


# Hernia

 Springer

The World Journal of Hernia  
and Abdominal Wall Surgery

## Abstract Book

5th INTERNATIONAL  
HERNIA CONGRESS  
THE WORLD HERNIA  
CELEBRATION

NEW YORK, USA  
March 28-31, 2012

Invited Papers

Free Papers

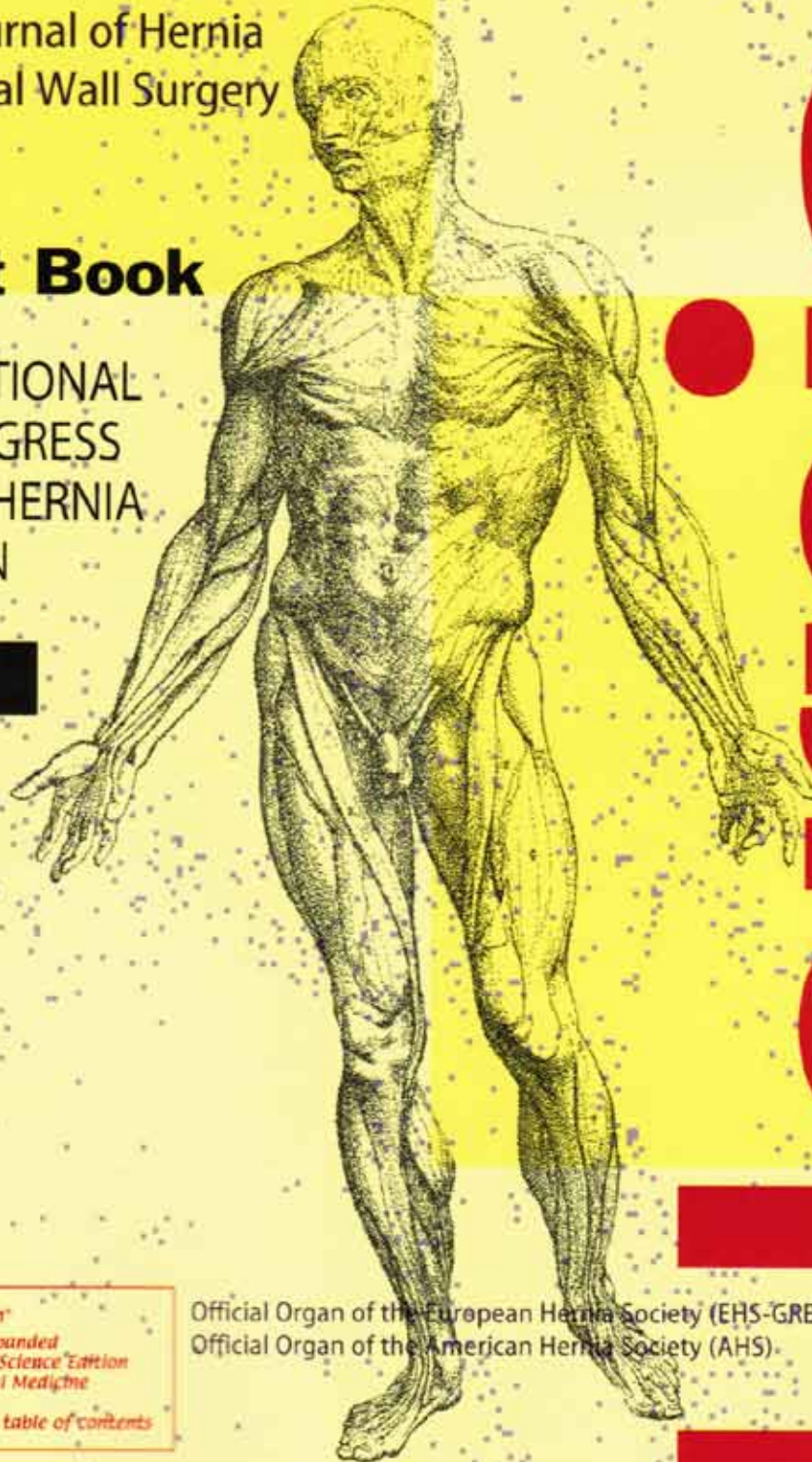
Posters

*Now indexed and included in\**

- Science Citation Index Expanded
- Journal Citation Reports/Science Edition
- Current Contents®/Clinical Medicine

