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ABSTRACTS

RECENT INNOVATIONS & DAILY PROBLEMS

CO24:01
A CLINICAL EVALUATION OF A NOVEL COMMERCIAL SINGLE PORT IN LAPAROENDOSCOPIC SINGLE-SITE SURGERY

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Introduction: Endoscopic total extraperitoneal herniorrhaphy (TEP) has emerged as a recognized surgical method for adult inguinal hernia. The evolution of a novel surgical approach was known as laparoendoscopic single-site surgery (LESS) TEP repair.

Aim: A clinical comparison of a novel commercial single port with a homemade single port in endoscopic total extraperitoneal (TEP) groin hernia repair.

Methods: Sixty consecutive patients undergoing laparoendoscopic single-site (LESS) TEP repair were enrolled in this trial with 31 in the homemade port group and 29 in the commercial single port group. Preoperative, intraoperative, and postoperative factors were recorded. The patients were interviewed postoperatively at outpatient clinics.

Results: The demographic data were comparable between the two groups. The median operative time was longer in the homemade port group than in the commercial port group (59.4 versus 51.4 minutes, respectively, $p = 0.04$). The homemade port group was significantly associated with more port related malfunction than the commercial port group (19% versus 0, respectively, $p = 0.02$). The postoperative results were comparable between the groups regarding pain scores, analgesic requirements, complications, and post-operative convalescence.

Conclusions: In conclusion, this novel commercial single port is not only associated with less intra-operative malfunctions but also improved the procedural efficiency of LESS TEP groin hernia repair. Thus, a well-designed commercial port will be of significant benefit in overcoming the current perceived procedural inefficiency of single port surgery, obviating as it does the relatively time-consuming set-up and practice required when utilizing a homemade port.

CO24:02
VALIDITY OF ULTRASOUND EXAMINATION IN THE DIAGNOSIS OF GROIN HERNIA

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Introduction: Patients with suspected groin hernias are commonly referred to the Shouldice clinic for further clinical evaluation where an average of one thousand two hundred patients with suspected abdominal wall hernias are seen each month by a group of specialized hernia surgeons.

Methods: From June 2009 to January 2011 we conducted an observational study at the outpatient department of Shouldice Hospital LTD in Thornhill, Ontario.Canada. One hundred and thirty nine patients were referred to Shouldice by other physicians with the diagnosis of inguinal hernia and an abdominal ultrasound study. Of which seven patients presented with bilateral inguinal hernias. Clinical examination of these patients was conducted in the supine and standing position. The clinical diagnosis of the presence or absence of an inguinal hernia was based solely on inspection and palpation of the inguinal area. In the absence of clinically discernible inguinal hernia, two Shouldice surgeons conducted a separate physical examination.Ultra sonogram was conducted at diverse radiological centres and reported by certified radiologists. The ultrasound diagnosis of hernia was compared with the clinical diagnosis in a contingency table to determine the sensitivity, specificity, positive and negative predictive values of the ultrasound diagnosis using the exact Fisher's test. Patients were classified according to their main complaint, either inguinal pain or bulge.

Results: There were one hundred and thirteen males and twenty six females. Their mean ages were 45.1 and 43.0 respectively. Their age difference was not different (t test = NS). There were one hundred and forty six groins under investigation with predominant bulge in seventy five and pain in seventy one. The mean age of those patients presenting with bulge was forty six years and forty years for those with pain. Fourteen ultrasounds were reported as equivocal for the diagnosis of hernia and were excluded from the calculations. Fifty eight groins with ultrasound diagnosis of hernia were confirmed clinically representing only forty three percent. Fifty one groins with positive ultrasound for hernia did not have a palpable groin hernia representing thirty eight percent. Eleven ultrasound diagnosis did not have a clinical hernia representing eight percent, while twelve such patients had negative ultrasound with clinically detectable hernia representing nine percent of all patients.

Results:

Ultrasonography versus Clinical Assessment

Groups	Sensitivity	Specificity	FPER	FNER	PPV	NPV
All	0.77	0.28	0.72	0.23	0.53	0.54
Groin Pain	0.83	0.19	0.81	0.17	0.26	0.77
Groin Bulge	0.75	0.56	0.44	0.24	0.84	0.42

FPER=False Positive Error Rate (Alpha Error)
FNER=False Negative Error Rate (Beta Error)
PPV= Positive Predictive Value
NPV= Negative Predictive Value

Conclusion: We conclude that ultrasound of the abdominal wall is not a reliable tool in the diagnosis of inguinal hernias. The discrepancy between clinical examination of the groin in the diagnosis of inguinal hernia and the common use of ultrasound examination for that purpose is the highlight of this current study. In our opinion imaging studies for such a diagnosis is both unnecessary and inaccurate. Diagnosis of inguinal hernia as well as other abdominal wall hernia remains to be

dependent on the experience and clinical judgement of surgeons dedicated to this field of surgery.

CO24:03
GROIN HERNIA DIAGNOSTIC: DYNAMIC INGUINAL ULTRASOUND (DIUS)

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Introduction: The up-to-date procedure of undertaking a clinical examination only, cannot embrace the complexity of the issue addressed. Employing imaging procedures can contribute to a better process of distinction as well as improve the detection of femoral hernias, initiating hernias and more seldom specific types of hernias (ex. obturator hernia).

Technique of DIUS: The four step technique of DIUS is described: In a vertical section above the pubic bone the rectus muscle, rectus sheath, the transversal fascia and the peritoneum will be displayed. Step two: A slightly diagonally adjusted section displays the spermatic cord longitudinally and under Valsalva maneuver the hernia sac respectively. Step three: In the following the transducer will be rotated by 90° in order to receive a cross- section picture. At this angle the epigastric vessels are easily identified – they contribute to the distinction of lateral / indirect and medial / direct hernia within the process of another Valsalva maneuver. In a fourth step the transducer will be moved further towards the lateral side, until reaching the femoral and iliac vessels (again employing a slightly diagonal longitudinal position). While employing the Valsalva maneuver, this position allows the display of a possible echoic protrusion (fermoral herniation) beneath the inguinal ligament within the Lacuna vasorum and in projection to the femoral vein.

Material and methods: In order to find out the number of inguinal / femoral hernia diagnoses, that were sonographically confirmed and to also consider the cases, in which a sonographical examination led to the detection of an inguinal / femoral hernia, where as a clinical examination neglected this diagnosis, the ultrasound examinations of the groin area executed in the past 2,5 years were analyzed retrospectively. The results were compared to the intra-operative findings.

Material: Between july 2010 and january 2013, 2063 ultrasound examinations of the groin area were executed in the Hanse-Hernienzentrum Hamburg.

Results and Conclusion: The results show, that standardized ultrasound examinations of the groin area with high-frequency small part linear transducers also serve to display femoral and other small groin hernias accurately. The high-level specifity (0.9980) and sensitivity (known to be strongly dependent on the examiner)(0.9758) are proof of the procedure quality.

