Aim: To determine if prophylactic mesh placement is an effective, safe, and cost-effective procedure to prevent parastomal hernia (PSH) formation in the long term.

Material and Methods: In this multicenter superiority trial patients undergoing formation of a permanent colostomy were randomly assigned to either retromuscular mesh reinforcement or conventional colostomy formation. The primary endpoint was the incidence of a PSH after 5 years. Secondary endpoints were morbidity, mortality, quality of life and cost-effectiveness.

Results: A total of 150 patients were randomly assigned to the mesh group (n=72) or non-mesh group (n=78). For the long term follow up, we could analyse 113 patients since 37 patients were lost to follow-up. After a median follow-up of 60 months (IQR 48.6 – 64.4), 49 patients developed a PSH, 20 (27.8%) in the mesh group and 29 (37.2%) in the non-mesh group (p=0.22; 95% CI -24 – 5.5). A total of 25 patients developed an incisional hernia, seven in the mesh group (10.4%) versus 18 in the non-mesh group (27.2%) (p= 0.013, 95% CI 3.5 – 30.0). No relevant differences were found in quality of life or cost-effectiveness between both study group.

Conclusions: Use of a prophylactic retromuscular mesh at the ostomy site delays but not reduces the incidence of PSH after 5 years of follow-up. It leads to less severe PSH according to the EHS and MM classification with fewer repairs needed. Furthermore it causes patients to have fewer stoma related complications necessitating change of appliances and it is safe without any adverse events or increase in morbidity.
[002] THE ROLE OF DEEP LEARNING IN PREDICTING COMPLEXITY AND COMPLICATIONS IN ABDOMINAL WALL RECONSTRUCTION

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Aim: The aim of our study was to evaluate the utility of image-based deep learning models (DLMs) to predict surgical complexity and postoperative outcomes in patients undergoing AWR.

Material and Methods: A prospective, tertiary center, hernia database was queried for open AWR patients with adequate pre-operative CT-scans. An 8-layer convolutional neural network (CNN) analyzed image characteristics in Python utilizing the open source Tensorflow© and OpenCV frameworks. Images were analyzed and batched into a training set (80%) and validation set (20%) used to analyze the model output, which was blinded to the CNN until testing. DLMs were run to assess surgical complexity based on need for component separation, surgical site infection (SSI), and pulmonary failure. The surgical complexity DLM was validated by comparison to 6 expert AWR surgeons.

Results: In total, 369 patient CT scans were utilized. The surgical complexity DLM performed well (ROC=0.744; p<0.0001), and when compared to surgeon prediction on the validation set, performed better with an accuracy of 81.3% compared to 65.0% (p<0.0001). The SSI DLM was successful with an ROC of 0.898 (p<0.0001). The DLM for predicting pulmonary failure was less effective with an ROC of 0.545 (p=0.03).

Conclusions: DLMs were able to successfully predict surgical complexity and were more accurate than expert surgeons using objective, pre-operative imaging. DLMs were also successful in predicting SSI. This breakthrough may allow for enhanced pre-operative planning, including resource utilization and possible need for tertiary center referral. AI appears to be an exciting new management tool in complex AWR.
[003] SMALL BITES AND PROPHYLACTIC MESH TO PREVENT INCISIONAL HERNIA IN HIGH-RISK PATIENTS. A MESH IS THE MOST POWERFUL TOOL

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Aim: Small bites (SB) technique for closure of elective midline laparotomies (EMLs) and a prophylactic mesh (PM) in high-risk patients are suggested by guidelines to prevent incisional hernias (IHs) and burst abdomen (BA). Our aim was to implement a protocol combining both and to analyze its outcomes.

Material and Methods: Prospective data collection of all EMLs for one year. Results were analyzed at one month and during follow-up. The incidence of IH and BA was compared by groups depending on the use of a PM (M Group) or not (S Group), and in subgroups related to the closure technique: SB (Subgroups MSB and SSB) or not (Subgroups MLB and MSB).

Results: A lower number of BA was diagnosed in the M group (OR 0.0692; CI95% 0.008-0.56; P=0.01) in 197 operations. 163 patients completed a mean follow-up of 29.23 months, with a lower frequency of IH in M group patients (OR = 0.769; CI 95% 0.65 - 0.91; P < 0.0001). Same differences persisted after a propensity matching score: BA (OR = 0.355; CI 95% 0.255 - 0.494; P < 0.0001) and IH (OR = 0.394; CI 95% 0.24 - 0.61; P < 0.0001). Comparing suturing techniques by subgroups any difference in IH and BA appeared. PM was the main factor related to reduction of IH (HR 11.794; CI 95% 4.29 - 32.39; P < 0.0001).

Conclusions: A PM is the most powerful tool for prevention both IH and BA after EMLs, regardless of the closure technique in patients at high-risk for IHs.
Aim: Research indicates that prophylactic mesh may help prevent incisional hernia after laparotomy, but best practice patterns in these situations are still evolving. Here, we compare the failure loads (FLs) and biomechanical stiffness (BMS) of 35 porcine abdominal wall laparotomy incisions reinforced with meshes of various widths and fixation distances using biomechanical testing.

Material and Methods: In each specimen, a ten centimeter (cm) incision was made and closed using continuous 1-0 Maxon suture. Specimens were randomized to mesh width (none, 2.5cm, 3cm, 4cm, 6cm, 8cm) and tack separation (1.5cm, 2cm apart), and the meshes secured in an onlay fashion. Cyclic loads oscillating from 15 Newtons (N) to 140N were applied to stimulate abdominal wall stress, and the specimens subsequently loaded to failure. FLs (N) and BMS (N/mm) were comparatively analyzed.

Results: All specimens failed via suture pull-through. FLs and BMS were lowest in specimens with suture-only (421.43 N; 11.69 N/mm). FLs and BMS were significantly higher in 4cm mesh specimens (567.51N) than those with suture, 2.5cm, and 3.0cm mesh (all p<0.05). FLs in specimens with a greater number of tacks were consistently higher in meshes of similar sizes, although these did not reach significance.

Conclusions: Four cm mesh re-enforcement is superior to suture-only and smaller meshes at preserving strength in laparotomy closure in the early stages of healing, but larger meshes (6cm, 8cm) do not provide additional benefit. Meshes with more fixation points may be advantageous, but additional data is needed to make definitive conclusions.
Aim: The aim of this multicenter, randomized, double blinded study was to compare the short stitch technique for elective, primary, median laparotomy closure with the long stitch closure using the ultra-long absorbable, elastic monofilament suture made of poly 4-hydroxybutyrate (MonoMax®).

Material and Methods: Eligible patients were randomly allocated to receive either the short or the long stitch suture technique in a 1:1 ratio in 9 centers in Austria and Germany after elective midline laparotomy.

Results: 425 patients were randomized to receive either the short stitch (n = 215) or long stitch technique (n = 210). In a cox proportional hazards model, the risk for burst abdomen was reduced by 7-fold (HR 0.183 (0.0427 - 0.7435), p = 0.0179) for the short stitch group. Complications such as seroma, hematoma and other wound healing disorders occurred without significant differences between groups. After one year, the incisional hernia rate was 3.65% in the short stitch group compared to 8.80% in the long stitch group (p=0.055). The combination of burst abdomen and incisional hernia rate had a significantly lower rate of 5.38% for the short stitch technique compared to 13.17% for the long stitch technique (p=0.0142).

Conclusions: Both in the short-term results, the short-stitch technique showed substantial advantages in burst abdomen rate, as well as in the 1-year follow-up regarding the incidence of incisional hernias. The low incidence of incisional hernia in the short stitch technique with MonoMax® is promising in comparison to previously published data and should be confirmed in the 3-year follow-up.
Aim: The objective of this study was to gather information on patient-reported knowledge (PRK) in the field of hernia surgery.

Material and Methods: A prospective quantitative study was designed to explore different aspects of PRK and opinions regarding hernia surgery. Patients referred for the first time to a surgical service with a presumed diagnosis of hernia and eventual hernia repair were eligible, and those who gave consent completed a simple self-assessment questionnaire before the clinical visit.

Results: The study population included 449 patients (72.8% men, mean age 61.5). Twenty (4.5%) patients did not have hernia on physical examination. The patient’s perceived health status was “neither bad nor good” or “good” in 56.6% of cases. Also, more patients considered that hernia repair would be an easy procedure (35.1%) rather than a difficult one (9.8%). Although patients were referred by their family physicians, 32 (7.1%) answered negatively to the question of coming to the visit to assess the presence of a hernia. The most important reason of the medical visit was to receive medical advice (77.7%), to be operated on as soon as possible (40.1%) or to be included in the surgical waiting list (35.9%). Also, 46.1% of the patients considered that they should undergo a hernia repair and 56.8% that surgery will be a definitive solution.

Conclusions: PRK of patients referred for the first time to an abdominal wall surgery unit with a presumed diagnosis of hernia was quite limited and there is still a long way towards improving knowledge of hernia surgery.
Aim: Prophylactic meshes in high-risk patients prevent incisional hernias, although there are still some concerns about the best layer to place them in, the type of fixation, the mesh material, the significance of the level of contamination, and surgical complications. We aimed to provide answers to these questions and information about how the implanted material behaves based on its visibility under MRI.

Material and Methods: This is a prospective multicentre observational cohort study. Preliminary results from the first three months are presented. We included general surgical patients who had at least two risk factors for developing an incisional hernia. MRIs were performed six weeks after treatment. A polyvinylidene fluoride (PVDF) mesh loaded with iron particles was used in an onlay position.

Results: Between July 2016 and December 2020, 178 patients were enrolled in the study. Surgery was emergent in 30.3% of cases, contaminated in 10.7% and dirty in 11.8%. A total of 5.6% of cases had postoperative wound infections, with BMI being the only significant risk factor (OR = 1.14, 95% CI = 1.00-1.31, p = 0.048). The formation of a seroma was also associated with BMI (OR = 1.11, 95% CI = 1.02-1.21, p = 0.02).

Conclusions: The prophylactic use of onlay PVDF mesh in midline laparotomies in high-risk patients was safe and effective in the short term, regardless of the type of surgery or the level of contamination. MRI allowed us to understand how the mesh behaves during the early process of integration.
Aim: No data on the biomechanical properties of staplers’ use in the repair of abdominal wall defects are available. Our objective is to study prospectively the biomechanical properties of manual, stapled and mixed manual/stapled fascial sutures.

Material-Methods: Stress/strain tests were performed on 16 human cadaver fascial samples. The data on strength, strain (deformability), Young’s modulus (elasticity), and dissipated energy (toughness modulus) were recorded for each type of suture.

Results: Stapled and mixed suture showed a significantly higher strength (manual 0.83, stapled 2.10, mixed 2.68 MPa), and a trend towards a higher strain as compared to manual sutures (manual 344, stapled 249, mixed 280%). Stapled and mixed suture were four-fold higher as compared to manual sutures (manual 1.779, stapled 7.374, mixed 6.964 MPa). Manual and mixed sutures showed significantly higher dissipated energy (manual 0.99, vs stapled 0.73, vs mixed 1.35 mJ-mm²).

Conclusions: Stapled and mixed sutures have better strength performances than manual sutures. On the other hand, stapled and mixed sutures have significantly higher Young’s modulus and lower ultimate strain, showing less deformability, possibly translating in less efficiency in large midline defects, where manual sutures might display higher elasticity. Also, hand-sewn sutures (in manual or over-sewn stapled) appear to increase the ability to absorb mechanical energy, whereas stapled sutures showed to be less tough. Furthermore, an over-sewn stapled suture, as compared to a stapled suture, gains in term of strength, ultimate strain, Young’s modulus, and dissipated specific energy, suggesting the need of over-sewn stapled sutures in case of larger fascial defects.
Aim: Patient Reported Outcomes (PROs) are essential for evaluating hernia surgery. Current measuring instruments for PROs have disadvantages: often lengthy and burdensome paper questionnaires, used at predetermined moments with low patient compliance and time-consuming data processing. The Q 1.6 Inguinal Hernia application was developed to overcome these challenges. This pilot study reports the first clinical feasibility results.

Materials and Methods: the ‘twitch crowdsourcing’ concept was applied: during the interval of unlocking a smartphone or tablet a short question is asked, multiple times a day. Questions from validated questionnaires were implemented. The adaptive question engine generates an individualized set of questions. Alerts are automatically generated when a complication is suspected. All inguinal hernia patients in a high-volume inguinal hernia center were eligible for inclusion. Patients signed informed consent.

Results: 229 patients answered over 50,000 pre- and postoperative questions of which 92% were answered. Pre- and postoperative patient characteristics and clinical outcomes confirmed a standard inguinal hernia population. Compliance was 91.7% after 14 days, 69.0% after 3 months and 28.8% after one year. Pain and functional limitations were measured with a numerical scale from zero to ten. After 3 and 7 days, 7.7% and 44.3% returned to work, respectively. Patients were highly satisfied (92.8% preferred the app to usual care).

Conclusions: this smartphone application shows promising results for clinical practice. Remote monitoring may become standard postoperative care after (inguinal) hernia surgery. The current application will be further improved and evaluated for cost-effectiveness, safety and validity.
Aim: Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) for peritoneal carcinomatosis entails several risk factors for incisional hernia (IH). At our institution fascia closure has been performed in a 4:1 manner with a 2-0 polydiaxanone suture (the PDS-group) or a 2-0 polypropylene preceded by a reinforced tension line (RTL) suture (the RTL-group). Our hypothesis was that reinforcing the suture line results in fewer IH at one year.


Results: Of 193 patients, 63 were not evaluable for IH of which two, both in the PDS-group, were reoperated for fascial dehiscence (FD). 130 patients; 83 (45 women) in the PDS- and 47 (23 women) in the RTL-group, mean age 57 years (19-77) remained. RTL-patients were five years younger (54 vs 59), had a higher Karnofsky index and less bleeding (807 vs 1409 mL). No differences regarding sex, BMI, recent midline incisions, excision of midline scars, peritoneal cancer index score, complications (Clavien-Dindo 3b or higher), neo-adjuvant or adjuvant chemotherapy were found. 12 IH (9%) were found, 11 (13%) in the PDS- and 1 (2%) in the RTL-group (p=0.055).

Conclusions: Despite many potential IH risk factors, the overall IH-incidences do not seem higher than after laparotomies in general. The RTL-group showed 2% IH compared to 13% in the PDS-group. The PDS-group were further burdened by two FD. The results are clinically relevant, suggesting an advantage with RTL-closure for these patients.
Aim: Persistent pain after groin hernia repair is a major health problem. Sleep disturbance is associated with heightened pain sensitivity. The main objective of this study was to examine the role of sleep disturbance in the development and long-term maintenance of chronic postherniorrhaphy inguinal pain (CPIP), with exploration of sex differences.

Material and Methods: From 2012-2017, a national cohort of patients with prior groin hernia repair (n=2084; 45.8% females) were assessed for the development of CPIP 12 months after surgery. Patients then underwent long-term (median 5.0 years) follow-up to evaluate the contribution of sex and sleep disturbance on the maintenance of CPIP. Associations between pre- and postoperative sleep problems (assessed at long-term follow-up) and CPIP were tested using logistic regression.

Results: Females had higher rates of CPIP with negative impact on daily activities 12 months after surgery as compared to males (14.6 vs 9.2%, \(p<0.0005\)), and were more likely to have moderate-severe CPIP in the long-term (3.1 vs 1.2%, \(p=0.003\)). Preoperative sleep problems predicted development of CPIP 12 months after surgery (adjusted odds ratio (aOR) 1.76 (95%CI 1.26-2.46), \(p=0.001\)) and CPIP in the long-term (aOR 2.20 (1.61-3.00), \(p<0.0001\)). CPIP was associated with insomnia and depression.

Conclusions: Sleep disturbance may increase the risk for CPIP, and contribute to maintenance of postsurgical pain. Females are at heightened risk for CPIP as compared to males. Given the robust associations between sleep disturbance and CPIP, interventions which consolidate and promote sleep, especially in females, may improve long-term pain control.
[O12] OPEN PREPERITONEAL INGUINAL HERNIA REPAIR, TREPP VERSUS TIPP IN A RANDOMIZED CLINICAL TRIAL

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Aim: The preperitoneal mesh position for inguinal hernia repair showed beneficial results regarding Chronic Postoperative Inguinal Pain (CPIP) with low recurrence rates. Two open preperitoneal techniques, the TransREctus Sheath PrePeritoneal (TREPP) and the TransInguinal PrePeritoneal (TIPP) technique, were compared in a randomized clinical trial with the hypothesis of less patients with CPIP after TREPP due to complete avoidance of nerve contact.

Materials and Methods: Adult patients with a primary unilateral inguinal hernia were randomized to either TREPP or TIPP in four hospitals. Prior to the trial’s start the study protocol was ethically approved and published. Outcomes included CPIP after 1 year (primary outcome) and recurrence rates, adverse events and Health related Quality of Life (secondary outcomes). Follow-up was performed at 2 weeks, 6 months and 1 year.

Results: Baseline characteristics were comparable in both groups. Pain was less often present after TREPP at 2 weeks and 6 months, but the CPIP at rest at 1 year was comparable 1.9% after TREPP vs 1.4% after TIPP, p=0.535). The overall recurrence rate was higher in the TREPP group, 8.9% vs 4.6%, p=0.022). Corrected for a learning curve for TREPP, no significant difference could be assessed (TREPP 5.7% and TIPP 4.8%, p=0.591).

Conclusions: both the TREPP and TIPP technique resulted in a low incidence of CPIP after 1 year follow-up. The TREPP method can be considered a solid method for inguinal hernia repair if expertise is present. The learning curve of the TREPP techniques needs further evaluation.
Aim: Biologic mesh has been increasingly utilized in complex ventral hernia repair despite limited evidence at low risk of bias supporting its growth. We hypothesized biologic mesh when compared to synthetic mesh would have fewer major complications at one year.

Material and Methods: We performed a participant-level meta-analysis of published randomized controlled trials (RCTs) comparing biologic to synthetic mesh at one year. Primary outcome was major complication (composite of mesh infection, recurrence, reoperation, or death) at one year post-operative. Secondary outcomes included length of index hospital stay, surgical site occurrence, and surgical site infection. Outcomes were assessed using frequentist generalized linear models.

Results: A total of 252 patients from two RCTs were included, 126 patients randomized to the intervention arm of biologic mesh and 126 patients randomized to the control of synthetic mesh. Median follow-up was 15 (12, 27) months. Major complication occurred in 41 (33%) patients randomized to biologic mesh, and 44 (35%) patients randomized to synthetic mesh, (relative risk [RR] 0.91, 95% confidence interval [CI] 0.54-1.55, p-value 0.740). There were 36 total recurrences, 23 (18%) in the biologic arm, and 13 (10%) in the synthetic arm (RR 1.83, 95% CI 0.84-3.99, p-value 0.130). The remainder of outcomes demonstrated no statistically significant differences.

Conclusions: The risk of major complication did not differ between biologic versus synthetic mesh. In patients undergoing ventral hernia repair, there was no clinical benefit with biologic mesh as opposed to synthetic mesh at one year post-operative.
Aim: Surgical technique and material used to close an abdominal wall incision are considered to be important determinants for the risk of developing surgical site occurrences (SSOs). Aim of our prospective, non-randomized, monocentric study was a comparative analysis of the perioperative performance (6:1 suture/wound length (SL/WL)-ratio) and SSOs (surgical site infections [SSI] & 2°wound dehiscence/burst abdomen) following midline & transverse incisions.

Material and Methods: The trial is completed. It included 351 patients between 1/2013-10/2018 in a prospective database. The surgeons aimed at performing a 6:1 SL/WL-ratio in all laparotomies. Patient specific data (risk factors, intra- & postop parameters & SSI/SSO) were entered into the registry database. Statistics involved the Chi²-/ANOVA and Mann-Whitney Test.

Results: Overall, 82.3% (289/351) were operated electively, 17.7% (62/351) had an emergency laparotomy, 55% (n=194) had a midline, 29% (n=103) a transverse and 15% (n=54) a combined L-shaped laparotomy (liver resection). A learning curve with respect to the bite width was encountered. While SL/WL ratio all laparotomies were similar, bite width varied but improved with experience. SSI was higher in transverse vs. median laparotomies and overall higher in emergency operations. The rate of 2°wound dehiscence (surgical site occurrence [SSO]) stayed at 1/351.

Conclusions: A learning curve is required to sufficiently perform a short stitch 6:1 suture. Median and transverse laparotomies can be closed safely by a 6:1 SL/WL ratio. SSO could be reduced compared to our historic patient cohort but did not differ within the > and < 6:1 ratio. Emergency laparotomies can also be safely performed with the short stitch technique.
Aim: Acute pain following transabdominal preperitoneal inguinal hernia repair (TAPP) may be attributed to mesh fixation. The aim of the present study was to determine short and long-term complications following laparoscopic TAPP repair using either a self-gripping mesh or a tacked mesh.

Material and Methods: Healthy male subjects referred for unilateral inguinal hernia repair were randomized to a TAPP procedure using either a tacked mesh (Parietix, Medtronic; AbsorbaTack, Medtronic) or a self-gripping mesh (ProGrip™, Medtronic). Acute postoperative pain and short and long-term complications were recorded using an e-mail generated questionnaire preoperatively and at days 1 and 7 and at 1, 3, 6 and 12 months postoperatively. Acute pain was assessed using the visual analogue scale (VAS).

Results: A total of 333 male subjects underwent elective repair of a medial (n=107, 32%) or a lateral (n=226, 68%) inguinal hernia. Patients were randomized to either a tacked (T=178) or non-tacked procedure (N=155). Mean follow-up time was 141 days. Mean number of tacks applied was 2.7 per operation. Mean preoperative VAS score was 2.21 (T) vs 1.78 (N) (P=0.06). Postoperatively, the mean VAS-score (average within the observation period) was 2.80 (T) vs 3.12 (N) (P<0.01), resulting in a 10% lower VAS-score following the tacked repair compared to the self-gripping mesh (P<0.01). Patient-reported signs of recurrence at 12 months was 4.7% (T) vs 7.5% (N) (P=0.35).

Conclusions: Postoperative acute pain after laparoscopic inguinal hernia repair is lower following a tacked than a non-tacked (self-adhesive mesh) procedure. Patient-reported recurrence did not differ between groups.
Aim: Management of diastasis recti abdominis (DRA) differs regarding core training, surgical repair methods and post-operative rehabilitation. The purpose of this prospective cohort study was to evaluate the effect of a novel concept of treatment for DRA, the TOR-concept (Training, Operation and Rehabilitation). The concept includes preoperative evaluation of symptoms and instructed abdominal core training; tailored surgical repair of the DRA; and an individualized postoperative rehabilitation program.

Material and Methods: A cohort of seventy-five post-partum women with diagnosed DRA and training resistant core dysfunctions were evaluated and included to the study during 2018-2020. After surgery, all participants underwent an individualized supervised rehabilitation program with progressive increasing load for four months. Physical function was registered preoperatively and one year after surgery with the disability rating index (DRI) questionnaire. Quality of life (QoL) was assessed with the SF-36 questionnaire. The DRA and the surgical result were assessed with ultrasonography before and one year after surgery.

Results: Sixty-nine participants, 92%, completed the study. There were no DRA-recurrences at the 1-year follow-up. Early results shows that self-reported physical function, (DRI), improved in 88.8 % of patients, with a mean score improvement of 78.5 %. Quality of life, (SF-36), improved significantly compared with the preoperative scores, and reached a level similar to, or higher than, the normative Swedish female population.

Conclusions: In this cohort of post-partum women with DRA combined with core instability symptoms resistant to training, surgical reconstruction within the TOR-concept resulted in a significant improvement of physical function and QoL.
Aim: There is a discrepancy between the high frequency of chronic post-operative pain reported in questionnaire-based studies after groin hernia surgery and the clinical experience of many surgeons in which it is infrequent that patients return after surgery because of chronic post-operative pain. This is supported by the Swedish Hernia Registry, where the proportion of patients who are re-operated for chronic post-operative pain is 0.02-0.03% for open methods and less than 0.01% for laparo-endoscopic methods. The aim of this study is to find the incidence of non-surgical causes of chronic groin pain and other patient-reported outcomes after inguinal hernia surgery.

Material and Methods: Prospective cohort observation study of patients evaluated for suspected inguinal hernia-related symptoms at a hernia clinic in Sweden during 1 year. Patients completed validated pain forms before surgery and 6 and 12 months after surgery. Patients were assessed preoperatively about the possible causes of groin pain according to a checklist. For this purpose, a questionnaire of inguinal hernia-related symptoms was used. Patients with moderate or severe chronic groin pain after surgery were offered to participate in a clinical examination where the pain was evaluated for probable cause according to a checklist.

Results: 574 patients were included in the study, of which 372 were operated on and answered the post-operative questionnaires. Preliminary results on surgical and non-surgical causes of chronic groin pain after hernioplasty and other patient-reported outcomes will be presented at Hernia 2021 EHS-AHS Joint Congress.

Conclusions: Proportion of patients with chronic groin pain related to groin hernia surgery and other non-surgical pathologies will be reported.
Aim: Inguinal hernia (IH) belongs to the most common surgical pathology worldwide. Approximately, one third of patients are asymptomatic. Watchful waiting (WW) has been regarded as a justifiable treatment option, but doubts still exist since high crossover (CO) rates to surgery may occur. The aim of this study is to assess the CO rates after 13-year follow-up of our randomized controlled trial (RCT).

Material and Methods: In our original study, 496 men with an asymptomatic or mildly symptomatic IH were randomly assigned to elective repair or WW. A retrospective review was conducted of patients initially assigned to WW. Primary outcome was CO rate to surgery. Secondary outcomes included reason for crossing over and time between initial randomisation and the CO to surgery.

Results: In the original RCT, 95 of 262 WW patients electively crossed over to surgery (35.4%) after 32.9 months. Currently, 212 of the 262 (81.0%) WW patients were reviewed, and 133/212 (62.7%) crossed over to surgery. Median follow-up was 13 years (range, 8-15 years). Mean time to CO was 35.2 months SD (40.8). Motivations for crossing over to surgery were predominantly due to progression of symptoms (83.5%), and in 8 (3.8%) cases due to an emergency event.

Conclusions: In the presented population, WW on the long-term remains a safe strategy, saving one third of patients an operation, although CO to surgery will likely occur. Insights into the natural course of untreated inguinal hernia that are valuable during patient counseling can be offered in the form of long-term CO rate due to progression of symptoms.
Aim: To assess the 5-year outcomes of mesh fixation with cyanoacrylate or sutures for Lichtenstein hernioplasty (recurrence rate, chronic pain, and patient’s quality of life (QoL).

Methods: 370 patients who underwent Lichtenstein hernia repair were randomized to receive either cyanoacrylate or non-absorbable sutures for lightweight polypropylene mesh fixation. Postoperative outcomes were evaluated by an independent blinded observer. QoL was assessed using the EuraHS-QoL questionnaire (European Registry for Abdominal Wall Hernias).

Results: Initially 188 patients received Glue and 182 Suture. Mean follow-up: 72.6±7.8 months. 78.1% patients (Glue:147, Suture:142) completed 5-years follow-up. No significant differences were observed in terms of chronic pain. VAS score≥3: 8.1% vs 9.1%, Glue vs. Suture, respectively (P=0.836). 8 patients (2.7%) (4 in each group) reported pain at rest, reaching 10.7% when analyzing pain during activity.

QoL was unaffected (EHS-QoL score=0) in the majority of patients: 131 (89.2%) vs. 127 (89.5%) for Glue or Suture respectively (p=0.930). QoL-score greater than 20/90 points: 2 patients (Glue) vs. 6 (Suture) (p=0.099). The Suture group QoL-score was higher in all domains but without statistical significance. Foreign body sensation was slightly higher in Suture group (7.5% vs. 9.3%) but without reaching statistical significance (p=0.534). There were no differences in the recurrence rate (2.6% vs. 3.8% for Glue and Suture respectively) (p=0533).

Conclusions: Chronic discomfort rate after Lichtenstein hernioplasty is not negligible. Atraumatic mesh fixation with glue was quicker and resulted in less acute postoperative pain than sutures for Lichtenstein hernia repair, but with no statistical differences in terms of chronic pain nor the long-term patients’ QoL.
Aim: To assess the validity and cover rate of the Swedish hernia register.

Material and Methods: Annual validation of the Swedish Hernia Register has been carried out since the start in 1992 and since 2013 in a more standardized way to allow a systematic data collection and evaluation. 10% of all participating units are randomly selected each year in a specific region of Sweden, ensuring a systematic validation of all regions from North to South. Data from 2013 to 2018 was analyzed regarding data quality and from 2014 to 2018 regarding cover rate. All operations registered at the validated clinics was checked against the Swedish Hernia Register to assess cover rate. 50 operations were randomly selected at each clinic and data in the Swedish Hernia register was compared to the medical records to evaluate data quality.

Results: In total 55 participating units were evaluated and 73764 variables compared to medical records. Cover rate between 2014 to 2018 was 97% and proportion of correct variables was 98%. Most frequent errors where ASA-grade, date at which the patient was put on the waiting list and postoperative complications.

Conclusions: This unique validation of a national hernia register show a high cover rate and good quality of data. Efforts to maintain and improve national registers are of great importance. Research with data from the Swedish hernia register should be evaluated on the basis of the results presented in this study.
Aim: The incidence of a parastomal hernia (PSH) is approximately 40% two years after stoma construction and can even increase to 50% after a longer period. The European Hernia Society (EHS) published a guideline showing that the evidence for treatment of a PSH is of low quality. Due to the lack of evidence, a survey was conducted to provide insight into the Dutch approach.

Material and Methods: A survey was sent to 104 surgeons in the Netherlands representing their surgical department. The survey was developed by three hernia surgeons and a physiotherapist specialized in abdominal wall pathology.

Results: The survey was completed by 103 surgeons (99%) from 75 hospitals. 75% of the respondents perform a laparoscopic Sugarbaker for the treatment of PSH after colostomy, ileostomy or Bricker deviation. Most respondents (75%) replied that they never use a prophylactic mesh to prevent the occurrence of PSH, although more than half of them do wish to introduce this.

Conclusions: Authors believe that the implementation of minimally invasive surgery and the systematic review performed by Hansson et al. in 2012, shifted the treatment strategy for PSH towards the use of a laparoscopic Sugarbaker. Nevertheless, little is known about the results of this treatment. Although there is a high level of evidence for the use of prophylactic mesh placement in reducing the incidence of PSH development, this has not been implemented in daily practice for colorectal and/or hernia surgeons. Authors aim for registration of PSH repair to evaluate the outcomes in terms of recurrence, pain and quality of life.
Aim: To investigate whether androgen deprivation therapy (ADT) for prostate cancer increases the risk for inguinal hernia.

Material and Methods: A population-based nested case-control study based on data from the Prostate Cancer Database Sweden. The cohort included men with prostate cancer who had not received curative treatment. Men who had been diagnosed with inguinal hernia or had undergone inguinal hernia repair (n=1324) were cases and controls were men, not diagnosed, nor operated on for inguinal hernia, matched on birth year (n=13240). Conditional multivariate logistic regression models were used to assess any temporal association between ADT and inguinal hernia, adjusting for confounders.

Results: Odds Ratio [OR] for repair of inguinal hernia 0-1 years from start of ADT was 0.5 (95% confidence Interval (CI) 0.38-0.68), between 1 and 3 years after, the OR was 0.35 (95% CI 0.26-0.47), 3-5 years after, the OR was 0.39 (95% CI 0.26-0.56), 5-7 years after, the OR was 0.6, (95% CI: 0.41-0.97), and > 9 years after, the OR was 3.68 (95% CI 2.45-5.53).

Conclusions: The marked increase in OR for inguinal hernia after 9 years of ADT supports the hypothesis that low testosterone levels increase the risk for inguinal hernia. The low risk for inguinal hernia during the first eight years on ADT is likely caused by selection of men with advanced cancer unlikely to be diagnosed or treated for inguinal hernia. This finding may support the hypothesis that sex hormones plays a crucial role in inguinal hernia development.
[O23] SURGICAL REPAIR OF PARASTOMAL BULGING - A REGISTER-BASED STUDY

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Aim: To examine the incidence of primary and recurrent repair and types of repair performed in patients with parastomal bulging.

Material and Methods: We linked prospectively collected data on parastomal bulging from the Danish Stoma Database to surgical data on repair of parastomal bulging from the Danish National Patient Register. Survival statistics provided cumulative incidences and time until primary and recurrent repair.

Results: Of 1016 patients, registered from 2010-2017 with a permanent stoma and a parastomal bulge, 180 (18%) underwent surgical repair. The cumulative incidence of a primary repair was 9% (95% CI [8%; 11%]) within 1 year and 19% (95% CI [17%; 22%]) within 5 years after the occurrence of a parastomal bulge. For colostomies and ileostomies, we found similar probability of undergoing primary repair. For recurrent repair, the 5-year cumulative incidence was 5% (95% CI [3%; 7%]). The probability of undergoing further recurrent repair was 33% (95% CI [21%; 46%]) within 5 years. For primary repair, open or laparoscopic repair with mesh (43%) and stoma revision (39%) were performed almost equally frequent. Stoma revision and repair with mesh could precede and follow one another as primary and recurrent repair. Stoma reversal was performed in 17% of patients.

Conclusions: Our data offered a new and comprehensive view of the course of surgical treatment of parastomal bulging. Five years after the occurrence of a parastomal bulge the estimated probability of undergoing a repair was 19%. The probability of undergoing recurrent repair was high and stoma reversal more common than expected.
Aim: Between 01/2011 and 12/2020 5,068 AWR-patients at our department (tertiary referral center) – 884 (17.4%) incisionals. Over this 10-years period considerable changes (patients characteristics, surgical techniques, results) were analyzed.

Material and Methods: Herniamed® offers an internet-based registry-platform to document all kinds of abdominal wall repairs on a voluntary basis since 2009. Demographic data, interventional details and outcomes are documented using the EHS-classification-system. Follow-up is standardized and scheduled for 10 years.

Results: Up to 54.7% of patients (in 2020) show at least one risk factor (diabetes, smoking ....), in contrast to the age pyramid patients >70 years are decreasing (47.2% in 2011 down to 29.3% in 2020), share of ASA III/IV is initially increasing (up to 42.9% in 2017) with a constant decrease after 2017 to 25.3% in 2020. Emergent cases are increasing (6.9% in 2011 up to 10.8% in 2019). Recurrent hernia repairs stays almost constant at median 21.7%. After 2015 we decided – for various reasons - not to routinely apply the laparoscopic IPOM-technique (with an interim ratio of up to 46.2%) – with a post-OP complication rate of median 23.3% anymore. From 2016 onwards we performed an increasing number of „other techniques“ (E-MILOS, E-TEP, ....) up to 36% in 2020 instead.

Conclusions: By analysing trends we recognized that patients show increasing numbers of risk factors and ASA-scores which led us to implement a prehabilitational strategy in clinical routine. However rate of post-OP complication is still high representing AWR as demanding in many aspects. A temporary cessation of MIS did not led to an extensive increase in post-OP wound complications.
MORTALITY AFTER EMERGENCY VERSUS ELECTIVE GROIN HERNIA REPAIR: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Aim: This systematic review and meta-analysis aimed to investigate 30- and 90-day postoperative mortality in patients undergoing emergency or elective groin hernia repair.

Material and Methods: This review is reported after the PRISMA 2020 guidelines. A protocol (CRD42021244412) was registered to PROSPERO. Three databases (PubMed, EMBASE, and Cochrane CENTRAL) were searched in April 2021. The identified studies were screened for eligibility and included if they reported 30- and/or 90-day mortality following emergency or elective groin hernia repair. Meta-analyses were conducted when possible, and a subgroup analysis on patients undergoing bowel resection was made.

Results: We included 37 studies with a total of 30,740 patients receiving emergency repair and 457,253 receiving elective repair. Meta-analyses could not be conducted for the two repair settings separately due to heterogeneity. However, the 30-day mortality ranged from 0.0–1.7% following elective repair and 0.0–11.8% following emergency repair. The risk of 30-day mortality following emergency repair was estimated to be 26-fold higher than after elective repair. A subgroup meta-analysis on bowel resection in emergency repair estimated 30-day mortality to be 7.9%.

Conclusions: Emergency groin hernia remains a challenging and potentially fatal surgical emergency. This review emphasizes the importance of performing hernia repair in an elective setting to prevent a potential acute presentation with acute surgical intervention. Patients presenting with symptoms of emergency groin hernias should receive particular attention to minimize the high risk of mortality and morbidity following emergency repair.
[026] INFECTIOUS COMPLICATION IN RELATION TO THE PROPHYLACTIC MESH POSITION: THE PRIMA TRIAL REVISITED

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Aim: Prophylactic mesh reinforcement has proven to reduce the incidence of incisional hernia (IH). Fear of infectious complications may withhold the widespread implementation of prophylactic mesh reinforcement, particularly in the onlay position.

Material and Methods: Patients scheduled for elective midline surgery were randomly assigned to a suture closure group, onlay mesh group, or sublay mesh group. The incidence, treatment, and outcomes of patients with infectious complications were assessed through examining the adverse event forms. Data were collected prospectively for 2 years after the index procedure.

Results: Overall, infectious complications occurred in 14/107 (13.3%) patients in the suture group and in 52/373 (13.9%) patients with prophylactic mesh reinforcement (p = 0.821). Infectious complications occurred in 17.6% of the onlay group and 10.3% of the sublay group (p = 0.042). Excluding anastomotic leakage as a cause, these incidences were 16% (onlay) and 9.7% (sublay), p = 0.073. The mesh could remain in situ in 40/52 (77%) patients with an infectious complication. The 2-year IH incidence after onlay mesh reinforcement was 10 in 33 (30.3%) with infectious complications and 15 in 140 (9.7%) without infectious complications (p = 0.003). This difference was not statistically significant for the sublay group.

Conclusions: Prophylactic mesh placement was not associated with increased incidence, severity, or need for invasive treatment of infectious complications compared with suture closure. Patients with onlay mesh reinforcement and an infectious complication had a significantly higher risk of developing an incisional hernia, compared with those in the sublay group.
Aim: The impact of peripheral nerve management on post-operative pain is poorly known. The aim was to evaluate how management of the inguinal nerves during anterior mesh hernia repair affects the risk for long-term postoperative pain.

Material and Methods: Cross-sectional study based on the Swedish Hernia Register (SHR). Includes patients over 18 years of age with an open anterior repair during 2012-2018, who responded to a one-year follow-up questionnaire regarding pain. Ordered logistic regression analysis was applied to determine risk factors for pain.

Results: In total 35,720 patients who were operated with anterior mesh repair responded to the PROM questionnaire. Overall, 15.6% reported pain interfering with daily activities. The risk for persisting groin pain one year after surgery was not impacted by transecting the ilioinguinal nerve (0.49), the iliohypogastric nerve (0.17) or the genital branch of the genitofemoral nerve (0.25) in a multivariable ordinal regression adjusting for anaesthesia, gender, age and emergency surgery.

Conclusions: Intraoperative management of the three main inguinal nerves was not associated with the risk for persisting pain in the operated groin one year after surgery.
APPLICATION OF MICROPOROUS POLYSACCHARIDE HEMOSPHERES DURING TRANSVERSUS ABDOMINAL RELEASE TO REDUCE SEROMAS AND HEMATOMAS

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Aim: Wound complications, like seromas and hematomas, occur in 23% after transversus abdominis release (TAR). Hemostat agents like fibrin glue have potential to reduce this rate, by vessel sealing and tissue bonding. But these are expensive. A topical hemostatic, like microporous polysaccharide hemospheres (MPH), is much cheaper, but its potential to reduce seromas and hematomas has never been analyzed in ventral hernia surgery.

Material and Methods: After the first 25 consecutive TAR patients (Control group, 2016-2018), MPH was introduced as an adjunct in a consecutive group of 25 TAR patients (Intervention group, 2019-2020). MPH was sprinkled in the TAR planes and subcutaneous tissue. Groups were compared.

Results: Pre-operative base-line characteristics and the overall complexity of the hernia patients and operations did not differ between the two groups. Postoperatively, the overall rate of surgical site occurrences (SSO) differed (CG:60%;IG:32%), but not significantly. Seromas (CG:5%;IG:3%) and hematomas (CG:28%;IG:8%) did not differ significantly between the two groups. Medical complications (CG:13%;IG:10%) and two-year recurrence rate (CG:12%;IG:16%) also did not differ.

Conclusions: This study did not demonstrate a clear effect of MPH on the incidence of SSO, seromas or hematomas after a transversus abdominis release, despite the high incidence of wound complications in the first group of TAR patients (presumably, reflecting the learning curve of TAR). The fact that MPH does not glue tissue layers and minimize dead space, may be causative. MPH is not advised as an adjunct to reduce SSO.
Aim: Ventral hernias are increasing in prevalence and many recur despite attempted repair. To date, much of the literature is underpowered and divergent. As a result there is limited high quality evidence to inform surgeons succinctly which perioperative variables influence postoperative recurrence. This systematic review aimed to identify predictors of ventral hernia recurrence.