\*See complete list below the table of contents

Official Organ of the European Hernia Society (EHS-GREPA)  
Official Organ of the American Hernia Society (AHS)



than 10 years. Indications for surgery were as follows: Severe GERD symptoms; Therapy-resistant symptoms; Complications of GERD: Big sizes hernias; Accompanied diseases; Atypical cardiac symptoms; Young symptomatic patients. In 23 cases with concomitant duodenal ulcer and gastric acid hypersecretion we have performed additionally selective proximal vagotomy, 3 of them also underwent cholecystectomy and in 2 cases we reinforced hiatoplasty by composite mesh. All patients as anti-reflux surgery underwent posterior hiatoplasty and modified Nissen-Rossetti fundoplication (MNRF). In all cases we performed MNRF in A. Chernousov (Russia) modification, which propose the following steps: Mobilization of abdominal esophagus; Identification of vagal nerves; Expose of esophageal hiatus; Division of short gastric vessels; Posterior hiatoplasty (2-3 sutures); Cuff formation (valve length: 2-2.5 cm) and fixation of wrap to esophageal wall; Upper fixation of the cuff to both wall of esophagus and lower fixation to the left wall of esophagus.

**Results:** There were no mortality or major perioperative complications (1 case of iatrogenic splenectomy) in our series. Only 9 patients have transient episodes of mild dysphagia. Postoperative endoscopy and X-ray revealed a good swallow and functional status of esophagus and stomach. The good and excellent results were achieved in more than 90% of cases. No reinterventional surgery was needed.

**Conclusions:** Our experience showed that MNRF is safe and effective procedure, which: prevents "slippage" of cuff, avoids specific postoperative complications, guarantees long-term good functional results and improves results of antireflux surgery.

#### P-1518

##### Improved ICD10 hernia diagnosis classification

Rogmark P, Smedberg S

Skåne University Hospital, Malmö, Sweden

**Background:** The current International Classification of Diseases (ICD) in use is the 10th revision. The current revision plan began 2008 and predicts implementation of ICD-11 in 2014.

Hernias are located in categories K40 to K46 and each category can identify two major complications: obstruction and gangrene. Five categories collect specific hernias while two categories are collectors. The ventral hernia category is heterogeneous including epigastric and incisional hernias.

Our proposal collects hernia cases of similar anatomical type and aetiology into categories suitable for improved statistical analysis.

**Methods:** Inguinal (K40) and femoral (K41) hernia categories are unchanged. Umbilical hernias (K42) is renamed to Primary Hernias of the Abdominal wall and includes umbilical and primary midline hernias. Current category "Ventral hernias" K43 is reserved for hernias after previous surgery or other trauma and thus be declared as Secondary [iatrogenic, posttraumatic, incisional] hernias. Parastomal hernia is the only exclusion to this entity which needs a category of its own. Separate categories are reserved for pelvic region hernias and intraabdominal hernias. The diaphragmatic hernias (K44) should not be categorized elsewhere.

**Results:** The proposal was submitted to the Swedish National Board of Health 2008 and further to the WHO ICD Updating and Revision Committee. There was total agreement on the need of an extensive overhaul of the hernia classification, but delegates found it too radical or the terminology difficult. Some items were ratified in Seoul 2009 and will be implemented in ICD10 in 2013. [http://www.who.int/classifications/icd/Official\\_WHO\\_updates\\_combined\\_1996\\_2009VOL3.pdf](http://www.who.int/classifications/icd/Official_WHO_updates_combined_1996_2009VOL3.pdf).

**Conclusion:** Current ICD-10 categorization is inadequate for analysis of modern abdominal wall surgery and leads to unusable statistics inhibiting the use of national registries for advanced evaluation. Our proposal is consistent with the EHS classification. ICD representatives should be made aware of the hernia surgeon perspective. ICD11 will be in use in 5-10 years – there is no time to waste!