CO24:04
INGUINAL HERNIA REPAIR AND RISK OF BLEEDING IN PATIENTS WITH COAGULOPATHY OR ON ANTITHROMBOTIC THERAPY

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Introduction: Inguinal hernia operations in the presence of antithrombotic therapy, based on antiplatelet or anticoagulant drugs, or existing coagulopathy are associated with a markedly higher risk for onset of postoperative secondary bleeding. To date, there is a paucity of concrete data on this important clinical aspect of inguinal hernia surgery.

Methods: Out of the 82911 patients featured in the Herniamed hernia registry who had undergone inguinal hernia repair, 9115(11%) were operated on while receiving antithrombotic therapy or with existing coagulopathy. The implication of that risk Profile for onset of postoperative bleeding were investigated in multivariable analysis.

In Addition, other influencing variables were identified.

Results: The rate of postoperative secondary bleeding, at 3.91%, was significantly higher in the risk group with coagulopathy or receiving antithrombotic therapy than in the group without that risk profile at 1.12% ($p < 0.001$).

Multivariable analysis revealed other influence variables which, in addition to coagulopathy or antithrombotic therapy, had a relevant influence on the occurence of postoperative bleeding. These were higher age, a higher ASA score, recurrence, male gender, and a large hernia defect.

Conclusion: Patients receiving antithrombotic therapy or with existing coagulopathy who undergo inguinal hernia operation have a fourfold higher risk for onset of postoperative secondary bleeding compared with patients who do not have that multifactorial risk Profile.

CO24:05
SURGICAL TREATMENT FOR MESH INFECTION AFTER PROSTHETIC PATCH REPAIR OF INGUINAL HERNIA

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Objective: To discuss the surgical treatment and experience of mesh infection after prosthetic patch repair of inguinal hernia.

Methods: The clinical data of 67 cases of mesh infection after prosthetic patch repair who were treated in Chao-Yang Hospital from Jan. 2011 to Jun. 2012 were retrospectively analyzed.

Results: All patients were treated with surgical operation successfully, including removing the infected mesh and surrounding tissues, primary suture, and a placement of wound drainage, without replacement of a new patch substitute. The hospital stay of the patients was 10-25 days with an average of 16 days. Of the 67 patients, 51 patients got primary healed and the other 16 patients healed delayed after local dressing change due to the superficial infection following stitch removal. Sixty-six patients were followed-up for 6-24 months (average of 20 months) after operation with no recurrence and complication, including seroma, wound infection, intestinal fistula, and postoperative pain.

Conclusions: The treatment of mesh infection after inguinal hernia repair is very complicated, but the primary suture repair and a placement of wound drainage after removing infected mesh with complete debridement is a effective therapy for it.

CO24:06
TOTALLY EXTRAPERITONEAL BILATERAL REPAIR OF CLINICALLY UNILATERAL INGUINAL HERNIA WITH POSITIVE ULTRASOUND FINDINGS OF THE CONTRALATERAL GROIN DOES NOT INCREASE DISCOMFORT OR MORBIDITY

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Introduction: The likelihood of requiring contralateral inguinal hernia repair following previous unilateral herniorrhaphy is estimated at around 2.5% at 5 years, while the risk of finding an unexpected small contralateral hernia during unilateral laparoscopic inguinal hernia repair is 10–25%. If these 'occult' defects are left untreated, a proportion of them will evidently progress to become symptomatic hernias.

This study evaluates both the utility of preoperative ultrasound (US) assessment of the contralateral groin in patients presenting with a clinically unilateral inguinal hernia and the safety of offering simultaneous bilateral totally extraperitoneal (TEP) repair where an 'occult' defect is demonstrated.

Methods: Between July 2011 and April 2014, all patients referred for TEP repair of inguinal hernia were prospectively enrolled in this study. Patients diagnosed with a clinically unilateral hernia were sent for US of the contralateral virgin groin, creating 3 patient groups: those with clinical bilateral inguinal hernias (CBIH) for bilateral repair, those having bilateral repair for symptomatic unilateral and asymptomatic 'occult' contralateral inguinal hernia noted on US (USBIH), and those with a negative contralateral US who only underwent unilateral inguinal hernia repair (UNIH). The primary outcome measures were Visual Analogue pain Scale (VAS) and Carolina Comfort Scores (CCS) recorded at 2 and 6 weeks postoperative. The secondary outcome measure was short-term complications. Statistical analysis was performed using both SPSS and SAS9.3.

Results: A total of 182 patients (4 females) with a median age of 53 years (range: 21-83 years) underwent 287 TEP inguinal hernia repairs. There were 33 (11.5%) direct, 203 (70.7%) indirect and 51 (17.8%) mixed hernias. Patients repartition was at follows: 77 who underwent a UNIH, 65 had a CBIH and 40 a USBIH. There was no conversion to open surgery and an overall complication rate of 2.2%. The demographic data were similar between the 3 groups. Hernia size and the proportion with a recurrent hernia were also equivalent. VAS was equivalent between UNIH and USBIH groups at 2 weeks (1.0 v 1.4, $p = 0.06$) and 6 weeks (0.1 v 0.3, $p = 0.9$). Likewise CCS was equivalent at 2 weeks (3.5 v 4.7, $p = 0.8$) and 6 weeks (6.2 v 7.3, $p = 0.7$) respectively.

Univariate multivariate analysis of factors contributing to higher VAS and CCS at 2 and 6 weeks showed no association between scores and whether the repair was unilateral or bilateral after US. At the 6-week follow-up, multivariate analysis associated higher CCS with larger hernia and in patients with complications, but lower CCS with increasing age, while VAS at 6 weeks did not have a demonstrable association with any factor in the model.

Complication rates were not significantly different between UNIH, USBIH and CBIH groups (2.6%, 0% and 6.6%%, $p = 0.18$)

Conclusion: Bilateral TEP repair for a unilateral symptomatic inguinal hernia associated with a contralateral 'occult' groin defect, as demonstrated on preoperative US is an acceptable option as it does not increase the risk of developing local groin discomfort or short-term complications. Furthermore, it offers the choice for those with US proven inguinal hernia to have it simultaneously repaired as a 'one-stop' surgery rather one deferred until symptoms develop.

CO24:07
EFFECT OF AEROBIC TRAINING ON FATIGUE POSTOPERATIVE SYNDROME IN PATIENTS UNDERGOING INGUINAL SHOULDICE HERNIOPLASTY

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Introduction: Exercise improves physical capacity.

Postoperative disability in hernioplasty. this regard to fatigue and physiological changes during surgery.

Over 30% of patients undergoing Postoperative Fatigue Syndrome (SFP) characterized by decreased muscle strength, and increased subjective feeling of fatigue. Lasting 30 days.

Exercise improves SFP modifying the metabolic response to trauma and increases the functional capacity of the cardiovascular and muscular systems, reduces the SFP propitiating minor disability and better postoperative recovery

Methods: randomized groups of 10 patients. Group I. Control, Shouldice hernioplasty. Group II, same surgery, 12 weeks aerobic exercise, walking on the treadmill and bicycle pedaling at 75% of their maximum oxygen consumption (VO2 max) and 90% of your maximum heart rate (MHR) 50 min sessions, 3 times per week.

Results: Variables were analyzed for statistical positive significance; weight,% body fat, skinfold thickness, maximum cardiovascular capacity (VO2) at rest Cardica frequency, heart rate, peak systolic blood pressure and diastolic, hand grip, hematocrit, fatigue scale (Christensen), VO2 glucose, and lactate VO2.