Material and Methods: PubMed was searched for studies reporting prognostic data of ventral hernia recurrence between 1 January 1995 and 1 January 2018. Extracted data described hernia type (primary/incisional), definitions of recurrence, methods used to detect recurrence, duration of follow-up, and co-morbidity. Data were extracted for all potential predictors, estimates and thresholds described. Random-effects meta-analysis was used. Bias was assessed with a modified PROBAST (Prediction model Risk Of Bias AS sessment Tool).

Results: Screening of 18,214 abstracts yielded 274 individual studies for inclusion. Hernia recurrence was defined in 66 studies (24.1 per cent), using 41 different unstandardized definitions. Three patient variables (female sex, age 65 years or less, and BMI greater than 25, 30, 35 or 40 kg/m²), five patient co-morbidities (smoking, diabetes, chronic obstructive pulmonary disease, ASA grade III–IV, steroid use), two hernia-related variables (incisional/primary, recurrent/primary), six intraoperative variables (biological mesh, bridged repair, open versus laparoscopic surgery, suture versus mesh repair, onlay/retrorectus, intraperitoneal/retrorectus), and six postoperative variables (any complication, surgical-site occurrence, wound infection, seroma, haematoma, wound dehiscence) were identified as significant prognostic factors for hernia recurrence.

Conclusions: This study summarized the current evidence base for predicting ventral hernia recurrence. Results should inform best practice and future research.
Aim: The purpose of this study was to evaluate the rate of incisional hernias at the ostomy site after reversal of the ostomy.

Material and Methods: We used retrospectively compiled database of patients who had undergone ostomy formation and ist reversal. All patients had their surgery performed between Jan. 2011 and December 2019. Patients history, added by clinical examination and CT-scan were performed in order to identify the incidence of incisional hernias. Different variables, like gender, surgical site infection (SSI) and BMI were evaluated as possible risk factors for hernia occurrence.

Results: Among totally included 224 patients in the study, 190 of all patients had reversal after loop-ileostomy (85%) and 34 patients had reversal after loop-colostomy (15%). Among all stoma reversal patients, 12,8 % developed incisional hernia at the stoma reversal site (n=28). The incisional hernia occurrence at the ostomy reversal site was present in 20,0% in patients with clinically relevant SSI and only in 9,4% in patients where SSI was absent (p=0,03). There was no statistical significance in hernia occurrence between both genders and among patients with low, normal and high BMI in our cohort of patients.

Conclusions: Incisional hernia after ostomy reversal is a common late surgical complication. All measurements that reduce SSI at the reversal site are important for lower hernia incidence. Prophylactic mesh implantation at stoma reversal sites may be considered in these patients.
Aim: High level evidence recommends the use of mesh for umbilical hernias with defects >1 cm to reduce recurrence rates without increasing the risk of postoperative complications. For umbilical hernias with defect width <1 cm, the literature is sparse. The aim of the study was to assess outcomes after suture and mesh repair of umbilical hernias with defect width <1 cm on a nationwide basis, and to evaluate outcomes after onlay mesh repair specifically.

Material and Methods: By merging data from the Danish Hernia Database and the National Patients Registry from January 2007 until December 2018, patients receiving elective repair of an umbilical hernia with defect width < 1 cm were identified. Available data included details about comorbidity, surgical technique, 90-days readmission, 90-days reoperation and reoperation for recurrence.

Results: A total of 7,849 patients were included, of whom 25.7% (2,013/7,849) underwent mesh repair. The cumulative 5-year incidence of reoperation for recurrence was significantly decreased after mesh repair 3.1% (95% C.I. 2.1-4.1) compared with suture repair 6.7% (95% C.I. 6.0-7.4), P < 0.001. Onlay mesh repairs had the lowest cumulative risk of recurrence at 5 years 2.0% (95% C.I. 0.6-3.5). For onlay mesh repairs, readmission 7.9% (65/826) and reoperation (3.9% (32/826) rates within 90-days were comparable to suture repairs (6.5% (381/5,836) and 3.3% (192/5,836), P = 0.149 and P = 0.382, respectively.

Conclusions: Even for the smallest umbilical hernias, mesh repair significantly decreased the recurrence rate. Onlay mesh repair was associated with the lowest risk of recurrence without increasing early complications.
Aim: In 2014 fascial dehiscence (FD) was treated with re-suturing the fascia as the only measure in half of the cases at our institution, with discouraging re-rupture and incisional hernia (IH) rates. A changing path away from fascia closure (FC) by re-suturing solely towards reinforcement of the closed fascia is now evaluated.

Material and Methods: Retrospective chart review of consecutive patients operated for FD 2016-2020. Available CT scans were scrutinized for IH.

Results: 58 patients (14 women) with a mean age of 71 years and a mean BMI of 27.3 were treated with: FC by re-suturing as the only measure (n=1, 1.7%); FC preceded by a reinforced tension line (RTL) suture (n=9, 15.5%); FC and on-lay mesh reinforcement (n=23, 39.7%); retromuscular mesh closure (n=10, 17.2%); open abdomen treatment with retromuscular mesh reconstruction (n=1, 1.7%); and, open abdomen treatment with vacuum assisted wound closure and permanent on-lay mesh-mediated fascial traction (VAWCPOM) (n=14, 24.1%). One patient in the RTL-group suffered a re-rupture (1.7%). The in-hospital mortality was 5%. Wound healing problems were seen in 29 (51.9%) patients. IH was evaluable in 49 patients with a total incidence of 22.4% at mean follow-up of 21 months. The hernia incidence for mesh reinforced or reconstructed patients was 17.5% compared to 44.4% in re-sutured or RTL patients.

Conclusions: FD treatment with mesh reinforced FC prevented re-rupture and resulted in a lower rate of IH. Additional standardization and refining the mesh techniques may further improve results.
Aim: The evidence base for statements about risk factors, morbidity and mortality for emergency hernia repair is mostly low quality. The aim of this study is to elucidate risk factors for the development of incarcerated hernia and outcome after adult emergency hernia repair using data from the Swedish Hernia Register (SHR).

Material and Methods: Data in this observational study were extracted from the SHR. It included registered cases between January 1, 2009 and December 31, 2019. Maximal follow-up was until December 31, 2020. Demographic data were analysed descriptively, risk analyses were performed using multivariate- and Cox-regression models.

Results: A total of 164,844 cases could be included after application of the in- and exclusion criteria. Women [odds ratio (OR) 1.42, 99% CI 1.32–1.51], patients with lateral hernia [OR 1.54, 99% CI 1.47–1.61], femoral hernia [OR 14.63, 99% CI 13.32–16.06] and hernia recurrence [OR 2.46, 99% CI 2.33–2.60] were at higher risk of developing an incarcerated hernia. The highest strangulation risk was seen among women [OR 2.36, 99% CI 1.91–2.90], femoral hernia [OR 7.00, 99% CI 5.40–9.11] and recurrent hernia [1.90, 99% CI 1.54–2.33]. Patients with hernia incarceration or strangulation suffer significantly more frequent from postoperative complications [16.7% and 40.9% respectively, both p < 0.001].

Conclusions: The data demonstrate that certain risk groups exist, which are prone to suffer from hernia incarceration and strangulation. These at risk patients should be prioritized, especially during the reorganisation of services to cope with the massive surgical backlog in the aftermath of the COVID-19 pandemic.
[O34] AUTOLOGOUS FENESTRATED CUTIS GRAFTS FOR VENTRAL HERNIA REPAIR IN PATIENTS WITH OBESITY

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Aim: Traditional approaches to ventral hernia repair involve implantation of synthetic mesh (SM), primary suture (PS) repair, and the use of biologic prostheses (BP). A body mass index (BMI) > 30 increases recurrence rates and complications for such repairs. We have begun to use Autologous Fenestrated Cutis Grafts (CG) as an alternative hernia repair. We investigated the impact of obesity on the recurrence and complication rates of CG compared to traditional repairs.

Material and Methods: A five-surgeon, retrospective study included all ventral/incisional, epigastric and umbilical hernia repairs (SM, PS, and BP from 2015-2020; CG repairs from 2018-2020). Patients with a BMI ≥ 30 were stratified according to surgical approach. Outcomes included recurrence and complication rates. Descriptive statistics for demographics and outcomes were compared and logistic regression performed with p < 0.05 considered significant.

Results: A total of 301 hernia repairs were performed (173 CGs, 54 SM, 59 PS, 15 BS). The groups had similar recurrence rates. A significant difference in complications rates did exist (37% CGs, 48.1% SMs, 15.3% PS, 66.7% BP, p<0.001). Logistic regression revealed PS had fewer total complications than all other repairs. Compared to SM, CG had fewer seromas. Compared to BP, CG had fewer wound infections, systemic infections, renal complications, and additional procedures.

Conclusions: CG for abdominal wall hernia repair in patients with BMI ≥ 30 is an acceptable hernia repair in obese patients with similar recurrence rates and an acceptable complication profile compared to traditional repairs.
WHAT HAPPENS TO PATIENTS WITH ACUTELY SYMPTOMATIC HERNIA IN THE UK? FINDINGS FROM THE MASH STUDY

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Aim: Acutely symptomatic abdominal wall and groin hernias (ASH) are a common reason for acute surgical admissions in the UK. There is limited data to guide the treatment of such presentations. This study aimed to assess outcomes of emergency hernia surgery, and identify common management strategies, to improve care for these high-risk patients.

Material and Methods: A 12 week, UK-based, multi-centre, collaborative, prospective cohort study (NCT04197271) recruited adults with ASH. Data on patient characteristics, inpatient management, quality of life, complications and wound healing was collected. 30 and 90-day follow-up phone calls assessed complications and quality of life. Descriptive analyses were performed to describe population and outcomes.

Results: Twenty-three acute Trusts recruited 268 patients. Inguinal (37.7%) and umbilical (37.7%) were the most common hernia locations. 13.4% were awaiting elective surgery and 13.1% had been previously declined intervention. CT was performed in 48%. 82% underwent surgical management with open repair (94%) under general anaesthesia (93%) being most common. 4/11 laparoscopic procedures were converted to open. 55% of repairs used mesh, typically synthetic non-absorbable (87%). Complications were infrequent with surgical site infection (9.4%), delirium (3.2%) and pneumonia (2.3%) being most common. Mortality was 1.5%. Immediate surgical management was associated with significant improvement in quality of life at 30 days.

Conclusions: There is variation in the investigation, management and surgical strategy to treat acutely symptomatic abdominal wall and groin hernias in the UK. Further large-scale work is needed to establish the optimal management strategy for specific acute presentations given the wide variation at present.
Aim: Measurable and controlled stretching of the fascia for 30 minutes during surgery to achieve primary tension-free abdominal wall closure in LOD hernias. This prospective observational study aimed to clarify the extent to which this traction method can function as an alternative to component separation methods.

Material and Methods: We have already applied this technique in > 50 procedures of LOD hernias. We published the data of first 21 patients treated with intraoperative fascia stretching in seven specialized hernia centers between November 2019 and August 2020. The average patient age was 58 years with a gender ratio of 2.5 males: 1 female. ASA scores were III in 66.7% and II in 33.3%. The body mass index (BMI) averaged 32.5 kg/m². Thirteen patients were treated with BTA 4 weeks before surgery.

Results: Intraoperatively-measured fascial distance averaged 17.3 cm (range 8.5–44 cm). After application of diagonal-anterior traction >10 kg for an average duration of 32.3 min (range 30–40 min), the fascial distance decreased by 9.8 cm (1–26 cm) to an average 7.5 cm (range 2–19 cm), which is a large effect (r = 0.62). The fascial length increase (average 9.8 cm) after applied traction was highly significant. All hernias were closed under moderate tension after the traction phase. In 19 patients, this closure was reinforced with mesh using a sublay technique.

Conclusions: This method allows primary closure of complex LOD hernias and is potentially less prone to complications than component separation methods.
CONCOMITANT INTESTINAL RESECTION DOES NOT NEGATIVELY INFLUENCE LONG TERM OUTCOMES FOLLOWING COMPLEX ABDOMINAL WALL RECONSTRUCTION

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Aim: Simultaneous intestinal resection increases infective risks following abdominal wall reconstruction. We investigated the frequency of those risks and its impact on long-term outcomes.

Material and Methods: Analysis of prospectively accrued data from patients undergoing AWR by a single surgeon (01/01/2014–31/12/2020). Comparison between AWR with (IR-AWR) and without (AWR) concomitant intestinal resection. Clinical review was undertaken 6 monthly for 24 months with ongoing telephone follow-up thereafter.

Results: 101 repairs were performed within the study period (46 AWR, 55 IR-AWR). IR-AWR patients underwent 129 gastrointestinal procedures including 30 gastrointestinal fistula, 33 small bowel, 19 colonic and 2 gastric resections.

Both groups were similar in terms of smoking status, diabetes, but obesity (BMI>30) was more prevalent in AWR (23/46(50%) vs. 16/55(29%); p=0.03). Hernia defects were the same for both groups; AWR median area (range) 511 cm² (47–2171 cm²) and IR+AWR 471 cm² (50–2827 cm²) (p=0.7).

Post-operative wound infection was more frequent following IR-AWR (20/55 (36%) (Superficial incisional=13, deep incisional=6, cavity=1) vs. 6/46 (13%) (N=5, 0, 1 respectively); Odds ratio (OR)=3.8 (95%CI 1.4–10.6); p=0.01). Patients undergoing IR-AWR were also more likely to experience ileus necessitating short-term postoperative parenteral nutrition (OR 3.3 (1–10.8); p=0.05) and Clavien Dindo >2 complications (OR 4.4 (1.2–16.7); p=0.03). Within IR-AWR cohort there was a single anastomotic complication requiring re-laparotomy and one mesh infection treated with antibiotics.

Median follow-up= 25.2 months (range 1.2–88.8). 14 patients died during follow-up (AWR 7/46 (15%), IR-AWR 7/55 (13%); p=0.7). 5 were lost to follow-up (3 AWR, 2 IR-AWR).

12 (26%) AWR and 8 (15%) IR-AWR reported either persistent or delayed onset chronic abdominal wall pain post repair (p=0.14). Recurrent hernias occurred in 7/46 (15%) AWR compared with 10/55 (18%) IR-AWR (p=0.5).

Conclusions: Despite more frequent short-term complications in IR-AWR patient outcomes are comparable at 2 years.
PROPHYLACTIC LIQUID MESH - A SMALL ANIMAL EXPERIMENT

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Aim: Background: Surgical mesh is widely used not only to treat but also to prevent incisional hernia formation. Despite much effort by material engineers, the 'ideal' mesh mechanically, biologically and surgically easy to use remains elusive. Advances in tissue engineering and nanomedicine have allowed new concepts to be tested with promising results in both small and large animals. Abandoning the concept of a pre-formed mesh completely for a ‘pour in liquid mesh’ has never been tested before.

Material and Methods: Thirty rabbits underwent midline laparotomy with closure using an absorbable suture and small stitch small bites technique. In addition, their abdominal wall closure was reinforced by a liquid nanofibrous scaffold composed of a fibrin sealant and nanofibers of poly-ε-caprolactone with or without hyaluronic acid or the sealant alone, placed as an ‘onlay’ over the closed abdominal wall. The animals were sacrificed at 6 weeks and their abdominal wall was subjected to histological and biomechanical evaluations.

Results: All the animals survived the study period with no major complication. Histological evaluation showed an eosinophilic infiltration in all groups and foreign body reaction more pronounced in the groups with nanofibers. Biomechanical testing demonstrated that groups treated with nanofibers developed a scar with higher tensile ultimate and yield strength.

Conclusions: The use of nanofibers in a liquid form applied to the closed abdominal wall is easy to use and improves the biomechanical properties of healing fascia at 6 weeks after midline laparotomy in a rabbit model.
Aim: The HerniaSurge guidelines concerning mesh and fixation options in laparoscopic totally extraperitoneal (TEP) and transabdominal preperitoneal (TAPP) groin hernia repair are based on studies focusing on either mesh or fixation. We hypothesized that the value of such recommendations is limited by lacking knowledge on how mesh and fixation interact. The present registry-based nationwide cohort study compared different mesh/fixation combinations regarding relative risks for reoperation after TEP and TAPP.

Material and Methods: All TEP and TAPP with standard polypropylene (StdPPM) or lightweight (LWM) flat meshes, combined with either tacks, fibrin glue, or no fixation, registered in the Swedish Hernia Registry 2005-2017 were included. Endpoint was reoperation due to recurrence as of December 31, 2018. Multivariable Cox regression rendered relative risk differences between the exposures, expressed as hazard ratios (HR) with 95% confidence intervals (CI).

Results: Of 25,190 repairs, 924 (3.7%) were later reoperated for recurrence.

The lowest, mutually equivalent, reoperation risks were associated with StdPPM without fixation (HR 1), StdPPM with metal tacks (HR 0.8, CI 0.4-1.4), StdPPM with fibrin glue (HR 1.1, CI 0.7-1.6), and LWM with fibrin glue (HR 1.2, CI 0.97-1.6). LWM correlated otherwise with increased risk, whether without fixation (HR 2.0, CI 1.6-2.6), or affixed with metal (HR 1.7, CI 1.1-2.7), or absorbable tacks (HR 2.4, CI 1.8-3.1).

Conclusions: With StdPPM, fixation seems not to improve outcomes, despite being costlier. Thus, for this mesh category, we recommend non-fixation. With LWM, we recommend fibrin glue fixation, which was the only LWM alternative on par with non-affixed StdPPM.
A MODIFIED DELPHI PROCESS TO ESTABLISH RESEARCH PRIORITIES IN HERNIA SURGERY

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Aim: Abdominal wall hernia repair is one of the most commonly performed surgical procedures worldwide, yet there remains a lack of high quality evidence to support best management. The aim of the study was to use a modified Delphi process to determine future research priorities in this field.

Material and Methods: Stakeholders were invited by email, using British Hernia Society membership details or Twitter, to submit individual research questions via an online survey. In addition, questions obtained from a patient focus group (PFG) were collated to form Phase I. Two rounds of prioritisation by stakeholders (phase II and III) were then completed to determine a final list of questions. All questions were analysed on an anonymised basis.

Results: A total of 266 questions, 19 from the PFG, were submitted by 113 stakeholders in Phase I. Of these, 64 questions were taken forward for prioritisation in Phase II, which was completed by 107 stakeholders. Following Phase II analysis, 97 stakeholders prioritised 36 questions in Phase III. This resulted in a final list of 14 research questions, 3 of which were from the PFG. Stakeholders included patients and healthcare professionals (consultant surgeons, trainee surgeons and other multidisciplinary members) from over 27 countries during the 3 phases.

Conclusions: Fourteen key research priorities pertaining to abdominal wall hernia surgery were identified. Many topics focused on pain, mesh and what the optimal outcome measures following hernia surgery should be. Uniquely, these priorities have been determined from participation by both healthcare professionals and patients. These priorities should now be addressed by well-designed, high-quality international collaborative research.
Aim: Evidence about factors influencing quality of life after inguinal hernia surgery is scarce. This study aimed to identify predictors of low Quality of Life (QoL) after open inguinal hernia repair, to guide practice and inform patients at high risk.

Material and Methods: Prospective multicentric cohort study including consecutive patients undergoing elective open inguinal hernia repair in Portuguese hospitals (October-December 2019). The primary outcome was Quality of Life at 3 months after surgery, using the EuraHS-QoL score (higher score correlates with lower QoL). Low QoL was defined as the higher EuraHS-QoL score tertile and multivariate logistic regression was used to identify predictors.

Results: 893 patients were included from 33 hospitals. The majority were men (89.9% [800/891]), had unilateral hernias 88.7% (774/872) and the most common surgical technique was Lichtenstein’s repair (52.9% [472/893]). The median QoL score was 24 (IQR 10-40) before surgery and 2 (IQR 0-10) at 3 months after surgery, showing significant improvement (p<0.001). After adjustment, low QoL at 3 months was associated with low preoperative QoL (OR 1.76, 95% CI 1.21-2.57, p=0.003), non-absorbable mesh fixation (OR 1.64, 95% CI 1.12-2.41, p=0.011), severe immediate postoperative pain (OR 2.90, 95% CI 1.66-5.11, p<0.001) and minor postoperative complications (OR 2.23, 95% CI 1.30-3.84, p=0.004).

Conclusions: This study supports the use of the EuraHS-QoL score preoperatively to inform consent. Although significant improvement in QoL is expected after surgery, high scores before surgery are associated with low postoperative QoL. Caution should be taken with non-absorbable mesh fixation and immediate postoperative pain control should be optimised.
Aim: Diastasis Recti Abdominis (DRA) is a condition affecting many post-partum women. The aim of this study was to evaluate long-term results of surgical repair of DRA in a cohort of post-partum women.

Material and Methods: Sixty post-partum women with DRA and training-resistant core dysfunctions were included. Surgical repair was performed with suture plication of the linea alba. Abdominal core function was evaluated with the Abdominal Trunk Function Protocol (ATFP) including a self-report questionnaire and seven functional tests. Urinary incontinence and Quality of Life was evaluated with the Urogenital Distress Inventory (UDI-6), the Incontinence Impact Questionnaire (IIQ-7) and the SF-36 questionnaire. Follow-up was performed at one year and three years’ post-operatively.

Results: Response rate at the three-year follow-up was 86.7% for the DRI questionnaire; and 71.7% for ATFP, the UDI-6, IIQ-7, and SF-36 questionnaires. All DRI-parameters were improved (p<0.05) after three-years of follow-up compared to preoperative values. The functional tests in the ATFP showed an improvement (p<0.05) in core muscle strength and stability, persisting back and abdominal muscle strength compared to preoperative values as well as an improvement compared to the one-year follow-up values (p<0.05). UDI-6 and IIQ-7 results were improved (p<0.05) compared to preoperative values and showed consistent values compared to the one-year follow-up. Quality of life measured with SF-36 were improved compared to preoperative values and showed consistent values compared to the one-year follow-up (p<0.05).

Conclusions: The functional improvement of surgical reconstruction of the DRA persisted for three years in this series of post-partum women with DRA.
Aim: The conflict between the intra-abdominal pressure (IAP) applied to the abdominal wall and its resistance determines the occurrence of ventral hernia. Knowledge about IAP variation in everyday life is limited and mainly obtained by invasive methods. The objective of the study is to propose a comprehensive evaluation of IAP based on a limited risk and discomfort method.

Material and Methods: A prospective study was carried out in 20 healthy volunteers. The intragastric pressure, validated for estimating IAP, was assessed by an ingestible pressure sensor*. Volunteers realized a set of supervised exercises, including breathing, apnea after calm exhalation and seven muscle contraction stereotyped exercises in three different positions (supine, sitting, standing). Then the volunteers resumed their daily activities with the pressure continuously recorded until gastric emptying. Pressure variations and rates were computed.

Results: The highest IAP levels were reached during coughing and jumping. Maximum peaks were respectively 65 ± 35 and 67 ± 31 mmHg with pressure rates of 121 and 114 mmHg.s⁻¹ for these two exercises. The position did not affect the IAP variation. Men had significantly higher pressure values for pushing against a wall (P<0.01), Valsalva maneuver and legs raising (P<0.05) exercises. During daily life, peaks greater than 50, 100, and 150 mmHg occurred on average five times, twice, and once per hour, respectively.

Conclusions: This study provides a real-life characterization of IAP allowing the quantification of mechanical solicitation applied to the abdominal wall and the identification of risk situations for the occurrence of ventral hernias.

* (SmartPill™, Medtronic, Minneapolis, MN, U.S.A)
ENHANCED RECOVERY AFTER SURGERY (ERAS) IN PATIENTS UNDERGOING COMPLEX ABDOMINAL WALL RECONSTRUCTION (AWR)

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Aim: Enhanced Recovery After Surgery (ERAS) is often conceptually associated with hospital length of stay (LOS), but its true purpose is the application of best science to achieve best patient outcomes. We hypothesized that the implementation of the ERAS program would improve outcomes while possibly leading to a decreased LOS.

Material and Methods: Prospective institutional hernia database queried for patients who underwent open AWR between 2010–2014 (pre-ERAS) and 2016-2020 (ERAS). Demographics, operative characteristics and postoperative outcomes were compared between pre-ERAS and ERAS patients. Standard descriptive statistics and logistic regression were used.

Results: 1713 patients were analyzed (ERAS-802, pre-ERAS-911). ERAS patients were similar in terms of age (58.9±12.1 vs 58.4±12.5; p=0.29) and diabetes (24.6% vs 25.9%; p=0.53) compared to pre-ERAS patients, but ERAS patients had lower BMI (31.2±6.3 vs 33.3±8.1 kg/m²; p<0.01) and increased smoking history (35.8% vs 16.1%; p<0.01). The percentage of ERAS patients with CDC 3 and 4 wound classes was higher (12.7%/11.9% vs 10.4%/7.4%; p<0.01) as was the use of biologic mesh (30.0% vs 17.4%; p<0.01). There were no significant differences in defect (208.3±165.4 cm² vs 216.4 ±254.2 cm²; p=0.16) or mesh size (824.1±477.7 cm² vs 769.1±426.2 cm²; p=0.99). ERAS patients had fewer panniculectomies (21.7% vs 28.0%; p=0.02) and shorter operative time (176.3±81.6 vs 186.3±87.5 min; p=0.01). Mean LOS shorter for ERAS patients (6.5±4.8 vs 7.2±7.1; p<0.01). When transversus abdominis plane block was added (2018), LOS decreased further (6.0±6.0 days) and narcotic use decreased by 65.1% (each: p<0.05). ERAS had fewer wound complications (14.1% vs 32.3%; p<0.01), mesh infections (0.6% vs 2.5%; p<0.01), and 30-day readmissions (2.5% vs 11.4%; p<0.01). In logistic regression, BMI, operation time, and panniculectomy increased risk for wound complications.

Conclusions: ERAS measures improve multiple aspects of AWR patient outcomes including LOS, wound complications and readmissions.
Aim: Patients with a re-recurrent hernia may account for up to 20% of all incisional hernia (IH) patients. IH repair in this population may be complex due to an altered anatomical and biological situation as a result of previous procedures and outcomes of IH repair in this population have not been thoroughly assessed. This study aims to assess outcomes of IH repair by dedicated hernia surgeons in patients who have already had two or more re-recurrences.

Material and Methods: A propensity score matched analysis was performed using a registry-based, prospective cohort. Patients who underwent IH repair after ≥ 2 re-recurrences operated between 2011 and 2018 and who fulfilled 1 year follow-up visit were included. Patients with similar follow-up who underwent primary IH repair were propensity score matched (1:3) and served as control group. Patient baseline characteristics, surgical and functional outcomes were analyzed and compared between both groups.

Results: Seventy-three patients operated on after ≥ 2 IH re-recurrences were matched to 219 patients undergoing primary IH repair. After propensity score matching, no significant differences in patient baseline characteristics were present between groups. The incidence of re-recurrence was similar between groups (≥ 2 re-recurrences: 25% versus control 24%, p = 0.811). The incidence of complications, as well as long-term pain, was similar between both groups.

Conclusions: IH repair in patients who have experienced multiple re-recurrences results in outcomes comparable to patients operated for a primary IH with a similar risk profile. Further surgery in patients who have already experienced multiple hernia re-recurrences is justifiable when performed by a dedicated hernia surgeon.
Aim: Laparotomy closures fail due to suture pull-through. We hypothesize that a novel suturable mesh device may limit pull-through via mechanisms of force distribution at the suture-tissue interface and fibrous encapsulation of the device filaments. This new tissue approximation device may lead to improved outcomes for laparotomy closure.

Material and Methods: Fifteen domestic swine 74 kg in size were randomly allocated to three groups for epigastric laparotomy closure with either size 0 suturable mesh, number 1 suturable mesh, or number 1 polypropylene. All three devices were placed in running fashion with 1 cm bites and 1 cm travels. Primary endpoints were hernia formation at 13 weeks and a semiquantitative analysis of the histological tissue response. Secondary endpoints included adhesions, surgical site occurrence (SSO), and documentation of "loose sutures".

Results: There were numerically fewer hernias in the number 1 suturable mesh group. Nine of the 10 suturable mesh devices were well encapsulated within the tissues and could not be pulled away, while 4 of the 5 polypropylene sutures were loose. Adhesions were least for number 1 suturable mesh. Histologically, the suturable mesh implanted devices showed good fibrovascular ingrowth and were judged to be "non-irritants". The soft tissue response was statistically greater (p = .006) for the number 1 suturable mesh than for the number 1 polypropylene.

Conclusions: The mechanism of how meshes support closure sites is clearly demonstrated with this model. Suturable mesh has the potential to change surgical algorithms for abdominal wall closure.
Aim: The risk of mesh-related surgical complications after umbilical hernia repair is not known and chronic pain has only sparsely been analysed. Economic claims may represent a surrogate for poor postoperative surgical outcomes. Thus, the present study used mesh-related complications and chronic pain as primary and secondary outcomes, respectively.

Material and Methods: Blinded assessment of Swedish and Danish nationwide consecutive economic claim data from 2007 –2019. The study variables and outcomes were pre-study defined. Major complications were defined as acutely life-threatening complications requiring emergency surgery, clinically important complications were defined as all complications requiring surgical intervention but not emergency surgery.

Results: During the 13-years study period 181 patients were eligible for analysis. There were 96 patients with a surgical complication. In 52 (54%) and 44 (46%) patients the complication was mesh- or non-mesh-related, respectively. In the group of mesh- and non-mesh-related complications, major complications were found in 14 (14.6%) vs 21 (21.9%) patients and clinically important complications were found in 38 (39.5%) vs 23 (23.9%) patients respectively ($P<0.05$). Chronic pain was reported in 18%, followed by wound complications (14%) and cosmetic claim reasons (11%). After open repair, claim because of chronic pain was significantly more common after mesh repair (48%) compared with non-mesh repairs (32%), $P=0.05$. The economic compensation after a mesh- and non-mesh complication was 3,488€ (291 –188,186€) and 2,342€ (507€ - 58,437€) ($P = 0.55$), respectively.

Conclusions: Mesh-repair was related to postoperative complications and chronic pain after umbilical hernia repair.
PREOPERATIVE CT IMAGING IN PATIENTS WITH STRANGULATED ABDOMINAL WALL HERNIAS DELAYS SURGERY AND INCREASE RISK OF BOWEL RESECTION: A RETROSPECTIVE RECORD BASED STUDY

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Aim: “To investigate whether preoperative CT imaging in acute symptomatic hernia was associated with either surgical delays or increase risks of bowel ischemia and the need for resection.”

Material and Methods: “The data was collected retrospectively for patients who had emergency hernia surgeries in the period between June 2003 till January 2021. We studied the role of preoperative CT scan in delaying surgical intervention and its impact on intra-operative surgical intervention, postoperative complication, HDU admission and hospital length of stay.”

Results: “Data analysis was performed for 505 patients, 191 had preoperative CT scan. Hernia types included inguinal in 164 patients (32.5%); umbilical in 164 (32.5%); femoral in 69 (13.7%); incisional in 69 (13.7%); epigastric in 30 (5.9%); Spigelian in 9 (1.8%). Preoperative CT scan was associated with surgery delay (22.0 hours vs 13.0 hours, P 9.77e-16). Delayed surgery had an impact on increasing postoperative complications (5.2% vs 3.5%, P 0.4741), longer mean postoperative hospital lengths of stay (9.23 days vs 5.12 days, P 2.2e-16), and increase HDU admission (11.0% vs 4.8%, P 0.01408). Increase bowel resection (12% vs 6.4%, P 0.04032) with surgery delay (20.0 hours vs 12.0 hours, P 0.003448) and also increase omentum resection (7.3% vs 5.4%, P 0.4974) with surgery delay (22.5 hours vs 13.5 hours, P 0.02083) were noted.”

Conclusions: “Pre-operative CT scan for emergent hernias leads to delay in surgical intervention. Surgery delay leads to more aggressive intra-operative intervention and worse postoperative outcomes.”
Aim: Prospective evaluation comparing outcomes between laparoscopic (LIHR), robotic (RIHR), and open inguinal hernia repair (OIHR).

Material and Methods: Prospective institutional data comparison of patients undergoing inguinal hernia repair from 1999–2020 was performed. Patients with chronic pain or infection were excluded. Standard statistical methods were used and univariate analysis was performed between LIHR, RIHR, and OIHR groups.

Results: 3,300 repairs were performed: 1,970 LIHR (597-bilateral), 127 RIHR (25-bilateral), and 538 OIHR (43-bilateral). LIHR and RIHR patients were younger (55.4±14.8 vs 59.0±13.7 vs 65.0±13.7 years; p<0.01), with lower BMI (26.6±6.5 vs 28.9±20.3 vs 31.8±7.6 kg/m²; p<0.01), fewer overall (2.7±1.9 vs 2.7±2.2 vs 3.7±2.5; p< 0.01) and cardiac (0.2% vs 0% vs 2.6%; p<0.01) comorbidities, and fewer patients had diabetes (5.2% vs 4.6% vs 10.9%; p<0.01). OIHR had the highest rate of recurrent hernias (21.2% vs 11.2% vs 30.9%; p<0.01). History of smoking was less in LIHR (13.9% vs 30.9% vs 19.5%; p<0.01). Mesh was used in 99.5% of cases; synthetic was used in all minimally invasive cases and 98.4% of OIHR, with biologic mesh in 1.0% of OIHR due to bowel resection during the operation. Operative time was shortest in LIHR followed by open (86.5±39.6 vs 109.0±56.8 vs 92.6±55.2 min; p<0.01). Wound complications were more frequent in OIHR (0.8% vs 0.7% vs 3.8%; p<0.01). Admission was more common after open repair (2.2% vs 2.7% vs 5.7%; p<0.01) with a trend to less readmission following LIHR (1.0% vs 2.0% vs 2.3%; p=0.06). There were few recurrences overall (0.7% vs 0.7% vs 1.3%; p=0.40) with mean follow-up time 21.1±22.4 months.

Conclusions: LIHR, RIHR, and OIHR were performed with low overall morbidity and complications. Recurrent hernias and cardiac patients were most often repaired open, which more frequent admission and had higher wound morbidity. RIHR had longer OR times with no improvement overall outcomes.
Aim: Effects of component separation (CS) on abdominal wall musculature have only been investigated in smaller case series. The study aimed to compare abdominal wall alterations following endoscopic anterior component separation (EACS) or transverse abdominis release (TAR).

Material and Methods: Computed tomography scans were evaluated in patients who underwent open ventral hernia repair with TAR or EACS. Lateral abdominal wall muscle thickness and displacement were compared with preoperative images after bilateral CS and the undivided side postoperatively after unilateral CS.

Results: In total, 105 patients were included. The mean defect width was 12.2 cm. Fifty-five (52%) and 15 (14%) underwent bilateral and unilateral EACS, respectively. Five (5%) and 14 (13%) underwent bilateral and unilateral TAR, respectively. Sixteen (15%) underwent unilateral EACS and contralateral TAR. Complete fascial closure was achieved in 103 (98%) patients. The external oblique and transverse abdominis muscles were significantly laterally displaced with a mean of 2.74 cm (95% CI 2.29-3.19 cm) and 0.82 cm (0.07-1.57 cm) after EACS and TAR, respectively. The combined thickness of the lateral muscles was significantly decreased after EACS (mean decrease 10.5% [5.8-15.6%]) and insignificantly decreased after TAR (mean decrease 2.6% [-4.8-9.5%]), mean reduction difference EACS versus TAR 0.22 cm (-0.01-0.46 cm). One (1%) patient developed an iatrogenic linea semilunaris hernia after EACS. The recurrence rate was 19% after mean 1.7 years follow-up.

Conclusions: The divided muscle was significantly more laterally displaced after EACS compared with TAR. The thickness of the lateral muscles was slightly decreased after EACS and unchanged after TAR.
Aim: CAWR is marked by high complication and hernia recurrence rates. Different management strategies of CAWR may result in a significant reduction in quality of life and increased financial burden. The use of certain non-absorbable synthetic meshes in CAWR may be associated with an increased risk of adverse events for certain patients. Recent evidence suggests that biosynthetic meshes may contribute to lower complications and may be more cost-effective.

Material and Methods: To compare the cost between a synthetic mesh, and a bio-synthetic mesh in the management of patients undergoing CAWR. A cost-consequence model was developed to simulate clinical pathways for patients undergoing CAWR with different management strategies. Clinical parameters were informed by literature review and expert opinion. Adverse events associated with the use of a mesh, resource utilisation and re-admissions were compared between patient management strategies over a period of two years. Costing information were gathered from national tariffs using NICE methodology.

Results: Use of a biosynthetic mesh was associated with a significant reduction in total costs (£15,489 / €17,953) compared to a synthetic mesh at two years. Cost-savings were driven by a lower rate adverse events (hernia recurrence [2% vs.8%] and sepsis [5% vs. 12%] respectively), and resource utilisation after the initial procedure in the management of complications. There was no difference in the intra-procedural time and complications.

Conclusions: The use of a certain biosynthetic mesh is likely to be highly cost saving compared to a certain synthetic mesh in high-risk patients undergoing CAWR. Well conducted comparative clinical studies are needed to inform robust economic modelling.
[O52] LAP-T MINI LAPAROSCOPIC TECHNIQUE FOR THE REPAIR OF RECURRENT UMBILICAL HERNIA ON PRIMARILY UNTREATED DIASTASIS

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Aim: “This retrospective analysis on 1000 cases of Diatasis Recti (DR) complicated by single/multiple, primary/recurrent hernias, all treated with the Laparoscopic Abdominoplasty Technique (LAP-T), aims at evaluating the possible correlation of higher recurrence rate and complications when DR is left untreated”

Material and Methods: “This review on 1000 patients, <65yrs, BMI<30, 3>IRD>12, based on CT Scan/MRI study, showed 235 (23.5%) of them to be recurrent umbilical/midline hernias engaged on untreated RMD, independently from the surgical technique used for primary repair. Re-operation with LAP-T technique, consisted in removal of recurrent hernia and dislocated mesh when present, closure by self-locking running sutures of the hernia defect and the DR. Repair is consolidated placing an intra-peritoneal mesh”

Results: “In all patients, recurrence was repaired, DR reconstructed and abdominal wall anatomy and physiological functionality successfully restored. No intra operative bleeding, seroma formation, chronic pain, nor mesh infection have been recorded. 98% follow up at 12 months, 91% at 24, no recurrences observed”

Conclusions: “Higher incidence of recurrent umbilical/midline hernias observed in this analysis, compared to average recurrence rate reported in literature, suggest that regardless primary repair technique, the repair of the sole hernia engaged on a DR is likely to lead to a recurrent hernia, further midline hernia defects formation and worsening of the DR. A significant correlation between the recurrency after primary umbilical/midline repair when a concomitant RMD is left untreated is likely to lead to a more invasive and complicated re-intervention, higher complication rate and discomfort for the patient”
A LOW-COST HERNIA MODEL FOR THE TRAINING OF THE SHOULDICE AND THE LICHTENSTEIN INGUINAL HERNIA REPAIR

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Aim: Based on an international European survey, residents prefer to study inguinal hernia repair through lectures or video-demonstrations or want to practice either on simulation or cadaveric models. Simulation models in inguinal hernia are scarce or expensive.

Material and Methods: A low-cost model was developed that can be produced everywhere with the aid of the instruction video: “How to build an inguinal hernia model”. Initially, the model was designed to practice the Lichtenstein technique but after some minor modifications (adding the conjoint tendon, enough slack in the transversalis fascia) it was also possible to practice the Shouldice technique on the same model. It only needs the removal of the stitches of the third and fourth layer before the Lichtenstein can be performed.

Results: The model was used for several studies with students and residents and proved to be realistic and was approved by an international survey among experienced hernia surgeons. It has been used once in a national training session of residents.

Conclusions: The video shows the execution of both procedures on the same model.
Aim: Parastomal hernias of any size can be difficult to manage and greatly affect a patient’s quality of life, however, they can be even more problematic when associated with loss of domain and infection. The aim of our video was to demonstrate open repair of a massive parastomal hernia complicated by loss of domain, mesh fistula, and mesh infection.

Material and Methods: Images and footage from clinic and the operative procedure were included.

Results: A 51-year-old female with a history of prior APR followed by failed ventral and parastomal hernia repairs presented with a massive parastomal hernia that was significantly impacting her and her family’s quality of life. Due to her hernia, she had become immobile and was bed bound. Furthermore, the hernia had caused significant chronic constipation secondary to colonic dysmotility. The patient also had loss of domain, and her hernia appeared to be complicated by a chronic mesh infection with a draining sinus. She underwent pre-operative bilateral botulinum toxin A injection in the oblique abdominal musculature. She then underwent open preperitoneal parastomal hernia repair with biologic mesh, excision of prior mesh, primary fistula repair, total abdominal colectomy, and end ileostomy. The patient tolerated the procedure well without complications and has continued to do well in follow-up. She has had great improvement in her quality of life.

Conclusions: In this patient with a massive parastomal hernia complicated by loss of domain, mesh fistula, and mesh infection, we demonstrate a successful open preperitoneal repair following pre-operative BTA injection.
Aim: Present through an illustrative and educational video, an anatomical and colorful vision of the totally extraperitoneal laparoscopic approach (TEP) of inguinofemoral hernias, with the aim of favoring the learning process of this technique, facilitating the identification of the main anatomical structures, ensuring a safe and effective approach.