#### P-1519

##### Nationwide study of surgical risk factors for poor outcome after incisional hernia repair

Helgstrand F, Rosenberg J, Kehlet H, Nannestad L, Bisgaard T  
Dept. Surgery, Køge Sygehus

**Introduction:** Incisional hernia repair is a frequent procedure but some patients experience an unsatisfactory outcome. Risk factors for poor outcome have not been documented.

**Methods:** Nation-wide prospective study including incisional hernia repairs from the Danish Ventral Hernia Database (DVHD) between Jan 1st 2007 and Dec 31st 2010. Several perioperative details were online web-recorded by the operating surgeon. A 100% follow-up for 30 days outcome and recurrence repair within the entire observation period was obtained by electronic merging of DVHD with the Danish National Patient Register.

**Results:** The study included 3,460 incisional hernia repairs (94.2% elective and 5.8% emergency procedures; 47.9% open and 52.1% laparoscopic repairs). The mortality rate (<30 days) was 0.8% and significantly higher after open repair (1.2%) compared with laparoscopic repair (0.5%) ( $p=0.022$ ). Readmission rate (<30 days) was 13.8% (open 15.0% and laparoscopic 12.7,  $p=0.058$ ) and the reoperation rate (<30 days) was 2.4% (open 2.7%, laparoscopic 2.1%,  $p=0.24$ ). Hernia defects were significantly smaller in the open group (median 5 cm (range 0.2-34)) compared with the laparoscopic group (8 cm (0.5-40)) ( $p<0.001$ ). After a median observation period of 21 months (1-47) the cumulated risk of recurrence repair after open and laparoscopic repair was 19.4% and 15.5%, respectively ( $p=0.030$ ). The larger the defect the higher the risk of recurrence repair ( $p=0.038$ ). Old age, emergency repair, large hernia defect, and a vertical incision at the primary laparotomy were significant risk factors for readmission, reoperation or death when tested in a multivariate analysis ( $p<0.05$ ). Moreover, young age, open repair, hernia defects  $\geq 7$  cm, and intraperitoneal placement of the mesh in open repairs (compared with sublay/onlay placement) were significant risk factors for subsequent recurrence repair ( $p<0.05$ ).

**Conclusion:** Incisional hernia repair was beset with high rates of readmission and reoperation. Mortality and recurrence repair were significantly higher after open repair compared with laparoscopic repair.

#### P-1520

##### Save the sutures with the Tupler technique®

Tupler J

Diastasis Rehab

Abdominal surgery has a high incidence of reoccurrence. This is because the abdominal muscles are used with every body movement. When the muscles move, intra-abdominal pressure pushes on the sutures. This force and pressure on sutures can cause them to pull apart. Thus, the reasoning behind post-op instructions not to lift anything heavy or do any strenuous activities. Integrity of the sutures can be maintained post-op by patients learning how to use their muscles in a way that prevents force on these delicate stitches. This involves both strengthening and re-educating the muscles. If this is done BEFORE surgery, then patients will then have the strength and muscle memory to use their muscles correctly AFTER surgery.

The evidenced-based Tupler Technique® Program teaches patients how to strengthen the transverse abdominal muscle and also how to use their abdominal muscles "correctly" while performing the basic activities they will be doing after surgery. Patients will learn how to belly breathe and cough to help their lungs recover from the anesthesia. They will learn how to get in and out of bed and also how to go from a seated to standing position. For example, if they do not

engage their abdominals before they stand up, they will be lifting at least 100 pounds!! That is a lot of weight! Having a bowel movement after surgery is a strenuous activity and stressful on the sutures. This program will teach patients how to elevate their feet and use their abdominal muscles.

Starting this program 4 to 6 weeks prior to surgery will give patients the most benefit. However, even one week prior to surgery will be helpful. Once patients have learned and practiced this program, they'll be ready for the procedure with the knowledge that they have trained their body to actually advance the healing process.