Group II, increased cardiovascular function capacity (VO2 max), decreased resting heart rate (RHR), decrease in Systolic Blood Pressure (SBP), and decreased diastolic blood pressure (DBP). Group II (VO2) max decreased and FCR increased SBP and DBP were not affected. (Hand Grip) increased in Group II decreased in Group I.

Fatigue was removed at the end of the aerobic program in Group II to 30 days postoperatively. Group I showed moderately severe fatigue from the beginning to the end.

No complications for the procedure at all.

Conclusion: VO2 max increased by 11.8% in group II and held, while group I decreased 5.1% (Chriestensen). In studies, abdominal surgery, there have been only minor changes but with only 10 days of training.

The model hernia patients proved feasible

It proved to be a useful tool to reduce the SFP and consequently have better recovery with fewer disability days tool.

We must continue searching for improve the pre operative conditions of our patients and preform better results

Shouldice technique demonstrates to be a feasible procedure for inguinal hernia surgery

CO24:08
LOCAL ANAESTHETIC VS. GENERAL ANAESTHETIC FOR EMERGENCY INGUINAL HERNIA REPAIR

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Abstract:

Background: Local anaesthesia (LA) is proved to be the best choice to elective open inguinal hernia repair. However, when it comes to emergency surgery, for its high rate of postoperative complications and mortality, things become more complicated. To the best of our knowledge, no type of anaesthesia is recommended for the emergency hernia repair surgery. The aim of the present study was to establish whether inguinal hernia repair could be safely performed under LA in emergency surgery, and how about its outcome.

Methods: The study comprises all incarcerated inguinal hernias patients in our hospital from 2010 to 2014, who would undergo an emergency surgery. Patients are grouped into group LA ad group LA according to the methods of anesthesia. Two groups were evaluated in terms of preoperative symptoms, time to recovery, early and late postoperative complications, total expense and recurrence.

Results: A total of 90 patients were included in this study. Of these, 32 (35.6%) repairs were performed under LA and 58 (64.4%) under GA. Statistically significant differences were demonstrated between 2 groups. Group LA was able to experience less complication, less cost and return to normal activity earlier than Group GA.

Conclusion: LA is better than GA in the he emergency hernia repair surgery.

Keywords: Incarcerated inguinal hernia, Local anaesthesia, Safety

CO24:09
LAPAROSCOPIC TRANS-ABDOMINAL PRE-PERITONEAL HERNIA REPAIR (TAPP) FOR EMERGENCY INCARCERATED INGUINAL HERNIA

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Introduction: Elective surgery for inguinal hernia is affected by very low mortality (< 1 per 10000 operation); in contrast, when surgery is carried out for complicated inguinal hernia, risks of postoperative complication are higher. TAPP is a world-wide accepted surgical practice in the treatment of elective bilateral or recurrent inguinal hernia, above all in young patients. Few exploratory studies were published on laparoscopic approach in the treatment of urgent complicated inguinal hernia. Aim of this study was to analyze feasibility (operative time, conversion rate), safety (postoperative morbidity, length of hospital stay) and quality of life (acute and chronic pain, return to work) of trans-abdominal pre-peritoneal laparoscopic hernia repair in acute incarcerated inguinal hernia. Rationale of laparoscopic trans-abdominal approach is the easier hernia reduction under vision and a better exploration of the abdominal cavity.

Methods: from September 2012 to September 2013, 15 consecutive patients admitted in emergency at the Division of General Surgery of University "Sapienza", Polo Pontino, for acute incarcerated inguinal hernia were submitted to TAPP using 3 trocars (1 of 10 mm and 2 of 5mm) and polyester prosthesis fixed by fibrin glue. Exclusion criteria for laparoscopic approach were age < 18 yrs, ASA score >III, previous abdominal surgery, signs of strangulated hernia. All of them were evaluated for operative time, conversion rate, postoperative morbidity, organ resection or other surgery required. All patients were scored for pain by Visual Analogic Scale (VAS) during postoperative in hospital stay at 7 days, 1,6 and 12 months after surgery.

Results: median follow-up was 16 months and 12 as minimum. In all cases reduction of hernia was always possible and none conversion to open surgery was recorded, median operative time was 89 minutes (55-137 as range), omental resection was carried out in one patient (6,6%), no other organ resections needed, whereas contralateral hernia was diagnosed and repaired at the same time in 4 patients (26,6%). No major complications were observed, median blood loss was 100 ml, minor morbidity was contained to 18% represented by fever and wound infection of surgical umbilical scar. Median in hospital stay was 1,5 days with 1-5 days as range. Postoperative median acute pain, measured by visual analogic scale (VAS), was 2 (range:0-4), none patient referred any pain during follow-up. Median time of return to work was 6,5 days, ranged between 3 to 15 days. Patients' compliance to treatment and to follow-up was complete as well their satisfaction.

Conclusions: In centres skilled for laparoscopy in emergency, TAPP could be considered a feasible and safe technique. In well-selected patients (especially if enrolled in controlled clinical trial) TAPP could represent an alternative surgical approach for complicated incarcerated inguinal hernia to conventional open surgery even in urgency. The main advantages of laparoscopic approach are the ability to perform surgical hernia reduction under vision, a better exploration and evaluation of abdominal cavity and diagnosis and treatment of eventual contralateral defect of wall, otherwise often missed. Finally, the good control of acute and chronic pain, faster return to normal activity and work, better aesthetic results contributed to total satisfaction and compliance of the patients.

CO24:10
EVALUATION OF ALTERATION IN TESTICULAR PERFUSION AFTER LAPAROSCOPIC TOTAL EXTRAPERITONEAL REPAIR OF INGUINAL HERNIA

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Introduction: The effect of laparoscopic TEP repair on testicular perfusion is unclear. The procedure entails dissection of testicular blood vessels off the hernial sac and incorporation of a prosthetic mesh. This carries at minimum a theoretical risk of a compromise in testicular blood supply, which in turn may affect fertility.

Objectives: Our study aims to establish if any alteration in testicular perfusion occurs in very early (24 hours), early (1 week) or late post-operative period (3 months) after laparoscopic TEP repair.

Methods: In our prospective trial (n = 28), 20 patients underwent unilateral and 8 underwent bilateral laparoscopic TEP hernia repair using standard technique by experienced surgeons with minimal handling of spermatic cord structures. Flow parameters of Testicular, Capsular and Intratesticular artery were noted using CDUS preoperatively and postoperatively - very early, early and late. These postoperative values of operated side were compared with preoperative values. Also, for unilateral repairs, these flow parameters on operated side were evaluated vis-à-vis the non-operated side.

Results: No statistically significant difference was noticed in the resistive index of the arteries upon comparing these postoperative with preoperative values. For unilateral repairs, the flow parameters of the operated side were comparable with that of non-operated side (i.e. $p > 0.05$). Also, factors like age, side, nature of hernia, smoking, diabetes, hypertension, duration of surgery, size of mesh, mesh fixation do not affect the flow parameters.

Conclusion: We therefore conclude that laparoscopic TEP performed by experienced surgeons does not alter testicular flow dynamics in early or late post-operative period.