Material and Methods: In this video we show the laparoscopic approach to inguinofemoral hernias via TEP, highlighting the most important anatomical structures with different colors. Additionally, the surgical technique of this approach using articulated forceps is shown, which we consider to be a good resource for dissection in a space as small as the preperitoneal one.

Results: The anatomical study of the inguinofemoral area constitutes the basis of a correct preperitoneal approach, especially in PET, where the most difficult is probably the space location and the identification of the structures.

Conclusions: The preperitoneal PET route is a relatively novel approach for inguinofemoral hernia repair. Its benefits are based on the ability to identify all the anatomical structures of the myopectineal orifice from a preperitoneal view without the need to access the peritoneal cavity. The knowledge of preperitoneal anatomy is the cornerstone for learning the TEP approach, and we consider that anatomical videos of real surgeries are good strategies to shorten the learning curve.

Mastering the preperitoneal anatomy ensures obtaining the benefits inherent to the TEP approach, such as bilateral exploration of the myopectineal orifice, direct visualization of the pain and doom triangles, tension-free repair with mesh of all possible defects and faster postoperative recovery.
Aim: Inguinal hernias containing the ureter and retroperitoneal contents are uncommon. We present a robotic repair of a large inguinal-scrotal hernia containing the ureter as a video case presentation.

Material and Methods: A 66 year old male with no previous abdominal surgical history presents with a large left sided inguinal-scrotal hernia, as well as smaller ventral and right inguinal hernias. On CT imaging the patient was found to have an ectopic pelvic location of the left kidney with evidence of the left ureter coursing into the hernia with a significant amount of retroperitoneal fat. The patient was taken to the operating room for a robotic bilateral inguinal hernia repair and ventral hernia repair.

Results: A ureteral catheter was placed preoperatively and instilled with indocyanine green (ICG). The hernias were successfully repaired, and intraoperative fluorescence imaging was successfully used to visualize the ureter as it was reduced with the hernia sac. The robotic platform significantly aided in dissection of the large volume of retroperitoneal fat, while being able to quickly transition to intraoperative fluorescence to clearly visualize the course of the ureter. The patient did well post operatively with no complications.

Conclusions: We present a video case report of a large ureter-containing inguinoscrotal hernia that was successfully repaired using a robotic preperitoneal approach. Use of the robotic platform and indocyanine green/intraoperative fluorescence imaging were helpful adjuncts in aiding dissection by improving intraoperative visualization of the ureter.
Concomitant MIRS (Minimally Invasive Rives-Stoppa) and DREAM (Diastasis Repair Endoscopically Assisted Minimally-invasive) for the correction of combined ventral hernia and diastasis recti.

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**Aim:** Concomitant MIRS (Minimally Invasive Rives-Stoppa) and DREAM (Diastasis Repair Endoscopically Assisted Minimally-invasive) for the correction of combined ventral hernias and diastasis recti.

**Material and Methods:** The video shows the combined repair of umbilical hernia and diastasis correction by concomitant minimally invasive hernia repair without division of the posterior sheath and diastasis correction by parietoscopy.

**Results:** A short periumbilical incision is performed, the Alexis retractor is put in place, preaponeurotic dissection is carried out by direct access and two axial incisions of both anterior sheaths are performed parallel to and 1cm next to the midline.

The umbilical hernia and one unexpected epigastric hernia are reduced and repaired by suture. Additional suture approximating the medial borders of anterior sheath incisions over the previous suture is performed to strengthen the repair.

The patch is deployed in the retromuscular space superficial to the suture line, without any incision of the posterior sheath and without any fixation.

Then the top of the Alexis retractor and the camera are put in place, insufflation at 10mm Hg is started and the parietoscopic step is carried out. Two 5mm trocars are placed and preaponeurotic dissection is extended up to the xiphoid process. The diastasis correction is carried out by a continuous suture approximating both rectus muscles from the xiphoid process to the umbilical hernia suture.

**Conclusions:** The MIRS technique consists of retromuscular patch repair without division of the posterior sheath, and concomitant DREAM technique reinforces the hernia repair and provides diastasis correction.
[OV06] EXTENDING THE INDICATIONS OF TRANSVERSUS ABDOMINIS RELEASE: SUBLAY MESH REPAIR FOR A RARE CASE OF ACQUIRED DIAPHRAGMATIC HERNIA

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Aim: Acquired diaphragmatic hernia (ADH) is rare and its treatment is challenging. Posterior component separation (PCS) with transversus abdominis release (TAR) is gaining wide acceptance for the repair of complex abdominal hernia, including those located in proximity of the abdominal borders. In this view the central tendon of the diaphragm could be intended as the rooftop border of the peritoneal sac. We describe an original application of TAR for the treatment of an unusual case of ADH.

Material and Methods: A 54 year-old man was referred to our department for an ADH, following two previous sternotomies for an aortic aneurysm, conditioning respiratory symptoms. A thoraco-abdominal contrast enhanced CT-scan confirmed an anterior left diaphragmatic defect with a transverse diameter of 8.5 cm and a huge sac containing the great omentum and the distal transverse colon, with atelectasis of the inferior lobe of the lung. A subxiphoid M1W2L2 incisional hernia was also detected. The patient underwent a midline xiphoid laparotomy and a repair by partial TAR with posterior rectus sheath release and progressive dissection of the diaphragmatic muscular fibers far beyond the DH. A sublay repair with a large dual layer PVDF mesh was then accomplished.

Results: Postoperative course was uneventful and no recurrence was recorded at 6 months follow up.

Conclusions: partial-TAR could be a good option for repair of anteriorly placed ADH, ensuring a stable anatomical repair with an overlap that is usually wider than after laparoscopic IPOM repair. This novel indication confirms the extreme versatility of TAR for the repair of complex ventral hernia
Aim: A new original laparoscopic operative technique was used to suture paraesophageal hernia (PEH) with the strips of mesh.

Material and Methods: The Mercilen (Mercilen™) mesh suture was used to close large hiatal hernia. The strips of mesh, instead of normal thread, were applied to close the gap between diaphragm’s crura in 12 patients with hernia defect more than 5 cm. Mesh suture were tighten as a simple laparoscopic intracorporeal knot. The surgical technique and surgical outcomes are presented.

Results: 12 patients underwent a laparoscopic PEH suturing with Mercilen strips of mesh. We recorded no recurrence or dysphagia at 6 and 12 months follow-up.

Conclusions: Mesh-sutured repairs of diaphragm’s hernia support the concepts of force distribution and resistance to suture pull through. The new original technique avoids using the sheet of mesh and enables to reduce the amount of dangerous complications connected with mesh and its fixation. Mesh-sutured closures of hiatal hernias seem to be safe and effective in tension closure of large hiatal defects. Further investigations are needed to evaluate the results.

Using the mesh suture technique for the closure of large PEH, we protect the cruras from being cutting through. Besides, the mesh stripes and its knots produce tissue scarring around the esophagus making the suture line stronger.
Aim: The Shouldice procedure is a layered reconstruction of the posterior wall in inguinal hernia repair and currently the preferred method if the layers of the abdominal wall are of good quality, the wish of the patient for a non-mesh repair and if a mesh method is not possible or available. The correct performance of the reconstruction of the posterior wall is essential part of the operation.

Material and Methods: A life educational video was made with the four-layer reconstruction in detail.

The first layer of the reconstruction starts at the medial corner and the conjoint tendon is sutured to the caudal flap of the transversalis fascia using a continuous non resorbable suture. The second layer of the reconstruction is made by approximating the cranial flap of the transversalis fascia and the posterior part of the inguinal ligament. The third layer starts at the level of the deep internal inguinal ring and approximates the lower border of the internal oblique muscle with the inguinal ligament. The fourth and final layer approximates the internal oblique muscle again with the inguinal ligament.

Results: The four-layer reconstruction after splitting the transversalis fascia is shown in detail since treatment of the hernia sac is like the other techniques.

Conclusions: The instructional video can be used for the resident training as a start in a hernia course followed by the execution on a model before the actual execution on a patient.
Aim: A median sternotomy that extends toward the epigastric area can weaken the upper abdominal wall and result in the development of subxiphoid incisional hernia. We aim to assess the efficacy and the feasibility of repair of subxiphoid incisional hernia post CABG robotically. In this video; we will also review the surgical technique and the steps for robotic repair of subxiphoid incisional hernia.

Material and Methods: 57-year-old female presented with subxiphoid swelling post CABG in 2019. Her surgery was complicated with sternotomy wound infection with VAC dressing application and ARDS with prolonged intubation. She had 5x7 cm hernia defect that showed on the CT thorax along with sternal wound dehiscence. She underwent robotic repair of her hernia with phasix mesh and recovered well after surgery.

Results: The subxiphoid hernia is known for its repair complexities and high recurrence rate because the subxiphoid area is a complex structure consisting of boney structures, the rectus abdominis muscles, linea alba, and the diaphragm. The Da Vinci platform allows for accessing hard-to-reach area with enhanced precision in dissection and superior dexterity compared to laparoscopy. The Robotic platform allows for manipulation of the camera to assess and operate on the abdominal wall with ease as compared to laparoscopy.

Conclusions: robotic repair of subxiphoid incisional hernia with mesh is safe and effective method of repair. There are no short-term or long-term side effects of the procedure with no recurrence at 6 months follow up.
Aim: “COVID has been a great challenge for Hospitals around the world. At our surgical department a new protocol of TAP block was designed and implemented in our laparoscopic incisional ventral hernia repairs, to allow these patients to be operated in ambulatory regime, without compromising pain control and the outcomes. In this video we aim to present the technique for the Laparoscopic-guided TAP Block during a Laparoscopic IPOM Plus ventral hernia repair.”

Material and Methods: “We implemented this protocol in July 2020 and since then, we performed 18 TAP block in laparoscopic incisional hernia repairs, laparoscopic guided by the Surgeon or ultrasound-guided by the Anesthesiologist. In this case, the video reports to a Laparoscopic IPOM Plus incisional hernia repair performed on a 54-year-old patient, male, with obesity, arterial hypertension and dyslipidemia. He had a 6 centimeter incisional hernia post-colorectal surgery in 2013.”

Results: “As detailed in the video, we show all the steps to perform a TAP block under laparoscopic direct visualization”

Conclusions: “TAP block can be performed by the Surgeon, with direct visualization at the beginning of the laparoscopic procedure.”
Aim: Demonstrate the advantages of 3D technology planning in complex cases of hernia surgery and technical tricks for giant Spiegel hernia repair.

Material and Methods: 71 year old patient, BMI 38, asthma, hypertensive; long history of symptomatic left flank mass. Giant Spiegel hernia was diagnosed, with significant omentum and colon migration to hernial cavity. It was decided to perform minimally invasive surgery. 3D model of the abdominal scan was performed, assessing hernia size, volume and its relationship with the abdominal cavity. We were able to rule out the possibility of compartment syndrome, and foresee that we could probably close the defect.

Results: preperitoneal transabdominal repair (TAPP) is performed, beginning with herniated content reduction, a delicate step where injuries should be avoided, with careful traction of the colon and omentum. Hernial defect is assessed, coinciding with the 3D model, the peritoneum sac is reduced, taking as much as possible to facilitate its posterior closure. The entire peritoneum of the Spiegel and inguinal region are dissected en bloc. Defect tension-free closure is performed with 2 continuous V-LOOK 2.0, subsequent placement of 15x15cm polypropylene mesh and posterior peritoneum closure. The patient is discharged the same day without incidents.

Conclusions: The 3D model allows us to assess the actual abdominal and hernia volume to simulate surgery findings. Its benefits are yet to be developed. Laparoscopic preperitoneal repair is an excellent approach for Spiegel's hernia. Complex cases are also candidates for outpatient surgery.
The early outcomes of abdominal wall reconstruction with polyvinylidene (PVDF) mesh in the infected setting: video presentation

**Aim:** The use of synthetic mesh to repair infected defects of the abdominal wall remains controversial. PVDF mesh was introduced in 2002 as an alternative to polypropylene, with the advantages of improved biostability, lowered bending stiffness, and minimum tissue response. The study aimed to evaluate the short-term outcomes of using PVDF mesh to treat infected abdominal wall defects in the elective setting.

**Material and Methods:** Video presents the technical aspects and some of the outcomes of patients included in a prospective clinical trial designed to evaluate the short and mid-term outcomes of 38 patients submitted to abdominal wall reconstruction in the setting of active mesh infection and/or enteric fistulas (AI). Patients were submitted to single-staged repairs, using onlay PVDF mesh reinforcement to treat their defects.

**Results:** The technical aspects of the operation, and the management of complications such as wound breakdown, exposed mesh and post-operative seromas are shown in this short video. The early and late outcomes are presented for discussion.

**Conclusions:** The use of PVDF mesh in the infected setting presented very favorable results with a low incidence of wound infection.
Aim: Acute small bowel obstruction secondary to strangulated obturator hernia is a rare condition, with high rates of morbidity and mortality in the absence of prompt diagnosis and intervention. We aim to describe a case with the above presentation, managed using a minimally-invasive approach with positive outcomes.

Material and Methods: We describe a case of an 82-year-old female who presented with acute small bowel obstruction secondary to strangulated obturator hernia on cross-sectional imaging.

Results: The patient underwent emergency surgery using laparoscopic approach for repair of obturator hernia and assessment of obstructed small bowel. Our approach involved identification and reduction of small bowel loop. A transabdominal preperitoneal approach was made to obturator hernia and ischaemic sac was reduced followed by closure of defect with a plug of biologic mesh. A linear segment of ischaemic small bowel was oversewn. Total operative time was 90 minutes.

Conclusions: Minimally-invasive surgery is an important tool in the armamentarium of the acute care surgeon. A laparoscopic approach will reduce the insult of intervention in already physiologically deplete patients. This case demonstrates the feasibility of laparoscopy for small bowel obstruction secondary to strangulated obturator hernia in the acute setting, requiring advanced laparoscopic skill as demonstrated in this video.
Aim: Posterior component separation with transversus abdominis release (PCS-TAR) represents a good option for challenging complex ventral hernia repairs. We present a case of PCS-TAR for a giant lumbar hernia in a patient with a transplanted kidney.

Material and Methods: The patient is a 46 years old man with a Charlson Comorbidity Index of 2 and a BMI of 27.5 kg/m2 who underwent a kidney transplant in 2005 and a subsequent open repair with mesh implantation for an incisional hernia in 2007. Two years later, he experienced a hernia recurrence, but chose conservative management. In 2019, the patient complained of progressively worsening pain and bulky sensation. Due to the size and location of the defect and the massive relaxation of the muscle fibers, open repair with PCS-TAR was indicated.

Results: In 2019, the patient underwent right-sided PCS-TAR with retromuscular placement of one polyvinylidene fluoride (PVDF) mesh and one biosynthetic mesh. Duration of the procedure was 295 minutes. Two drains were placed, respectively in the subfascial and in the subcutaneous plane. Postoperative course required non-invasive ventilation for respiratory distress, but was otherwise uneventful and he was discharged on postoperative day 8. After 12 months, the patient showed no signs of recurrence.

Conclusions: PCS-TAR is a versatile technique for the repair of complex ventral hernias, with an acceptable rate of postoperative complications and good long-term outcomes.
[OV15] EMERGENCY SURGERY OF OBSTRUCTED VENTRAL HERNIA USING TAPP TECHNIQUE: A SAFE AND FEASIBLE APPROACH

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Aim: to explain and show the feasibility of laparoscopic TAPP technique in emergency procedures

Material and Methods: we present a 71-year-old female with personal history of obesity (BMI 32) and a laparoscopic right hemicolectomy performed in 2018, presenting at the ER with a 24-hour intestinal obstruction due to incarcerated ventral incisional hernia.

Results: laparoscopic reduction of the hernia contents was achieved without need of intestinal resection, prior to access to the preperitoneal space, creating a peritoneal flap that was dissected around the hernia. Following closure of the hernia defect, a polypropylene mesh was placed and the peritoneal flap closed. There were no intraoperative or postoperative events and patient was discharged on 3rd POD.

Conclusions: laparoscopic approach to emergency hernias in selected patients doesn’t differ from elective surgery, and offers great advantages in terms of evaluation of the incarcerated elements, and postoperative recovery, especially in obese patients where a conventional open approach has higher morbidity.
Aim: Massive complex inguinal hernias can be exceptionally difficult to repair, especially when they are associated with loss of domain (LOD). We aim to demonstrate an open preperitoneal approach to a complex massive inguinal hernia extending into the scrotum with severe LOD.

Material and Methods: Footage from clinic, diagnostic imaging, and all operative procedures was included. This included botulinum toxin A (BTA) injection, diagnostic laparoscopy and placement of a peritoneal catheter, outpatient pre-operative progressive pneumoperitoneum (PPP), and the preperitoneal hernia repair.

Results: A 53-year-old male construction worker with a known inguinal hernia presented with worsening groin and scrotal pain, associated with fever. CT imaging showed an abscess secondary to perforated diverticulitis within his massive inguinal hernia, as well as massive loss of domain with almost all small and large intestine within the hernia. He was treated with antibiotics and percutaneous drainage in preparation for surgery. He received pre-operative bilateral BTA injection in the oblique abdominal musculature. Subsequently, he underwent diagnostic laparoscopy and peritoneal catheter placement. He received 2 weeks of outpatient PPP. He then underwent open inguinal hernia repair with left orchiectomy and total abdominal colectomy. The hernia was repaired with a biologic mesh placed in the pre-peritoneal plane. The patient recovered very well and had no wound complications post-operatively. He has since followed up in clinic multiple times with no recurrence and excellent cosmetic results.

Conclusions: In this patient with a complex massive inguinal hernia and loss of domain, we demonstrate a successful open preperitoneal repair following pre-operative BTA injection and PPP.
Aim: Diaphragmatic eventration (DE) is a rare condition affecting 0.05% of the general population. DE is the abnormal elevation of a portion of an entire hemidiaphragm due to a lack of muscle or nerve function. It can be congenital or acquired. The most common cause of DE is cardiac surgery. It can be asymptomatic or present mild symptoms as dyspnea, palpitations, pneumonia.

Material and Methods: 61 years old male with a medical history of arterial hypertension, DMII, Hyperlipidemia.

He had a motor vehicle accident with 6 to 9 left ribs fractures.

One month later complained of dyspnea with shortness of air to normal activity. Rx: elevation of left diaphragm. CT scan: elevation of left diaphragm without rupture, passive atelectasis of the inferior left lobe of the lung.

He initiated respiratory physiotherapy without improvement of the symptoms. 4 months after the accident, we had a stroke with right hemiparesis. This situation produced worsening of the dyspnea.

Physiotherapy was reinforced with recuperation of the hemiparesis, but poor improvement of the dyspnea.

10 months after the accident, surgery was indicated for plication of the diaphragm to improve the respiratory function.

Results: The video shows the radiological exams and the surgery performed. Laparoscopic diaphragmatic plication with a reinforcement with a coated mesh (Uncoated monofilament polypropylene mesh on the anterior side with an absorbable hydrogel barrier). He was discharged 2 days after surgery.

The patient improved significantly in his respiratory symptoms and imaging exams.

Conclusions: Posttraumatic DE must be treated surgically with low morbidity and good functional results.
Development of retro muscular space with transversus abdominis release has reached maturity in endoscopic surgery. Next-level reconstruction is adaptation to parastomal hernia repair alone or in conjunction with another abdominal wall hernia repair.

We aim to present this extraperitoneal modified mesh technique based on the Sugarbaker principle with video demonstration and share clinical data and results from twenty-four patients operated with this technique within two years from the spring of 2019 to the spring of 2021. 77% patients had para-colostomy hernia and 41% of the patients had accessory repairs for midline or opposite flank hernia. 18% had prophylactic mesh at index operation, 27% were recurrent parastomal hernia and ostomies were formed median 32 months prior to parastomal hernia repair. 72% of the patients were operated robotically and 28% laparoscopically. Median follow up at time for presentation will be 17 months.
Background: Evidence to support routine prophylactic mesh insertion during stoma construction is conflicting. The PREVENT randomised controlled trial (RCT) suggested lower incidence of parastomal hernia (PSH) with prophylactic mesh but with no quality of life or cost benefit. Another two RCTs has shown no prophylactic benefit (STOMAMESH & STOMA-const). Although European Hernia guidelines recommends routine prophylactic mesh in end-colostomy, NICE guidelines suggest mesh on individual basis not routinely.

Aim: To identify the group with higher risk to develop a symptomatic PSH when prophylactic mesh should be considered

Material and Methods: A single center retrospective review of all stoma formed. Younger patient than 18 years and patients who had less than 6 months' follow-up were excluded. Development of PSH was confirmed by radiological evidence or direct intra-operative visualization

Results: 194 patients between January 2015 till December 2019 were included with mean follow-up of 15.7±13.5 months where 91 patients developed PSH. On multivariate analysis, older age (>65) (OR 2.3, 95% CI 1.08 – 4.99, p 0.03) and Obesity (OR 5.8, 95% CI 2.53 – 13.57, p 0.00) were risk factors of developing PSH. Among the PSH group, 28 were symptomatic (31%). Symptomatic subgroup had higher ASA (ASA >2) than asymptomatic subgroup (50% Vs 27%, p 0.05)

Conclusions: Obese patients older than 65 years are at increased risk of PSH. IF their ASA >2 this PSH is likely to become symptomatic. This is the group who should benefit the most from prophylactic measures including mesh insertion and should be targeted for future trials

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Aim: Post-partum abdominal wall insufficiency with rectus diastasis is present in over 30% of women after pregnancy. Little is known about how PPAWI affects the social, sexual life and self-esteem of patients. This study was designed to evaluate the safety of onlay mesh combined with abdominoplasty and its impact on the well-being of the patients.

Material and Methods: Two hundred patients with PPAWI underwent surgery with onlay mesh and abdominoplasty. The safety of the procedure was assessed by postoperative complications, time of hospitalization and time of drainage. Before the operation and 6 months later, a questionnaire asking about the patient’s sexual and social life and the presence of back pain was completed. The cosmetic effect was assessed separately.

Results: The onlay procedure with abdominoplasty was found to be safe and fast. The mean operation time was 82 min, and the drainage time was 2.1 days. In this group <2% postoperative complications were noted. There were no recurrences within the 6 month. Significant improvements in social and sexual life and the level of self-esteem were noted. Back pain was relieved or minimalized in all patients. The cosmetic effect was insufficient for 2 patients (1%).

Conclusions: PPAWI can be treated safely with onlay mesh and abdominoplasty. The patients’ symptoms were strongly correlated with the morphological status of the front abdominal wall and improved after the procedure. The authors are the first to propose PPAWI syndrome as a complex disorder with a disease classification, which can help patients with their choice of proper surgical intervention.
Aim: A gold standard procedure for small umbilical hernia repairs is still lacking today. There is an increasing evidence that mesh could be advantageous in lowering recurrence rates. A question remains with regard to optimal anatomical positioning of the mesh. We hypothesize that the use of an onlay-mesh can reduce recurrence rates without increasing complications compared to a simple-suture repair.

Material and Methods: A prospective, national, multicenter, randomized, double-blind clinical trial comparing a standardized 4x4 cm onlay mesh to a conventional suture repair will be conducted. 288 patients with a primary elective umbilical hernia ≤ 2 cm from 7 participating Swedish surgical centers will be enrolled. Intraoperative randomization will take place. Trial participants and follow-up clinical surgeons will be blinded to the assigned allocation. The primary outcome assessed will be postoperative recurrence at 1 and 3 years. Secondary outcomes assessed will be postoperative complications at 30 days and pain 1 year after surgery.

Results: 140 participants are included since February 2020 and 95 participants are randomized.

Conclusions: How to best repair a small umbilical hernia continues to be debated. A small onlay-mesh may become an easy and a safe method of choice to reduce recurrence rates in small umbilical hernia defects. This trial design should allow for a good assessment of differences in recurrence rate with due to the large sample size and the adequate follow-up. Guidelines for small umbilical hernia repairs have stressed the need for reliable data to improve treatment recommendations. We can expect that this trial will have a direct implication on small umbilical hernia repair standards.
Aim: To report feasibility and surgical outcomes of recurrent inguinal hernia repair after Transinguinal PrePeritoneal (TIPP) repair.

Material and Methods: Patients who underwent recurrent IHR after TIPP between January 2013 and January 2015 in a single hernia-dedicated teaching hospital were included. Exclusion criteria were femoral hernia, incarcerated hernia and reasons for unreliable follow-up. Electronic medical records were assessed retrospectively to register surgical outcomes and complications.

Results: Thirty-three patients underwent surgical repair of recurrent inguinal hernia after TIPP. Twenty patients were treated with a “re-TIPP when possible” strategy; resulting in 13 successful re-tipps and 7 conversions to Lichtenstein repair. Eleven patients underwent primarily a Lichtenstein’s repair, the remaining two patients underwent recurrent IHR using other techniques (transrectus sheath Pre-Peritoneal and transabdominal preperitoneal repair). Mean time of surgery was 44.7 minutes (standard deviation 16.7). There was one patient (3.0%) with a re-recurrent inguinal hernia during follow-up. Other minor complications included urinary tract infection. There were no significant differences in post-operative results between the different surgical techniques used for recurrent IHR.

Conclusions: These results indicate that after TIPP it is feasible and safe to perform re-surgery for recurrence with an anterior approach again. For these recurrences, a Lichtenstein can be performed, or a ‘re-TIPP if possible’ strategy can be applied by experienced TIPP surgeons. Whether a re-TIPP has the same advantages over Lichtenstein as is for primary inguinal hernia surgery, needs to be evaluated in a prospective manner.
Aim: To assess the short- and long-term outcomes of posterior component separation with transversus abdominis release (PCS-TAR) at our Centre.

Material and methods: From 2016, our abdominal wall unit started with PCS-TAR for the treatment of patients with complex abdominal wall hernias. We report our prospectively collected preliminary results.

Results: Sixty-six patients underwent PCS-TAR. Twenty patients had already received at least one previous hernia repair, 16 with mesh implantation. The median width of the defect was 12 cm (range 3 - 35), the median length 15 (range 4 - 40). Defects were multiple in 13 cases, swiss cheese in 2 cases. Eleven defects had both a midline and a lateral component, 3 had a concomitant parastomal hernia. Thirty-eight cases were located near the abdominal wall borders. The median duration of surgery was 255 minutes (range 84 - 740). TAR was partial in 24 cases and monolateral in 24. Twelve cases involved previous mesh removal. Fifty patients received implantation of more than one mesh: the most common combination was a PVDF mesh on top of a biosynthetic mesh. The mesh seldom needed to be fixed. The median length of stay was 6 days (range 3 - 61). Postoperative complications occurred in 22 patients (3 were major). Surgical site occurrences happened in 7 cases. After at least 12 months of follow up per patient, there was 1 recurrence, 1 case of chronic pain and no chronic seromas.

Conclusions: Posterior component separation with transversus abdominis release offers a versatile solution for a variety of complex ventral hernias, with good short- and long-term results.
Aim: Mesh infection represents a significant concern due to its terrible consequences. Mesh sinus, infected seromas, mesh extrusion, and mesh-related enteric fistulas are common complications associated with synthetic mesh. This study aimed to review the microbiota of mesh infection in a series of 100 patients submitted to mesh explantation.

Material and Methods: We reviewed the charts of patients presenting with a history of mesh infection lasting six months or more after mesh placement. All patients submitted to further abdominal wall repair with complete removal of the infected mesh and presenting a positive culture were included. The microbiota analysis was based on positive cultures obtained from the fluids and tissues surrounding the mesh or a positive culture of the mesh itself. Microorganisms were divided into gram-positive or gram-negative, aerobic or anaerobic, and fungi.

Results: Pure aerobic gram-positive cultures were encountered in 50% of the patients, followed by a combination of aerobic gram-positive/gram-negative (9%) and pure gram-negative cultures (6%). Anaerobes were recovered from 31% of patients. Fungi were recovered from 6%. Staphylococcus aureus was identified in 64% of cultures, with methicillin-resistant Staphylococcus aureus present in 42% and methicillin-sensitive Staphylococcus aureus in 22%. Among aerobic gram-negative infections, six (17%) were caused by multi-resistant bacteria, including Pseudomonas aeruginosa, Proteus mirabilis, Acinetobacter baumanii, Klebsiella pneumoniae complex, and Enterobacter cloacae complex.

Conclusions: Pure Staphylococcus aureus infections, occurring in 29%, accounted for most single bacterial infections. Gram-negative infections and anaerobes were commonly encountered in polymicrobial infections. Most fungi cultures occurred in patients with enteric fistulas.
[P007] COMPLETE FASCIAL CLOSURE IN LARGE HERNIAS AFTER LIVER TRANSPLANT USING BOTOX

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Aim: Hernias after liver transplant (HaLT), being transverse, preclude mechanical muscle release for fascial advancement. However, even with large HaLT, complete fascial closure is possible following Botox muscle release.

Material and Methods: A retrospective review included 31 consecutive large primary HaLT repairs between 2017 and 2021. Patients were immunosuppressed, with BMI=33+/-.5. Fascial defects were 13+/-.5cm (range 7.5-28cm) transversely and 11+/-.3cm (range 5-17cm) vertically. Botox was administered 29+/-.3days preoperatively. After extensive myofascial mobilization, mesh was inserted intraperitoneally and covered with omental flap alone or with posterior components, followed by fascial closure, progressive tension sutures and drains.

Results: Operative time was 235+/-.69min (range 111-418min), with no enterotomy or blood transfusion. Complete fascial closure was achieved in all. No mortality or abdominal compartment syndrome occurred. Two patients had long ICU stays (135 and 75days, aspiration and caecal necrosis), but were discharged with intact repairs, off dialysis and sound mentally. Other patients had a postoperative hospital stay of 5.8+/-.2.2days (range 3-13days). Mean follow-up was 48+/-.28.3 months (range 1-84 months). One patient with a mainly left sided repair developed a hernia on the right, beyond the mesh edge. No other recurrence or mesh infection occurred. One wound required open abscess drainage. Two seromas were aspirated.

Conclusions: Abdominal wall reconstruction with complete fascial closure is possible following abdominal muscle release with Botox, even in large HaLT. However, these immunosuppressed patients with multiple comorbidities may develop significant medical complications. One recurrence along the mesh edge suggests the need for complete incision mesh coverage, not just hernia coverage.
Aim: the worldwide increase in morbidly obese patients with complex hernia raises controversies in the choice of the appropriate treatment timing: synchronous bariatric and abdominal wall surgery versus delayed abdominal wall surgery. We report an innovative tailored surgical treatment carried out at our Institution.

Material and Methods: the approach provided the injection, six weeks before surgery, of 500 international units of botulinum toxin A on either side of the large abdominal wall muscles. Four weeks before surgery pneumoperitoneum was inducted and out-patient daily sessions of progressive insufflation with ambient air were then carried out. Surgery was scheduled 48 days after botulinum injection. Sleeve gastrectomy and simultaneous posterior component separation with transversus abdominis release were performed. Two prosthetic meshes were placed sublay.

Results: Postoperative superficial surgical site infection was successfully treated with negative pressure wound therapy. At one year follow up no hernia recurrence was recorded while total body weight loss was 31%.

Conclusions: a delay in ventral hernia repair could worsen quality of life of morbidly obese patients. In such high risk patients, the choice of the best surgical strategy remains controversial. There is great concern in performing bariatric surgery simultaneously to hernia repair, although there is lack of evidence on which is the ideal treatment modality. Synchronous bariatric surgery and complex ventral hernia repair should be approached in high volume centres where a consolidated experience of multidisciplinary team-work is available. Combined botulinum toxin A and preoperative progressive pneumoperitoneum administration allow for a safe resolution of loss of domain.
Aim: “Demonstrate step by step the planning that was carried out using 3D technology in pre-surgical assessment for complex hernia.”

Material and Methods: “57-year-old female, surgical record of laparoscopic uterine myomectomy 20 years ago, has an eventration with loss of domain on the left flank and a giant uterine myoma.

A multidisciplinary assessment was carried out for surgical decision, myomectomy was rejected.

Presurgical preparation was decided with progressive pneumoperitoneum (PPP) technique (1 week before surgery) associated with botulinum toxin (4 weeks before surgery).

The patient specific volumes of the abdominal cavity and the eventration were measured with 3D technology resulting in a volume ratio (VR) of 34% pre-PPP, VR post-PPP and botulinum toxin was 9.8%.

We compared these results to Tanaka index and we found a significant difference between the two techniques.”

Results: “During surgical intervention, multiple tumors were evidenced in the hernia content, distal ileum, cecum and omentum, peroperative pathological anatomy reported leiomyomas.
An ileocecal resection+Omentectomy+TAR was performed.
Patient was discharged on the 5th day without incidents.
A definitive diagnosis of Diffuse Peritoneal Leiomyomatosis was made.”

Conclusions: “3D technology might represent a better tool to calculate intraabdominal and hernia volume, providing greater safety for the patient and the surgeon to avoid compartment syndrome.
We found a significant difference between volumes measurements between Tanaka index and 3D technology.
3D technology gives us an unprecedented perspective for surgical planning in complex abdominal wall surgery.
The use of PPP and botulinum toxin is a safe and reproducible technique for hernia with loss of domain.”
Aim: Aim of the analysis was to evaluate whether preoperative botulinum toxin infiltration may facilitate anatomical midline reconstruction without the need for – otherwise pre-operative assumed – surgical component separation.

Material and Methods: Total of 58 patients with complex abdominal wall hernias were included in our single-center retrospective analysis between 03/2015 and 12/2020. Size of the defect, HSV/ACV-ratio, rectus-to-defect-width-ratio (“Carbonell-Index”) as well as risk factors were analyzed. In all patients muscles of the lateral abdominal wall were infiltrated with 300-500 IE of botulinum toxin 4 weeks prior to the abdominal wall reconstruction. CT scans were performed before and 4 weeks after the botulinum toxin infiltration.

Results: Total of 58 patients (M/F-ratio 36:22), with a mean age of 63.8 years were included in our analysis. Mean BMI was 29.5 kg/m². Total of 50 incisional, 3 umbilical, 2 posttraumatic diaphragmatic hernias and 3 scrotal hernias were analyzed. Surgical component separation after the infiltration with botulinum toxin was necessary in 43% of the cases.

Conclusions: Preoperative infiltration of the lateral abdominal wall musculature with botulinum toxin facilitated midline reconstruction of the abdominal wall without the need for myofascial release in 57%. Reduction of surgical trauma could therefore be achieved in several patients.
THE EARLY OUTCOMES OF ABDOMINAL WALL RECONSTRUCTION WITH POLYVINYLIDENE (PVDF) MESH IN THE INFECTED SETTING: A CASE-CONTROL SERIES

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Aim: The use of synthetic mesh to repair infected defects of the abdominal wall remains controversial. PVDF mesh was introduced in 2002 as an alternative to polypropylene, with the advantages of improved biostability, lowered bending stiffness, and minimum tissue response. This study aimed to evaluate the short-term outcomes of using PVDF mesh to treat infected abdominal wall defects in the elective setting.

Material and Methods: A prospective clinical trial started in 2016 and designed to evaluate the short and mid-term outcomes of 38 patients submitted to abdominal wall reconstruction in the setting of active mesh infection and/or enteric fistulas (AI) when compared to a group of 38 patients submitted to clean ventral hernia repairs (CC). Patients were submitted to single-staged repairs, using onlay PVDF mesh reinforcement to treat their defects.

Results: Groups had comparable demographic characteristics. The AI group had more previous abdominal operations and a longer operative and anesthesia time. At 30-days, surgical site occurrences were observed in 18 (47.4%) AI vs. 17 (44.7%) CC; surgical site infection occurred in 4 (10.4%) AI vs. 6 (15.8%) CC, and a higher number of procedural interventions were required in the CC group, 15.8% AI vs. 28.9% CC. At 6-months follow-up, no chronic infections or hernia recurrences were observed in both groups.

Conclusions: The use of PVDF mesh in the infected setting presented very favorable results with a low incidence of wound infection.
Aims: In patients with herniorrhaphy treated in a 3rd level hospital in the Southwestern of Colombia from January 2014 to March 2020, determine the frequency of incisional hernia recurrence and the risk factors related to.

Materials and methods: Observational, ambispective study that included patients older than 15 years with a history of incisional hernia that agreed to participate and signed a consent form. Patients with incomplete data or who underwent surgery in another institution were excluded. Follow-up appointments every 3 months were made to evaluate the incidence of hernia recurrence.

Results: 112 patients were included, 64.3% female with a mean age of 58.6-year-old. The frequency of recurrence was 38.4% with a mean of appearance of 22.9 months; 44.2% were repaired with only one technique and 39.5% with non-mesh. Non-use of mesh increased the risk for recurrence (RR 2.02; CI95%: 1.17-3.48). Other risk factors were urgent surgery (RR 1.82; CI95%: 1.14-2.91), defect closure with multifilament suture (RR 1.61; CI95%: 1.15-2.25), not do adhesiolysis (RR 3.17; CI 95%; 0.85 – 11.76) and the no use of postoperative antibiotics (RR 1.67M CI95%: 0.97-2.89).

Conclusions: Incisional hernia recurrences increase with time. Therefore, a follow-up of at least for 3 years should be guaranteed to avoid undiagnosed cases. Risk factors identified like absorbable multifilament sutures and non-use of the mesh must be removed from the surgery plans. Furthermore, a specialized in-hospital group of the abdominal wall and an institutional protocol would help to diminish this complication.
Aim: Surgery of a complex incisional hernia in an obese patient is a challenging procedure for hernia surgeons. The aim of a new approach is to reduce complications such as pain and wound events, without increasing the number of recurrences.

Material and Methods: Adults with BMI more than 35 who underwent open, elective operation of a complex incisional hernia (with horizontal diameter more than 12cm) including posterior component separation technique with TAR (transversus abdominis muscle release) and retromuscular synthetic large-pore mesh placement, were identified. Patients were divided into 2 groups: The first group was treated with standard open technique with fixation using interrupted stitches, and the second group was treated with a technique using light hook and no or reduced fixation in the upper and lower pole of the mesh. For post-operative complication evaluation, the Clavien-Dindo classification was used. We have also evaluated an average operation time, length of stay, duration of opioid need. The long-term follow-up was 6 – 48 months.

Results: There was no significant difference in length of stay, the need of analgetic treatment, and hernia recurrence. Shorter operation time, and lower occurrence of surgical-site infections were reported in the second group, but it was not significant.

Conclusions: Open posterior component separation technique with TAR using large-pore mesh and no/minimal fixation seems to be a safe and sufficient method of treatment for complex incisional hernias in obese patients. Alternative methods may reduce early complications and pain and do not increase number of recurrences. A larger group of patients and longer follow-up should be needed to improve these findings.
COMPARATIVE EFFECTIVENESS OF RESORBABLE SYNTHETIC ONLAY AND BIOLOGIC INTRAPERITONEAL MESH FOR ABDOMINAL WALL RECONSTRUCTION: A 2-YEAR MATCHED PAIR ANALYSIS

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Aim: The literature currently lacks comparative studies examining the relative effectiveness of anatomic planes and mesh selection when combating abdominal wall reconstruction (AWR), particularly when the retrorectus sublay space is not available. The aim of this study was to examine the efficacy of resorbable synthetic mesh onlay (RSOM) plane against biologic mesh in the intraperitoneal plane (BIPM).

Methods: A single center, two surgeon, 5-year retrospective review (2014-2019) was performed examining subjects who underwent AWR in the onlay plane with resorbable synthetic mesh or the intraperitoneal plane with biologic mesh. A matched paired analysis was conducted. Data examining demographic characteristics, intraoperative variables, post-operative outcomes, and costs were analyzed.

Results: A total of 88 subjects (44 per group) were identified (median follow-up: 24.5 months). The mean age was 57.7 years, with a mean BMI of 30.4 kg/m². The average defect size was 292 ± 237 cm², with most wounds being clean-contaminated (48.9%), and 55% having prior failed repair. RSOM subjects were significantly less likely (4.5%) to experience recurrence compared to BIPM (22.7%; p<0.026.). Additionally, RSOM suffered less post-operative surgical site occurrences (18.2% vs. 40.9%; p<0.019) and required fewer procedural interventions (11.4% vs. 36.4%; p<0.011). RSOM was also associated with significantly less total costs ($16,658 ± 14,930) compared to BIPM ($27,645 ± 16,864; p<0.001).

Conclusion: When faced with hernia repair, the selection of resorbable synthetic mesh in the onlay plane may be preferable to biologic mesh place in the intraperitoneal plane due to lower long-term recurrence rates, surgical site complications, and costs.
Aim: Complex ventral hernia (CVH) treatment due to large abdominal wall defects or loss of domain is challenging. BTA-injection in lateral abdominal wall causing flaccid paralysis and elongation, so called chemical component separation (CCS), might facilitate closure of large fascial defects. Combining preoperative progressive pneumoperitoneum might help restore abdominal content in severe loss of domain situations. We studied the results after CAWR following abdominal wall preparation with BTA and possible PPP. Primary aim was to report fascial defect closure rate without need for surgical component separation.