#### P-1522

##### **Elective Lichtenstein inguinal hernioplasty in general surgical unit: Is there a need for antibiotic prophylaxis**

Cijan V, Scepanovic M, Bohovic P  
Clinical Hospital Center "Zvezdara", Department of surgery,  
Belgrade, Serbia

**Introduction:** The role of prophylactic antibiotics in inguinal mesh hernioplasty is currently unclear and still a matter of debate. Although European Hernia Society evidence-based guidelines don't recommend routine use of antibiotic prophylaxis in elective open groin hernia repair in low-risk patients, many surgeons, however, continue to give antibiotics empirically, without strong evidence to support this policy.

The aim of this study was to assess if systemic antibiotic prophylaxis prevents wound infection in Lichtenstein inguinal hernioplasty in general surgical unit.

**Methods:** A prospective one-year database of patients categorized in antibiotic (received prophylactic antibiotics) and placebo (received placebo) group who underwent elective Lichtenstein inguinal hernioplasty has been established. Demography, type of hernia and anaesthesia, operating time, complications and hospital stay were recorded. Infections were evaluated 1 week, 2 weeks, and 1 month postoperatively according to CDC (Center for Disease Control) criteria.

**Results:** A total of 120 consecutive patients were operated, between September 2010 and September 2011, including 60 patients in each group. Groups were comparable regarding demographic data, hernia type, operation time, hospital stay and recurrence. Respectively for antibiotic versus placebo group: spinal anesthesia 83.4% versus 0%, local anesthesia 16.6% versus 100%. 3 patients (5%) had postoperative haematoma versus 2 (3.3%) and 3 (5%) wound seroma versus 4 (6.6%). Superficial surgical site infection developed in 2 patients (3.33%) from the antibiotic group and 3 (5%) from the placebo group. One from each group developed deep surgical site infection. None of the infections required mesh removal.

**Conclusion:** Antibiotic prophylaxis for Lichtenstein inguinal hernioplasty did not markedly decrease risk of wound infection in this patient population. Based on the results of this study the routine use of antibiotic prophylaxis for elective inguinal hernia repair in general surgical unit cannot be universally recommended.

#### P-1524

##### **Retrospective analysis of patients with chronic groin pain: What factors prove to be significant?**

Morfesis F, Rose B  
Owen Drive Surgical Clinic of Fayetteville, NC

**Introduction:** The incidence of chronic groin pain (CGP) in elective open inguinal hernia repair ranges from 0-37% in prior studies (Nielsen et al 2001). While prior studies investigate the success of different operative techniques and mesh composites, few have begun

to look at the types of patients who tend to have poor surgery outcomes in the form of continued pain. The present pilot study is intended to provide an initial qualitative look at patients who continue to report high pain scores post-operatively.

**Methods:** Patients were given a hernia specific pain scale to measure pain at fixed intervals in order to identify patients who met criteria for CGP. Among the sample who met criteria (n=5 of 200), a retrospective chart review was then completed.

**Results:** Consistent with past research, 5 of 5 CGP patients reported pre-operative pain scores in the upper third of the pain scale, suggesting high rates of pre-operative pain. Additionally, all patients reported increased pain with movements, and all agreed that they believed their hernia occurrence was work related. Finally, all of the patients reported past history of substance use including: alcohol, opioids, cannabis, and cocaine. Post-operative scores revealed even higher pain scores in n=2 patients at 1 month, while the remaining n=3 reported no change in pain since the procedure. This pattern persisted at 3 months, 6 months, and 1 year, respectively.

**Conclusions:** In this pilot study, we begin to establish possible areas of interest for future studies that hope to evaluate factors that contribute to poor outcomes post-operatively. Factors that overlapped between patients included high pre-operative pain scores that increase with movement, self-reported history of substance use, and beliefs about the source of injury. Future research may benefit from an in depth evaluation of these variables as possible predictors of patient outcomes.

#### P-1526

##### **Modified Kugel groin hernia repairs: The operative outcomes in consecutive 512 patients**

Suwa K, Yamagata T, Fujita A, Hanyu K, Okamoto T, Yanaga K  
Department of Surgery, Jikei University School of Medicine, Tokyo,  
Japan

**Background:** The preperitoneal mesh repair is an ideal because the abdominal pressure is evenly distributed on the mesh according to the Pascal's principle. The laparoscopic and Kugel repair are useful for this reason, but are associated with problems including cost and educational feasibility. The modified Kugel herniorrhaphy (MK) solves such problems because it is a preperitoneal repair through an anterior approach with which general surgeons are familiar.