CO24:11
LONG-TERM OUTOCOME OF A NEW 3D ANATOMICAL MESH FOR ENDO-LAPAROSCOPIC INGUINAL HERNIA REPAIR

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Laparoscopic inguinal hernia repair has advanced over the past decade together with the development of new biomaterials to improve clinical outcome and patient care. The use of flat or anatomical mesh

and the options for fixation has been a debatable topic where sufficient evidence for the best therapeutic option is not yet available. The concept of anatomical mesh is still new to the practice and the few available do not require fixation that may increase post-operative pain. Our objective was to verify the safety and feasibility of a new anatomic mesh with a unique multi-dimensional design, C-Qur CentriFX mesh is made by polypropylene and coated with Omega-3 to reduce inflammation. The mesh has unique peculiarity with its invertible design that standardizes the use in both right and left sided hernia.

This is a prospective observational case series. C-Qur CentriFX mesh was used in 12 consecutive patients with inguinal hernia that underwent laparoscopic hernia repair from November 2012 to March 2013. A standard 10.5 x 16 cm size was used in all patients. Information on patient demographics, hernia description according to EHS classification, operative findings and technique, post-operative complications including pain scores and recurrence were recorded during post-operative period at 6, 12 hours and at discharge then during follow-up visits at 1 week, 1, 3, 6 and 12months. Visual Analogue Scale (VAS) was used to assess the pain.

20 meshes were used in 4 unilateral and 8 bilateral inguinal hernia in 12 male patients with a mean age of 61 years. According to EHS classification the size and number of defects were L1 = 8, L2 = 5, L3 = 2, M1 = 2, M2 = 7, M3 = 4, F1 = 2 and R = 2. Six patients had multiple fascial defects on at least one side. Standard 3 port totally extra-peritoneal (TEP) approach was used in 10 patients while single incision trans-abdominal pre-peritoneal (TAPP) approach was used in 2 patients. Mean operative time for unilateral hernia was 49mins (range 42 – 64mins) while in bilateral hernia it was 85mins (range 44-132 mins). 1 patient had a left scrotal hematoma and another patient presented with local peritonitis due to small-bowel perforation on post-operative day-3 and underwent emergency laparotomy for repair of perforation and mesh removal. Both patients subsequently recovered well. Post-operatively, mean VAS at 6hours was 0.75 (range 0-3), at 12hours 0.58 (range 0-2) and at discharge 0.17 (range 0-2). None of the patients reported pain during the follow-up visits. No recurrence or long-term side effects (chornic Pain, testicular atrophya, etc) was reported at 1 year follow-up.

The long-term outcome of CentriFX, a new 3D anatomical mesh is similar and comparable to the other meshes available in the current practice, but with the benefit that it does not require any fixation that may lead to chroinc pain.

CO24:12
PROSPECTIVE OBSERVATIONAL COHORT STUDY OF ROBOTIC VS OPEN RIVES-STOPPA RETRORECTUS INCISIONAL HERNIA REPAIR

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Purpose: The Rives-Stoppa retromuscular approach is widely considered standard of care for repair of abdominal incisional hernias. This technique involves dissection of the posterior rectus sheath, complete closure of the posterior fascia, placement of mesh behind the rectus muscle over the closed posterior fascia, and reapproximation of the anterior fascia. Advantages of this approach include placement of mesh in a well vascularized, contained compartment separate from the viscera and restoration of native functional anatomy. However, it is plagued by high rates of surgical site occurrence and infection compared to laparoscopy. The robotic platform offers the tools to replicate the traditional open Rives-Stoppa retrorectus incisional hernia repair (IHR) in a minimally invasive fashion, thus combining the benefits of both the open repair and laparoscopic approaches.

Methods: Between February 2013 and September 9, 2014 a total of 21 robotic retrorectus incisional hernia repairs (RR-IHR) were performed. Demographic, perioperative, operative and postoperative data were maintained prospectively. For comparison, 21 open retrorectus incisional hernia (O-IHR) cases from a prospectively-maintained database were matched equally based on defect width, body mass index (BMI), and wound classification. Primary outcomes were 30-day surgical site occurrence (SSO), surgical site infection (SSI), length of stay (LOS) and cost. Continuous parametric data were compared using Students t-test, continuous non-parametric data were compared using Mann-Whitney U test. Discrete variables were compared using Chi-squared test. P-values < 0.05 were considered indicative of statistical significance. All data analyses were completed using R statistical software (R Version 3.0.2). Cost data were adjusted for inflation to 2014 U.S. dollars using the Bureau of Labor Statistics Medical Care Consumer Price Index.

Results: The RR-IHR and O-IHR groups were similar in BMI, hernia width, wound class, smoking status and diabetes. There were significantly more patients with COPD in the O-IHR group (42.9% v 4.8%; $p = 0.009$). There were no surgical site infections in the robotic group (0 v 9.5%; $p = 0.488$), no difference in surgical site occurrence, (33.3% v 38.1%; $p = 1.0$) between groups, and a lower estimated blood loss (EBL) with RR-IHR (37.0 + 39.0cc v 106 + 122.1cc; $p = 0.022$). Mean length of stay (LOS) was significantly shorter after RR-IHR (2.3 v 4.2 days; $p = 0.046$). Average inflation-adjusted, direct, fixed hospital cost was similar between groups ($15,590 + 4523 v $12,890 + 8959; $p = 0.229$).

Conclusions: Our study indicates that 30-day outcomes for robotic retrorectus incisional hernia repair are superior to open retrorectus incisional hernia repair with regard to surgical site infection and length of stay. Furthermore, our direct hospital costs were comparable to open repair. Additional long-term study is necessary to evaluate the durability of this repair.

CO24:13
DEVELOPMENT OF BIODEGRADABLE MESH FOR HERNIA REPAIR SUITABLE FOR INTRA-OPERATIVE CELL COATING

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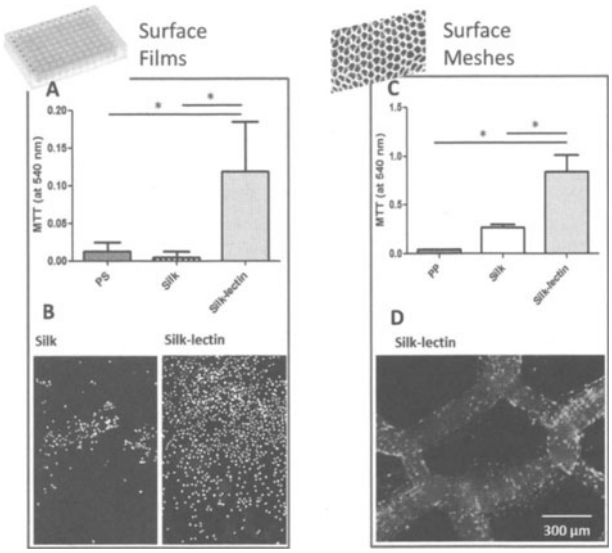
Introduction: Recent innovations in hernia repair have demonstrated that combining mesh with cells (i.e. fibroblasts) stimulates the healing process of the impaired abdominal wall (1). However, the major limitation of such technology is the in vitro expansion step of the cells in contact with the mesh prior to implantation, which can last up to several weeks before obtaining a homogenous cell-coated mesh. To avoid such time consuming protocol and to decrease the final cost of the product, the development of new mesh that can be quickly covered using freshly isolated autologous cells without any in vitro expansion before the surgical transplantation would bring tremendous advantage. In the presented preliminary work, we investigated if the immobilization of lectin by covalent grating onto silk biomaterial mesh can accelerate in vitro cell adhesion, which is essential for the development of an intra-operative seeding procedure.