Material and Methods: All electively operated patients to date that were treated preoperatively with BTA, including all patients treated with PPP.

Results: Hospital index patient received preoperative BTA in January 2018. Since then, altogether 42 patients underwent CCS prior to CAWR. Average patient suffered from obesity (mean BMI 31), 30% had diabetes, and a third were active smokers. Mean hernia defect area exceeded 200 cm². All operations were mesh repairs. Surgical approach was mostly (88%) open retromuscular. Abdominal wall reconstruction via fascial closure was achieved in 93% of cases with only 21% needing surgical component separation. Preoperative morbidity was common in patients undergoing PPP. Around 40% of all patients had postoperative complications, half of which were surgical complications. One patient died of a yet unknown cause on the third postoperative day. There were no recurrences within median 15 months follow-up.

Conclusions: Restoring abdominal wall continuity without frequent need for surgical component separation seems likely in CVH following CCS.
A COMPARATIVE STUDY BETWEEN ROBOTIC AND LAPAROSCOPIC VENTRAL AND INCISIONAL HERNIA REPAIR WITH THE ETEP - TAR TECHNIQUE.

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Aim: The aim of this study is to present a single centre’s experience in Robotic and Laparoscopic eTEP TAR technique in ventral and incisional hernia repair. Additionally, the purpose of this study is to compare these Robotic and Laparoscopic techniques in terms of feasibility, efficacy, safety, advantages and disadvantages.

Material and Methods: This is a case-series comparative study of patients with M1-M5 / W3 ventral and incisional hernia that underwent Robotic or Laparoscopic eTEP-TAR repair in a single institution. Patients’ characteristics were reviewed and perioperative outcomes were extracted. All patients were followed-up at the outpatient surgical unit. Intraoperative and postoperative parameters were analyzed.

Results: 35 patients (19 males) with a mean age of 57 years underwent Robotic eTEP-TAR (21 patients) and Laparoscopic eTEP-TAR (14 patients) repair of M1-M3/W3 ventral (12 patients) and M2-M5/W3 incisional hernia. There were 3 conversions to open repair in the Robotic group (Rg) and 1 for the Laparoscopic group (Lg). The mean operative time in Rg was 345 minutes, while in Lg was 320 min. All patients were discharged between the first and fifth postoperative day. No major complications or recurrences were revealed during a mean postoperative follow-up time of 26 months.

Conclusions: Both techniques are feasible, reproducible, and safe, with no major differences in operative time, recurrence and complications rate. Nevertheless, these techniques are highly demanding procedures that should be performed by experienced hernia surgeons, in well-organized centers of excellence in hernia surgery.
Aim: Our study aims to analyze and evaluate the results obtained in patients older than 80 years who underwent complex abdominal wall reconstruction (CAWR) in a multicenter abdominal wall unit using different surgical approaches.

Material and Methods: Patients were identified from a prospective maintained multicenter database. Demographic characteristics, incisional hernias' (IH) characteristics, as well as postoperative outcomes, including short and long-term complications have been analyzed.

Results: 21 patients were identified. The mean age was 82.5 (+/- 2.4) years old. There were 10 (47.6%) midline IHs, 5 (23.8%) lateral IHs, 4 (19%) synchronous midline and lateral IHs, and 2 (9.6%) parastomal hernias (PH). 9 (42.8%) Madrid TAR modification technique, 5 (23.8%) Rives-Stoppa, 3 (14.3%) lateral preperitoneal approaches, 1 (4.8%) midline preperitoneal approach and 1 (4.8%) anterior component separation were performed. In patients with PH, a modification of the Pauli technique (4.8%), and a unilateral TAR with a keyhole repair associated (4.8%) were performed.

There were 7 (33.3) surgical site occurrences (SSO), 1 (4.8%) seroma, 3 (14.3%) hematomas and 3 (14.3%) surgical site infections. Only 3 (14.3%) SSO required procedural intervention. During a mean follow-up of 20.6 (+/- 15.9) months, 1 (4.8%) hernia recurrence was diagnosed. No cases of postoperative bulging were recorded. There were also no cases of chronic pain in the sample.

During follow-up, 3 patients died from surgery unrelated causes.

Conclusions: CAWR in the elderly patient, after an adequate preoperatively selection of patients, presented acceptable short- and long-term results, despite the advanced population age.
Aim: The simultaneous repair of incisional hernias (IH) and the reconstruction of the intestinal transit may pose a challenge for many surgeons. Collaboration between units specialized in abdominal wall and colorectal surgery can favor simultaneous treatment.

We present our experience in the collaboration between specialized units for the simultaneous treatment of complex incisional hernias and ostomy closure.


All interventions were performed electively and with the collaboration of surgeons experts in abdominal wall and colorectal surgery. Demographic variables, hernias characteristics, surgical techniques, postoperative evolution, morbidity and mortality are recorded.

Results: 16 patients are included. 8 with ileostomy, 3 lateral colostomies and 5 end colostomies. All the patients presented IH of the middle laparotomy and 12 had stomal hernias associated. The mean diameters of the IH were 16.2 cm longitudinal and 11 cm transverse. Intestinal transit was reconstructed in 15 cases (94%) and incisional hernia repair in 100%. Component separation was required in 75% of cases (8 posterior and 4 anterior).

Morbidity in the first postoperative month was 18%, requiring 2 reoperations (12%). At the end of the mean follow-up of 10.8 months, 81% of the cases did not present complications.

Conclusions: The collaboration between specialist allows the use of advanced techniques in the simultaneous reconstruction of the abdominal wall and intestinal transit, with good clinical results and patient quality of life.
OUTCOMES OF OPEN LATERAL APPROACHES FOR L3-L4 INCISIONAL HERNIAS

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Aim: Our study aimed to compare and evaluate results of two different open lateral approaches for L3–L4 incisional hernias (IH) operated in a multicentric complex abdominal wall unit.

Material and Methods: Patients who underwent surgery for L3–L4 IH were identified from a prospective maintained multicenter database. The lateral IH were approached laterally, performing a reverse transversus abdominis release (TAR) or a lateral retromuscular preperitoneal approach (LRP).

Outcomes included short and long-term complications, such as recurrence, bulging and pain.

Results: 61 patients were identified. There were 28 (45.9%) cases of L3 IH and 33 (54.1%) cases of L4 IH. 28 (34.7%) LRP approaches and 33 (24.5%) reverse TAR techniques were performed.

There were surgical site occurrences (SSO) in 13 (21.3%) patients, 7 (11.5%) in the reverse TAR group and 6 in the LRP group. 8 (13.1%) SSO required procedural intervention (4 in each group). During a mean follow-up of 26.57 (+/- 19.23) months, no cases of recurrence were diagnosed. There were 12 (19.7%) cases of asymptomatic bulging that did not required reintervention (7 in the LRP group), and only one case of symptomatic bulging that needed intervention (in the LRP group). Furthermore, two patients (3.3%) required daily no opioids treatment for pain. Two (3.3%) cases of mortality were registered (both in the LRP group).

Conclusions: Despite the high complexity associated of L3-L4 IH, both lateral approaches showed acceptable long-term results, without any statistical difference between groups.
[P020] ESTABLISHING PEER-CONSENSUS ABOUT THE USE OF LONG-TERM BIOSYNTHETIC ABSORBABLE MESH FOR VENTRAL HERNIA (GRADE 2-3) AS THE STANDARD OF CARE

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Aim: “This consensus project was initiated to provide insight into those situations where a long-term biosynthetic absorbable mesh (LTBA) might be considered the standard of care in repair of ventral hernia grades 2 and 3 (original Ventral Hernia Working Group Classification, 2010).”

Material and Methods: “A steering group of surgical experts developed 35 initial statements formed from six domains. These statements were used to develop an online survey which was sent to surgeons involved in hernia repair surgery within Europe. Agreement (consensus) with the statements was defined as high if ≥70% and very high if ≥90% of respondents agreed with a statement. After the initial survey round, some statements were revised and these were then reissued, 34 statements were included in the final analysis.”

Results: “A total of 255 responses were received over the two rounds of survey. Respondents (n=255) were all surgeons involved in hernia repair in Europe. Fourteen statements (41%) achieved very high consensus (≥ 90%), 24 statements achieved consensus (≥70% to <90%) while one statement (3%) fell short of consensus with an agreement score of 69%.”

Conclusions: “Expert consensus opinion about the use of LTBA for hernia (Grades 2-3) as the standard of care was achieved. Based on the consensus scores, the steering group derived eleven key recommendations which, if implemented, should result in a clearer understanding of how and when a LTBA might be used in hernia repair, aiming for improvement in surgical and patient related outcomes”
Aim: To evaluate surgical outcomes after introduction to our unit of the stapled opening and closure of the linea alba in reconstruction of the abdominal wall using the GIA linear stapler (linea alba stapling – LAS) and self-fixating mesh for medium and large defects.

Material and Methods: Since 2018, we have transitioned from the Rives – Stoppa (with or without component separation) (R-S) to the LAS technique for abdominal wall reconstruction. We compared our outcomes with the LAS technique with matched historic R-S controls (in terms of defect size, duration of surgery and skin related complications).

Results: Thirty-three cases of LAS reconstruction have been performed in our unit: 15 with defects larger than 10 cm. After exclusion of patients who underwent additional procedures such as adhesiolysis and bowel resection, the mean duration of surgery was 165 min. There were no skin related complications. Comparable cases who underwent R-S reconstruction took 213 min; and, wound infection developed in one patient and skin necrosis in two.

Conclusions: Provisional results indicate significantly lower operative times and incidence of wound complications (including infections and fluid collections). Notable advantages include a shorter skin incision, a small incision in the anterior rectus sheath to introduce the linear stapler rather than the standard laparotomy and lateral abdominal wall dissection (with ligation of perforators) necessary in the R-S method. Self-fixating mesh eliminates the requirement of sutured mesh fixation which may also be associated with more extensive dissection and longer operative times.
Aim: Analyze and evaluate the results obtained in patients undergoing transit reconstruction surgery in which an abdominal wall reconstruction (AWR) is associated using a multidisciplinary approach.

Material and Methods: All patients who underwent an intestinal transit reconstruction associated with an AWR surgery were identified from a prospectively maintained multicenter database. Short and long-term results have been analyzed, especially AWR outcomes.

Results: 10 patients were identified. 60% were men. Mean time since previous surgery was 1.66 years. 8 cases (80%) associated a midline incisional hernia with the parastomal hernia. 3 (30%) bilateral posterior component separation (PCS) Madrid transverse abdominis muscle release (Madrid TAR) modification, 5 (50%) unilateral Madrid TAR, 1 (10%) PCS Carbonell, and 1 (10%) Rives-Stoppa techniques were performed.

A double mesh reconstruction technique was used in 60% of the patients, associating absorbable mesh with a permanent mesh.

One patient presented a paucisymptomatic colorectal anastomosis fistula, that could be managed conservatively. A case of postsurgical ileus was also evidenced.

Surgical site occurrences (SSO) were recorded in 4 patients (40%), all of them related to surgical site infection that required a bedside wound opening.

During a mean follow-up of 24 (+/- 15) months, there was no evidence of hernia recurrence. No cases of bulging, chronic mesh infection or chronic pain were reported.

No case of mortality was recorded in the series.

Conclusions: Intestinal transit reconstruction surgery associated with an AWR, with a multidisciplinary team managed, presents acceptable long-term results, despite the high SSO associated.
Aim: Large incisional hernia treatment is challenging for surgeons especially when there is loss of domain. Its management requires appropriate preoperative optimization of the patient.

We present a complex case that provides an exhaustive review of different measures in order to treat this type of hernias.

Material and Methods: A 61-year-old, smoker and diabetic patient consulted because of a large ventral hernia. He underwent an umbilical hernia surgery which recurred three more times.

The patient had a M1-M5 W3 hernia with active suppuration through fistulous orifices. The abdominal wall planning CT scan showed a large eventration with 23 cm of transverse defect diameter and a Tanaka index of 92%.

Results: The patient received support to quit smoking and he lost weight due to an intragastric balloon. Botulinum toxin was administered six weeks before surgical intervention. An abdominal pneumoperitoneum catheter was placed, reaching 12,400 liters of ambient air insufflated during 13 days.

Finally, surgery was performed, finding a 27 x 35 cm wall defect that required the performance of:

1. Bilateral posterior component separation (Madrid modification of TAR)
2. Omentectomy
3. Bilateral anterior component separation
4. Right hemicolectomy

After these maneuvers, the posterior abdominal wall could be completely closed. A double preperitoneal mesh (BioA and polypropylene) was placed.

After 16 days, he was discharged without major complications.

Conclusions: Loss of domain hernias are a complex entity which requires a multidisciplinary approach and abdominal wall experienced surgeons since it may require extreme measures.
Aim: Recurrence indicates a failed repair. Which biomechanical factors have to be considered to reduce failure rates? How can surgeons enhance the interface between mesh and tissue?

Material and Methods: The strength of the mesh-tissue interface was evaluated by cyclic loading. A self-made bench test was used to apply dynamic intermittent strain (DIS) to model preparations in order to evaluate the tissue quality and the material properties of hernia meshes and fixation devices. The influences and the properties were condensed in coefficients representing their relative strengths. The strain of the individual human abdominal wall were determined with computerized tomography at rest and during Valsalva’s maneuver.

Results: The strain observed in porcine, bovine and human tissue was in the same range. Tissue samples exhibited both brittle and ductile failure patterns. Both the load duration and the peak load increased destruction. Stress concentration elevated failure rates. Regional areas of distortions increase stress concentrations. Hernia repair has to counteract individual strain levels. Measures to improve hernia repair include closure of the defect, use of higher DIS class meshes, increased mesh overlap and additional fixation. In the clinical routine, all measures must be adapted to the individual tissue quality.

Conclusions: Using the conception of GRIP as the gained resistance towards pressure related impacts, a durable hernia repair can be designed from coefficients determined with a bench test or with computerized tomography of the human abdominal wall. Pain levels and hernia recurrence rates can be reduced in incisional hernia repair when biomechanical principles are considered.
Aim: It was investigated how preoperative botox injection in the abdominal musculature both facilitates the surgical repair of incisional hernias and reduce the rate of hernia recurrence.

Material and Methods: Botulinum toxin A injections was given to 12 patients (7 female and 5 male) suffering from complex incisional wall hernia, 4 to 6 weeks preoperatively. Mean age was 54 years. 9 patients were treated by anterior and/or posterior component separation repair and 3 by Rives-Stoppa repair. By all patients the mesh could be placed in the retromuscular position. No bridging was necessary.

Results: After a follow-up of 3 to 4 years we examined the patients clinically and by sonography. The rate of incisional hernia recurrence was low as well as the rate of side effects like chronic pain, persisting paresthesia and mobility disorders of the abdomen.

Conclusions: Preoperative injection of botulinum toxin A can help to reduce the risk of further hernia recurrence after surgical repair of complex incisional hernias of the abdominal wall.
Aim: to point out the critical issues of the management of a challenging case of complex ventral hernia (CVH) in high risk patient

Material and methods: A 58-year-old female was referred to our Institution with a history of alcohol and smoking abuse, COPD and class I obesity. Four years before she underwent liver transplantation. In the next two years she had 2 VH repairs with polypropylene (PP) meshes. The postoperative course was complicated by a deep surgical site infection (SSI) and dehiscence. The wound resulted in a large R2 M3-L2 CWH with distorted anatomy. The patient experienced VH incarcerations and bowel obstructions. Clinical examination revealed no signs of infection and the CT scan showed partial loss of substance of the abdominal wall.

Results: The patient underwent posterior component separation with transversus abdominis release (PCS-TAR) and large PVDF mesh on top of a biosynthetic mesh implantation. The postoperative course was complicated after 14 days by a SSI causing a large wound dehiscence with underlying mesh exposure. The patient was readmitted and negative pressure wound therapy (NPWT) with topical wound solution instillation was initiated. After 1 month was followed up as an out-patient to continue traditional NPWT and removal of former PP remnants. NPWT was interrupted after 6 months and no signs of infection nor VH recurrence were recorded at 1 year.

Conclusions: the indication to PCS-TAR for such comorbid patient should be carefully evaluated. The use of a biosynthetic mesh could be debatable. The conservative management of a chronic infection could be the first-line option in case of macroporous mesh implantations.
Aim: We present our approach of treating a W3 (EHS-Classification) incisional hernia with heterotopic ossification in the abdominal wall.

Material and Methods: A 62-years-old female patient presented with a hernia in her inverted-T incision (midline and transverse) after undergoing multiple laparotomies. The CT-scan showed calcified structures within the abdominal wall. We planned the extensive reconstruction after preoperative Botox injections.

Results: The 20x25 cm hernial sack contained parts of the stomach and colon. The dissection of the midline and transverse scars was challenging with the needed removal of scattered pieces of heterotopic bone tissues. After dissecting the retro-muscular space, the fascial edges were 25 cm apart. With bilateral transversus abdominis release (TAR), it was reduced to 20 cm. The posterior fascia was approximated, leaving a central 12 cm defect, and a smaller lateral defect, which we covered using open-IPOM and underlay techniques respectively. A 30x40 cm mesh in sublay position was placed and fascial traction was applied on the anterior fascia. With the resulting defect of 16 cm, a tension-free closure was still not possible, and we bridged the gap with a mesh in inlay position.

Conclusions: Despite combining pre-operative Botox injection and fascial traction with TAR, complete closure of the fascia was not possible. IPOM, sublay, underlay and inlay bridging were needed. Specialized hernia surgeons should be familiar with a wide range of different techniques to deal with such cases.
Aim: The Madrid APPROACH is the combination of an absorbable mesh and a permanent retromuscular mesh for the treatment of the complex abdominal wall problems. It has been controversial because of the need of two different meshes. We present a clinic case to show the utility of this technique and how it allows rebuilding the inguinal ligament.

Material and Methods: 78 years old woman who underwent a right ilioinguinal and obturatrix lymphadenectomy due to a melanoma. Incisional hernia fixed in 2018 with a retromuscular polyester mesh. New incisional iliac hernia (L3) over the right iliac vessels, with an absence of inguinal ligament, right rectus atrophy, and the previous mesh being part of the sac.

Surgery: incision over the previous scar. Wide dissection of the preperitoneal space, Retzius space and lateral to the cuadratus lumborum, retrodiafragmatic dissection, lateral transverse abdominus release, and cross-over to the retrorectal left space. Preperitoneal BioA mesh and an upper 40x40cm medium weight polipropilene mesh set to both Cooper ligaments.

Results: After two and a half months, a PET-TC showed the BioA mesh perfectly adapted to the abdominal wall and rebuilt a new inguinal ligament. Also intense FDG capitation of the mesh due to the high cellular metabolism.

Two years later the patient has a continent abdominal wall, the follow up TC shows the disappearance of the absorbable mesh and the perfect abdominal wall rebuilt.

Conclusions: The BioA mesh acts like a tissue scaffold for new conjunctive tissue as we see the intense FDG captation. The Madrid APPROACH allows giving response to very complex abdominal wall problems.
[P030] OPEN VERSUS LAPAROSCOPIC UMBILICAL AND EPIGASTRIC HERNIA REPAIR: NATIONWIDE DATA ON SHORT- AND LONG-TERM OUTCOMES

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Aim: The aim of the study was to evaluate the rates of 90-day readmission and reoperation for complication, together with rate of operation for recurrence after either open or laparoscopic mesh repair for primary umbilical or epigastric hernias with defect widths above 1 cm.

Material and Methods: A merge of data between the Danish Hernia Database and the National Patient Registry provided data from 2007-2018 on perioperative information, 90-day readmission, 90-day reoperation for complication, and long-term operation for hernia recurrence.

Results: A total of 6,855 patients were included, of whom 4,106 (59.9\%) and 2,749 (40.1\%) patients had an open or laparoscopic repair, respectively. There were significantly more patients readmitted with a superficial surgical site infection 2.5\% (102/4,106) after open repair compared with laparoscopic repair (0.5\% (15/2,749), \(P < 0.001\). The 90-day reoperation rate for complications was significantly higher for open repairs 5.0\% (205/4,106) compared with laparoscopic repairs 2.7\% (75/2,749), \(P < 0.001\). The incidence of a reoperation for a severe condition was significantly increased after laparoscopic repair 1.5\% (41/2,749) compared with open repair 0.8\% (34/4,106), \(P = 0.010\). The 4-year cumulative incidence of operation for recurrence was 3.5\% after open and 4.2\% after laparoscopic repairs, \(P = 0.302\).

Conclusions: Recurrence rates were comparable between open and laparoscopic repair of umbilical and epigastric hernias. Open repair was associated with a significantly higher rate of readmission and reoperation due to surgical site infection, whereas the rate of reoperation due to a severe complication was significantly higher after laparoscopic repair.
Aim: Although laparoscopic repair of incisional hernias decreases the incidence of wound complications as compared with open repair, there has been a rising concern related to intraperitoneal mesh placement. The aim of this study was to examine outcomes after open or laparoscopic elective incisional hernia mesh repair on a nationwide basis.

Material and Methods: A merge of data between the Danish Hernia Database and the National Patient Registry provided data on perioperative information, 90-day readmission, 90-day reoperation for complication, and long-term operation for hernia recurrence from 2007-2018.

Results: A total of 3,090 (57.5%) and 2,288 (42.5%) patients were operated by laparoscopic and open approach, respectively. The defect was closed in 27.9% (865/3,090) of the laparoscopic cases. The median follow-up time was 4.0 (1.8-6.8) years. Rates of readmission (16.2%, 502/3,090) and re-operation for complication (7.0%, 216/3,090) were significantly lower for laparoscopic compared to open repairs (19.3%, 442/2,288, P = 0.003 and 12.5%, 288/2,288, P < 0.001). Re-operation for bowel obstruction or bowel resection was twice as high after laparoscopic repair (0.6%, 20/3,090) compared with open repair (0.3%, 6/2,288, P = 0.044). Patients were significantly less prone to undergo repair of recurrence following laparoscopic compared with open repair of defect widths 2-6 cm (P = 0.002).

Conclusions: Laparoscopic intraperitoneal mesh repair for incisional hernia should still be considered for fascial defects between 2 and 6 cm, because of decreased incidences of early complications and repair of hernia recurrence compared with open repair.
Aim: Acutely symptomatic hernia (ASH) of the abdominal wall and groin are common presentations. Decisions related to repair technique can be driven by contamination and surgical site infection (SSI) risk. The aim of this study is to report rates of SSI following ASH repair, and assess the performance of the Bluebelle wound health questionnaire in this population.

Material and Methods: This study reports on the operated sub-group of the MASH study. This was a 12 week, UK-based, multi-centre, collaborative, prospective cohort study (NCT04197271) recruited adults with ASH. Hernia site, repair type, wound complications, and Bluebelle questionnaire at 30 & 90 days were captured. Performance of this score was assessed using ROC curves, and regression modelling.

Results: 223 patients were operated on, and 21 (9.4%) developed SSI within 90 days. Infections were most common in umbilical hernia (16.2%). No infections were seen in ‘simple’ symptomatic hernia. There was no association with either repair type. Bluebelle scores for 109 patients had an area under the curve of 0.807, showing good performance in this population. Regression modelling showed that SSI was most strongly associated with increased Bluebelle score (OR 8.54 (4.27 to 12.80, p<0.001)). Use of a sutured repair was associated with a lower score (OR -3.79 (-7.19 to -0.39, p=0.029)).

Conclusions: SSI is common after surgical treatment of ASH. Strategies to reduce this are needed. The Bluebelle score appears valid for this population; mesh repair might affect scores independent of SSI.
IMPLEMENTATION OF A ROBOTIC VENTRAL HERNIA REPAIR PROGRAM IN A EUROPEAN CENTER: RESULTS DURING THE LEARNING CURVE AND EARLY DEVELOPMENT.

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Aim: This study aims to describe the early results after implementing a robotic ventral hernia repair (RVHR) program in a European university center.

Material and Methods: All patients undergoing primary (PH) or incisional (IH) RVHR were included in an institutional open-label prospective quality database. Patients' baseline characteristics, intra-operative data, postoperative, and follow-up outcomes recorded from September 2018 to September 2020 were analyzed.

Results: Twenty-six PH and 58 IH were included; respectively, mean BMIs were 32.8±7.1 and 30.3±5.0kg/m². Hernia resulted from median laparotomies in 69.0% of the IH patients; 5 patients (8.6%) had defects >10cm in width. In the PH group, the mean total operative room (OR) time was 98.1±42.5min. Mean VAS (Visual Analog Score) was 2.5±1.7 at day 0, 61.5% of patients were ambulatory, and 38.5% stayed 1-2 nights. One (3.8%) recurrence and 1(3.8%) surgical complication (umbilical perforation) occurred with no general complications. In the IH group, 15 patients required transversus abdominis release (TAR, 25.9%). Mean OR time was 179.6±82.3min, mean VAS 1.9±2.0 at day0, 19% of patients were ambulatory, 44.8% stayed 1-2 nights and 27.6% 3-4 nights. Mean follow-up was 71.6±51.8 days. One (1.7%) postoperative complication (bleeding, embolization, no reoperation), 2(3.4%) recurrences occurred. Successful completion of an extraperitoneal (eTEP) RVHR with bilateral TAR was achieved after 18 months and 40 cases, after which we began training a second surgeon.

Conclusions: Implementation of a RVHR program showed promising results with acceptable operative time even during the learning curve. Postoperative outcomes suggest a potential advantage in postoperative recovery.
A diaphragmatic hernia (DH) is a protrusion of abdominal contents into the thoracic cavity as a result of a defect within diaphragm. It is most common as a congenital phenomenon; however, there have also been cases where it can be acquired. DH can be life-threatening, resulting in incarceration and strangulation.

Aim: From June 2009 to April 2021, ten cases of strangulated diaphragmatic hernia were admitted to our Emergency Surgery Department of General Surgery with respiratory and abdominal symptoms. Patients' characteristics, operation details, and postoperative complications were retrospectively analyzed.

Results: There were 5 (50%) men and 5 (50%) women with a mean age of 66 years (range, 20–85 years). Emergency surgery was performed by laparoscopic in 4 (40%) patients and open in 6 (60%) patients. Two patients had a history of penetrating trauma to the left thoracoabdominal region. Segmental bowel resection was performed in 3 patients and total gastrectomy in 1 patient. Reconstruction was not performed in the patient who underwent total gastrectomy due to ischemia and perforation. In the postoperative period, wound infection was observed in 2 patients. Anastomotic leakage was observed in 1 patient and treated with end enterostomy. Empyema was observed in one patient after discharge, the empyema was evacuated and thoracoscopic decortication was performed. The patient who underwent total gastrectomy died due to septic shock and comorbid diseases.

Conclusions: Strangulated diaphragmatic hernia is a life-threatening condition and requires emergency surgery. Laparoscopic techniques can also be used in treatment.
Aim: Aim of our study was to analyze outcomes and safety of bilateral inguinal hernia repair in unilateral groin complicated hernia with contralateral groin hernia.

Material and Methods: Retrospective cohorts study following STROBE statements on a prospective Emergency Surgery Department database. Inclusion criteria were: patients with emergency hernia repair from 2008 to 2018, 18 years old. Unilateral or bilateral inguinal hernia repair without other abdominal wall hernia repairs. Comparative analysis between two group unilateral hernia repair (UH) vs bilateral hernia repair (BH) those patients with unilateral complicated inguinal hernia with contralateral inguinal hernia. Propensity score matching (PSM) between groups was performed to eliminate statistically groups differences. Outcomes between groups were analyzed with special attention to postoperative morbimortality and hernia recurrence.

Results: 341 patients were included, 38(11.1%) were performed bilateral hernia repair. Groups differences were: higher rate of inguinoscrotal inguinal hernia (36.8 vs 22.8), prophylactic antibiotics use (94.7 vs 81.8) and general Anesthesia use (52.6% vs 50.2%). General high rates of morbidity and mortality were observed (5.9% and 41.9) and 22 (6.5%) hernia repair recurrence were detected. After PSM no differences between surgery outcomes groups were observed with similar morbidity, recurrence or hospital stay.

Conclusions: Emergency inguinal hernia repair has high morbidity and mortality rates in our experience. Emergency Bilateral inguinal hernia repair in context of hernia complication seems safe without recurrence or hospital stay increase.
Aim: During the COVID-19 pandemic, Swedish health care centers were restructured. This was accompanied by changes in the surgical programme. The aim of this study was to determine the effects of COVID-19 on emergency and elective hernia surgeries in a Swedish health-care region.

Material and Methods: This was a retrospective, observational cohort study. Data from inguinal and ventral hernia surgeries were retrieved from a medical database using procedure codes from all three hospitals in Region Jönköping County from March 1, 2019 to January 31, 2021. The participants were divided into two groups: COVID-19 group (March 1, 2020 - January 31, 2021) and reference group (March 1, 2019 - January 31, 2020). The incidence rate (IR) and relative risk (RR) of operations over different time frames were analyzed.

Results: A total 1351 participants met the inclusion criteria. 590 were operated during the COVID-19 period and 761 during the reference period. The IR of elective operations was decreased during the COVID-19 pandemic; 146 operations/100,000 population vs 192 operations/100,000 population during the reference period. RR was 0,76 (95% CI 0.6813-0.8545, p < 0.0001). Moreover, IR of emergency operations decreased insignificantly during the COVID-19 pandemic; 17,5 operations/100,000 population vs 19,4 operations/100,000 population during the reference period. RR was 0,9 (95% CI 0.6404- 1.2649, p 0.5441). No significant variations in the emergency operations have identified when different time frames were compared.

Conclusions: There is no evidence to support that COVID-19 pandemic has increased emergency hernia operations during the studied period despite the significant reduction of elective operations.
Aim: We describe in detail the step by step technique of the first case of TES repair at our institution.

Methods: We selected the case of a M2W3L3 hernia associated to xipho-umbilical diastasis recti in a young woman symptomatic for a progressively worsening back pain and local bulky sensation.

Results: The intervention is started directly with a suprapubic transverse incision of 2.5 cm and a circumferential, atraumatic retraction is inserted after a small incision of the anterior rectus sheath. Blunt dissection is further continued through this access by luxating the underlying rectus muscles to separate the preperitoneal space below the arcuate line. The pneumo-preperitoneum is then inducted through this port. Laparoscopic dissection allows for enlargement of the avascular space laterally and then two 5-mm trocars are placed on the bilateral aspects of rectus muscles. By means of a lap bipolar dissector the edge of posterior rectus sheath are incised from the arcuate line following the diastasis laterally up to the subxiphoid space. The Rives plane is recovered without opening of the linea alba. After reduction of the M2 hernia both the posterior sheath and the diastatic anterior fascia are sutured with a running long-resorbable 2/0 barbed suture. Polyvinylidene fluoride (PVDF) mesh fixed with the use of an hystoacrilic glue.

Conclusion: Minimally invasive extraperitoneal repair of small/medium hernia defects of the linea alba is gaining wide acceptance. Concomitant presence of rectum diastasis recti seems to be the ideal indication to approach the learning curve of such a technically demanding procedure.
Aim: After a long experience of more than 20 years in TEP hernioplasty we explore if it can also be suitable for emergency patients.

Material and Methods: We present different laparoendoscopic schemes that we have used in our Hospital to treat strangulated inguinal hernia according to clinical and radiological findings.

Results: TEP in now assumed to be one of the best options in scheduled surgery to treat inguinal hernia. Is now the time to change the paradigm by using it also in emergency surgery?

Incarcerated inguinal hernia presents two problems: first of all the clinical emergency, an irreducible inguinal bulge that causes pain, obstruction and bowel ischemia; and second, the need to repair inguinal wall.

While treating both problems, we have explored different minimally invasive surgery approaches according to each patient’s characteristics and the preoperative risk of intestinal resection based on CT findings.

To reduce the incarcerated bulge, we use a laparoendoscopic methods. After a preperitoneal dissection, and with the help of external maneuvers, we try to reduce the content. If we are not successful, a quelotomy becomes necessary.

To treat the inguinal defect we use TEP or TAPP approaches.

Conclusions: We seek to show that endoscopic preperitoneal approach in an incarcerated inguinal hernia is safe and possible, allowing us to maintain minimal invasive techniques.

Laparoscopy allows us to explore and to treat possible complications of intestinal ischemia with no need of laparotomy.

Multiple treatment schemes are possible for inguinal incarcerated hernia. The choice must be made according to the surgeon’s experience, patient’s characteristic and the risk of intestinal ischemia.
Aim: Intercostal lung herniation is a rare clinical condition defined as the protrusion of lung parenchyma beyond the anatomic boundaries of the thoracic wall. Acquired lung hernias are typically occur secondary to trauma or are associated with severe pulmonary disease. We present a case of lung herniation following DIEP breast reconstruction which is the first reported case to date.

Material and Methods: 40-year-old woman with a history of bilateral mastectomy for breast cancer and subsequent delayed, bilateral DIEP breast reconstruction. She returned to the emergency department four days after her reconstruction with chest pain, shortness of breath and swelling of her chest. CT angiography of her chest demonstrated a focal protrusion of her right lung into her anterior chest wall (Figure 1). Thoracic surgery was consulted for repair which was achieved with a patch technique using Allomax dermal matrix.

Results: We describe the first reported intercostal lung hernia following DIEP breast reconstruction reported in scientific literature. Our patient had no history of trauma, thoracic surgery or pulmonary disease which are considered the greatest risk factors for acquired intercostal lung herniation. Much like abdominal wall hernias, protrusion of tissue through a small defect places tissue at risk for ischemia. Early recognition is thus essential to avoid tissue loss.

Conclusions: Intercostal lung hernia is an uncommon clinical entity that has not previously been described as a complication of DIEP breast reconstruction. Its development is associated with significant morbidity including flap loss in this case. Early recognition of this rare complication is essential to avoid more severe sequelae of tissue ischemia.
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Aim: The main goal of the present work is to study and ability of Atomic Layer Deposition (ALD) ultra-thin (<100nm) ceramic films on polypropylene (PP) hernia meshes to prevent the mesh-associated infections (post-surgery complications).

Material and Methods: Three types of ALD nanofilms were examined: Al2O3, TiO2, or Ti,VxOy. 10 rats and 5 rabbits were used to evaluate the tissue reaction of surface modified PP meshes and for biomechanical (antibacterial, inflammation effect), biocompatibility, and barrier testing of the healed tissue. The ALD coated PP meshes were implanted into rabbits and rats together with uncoated ones. After 10, 20, 30 and 60 days, the hernia meshes with the surrounding soft tissues were removed and fixed for histological and cytological studies.

Results: The Ti,VxOy (28nm) film showed enhanced antibacterial activity compared to Al2O3 and TiO2 films. The histology was performed on coated and uncoated PP mesh samples.

Conclusions: The ALD Ti,VxOy film helped to avoid formation of rough scar tissue (microscale roughness, which prevents ability biofilm formation) and, reduction of eosinophilic-cell and lymphocytic-cell reactions of the tissues surrounding the mesh, illustrate good integration into the surrounding tissue with minimal inflammatory reaction and minimal adhesions to intra-abdominal structures. The ALD film was highly effective in inhibiting S. aureus and E. coli bacteria adhesion and exhibited excellent biological activity in promoting osteoblastic adhesion. Speculatively, presence of vanadyl (≡V=O:) chemical groups, either on the surface or in the bulk, believe to play a key role in high performance of the Ti,VxOy compared to TiO2.
Aim: Polypropylene (PP) mesh is widely used to reinforce tissues. The foreign body reaction (FBR) to the implant is dominated by innate immune cells, especially macrophages. However, considerable numbers of adaptive immune cells have also been regularly observed, which appear to play a crucial role in the long-term host response. This study investigated the FBR to seven human PP meshes, which were removed from the abdomen for recurrence after a median of one year.

Material and Methods: Using immunofluorescence microscopy and distance maps, the FBR was spatially analyzed for various innate (e.g., CD68+ macrophages, CD56+ NK) and adaptive immune cells (CD3+ T, CD4+ T-helper, CD8+ cytotoxic, FoxP3+ T-regulatory, CD20+ B) as well as “conventional” immune cells (defined as cells expressing their specific immune cell marker without co-expressing CD68).

Results: T-helper cells (19%) and regulatory T-cells (25%) were present at comparable rates to macrophages, and clustered significantly toward the mesh fibers. For all cell types the lowest proportions of “conventional” cells (< 60%) were observed at the mesh–tissue interface, but increased considerably at about 50–100 µm, indicating reduced stimulation with rising distance to the mesh fibers.

Conclusions: Both innate and adaptive immune cells participate in the chronic FBR to PP meshes with T cells and macrophages being the predominant cell types, respectively. Furthermore, many cells present a “hybrid” pattern near the mesh fibers. The complexity of the local immune reaction may explain why approaches focusing on specific cell types have not been very successful in reducing the chronic FBR.
Aim: Demonstrate the performance and safety of TISSIUM on-demand activated adhesive for atraumatic hernia mesh fixation in a laparoscopic IPOM porcine model.

Material and Methods: Full thickness 4 cm in diameter excisional abdominal defects (n=14) were created in pig (n=8). The defects were repaired through laparoscopic intraperitoneal mesh placement using commercial composite meshes fixed with TISSIUM adhesive (n=8) or resorbable tacks (n=6). The animals were sacrificed after 28 and 90 days. An independent pathologist evaluated abdominal adhesion, mesh shrinkage, local tissue tolerance and tissue ingrowth through histological analysis (H&E and Movat Pentacrome) at sacrifice. Fixation strength of the explanted abdominal walls was also assessed via burst-ball.

Results: No adverse events were observed at implantation or during the survival period. All the meshes were in place at sacrifice. Mesh shrinkage and abdominal adhesion scores were similar between the two groups. Histological analysis of the mesh demonstrated equivalent quality of tissue ingrowth and excellent local tissue tolerance with minimal/mild foreign body response and mononuclear cells inflammation. The repair strength, evaluated through a burst ball method 90 days after implantation, showed no significant difference between the TISSIUM adhesive and tacks. Usability is currently being evaluated in clinically relevant models.

Conclusions: In this preclinical study the TISSIUM adhesive demonstrated similar fixation strength and quality of repair when compared to commercial tacks. This technology has the potential to impact hernia procedures standardization and reduce pain often associated with current fixation technologies.
[P045] MEDIALIZATION AFTER COMBINED ANTERIOR AND POSTERIOR COMPONENT SEPARATION IN GIANT INCISIONAL HERNIA SURGERY, AN ANATOMICAL STUDY

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Aim: To obtain tension-free closure for giant incisional hernia repair, anterior or posterior component separation (ACS, PCS) is often performed. In extreme patients, ACS and PCS may be combined. The aim of this study was to assess the additional medialization after simultaneous ACS and PCS.

Material and Methods: Fresh-frozen post mortem human specimens were used. Both sides of the abdominal wall were subjected to retro-rectus dissection (Rives-Stoppa), ACS and PCS, the order in which the component separation techniques (CST) were performed was reversed for the contralateral side. Medialization was measured at three reference points.

Results: ACS provided most medialization for the anterior rectus sheath, PCS provided most medialization for the posterior rectus sheath. After combined CST total median medialization ranged between 5.8 and 9.2 cm for the anterior rectus sheath, and between 10.1 and 14.2 cm for the posterior rectus sheath (depending on the level on the abdomen). For the anterior rectus sheath, additional PCS after ACS provided 15% to 16%, and additional ACS after PCS provided 32% to 38% of the total medialization after combined CST. For the posterior rectus sheath, additional PCS after ACS provided 50% to 59%, and additional ACS after PCS provided 11% to 17% of the total medialization after combined CST. Retro-rectus dissection alone contributed up to 41% of maximum obtainable medialization.

Conclusions: ACS provided most medialization of the anterior rectus sheath and PCS provided most medialization of the posterior rectus sheath. Combined CST provides marginal additional medialization, clinical use of this technique should be carefully balanced against additional risks.
Aim: Demonstrate the performance and safety of TISSIUM on-demand activated adhesive for atraumatic hernia mesh fixation in a laparoscopic IPOM porcine model.

Material and Methods: Full thickness 4 cm in diameter excisional abdominal defects (n=14) were created in pig (n=8). The defects were repaired through laparoscopic intraperitoneal mesh placement using commercial composite meshes fixed with TISSIUM adhesive (n=8) or resorbable tacks (n=6). The animals were sacrificed after 28 and 90 days. An independent pathologist evaluated abdominal adhesion, mesh shrinkage, local tissue tolerance and tissue ingrowth through histological analysis (H&E and Movat Pentacrome) at sacrifice. Fixation strength of the explanted abdominal walls was also assessed via burst-ball.

Results: No adverse events were observed at implantation or during the survival period. All the meshes were in place at sacrifice. Mesh shrinkage and abdominal adhesion scores were similar between the two groups. Histological analysis of the mesh demonstrated equivalent quality of tissue ingrowth and excellent local tissue tolerance with minimal/mild foreign body response and mononuclear cells inflammation. The repair strength, evaluated through a burst ball method 90 days after implantation, showed no significant difference between the TISSIUM adhesive and tacks. Usability is currently being evaluated in clinically relevant models.