**Material and methods:** The operative outcomes of MK in 512 consecutive patients are compared with the plug and onlay method (PO) in 525 patients during the same period.

Additionally, we demonstrate our own technique to make the preperitoneal cavity for placement of the prosthesis.

**Surgical technique:** The preperitoneal space is divided into three by the two preperitoneal fasciae, superficial and deep lamina. The first cavity should be made between the hernia sac and the deep lamina which covers the spermatic vessels and the vas deferens. We call this "zone 1". The second should be made in the preperitoneal fat space under the superficial lamina beneath the inferior epigastric vessels. We call this "zone 2". These two zones are separated by the deep lamina, and should be connected to facilitate mesh placement.

**Results:** The mean operation time, postoperative complications and recurrence of MK and PO is 42.9 vs 52.0 min, 3 (0.6%) vs 5 (1.0%) cases, and 1 (0.2%) vs 3 (0.6%) cases, respectively. The complications of MK included one infection which did not require mesh extraction, one persistent seroma and chronic groin discomfort, while PO included 2 infections of which one required mesh extraction, one huge hematoma and 2 chronic pain. Although not statistically significant, the results of MK seemed better than those of PO.

**Conclusion:** The MK is a safe and effective for inguinal hernia repair as compared with PO.

**P-1486****Quality of life after hernia surgery using 3dimensional an partly resorbable meshes**

Koch A, Lorenz R, Born H, Wiese M, Schmitz H, Cejnar S  
*Day Surgery Centre*

**Background:** With the use of mesh shown to considerably reduce recurrence rates for hernia repair and the subsequent improvement in clinical outcomes, focus has now been placed on quality-of-life outcomes in patients undergoing these repairs, specifically, as they relate to the mesh prosthesis. In 2007 Heniford et al. propose a new quality-of-life survey, the Carolinas Comfort Scale (CCS), pertaining specifically to patients undergoing hernia repair with mesh. (*J Am Coll Surg* 2008; 206: 638-644. © 2008 by the American College of Surgeons).

**Methods:** 16 ambulant hernia centers in Germany carry on a large multicenter study on hernia repair using partly resorbable 3 dimensional meshes (UHS an UPP) since the 1st of October, 2009. The CCS questionnaire was mailed to all patients 4 and 12 weeks after surgery. A clinical examination by the surgeon was also made 4 and 12 weeks postoperatively. There are 3 main points in the questionnaire: sensation of mesh, movement limitations and pain. For each point, 8 questions (eg. Laying down, bending over, sitting down, walking etc.) and for every question a maximum of 5 points is possible.

**Results:** Between 1st of October 2009 and 30th of September 2010 in total, there were 878 patients included (771 male and 107 female, median age 56 years). The postoperative morbidity was 1.5% and the recurrence rate after 52 weeks was 0.4% (n=3). Inguinal chronic pain was found in 16 patients (2.2%). The patient satisfaction rate was 98%. The sum score for the satisfied patients is in correlation with the score published by Heniford in 2008.

**Conclusion:** In conclusion, this study demonstrated that hernia surgery with 3D partly resorbable meshes is associated with low rates of recurrence and chronic pain. The rate of satisfied patients is high.

**P-1487****The benefits of hernioplastia with local anesthesia in an outpatient**

Roxo C, Sa Ribeiro F, Falcao D, Ribas R  
*Brazilian Public Health (SUS)*

**Objective:** Demonstrate the feasibility of the technique of inguinal hernioplasty with local anesthesia as an outpatient, with safety, efficacy, optimal patient compliance, lower cost and less systemic side effects (cardiovascular effects, nausea and vomiting, urinary retention). Along with that sought a reduction of waiting times of the condition, which at baseline was 6 years.