Materials and methods: Silk meshes were manufactured from fibres using a Silver Reed knitting machine. Covalent immobilization of pro-adhesive glycoprotein (i.e. lectin) on the silk surface was performed on silk films and on silk meshes according to a protocol recently published, using carbodiimide chemistry (2). As a proof of concept, we investigated in vitro how mouse fibroblasts NIH/3T3 attach on the surface of the modified silk compared to native silk and to control surfaces (PolyStyrene PS and PolyPropylene PP). Quantification of cell adhesion was performed using MTT test. Viability of the cells was evaluated using Live/Dead staining. Different seeding systems were compared (static versus dynamic) in order to optimize the coating density of the mesh by the cells.

Results: Our preliminary experiments realized on fibroblasts demonstrated that grafting lectin to the surface of silk films (Fig.1 A and B) and meshes (Fig.1 C and D) did not induce in vitro cytotoxicity, while it significantly enhanced and accelerated cell attachment. Indeed, within a short-term incubation period, the modified silk surfaces (films and meshes) were covered by the cells, whereas the controls (PP, PS and native silk) did not promote similar cell attachment.

Discussion: Developing a new material suitable for one-step intra-operative seeding implant with autologous cells would bring remarkable benefit in soft tissue repair. In this study, we successfully grafted pro-adhesive plant-derived molecule (i.e. lectin) that promotes and accelerates the attachment of cells onto the mesh. We showed that fibroblasts could be quickly coated onto the silk-lectin material, on either films or meshes. The second advantage of this investigation is the utilization of silk fibres, a promising candidate for various tissue engineering applications. We hypothesize that the creation of a long-term biodegradable mesh should prevent major post-implantation complications frequently observed during the utilization of permanent mesh. Further investigations will be needed to clarify how cell-seeded meshes perform in animal model and how cells other than fibroblasts will attach to the novel meshes.

Figure 1: Grafting lectin to silk significantly stimulates cell adhesion.



Quantification of fibroblast adhesion on films after 15 minutes of incubation (A) and illustration of cell attachment on silk compared to silk-lectin films (B). Adhering fibroblasts were quantified also on meshes after 24 hours of incubation with the cells (C) and viability was demonstrated by the Live/Dead staining (D).

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CO24:14
TOTALLY EXTRAPERITONEAL LAPAROSCOPIC INGUINAL HERNIA REPAIR USING A SELF-EXPANDING NITINOL FRAMED HERNIA REPAIR DEVICE: PRELIMINARY RESULTS OF A PROSPECTIVE PILOT STUDY

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Introduction: Mesh shrinkage and fixation have been associated with recurrence and postoperatieve pain. Avoiding shrinkage and fixation could reduce postoperative pain and improve hernia recurrence rates and complications. Recently it has been shown that the self-expanding nitinol framed hernia repair device (ReboundHRD®, MMDI, Plymouth, MN, USA) exhibits radiographic evidence of size and shape stability and intransience of position without fixation.

To our knowledge no studies have been published regarding the use of this type of prosthesis for totally extraperitoneal laparoscopic inguinal hernia repair (TEP-IHR). Therefore we prospectively evaluated the use of the ReboundHRD® mesh for TEP-IHR.

Materials and methods: The study population comprised all patients who underwent a TEP-IHR using the ReboundHRD® Large mesh from April 2014 till October 2014. All operations were performed by a single surgeon (MDH) with experience of more than 80 TEP-IHR procedures. Intra-operatively the type and size of the hernia were evaluated according to the EHS classification. No mesh fixation was performed. Baseline characteristics for all patients were evaluated considering age, gender, BMI and American Society of Anesthesiologists score. All patients were evaluated for post-operative pain using the visual analogue scale (VAS score). Somatic, neuropathic and visceral pain were also questioned.

Results: In total 36 TEP-IHR procedures were performed in 27 patients. The median operating time was 29 (range 25-35) minutes for unilateral hernias and 55 (range 40-60) minutes for bilateral hernias. The median duration of the mesh deployment was 90 (range 30-180) seconds. No peroperative complications occurred.

At the day of the operation, day 2 and day 3 the median VAS score was 3 (range 1-5), 2 (range 0-4), and 1 (range 0-3) respectively. At the time of re-evaluation at 1 week, 40.7% still experienced mild pain with a mean VAS score of only 1.46. Patients were completely pain-free at a median time of 5 (range 1-42) days. At 1 month only 10% of the patients experienced residual pain with a mean VAS score of 0.15. No one had pain after 3 months. After 1 month, 1 patient felt somatic and visceral pain, 1 patient felt somatic and neuropathic pain, 1 patient mentioned only visceral pain and another patient only neuropathic pain. None of the patients could feel the sensation of a mesh in their groin.

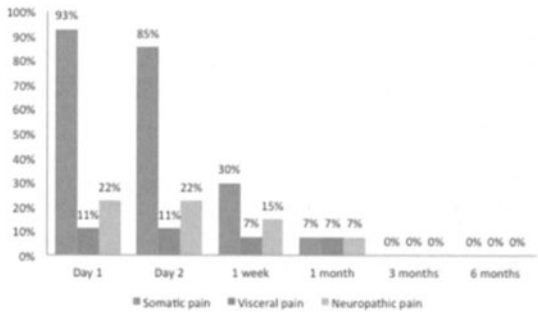
The median length of stay was 1 (range 1-3) day, with 78% of the patient leaving the hospital at the day of the operation. Length of stay was associated with a bilateral hernia repair ($p = 0.0067$) and the duration of the operation ($p = 0.0051$). The patients were back at work after a median time of 2 (range > 1-6) weeks. Two postoperative complications occurred, 1 patient had a urinary retention and 1 patient had a wounddehiscence of a 5mm trocarwound. At a median follow-up of 3 months, no recurrences occurred.

Conclusion: With the proviso that our study population was limited in size and follow-up is relatively short, TEP-IHR using a self-expanding nitinol framed hernia repair device is a safe technique. Operating time and time for mesh deployement is short and no mesh fixation is required. The technique is associated with a low incidence of postoperative pain, a short hospital stay and quick return to normal activities.

Table. Pain variables.

Preoperative pain (Yes : No)	20:7	
VAS score day 1 (day of operation)	Median 3	Range 1-5
VAS score day 2	Median 2	Range 0-4
VAS score day 3	Median 1	Range 0-3
VAS 1 week	Mean 0.52	
VAS 1 month	Mean 0.15	
VAS 3 months (20 patients)	0	
VAS 6 months (8 patients)	0	
Free of pain (days)	Median 5	Range 1-42

Figure. Pain variables.