Conclusions: In this preclinical study the TISSIUM adhesive demonstrated similar fixation strength and quality of repair when compared to commercial tacks. This technology has the potential to impact hernia procedures standardization and reduce pain often associated with current fixation technologies.
Aim: Introduction Surgeons can reduce incisional hernia formation by adhering to standardized techniques for incisional wound closure. This is often neglected by the time a long operation is to be ended and can lead to the risk of developing an incisional hernia or a wound rupture. To address this issue, a suturing machine (Suture-TOOL) was developed for swift and standardized abdominal closure. The aim was to compare the user safety, speed, and suturing quality between Suture-TOOL and manual Needle-Driver suturing.

Material and Methods: Fifteen surgeons who were specialists in surgery, urology, and gynaecology as well as surgical trainees were invited. The Suture-TOOL was presented to the surgeons who read the instructions for use before starting the test. Each surgeon closed nine 15-cm-long incisions in a human body model; six with Suture-TOOL and three with the Needle-Driver technique. Gloves were examined for puncture damage. Endpoints were suture-length/wound-length (SL/WL)-ratio, closure time, number of stitches, learning curve, and glove puncture rate. A VAS-evaluation concerning different Suture-TOOL user impressions was completed.

Results: SL/WL-ratio ≥4 was 98% for Suture-TOOL versus 69% for Needle-Driver (p<0.001). Suture time was shorter for Suture-TOOL (p=0.013). The median SL/WL-ratio was similar between the groups. The learning curve plateaued after three closures using Suture-TOOL. Two glove punctures were detected—all in the Needle-Driver group. Suture-TOOL received high VAS scores for all measured functionalities.

Conclusions: Suture-TOOL is a promising device for clinical use. It is safe, easy, and fast resulting in a high-quality suture lines with a short learning curve and a high functionality ranking.
A NEW MODALITY FOR BIOMECHANICAL VALIDATION OF CLOSURE TECHNIQUES OF LAPAROTOMIES

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Aim: Incisional hernia remains one of the most frequent complications after abdominal surgery. Several closure techniques exist. However, fundamental biomechanical understanding of these techniques and of the differences in clinical outcomes are still lacking. It is thought that distribution of lateral forces on the midline plays a role. Testing in a clinical setting is limited by sample sizes, costs and ethical regulations. We propose a preclinical ex vivo model in which multiple closure configurations can be tested in a controlled setting, eliminating interfering variables existing in previously published, more complex abdominal wall models. Consequently, this allows a valid comparison between closure modalities based on biomechanical merits.

Material and Methods: The experimental set-up is represented by a vertical tensile load tester, in which a sutured tissue sample is clamped. The tissue samples are covered with a fine, random speckle pattern via miniscule ink droplets. A high-resolution camera captures the speckles as the tissue is subjected to linear pulling forces. Image analysis documenting relative movement of speckles as a means for measuring tissue deformation is performed in ex-vivo tissue samples, resulting in specific objective biomechanical characteristics for each closure configuration.

Results: Local tissue strain fields are visualized, and compared between closure modalities and correlated to known linear forces applied to the tissue. The latest results will be shared and discussed.

Conclusions: A new modality for biomechanical evaluation of closure techniques has been developed. Further validation and serial experiments with different closure modalities with and without mesh reinforcement can be performed in order to determine the biomechanically optimal suture-technique for fascial closure.
Aim: Choice of the best fixation system in terms of safety and effectiveness for intraperitoneal mesh placement in hernia surgery remains controversial. The aim of this study was to compare the performance of four fixation systems in a swine model of intraperitoneal mesh fixation.

Material and Methods: Fourteen Landrace swine were utilized and the experiment included two stages. Initially, four pieces of polypropylene mesh with hydrogel barrier coating were fixed intraperitoneally to reinforce 4 small full thickness abdominal wall defects created with diathermy. Each mesh was anchored with a different tack device between titanium, steel or absorbable fasteners. The second stage took place after 60 days and included euthanasia, laparoscopy, and laparotomy. The primary endpoint was to compare the peel strength of the compound tack/mesh from the abdominal wall. Secondary parameters were the extent and quality of visceral adhesions to the mesh, the degree of mesh shrinkage and the histological response around the tacks.

Results: Thirteen out of 14 animals survived the experiment and 10 were included in the final analysis. Steel tacks had higher peel strength when compared to titanium and absorbable fasteners. No significant differences were noted regarding the secondary endpoints.

Conclusions: Steel fasteners provided higher peel strength that the other devices in this swine model of intraperitoneal mesh fixation. Our findings generate the hypothesis that this type of fixation may be superior in a clinical setting. Clinical trials with long-term follow-up are required to assess the safety and efficacy of mesh fixation systems in hernia surgery.

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INTRODUCTION OF MINIMAL INVASIVE PROCEDURES WITH EXTRAPERITONEAL MESH PLACEMENT MAY REDUCE MORBIDITY AND LENGTH OF HOSPITAL STAY IN PATIENTS WITH INCISIONAL HERNIA - A SINGLE CENTER’S EXPERIENCE

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Aim: "Sublay mesh placement is the gold standard in the treatment of incisional hernias. In open surgery, high rates of wound complications are reported. Various minimal invasive procedures with extraperitoneal mesh placement (MIPEX) are currently under evaluation in order to improve the clinical results. We report our experience with an increased use of MIPEX techniques”

Material and Methods: “The perioperative results of all consecutive patients from 1/2018 to 4/2021 with incisional hernia surgery were reviewed. For the purpose of this study, the results of patients with MIPEX were compared to STANDARD treatment (open surgery and/or intraperitoneal mesh). All patient data were registered prospectively in the Herniamed database. “

Results: “103 out of 170 patients were treated with MIPEX and 67 with STANDARD. MIPEX were MILOS/E-MILOS (n=48), TAPP (n=15), laparoscopic sublay (n=5), ETEP (n=17) and other (n=18) with additional TAR in (n=16). Five procedures were performed robotically. Mean duration of surgery (DOS) was 150 minutes in MIPEX and 116 minutes in STANDARD (n.s.). Morbidity was 7% in MIPEX and 19% in Standard (p<0.5). Mean length of hospital stay (LHS) was 4 days in MIPEX and 8 days in STANDARD (p<0.5). In subgroup analysis of patients with large hernias (EHS-3, n=31), DOS was 320 minutes (MIPEX) vs. 159 minutes (STANDARD); p<0.01 and LHS was 8 days (MIPEX) vs. 12 days (STANDARD), p<0.01.”

Conclusions: “MIPEX included a broad spectrum of procedures. With the implementation of MIPEX, DOS increased significantly in large hernias. Morbidity and LHS were significantly reduced in all patients.”
Aim: We describe trends in inpatient burden by volume, cost, and patient risk profiles of incisional hernia repair (IHR) as compared to other abdominal surgery (AS) procedures in the United States.

Material and Methods: Patients undergoing AS were identified using the National Inpatient Sample (2008-2018) by ICD-9/ICD-10 codes. National weighted procedure rates and hospital costs were ascertained and plotted using sampling weights and normalized per 1,000,000 people. Regression models allowed identification of statistical significance of trends and prediction of mean differences in rates, costs and patient characteristics.

Results: Over 38,000,000 AS discharges were identified, averaging 3.5 million annually, with over 1,200,000 discharges following IHR (3.1% of all AS). The difference between AS and IHR significantly decreased over time from 12,702 procedures per million (PPM) to 9,039 PPM. Open and laparoscopic AS down-trended (46.2% and 20.8%, respectively), whereas robotic AS up-trended (95.2% [all p<0.01]). Open IHR down-trended (60.9%) and laparoscopic IHR up-trended (83.6%, [both p<0.01]). Robotic IHR increased by 99.5% (p=0.17). Average annual national charges for AS and IHR were $183.8 and $6.6 billion, respectively. Costs increased by 20.3% for AS and 25.6% for IHR. Patients undergoing IHR were 45-64 years old (46%), female (63.1%), White (68.1%), publicly insured (55.1%), with moderate loss of function (43.2%) and ≥2 comorbidities (43.3%).

Conclusions: IH continues to carry a significant societal and healthcare burden. With AS decreasing and IHR remaining stable from 2008 to 2018, the percentage of patients developing IH after AS has increased, as well as cost per IHR, critically underscoring the need to adopt and implement risk reduction and hernia prevention.
Aim: Early operative outcomes of enhanced-view totally extraperitoneal repair (eTEP) for ventral hernias

Material and Methods: We have retrospectively analysed the date of 41 patients who underwent an eTEP procedure on between November 2018 and April 2021 by a single surgeon and monitored until May 2021.

Results: During the study period, 29 endoscopic transversus abdominis muscle release and 12 endoscopic Rives-Stoppa techniques were performed to repair incisional (30), umbilical (6), epigastric (3), and spigelian, and parastomal hernias occurred in 1 patient each. The mean age was 68.0 years, mean BMI was 26.4 kg/m2. The hernial orifice centers were as follows: M2 in 7, M3 in 23, M4 in 5, L2 in 4, L4 in 1, and M2 and L2 (2 orifices) in 1 patient. Nine cases of large incisional hernia (width ≥10cm) were included. An average mesh area of 624cm² was used for an average defect area of 57cm². Mean operative time, blood loss, and length of hospital stay were 278 min, 5 ml, 6 days, respectively. Only one case was converted to an open operation due to presence of severe adhesions. Postoperative complication consisted of hematoma (n=1) and a small bowel obstruction due to a tear of the posterior sheath (n=1). There was no hernia recurrence at mean follow-up of 448 days. No patient reported significant pain at the surgical site at the first postoperative follow up.

Conclusions: Judging from our short-term results, eTEP approach for ventral hernias can be an attractive option for selected cases.
COMPARISON OF CLINICAL OUTCOMES BETWEEN INTRAPERITONEAL ONLAY MESH REPAIR (IPOM PLUS) AND ENHANCED-VIEW TOTALLY EXTRAPERITONEAL REPAIR (ETEP) FOR VENTRAL HERNIAS

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Aim: We have been performing intraperitoneal onlay mesh repair (IPOM plus) as the standard laparoscopic procedure for ventral hernia in our department. We introduced enhanced-view totally extraperitoneal repair (eTEP) for ventral hernia repair in 2018, and have performed 31 cases so far. We compared the outcomes of IPOM Plus and eTEP at our institution.

Material and Methods: Ventral hernia cases who underwent surgery at our department between 2018 and 2020 were included in the study. The postoperative outcomes and complications of the IPOM Plus and eTEP groups were evaluated retrospectively.

Results: There were 12 cases of IPOM plus, and all were incisional hernias. There were 31 cases of eTEP, including 7 cases of primary hernias and 24 cases of incisional hernias. Transversus abdominis muscle release (TAR) was added in 24 cases. The mean hernia size was 6.6 x 7.9 cm with IPOM Plus and 8.0 x 10.1 cm with eTEP, and the average meshes size was 15.5 x 22.0 cm and 20.3 x 23.6 cm, respectively. The mean postoperative hospital stay was 7.8 days and 5 days. Postoperative complications included 1 case of mesh bulging and 1 case of recurrence in the IPOM Plus group, 1 case of seroma and 1 case of intestinal obstruction in the eTEP.

Conclusions: The surgical outcomes for ventral hernias up to 8 cm wide were similar for IPOM Plus and eTEP. The eTEP can insert a larger mesh and may be useful for wider hernias (>8cm).
Aim: "Can a mesh reduce failure rates after closure of a hernia defect?"

Material and Methods: “Porcine abdominal walls and bovine flanks were used as model tissues. After preparation, a 15 cm long incision was placed in the linea alba of the porcine abdominal wall. An additional round 5 cm defect was punched in the middle of the incision. The bovine flank was prepared in a similar manner.

The incisions with the defects were closed with running sutures in a small stitch, small bite technique. Monomax® 2-0 sutures were used with suture to wound lengths above 4:1.

Dynamesh® CiCAT meshes of three different sizes were placed in the sublay position.

The mesh-tissue compounds were investigated on our self-built hydraulic bench test simulating coughs. Dynamic intermitted strain (DIS) was repeatedly delivered with impacts around 210 mmHg. Each of ten preparations was loaded 425 times by the pressure peaks.”

Results: “Small stitch, small bite sutures using 2-0 Monomax® with a suture-incision-ratio of 4.5:1 can provide a durable defect closure. Under other conditions, suture lines can reopen. A mesh reduces the recurrence of incisional hernia depending on the mesh size.”

Conclusions: "An additional DIS-class A mesh in sublay position can provide sufficient support for a suture closing the defect of the abdominal wall. It can prevent a tear-out of the suture from the tissue. On average, a mesh-augmented defect closure reduces the recurrence rate of incisional hernia.”
THE USE OF ARTIFICIAL NEURAL NETWORK TO PREDICT THE RISK OF INCISIONAL HERNIA AFTER MIDLINE LAPAROTOMY.

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Aim: “Incisional Hernia (IH) has an incidence of 10-23%, which can increase to 38% in specific risk groups. The objective of this study was developed and validated an artificial neural network (ANN) model for the prediction of IH after midline laparotomy (ML) and this model can be used by surgeons to help judge a patient’s risk for IH.”

Material and Methods: “A retrospective, single arm, observational cohort trial was conducted from January 2016 to December 2020. Study participants were recruited from patients undergoing ML for elective or urgent surgical indication. Using logistic regression and ANN models, we evaluated surgical treated IH, wound dehiscence, morbidity, readmission, and mortality using the area under the receiver operating characteristic curves, true-positive rate, true-negative rate, false-positive rate, and false-negative rates.”

Results: “There was no significant difference in the power of the ANN and logistic regression for predicting IH, wound dehiscence, mortality, readmission, and all morbidities after ML. The resulting model consisted of 4 variables: surgical site infection, emergency surgery, previous laparotomy, and BMI(Kg/m²) > 26. The patient with the four positive factors has a 73% risk of developing incisional hernia. The area under the curve was 0.82 (95% IC 0.76-0.87).

Conclusions: “ANNs perform comparably to logistic regression models in the prediction of IH. ANNs may be a useful tool in risk factor analysis of IH and clinical applications.”
Aim: “Assess risk factors and incidence of ventral incisional hernia (VIH) following liver transplantation (LT).”

Material and Methods: “Retrospective analysis of clinical or radiological signs of VIH during a systematic ten year follow up after liver transplantation. Descriptive statistics and a binary logistic regression analysis were performed to identify possible risk factors.”

Results: “Between 01/2007-12/2017, 708 LT were performed in 660 patients at our institution. Following LT, 122 patients (18.5%) had a VIH as identified per clinical examination. Further to this, 85 patients (12.9%) had CT findings consistent with VIH adding to a total of 207 (31.4%) patients with VIH after LT. Male gender (p<0.001), BMI (p<0.001), age at LT (p<0.001), alcohol induced cirrhosis (p=0.032) and reoperation after 180 days following LT (p=0.007) were identified as risk factors in a multivariate analysis. An incisional hernia repair was performed in 76 patients (11.5%) at 22.9 months (median, 5.7-101.5). Laparoscopic IPOM repair was performed in 46 (60.5%) patients and 30 patients had an open hernia repair including 26 (34.2%) with mesh augmentation and 4 (5.3%) with primary closure. Five patients (6.6%) needed a reoperation for postoperative complications related to hernia repair. Recurrent VIH occurred in 12 (15.8%) patients. In 131 patients, no hernia repair was performed because of only mild clinical symptoms, patient preference and/or poor general condition.”

Conclusions: “The incidence and burden of incisional hernia following LT is significant. Many cases of VIH are clinically mild but radiomorphologically manifest.”
Aim: Administrative databases contain valuable information for studying incisional hernia (IH) following intra-abdominal procedures at a large scale. We assessed the validity of billing codes for the identification of IH in patients following abdominal surgery.

Material and Methods: Using International Classification of Diseases, Ninth and Tenth Revision, Clinical Modification (ICD-9-CM and ICD-10-CM), a random sample of 1,000 patients who underwent abdominal operations between 2006-2020 within a large health system-wide administrative database and ≥1 year of follow-up were screened for eligibility. Validation of IH codes was performed using the electronic medical record as reference. Validity metrics of interest included sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy. Patient factors associated with false positive (FP) and false negative (FN) were also explored within univariate and multivariate analyses.

Results: 759 patients were included. The sensitivity of IH codes was 94.7% (CI 91.4 – 97.0), specificity was 94.9% (CI 92.6 – 96.7), PPV was 84.4% (CI 78.5 – 88.9), NPV was 98.4 (CI 97.4 – 99.0), accuracy was 94.9% (CI 93.0 – 96.3). Within adjusted analyses, patients admitted to a non-surgical service (relative to patients admitted to surgical services; OR 4.46 [95% CI 1.06-18.66]; p=0.04) were associated with FP; whereas every one-year increase in age was associated with a 5.0% (95% CI 1.0%-10.0%) increase in FN (p=0.03).

Conclusions: We have validated the use of ICD-9-CM and ICD-10-CM codes for accurately identifying IH following abdominal surgery. This method yields >94% for key validity measures.
Aim: Patients with inflammatory bowel disease (IBD) are likely to undergo several abdominal operations and may thus be at increased risk for incisional hernia repair (IHR). The aim of the present study was to investigate risk and predictors of IHR in patients undergoing surgery for ulcerative colitis (UC) or Crohn’s disease (CD).

Material and Methods: Nationwide register-based study (1996-2018). Patients were followed from date of first abdominal operation until the date of the first IHR. Cumulative incidence proportion were estimated treating death as competing risk. Cox proportional hazard regression was used to explore pre-study defined predictors of IHR.

Results: Patients with inflammatory bowel disease (IBD) are likely to undergo several abdominal operations and may thus be at increased risk for incisional hernia repair (IHR). The present study analyzed the risk and predictors of IHR in patients undergoing surgery for ulcerative colitis (UC) or Crohn’s disease (CD).

Conclusions: The risk for incisional hernia repair is relatively low after IBD-surgery, although increased in UC compared with CD patients. Hernia repair predictors varied between UC and CD patients.
Aim: determine themes reported as important to Quality of Life (QoL) in Complex Abdominal Wall Hernia (CAWH) patients

Material and Methods: 15 purposively sampled CAWH patients were interviewed using topic guides (8 men and 7 women aged between 36 to 85 years [median = 65 years] covering all VHWG grades). All verbatim transcripts were coded and analysed using NVIVO12 software and Interpretative Phenomenological Analysis (IPA) until thematic saturation.

Results: 3 overarching groupings and 5 superordinate themes were identified. Each superordinate theme is associated with several subordinate themes:

1. Effects on psychology: body image (broken down into the subthemes ‘changes to perceptions of self’ and ‘fears concerning perceptions of others’) and mental health (split into the subthemes ‘emotional responses’, ‘disruptions to previously solid aspects of identity’, ‘developing coping strategies’).
2. Effects on daily life: symptoms (with the emerging subthemes ‘managing pain’, ‘freedom of movement’, ‘restriction and adaptation’).
3. Effects on social dynamics: interpersonal relationships (with the subthemes of ‘difficulties socially connecting’ and ‘changes in sexual relations’) and employment (categorised into the following subthemes ‘financial pressure’, ‘return to work issues’, ‘costs to family’).

Conclusions: This is the first phenomenological qualitative study in CAWH patients. The themes presented are interrelated and should shape our understanding of QoL in CAWH. Current QoL tools do not incorporate all aspects identified by this study. Further research is needed in order to generate a standardised CAWH QoL instrument which incorporates bio-psycho-emotional-social processes important to patients as identified by patients.
TROCAR SITE HERNIA AFTER GASTRIC SLEEVE

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Aim: Laparoscopy is common in abdominal surgery. Trocar site hernia (TSH) is a most likely underestimated complication. Among risk factors, obesity, the use of larger trocars and the umbilical trocar site has been described. In a previous study, CT scan in the prone position upon a ring was found to be a reliable method for the detection of TSH in obese.

Our aim was to examine the incidence of TSH after gastric sleeve.

Material and Methods: 79 patients subjected to laparoscopic gastric sleeve in 2011-2016 were examined using CT in the prone position upon a ring. Symptoms of TSH were assessed using a digital survey.

Results: The incidence of trocar site hernia was 17 out of 79 (21,5 %), all at the umbilical trocar site. The mean follow-up time was 37 months. There was no clear correlation between symptomatic TSH and TSH on CT.

Conclusions: The incidence of TSH is high in this group of patients. Up to follow-up, none of the patients had been subjected to hernia repair. Although the consequence of trocar site hernia can be serious, the proportion of symptomatic TSH is unknown.
[P061] ANALYSIS OF THE IMPACT DERIVED FROM MORBIDITY IN THE INCISIONAL HERNIA SURGERY.

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Aim: To analyse the repercussion derived from the morbidity that appeared after the repair of incisional hernias.

Material and Methods: Descriptive, retrospective and longitudinal study based on a prospective database of all incisional hernia operated patients of a university-level hospital in the period between 2013 and 2019. Anthropometric parameters, classification of the hernia according to the European Hernia Society guides and characteristics of the intervention performed were registered. Complications observed until the end of the follow-up and the final evolution are analysed.

Results: The sample is composed by 244 patients with a mean follow-up of 11 months. In 50% of the surgeries anterior separation of components was performed. In 240 patients, the mesh was placed in the following positions: 68.5% onlay, 13.5% retromuscular, 13% preperitoneal, 3.6% intraperitoneal and 1.3% inlay. During the first postoperative month, 63 patients (25.8%) presented some type of complication: seroma (47.6%), surgical wound infection (20.6%) and dehiscence (17.5%). 31 complications (49.2%) were classified as Clavien-Dindo III or greater severity. In 60% of patients with seroma the mesh was placed onlay. Of the 30 patients with seroma, 9 recurred over a mean of 16 months of follow-up (30%).

Conclusions: In our sample, the main cause of postoperative seroma is onlay placement of the mesh, and this complication may cause recurrence. We consider that it’s important to register our results to obtain a correct analysis and to prevent morbidity in the future.
IMPLEMENTATION OF ETEP (EXTENDED TOTALLY EXTRAPERITONEAL REPAIR) AS A NEW METHOD OF INCISIONAL HERNIA REPAIR

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Aim: To assess the outcomes of implementation of extended Totally Extraperitoneal Repair (eTEP) for incisional hernia in our clinic.

Material and Methods: In our clinic abdominal wall hernias are predominantly repaired in eMILOS (endoscopic Mini or Less Open Sublay)-technique. However, we hoped for advantages in repairing incisional hernias in eTEP-technique.

From 19.09.2019 till 28.04.2021 there were 13 patients with incisional hernias included to be operated in eTEP-technique.

Results: Among 13 patients, mean age was 64,6 years (range 47 – 78 years), 7 females (54%) and 6 males (46%). Average diameter of the hernia was 6,46 cm (range 2 – 14 cm). The mean Body Mass Index of the patients was 29,41 kg/m² (range 18,4 – 48,76 kg/m²). The mean duration of the operation was 162,38 minutes (range 106 – 237 minutes). The mean surface of the mesh was 612 cm² (range 225 – 1200 cm²). Hospital stay lasted mean of 5,8 days (range 2 – 28 days). We observed one postoperative complication as a lung artery embolism occurred in one patient with preperitoneal heamatoma due to needed anticoagulation. Till today we have not observed any recurrence.

Conclusions: Our study shows that a new method of incisional hernia repair with mesh placement can be a safely implemented and may have advantages comparing with other laparoscopic methods. It has low complication rate, shows good cosmetic results and is cost effective.
Aim: Sublay mesh placement in incisional hernia repair (IH) does not seem to show lower surgical site infection (SSI) or recurrence than onlay placement, according to a recent review. Our aim was to analyze both techniques in an abdominal wall department.

Material and Methods: Prospective data collection of all IHs for four years. Results were analyzed at one month and during follow-up. The characteristics of IH, operative time, incidence of SSI and recurrence was compared by groups depending on location of the mesh in sublay (SM) or onlay (OM).

Results: “The surface area of the hernial defect was greater in the SM group (216±338 vs 68±84cm²; P=0.002), as well as longer surgical time (131±91 vs 70±54 min; P< 0.001). A higher number of hematoma was diagnosed in the SM (OR 1.39; CI95% 1.21-1.60; P=0.18) in 88 operations. No differences were observed in the incidence of SSI between the groups (27.7 vs 21.7%; P=0.78). 74 patients completed a mean follow-up of 11.4 months, any difference in IH recurrence appeared (5.8 vs 9.1%; P=0.63) in SM group vs OM group, respectively.

Conclusions: A SM repair is performed in IHs with large defects, which entails a longer surgical time and the appearance of hematoma, although no statistically significant differences in the rate of SSI or IH recurrence was observed between SM and OM repair.
Aim: Durable composite constructions of polymers follow specific mechanical principles. Can incisional hernia can be repaired durably based on biomechanical principles considering the abdominal wall a polymer composite?

Material and Methods: Biomechanical principles of the reconstruction of the abdominal wall were analyzed ex vivo with cyclic loading common in material sciences. The resulting GRIP concept was clinically applied. The tissue quality of the individual patient was assessed with computed tomography at rest and during Valsalva’s maneuver. Hernia meshes with high GRIP factors (Progríp®, Dahlhausen® Cicat) were used. All patients received single-shot antibiosis. Patients were discharged after full ambulation was achieved.

Results: A total of 163 patients (82 males and 81 females) were treated for incisional hernia. Primary hernia was repaired in 119, recurrence in 44 patients. Recurrent hernia was significantly larger (median 161 cm² versus 78 cm²; u-test: p = 0.00714) resulting in a 30 % lower mesh defect area ratio. Redo-surgery took significantly longer (median 229 min versus 150 min; p < 0.00001) as recurrent disease is more likely to require transversus abdominis release (70 % versus 47 %). GRIP tended to be higher in recurrent repair (p = 0.01828). Complication rates (15 %) and duration of hospitalization were the same (6 days; p = 0.28462). After one year, no recurrence was detected in either group. Pain levels were equally low in both groups (median NAS = 0 at rest and under load, p = 0.88866).

Conclusions: Incisional hernia can be repaired safely and durably based on biomechanical principles.
Aim: To assess the long-term outcomes after laparoscopic repair (LR) of ventral hernias located on the abdominal borders.

Material and methods. Out of our prospectively collected LR database, all cases of ventral hernias were reviewed. Defects located near the abdominal borders were identified (M1, M5, L1 and L4 according to the EHS classification). All patients received intraperitoneal implantation of an e-PTFE mesh. The primary aim of this study was to assess long-term outcomes.

Results. Out of 175 LR, 105 (60%) had a M1 component, 61 (35%) an M5, 24 (14%) an L1 and 5 (3%) an L4. The median defect width was 9 cm (range 2.5 - 30), the median length 13 (range 2 - 30), with a median defect area of 92 cm² (range 5 - 471). Two (1%) cases required conversion to open approach. After a median follow up of 55 months, there were 7 recurrences: 4/105 in M1 patients, 1/61 M5 patients, 1/24 L1 patients and 1/4 L4 patients. 41 patients (23%) experienced chronic seroma, while 24 (14%) had chronic pain. 6 patients (3%) required a reoperation with mesh removal. At univariate analysis, only previous hernia repair was associated with recurrence; COPD, hypertension and M5 defect were associated with seroma development; seroma development and chronic pain were mutually associated.

Conclusions. Laparoscopic repair for ventral hernias is safe and feasible, with good long term outcomes.
Aim: Elective surgery is becoming increasingly common in geriatric patients, particularly as the population is aging. The incidence of inguinal hernia in the elderly is also increasing. Lichtenstein inguinal hernioplasty is the most frequent procedure for the elective repair. There is ambiguity about the usefulness of antibiotic prophylaxis in inguinal mesh hernioplasty and the evidence for its value is still a matter of debate. Our aim was to evaluate the outcomes of Lichtenstein inguinal hernioplasty without antibiotic prophylaxis in geriatric patients.

Material and Methods: A database of patients aged 70 and more undergoing elective Lichtenstein inguinal hernioplasty was established. Patients were randomly categorized in antibiotic (received antibiotics) and placebo group (received placebo). Demographics, American Society of Anesthesiologists (ASA) classification, comorbidity, hernia type, operating time and hospitalisation were analyzed. Infections were evaluated 1 week, 2 weeks and 1 month postoperatively according to Center for Disease Control criteria.

Results: Between 2015.-2019., 400 patients were evaluated, 200 patients in each group. All patients were operated under local anaesthesia with 24-hours hospitalisation. Groups were well matched regarding demographics, ASA-type, comorbidity, hernia type, operation time. Superficial surgical site infection developed in 16 patients from the antibiotic and 19 from the placebo group. Three from each group developed deep infection. Two mesh removal was required in the placebo group.

Conclusions: Prophylactic antibiotic usage in geriatric patients undergoing Lichtenstein inguinal hernioplasty did not show any significant beneficial effects in reduction of surgical site infection. Our results do not support the routine use of antibiotics for elective inguinal hernioplasty.
Aim: Many people from low-income countries suffer from late or no treatment of incarcerated hernias. That can cause permanent consequences or even death. Hernia International is a 100% volunteer organisation, delivering humanitarian hernia surgery in the countries of the third world. A LDPE mosquito mesh is widely used. Its safety and full functionality was described.

Material and Methods: A LDPE Mosquito mesh was a subject of testing for a heavy metal content; the same-size piece of a mosquito mesh, and a standard commercial mesh, were tested by spectral photometry.

I have had the chance to join 11 international voluntary teams in the years of 2011-2019. More than 1000 procedures were performed, including large inguinoscrotal, incisional, and pediatric hernias. The conditions were often very basic, and a LDPE mosquito mesh and local anaesthesia were used in most adult cases.

Results: The test shows comparable or less presence of heavy metals in the LDPE mosquito mesh, in comparison with a standard polypropylene mesh.

A very low number of early post-op complications, such as haematoma and wound infection, were recorded (less than 1%) in a group of patients operated during voluntary missions. 1-2 local young surgeons were trained in basic hernia procedures.

Conclusions: Hernia International provides a high-quality surgical care to the patients from the developing countries. Using a mosquito mesh is a safe and effective method with a comparable low complication rate but with minimal costs.
[P068] ROBOTIC REPAIR OF VENTRAL AND INCISIONAL HERNIAS: A STUDY ON 118 PATIENTS OPERATED BY RV-TAPP AND R-RIVES

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Aim: The purpose of this study is to compare the results of robotic ventral TAPP and robotic retrorectus repair for ventral and incisional hernias.

Material and Methods: The results of 118 consecutive rv-TAPP (88) and r-Rives (30) surgeries are presented. The study was approved by the ethics committee (Ref. No. 2019-02046). Primary ventral hernias were treated mainly by rv-TAPP approach, incisional hernias by r-Rives Technique. Patients were followed up six weeks postoperatively.

Results: In every third patient, an additional finding at the linea alba was found. Patients in the r-Rives group were significantly older (p=0.001). Hernia gaps were significantly larger and meshes were significantly larger in the r-Rives group (p<0.001). The ratio of mesh area to hernia gap area was comparable in both groups (p=0.142). OR time was significantly shorter for rv-TAPP (82min) than r-Rives (109min). Hospital stay was shorter in the rv-TAPP group than in the r-Rives group (1.5 vs. 2.7 days, respectively) (p<0.001). There was a significant clustering of type II seromas in the r-Rives group (p<0.001), however, the total number of seromas was comparable.

Conclusions: rv-TAPP and r-Rives have the advantages of minimally invasive procedures (low complication rate) and most of the advantages of open procedures (morphological reconstruction). Both techniques allow consistent extraperitonealization of meshes. Umbilical and epigastric hernias (<4cm) are treated as rv-TAPP; incisional hernias, large hernia gaps (4-7cm), as well as in case of planned suturing of the linea alba, the r-Rives is indicated. Concomitant hernia gaps of the linea alba are also treated. Both procedures have few complications and are suitable for residents training.
Aim: "COVID has been a great challenge since its beginning. Hospitals had to change/create a lot of clinical pathways and protocols to fight it. As an adaptation to COVID pandemic, our surgical department decided to implement a protocol of Transversus Abdominis Plane Block (TAPB) in laparoscopic incisional ventral hernia repair to allow these patients to be shifted from elective to outpatient regime. This study aimed to analyze the implementation of this protocol during the covid era as a way to have more resources available for COVID patients."

Material and Methods: “A retrospective observational study was conducted using data since the beginning of the implementation of the protocol, from July 2020 to May 2021. TAPB was performed in all patients, laparoscopically or ultrasound-guided. Patients and hernia variables were identified using the hospital database. Data was recorded in the recovery room, by a phone call 24h post-surgery and in postoperative consultations with the surgeon.”

Results: “A total of 18 patients with incisional ventral hernia was included in the study. All patients had laparoscopic incisional ventral hernia repair surgery with TAPB and in ambulatory regime, discharged before 24h, are very satisfied with the protocol in terms of post-operative pain and there are no complications related to the TAPB.”

Conclusions: “This study found that, despite of COVID Pandemic, implementing a TAP Block procedure during laparoscopic incisional ventral hernia repair, allows to shift these patients from elective to outpatient surgery without compromising the outcomes, pain management and patient security, and, finally, to increase availability of resources for COVID patients.”
Aim: The SARS-CoV-2 pandemic has greatly affected health care systems worldwide, including the Czech Republic. However, the degree to which Covid-19 has impacted on hernia surgery is unknown. The aim of this study was to review the hernia surgery workload in a large university teaching hospital department.

Material and Methods: A computer based medical record system was used to identify all patients undergoing elective and emergency hernia repair of all types from March 1 to November 30, 2020 and for a similar time period in 2019 at the Motol University Hospital, Prague.

Results: 194 elective hernia operations were undertaken over the study period in 2020, a reduction from the 285 over a similar period in 2019. The number of emergency hernia operations in 2020 was 13 compared to 25 in 2019.

Conclusions: The SARS–CoV-2 pandemic has reduced both the number of elective and emergency hernia operations in 2020 compared to 2019. Time will tell if the reduced elective workload will subsequently increase the emergency hernia workload during the recovery from the pandemic.
Aim: “COVID pandemic created unprecedented challenges for actual health care systems with hundreds of surgeries suspended with impact in Abdominal Wall Surgery (AWS) and other benign diseases. With this in mind, we implemented new and dedicated clinical pathways to allow more patients to be operated in outpatient regime, so we could have more availability of beds, staff and resources for COVID assistance.”

Material and Methods: “A retrospective observational study was conducted using data since January 2018 to May 2021. Our Hospital and Surgical Department suffered great organizational changes, namely creation of: dedicated medical and staff teams for COVID+ (C+) and COVID- (C-) patients; dedicated pathways in our operating rooms for C+ cases; and, ultimately, designed and implemented protocols and agreements to maintain our Department fully operational, with a secure shift from elective to outpatient surgeries.”

Results: “During the study, a global number of 2541 AWS were performed. In the era pre-COVID (2018 - February 2020), we performed 968 surgeries with an average number of 37,2 AWS/month. Despite COVID pandemic (March 2020 - May 2021), our department performed a total of 1573 AWS, with an average number of 112,4 AWS/month. In summary, during COVID era, we increased AWS by more than 300%.”

Conclusions: “This study found that, inner organizational adaptations and creation of dedicated protocols/clinical pathways can maintain surgical departments performance despite the stress and uncertainty of a pandemic like COVID-19 with a very positive impact on benign pathologies such as AWS.”
Aim: To present initial experience using 5 mm articulated laparoscopic instruments in tapp laparoscopic hernioplasty that emulated the benefits attributed to robotic surgery.

Material and Methods: We report data from the first 42 procedures using 5 mm articulating instruments. A retrospective analysis was performed in patients who underwent tapp laparoscopic hernioplasty using novel articulated graspers, needle holders, and scissors. The surgeons and surgical nurses were trained in the handling and operation of the articulating instruments, before the first surgical procedure. In all cases, articulating instruments were inserted through 5 mm trocars. Data collected included patient demographics, details related to the surgical procedure, postoperative outcomes, and complications.

Results: Over a period of one month, were repaired 78 inguinal hernias. 36 patients had a bilateral hernia, and the mean age was 45 years (SD 15.1), with a mean BMI of 28.6 (SD 6.1). 32 male and 4 female patients. The mean operative time was 90 min. The articulated head of the clamp allowed traction, dissection, and suture in different directions. In addition, was not detected a significant learning curve due to its intuitive applicability. Surgical complications included two serohematomas. All patients discharge during operation day. The procedures performing without intraoperative complications nor conversion to open surgery occurred.

Conclusions: The use of an articulated instrument has a promising future. It would meet some benefits of robotics without increasing costs. We need randomized comparative studies for a better conclusion.
Aim: The worldwide increase in morbid obese patients raises controversies regarding the best timing of treatment for concomitant ventral hernias (VH). We present the preliminary experience at a referral center for bariatric surgery (BS): synchronous versus delayed ventral hernia repair (S-VHR, D-VHR) have been compared.

Material and Methods: From 2009, 40 consecutive morbid obese patients eligible for BS presented with concomitant VH. Symptoms and characteristics of the VH were evaluated to choose between S-VHR (28 patients), primary (n=12) or mesh augmented (n=16), and D-VHR (12 patients). 90-day postoperative complications and hernia recurrence were evaluated.

Results: 3 patients out of 16 in the mesh group experienced superficial surgical site infections. 4 patients in the D-VHR had a bowel incarceration within 20 days after BS and required emergency surgery with mesh implantation. No complications occurred in the primary repair group. The recurrence rate was around 19% in both groups of the S-VHR. Nonetheless the group that received mesh repair had a significant higher mean value of the defect. In the D-VHR cohort 1 patient was lost at follow up while 3 patients were not operated on due to inadequate weight loss. No recurrences occurred in the 4 patients requiring emergency surgery.

Conclusions: D-VHR is associated with worse early postoperative outcomes; primary suture repair should be considered in preventing bowel incarceration but synchronous mesh repair is preferred in large symptomatic hernias for its acceptable postoperative morbidity and hernia recurrence at 1 year.
[P074] PARASTOMAL AND INCISIONAL HERNIAS FOLLOWING EMERGENCY SURGERY FOR HINCHEY III-IV DIVERTICULITIS: A SYSTEMATIC REVIEW

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Aim: The aim of this systematic review was to report the risk of parastomal and incisional hernias after emergency surgery for Hinchey III–IV diverticulitis.

Material and Methods: The Cochrane Library, Embase, PubMed (MEDLINE), Web of Science and Scopus databases were systematically searched. All randomized controlled trials (RCTs) and cohort studies comparing HP with other surgical treatment options for perforated diverticulitis classified as purulent or faecal (Hinchey III–IV) were considered for inclusion. Exclusion criteria were case series and reports, letters, editorials, reviews and conference abstracts. The primary endpoint was parastomal hernia incidence. The secondary endpoint was incisional hernia incidence. Seven studies (six randomized controlled trials and one retrospective cohort) with a total of 831 patients were eligible for inclusion.

Results: The parastomal hernia incidence was 15.2–46.0% for Hartmann procedure, 0–85.2% for primary anastomosis, 4.3% for resection and 1.6% for laparoscopic lavage. The incisional hernia incidences were 7.8–38.1% for Hartmann procedure, 4.5–27.2% for primary anastomosis, 3.2–25.5% for primary resection, 2.7–11.1% for laparoscopic lavage and 16.1–45.8% for secondary resection. Due to heterogeneity of follow-up methods, follow-up time and lack of both parastomal and incisional hernia as outcome, no meta-analysis was conducted.

Conclusions: The hernia incidences reported after surgical treatment for complicated diverticulitis may be biased and underestimated. For future RCTs, researchers are encouraged to pay attention to hernia diagnosis, symptoms and prevention.
[P075] IS INTER-RECTI DISTANCE (IRD) A RELIABLE PROXY FOR EVALUATION OF FUNCTIONAL IMPAIRMENTS ASSOCIATED WITH DIASTASIS RECTI ABDOMINIS (DRA)?

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Aim: Diastasis recti abdominis (DRA) following pregnancy is associated with functional impairment such as back pain, abdominal core instability, urinary incontinence, and abdominal bulging. Several studies have reported functional improvements after surgical repair of the DRA. The aim of this study was to investigate the association between the inter-recti distance (IRD) and self-reported functional disabilities measured with the Disability Rating Index questionnaire (DRI), with the hypothesis that inter-recti distance could serve as a proxy for core instability symptoms.

Material and Methods: A retrospective study based on a consecutive cohort of patients with core instability symptoms combined with DRA. The IRD was measured with ultrasonography among women with symptomatic post-partum DRA and functional impairments were registered with the self-report DRI questionnaire that covers twelve unspecific daily activities. IRD results were analysed against the DRI score with uni- and multivariable regression analyses.

Results: A total of 222 women were included in this study. Univariable regression analyses showed a significant positive correlation between the heavier activities running, heavy work, lifting heavy objects and exercise/sports and IRD, which failed to reach significance in the multivariable regression analysis with adjustments for length, weight, and BMI.

Conclusions: This study could not show any significant correlation between self-reported functional impairments and DRA isolated in the multivariable analysis, even though there is a tendency towards an association between DRA and heavy activities. The post-partum core instability situation is complex and probably origins from more components than solely the inter-recti distance.
DIFFERENT SURGICAL APPROACH IN DIASTASIS RECTI REPAIR: IMPORTANCE OF AN OVERALL VIEW OF THE DISEASE

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Aim: Diastasis Recti (DR) is characterized by a defect of the linea alba sometimes associated with midline hernias, and frequent lipocutaneous excess. We present our experience in the treatment of diastasis recti with Inter Recti Distance (IRD) > 50mm -with or without umbilical hernia- by 3 different approaches.