**Methods:** We analyzed prospectively 884 patients undergoing inguinal hernioplastia under local anesthesia as an outpatient, between November 2004 and July 2011. Of the total number of hernia operations in this period, 556 (63%) were located to the right, 308 (36%) left and 10 (1%) bilateral. We used clinical, surgical and psychosocial aspects for inclusion in the procedure. The parameters for exclusion were complex or irreducible hernia, recurrent hernia, obesity (BMI >30), refusal of patient or psychiatric patients. All surgeries were elective and after the same patients were evaluated for surgical outcome, intraoperative pain and satisfaction with the method, length of stay and complications in the long run.

**Results:** All surgeries were completed successfully. In any case it was necessary to change the method of anesthesia. Surgical time was similar to surgeries by block, without having any cases of adverse effects to local anesthetics. The intraoperative complications amounted to 14 and all were resolved quickly. All patients accepted

the method with low intraoperative pain (70 patients - 8%). Only 3 patients (0.2%) required hospitalization exceeding 24 hours. The waiting list for this pathology decreased from 6 years to 2 weeks.

**Conclusion:** The procedure is feasible, safe, low rate of intraoperative and postoperative complications, optimal patient compliance, enabling reduced time and cost of hospitalization generating higher turnover and access to the population.

**P-1488****Prevention of parastomal hernias by prophylactic use of a proceed mesh intraperitoneal of sugarbaker technique**

Barreiro J, Garcia Bear I, Truan Alonso N, Garcia Florez L  
*Service of General surgery Hospital San Agustin*

**Background:** Hernias around ostomies are a very common complication, exceeding 50%. Only a few studies deal with the prophylactic use of mesh to prevent parastomal hernia revealing promising results.

**Patients and methods:** Twenty-nine patients undergoing elective rectal surgery with a permanent colostomy -one with an ileostomy and two needing surgical correction of a preexisting colostomy- were enrolled in a prospective study, the proceed mesh intraperitoneal was prophylactically using an intraperitoneal sugerbaker technique, the patient were followed for a median of 14 months (range 2-24 months by clinical examination every 4 months).

**Results:** No infection or any other adverse effect was observed, and no parastomal hernia or stoma protrusion could be detected clinically. Twenty patients had a routine computed tomography after 12 months, which also excluded any hernia formation.

**Conclusion:** The prophylactic use of proceed mesh (sugarbaker technique) is safe effective preventing stoma complications such as hernia formation or prolapse, at least in the short run.

**P-1491****Treatment of Diastasis Recti and umbilical hernia with the Tupler technique®**

Tupler J  
*Diastasis Rehab*

The Tupler Technique® is the only evidence and research based program to treat a diastasis recti. This research is from Columbia University Program in Physical Therapy.

Closing a diastasis is all about healing weakened connective tissue. A side effect of a severe diastasis is an umbilical hernia. Healing the connective tissue means making it denser and shallower. Strong connective tissue will close the diastasis and bring support to the umbilicus.

The Tupler Technique® program heals connective tissue by doing 4 things:

1. Approximates the separated muscles with a Diastasis Rehab Splint® to put the connective tissue in a better position to heal. It also puts the separated muscles in a better position making the exercises more effective.
2. Strengthens the transverse abdominal muscle with the Tupler Technique® seated and back lying exercises. This brings blood flow to the connective tissue.
3. Prevents intra-abdominal force, pressure and stretching of the connective tissue with re-education of the muscles.
4. Provides an awareness of how to use the strengthened abdominals while exercising.

Closing a diastasis will give more back and organ support relieving clients of back pain while protecting their organs. They will love their flatter belly and smaller waist! After six weeks of doing this program the size of the diastasis will measure significantly smaller, the umbilicus will start to move inward and the condition of the connective tissue will improve. It becomes stronger and shallower. Closing a severe diastasis may take up to a year.

Closing a diastasis does NOT guarantee it will stay closed. The umbilicus is a weak spot in the connective tissue. Intra-abdominal force on this weak spot can re-open the diastasis. So it is crucial to continue to do the Tupler Technique® exercises even after the diastasis has closed. This is a life changing program!!