CO24:15
REDUCED PORT LAPAROSCOPIC SURGERY FOR INGUINAL HERNIA: TEP WITH SINGLE INCISION

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Introduction: Recently single incision laparoscopic surgery is adopted for various diseases. However single incision laparoscopic surgery for inguinal hernia is not so widely accepted. TAPP which is common laparoscopic hernia repair need suture and ligation procedure that is technically difficult due to restriction of forceps handling. For the TEP that is another laparoscopic repair suture and ligation is not mandatory procedure. Consequently TEP can be more suitable procedure for single incision inguinal hernia repair.

Purpose: We will evaluate our initial series of TEP with single incision and will report results and problems such as adverse event, and duration of surgery.

Methods: Procedure was carried out through 2cm long skin incision made at umbilicus. Incision of anterior sheath of rectus muscle slightly off the midline was carried out to expose posterior rectus sheath. After exposing the surface of posterior rectus sheath wound retractor was inserted into retro muscular space to obtain handling spaces. Trocar was inserted through silicon rubber lid (EZ access Hakko corporation Japan) fitted to wound retractor. Dissection of pre-peritoneal space was done by Laparoscopic coagulating scissors under direct vision. After reduction of hernia and isolation of vas deference, polyester mesh was inserted into pre-peritoneal space and fitted to posterior inguinal wall.

Results: From March 2012 134 patients received TEP with single incision. 57 patients had bilateral hernia (bilateral direct 14, bilateral indirect 17, direct and indirect 17, multiple type complex such as indirect direct and femoral 9) and rest 77 patients had unilateral hernia (direct 13, indirect 58, femoral 2, complex 4). Duration of procedures for unilateral lesion ranges from 25min to 108min (average 52.5min). Those for bilateral lesion ranges from 25min to 168min. (average 79.7min) All except one patient who had developed intestinal obstruction due to peritoneal injury could discharge within 2 days after surgery. Most common adverse event observed during peri-surgery was 21cases of seroma that can be treated by percutaneous puncture or follow up. For 8 patients who were suffered from peritoneal injury during surgery, peritoneal repair by TAPP approach with additional trocar was carried out. We have not experienced bleeding from inferior epigastric vessels that was common conventional TEP procedure. Average duration of initial 10 procedures was 54.5min for unilateral lesion and 93.5min for bilateral lesion. But for the most recent 10 procedures average duration was improved to 36.0min for unilateral lesion and 61.0 min for bilateral lesion. Those results were similar to the result for those who were carried out open hernioplasty during same period. (Unilateral 46 min bilateral 80 min)

Discussion: Our result of TEP with single incision demonstrated acceptable result. At the initial phase limitation of coaxial handling more affected treatment especially for indirect hernia. But it could be overcome as we have experienced procedures. Dissection of preperitoneal space under direct vision could eliminate usage of dissection balloon that cost could not be ignored and injury to inferior epigastric vessels. It should be noted that peritoneal injury that could lead to serious complication such as intestinal obstruction was common adverse event. Meticulous observation of peritoneal injury and peritoneal repair if needed was essential to avoid serious complication.

Conclusion: Our result demonstrated that TEP hernia repair with single incision was feasible procedure. Careful dissections of pre-peritoneal space under direct vision, meticulous observation and repair for peritoneal injury was essential to accomplish successful result.

CO24:16
ZENAPRO™ HYBRID HERNIA REPAIR DEVICE FOR VENTRAL HERNIA REPAIR

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Purpose: The repair of large ventral hernias, often with multiple recurrences and comorbidities, is challenging and often requires abdominal wall reconstruction or the bridging of a gap to achieve closure. Previous hernia repair meshes have been classified as permanent synthetic with or without barriers, biologic, or absorbable synthetic. A new hernia repair device, Zenapro, combines the elements of biologic grafts with a synthetic mesh to create a device that is durable and biocompatible for use in these challenging or complex-routine cases.

Methods: A prospective, multicenter, single-arm study is currently recruiting patients (NCT01784822) and is planned to include 63 patients to study the clinical outcomes of ventral hernia repair with the Zenapro Hybrid Hernia Repair Device, a hernia graft comprised of porcine small intestine submucosa (SIS) covering an open-pore polypropylene material. Inclusion criteria are broad and include patients with primary or recurrent hernias that require the addition of a bridging material to achieve the desired surgical outcome. Ultimately, patients will be followed for at least one year to examine adverse events

and recurrence. The primary study endpoint is hernia recurrence at 12 months. To date, 30 patients with ventral or incisional hernias in both open and laparoscopic repairs have been treated and have completed their 6-week post-operative visit.

Results: Of the 30 patients treated, 57% are male and 83% are Caucasian. Age is 53.3 ± 11.6 years (Range: 33-76) and BMI is 35.1 ± 9.7 (Range: 17.5-57.5). Other significant comorbidities include smoking in 43%, hypertension in 67%, and insulin-dependent diabetes in 23%. A majority of patients (25/30, 83%) have had previous abdominal surgeries. Laparoscopic surgery has been performed in 25/30 (83%) of patients, and components separation has been performed in 4 (13%). Complete peritoneal closure was achieved in 63%. To date, there have been no device infections and no early recurrences. Complications have included seroma formation (n = 7), bowel complications (n = 2), hematoma formation (n = 1), and wound complications (n = 1). There has been one unrelated death due to C. difficile infection.

Conclusions: The Zenapro Hybrid Hernia Repair Device offers surgeons another alternative for challenging or complex-routine hernia cases where previous operations and multiple comorbidities are common. In short term follow-up with these initial patients, the device has achieved the desired result and has resulted in few complications.

CO24:17
BIOMECHANICAL EVALUATION OF LINEA ALBA PROPHYLACTIC REINFORCEMENT WITH AN INNOVATIVE WAY TO PLACE AND FIX POLYPROPYLENE MESH IN A RABBIT MODEL

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Introduction: Midline laparotomy is the most commonly used incision in general surgery. However, it is associated with incisional hernia in up to 40% of high risk patients. The abdominal wall closure technique is well recognized as the main factor to avoid incisional hernia. Recent studies have demonstrated the benefits of prophylactic mesh to prevent incisional hernias, mainly in high-risk patients, but there is no consensus about the type, where to place and how to fix the mesh. The authors evaluated the resistance of the linea alba reconstructed with an innovative way to place and fix polypropylene mesh. This study is part of a project to develop a new 3D mesh to reinforce and reconstruct the linea alba.

Methods: Nine New Zealand white male rabbits were divided in 3 groups with 3 animals each: control, heavy weight (HW) and light weight polypropylene mesh (LW). All of them were submitted to midline laparotomies. The abdominal wall of the control group was closed with prolene® 3-0 running sutures. In the HW group, a 10,0 cm x 0,5 cm heavy weight polypropylene mesh was placed between the 2 borders of the midline incision. The mesh was sutured within the abdominal wall with prolene® 3-0 running suture – each stitch passes through one side of the abdominal wall, through the mesh and through the other side of the abdominal wall. In the LW group, a 10,0 cm x 0,5 cm low weight polypropylene mesh was used to close the abdominal wall, like the HW group. After 4 months, the animals were killed and a U shape laparotomy was performed. All adhesions were documented and a 12 cm x 10 cm muscle-aponeurotic flap containing the whole scar was excised of each animal. Each flap was segmented in 3 or 4 standardized pieces with the linea alba in the middle and submitted to tensiometric measures and histological analysis.