Material and Methods: From January 2018 to February 2020, 104 patients were referred to our unit for clinical and radiological diagnosis of DR with IRD > 50 mm. Three different surgical approaches were used, based on presence of lipocutaneous excess: laparoabdominoplasty, laparominiabdominoplasty and minimally-invasive/endoscopic with Totally Sublay Anterior Repair (TESAR) approach.

Results: We performed 28 TESAR (29.8%), 44 laparoabdominoplasties (42.3%) and 32 laparominiabdominoplasties (30.8%). Overall complication rate was 26% (27 patients). In 3 (2.9%) cases major surgical complications (Clavien-Dindo 3-4) occurred, all for open operations. Minor complications (Clavien-Dindo 1-2) included: 13 cutaneous ischemia, 10 small muscular hematomas and 1 subcutaneous seroma. The overall median post-operative stay was 3 days (range 2 – 14 days), and 3, 4 and 3 days for TESAR, laparoabdominoplasty and laparominiabdominoplasty groups, respectively. No recurrence registered to date.

Conclusions: Our experience shows the importance of an overall view of the functional and cosmetic impairment created by the DR. The surgeon must obtain an optimal functional outcome also aiming for the best cosmetic result. Therefore different approaches have to be considered, tailored to the clinical, instrumental and psychological aspects of the disease. The complication rate, while in line with the literature, emphasize how in this type of operation the critical issues of functional as well as morphological surgery coexist.
Aim: Abdominal wall reconstruction in high-risk and contaminated cases remains a challenging surgical dilemma. We report long-term clinical outcomes for a rifampin/minocycline-coated acellular dermal graft (XenMatrix™ AB) in complex abdominal wall reconstruction for patients with a prior open abdomen or contaminated wounds.

Material and Methods: Patients undergoing abdominal wall reconstruction at our institution at high risk for surgical site occurrence and reconstructed with XenMatrix™ AB with intent-to-treat between 2014 through 2017 were included. Demographics, operative characteristics, and outcomes were collected. Primary outcome was hernia recurrence. Secondary outcomes included length of stay, surgical site occurrence, readmission, morbidity, and mortality.

Results: Twenty-two patients underwent abdominal wall reconstruction using XenMatrix™ AB during the study period. Two patients died while inpatient from progression of their comorbid diseases and were excluded. Sixty percent of patients had an open abdomen at time of repair. All patients were Modified VHWG class 2 or 3. There was a total of four 30-day infectious complications including superficial cellulitis/fat necrosis (15%) and one intraperitoneal abscess (5%). No patients required re-operation or graft excision.

Median clinical follow-up was 35.1 months with a mean of 32.2 +/- 16.5 months. Two asymptomatic recurrences and one symptomatic recurrence were noted during this period. Follow-up was extended by phone interview which identified no additional recurrences at a median of 45.5 and mean of 50.5 +/- 12.7 months.

Conclusions: We present long-term outcomes for patients with high-risk and contaminated wounds who underwent abdominal wall reconstruction reinforced with XenMatrix™ AB to achieve early, permanent abdominal closure. Acceptable outcomes were noted.
[P078] SURGICAL PLANNING WITH 3D TECHNOLOGY UN PATIENT WITH MORGAGNI HERNIA AND INGUINAL HERNIA

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Aim: The use of 3D technology is increasingly used for surgical planning in cases of complex surgery. In the case of the abdominal wall, its use is not very widespread. In this video we present the case of a patient with inguinal hernia and Morgagni hernia in which 3D planning provided us with multiple benefits.

Material and Methods: 71-year-old patient awaiting intervention for right inguinal hernia, presenting progressive dyspnea, abdominal pain and vomiting. A thoraco-abdominal CT scan was performed, which reported a Morgagni hernia containing the transverse colon and omentum.

Due to 3D planning, we were able to obtain the abdominal and hernial sac volumes, evaluate the hernial orifice and its relationship with the adjacent structures.

Results: Laparoscopic repair of the Morgagni hernia was performed by reducing the hernial content, placement of visceral contact mesh fixed with resorbable tackers. In the same surgical act, an inguinal hernioplasty was performed via TAPP.

The postoperative period was correct, without complications, and the patient was discharged after 3 days. Two years after the intervention, the patient remains asymptomatic.

Conclusions: The use of 3D technology for surgical planning facilitates the repair of complex hernias, helping us to assess the surgical indication, hernial volumes and hernial content. Good surgical planning facilitates the performance of the intervention through minimally invasive surgery, in this case two hernias were repaired in the same surgical procedure and with the same incisions, which facilitated the recovery of the patient.
[P080] ROUTINE ELECTIVE IlioHypogastric NEURECTOMY IN LICHTENSTEIN INGUINAL HERNIA REPAIR

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Aim: Chronic postherniorraphy pain occurs in 8-25% of patients undergoing groin hernioplasty with mesh insertion. The most common cause for inguinodynia is neuropathy resulting from nerve damage or entrapment during mesh fixation. With wide mesh insertion there is often a conflict between upper prosthesis margin and an iliohypogastric nerve. The aim of this study is to present a routine elective iliohypogastric neurectomy in Lichtenstein groin hernia repair for prevention of chronic inguinodynia.

Material and Methods: Between 2018 and 2020, 398 patients were admitted for open inguinal hernia repair. 218 patients underwent a Lichtenstein repair with transection of iliohypogastric nerve before implantation of 10x14 polypropylene mesh (IH group). In the control group of 180 patients all nerves were spared (C group). Follow-up was conducted on 1 POD, 1 month, and 1 year after surgery.

Results: 1 month after a surgery a pain was reported in 24 (11%) patients in IH group (2.9% severe; 8.1% moderate; 89% no pain), and 48 (26.7%) patients in C group (3.9% severe; 22.8% moderate; 73.3% no pain). 1 year after a surgery a persistent pain was reported in 1 (0.4%) patient in IH group, and in 5 (2.8%) patients in C group. An incidence of inguinodynia was significantly lower after iliohypogastric neurectomy (0.5% vs. 2.8%; p<0.001).

Conclusions: Routine neurectomy of iliohypogastric nerve appears to be an effective technique in chronic inguinodynia after open mech repair for inguinal hernias. Iliohypogastric nerve resection allows to place a flat synthetic mesh with wide coverage of myopectineal orifice with no need for additional mesh trimming.
Aim: The main objective of this study is to describe and analyze the assessment and treatment of chronic groin pain (CGP) based on the experience collected in 20 years.

Material and Methods: Descriptive, observational, and retrospective study. It is a multidisciplinary team formed by surgeons, physiotherapists, orthopedists, and imaging specialists. That had developed an assessment, diagnosis, and treatment algorithm for (CGP), which have been implemented for more than 20 years. Follow-up included a record of clinical examination findings, clinical entities diagnosed, ultrasound findings, physiotherapy treatment, operation notes, and postoperative recovery, time to return to sporting activity, and complications.

Results: In the period between August 2000 and August 2020, we assessed 9996 patients with CGP. (91%) men and (9%) women with a mean age of 30 (SD: 11.21).

The most frequently practiced sports were: football (43%), rugby (25%), tennis (12%).

The most frequent clinical entities registered were tendinopathies (69%): iliopsoas-pectineus-related (36%) and adductor-related (33%). Tendinopathy sports rehabilitation treatment: (95.7%) presented total recovery in 45 days; 260 patients (4.3%) intra-tissue percutaneous electrolysis was used with favorable recovery. Only 16 patients required tenotomies.

The ultrasound has been used to detect signs of adductor tendinopathy (92%) and sportsman hernia, but has low sensitivity in iliopsoas-pectineus tendinopathy (21%).

Conclusions: The algorithm used has proven to be safe and successful.

Tendinopathies and Sportsman's hernia are the most common causes of chronic groin pain in sportsmen, presenting together in 82% of the cases.

TAPP hernioplasty repair, followed by physical rehabilitation offered excellent results to treat sportsman hernia.
Aim: Parastomal hernias are complex findings with a high recurrence rate. Various methods were described for surgical repair. A new method for the treatment of parastomal hernias with extraperitoneal mesh placement was published in 2016 (Pauli et al.). Recently, open retromuscular repair has been shown to be safe, effective and durable (Beffa et al. 2017). Still, there are concerns regarding mesh related complications (Tastaldi et al. 2017).

Material and Methods: All patients who underwent an open or laparoscopic modified retromuscular Sugarbaker parastomal hernia repair at our institution were identified. We describe the patient characteristics, operative details, perioperative results and the follow-up.

Results: Between January 2018 to May 2021 14 patients received surgical repair for parastomal hernia at our institution. Eight of these patients received retromuscular extraperitoneal mesh placement (4 open, 4 laparoscopic) in the aforementioned technique. The median age was 72 years (65 – 85) and the median BMI was 31 kg/m² (26 – 34). Six patients had a urostomy and two had a colostomy. One patient had a recurrent parastomal hernia after previous intraabdominal mesh repair. The median operating time was 223 minutes (144 – 425). Median Mesh size was 300 cm² (225 – 750). Two minor complications (Clavien-Dindo Classification Grade II) demanding pharmacological treatment. The median hospital stay was 8 days (4 – 17). Median follow up was 17 month (range 1 – 26). Recurrence rate was 25 %.

Conclusions: The modified retromuscular sugerbaker technique seems to be safe and feasible as shown by our data. Due to the extraperitoneal mesh position, we see fundamental methodological advantages. Further studies are necessary for long-term results.
Aim: Synthetic non-absorbable mesh repair is considered standard of care for most hernias in the United States (US). The introduction of biologic absorbable mesh in the 2000’s has changed this practice and now novel synthetic absorbable and hybrid meshes are available. We aim to describe US trends of mesh use.

Material and Methods: We surveyed the Abdominal Core Health Quality Collaborative database for all repairs using mesh from 2012 to 2021. Mesh types and indications were analysed.

Results: Among 47,555 patients who underwent hernia repair with mesh, the majority were with synthetic non-absorbable meshes (96%). Absorbable mesh was placed in 2,039 (4%) patients and included biologic absorbable (893, 44%), synthetic absorbable (1,070, 52%), and hybrid (76, 4%) meshes. Synthetic non-absorbable mesh use was significantly predominant in all wound classes, including dirty/contaminated wounds (P<0.01) [Figure 1]. Over time, we noted a trend toward lower incidence of absorbable and hybrid mesh use, from 18% to 2% (P<0.01). Interestingly, we noted a relative increase in annual incidence of absorbable and hybrid mesh use in clean wounds, from 20% to 63% (P<0.01) [Figure 2].

Conclusions: In the United States, synthetic non-absorbable meshes are commonly used during hernia repairs in dirty and contaminated fields. At the same time, there is a significant increase in the use of absorbable and hybrid meshes in the repair of hernias with clean wound classification. The costs and long-term outcomes of such surgeon choices have yet to be validated.
Aim: Posterior component separation with transversus abdominis release (TAR) is a novel complex abdominal wall repair technique that maximizes medial myofascial flap advancement in a vascularized, pre-peritoneal plane. Here, we add to a growing body of literature on this technique by assessing longitudinal clinical and patient reported outcomes (PROs) after ventral hernia repair (VHR) with TAR.

Material and Methods: Adult patients undergoing VHR with TAR between 10/1/2015 and 01/15/2020 by a single surgeon were retrospectively identified. Patients with parastomal hernias and <12 months of follow-up were excluded. Clinical outcomes and PROs using the Abdominal Hernia Questionnaire (AQH) and Hernia Related Quality of Life Survey (HerQLes) were assessed.

Results: 57 patients were included with a median age and body mass index of 60 and 30.6 kg/m², respectively. The average hernia defect was 384 cm² [IQR 205-471], and all patients had retro-muscular mesh placed. The most common complications were delayed healing (19.3%) and seroma (14.0%). One patient required return to the OR for management of a complication and there were no cases of mesh infection or explantation. Previous hernia repair and concurrent panniculectomy were risk factors for developing any complication (p<0.05). One patient (1.8%) recurred at a median follow-up of 25.7 months [IQR 18.2-42.1]. Significant improvement in disease-specific PROs was observed and maintained throughout the follow-up period (pre to post p<0.05).

Conclusions: Longitudinal clinical and patient-reported outcomes after VHR with TAR are limited. We conclude that TAR is a safe and efficacious adjunct in the repair of complex hernia defects.
Aim: While there are many patient-reported outcome measures (PROMs) used for ventral hernia (VH), disease-specific instruments, like the Hernia-related Quality-of-Life (QoL) Survey (HerQLes) and Abdominal Hernia-Q (AHQ), have greater accuracy in capturing broad VH-related QoL. We present a novel calibration that allows providers to convert scores between the AHQ and HerQLes, enabling unification of QoL data.

Material and Methods: VH patients were prospectively identified and simultaneously administered the AHQ and HerQLes pre-and post-operatively. To ensure validity of the calibration, responses were excluded if patients answered instruments on different dates or if responses were discordant on corresponding questions on each instrument. The calibration was estimated using a linear mixed-effects model, including linear and quadratic scores, timing of survey relative to surgery and their interactions as fixed effects, and patients as random effects to account for multiple surveys from the same patient.

Results In total, 109 patients were included, responding to 300 pairs of surveys (112 pre-operative and 188 post-operative). Seventeen (5.6%) were statistically excluded due to discordant responses. Conversion of the HerQLes to AHQ was most accurate when including whether the survey was completed pre- or post-operatively, with a mean square error (MSE) of 0.0091. Similarly, converting the AHQ to HerQLes was most accurate when factoring in the timing of survey administration, with a MSE of 0.016.

Conclusions: We present a novel and accurate method to convert scores between the AHQ and HerQLes. Portability of PROMs will be crucial in efforts to more broadly integrate PROMs into routine care in VH.
Aim: Aim of this study is to compare long term results of efficacy, recurrence and quality of life in patients submitted to TAPP for inguinal hernia repair with standard Heavyweight or Selfgripping mesh.

Material and Methods: A prospective case control study was conducted at single third referral center. The study included adult patients submitted to TAPP, of both sex, with primary and recurrent, unilateral and bilateral inguinal hernia. Patients received non-fixated standard heavyweight meshes (HW) or PROGRIP self gripping mesh (PG), their data were entered in EuraHS platform and the EuraHS Quality of life (QOL) questionnaire was administered before and 1 year after surgery. Primary outcome of the study is to compare long term QOL before and after surgery in HW vs PG group. Secondary outcome is perioperative morbidity and 12 months recurrence assessed with PINQ questionnaire.

Results: Between 2016 and 2020, 100 patients of both sexes (10 female) were enrolled, 50 in HW group and 50 in PG group. The two groups were comparable preoperatively. After 12 months no cases of CPIP were observed and there wasn’t differences in QOL reported by patients, although in both groups there was an improvement of pain, movement limitations and esthetical discomfort after surgery. None recurrence and overall only 4 cases of complications (1 hematoma and 1 seroma for each group) were registered.

Conclusions: Selfgripping Mesh for laparoscopic hernia repair has produced results equal to standard of care meshes in term of recurrence rate, early morbidity and postoperative quality of life of patients.
Aim: Our aim was to analyze patient’s reported EurAHS QoL (quality of life) scores before and after hernia surgery. And find whether the result is surgeon dependent or not, because hernia repair often serves as a training surgery for young surgeons or is performed by surgeons with no hernia interest. However, even a simple groin hernia repair can lead to life-long pain or reduced QoL and the risk of complications following incisional hernia repair is much higher.

Material and Methods: We have utilized the EurAHS database and its QoL questionnaire and prospectively entered all patients undergoing any hernia repair at our department since Jan. 2019.

Results: 519 patients have been included. Many patients in the incisional hernia cohort have reported no or very little symptoms before the operation. Only 251 have completed their 1 month follow-up with the QoL questionnaire. 63 patients have been contacted and questioned 1 year post-surgery to this date. In 6 cases the QoL scores are lower than pre-repair. 45 patients had a record of major complication or reoccurrence requiring surgery so far. Unfortunately 31 of those did not fill up the QoL questionnaire. 37 were operated on by resident with a supervision of a surgeon without a hernia interest.

Conclusions: Results of hernia repair are surgeon dependent and an internal audit of current practices is needed at many general surgery departments.
Aim: Assessing pre- and postoperative quality of life (QoL) is essential to quantify the magnitude of improvement in disease burden after ventral hernia repair (VHR). Here, we identify patient and operative factors associated with QoL improvement after VHR.

Material and Methods: Patients that underwent VHR by a single surgeon were retrospectively identified and included if they had minimum 1 year of follow-up, and completed pre- and postoperative Abdominal Hernia-Q (AHQ) questionnaires. Patients were divided into quintiles based on absolute pre- to postoperative improvement in AHQ score. Chi-squared and fisher’s exact tests were used for categorical data, and Student’s t-test for continuous data, as appropriate.

Results: Compared to the lowest quintile (n=27, follow-up 32.6 months, mean improvement 3.24 [SD 10.4]), patients in the highest quintile (n=26, follow up 23.9 months, mean improvement 66.3 [SD 12.1]) were female (76.9% vs 37.0%, p<0.005) with a greater number of previous hernia repairs (mean 2.12 vs. 0.78, p<0.005) and previous abdominal surgeries (mean 4.0 vs 2.0, p<0.001). Patients with greater improvement also had higher incidences of delayed healing (42.3% vs 7.41%), required more office visits (5.54 vs 3.89), and had higher inpatient costs ($30,084 USD vs. $16,886, all p<0.05). No significant differences were seen in terms of race, ethnicity, body mass index, age, length of stay, Clavien-Dindo scores, hernia recurrence, or other postoperative complications.

Conclusions: Despite increased preoperative risk and healthcare burden, some of the most significant QoL improvement after VHR is demonstrated in patients with complex repairs and recoveries. This indicates the global utility of VHR regardless of patient demographics and complicating perioperative factors.
Aim: To analyze device safety and clinical outcomes of ventral hernia repair with a hybrid composite mesh

Material and Methods: This retrospective, multicenter, case review analyzed device/procedure endpoints and patient-reported outcomes in patients treated for hernia repair ≥ 1 year from study enrollment.

Results: There were 459 patients with 469 ventral hernias with a mean age of 58 ± 15 years and 77% Ventral Hernia Working Group 2 (VHWG2). Mean hernia size was 18.9 cm². Laparoscopic or robotic approach were utilized in 95% of patients, incisional hernias accounted for 57%. Mesh location was 75% intraperitoneal and bridging repair was performed in 57%. Procedure related adverse events within 30-days occurred in 5%, including: surgical site infection (SSI), surgical site occurrence (SSO), ileus, readmission, and re-operation. Procedure-related SSI or SSO events were 3.75% through 12-months. SSO events requiring procedural intervention (SSOPI) were 2.57% through 24-months. An estimated 7% of subjects had hernia recurrence through the study with a mean follow-up of 32-months (14-53 months) using a patient-reported outcome measure. Subgroup comparison of fixation type (permanent vs absorbable, p=0.93) and repair (bridging vs reinforcement, p=0.99) were conducted for recurrence and were not statistically significant.

Conclusions: In this analysis, ventral hernia repair with hybrid, composite mesh results in successful outcomes in the majority of patients. This study represents a heterogeneous patient population undergoing repair using various approaches, mesh fixation, and mesh placement locations. These data appear to confirm long-term acceptable safety and device performance with a low rate of recurrence in a predominantly VHWG2 population.
Aim: Explore which postoperative outcomes are important to patients operated for inguinal hernia to gain a better insight into the patient experience going through surgery.

Material and Methods: Qualitative study using semi-structured individual interviews. Based on phenomenology and hermeneutics. Participants were all male, between 44-66 years of age, and had undergone inguinal hernia repair. Patients were interviewed either shortly after surgery (≤ 10 days) or 3-6 months postoperatively. Data were analyzed with directed content analysis based on six domains defined a priori based on the literature. Reported according to the COnsolidated criteria for REporting Qualitative research (COREQ) and Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0).

Results: Ten patients were included and interviewed. Data aligned well with the six predefined domains. Major domains: Function, Sensation, Expectations. Minor domains: Appearance, Social Aspects, Satisfaction with surgeon/staff. Preoperative functional limitations were the main motivation for seeking surgery, and postoperative functional improvement seemed to be the most important factor determining overall patient satisfaction.

Conclusions: Patients consider a wide range of factors when assessing the outcome of their inguinal hernia repair. Our results suggest that the current practice of outcome assessment of inguinal hernia repair may be too narrow and may not adequately reflect the patients’ experience. This study is a part of an ongoing development of a Core Outcome Set for inguinal hernia research.
[P092] EVOLUTIVE MANAGEMENT OF THE OPEN ABDOMEN WITH POSTERIOR SEPARATION TECHNIQUE FOR DEFINITIVE RECONSTRUCTION

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Aim: Traumatic evisceration in politrauma patients is rare, with a prevalence of 1 in 40,000 trauma patients. The main mechanism is high-energy trauma to an acute surface. Our objective is to apply theoretical knowledge regarding the complex abdominal wall as an independent entity, analyzing the particular case of a patient operated in our center.

Material and Methods: Description of a clinical case using data extracted from the electronic medical record and bibliographic search in Pubmed.

Results: The reviewed literature was applied to a traumatic evisceration case with a Grade IV on the Dennis Abdominal Trauma Scale. The decisions made during the different stages in the multidisciplinary management of the traumatic evisceration were discussed. The role of Negative Pressure Therapy, the use of biological meshes, full thickness grafts and/or the Posterior Separation of Components were used to achieve a continent and functional abdomen after an injury of that magnitude during a 4-year follow-up with excellent results.

Conclusions: At the moment there is no consensus on the management of these traumatic evisceration situations. It depends in many cases on the experience of the surgeon. These cases should be treated individually based on the size and location of the lesions. The approach must be carried out in different stages, always thinking about achieving an early closure of the abdomen and preserving the anatomy of the abdominal wall. The best strategy for open abdomen reconstruction is not well defined, but we believe that Posterior Component Separation is a good option.
Aim: “Cytoreductive surgery (CRS) together with the application of hyperthermic intraperitoneal chemotherapy (HIPEC) has proven to be a feasible and effective method in the management of selected patients with peritoneal metastases and/or primary peritoneal tumors. Infiltration of the abdominal wall is a frequent finding in these patients, which often leads to extensive resections and complex parietal reconstructions in the same surgical act. This may be associated with wound complications and the consequent delay in postoperative therapy of the patient. For this reason, an exquisite management of the abdominal wall is required. Our goal is to evaluate the technique and results of two clinical cases that required simultaneous complex reconstructions.”

Material and Methods: “Review patients undergoing CRS and HIPEC and simultaneous complex abdominal wall reconstruction between 2015 and 2020. Analysis of oncological history, description of the defect resulting from cytoreduction and the reconstruction technique used, postoperative course and medium-term results.”

Results: “Different techniques were used to reconstruct the abdominal wall according the characteristics of the defect after cytoreduction. The simultaneous performance of reconstruction techniques did not increase the hospital stay nor the rate of complications of the surgical wound. Systemic chemotherapy was continued without delay and we have no evidence of incisional hernias in the medium term.”

Conclusions: “In our experience, the use of abdominal wall reconstruction techniques in the same surgical time after performing CRS and HIPEC is safe and with good results in the medium term.”
[P094] DIASTASIS POST-PREGNANCY PROGRAM

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Aim: This study aims to summarize our knowledge in rectus abdominis diastasis based on the experience collected by the multidisciplinary program.

Material and Methods: Retrospective analysis of a prospective database. The diastasis post-pregnancy program is an interdisciplinary protocol that aims to restore the anatomical and functional structure of the abdominal wall after the degenerative process of pregnancy. Used a systematic multidisciplinary evaluation that included an abdominal walls surgeon, plastic surgeon, physiotherapist, and radiologist. Following the findings, we propose a classification, adapting the specific treatment according to the degree of the patient’s condition. Grade I only performed physiotherapy; Grade II: started physiotherapy plan, with associated surgical treatment due to lack of response; Grade III underwent surgery as the first treatment in addition to physiotherapy protocol.

Endoscopic-assisted linea alba reconstruction plus mesh have using to repair midline hernias in association with diastasis.

Results: From January 2017 and June 2019, 1085 patients completed the program. Clinical classification: Grade I: 760 patients (70%) and Grade II: 248 patients (64%) performed physiotherapy as first-line treatment, with associated surgical treatment being necessary for 89 patients (36%); Grade III: 77 patients (7%) underwent surgery as first-line treatment, associated with physiotherapy postoperative protocol. Postoperative complications were: 31 seromas (14%), 11 omphalitis (5%), 5 hematoma (2%) 1 (0.44%) required surgical dressing. McGill and Us Check-up post-treatment test showed improvement in 77% of patients. Please insert your text here.

Conclusions: Evaluation and treatment, in post-pregnant patients, using a multidisciplinary approach concept showed good initial results with important improvement anatomical, functional, clinical, and aesthetic.
[P095] ARE POLYPROPYLENE MESH IMPLANTS ASSOCIATED WITH SYSTEMIC AUTOIMMUNE/INFLAMMATORY SYNDROMES?

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Aim: Worldwide there is a lot of commotion about the effects and complications of mesh implants. The surgical implantation of polypropylene (PP) meshes has been linked to the occurrence of systemic autoimmune disorders (SAIS). We performed a systematic review to determine whether PP implants for inguinal, ventral hernia or pelvic floor surgery are associated with the development of SAIS.

Material and Methods: We searched Embase, Medline, Web of Science, Scopus, Cochrane library, clinicaltrialsregister.eu, clinicaltrails.gov and WHO-ICTR platform. Forward and backward reference searching was performed to avoid missing relevant papers. All types of studies, except case studies, reporting SAIS in patients having a PP implant for either pelvic floor surgery, ventral or inguinal hernia repair were included. Animal studies were excluded. We intended to perform a meta-analysis. The quality of evidence was assessed with the Newcastle-Ottawa Scale. This study was registered at Prospero (CRD42020220705).

Results: Of 1938 records identified, 3 were eligible. Two studies involving retrospective matched cohorts focused on mesh surgery for vaginal prolapse or inguinal hernia compared to hysterectomy and colonoscopy, respectively. These reports had a low risk of bias. The third study was a case-series with a high risk of bias, with a sample of 714 patients with systemic disease, 40 of them had PP mesh implanted. A meta-analysis showed no association when comparing systemic disease between mesh and control groups. Calculated Risk Ratio was 0.9 (95%CI 0.78-1.04).

Conclusions: To date, there is no evidence to suggest a causal relationship between being implanted with a PP mesh and the occurrence of SAIS.
Aim: Robotic-assisted ventral hernia repair (rVHR) has emerged as an alternative to current open and laparoscopic procedures. The present study aims to determine the effect of rVHR on postoperative quality of life.

Material and Methods: Patients undergoing elective rVHR from 01/01 2017 until 12/6 2020 were identified from the hospital’s electronic medical record system. Patient demographic, clinical presentation, location of the hernial defect and postoperative complications were obtained from the case notes. A phone interview was also conducted to assess postoperative life quality using the EuraHS-QoL questionnaire. The pre and postoperative life quality assessment was performed to determine the effect of robotic-assisted ventral hernia repair on 1. Pain at the site of the hernia, 2. Restrictions of activities due to pain or discomfort at the site of the hernia and 3. Esthetical discomfort. Moreover, patients were asked whether they felt their overall quality of life had improved, deteriorated or was unaltered after the procedure. A Wilcoxon signed rank test was conducted to determine the effect of the repair on postoperative life quality.

Results: 85 out of 99 patients completed the interview and were included in this case series. The survey revealed a highly significant improvement of life quality in all categories (P<0.01). 86% of the participants reported that their overall quality of life had improved, 13% reported no change and 1% felt that it had deteriorated.

Conclusions: Robotic-assisted retromuscular ventral hernia repair is a safe procedure that is associated with a significant improvement of patient quality of life.
Aim: To analyse if postoperative complications constitute a predictor for the risk of developing long-term groin pain.

Material and Methods: Population-based prospective cohort study of 30,659 patients operated for inguinal hernia 2015-2017 included in the Swedish Hernia Register. Registered post-operative complications were categorised into hematomas, surgical site infections, seromas, urinary tract complications, and acute post-operative pain. A questionnaire enquiring about groin pain was distributed to all patients one year after surgery. Reported level of pain one year after surgery was analysed against postoperative complications using multivariable logistic regression analyses.

Results: The response rate was 64.5%. In total 19,773 eligible participants responded to the questionnaire whereof 73.4% had undergone open anterior mesh repair and 26.6% had undergone endo-laparoscopic mesh repair.

Registered postoperative complications were: 750 hematomas (2.3%), 516 surgical site infections (1.6%), 395 seromas (1.2%), 1,216 urinary tract complications (3.7%), and 520 hernia repairs with acute post-operative pain (1.6%).

Among patients who had undergone open anterior mesh repair, analyses showed an association between persistent pain and hematomas (OR 2.03, CI 1.30-3.18), surgical site infections (OR 2.18, CI 1.27-3.73) and acute post-operative pain (OR 7.46, CI 4.02-13.87). Analysis of patients with endo-laparoscopic repair showed an association between persistent pain and acute post-operative pain (OR 9.35, CI 3.18-27.48).

Conclusions: Acute postoperative pain was a strong predictor for persistent pain following both open anterior and endo-laparoscopic hernia repair. Surgical site infections and hematomas were predictors for persistent pain following open anterior hernia repair, although the rate of reported postoperative complications was low.
Aim: Analysis of all healthcare encounters (readmissions and emergency department visits, EDV) following both inpatient and outpatient abdominal hernia repairs (AHR), with respect to the timeline of such encounters.

Material and Methods: Patients undergoing AHR were identified in Maryland State Inpatient and State Ambulatory Surgery and Services Databases, 2016-2017, and all their hospital and ED encounters were assembled into a comprehensive database, covering almost 95% of all AHR performed in Maryland.

Results: Of the total 26,215 patients who underwent AHR (3,333 inpatient and 22,950 outpatient; 48.7% inguinal and 53.0% ventral/umbilical), 5,802 (22.1%) had at least one postoperative encounter (4,186 EDV, 1,415 readmissions, and 248 encounters for mostly outpatient another AHR). 419 (80.4%) post-operative encounters within the first 48 hours were EDV and 98 (18.8%) were readmissions. Fraction of EDV within later encounters was in 69.6–71.1% range. Most frequent reasons for EDV were urinary complaints (24.1%, 10.6% and 4.0% on POD 0–2, 3–7, and 8–30, respectively), followed by pain control issues (18.1%, 24.9%, 14.4%) and delayed return of bowel function or constipation (10.5%, 9.9%, 3.4%). Readmissions mainly occurred for aforementioned GI complaints (15.3%, 19.9%, 6.9% on POD 0–2, 3–7, and 8–30, respectively), local surgical site infections (5.1%, 15.5%, 26.8%), and respiratory complications (8.2%, 6.6%, 4.1%).

Conclusions: 2.3% of all patients had at least one readmission while 6.4% patients had at least one EDV within 30 days following herniorrhaphy. Early postoperative EDV were mainly caused by urinary complaints, inadequately controlled pain, or delayed bowel function. Factors associated with these largely preventable complications require dedicated analysis.
Aim: To analyze the incidence and risk factors of surgical site infections (SSI) and wound dehiscence (WD) after closure of primary midline laparotomies with small-bites (SB) technique.

Material and Methods: Retrospective analysis using hospital prospective database of all midline abdominal wall closures (AWC) with SB technique performed in a University Hospital between December 2019 and February 2021. To achieve a proper protocol of AWC with SB technique, it is advised to have suture/wound length (SL/WL) – ratio of more than 4:1. Statistical analysis of the incidence of SSI and AWD, comparing the results when the protocol was properly used (A group) or not (B group), was performed. Between groups, no relevant differences were observed for patient characteristics.

Results: A total of 108 midline laparotomies were included for analysis. 55.5% of patients were male. The mean age was 62.8 years, mean body mass index was 24.3 kg/m². 78.7% (85/108) were operated electively. SSI and WD have been recorded in 7 (6.5%) and 8 (7.4%) cases respectively. In 65 (60.2%) patients abdominal wall closure after primary laparotomy was achieved with proper protocol (group A). Median SL/WL in A and B group was 4.57 and 3.43 respectively. The rate of WD in A group (n=1, 1.5%) was significantly (P=.006) lower than in B group (n=7, 16.3%). Incidence of SSI was 7.7% (n=5, A group) vs. 4.7% (n=2; B group) (P=.420).

Conclusions: Using a proper AWC protocol has been effective to prevent WD in midline laparotomy.
Aim: Adhesions are fibrous bands of scar tissue that form following peritoneal injury, commonly intra-abdominal surgery, and are associated with serious morbidity such as small bowel obstruction and pain. Surgical meshes used for incisional hernia repair are associated with increased incidence and severity of adhesions. There is limited consensus on which mesh may induce the least adhesions following incisional hernia repair, and most previous data has come from experimental animal models. We aimed to evaluate existing primary research to investigate whether biological mesh limits adhesion formation compared to synthetic or biosynthetic mesh when used in patients for incisional hernia repair and also to assess whether there is correlation with existing animal model data.

Material and Methods: A systematic search was conducted on PubMed and EMBASE. The number of mesh-related adhesions, character of adhesions and adhesion-related complications were documented. Results were compared to previously published results from animal models.

Results: Thirty-two studies were included, 11 of which did not document whether the adhesions were mesh related. A total of 14,161 participants underwent incisional hernia repair, 8,526 of whom were included in follow-up analysis. Overall, 9.7% developed adhesions. Biological mesh induced a high rate of dense adhesions, whereas biosynthetic mesh induced loose, filmy adhesions suggested to cause fewer complications. These findings were similar to findings from experimental animal models.

Conclusions: Bio-synthetic mesh was superior in causing fewer and less dense adhesions. Further analysis of mesh-induced adhesion formation on a larger scale is required to fully understand the consequences of different mesh types.
Aim and Introduction: “Inguinal hernia repair is one of the most common surgical procedures performed worldwide. Postoperative pain control is very important and recently nerve block has gained popularity as an alternative to opioid use. Transient femoral nerve palsy (TNFP) is a potential complication of ilioinguinal nerve block, but it is extremely rare with only a few cases reported. We discuss a case of TNFP post-left inguinal hernia repair to highlight this rare complication.”

Material and Methods: “Case Report: A 17-year-old male with clinically and radiologically confirmed left inguinal hernia underwent open mesh repair (Lichtenstein repair). At the end of the procedure, he had ilioinguinal and iliohypogastric nerve block (10ml, 0.5% bupivacaine). In the recovery room, he developed numbness of his anteromedial aspect of his left thigh with weakness of hip flexion and paralysis of quadriceps with an inability to extend his knee. He was reviewed by the anaesthetic team and was admitted overnight. His symptoms resolved spontaneously within 18 hours. He was subsequently discharged and followed up in the surgical OPD 2 weeks, 6 weeks and 6 months later and there were no residual neurological symptoms.”

Results and Conclusion: “TNFP post open hernia repair is very rare. Mechanisms of femoral nerve injury include suturing, stapling, scar tissue entrapment or direct compression. Careful attention is needed to the technique of local anaesthesia post-operatively (avoid deep infiltration, lowest volume and concentration used, ultrasound use) to avoid potential morbidity if this complication is not recognised.”
Aim: To assess the usefulness of 3D Planning and preconditioning with botulinum toxin in a complex abdominal wall hernia.

Material and Methods: A 54-year-old man with severe alcoholic pancreatitis required surgery due to poor evolution, performing subtotal colectomy with a right colon colostomy and necrosectomy by bilateral subcostal laparotomy. After several operations and not being able to close the wall, the use of negative pressure therapy and subsequently skin grafting was required.

Abdominal wall 3D Planning was performed and botulinum toxin injection was administered before definite surgery.

During surgery, after digestive reconstruction, it was observed that wound’s edges did not approximate due to retraction of rectus in the cranial and caudal pole. Posterior layer was closed with running suture and double polypropylene mesh was placed.

One year after surgery, patient remains without recurrences with a firm abdominal wall and recovery of life’s quality with radiologic confirmation images.

Results: Intestinal and Wall reconstruction in one step was feasible, although botulinum toxin injection did not provide benefits due to a bilateral subcostal incision with significant muscle retraction.

The 3D Planning allowed us to assess the degree of retraction of the musculature, much greater than what was appreciated in the physical examination.

Conclusions: The subcostal incision should be avoided in severe pancreatitis.

Surgical planning with 3D technology is developing, allowing the entire anatomy to be assessed globally.

3D, useful tool for teaching, suggests that in subcostal laparotomies, it could help predicting that botulinum toxin would not be useful due to muscular retraction.
POSTOPERATIVE OUTCOME AND COMPLICATIONS AFTER STOMA REVERSAL SURGERY WITH CICATRIAL HERNIA HERNIA PROPHYLAXIS BY MESH AUGMENTATION IN SUBLAY TECHNIQUE USING GORE® BIO A® MESH

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Aim: At the surgery hospital of Klinikum Mittelbaden in Baden-Baden (Prof. Dr. Dieter Berger) stoma reversal surgery was performed on 127 patients in the time from Nov. 15, 2010 to Mar. 11, 2015.

All 127 patients were treated with a resorbable synthetic mesh (GORE® BIO-A® mesh) in sublay technique to close abdominal wall incisions.

Primary wound closure was carried out in all cases.

In order to evaluate the rate of postoperative hernias, which literature reports to be over 30 percent and a common complication, all 127 patients were included in a prospective study.

Material and Methods: In total, 104 of the included patients (n=127) took part in the follow-up examinations. 72 patients underwent clinical examinations and imaging diagnostics, 21 were surveyed on the telephone whenever their presentation at a follow-up exam was impossible, whereas 11 patients deceased during the follow-up period. These cases were analyzed on the basis of the previous examinations which had been part of the respective health records.

The follow-up examination took place after a median time span of 87 weeks (8 - 218 weeks).

Results: The total herniation rate of 7.7 percent (n=8/104) in the examined patient population was thus much lower than described in the literature.

Conclusions: According to our own prospective analysis, we were able to register a very low herniation rate compared to the literature when the resorbable synthetic mesh (GORE® BIO-A®) was applied in sublay technique for stoma reversal.

One disadvantage could lie in the increased perioperative wound infection rate.

5/8 hernias were observed after the occurrence of perioperative wound infections.
Aim: “Incisional hernia (IH) has an incidence of 10–23%, which can increase to 38% in specific risk groups. The objective of this study is to report the results at 3 years of follow-up of the use of the reinforced tension line (RTL) technique compared with primary suture only (PSO) closure in the prevention of IH in high-risk patients undergoing laparotomy.”

Material and Methods: “Open randomized controlled clinical trial. Included were patients older than 18 years who underwent midline laparotomy, emergency or scheduled, who were considered high risk, and who completed 3-year follow-up. The patients were randomized 1:1 to the RTL technique or to PSO. The objective was to report the incidence of IH and the complications associated with the closure method. Intention-to-treat analysis and Cox regression were performed.”

Results: “A total of 124 patients were randomized; 51 patients from the RTL group and 53 patients from the PSO group finished the 3-year follow-up. The incidence of IH was higher in the PSO group (15/53, 28.3%) than the RTL group (5/51, 9.8%) (p=0.016, OR 0.35, 95% CI 0.14–0.88, number needed to treat 5.4, log-rank test p=0.017). The groups were similar in the rates of surgical site infection, hematoma, seroma, and postoperative pain during follow-up.”

Conclusions: “The RTL technique is useful in the prevention of IH when compared with PSO in high-risk midline laparotomy patients, and it is not associated with a higher percentage of complications. Clinical trials NCT02136628, retrospectively registered”
Aim: According to the guidelines, prophylactic mesh placement appears to be an effective, safe procedure in high-risk patients for the prevention of incisional hernia (IH) after midline laparotomy, without its use being standardized. Knowing its radiological behaviour can resolve doubts about its use.

Material and Methods: This was a prospective observational cohort study. The included patients needed to have more than one risk factor for IH (age> 60 years old, Body Mass Index > 30kg/m², diabetes, chronic bronchopathy, heart disease, smoking, kidney disease, neoplasia, liver disease, immunosuppression or an emergency operation). Follow-up included 6-week and 12-month postoperative magnetic resonance imaging (MRI). If MRI was not performed, we used the follow-up computed tomography (CT).

Results: Between July 2016 and March 2021, 54 patients were enrolled in the study. Surgery was emergent in 14.8% of cases, clean-contaminated in 87% and upper gastrointestinal surgery in 51.9%. A total of 43 MRI and 3 CT at 6-week and 30 MRI and 2 CT at 12-month were carried out. The median of the mesh area were 150.7 vs 150,1cm² respectively. 91% of cases had the mesh lined to the fascia at 12 months. The bridging in the linea alba was zero in 61% at 6-weeks and 24% at 12-month follow-up, mean 9 vs 19mm (p = 0.001).