#### P-1494

##### A new inguinal hernia classification helps the surgeon to perform custom made surgery

Guarnieri F, Calistus N  
*Clinica Guarnieri*

In recent time, different surgeons have attempted to classify the groin hernias (Nyhus, Zollinger, Aachen, Bendavid, Schumpelick, etc) with different criterias like the size of the hernia, it's location and the diameter of the internal inguinal ring. The European Hernia Society has tried to put together all these parameters in order to produce an "easy to remember" classification. In our opinion, we are convinced that this classification is still not complete since some salient points in the description of the groin hernia for a practising surgeon are still missing.

In our study and with our clinical experience, we tried to classify groin hernias taking into consideration the logic of "simple to apply and easy to remember" concept. In reviewing all the existing classifications, we noticed that no mention was made regarding the position of the hernia in the posterior wall in direct hernia and that mixed hernias were not well represented hence our conviction for a new classification. This aspect is important for us because we use a custom made surgery and a method which changes depending on the diagnosis.

We identified five major types of groin hernias:

- Indirect hernia.
- Direct hernia.
- Femoral hernia.
- Mixed hernia.
- Recurrent hernia.

Each type has three or four subtypes regarding position, size and number of hernias. Indirect Hernia (I) has three subtypes regarding the size. Direct Hernia (D) has three subtypes regarding the position (High, Low or Total). Mixed Hernia (M) is classified for its prevalent diagnosis and number of hernia openings. Recurrent Hernia has four subtypes regarding its position and number of hernias. The Femoral Hernia has only one subtype to show if it is present or not. This classification is represented by a scheme easy to remember.

#### P-1495

##### Experimental research of the possibility of using mesh implants with adhesive compositions for the prevention of postoperative hernia

Shkundin A, Galimov O, Khanov V, Gaptrakipov E  
*Bashkir State Medical University*

Highly relevant to the end of the unsolved at the present time is the issue of complications after the installation of implants in hernioplasty, but also when they are installed for the prevention of postop-

erative hernia. A special group of complications associated with the need to fix the implant suture material for which there is a high risk of developing fistula ligature, due to the eruption of filaments, or wrinkling of the grid, "a discharge" its one of the edges of the aponeurosis. An important aspect is the problem of reducing the duration of the operation, in particular - reducing the time required for fixation of the implant.

The aim of the study was to examine different methods of fixation of implants in the anterior abdominal wall, especially with the use of adhesive compositions.

Experimental studies were conducted on 120 rats "Wistar" of both sexes, weighing 150-170 g.

Laboratory animals were divided into 8 groups, depending on the type of prosthesis, the adhesive composition and the technique of his fixation.

In the experiment, rats were observed complications such as postoperative wound gap in the investigation of cutaneous sutures bite off identified in 22 rats. In 16 rats were observed shift from the place of the original polytetrafluoroethylene prosthesis fixation with glue and alloplant latex fabric. In 12 rats, who underwent fixation of prostheses interrupted sutures were observed fistulous passages of the abdominal wall. In 5 rats was observed by the festering scar at the site of overlap of skin sutures.

According to the results of experimental studies, the most rapid, reliable and with the least amount of postoperative complications, are ways of fixing in the experimental group who underwent fixation of a polypropylene prosthesis with an adhesive latex and fabric sulfakrilatnym glue and polytetrafluoroethylene prosthesis fixation sulfakrilatnym glue.

#### P-1496

##### Comparative study of multiple biologic meshes for the repair of abdominal wall defects; Our centers experience

Kaufman J  
*Advanced Surgical Associates of Central Jersey, LLC*

This study will compare human acellular dermis to bovine and porcine biologic meshes currently being used in abdominal wall reconstruction. Reconstruction and repair of complex ventral hernias will be assessed for recurrence rates, complications, morbidity and mortality.

#### P-1497

##### The incidence and cost of incisional/ventral hernia repair with and without surgical complications in the United States

Hashemi L, Morseon M

**Objective:** Hernia repair and abdominal wall repair are among the most common major surgical procedures performed in the U.S. According to the Agency for Healthcare Research and Quality a total of 183,978 hospital discharges in 2007 listed abdominal hernia as the principal diagnosis. An analysis of available data indicates that aggregate direct charges for all hernia procedures totaled \$2.8 billion in 2007. Our study examined the cost associated with hernia repair with and without surgical complications including infections and the mechanical failure of previously implanted mesh.