Results: There were no significant differences in surgical site complications. The maximum tensile strength of abdominal wall in the midline closure was significant higher in mesh groups than measured for the suture alone (Control - 8,39 ± 2,24N, HW group 12,24 ± 2,58N and LW 12,12 ± 3,29N - $p < 0,00$). There were no significant difference between the maximum tensile strength of HW and LW meshes (Control X HW ($p = 0,01$), control X LW ($p = 0,03$), HW X LW ($p = 0,99$). The histological features are still being analyzed (Inflammation grade described by Hooker and thickness of the inflammatory reaction). All animals of the tests groups had adhesions between mesh and omentum and none in the control group.

Conclusions: The reinforcement of the abdominal wall closure with this innovative way to place and fix polypropylene mesh strengthens the linea alba. Long-term, this may contribute to development of a tridimensional Tshape® prophylactic mesh for abdominal wall closure.

CO24:18
A NOVEL MESH SUTURE STRUCTURE STRENGTHENS EARLY LAPAROTOMY CLOSURES

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Summary Background Data: The failure of sutures to maintain tissue in apposition is well characterized in hernia repairs. A mesh suture designed to facilitate tissue integration into and around the filaments may improve tissue hold and decrease suture pull-through.

Methods: A mesh suture with tensile characteristics nearly identical to 0-polypropylene suture was tested for its resistance to pull-through in ballistics gel. In vivo implantation of mesh suture and 0-polypropylene in ten female swine (average weight 93 kg) was performed with closure of midline laparotomy incisions. At 8 days, tissue segments were subjected to mechanical and histologic testing.

Results: Mesh suture demonstrated greater resistance to pull-through in comparison to standard suture (4.27 +/-.42 N vs. 2.23 +/-.48N, $p < .0001$) in vitro. In swine, the ultimate tensile strength (UTS) for repaired linea alba was higher with mesh suture (320.0 +/- 57.0 N vs. 159.9 +/- 56.2 N, $p < .0001$) as was the work to failure (24.6 +/- 14.2 J vs. 7.3 +/-.3.7 J, $p < .0001$) and elasticity (127.6 +/- 9.0 N/cm vs 71.9 +/- 6.9 N/cm, $p < .0001$) in comparison to 0-polypropylene suture. Histology at 8 days showed complete tissue integration of the mesh suture.

Conclusion: Mesh suture demonstrated a significant increase in the strength of early wound healing using a realistic animal model due to tissue integration and resistance to pull-through. Mesh suture may prove optimal for internal high-tension closures.

CO24:19
THE APPLICATION OF HERNIOSCOPY FOR THE EXPLORATION OF CONTRALATERAL INGUINAL REGION IN UNILATERAL OPEN TENSION-FREE INGUINAL HERNIORRHAPHY – EXPERIENCE BY ONE HERNIA CENTER

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Hernioscopy is laparoscopy traversing a hernial sac into peritoneal cavity for diagnosis or therapy adopted in the course of open

inguinal herniorraphy. Up to now, Hernioscopy is mainly used to inspect intra-abdominal contents and thus prevent the necrotic bowel left in peritoneal cavity or unnecessary laparotomy in incarcerated hernias if the incarcerated contents reduced spontaneously in general anaesthesia.

We adopted hernioscopy to explore the contralateral inguinal region for those patients with the confirmed diagnosis of unilateral inguinal hernia accompanied by the discomfort in contralateral inguinal region. The decisions were made for further management according to the results of exploration by hernioscopy. In our practice, due to the limitation of anatomical structure of bilateral inguinal areas, a 30-degree laparoscope's visualization of contralateral inguinal region through a hernia sac is not as adequate as that for contralateral myopectineal orifice using a laparoscope through umbilicus. Plica umbilicalis lateralis often interrupted the view of part of contralateral internal ring and so the observation of hernia sac or patent processus vaginalis. In order to obtain the clear view of peritoneum in the internal ring to evaluate whether indirect hernia or patent processus vaginalis coexisted, two techniques were adopted singly or in combination: 1) trocar that the laparoscope went through were pulled cranially to lift the laparoscope to the direction of umbilicus and so observation angle changed; 2) slight press of the contralateral internal ring from body surface so that sac or patent processus vaginalis, if existed, in the internal ring could protrude into peritoneal cavity. The techniques were easily learned and mastered even by surgeons who have limited experience in laparoscopy.

For unilateral inguinal hernia patients with contralateral groin complaint(without apparent swelling in the groin region), the hernioscopy could be safely used for the diagnosis of occult contralateral inguinal hernia without more surgical trauma to the abdominal wall, avoiding the metachronous inguinal hernia repair.

CO24:20
ALL IN ONE MESH INGUINAL HERNIA REPAIR: A NEW METHOD FOR THE PATIENT'S MAXIMUM COMFORT

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Purpose: To broadcast a new and more simple method for repairing primary inguinal hernias aiming to reduce neuralgic complications and to improve the patient's discomfort.

Materials and methods: From September 2012 to July 2014 130 patients (125 males and 5 females) were treated in Day Surgery at the Department of Surgery of the Istituti Clinici Zucchi in Monza - Italy -.

Average age was of 61,8 years and 73% (95) of the patients were involved in sports or strenuous jobs.

All procedures were done under spinal anaesthesia.

Follow-ups were carried out at 3, 6, 12, 18 and 24 months from surgery, postoperative pain being evaluated by means of VAS; patient comfort and long- or short-term complications were also considered.

This newly devised technique implies the positioning of a small prosthesis of original design: once the spermatic cord is identified, a longitudinal medial incision of the fibro-cremasteric sheath is carried out. The sheath is completely separeted from the cord elements as far as the inguinal ligament with which it shares functional continuity. After hernial reduction, accomplished in the usual manner, the mesh is placed on the floor of the inguinal canal (above the fascia transversalis) in order to strengthen all areas of weakness from which the hernia may originate. The mesh is now covered up with the previously separated fibro-cremasteric sheath. The cord is returned to its anatomical position. The suture of the fascia of the external oblique muscle and of the superficial layers complete the procedure.

Results: Slight pain was reported by the majority of patients (average VAS = 2,2).

Urinary retention was seen in 0,8% (1) of patients; bruising of the external genitalia in 4,6% (6) of them.

All patients were discharged within 24 hours from surgery.

53% (69) of patients did not require pain medication at home. Of the remaining 47% (61), 75,4% (46) took 10 mg of Ketorolac for the first two days, 24,6% (15) for no longer than 6 days with an average VAS of 1,4. After two weeks, only 4,6% (6) of patients complained of a slight pain but did not need medication.

No significant limitation of normal activities was reported during the first week and only 10% (13) of patients suffered a slight limitation.

All patients resumed work after a few days and 22,4% (19) of them indulged in sports after only one week.

No neuralgia or perception of foreign bodies was reported. We had no recurrences.

All patients were fully satisfied by the procedure and end result.