Conclusions: The use of imaging tests to know the postoperative behaviour of a Polyvinylidenfluorid (PVDF) “visible” mesh shows us that there is no mesh contraction at one year or detachment of the fascia, however we observe a significant tendency in the separation of the linea alba.
Aim: “Incisional hernia is the main complication after laparotomy, the prevention of this is currently aimed at preoperative rehabilitation, modification of the closure technique and the use of prophylactic mesh. The objective of the study was to measure the effectiveness of the modification in the laparotomy closure technique to reduce the incidence of incisional hernia.”

Material and Methods: “A systematic review and meta-analysis were carried out following the PRISMA guidelines. The first objective was to determine the incidence of incisional hernia at one year of follow-up, comparing the modification in the closure technique with the usual closure. The secondary objective was to determine the difference in wound dehiscence and surgical site infection between these two groups. Only clinical trials were included, and the random effects method was used for their analysis. PROSPERO registration number: CRD42021231107”

Results: “Seven clinical trials were included, comparing 1612 patients, the incidence of incisional hernia was significantly lower in the surgical technique modification group OR 0.55 (95% CI 0.38-79). Efficacy to reduce the incidence of wound dehiscence was also analyzed without finding a difference between the two groups OR 0.58 (95% CI 0.27-1.21). There was no statistically significant difference between both groups when comparing seroma hematoma and surgical site infection.”

Conclusions: “The modification in the laparotomy closure technique reduces the incidence of incisional hernia. However, when analyzing globally, only the Small bites and Reinforced tension line techniques contributed to this result.”
Aim: The aim of this study was to investigate the association of sarcopenia with the risk of burst abdomen after midline laparotomy.

Material and Methods: A single-center, retrospective, 1:4 matched case-control study of patients suffering from burst abdomen (cases) and controls. Sarcopenia was defined as lowest sex-dependent quartile of total cross-sectional psoas area adjusted for body surface area. Primary outcome was to evaluate the rate of sarcopenic patients among cases and controls. Secondary, risk-factors for burst abdomen and postoperative death, were evaluated by multivariate regression analysis.

Results: 67 patients suffering from burst abdomen were matched to 268 controls. Sarcopenia was associated with burst abdomen (OR 2.3, p = 0.006). Unadjusted analysis identified a higher 90-day mortality among sarcopenic patients compared to the non-sarcopenia group (32.9% vs. 21.1%, p = 0.029) but this association was not verified by the adjusted analysis.

Conclusions: Sarcopenia is an isolated risk-factor for burst abdomen after midline laparotomy.
Aim: To demonstrate that in patients with abdominal sepsis, delayed primary fascial closure and definitive abdominal wall repair can be achieved, in the same hospitalization, using combined therapies, which reduces the percentage of ventral hernias.

Material and Methods: Medical records, tomography images and outpatient controls of 9 patients were reviewed, which required open abdomen management for abdominal sepsis using negative pressure therapy combined with a dynamic fascial mesh traction, from February 2020 until May 2021.

Results: 9 patients (2 men and 7 women), all Grade 2C open abdomen according to Björck classification, with a median age of 43 years (25-71). The median time therapy was 29±3 days. The primary fascial closure rate was 100% (n=9), 77.8% (n=7) underwent a definitive repair of the abdominal wall with absorbable synthetic mesh in the same hospitalization, while 22.2% (n=2) did not, due to being cancer patients. The mortality rate was 11.1% (n=1) due to pneumonia and the fistula rate was 11.1% (n=1). None developed an incisional hernia at the one-year follow-up.

Conclusions: The combination of negative pressure therapy with dynamic fascial mesh traction, in the management of the open abdomen, allows us to achieve a 100% delayed primary fascial closure, avoiding ventral hernia. In the same hospitalization, while the patient leaves the critical stage, we can achieve a definitive repair of the abdominal wall using absorbable synthetic meshes returning the biomechanics to the abdominal wall, improving the quality of life of these patients.
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Aim: This study investigated the long-term effect of a standardized strategy of fascial closure with a mass closure technique, using a slowly absorbable running stitch for burst abdomen and evaluated the incidence of incisional hernia in these patients.

Material and Methods: A single-center, retrospective study including all patients that underwent surgery for burst abdomen between June 2014 and April 2019 was followed up in October 2020 to report the rate of incisional hernias.

Results: 94 patients underwent surgery for burst abdomen. 80 patients was enrolled for follow up. Index surgery was acute in 78%. Incisional hernia rate was 33%. 30-day mortality rate was 24%.

Conclusions: Standardized surgery for burst abdomen with a standardized mass-closure technique still results in high rates of incisional hernias.
Aim: “Ultrasound may contribute to establish the cause of nonspecific groin complaints. However, the risk is diagnosing an incidental inguinal hernia whereas the pain has an alternative cause. Overtreatment is to be prevented. Therefore, the aim of this study is to determine the prevalence of a previously unknown inguinal hernia among working-age men without groin complaints.”

Material and Methods: “A cross sectional study was conducted in healthy men aged 45-67 years. Men with a Body Mass Index (BMI) > 40, a history of groin complaints, a known inguinal hernia or previous inguinal surgery were excluded. Ultrasound of both groins was performed in supine position with and without a Valsalva manoeuvre by a specialised ultrasound technician in consultation with a radiologist. In all groin ultrasounds showing an inguinal hernia, physical examination was executed by a hernia surgeon.”

Results: “In the months June and November of 2018, 200 groins of 100 men were analysed. In 16 (16%) men an inguinal hernia was found on groin ultrasound (95% confidence interval [8.8 – 23.2]). In 12 men this was a unilateral inguinal hernia and in 4 men a bilateral inguinal hernia. Ultrasound yielded no other pathology.”

Conclusions: “In a population of men aged 40-67 years without groin complaints, ultrasound detects an inguinal hernia in 16%. Hence, the probability of wrongly attributing groin complaints to an incidental inguinal hernia, diagnosed on ultrasound, is considerable.”
Aim: The number of articles published each year are increasing, resulting in greater competition to get work published. Spin is defined as specific reporting strategies used to distort the readers’ interpretation of results so that they are viewed more favourable. However, prevalence of spin in studies comparing robot-assisted groin hernia repair with traditional methods is unknown. The aim of the study was to determine the frequency and extent of misrepresentation of results, spin, in studies assessing robot-assisted groin hernia repair.

Methods: This systematic review was reported according to PRISMA guidelines, and a protocol was registered at PROSPERO before data extraction. Database search included PubMed, EMBASE and Cochrane Central.

Results: Of 35 included studies, spin was present in 57%. Within these, 95% had spin present in the abstract and 80% in the conclusion of the article. There was no association between study size and spin (p>0.05). However, presence of spin in studies positively minded towards robot-assisted hernia repair was higher (p<0.001) compared with those against or being neutral in their view of the procedure. Furthermore, being funded by or receiving grants from Intuitive Surgical were associated with a higher prevalence of spin (p<0.01) compared with those who were not.

Conclusion: Spin was found to be common in articles reporting on robot-assisted groin hernia repair, and presence of spin was higher in studies funded by or receiving grants from the robot company. This suggests that readers should be cautious when reading similar literature.
Aim: The purpose of this study is to apply the resources of robotics to inguinal hernia repair (r-TAPP) and to investigate where specific optimizations to the surgical technique can be achieved.

Material and Methods: The results of 302 consecutive r-TAPP surgeries performed over an 18-month period are presented. It is a cohort study without a control group. The study was approved by the ethics committee (Ref. No. 2019-02046). Decisions on interventions (suturing of the transverse fascia or fibrin glue sealing of the inguinal canal) and mesh size were made intraoperatively. Patients were followed up six weeks postoperatively.

Results: In every fourth patient, a femoral, obturator, or Spieghel hernia was diagnosed in addition to symptomatic inguinal hernia. Mesh fixation with absorbable suture at 4 points was matured. The operative time averaged 71 minutes for unilateral, 103 minutes for bilateral and 95 minutes for unilateral recurrent hernias. 48% of procedures were performed by residents. Seroma incidence decreased from 15.0% in the first period to 5.1% in the third study period. None of the patients experienced pain symptoms due to nerve lesion. The study provided new clarity about the blood supply patterns of the lipoma, the course of the genital branch and the constitution iliac fascia.

Conclusions: Suturing of the transversal fascia, fibrin glue sealing of the inguinal canal, and suture fixation of the mesh are steps that must be validated in future studies. Robotics provides optimal conditions for residents training, without learning curve on the patient and with predictable OR times. Postoperative seroma formation and complication rate of r-TAPP are low.
Aim: To evaluate the possibilities, benefits and safety of laparoscopic treatment of inguinal hernias in patients with cirrhosis of the liver and ascites, in particular to evaluate the TAPP approach for the treatment of inguinal hernias in patients with cirrhosis of the liver and ascites.

Material and Methods: Group I - TAPP repair in 16 patients with liver cirrhosis and ascites. Group II - Lichtenstein type hernioplasty in 15 patients with liver cirrhosis and ascites. All patients underwent planned surgery after dosing preoperative laparocentesis and correction of liver function indices.

Results: In the first group of patients no complications developed, no suppurative complications were observed, no edema, no leakage of ascites fluid. Postoperatively, all patients recovered well, noticed less pain. Only 25 percent of patients required analgesics. Patients were discharged at home 3-5 days postoperatively. In group II - minor complications were observed: 1 local hematoma, 1 seroma. Postoperative pain syndrome was more pronounced. All patients required analgesics. Duration of hospitalization 4-6 days. During a 10-month follow-up, no patients had recurrence and chronic pain.

Conclusions: TAPP repair provided the opportunity to assess macroscopic changes in the liver and possibly to perform liver biopsies, if necessary. TAPP repair reduces days of hospitalization and postoperative recovery by reducing pain syndrome with a low percentage of analgesics. TAPP repair can be a useful treatment option for patients with liver cirrhosis accompanied by ascites.
"KINGSNORTH MODIFIED SCORE" FOR OPEN INGUINAL HERNIA REPAIR COMPLICATIONS PREDICTION. POINTHER STUDY.

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**Aim:** Aim of our study is to analysis of postoperative outcomes (30 days) after elective unilateral open anterior inguinal hernia repair and prove correlation to modified Kingsnorth (MK) score classification system.

**Material and Methods:** Prospective registered (NTC 04806828) study of all consecutive unilateral open anterior groin hernia repair performed at a University Hospital General Surgery Department from January 2019 to December 2020. Data was stored at National Spanish Groin Hernia Registry (EVEREG). All patients were preoperatively classified using MK score. Statistical analysis of postoperative complications and their relation to preoperative modified Kingsnorth scale was performed.

**Results:** 403 patients were included. 61\% were performed as ambulatory surgery. 15.7\% had more than 5-8 MK punctuation. A total of 62 patients had postoperative complications, 81\% of all complications were classified as Clavien I. Higher Surgery duration was directly related to higher MK (Pearson's correlation 0.291; \( P < 0.0001 \) score.) Statistically significant relationship with the presence of higher rate of complications were a KN score of 5-8 (OR 2.7; 95\% CI 1.07-4.82; \( P = 0.03 \)) whereas performance of surgery by an abdominal wall surgery specialist had less complications (OR 0.28; 95\% CI 0.08-0.92; \( P = 0.03 \))

**Conclusions:** MK classification predicts surgical wound complications on patients who undergo a primary unilateral inguinal hernia surgery. A KN score of 5-8 had a higher probability of wound complications. When surgery was performed by a specialist in abdominal wall surgery, less postoperative complications were observed.
 INFLUENCE OF THE MESH FIXATION METHOD ON THE RESULTS OF OPEN INGUINAL HERNIA REPAIR

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Aim: Study of postoperative outcomes after Liechtenstein inguinal hernia repair using self-gripping mesh and polypropylene mesh with suture fixation.

Material and Methods: Medical records of 289 open inguinal hernia repairs were analyzed: 176 – with sutured polypropylene mesh and 113 – using self-gripping mesh. To assess the quality of life we have used EuraHS Qol and SF-36. Statistical analysis was performed using SPSS.

Results: There were no significant differences in wound complications (such as swelling, seroma, hematoma, orchitis) between these groups (p>0.05). The duration of operation was significantly shorter with self-gripping mesh compared to sutured mesh (42.2 min. sd=23.42 vs 58.5 min. sd=16.70; p<0.001). Pain on the first and 6th days after implantation self-gripping mesh was present significantly less frequently in comparison with sutured mesh (χ² (1, N=289) =7.925, p =0.005 and χ² (1, N=289) =24.740, p<0.001). NSAIDs intake time was less in self-gripping mesh group (3.01±1.07 vs 4.43±1.75 days; U=11723, p<0.001). We have found no significant differences in both groups for all quality-of-life indicators EuraHS (p =0.234) and SF-36 (p =0.190).

Conclusions: Self-gripping mesh has comparable outcomes with sutured polypropylene mesh regarding the frequency of wound complications and quality of life on long-term follow-up. However, self-gripping mesh is associated with reduced operation time, pain in the short-term postoperative period, and taking NSAIDs compared to sutured mesh.
MORBIDITY, MORTALITY AND RECURRENT FACTORS OF INCARCERATED FEMORAL HERNIA

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Aim: Aimed to search the factors affecting morbidity, mortality, and recurrence in incarcerated femoral hernia cases.

Material and Methods: After ethical committee approval, patients operated due to incarcerated femoral hernia between 2010 and 2020 were included in the study. Patients in the pediatric age group (0-18 years), and pregnant patients were excluded from the study. Preoperative, intraoperative, and postoperative factors of the patients were gathered. Morbidity, mortality, and recurrence factors were evaluated with Mann-Whitney U test, χ² test, and Likelihood ratio test, p value lower than 0.05 as significant.

Results: The mean age of 50 patients was 54.56±19.34 years (19-91) and the female to male ratio was 33/17. Right-sided hernia was present in 27 (54%) patients and recurrent hernia in 5 (10%) patients. The most common surgery type was Mc Vay repair in 33 (66%) patients. Other surgery types were as follows: Lichtenstein procedure in 9 (18%) patients and Rutkow plug procedure in 8 (16%) patients. The morbidity and mortality rates of the study were 14% and 4%, respectively. Postoperative recurrence was seen in only 3 (6%) patients. Patients with preoperative nausea (p=0.003), vomiting (p<0.001), and tachycardia (p<0.001), presence of recurrent hernia (p<0.001), surgery under general anesthesia (p<0.001), performing both laparotomy (p=0.007) and organ resection during surgery (p<0.001) had more morbidity. Also, patients with preoperative tachycardia (p=0.005) and organ resection during surgery (p=0.029) had more mortality. However, no factors affecting recurrence were found in the study.

Conclusions: Morbidity and mortality probability are higher in patients with preoperative septic and obstructive symptoms.
Aim: In a robotic surgery era, the totally extraperitoneal (TEP) inguinal hernia repair is less common than the transabdominal preperitoneal (TAPP) approach. The enhanced-view TEP (eTEP) has been proposed as a modification to the standard TEP technique. The aim of this study is to present a single centre’s experience in Robotic TEP and eTEP inguinal hernia repair technique.

Material and Methods: This is a case-series presentation of patients with inguinal hernia that underwent robotic TEP and eTEP repair in a single institution. Patients’ characteristics were reviewed and perioperative outcomes were extracted. All patients were followed-up at the outpatient surgical unit. Intraoperative and postoperative parameters were analyzed.

Results: 21 patients (10% females) with a mean age of 58.5 years underwent robotic TEP (14 patients) and eTEP (7 patients) inguinal hernia repair. Eight patients were treated for bilateral hernia (total number of 29 hernias) and two were operated for recurrence. No conversion to open or TAPP repair was required. The mean operative time was 108 minutes for the bilateral hernias and 75 minutes for the unilateral cases. All patients were discharged the same day, after 3 to 5 hours postoperatively. Four of the patients used pain medication postoperatively. No major complications or recurrences were revealed during a mean postoperative follow-up time of 14 months.

Conclusions: Robotic TEP and eTEP are safe and efficient surgical options in the treatment of inguinal hernia in experienced centres. The two techniques can result in high-quality outcomes regarding hospital stay, pain control and elimination of hernia recurrence.
Aim: To assess if increased serum levels of estradiol is an independent risk factor for occurrence of groin hernia in men.

Material and Methods: We performed a hospital based case-control study. Men diagnosed with groin hernia were taken as cases and men who did not have groin hernia but were admitted for other elective surgery were taken as controls. Cases were matched to controls based on age and BMI. Morning fasting blood sample was collected from both cases and controls used to measure serum estradiol levels.

Results: A total of 46 hernia cases and 91 non-hernia controls were included in the study. The mean age and BMI of both cases and controls were not significantly different. The mean serum estradiol level for cases was 53.5 ± 7.11 pg/ml. This value was significantly higher (p<0.001) than for the control group which was 28.3 ± 3.14 pg/ml. A strong positive association was observed between increasing serum estradiol levels and hernia incidence. Men in 4th (highest) quartile of estradiol levels had a relative risk of 2.27 (95% CI:1.33-3.04) compared to men in 2nd quartile. Men in 1st (lowest) quartile didn’t have any hernia cases.

Conclusions: The knowledge may allow treatment or prevention with novel nonsurgical approaches. Therapy with aromatase inhibitors might prevent recurrence after hernia repair or even help men avoid surgery in the first place. Prevention of hernia will lead to decrease in morbidity and cost burden due to surgical treatment to a long extent.
Aim: Previous studies on the repair of small umbilical hernias have suggested a lower recurrence rate with mesh compared to suture repair. A remaining important question is in what anatomical position the mesh should be placed. The purpose of this study was to investigate the outcome of using a standardized 4x4 cm onlay-mesh for umbilical hernias ≤2cm.

Material and Methods: A retrospective study was conducted at a single institution in Sweden on all umbilical hernia repairs during 2015-2019. The follow up time was at least four months. Patients were identified using the hospital medical record database. Repairs performed with suture, sublay, ventral patch or laparoscopic mesh positioning were excluded. Patient’s demographics, comorbidities, intra- and postoperative details were considered. Primary outcome was surgical site complications within 30 days. Secondary outcome was recurrence.

Results: 80 patients were repaired with a small onlay-mesh for an umbilical hernia ≤ 2 cm and were included for statistical analysis. Median (range) follow-up time was 29.0 (4.3-50.1) months. Median age was 46 (26-76) years old. Median body mass index was 28 (19-38) kg/m². Men to female ratio was 2.1. 4 patients were identified with a surgical site postoperative complication; 3 with seroma and 1 with superficial wound infection. 3 of these were given antibiotics. 2 patients were treated with wound opening bedside. There were no registered cases of a recurrence.

Conclusions: Repairing small umbilical hernias with a small onlay-mesh was safe with a low surgical site complication rate. Randomized trials are needed to assess whether mesh reduce recurrences in umbilical hernia repairs ≤2cm.
[P122] LAPAROSCOPIC APPROACH TO THE ABDOMINAL WALL WITH CLOSURE OF THE DEFECT, OUR INITIAL RESULTS

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Aim: The aim of the study is to evaluate the closure of the defect in postoperative pain, seroma and recurrence.

Material and Methods: Inclusion criteria were; defect width of 2 - 4 cm and body mass index ≤ 35 kg/m2, or previous intraperitoneal surgery. A prospective database of perioperative variables have been collected. We consider postoperative pain as a value ≥5 on the Visual Analogue Scale, seroma types III and IV of the Morales-Conde classification.

Results: 32 patients were operated with laparoscopic closure of the defect (LCD) between 2018 and 2020. The mean age was 59 years and body mass index was 31 kg/m2. 14 patients had incisional hernia. 90% of the cases were M2-3 with a mean defect diameter of 2.7 cm. In 5 cases, a preperitoneal mesh was placed without tackers, the mean size of the mesh was 15 cm. The mean duration of the procedures was 96.1 min. Seven (22%) patients presented postoperative pain, of which 5 had 24 h limited and in two cases it lasted up to 48 h. No patient presented pain at the 30-day evaluation. The mean length of stay was 1.8 days. The mean follow-up was 23 months, one seroma (3.1%) and three (9.4%) recurrences were diagnosed.

Conclusions: In our initial experience, we considered LCD a safe technique with benefits for selected patients.
Aim: Cryptorchidism is a rare condition of adult male. The diagnosis is based on examination: impalpable testis and CT/MRI. The surgical correction of cryptorchidism is possible in childhood, but in adult orchiectomy is recommended, considering the malignancy risk. The association with hernia is uncommon.

Material and Methods: We report the case of a 23 years old male with left inguinal hernia and concomitant left cryptorchidism. MRI revealed the intra-abdominal left testicle, with reduced size and short vessels. Lab analysis were normal. We underwent laparoscopic exploration: the left testicle was small and had pelvic localization. A large inguinal hernia was also confirmed. We decided to perform laparoscopic TAPP (transabdominal preperitoneal repair) and left orchiectomy. The evolution was uneventful and patient discharged 1st day postoperatively. Histology revealed testicular atrophy with no malignancy, also no spermatogenesis was present. No recurrence was found during follow-up.

Results: Cryptorchidism in adult is rare. The association with hernia is even more rare. The open management is not easy, often in pelvic/abdominal localization, the inguinal approach can be cumbersome. There is no standard of care for these cases, but we found the minimally invasive approach to be a good choice. Laparoscopic surgery has the advantage of enhanced exploration and orhidectomy can be easily performed. Associated with the orchiectomy, hernia cure can be facilitated by laparoscopic TAPP procedure.

Conclusions: In cases of concomitant hernia and cryptorchidism, we emphasize the idea of simultaneously cure hernia via laparoscopic TAPP procedure associated with orchiectomy as feasible and safe.
Aim: To demonstrate how minimally invasive surgery of the abdominal wall allows us to rescue patients with recurrent hernias previously treated with other laparoscopic techniques.

Material and Methods: An 83-year-old woman with moderate comorbidities, ASA III and obese was operated for bilateral Spiegel’s hernia by laparoscopic IPOM. 21 months later, a symptomatic recurrence of the right hernia was diagnosed.

The physical examination was difficult due to obesity and the CT scan showed a right hernia recurrence. This CT scan was used for 3D Planning of the surgery, showing the right Spiegel’s hernia with 5-6 cm of diameter with a bowel loop inside.

Results: Given the age of the patient and comorbidities, it was decided to perform a laparoscopic repair using the IPOM + technique, closing the defect with barbed suture and placing a wide visceral contact mesh fixed with absorbable tackers.

She was discharged 24 hours after surgery without complications, providing the patient with the benefits of minimally invasive surgery.

Conclusions: Laparoscopic surgery allows us to treat hernia recurrences even in cases previously treated by minimally invasive approach.

An individualized treatment adjusted to the age and characteristics of each patient should be carried out.

3D Technology and reconstruction is very useful for pre-surgical Planning, allowing a personalized pre-operative assessment of each patient.

The use of 3D Technology is a great teaching tool with great potential for surgical planning.
Introduction: “Internal hernias are an unusual cause of intestinal obstruction. Pericaecal hernias are an exceptionally rare type of internal hernia.

Laparoscopy for small bowel obstruction was previously considered inappropriate. We present a case of Pericaecal hernia causing small bowel obstruction treated successfully with a laparoscopic approach.”

Case-Report: “64 year old man presented with abdominal pain, vomiting and constipation for 3 days, no previous surgery. Small bowel obstruction confirmed on PFA and CT. He was treated conservatively for 10 days without settling. A laparoscopy revealed a Pericaecal hernia. This was reduced with gentle manoeuvre and the peritoneal folds were divided to prevent recurrence. Recovery was uneventful.”

Discussion: “Perioperative diagnosis of internal hernia is extremely difficult. Pericaecal hernia is an uncommon type of internal hernia. CT diagnosis of internal hernia remains difficult. Laparoscopy is a valuable tool for diagnosis and treatment with the advantage of minimal invasiveness. However, the laparoscopic manipulation of distended bowel loops remain controversial because of high risk of perforation, reduced space to work in the peritoneal cavity and requirement of advanced laparoscopic skills. Laparoscopic treatment of Pericaecal hernia was reported about 17 years ago but has since been reported more frequently and in recent years there is a move towards laparoscopic diagnosis and management of Pericaecal hernias.”

Conclusions: “CT diagnosis of internal hernia remains difficult. With the advent of minimal access surgery, diagnostic laparoscopy may be a safe and feasible modality to diagnose and deliver definitive treatment of small bowel obstruction secondary to Pericaecal hernia.”
Aim: The hydrocele of the femoral canal (Femorocele) is one of the rarest entities of femoral hernia (1). All of the reported cases were an intraoperative diagnosis and were treated with an open approach. We are reporting, the probably first femorocele diagnosed and treated laparoscopically.

Material and Methods: A 57-years-old female patient was presented in our outpatient clinic with pain and an unclear lump in the groin area for 6 months. The sonographic examination revealed a cystic structure in the groin area resampling Nuck’s cyst. An elective laparoscopic exploration and transabdominal preperitoneal (TAPP) repair was planned.

Results: A laparoscopic exploration was carried out. Intraoperatively, the cystic structure was not found in the Nuck’s Canal, but in the femoral canal as a content of a femoral hernia with some pre-peritoneal fat. By the extraction of the cyst, a gush of clear fluid was noted. After the usual preparation of the preperitoneal area, a mesh was placed in TAPP technique.

Conclusions: This rare variety of femoral hernias, femorocele, is commonly misdiagnosed as a strangulated hernia or Nuck’s cyst (as in this case) among other differential diagnoses (2). All published femorocele cases were treated with an open approach. As demonstrated here, such unclear cases can be laparoscopically explored and treated accordingly.

Aim: “The optimal repair technique for small and medium-sized ventral hernias in obese patients remains unknown. We aimed to evaluate results after robotic-assisted laparoscopic transabdominal repair with retro-rectus mesh placement (rTARUP) compared with laparoscopic intraperitoneal onlay mesh repair (IPOM).”

Material and Methods: “Retrospective cohort study of consecutive patients undergoing rTARUP or IPOM repair for small or medium-sized primary ventral and incisional hernias. The primary outcome was postoperative need for transverse abdominis plane (TAP) block or epidural catheter, and secondary outcomes were 30-day complications, and length of stay. All patients underwent elective surgery and were followed for 30 days postoperatively.”

Results: “A total of 27 patients (rTARUP) and 32 (IPOM) were included. Patients in the two groups were comparable in terms of age, sex, comorbidities, smoking status, body mass index (BMI), and type of hernia. The median BMI was 32.4 kg/m² and the fascial defect area was comparable (rTARUP median 16.8 cm² vs. IPOM 11.7 cm², P = 0.303). The duration of surgery was longer in the rTARUP group (median 117.2 min. vs. 84.4, P = 0.003), whereas the postoperative need for TAP block or epidural analgesics was less in the rTARUP group compared with IPOM (n= 14 vs. n= 1, P = 0.002). There were no severe complications or reoperations in the two groups. The length of stay was shorter in the rTARUP group (median 0 vs. 1 days, P < 0.001).”

Conclusions: “rTARUP was associated with reduced postoperative analgesic requirement and shorter length of stay compared with laparoscopic IPOM.”
Aim: Presentation of our data on Vacuum-Assisted Wound Closure and Permanent Onlay Mesh-Mediated Fascial Traction (VAWCPOM) in combination with Botulinum Toxin A (BTX-A) injection in the lateral abdominal wall as a treatment of the open abdomen (OA).

Material and Methods: This is a retrospective case series including patients treated for OA from January 2017 till March 2021 with VAWCPOM and BTX-A. Patient records were collected from medical charts, incl. age, sex, body mass index (BMI), comorbidity, initial fascial defect size, time until fascial closure, complications and, when available, outpatient follow-up.

Results: A total of 33 patients with OA were included. The mean age was 62,5 years, male/female ratio was 15:18, with a mean BMI of 35,4 kg/m². The mean width of the fascial defect was 13,5 cm (5 - 25cm). The rate of fascial closure was 96,9%, achieved within a mean of 22,7 days. Fascial closure was not attainable in one patient who developed enterocutaneous fistula under treatment. 22 patients experienced in-hospital complications. Short-term follow-up was conducted in 22 patients, with hernia recurrences in three.

Conclusions: Treatment of OA remains a surgical challenge. This case series shows promising results with a high rate of fascial closure using a combination of VAWCPOM and BTX-A and an acceptable rate of postoperative complications in this severely challenging patient group. The rate of primary closure indicates that this may be the future management of open abdomen.
Aim: “To compare the outcomes of different surgical approaches for diaphragmatic hernia (DH) repair.”

Material and Methods: “Adult patients with a principal admitting diagnosis of uncomplicated DH registered in the National Inpatient Sample in the period 2010-2015 were included. Patients with obstruction, gangrene, or congenital hernias were excluded. The primary outcome was in-hospital mortality. Secondary outcomes were the incidence of complications, length of stay, and hospital charges. A multivariate logistic regression model adjusted by age, sex, elective admission, comorbidities, and hospital characteristics was used to analyze the impact of the surgical approach on the evaluated outcomes.”

Results: “A total of 14910 patients with DH were included (median age 65 years, 74% women). Abdominal approaches were the most commonly performed (78.9% laparoscopy and 13.6% open). Patients that underwent open abdominal and thoracic repairs had a higher risk of complications (sepsis, pneumonia, surgical site infection, prolonged postoperative ileus, and acute myocardial infarction), longer hospital stay, higher total hospital costs, and a significantly higher risk of mortality (OR 2.62; 95% CI 1.59-4.30 and OR 4.60; 95% CI 2.37-8.91, respectively) compared to patients that underwent laparoscopic abdominal repair. Individuals whose DH repair was performed through thoracoscopy had a similar mortality risk to those who underwent laparoscopic abdominal repair (OR 0.87; 95% CI 0.11-6.43).”

Conclusions: “Nowadays, laparoscopy has become the most used approach for DH repair. In the present cohort, it was associated with better outcomes in terms of complications, length of hospital stay, and mortality, as well as lower health costs. Additional studies assessing hernia characteristics are required to validate this result.”

<table>
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<tr>
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<th>Open thoracic</th>
<th>Thoracoscopic</th>
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<td>AMI</td>
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<tr>
<td>SSI</td>
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<td>40509 (27436-61960)</td>
<td>57781 (40251-91416)</td>
<td>46280 (32015-71094)</td>
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<td>LOS (days)</td>
<td>5 (4-8)</td>
<td>2 (1-3)</td>
<td>6 (4-8)</td>
<td>3 (2-5)</td>
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<td>Mortality</td>
<td>31 (1.53%)</td>
<td>51 (0.43%)</td>
<td>12 (1.44%)</td>
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PPOI: Prolonged postoperative ileus; AMI: Acute myocardial infarction; SSI: Surgical site infection; LOS: Length of stay.
Aim: Incisional hernia (IH) occurs approximately in 15% of patients after midline surgery. Surgical treatment for IHs include a solely open or solely laparoscopic approach with mesh placement. Recently, hybrid (combined laparoscopic and open) approaches are being performed. This systematic review evaluates the perioperative complications of hybrid incisional hernia repair (HIHR).

Material and Methods: EMBASE, Medline via OvidSP, Web of Science, Cochrane and Google Scholar databases were searched. Studies providing data on intra- and postoperative complications in patients who underwent HIHR were included. Data on intra- and postoperative complications were extracted and meta-analyses were performed. Study quality was assessed with the Newcastle Ottowa Scale, ROBINS-I tool, and Cochrane risk of bias. PROSPERO registration: CRD42020175053.

Results: Results: Nine studies (n=1596 patients) were included. Five studies compared intra-operative complications between HIHR and laparoscopic incisional hernia repair (LIHR) with a pooled incidence of 1.8% in HIHR group and 2.8% in LIHR group (p=0.13). Comparison of postoperative prevalence of surgical site occurrences (SSOs) (24% versus 31%, p=0.02) and surgical site occurrences requiring interventions (SSOPIs) (1.5% versus 4.1%, p<0.01) were in favour of the HIHR group. Overall postoperative complications seemed to occur less frequent in the HIHR group, though no hard statements could be made due to the vast heterogeneity in reporting between studies.

Conclusions: Although the majority of studies were retrospective and included a small number of patients, HIHR led to less SSOs and SSOPIs compared to LIHR. This systematic review forms a strong invitation for more randomized controlled trials to confirm the benefits of this approach.
A NEW THREE-STEP HYBRID APPROACH IS A SAFE PROCEDURE FOR INCISIONAL HERNIA: EARLY EXPERIENCES WITH A SINGLE CENTRE RETROSPECTIVE COHORT

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\textbf{Aim:} In this study, a three-step novel surgical technique was developed for incisional hernia, in which a laparoscopic procedure with a mini-laparotomy is combined: so-called ‘three-step incisional hybrid repair’. The aim of this study was to reduce the risk of intestinal lacerations during adhesiolysis and recurrence rate by better symmetrical overlap placement of the mesh.

\textbf{Material and Methods:} From 2016 to 2020, 70 patients (65.7\% females) with an incisional hernia of >2 and ≤10 cm underwent an elective three-step incisional hybrid repair in two non-academic hospitals performed by two surgeons specialised in abdominal wall surgery. Intra- and postoperative complications, operation time, hospitalisation time and hernia recurrence were assessed.

\textbf{Results:} Mean operation time was 100 min. Mean hernia size was 4.8 cm; 45 patients (64.3\%) had a hernia of 1–5 cm, 25 patients (35.7\%) of 6–10 cm. Eight patients had a grade 1 complication (11.4\%), five patients a grade 2 (7.1\%), two patients (2.8\%) a grade 4 complication and one patient (1.4\%) a grade 5 complication. Five patients had an intraoperative complication (7.0\%), two enterotomies, one serosa injury, one omentum bleeding and one laceration of an epigastric vessel. Mean length of stay was 3.3 days. Four patients (5.6\%) developed a hernia recurrence during a mean follow-up of 19.5 weeks.

\textbf{Conclusions:} A three-step hybrid incisional hernia repair is a safe alternative for incisional hernia repair. Intraoperative complications rate was low.
Aim: In Japan, the de novo type inguinal hernia is defined as a hernia that develops without being related to the vaginal process of peritoneum. The pathological condition of a de novo type hernia is considered similar to that of a sliding hernia. The aim of this study is to discuss about the operative procedure for de novo type inguinal hernia, with a particular focus on lipomas.

Material and Methods: We examined surgical procedures, rate of combined lipoma, postoperative complications, and recurrence rates of de novo cases among TAPP cases performed in our department from 2018 to 2020.

Results: We performed 230 TAPP repairs during the period, included 56 de novo type hernia. 19 cord lipomas were found in de novo type hernias but none in non de novo type hernias. The lipomas prolapsed from the lateral side of the internal inguinal ring in 6 cases, medial side in 9 cases, In 4 cases, lipoma or lipomatous tissue were embedded in the spermatic cord and they could not be extracted. There were no postoperative complications. The average postoperative hospital stay was 1.2 days. There were no chronic pain nor recurrence.

Conclusions: It is important to note that the de novo hernia is associated with a high incidence of lipoma. Since lipomas are often attached to the peritoneum, dissecting the peritoneum at the internal inguinal ring has the risk of missing the presence of lipomas, and in de novo hernias, the peritoneum must be pulled out.
Aim: The objective of this study is to identify two-year recurrence and complication rates using robotic assisted reinforced biologic augmented repair (ReBAR) in inguinal hernia repair.

Material and Methods: A retrospective review identified all robotic inguinal hernia repairs utilizing a reinforced biologic mesh performed by a single surgeon from May 2018 through May 2019. All repairs employed the robotic transabdominal preperitoneal (rTAPP) approach combined with the ReBAR technique. Patients with prior repairs and bilateral hernias were included. All patients were followed post-operatively using secure messaging to assess outcomes, including hernia recurrence and other complications.

Results: A total of 57 patients undergoing the rTAPP ReBAR were identified. Of these patients, there were 18 bilateral hernias repaired for a total of 75 inguinal hernia repairs. In addition, 5 of the hernias had previously been repaired. Two-year outcomes identified 1 recurrence (1.3%) at 345 days post-operatively and one complication of small bowel obstruction requiring takeback unrelated to the ReBAR. There were no complications of chronic groin pain or seromas in this cohort.

Conclusions: In conclusion, the two-year recurrence rate in this population of 75 inguinal hernias repaired using the robotic assisted ReBAR was 1.3%. With low recurrence and complication rates, the robotic assisted ReBAR technique appears to be a safe and durable option for inguinal hernia repairs.
Aim: Even today, operations which include retromuscular mesh placement are usually performed using an open approach. Thanks to advent of robotics, these technically demanding operations can be carried out using minimally invasive techniques. The objective of this investigation is to establish a novel minimally invasive surgical method as part of a feasibility study in a hospital providing specialised care.

Material and Methods: We carried out a retrospective analysis, out of all patients who were operated on a ventral hernia, using a robotically assisted totally extraperitoneal technique, during the period between September 2019 and May 2021. For evaluation we used data from our hospitals information system. All patients had given their consent, to participate in the Herniamed quality assurance study.

Results: From September 2019 to May 2021, 33 patients underwent robotic surgery on a ventral hernia, using a totally extraperitoneal approach. 23 patients had an incisional hernia (69.70%), 10 patients had a primary hernia (30.30%). We did perform a total of 3 unilateral and 2 bilateral Transversus Abdominis Releases (TAR). A lateral approach was chosen in 26 patients and a caudal "bottom-up" approach in 7 patients. There were no intraoperative complications. A conversion was not necessary. Postoperative complications did occur in 3 patients (2 Clavien Dindo 1, 1 Clavien Dindo 3a). Reoperation was not needed.

Conclusions: The eTEP technique is a promising surgical method, that can also be carried out in a hospital providing specialised care, with an acceptable risk of complications. This technique enables us, to combine the advantages of minimally invasive surgery with those of extraperitoneal mesh placement.
Aim: Several meta-analyses indicated, that extraperitoneal mesh placement in the retromuscular or preperitoneal space shows advantages over intraperitoneal mesh placement. Previous surgical interventions which included extraperitoneal mesh placement were usually performed using open surgery. For several years now, our hospital has pursued to treat ventral hernias using a minimally invasive approach with extraperitoneal mesh placement. A Da Vinci X system has been available since the beginning of 2019. The aim of this analysis is to show the process of changing the operative procedure in ventral hernia repair over the period from 2016 to 2020.

Material and Methods: All hernia operations from 2016-2020 were evaluated using our hospitals information system. Every surgical intervention which included ventral hernia repair with the indication for mesh implantation was taken into the analysis.

Results: In 2016, the proportion of minimally invasive procedures was 36.67%. In all of these cases an intraperitoneal mesh was implanted in the abdominal cavity (laparoscopic IPOM operation). Open surgery was performed in 63.33%, out of which we implanted an intraperitoneal mesh in 23.68%, a retromuscular mesh in 73.68% and an onlay mesh in 2.63% of the cases. In 2020, the proportion of minimally invasive operations was already 87.5%, of which 83.33% were performed robotically assisted and 16.67% laparoscopically. In 94.29% of the minimally invasive operated patients an extraperitoneal mesh implantation was carried out, among which 75.76% were placed in the retromuscular and 24.24% in the preperitoneal position.

Conclusions: The majority of elective operations on ventral hernias can be performed in a minimally invasive technique with retromuscular mesh placement, using the robot.
Aim: To researched the degradation resistance of PVDF mesh by comparing its morphological and chemical condition with PP mesh.

Material and Methods: PVDF and PP meshes analysed in this study were received from a previous animal experiment. To expose the surface of explanted meshes, a tissue removing method with protease was used and the result of this cleaning process was tested by X-ray Photoelectron Spectroscopy (XPS). The morphological condition of the mesh surface was compared using Scanning Electron Microscopy (SEM) and the chemical condition concerning degradation was analysed through Fourier Transform Infrared Spectroscopy (FTIR). The surface condition of PVDF mesh after 3-, 6-, 12- and 24-month implantation was illustrated and compared with two types of PP meshes.

Results: XPS revealed an absence of nitrogen, confirming the successful removal of tissue residues using protease. SEM results presented no notable morphological surface change of the PVDF mesh and progressive surface cracking processes over time of both types of PP meshes. FTIR spectra of the implanted PVDF meshes had no considerable difference from the spectrum of the pristine mesh, while FTIR spectra of both types of PP meshes had extra chemical functional groups increasing with implantation time, indicating progressive degradation.

Conclusions: PVDF mesh does not show signs of degradation up to 24 months after implantation while PP meshes progressively degrade with increasing time under the same conditions, which appears as worsening Environmental Stress Cracks. This study highlights the morphological and chemical stability of the PVDF mesh and demonstrates that the PVDF mesh is more resistant to degradation in comparison to the PP meshes.
Aim: Fascial groin anatomy remains a conundrum. In particular, a clear anatomical allocation of the correct extraperitoneal dissection planes and spaces in total extraperitoneal endoscopic hernia surgery (TEP) has not yet agreed upon. The differing anatomical concepts are reflected by the variability of surgical approaches, the considerably long learning curves and subsequent complications. Thus, the aim of this study was to reassess the topographic anatomy of the groin region providing a basis to standardize the surgical steps of TEP according to clearly defined anatomical landmarks.