Conclusions: This new technique respects anatomy, is simple and quick and seems to be of maximum comfort to the patient. No neuralgia or feeling of foreign body have been reported. Isolation of nerve structures is usually not necessary. The less experienced surgeon will be able to avoid neuralgic complications not having to sever the cremaster. Placing a prosthesis of the same size and specular to the area of weakness on the posterior wall of the inguinal canal builds a sort of sandwich between the fascia transversalis, the mesh and the fibro-cremasteric sheath, pressed upon by the overlying spermatic cord and external oblique aponeurosis. In such a way, a direct and precise reinforcement of weak areas lacking a muscular layer in the inguinal canal is guaranteed. The minor surgical trauma and attention to anatomical structures pay off as less postoperative pain with an earlier return to normal activities and even sports.

Longer follow-ups and a higher number of treated patients will validate this new method we propose.

CO24:21
PROFLOR FREEDOM MESH REPAIR FOR INGUINAL HERNIA—SINGLE CENTER RETROSPECTIVE STUDY

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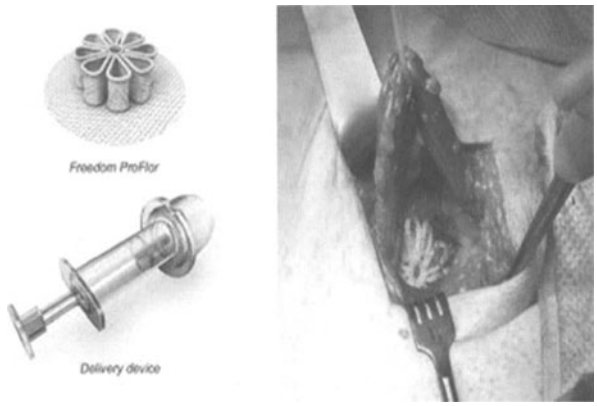
Introduction: This paper brings the latest innovative Mesh Repair of Inguinal Hernia using a dynamic Freedom Proflor Mesh Repair both regular and extended variant

Objectives-methods: Surgery for Inguinal hernia is diversified. Since the day of anatomical Repair by Bassini's and updated to Single sheet mesh repair of Lichtenstein and in Recent years by Lap. Hernia repairs, the challenge continues to get the most suited method for the patients. In the best hands of surgeons, the objective of repair of hernia is to prevent recurrence to maximum low level and to give the best post-operative comfort to the patients. In order to address these problems new "Proflor Freedom Mesh Repair" was launched in Our Center in 19.02.2013 in South India. The new Technique had caused Revolution in Inguinal Hernia surgery and offers better therapeutic benefits and it is discussed in detail in the paper.

Description-Results: Sixty seven patients were operated by the New "Proflor Freedom Mesh Repair" both regular and extended variant from 19.02.2013. The mesh has a flower shape 40 mm disc Prolene in knitted form and has underlay mesh plate made of Prolene. The regular one the underlay is 6 cms diameter round shape and in extended one it is 8 cms diameter but oval shape. The patient's age group varied from 23 to 80 years, both direct and indirect hernias and Bilateral Hernias were operated by this method. Those who were operated were discharged with nil morbidity and Patient's overall satisfaction with the procedure was high and Post Op recovery was fast. The surgical time was also reduced by 50% and it also helped patient's Psychological feeling of well being as it offers speedy recovery as this mesh has collapsible flower which sits in the defect without any suture. In this paper the details of the new Mesh, the procedure and the impact were discussed in detail.

Conclusion: the new type of "Proflor Freedom Mesh Repair" gives a promising role to repair Inguinal Hernia's with Good Surgical Outcome and Nil Morbidity and there are hopes that it may form one of the gold standard method in the Inguinal Hernia Surgery.



CO24:22
A NEW PROSTHESIS IN INGUINAL HERNIA REPAIR: PRELIMINARY RESULTS OF A PILOT STUDY

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Backgroud: Prosthetic reinforcement is the gold standard in inguinal hernia repair. One - third of patients complain of post – surgical pain due to irritation and inflammation caused by the mesh and methods of fixation; 4-10% of these will experience severe chronic pain. We performed a prospective single arm study for the assessment of post-operative pain after inguinal hernia repair with a new self – gripping hernia prosthesis (Freedom Proflor™; Insightra).

Methods: From December 2011 to December 2013, 44 consecutive patients with primary oblique inguinal hernia underwent to inguinal hernia repair with Proflor™. All patients were preoperatively evaluated by ultrasound and the defect size was < 2 cm. Visual Analog Scale (VAS) was assessed at 7 days and 3 – 6 months. All patients were included in ultrasound follow up at 7 days and 3 – 6 – 12 – 18 – 24 months. Long term follow-up was completed by telephone questionnaire.

Results: The mean operative time was 40 ± 15.All patients received local anaesthesia and prophylactic antibiotic (1 x 2g Cefazolin). No sutures or other fixation systems have been used. According to the VAS scale pain was reported in a range from 1 to 3 during the first week. No peri-operative complications occurred. 5 post-operative complications was reported: 2 seroma (4.5%), 3 transient paresthesia (6.8%). None of total implants delivered dislodged or migrated, as confirmed by the ultrasounds.

Conclusions: Operative and post-operative complication rates were comparable to the literature; chronic pain did not occur in any case. The use of this new prosthesis, which through its design allows fixation without sutures, could be an alternative method to decrease chronic pain after inguinal hernia repair. We acknowledge that further studies are needed.

CO24:23
CLINICAL EVALUATION WITH A NOVEL IMPLANT AND MODIFIED TECHNIQUE FOR VENTRAL HERNIA REPAIR

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Background: The preperitoneal sublay placement for ventral hernia repair can be difficult with respect to achieving the proper defect overlap and fixation of the implant. The OctomeshTM (Insightra Medical, Irvine, CA, USA) has undergone evaluation in 51 patients in two centers. Results of this Insightra sponsored study are reported herein.

Methods: Octomesh is a polypropylene mesh implant with eight tension-free anchoring straps radiating from the elliptical implant body. Implantation was accomplished using a sublay technique. To evaluate mesh stability, Ligaclips® were affixed adjacent to each strap location. Once the implant was placed in the preperitoneal space, the mesh straps were threaded anteriorly through the rectus muscle using the provided strap passer instrument. X-rays were taken post-operatively, at 1 month and at 2 months to determine mesh migration. CT scans were also performed at the 2-month visit to evaluate the strap passage sites for the formation of microhernias.

Results: X-rays from immediate post-operatively, one month and two months were compared for mesh migration. A limit of 5 cm was established since that is the widely recommended margin coverage based on the literature. No patients had any mesh migration or strap movement approaching the 5 cm limit. Final mesh positioning as indicated by the clips collectively showed the implants to be properly placed and stable. Complications reported during the follow up period were recurrences (n=2 (4%)), wound infections (n =2 (4%)) and seroma (n = 4 (8%)). The CT scans confirmed the straps did not introduce any unreasonable risk of new microhernias.

Conclusions: The Freedom Ventral Hernia repair was an effective repair in terms of recurrence, migration and acute pain. It is a time efficient repair system (mean 106 minutes) that enables broad margin coverage in the preperitoneal sublay and retromuscular sublay position. There were no findings of parastrap microhernias in this cohort.