Material and Methods: Video analysis of intraoperative surgical anatomy of groin hernia patients was correlated with the findings retrieved by macroscopic anatomical studies. The groin region of formalin fixed body donors was subjected to a stepwise dissection exposing the fascial system of the abdominal wall layer-by-layer and via different angles. Selected areas of interest were processed for histological study. Surgically relevant anatomical landmarks were defined and termed according to the most appropriate anatomical nomenclature.

Results: The essential surgical dissection steps during TEP could be related to specific anatomical landmarks extending within the extraperitoneal space of the ventral and dorsolateral abdominal wall. The definition of fascial structures and interfaces and the identification of structures at risk allowed the identification of correct dissection planes for mesh placement.

Conclusions: Our study helps to clarify the definition and nomenclature of anatomical key structures required for a standardized description of TEP in a simplified model. The data may contribute to reduce complications and improve surgical teaching and training.
LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL REPAIR FOR SMALL AND MEDIUM PRIMARY UMBILICAL AND MIDLINE HERNIAS

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Aim: Complications of open mesh repair for primary umbilical and midline hernias (PUMH) may lead to significant re-admissions and follow-up costs. Although laparoscopic intraperitoneal onlay mesh repair reduces infection rates, especially in overweight patients, it’s controversial in these hernias, mainly due to potential adhesions’ formation. Laparoscopic transabdominal preperitoneal technique (lap-TAPP) may address these issues, as it combines advantages of both open and laparoscopic approaches. The aim of this study is to present the initial results of lap-TAPP for PUMH in regard to its feasibility and complication rates.

Material and Methods: We evaluated 25 consecutive cases of lap-TAPP repair for PUMH. Patients’s characteristics, intraoperative findings, and postoperative complications after 30-days follow-up were analyzed.

Results: 21 male and 4 female patients were included in analysis (mean BMI 29.8 kg/m²). Surgery time was 82 minutes (55-120). We found 20 umbilical and 11 epigastric linea alba hernias. Mesh size was 144 cm² (120-225); mean hernia defect width was 25 mm (10-40). In 9 patients (36%) the peritoneal rents were created which were easily closed with sutures. All patients were discharged on 1 POD with no complications. After 30-days we found no recurrences or bulging, no pain complaints. We found one subcutaneous small hematoma with no need for intervention.

Conclusions: Laparoscopic TAPP for small and medium PUMH is a safe and feasible technique with low complication rate. However, this method is technically demanding and time consuming while performed with laparoscopic approach as it requires precise and subtle plane dissection, and non-ergonomic closure hernia defect.
Aim: Laparoscopic retro-rectus ventral hernia repair avoids the need for intra-peritoneal mesh placement and penetrating mesh fixation. The robotic platform facilitates the execution of this technique.

Material and Methods: From a prospective consecutive single center database all patients that underwent a robotic assisted trans-abdominal retro-rectus ventral hernia repair (rTARUP) via lateral single docking using a self-fixating mesh (ProGrip) were identified.

Results: Between September 2016 and December 2019, 203 patients were included. There were 89 (44%) umbilical hernias, 34 (17%) epigastric hernias and 80 (39%) incisional midline hernias. Patients had a mean BMI of 29 kg/m². The mean hernia diameter was 3.2 cm and mainly located in zone M2-M3-M4 of the EHS classification. The mean operative time was 85 min (SD: 33 min) and all except one were clean operations. The self-fixating mesh was mostly 15 cm wide with a variable length between 15 and 30 cm. No intra-operative complications or conversions to open surgery. Intra-hospital complications were seen in 12 patients (6%) and one patient needed a reoperation for bleeding. The operation was performed in day care in 37% of patients and hospital stay was less than 24 hours in 80%. There were 6 readmissions within 30 days of surgery (3%). At 12 months clinical follow-up 3 patients were documented with a recurrence and 2 underwent an laparoscopic intra-peritoneal hernia repair. Due to COVID-19 restrictions a clinical follow-up was only possible in 73 % of patients and needs updating.

Conclusions: This case series reports favorable early clinical outcome of an innovative retro-rectus repair using the robotic platform.
Aim: Laparoscopic paraesophageal hernia repair is an effective treatment for symptomatic paraesophageal hernias. To reduce recurrence rates, the use of prosthetics for the crural repair has been suggested. Mesh-related complications are rare, but known to be disastrous. To address another form of crural repair, polypropylene strips are suggested. This study aimed to assess peri- and postoperative complications of reinforcement of the cruroplasty with polypropylene strips.

Material and Methods: From 2013 to 2020, patients with a type II, III or IV primary or recurrent paraesophageal hernia that underwent cruroplasty with polypropylene strips were retrospectively reviewed. Intra- and postoperative complications were graded according to the Clavien-Dindo classification. The incidence of symptomatic recurrent hiatal hernia (CT or endoscopy proven) and hospital stay were assessed.

Results: One-hundred-and-fifty-eight patients were included. Mean age was 65 years (standard deviation 10.4), 119 patients were female (75.3%). Almost 50% of surgeries took place between 2018 and 2020. Median follow-up was 7 months (interquartile range 17.5). Mean operation time in the primary hernia group was 159 minutes (standard deviation 39.0), and length of stay was 4.4 days. In 3/158 patients (2.0%) intra-operative complications occurred. Two patients developed a grade IV and seven patients a grade III postoperative complication. No mortality was recorded. Twelve recurrences (8.2%) were detected in the primary hernia group, and one (9.1%) in the recurrent hernia group.

Conclusions: There were no mesh-related complications seen and symptomatic recurrence rate was low, but longer follow up is needed.
Aim: In this video we want to share and discuss what we have learned from our 20 year experience in IPOM PLUS procedures.

Material and Methods: We use only all 5 mm trocars, instruments and 30 degree optic and we always use a low intraabdonimal pressure (10mmHg).

The major technical trick in is to carefully prepare and manage the abdominal wall context, in order to free all the hernia areas.

Results: Our IPOM experience is almost more than 500 case, elective as emergency. Normally we use a double prolene (with the film versus the intestine) mesh with a 5 cm overlap. Besides the well known needed physical characteristics of the mesh, on the surgeon’s side, a mesh should be smooth, stiff, wide enough to cover all the possible defects, easy to handle and, especially for its possible use in laparoscopy, with a certain degree of and thickness just what it is needed in order to let it pass through a 5 mm trocar once rolled up. We use to close the defect in order to avoid serosa and SS - Morbidity and we use to fix the mesh with absorbable tackers.

Conclusions: Most of the advantages of laparoscopy rely on the minimal access and the possibility to manage and examine the abdominal context, especially in emergency, and to close the defect and to fix the mesh with tackers.
Aim: We use the self-made manual to understand procedures easily, and the self-assessment sheet to improve trainees’ skills efficiently. We investigated the effect of this method for trainees in laparoscopic inguinal hernia repair.

Material and Methods: In the original manual, surgical procedures and how to make surgical fields are explained using intraoperative photos, in order to clarify the purpose of the procedures in each scene of surgery. We also made the self-assessment sheet that sets goals according to the manual, and evaluates the trainee’s attainment objectively. Trainees score the assessment sheet after every surgery. Trainers evaluate their sheets and give feedback on their skills with a radar chart.

Results: By using the same manual, trainees and trainers could share the same terms and thoughts easily during surgery. The self-assessment sheet made trainees effective to understand their weak points and improve their skills. At the beginning of the training, the much-experienced trainee got a higher score. As trainees experienced surgeries, they became getting higher scores. There was a significant correlation between a high score and a short operation time. A radar chart helped efficiently to understand trainees’ weak points.

Conclusions: Using the self-made manual and the self-assessment sheet together was useful for both the trainer and the trainees to evaluate their attainment objectively. Scores and graphs helped trainees assess their skills efficiently.
Aim: Repair of inguinal hernia is one of the most common operations in general surgery in industrialized countries. Isolated spermatic cord liposarcoma is a very rare soft tissue tumor. Despite standardized diagnostic algorithms for inguinal hernia, it could be difficult to predict such a rare finding.

Material and Methods: We report a case of inadvertent inguinal liposarcoma excision during hernia surgery in a 72-year-old male patient. Except for polyposis coli there were no further illnesses.

Results: After a minimal invasive transabdominal preperitoneal (TAPP) repair of a symptomatic inguinal hernia last year a persistent scrotal swelling developed. Computed tomography (CT) showed a protrusion of fatty tissue into the scrotal sac. Diagnosis of scrotal hernia was made. We performed an open Lichtenstein procedure. The final pathologic examination revealed a highly differentiated liposarcoma. Staging was completed and the case was presented to a multidisciplinary sarcoma tumor board at our institution. As recommended, a inguinal reoperation was performed with wide excision.

Conclusions: Although a very rare condition, spermatic cord liposarcoma should be considered as a possible differential diagnosis for inguinal hernia surgery.
DERMOID CYST MASQUERADING AS INCARCERATED INGUINAL HERNIA.

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Aim: "For pre operative optimization and educational purposes, rare possibilities should be included in the differential diagnosis"

Material and Methods:

CASE REPORT.

Inguinal hernia is one of the common operations done by surgeons, often diagnosed clinically. Here we present a case of 29 year old male patient presented with inguinal swelling for 3 years. He was admitted for the surgical ward as a case of incarcerated inguinal hernia for elective repair under GA. Intra op the mass was not consistent with inguinal hernia, two other possibilities were a concern that can cause the swelling; 1) testes, which was excluded by examining the scrotum, 2) Dermoid/Epidermoid cyst which was checked by the mass content of hair and pasty fluid

Results: “DERMOID CYST”

Conclusions: “Most surgeons depend on clinical picture in diagnosing inguinal hernia, thus even other rare possibilities should be included in the differential diagnosis.

Unusual presentations of inguinal hernia should be having radiological evaluated."
Aim: In this video, the authors provide an educational demonstration on the use of robotic surgery in management of two patients with complicated and recurrent inguinal hernias. The two patients demonstrated in these videos show the benefits of use of robotics in the approach to a patient with a recurrent hernia after previous open repair with plug and patch method as well as repair in a very obese patient with large hernias causing obstruction of the left ureter.

Material and Methods: N/a

Results: N/a

Conclusions: Robotic surgery is an emerging technology in surgery and can be a useful modality in treating patients with complex and recurrent inguinal hernias. Furthermore, the visualization in these complex cases can be helpful in identifying the important structures during dissection. Regardless of technique, the two videos presented demonstrate a complex dissection which may be needed when repairing recurrent or very large inguinal hernias.
Aim: After any type of musculoskeletal surgery, post-operative rehabilitation with advice on weight bearing and physical therapy is normal practice. Rehabilitation protocols lead to early mobilization and shorter hospitalization. Although ventral hernia repair (VHR) is musculotendinous surgery with tremendous impact on muscle strength and coordination, standardized and evidenced rehabilitation protocols for VHR are lacking. This survey aims to provide insight into the rehabilitation protocols after VHR, commonly used in the Netherlands.

Material and Methods: Hernia-surgeons in all Dutch hospitals were addressed in May 2021 by an electronic survey. Three cases were presented: non-complex (2 cm, primary umbilical repair), moderate-complex (8 cm, Rives-Stoppa) and complex (13 cm, myofascial release). Use of abdominal binders, advice on physical strain and referral for physical therapy were surveyed.

Results: 75 of 75 (100%) Dutch hospitals responded. In order of increasing hernia complexity an abdominal binder was prescribed in respectively 10%, 74% and 92% with various duration. Reduced physical strain was advised in 73%, 90% and 91%, mainly with a duration of 4-6 weeks (40%, 58% and 70%). Patients were referred for physical therapy after discharge in 4%, 15% and 41%.

Conclusions: This study describes the practice of rehabilitation after VHR in the Netherlands. Although abdominal binder prescription and physical strain advice increases with hernia complexity, there is no uniformity in duration. Physical therapy was advised only in a minority of the VHR patients, even after complex reconstructions. Lack of standardized rehabilitation protocols after VHR underlines the need for guidelines.
Aim: LIRA technique (Laparoscopic Intracorporeal Rectus Aponeuroplasty) was described in 2018 in order to reduce the tension in the midline as an alternative to defect closure (CD) in Laparoscopic Ventral Hernia Repair. We present our results in LIRA series in patients over 1-year follow-up.

Material and Methods: A prospective controlled study was conducted from January 2015 to December 2020 to evaluate an elective new procedure (LIRA) performed on patients with midline ventral hernias w2 (EHS Classification). Data analyzed included patient demographics, operative parameters and complications.

A Tomography was performed preoperatively and postoperatively (1 month and 1 year) to evaluate recurrence, distance between rectus and seroma

Results: 49 patients were included. Mean Age was 58± 10.59 years old and BMI 33.11± 6.61 kg/m². Mean width of the defect was 6.19± 1.49 cm. Average VAS (24 h) was 5.09 ± 5.0.38(1 month) and 0 (1 year). Mean preoperative distance between rectus was 5.55± 1.61 cm; postoperative was 2.15 ± 0.79 cm (1 month) and 2.20±0.68 cm (1 year). Radiological seroma at first month was detected in 40%. Seroma after 1 year was 4.08% Mean follow-up was 24 months. Bulging was detected only in 1 case (2.04%) of our series after 1 year follow up. No recurrence is data.

Conclusions: LIRA technique could be considered as an alternative to CD for w2 defects with a low rate of complication, and could be related to a low rate of postoperative pain with no recurrence and a low rate of bulging compared to CD, being a safe, feasible and reproducible technique.
Aim: Provide a report on all patients who underwent laparoscopic incisional hernia repair as part of the TACKoMesh RCT prior to unblinding of treatment arms.

Material and Methods: Trial recruitment was for primary incisional hernia with a defect diameter of 3–10cm. 63 patients (target 74-136) were operated on prior to the outbreak of COVID-19. Post-operative pain is the primary trial outcome.

Surgery was performed with either spiral-tack mesh-fixation device (Protack (permanent) or Reliatack (absorbable)), Symbotex IPOM mesh, and fascial closure with no 1 Maxon suture(s) using extracorporeal knot ties – the Manchester Technique.

Data was collected on trial forms and lifestyle questionnaires (SF-36 and CCS). All data were explored and described in RStudio v1.4.1106.

Results: Patients were aged 36-80 and 36(57.1%) patients were male. Mean preoperative BMI was 30.91(sd5.11,range21.15–43.93).

Mean operating time was 80.81(37.34,20-240)minutes. In 13(20.6%) patients multiple hernia defects were identified. A good degree of fascial closure was achieved in all patients using a median of 3(IQR 2.0 -3.5) knots.

Median mesh-fixation time was 286(159.5-428.0) seconds and a mean 25.24(5.49,14-41)tacks/patient were used. Median length of hospital stay was 3.5(2.0–6.0)days.

Patients were asked “Please indicate on this scale [VAS 0–10] the pain that you currently experience from your incisional hernia during activity?”. Median responses for Day0/pre-op, Day1, Day6, Day30 and Day365 were 4.5, 8.0, 6.0, 3.0 and 1.5 respectively.

At one year, 7(11%) patients had experienced hernia recurrence and 33(52%) post-operative seroma.

Conclusions: Target recruitment was not possible owing to COVID-19. The Manchester Technique has comparable recurrence rates. Reported pain increases post-operatively but is reduced at post-operative day30 and day365.
Aim: Abdominal and thoracic reconstructive surgery has always been an aspect of surgical care in children for conditions such as congenital abdominal wall defects, large hiatal herniae, incisional herniae and chest wall defects following tumour surgery. Biosynthetic matrices are ideal for reconstructive surgery in the paediatric population as consideration needs to be given to future growth and potential need for reoperation. Moreover, the use of synthetic materials in this setting is known to be associated with long term issues. We present the results of our experience with ovine reinforced tissue matrix¹ in paediatric reconstructive surgery.

Material and Methods: All patients who underwent an operation at our institution using the biosynthetic matrix from March 2019 to April 2021 were identified retrospectively by searching theatre databases. Patient demographics, diagnoses and case notes were reviewed.

Results: The biosynthetic matrix was used in 26 children, (15 male and 11 female). Median age at insertion was 5.1 years (2.1 – 7.1 years). Median weight at insertion was 14.0kg (11.3 – 28.1kg). Patients had a history of hiatal hernia (n=10), exomphalos (n=6), emergency laparotomy (n=3), congenital diaphragmatic hernia (n=2), sternal sarcoma (n=1), rib sarcoma (n=1), gastroschisis (n=1), recurrent umbilical hernia (n=1) and direct inguinal hernia (n=1).

There were no hernial recurrences. There was a surgical site occurrence (SSO) in 12% - skin dehiscence (n=2) and wound infection (n=1). Median length of follow up was 7.9 months (4.5 - 9.0 months).

Conclusions: Our series demonstrates that ovine biosynthetic matrices can be used safely in paediatric reconstructive surgery with excellent outcomes and a very low rate of SSO.

¹ OviTex®-TELA Bio
Aim: Parastomal hernia after radical cystectomy and ileal conduit urinary diversion is an underestimated and probably undertreated condition with significant impact on quality of life. However, its surgical treatment is challenging and prone to recurrence and complications. Literature on the subject is scarce and of poor quality, and the optimal surgical treatment of this condition remains to be determined.

Material and Methods: In this retrospective patient series, a prospectively maintained database was screened. Data from all patients undergoing surgical treatment for a parastomal hernia after cystectomy and ileal conduit urinary diversion in our center were collected. The incidence of local recurrence was defined as primary endpoint. The rate of in-hospital complications was defined as secondary endpoint.

Results: Between May 2016 and June 2020, 15 patients underwent minimally invasive repair of a parastomal hernia of an ileal conduit at our center. Almost half of the patients had a concomitant midline incisional hernia (7/15; 46,7%). The majority of patients were treated with robotic-assisted laparoscopic surgery (10/15; 66,7%). Median follow-up was 366 days. One patient developed a local recurrence of her parastomal hernia on day 66 postoperatively, this recurrence was treated with intraperitoneal mesh.

Conclusions: The minimally invasive surgical treatment of a parastomal hernia after ileal conduit urinary diversion poses specific perioperative challenges that require a broad surgical armamentarium and a tailored approach. This paper confirms the significant morbidity after this type of surgery and proposes a flow chart to standardize the choice of surgical technique, depending on the presence of a concomitant midline incisional hernia and perioperative findings.
Aim: The incidence of direct inguinal hernia and reservoir migration post-penile prosthesis implantation is extremely rare. We present a case series of patients presenting with direct inguinal hernia following three-piece penile prosthesis implantation.

Material and Methods: Three patients presented with direct inguinal hernia shortly following penile prosthesis implantation for treatment of refractory erectile dysfunction due to venous leak that was confirmed on ultrasound imaging. All patients underwent standard open Lichtenstein tension free repair.

Results: All patients underwent penile prosthesis implantation through a peno-scrotal approach in which the reservoir was placed in the space of Retzius. The first patient had reservoir displacement one day post-operatively presenting as an inguinal bulge and discomfort, and repaired the same day. The other two patients presented with symptoms of inguinal swelling and pain at 40 days and 8 months respectively. None of our patients had signs and symptoms of intestinal obstruction. Identifiable risk factors included high BMI and a history of smoking, however dissection and placement of the reservoir may play a role in weakening the floor of the inguinal canal.

Conclusions: Despite the rare incidence of inguinal hernia post-penile prosthesis implantation, identification of patients with risk factors for inguinal hernia development should be done preoperatively. This may be evaluated through preoperative radiologic imaging with an abdominal wall ultrasound or clinical examination by a general surgeon.
DE GARENGEOT HERNIA: A CASE REPORT

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Aim: “The De Garengeot’s hernia, from Rene De Garengeot, who was the first to describe the appendix inside a femoral hernia sac in 1731, is a rare type of crural hernia. The diagnosis is challenging and surgery must be performed without delay. The incidence of appendicitis in this type of hernia is about 0.08-0.13%. The aim of this work is to describe our experience in the management of this rare subtype of hernia in a 82-year-old women”

Material and Methods: “A 82-year-old patient with a right groin bulge presented to the Emergency. At the physical examination the abdomen was treatable; there was no sign of bowel obstruction. Blood test values were normal, except for a high PCR value. The US of the groin region demonstrated a right femoral hernia containing a bowel tract, irreducible at the probe’s pressure. The patient underwent surgery, with diagnosis of De Garengeot’s hernia; a direct hernia repair followed by an open appendectomy were performed. The patient did not present any complications and was discharged on the second postoperative day”

Results: “The De Garengeot hernia is a rare entity that requires an early treatment; the preoperative diagnosis is difficult and often clinical features are similar to a common incarcerated hernia. There are many surgical options for the management of the De Garengeot hernia, but there is not a consensus for the best surgical approach”

Conclusions: “De Garengeot's hernia is rare, being indistinguishable from an incarcerated femoral hernia in general. This case report is about a De Garengeot’s hernia patient, who presented a good recovery after surgery.”
INTERNET USE OF THE HERNIA PATIENTS BEFORE SURGERY: SEARCHING ABOUT THE DISEASE, AND FINDING A PROPER SURGEON.

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Aim: To find out the current status of the internet use of the patients who undergo hernia repair.

Material and Methods: The patients who were diagnosed with abdominal wall hernia and scheduled for elective hernia repair were requested to answer a questionnaire. The age, gender, education status, place of living, health insurance, access to the Internet, the person who did the search, and the hernia type were the recorded parameters at the first stage. Then the answers for three main questions were taken: “Did you make a search about your hernia?”, “Did you make a search about your surgeon?”, “Would you prefer another surgeon if you could?”.

Results: 139 patients were included. 86% of all participants were Internet users. 62% of the patients made an Internet search about their hernias. 57% made a search in order to find a proper surgeon. 10% of the patients stated that they would like to go to another surgeon for the hernia repair if it was possible. Internet search rate was significantly higher in younger patients (16-40 y) in comparison with older patients. The higher the education level of the patients the higher the rate of making Internet searches. Patients who live in the cities more frequently made Internet searches than those in towns or villages.

Conclusions: Less than two thirds of the hernia patients make Internet search about their disease. Higher education level, younger age and living in a city positively affect Internet search rates.
EFFECTS OF COVID-19 PANDEMIC ON THE SCIENTIFIC PUBLICATIONS IN HERNIA FIELD.

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**Aim:** The increase in the number of publications in the hernia field has been higher than the most of our areas of surgery. COVID-19 pandemics has affected many elective surgical procedures like hernia repairs. We assumed that the declines in case volumes might cause some falls in related publications, and searched the literature in order to find the number of herniology publications before and during the pandemic.

**Material and Methods:** A systematic PUBMED search was done for three consecutive decades “1991-2000”, “2001-2010” and “2011-2020” by using the key words “inguinal and hernia”, “umbilical and hernia”, “incisional and hernia”, “mesh and hernia”, “laparoscopic and hernia”, “robotic and hernia”, and “experimental and hernia”. Later, a comparison of years 2019 and 2020 was done.

**Results:** Although increases were detected for all searches with the key words, the largest rise was seen in publications related to “robotic and hernia”. Some undulations were recorded during the years, but the number of publications showed obvious increases decade by decade. A very small decrease was found in the number of publications for “experimental and hernia” only, however all other searches presented increases during the first year of the pandemic, 2020 in comparison with 2019.

**Conclusions:** The increases in the number of publications in hernia field continued during the last decade. COVID-19 pandemic did not cause a decrease in these publications the first year. We assume that year 2021 can be a more correct criteria in order to observe the potentially negative effect of the pandemic.
PARTIAL VS COMPLETE MESH REMOVAL AFTER CROHNIC MESH INFECTION: COMPARISON OF OUTCOMES.

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Aim: “The purpose of this study is to compare the postoperative outcomes between partial mesh removal (PM) and complete mesh removal (CM) due to chronic mesh infection.”

Material and Methods: “Patients with mesh removal due to chronic mesh infection were included from February 2010 to May 2020. The patients were consequently assigned depending on the surgical technique to either partial or complete mesh removal. The demographic, operative and follow-up data of the two groups were analyzed and compared in terms of surgical site occurrence (SSO), surgical site infection (SSI), overall complications following Clavien-Dindo classification and relapse of mesh infection at 1 year follow-up.”

Results: “The study included 65 patients (44.61% males) intervened of mesh explantation. MThe patients were assigned to PM 56.92% (n=37) and CM 43.08% (n=28). 27% of the patient in the CM group needed a new mesh vs. 7.1% of PM p=0.039 (4.38 OR 1.02-24.1). There were no statistically significant differences with respect to length of hospital stay CM 5.46 (DS 6.1) vs 5.82 (DS 10.09) days, p=0.409. SSO were 84.4%, p=0.631, while SSI was 61.2%. There were no differences in terms of Clavien-Dindo (p=0.617). The appearance of new chronic mesh infection after surgery were: CM 29.7% vs PM 39.3%, p=0.420.”

Conclusions: “Postoperative morbidity after mesh explants is comparable between partial and total explants. Those cases in which a total explant is performed are more likely to require the placement of a new mesh, while in partial explant there is a higher percentage of recurrence of chronic infection.”
Aim: Traditional anterior component separation during incisional hernia repair is associated with a high rate of postoperative wound morbidity. Because extensive subcutaneous dissection is avoided by endoscopic anterior component separation (eACS) or open transversus abdominis release (TAR), we hypothesized that these techniques did not increase the incidence of surgical site occurrence compared to incisional hernia repair without component separation.

Material and Methods: This was a retrospective cohort study of patients undergoing open, retro-rectus incisional hernia repair. Component separation during retro-rectus repair was performed using eACS or TAR. The primary outcome was 30-day incidence of postoperative surgical site occurrence. Secondary outcomes included length of stay, 30-day readmission, 30-day reoperation rate and 3-year recurrence rate.

Results: A total of 322 patients underwent retro-rectus repair, 168 (52%) of whom received either eACS or TAR. Addition of eACS or TAR was neither associated with surgical site occurrence, (odds ratio: 0.82, confidence interval: 0.40-1.68, P=0.596) nor with hernia recurrence (hazard ratio 0.80, CI 0.27-2.40, P=0.693). There was no significant difference between the groups regarding the frequencies of 30 day-readmission or 30-day reoperation.

Conclusions: The addition of eACS or TAR to a retro-rectus incisional hernia repair was not associated with increased wound morbidity or hernia recurrence.
Aim: The aim of this video is to present the laparoscopic approach to an incarcerated parastomal hernia, using the modified Sugarbaker technique.

Material and Methods: A 50-year-old man with a definitive terminal colostomy after undergoing an abdominoperineal resection due to a rectal cancer, consulted in the emergency room with abdominal pain and an incarcerated mass below the colostomy, without evidence of intestinal obstruction. A CT scan was performed, with the finding of infarcted epiploic appendages inside the parastomal hernia. After evaluation of the case, emergency surgery was decided, opting for a laparoscopic approach to the parastomal hernia, employing the modified Sugarbaker technique.

Results: Following the dissection of the hernial sac and resection of the necrotic fat content, a partial closure of the hernial orifice was done. A hernioplasty was performed using a composite synthetic mesh, that was fixated with helical sutures. After surgery, the patient evolved favorably and was discharged 72 hours after the procedure. In the one year of follow-up, the patient was asymptomatic and there were no data of recurrence either on the clinical examination or the control CT scan.

Conclusions: The laparoscopic approach to an incarcerated parastomal hernia is possible and safe when performed in well-selected cases by the hands of experienced surgeons, offering good short and long-term results.
Aim: To compare a single-surgeon experience using poly-4-hydroxybutyrate mesh (Phasix™ Mesh) for ventral hernia repairs (VHR).

Material and Methods: A retrospective series was performed from 2014-2020. Inclusion criteria were patients ≥18 years of age with open VHR using poly-4-hydroxybutyrate mesh, with a minimum follow-up of 12-months. Comparisons were performed between no prior VHR versus prior VHR; no mesh infections versus mesh infections; onlay versus retrorectus; no recurrences versus recurrences; no readmissions versus readmissions; no reoperations versus reoperations.

Results: Poly-4-hydroxybutyrate mesh was used for VHR in 179 patients. Compared to 90 patients with no prior VHR, 89 patients with prior VHR had higher BMIs (31.1 kg/m² versus 33.3 kg/m²; p=0.042). Compared to 146 patients with no mesh infections, 33 patients with mesh infections had more prior VHR (97% versus 39%; p<0.001). Compared to 101 patients with onlay approaches, 79 patients with retrorectus approaches had more component separations (89% versus 31%; p<0.001). Compared to 168 patients with no recurrences, 11 patients with recurrences had more complications (55% versus 23%; p=0.031), reoperations (82% versus 16%; p<0.001), and readmissions (91% versus 20%; p<0.001). Compared to 136 patients with no readmissions, 43 patients with readmissions had more hypertension (81% versus 56%; p=0.004), COPD (28% versus 10%; p=0.011), complications (79% versus 8%; p<0.001), and recurrences (23% versus 0.7%; p<0.001). Compared to 142 patients with no reoperations, 37 patients with reoperations had more hypertension (89% versus 55%; p<0.008), diabetes (43% versus 25%; p=0.042), COPD (30% versus 11%; p=0.007), hyperlipidemia (57% versus 32%; p=0.008), larger defect sizes (300 cm² versus 200 cm²; p=0.032), complications (78% versus 11%; p<0.001), readmissions (92% versus 6%; p<0.001), and recurrences (24% versus 1%; p<0.001).

Conclusions: VHR with poly-4-hydroxybutyrate mesh can include prior VHR, different anatomical locations, mesh infections, recurrences, readmissions and reoperations.
ROLE OF THE LAPAROSCOPIC APPROACH IN EMERGENT INGUINAL HERNIA REPAIR

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Aim: Analyze the evolution of the laparoscopic approach in emergent inguinal hernia repair at our center.

Material and Methods: Retrospective review of patients with emergent inguinal hernia repair in our center from January 2011 to June 2020. Demographic, clinical and postoperative data were analyzed as well as the evolution of the laparoscopic approach.

Results: 385 patients with incarcerated/strangulated inguinal hernia were registered. 58.96% were men, with a median age of 71. Of those, 22 patients (5.71%) were treated by laparoscopic approach and 363 (94.29%) by open approach. The open approach had a longer median hospitalization (4.82 vs 1.66 days), higher rate of surgical wound infection (5.51% vs. 0%), higher reoperation rate (3.31% vs 0%) and higher incidence of respiratory complications (1.97% vs 0%). 1 patient (4.54%) with laparoscopic approach required intestinal resection vs 48 patients (13.22%) of the open group, with a dehiscence rate of 0% vs 4.76% respectively. Mortality rate was 0% for the laparoscopic group and 2.75% in the open group.

In the last 18 months, 28.98% of urgent hernias repaired have been performed laparoscopically, while previously from 2011 to 2017 only 0.95%, due to the learning curve obtained in elective surgery where the laparoscopic approach has had a major development in the last 3 years.

Conclusions: Despite the evident patient selection bias because the approach choice by the surgeon in emergent inguinal hernia repair, laparoscopic approach is feasible and has lower morbidity-mortality compared to open approach in our center. In specialized centers this may be a treatment option for selected patient groups.
Aim: Treatment of recurrent desmoid tumors represents a real challenge for the surgeon. The purpose of the video is to show the treatment of a multirecidivated complex desmoid tumor that affects the lateral thoracoabdominal wall.

Material and Methods: 24-year-old woman with the diagnosis of recurrent desmoid tumor. She was operated in 2014 for a 10 cm desmoid tumor in the left chest wall with affected margins in the biopsy. In 2016 she underwent surgery for a 5 cm recurrence, which was excised en bloc along with the 6th, 7th, 8th and 9th rib arches. In 2018 she presented a recurrence in the scar treated by radiotherapy. She now presents a recurrence that in the CT scan is seen as an 8 cm tumor that affects the thoraco-abdominal wall.

Results: We perform a complete resection with free margins and “en bloc” resection of the 8th, 9th, 10th and 11th rib arches. We repair the defect using a reverse TAR and rebuild the wall with the Madrid APPROACH technique with BioA and polypropylene meshes.

The patient was discharged 11 days after surgery without any complications. The pathological study showed an 8 cm desmoid tumor with free surgical margins. The patient a year after surgery remains disease free.

Conclusions: The resection of a desmoid tumor that affects the abdominal and/or thoracic wall, especially if it is recurrent, represents a challenge for the surgeon. Component separation techniques and Madrid APPROACH may be very useful to achieve an optimal repair.
Aim: Nowadays, in vast majority of emergency patients with gastrointestinal obstruction laparoscopy is not the treatment of choice. In our department laparoscopy is routinely used in emergency admitted patients, also those with abovementioned condition, sometimes yielding unexpected and thrilling results. The aim of this work is to present a laparoscopic internal hernia repair with simultaneous “Phrygian-cap-type” gallbladder excision, performed on a patient with small intestine obstruction and chronic acalculous cholecystitis.

Material and Methods: A 57-year-old patient was admitted to our department as an emergency, with a one week history of symptomatic cholecystitis accompanied by gastrointestinal obstruction. CT revealed atypical suprahepatic displacement of the small intestine. An attempt of conservative treatment failed after the re-initiation of oral nutrition. The patient was qualified for laparoscopy.

Results: An anatomical variant of the liver ligaments was visualized with two defects in the anteriorly displaced coronary ligament and shortening of the falciform ligament. Those defects formed the hernia ring entrapping a small intestine of a total length of about 1.5 m. The falciform ligament was dissected. To avoid re-entrapment of the intestine, most of the coronary ligament was severed. Consecutively the inflamed gallbladder was removed. The unusual anatomical variation of its structure, the so-called "Phrygian cap", was an additional difficulty.

The postoperative course was uneventful.

Conclusions: The presented material demonstrates the possibility of immediate treatment of intestinal obstruction, even in a complicated cases, with laparoscopic manner, without the need of conversion to the open method.
Aim: In recent years, many minimally invasive techniques have been presented in abdominal wall repair. Since 2018 we have been using TESAR technique, an anterior endoscopic approach with mesh sublay, published in 2019 from our group.

Material and Methods: From May 2018 to May 2021 58 Patients referred to our Unit for clinical and radiological diagnosis of ventral defect (Midline hernia, Incisional hernia, Diastasis Recti>5 cm). Exclusion criteria were: maximum defect width 8 cm, and contraindications to general anesthesia.

Results: All the patients underwent midline repair with TESAR technique. Three TAR were performed, with defect of 8 cm width previously treated with botox. No conversion to laparotomy occurred, no intraoperative complications were registered. Total mean operative time was 156 ± 21.5 min. No postoperative major complications, 3 subcutaneous seromas occurred, all treated conservatively. The mean Hospital stay was 2.7±0.8 days.

Conclusions: TESAR is a feasible technique for extraperitoneal repair of midline defects with a totally endoscopic approach, allowing a safe repair with good outcomes in terms of resolutions of symptoms and postoperative complications. The video shows the main steps of the technique in diastasis recti and complicated ventral hernia repair.
Aim: According to the clinical symptoms and radiological findings minimal invasive surgery can be an option to repair an strangulated inguinal hernia.

Material and Methods: We present the different ways we have used in our Hospital to treat incarcerated inguinal hernia combining endoscopic preperitoneal and laparoscopic approach

Results: Multiple treatment schemes are possible for inguinal incarcerated hernia. The choice must be made according to the surgeon’s experience, patient’s characteristic and the risk of intestinal ischemia.

Laparoscopy combined with preperitoneal endoscopic inguinal repair allows us to explore and to treat possible complications of intestinal ischemia with no need of laparotomy.

Conclusions: Laparoendoscopic techniques are an option to consider when treating an incarcerated inguinal hernia, even if bowel resection is needed.

Thanks to laparoscopic approach, laparotomy can be avoided in many cases.
Aim: “Spigelian hernia is uncommon and accounts for only 0.12–2% of all abdominal hernias. It is mandatory to perform surgical correction and in recent years the laparoscopic approach is gaining ground. The authors pretend to demonstrate a video of an outpatient laparoscopic repair of Spigelian hernia.”

Material and Methods: “53-year-old woman with a left Spigelian hernia referred to laparoscopic repair via intraperitoneal approach.”

Results: “The patient was submitted to laparoscopic correction with a Ventralex™ mesh. The surgery went without any complication and under 30 minutes. A few hours after the surgery, the patient was discharged. In the follow-up appointment, the patient had no complaints or evidence of recurrence.”

Conclusions: “Spigelian hernias are rare and have a mandatory surgical indication. Traditionally, open surgical repair is most commonly used. However, laparoscopic approach is becoming increasingly popular since it allows faster recovery, shorter hospital stay, and less pain, with no commitment to recurrence. Currently, there are no studies that demonstrate the superiority of a laparoscopic technique (intraperitoneal, TAPP or TEP). The intraperitoneal route is a simple, faster, and easily reproducible approach.”
A NEW PROCEDURE FOR RESTORING THE MIDLINE BY MIS IN SUPRAPUBLIC AND MIDDLE SIZE MIDLINE HERNIAS

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Aim: LIRA (Laparoscopic Intracorporeal Rectus Aponeuroplasty) was described in 2018 in order to reduce the tension in the midline as an alternative for Closing the defect (CD) during Laparoscopic Ventral Hernia Repair. TAPE (Transabdominal Partial Extraperitoneal) was described in 2011 in order to repair complex suprapubic hernias to reduce the recurrence rate. We present a case of suprapubic hernia associated to a medium-size midline hernia using LIRA combined with TAPE as a new procedure for abdominal wall reconstruction.

Material and Methods: 50 years old female affected with a M5 W2 hernia associated to a M2-3 W2. (EHS Classification). Preoperative scan was performed.

Results: 3 Ports (2 of 5 mm, 1 of 12 mm) in the left mid axillary line for LIRA and supraumbilical (10 mm) and right paraumbilical (5mm) to assist TAPE were placed. A peritoneal flap is created to expose de pubic arch and the Cooper’s Ligament. CD was performed in suprapubic defect using a barbed suture and continued for LIRA procedure in the posterior rectus sheath. An intraabdominal mesh was placed (Polyvinylidene fluoride (PVDF) mesh, Dynamesh (°)-IPOM (FEG Textiltechnik mbH, Aachen, Germany. The mesh overlapped the suprapubic arch and was fixed using helicoidal sutures and covered the whole incision in the midline. Pelvic flap covered partially the mesh. Patient was discharge in 72 h.

Conclusions: Complex hernias close to bones, as suprapubic hernias, can be restored using a minimal invasive approach, even those associated to mid-line defects. LIRA-TAPE is a safe and reproducible association for restoring the midline with a low rate of complications.
[VP028] TAPP REPAIR FOR INCISIONAL LUMBAR HERNIA

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Aim: "Incisional hernias are very common and can present even after minimally invasive surgery for other pathologies. Laparoscopic ventral hernia repair first described by LeBlanc in 1992, gained great popularity, because of its known advantages over the open techniques.

In the last decade because of increasing concerns about the future risks of using an intra-peritoneal mesh, several minimally invasive techniques using a mesh outside abdominal cavity have been described. We report the use of a TAPP technique.”

Material and Methods: "48 yo female patient, that underwent a laparoscopic right adrenalectomy, for myelolipoma, in 2015, with subsequent incisional lumbar hernia (L4W1) in the extraction incision.”

Results: "The patient was submitted to a laparoscopic TAPP repair in ambulatory surgery with extended recovery. The hernia defect was closed with a barbed suture and it was used a 15x15cm medium weight polypropylene mesh without traumatic fixation. For pain control it was done a TAP block guided by laparoscopy. The duration of surgery was 90 minutes. The patient had no complications. No recurrence on follow-up (4 months).”

Conclusions: "New minimally invasive procedures for the repair of incisional hernias avoid the intraperitoneal mesh position and maintain all the advantages of the minimally invasive approach. Some of these techniques may be complex and have a long learning curve. TAPP seems reproducible and a good option if a good extraperitoneal dissection is possible.

Larger series are needed, to accurately compare these new techniques with IPOM, open sublay and to select the best technique for each patient.”
Aim: Robotic-assisted ventral hernia repair (rVHR) has become an attractive alternative to current laparoscopic and open procedures. The present study aims to determine short- and long-term complications following rVHR.

Material and Methods: Patients undergoing rVHR from 01/01 2017 until 21/06 2020 were identified from the electronic medical record system. The medical case notes were reviewed and a telephone interview conducted to determine short and long-term complications. Patients with symptoms related to the repair were examined by a specialist in hernia surgery. US or CT scan was performed to determine the presence of absence of complications.

Results: 85 patients were included. Mean age was 57.8 years, 54 were males (63.5%). Mean ASA-score was 2.12 and BMI was 30.2 kg/m². 11 patients (13%) had diabetes, 22 (26%) were active smokers, 37 (44%) had hypertension and 7 (8%) were taking anti-coagulants. The mean hernial defect was 16.1 cm² and the mesh size was 205.4 cm². Mean length of stay was 0.5 days and the follow-up time was 94 weeks. Hematoma was encountered in 10 (11.8%) patients. 8 (9.4%) reported of seroma and 1 (1.2%) of a superficial wound infection complicated by skin necrosis. 5 patients (5.9%) reported of chronic pain. 2 patients (2.3%) developed recurrence.

Conclusions: The study demonstrates that rVHR is feasible and associated with few complications and a very low recurrence rate. Patients who had pain before surgery were likely to have less pain following the procedure. Due to the short hospital stay the procedure is suitable as an outpatient procedure.