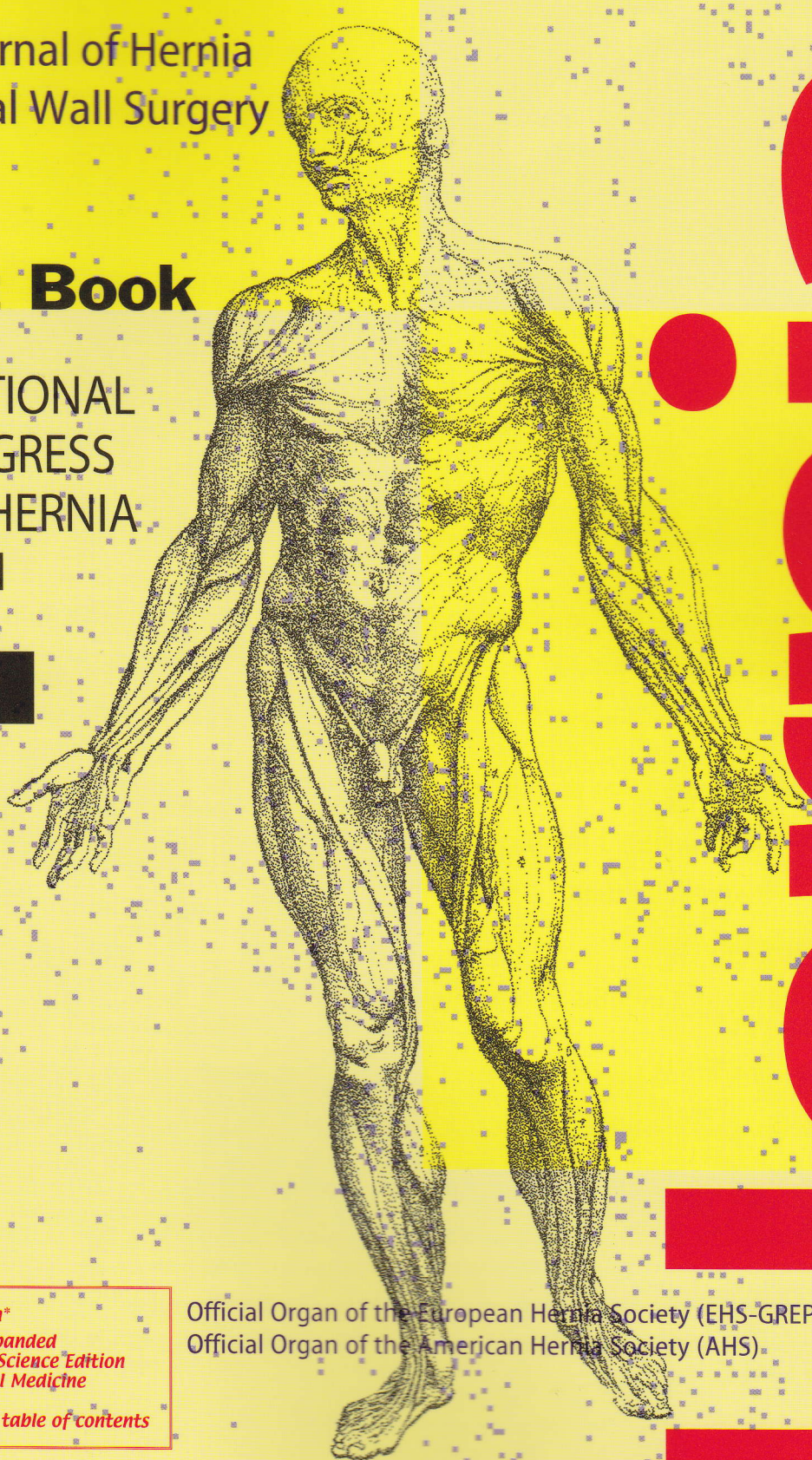
Volume 16 • Supplement 1 • March 2012

Hernia

Springer

The World Journal of Hernia and Abdominal Wall Surgery



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is more cost effective than fixing the mesh and does not influence recurrence rates (level 1A). In laparoscopic incisional hernia repair there is no difference in recurrence rates between tacks and trans abdominal sutures for fixing the mesh (level 2B). The majority of studies assessing fixation of mesh are of low quality and lack formal power calculations. For significant contribution to the literature, further studies assessing mesh fixation should include formal power calculations and cost effective analysis.

P-1432
Obturator hernia – An unusual presentation

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Obturator hernias are rare. A typical presentation is that of bowel obstruction in thin, elderly patients. We present an unusual case of a 48-year-old obese man with a symptomatic left obturator hernia.
The patient is an obese active national guardsman complaining of slight groin pain and deep pelvic pain, especially on exertion. The Howship-Romberg sign is negative but he has marked tenderness on palpation along his adductor muscles. He has had a CT scan done previously to rule out kidney stones. This was negative for kidney stones and hernias. It showed substantial preperitoneal fat and a lipoma of the spermatic cord.
We performed a laparoscopic preperitoneal exploration. The patient did not have an inguinal hernia. A small cord lipoma was removed. A large aberrant obturator artery was found. Next to it we identified a Type 1 obturator hernia. Abundant fat obscured the course of the obturator nerve and adjacent small blood vessels in the pelvis. Therefore we used a boomerang shaped polypropylene mesh cut out of a 15x15 cm piece and attached it to Cooper's ligament with one arm of the boomerang and allowed the other arm to completely cover the site of the obturator hernia towards inferior. Upon desufflation of the preperitoneum, the mesh assumed a secure position without further fixation.
The patient became immediately pain free and remained symptom free during follow up of more than 1 year.
Conclusion: Obturator hernias can occur in other than "typical" patients. Thorough exploration can uncover these rare hernias even if CT scanning is "negative". Mesh repair of obturator hernias in obese patients can be done safely and effectively without tacks near the obturator foramen.

P-1433
Incidence of inguinal hernia repairs in Olmsted County, MN: A population-based study

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Objective: To determine incidence rates of inguinal hernia repairs (IHR) in a well defined USA population.
Design: Incidence study based on a record linkage system, the Rochester Epidemiology Project, with >97% population coverage.
Setting: Olmsted County, Minnesota (2,000 census population=127,277).
Patients: Adult residents of Olmsted County with an IHR between 1989 and 2008 (n=3,599).
Main Outcome Measures: Age- and sex-specific incidence rates per 100,000 person/years.
Results: During the study period, the overall incidence of IHR was 200 per 100,000 persons/year. Rates per 100,000 persons/year varied greatly by sex, age, and type of IHR. The overall incidence for initial, unilateral IHR was 264 in men and 40 in women. Rates increased with age: from 194 to 648 in men, and from 28 to 108 in women between 30 and 70 years of age. The incidence of recurrent IHR was 33.5 in men and 1.3 in women. The life-long cumulative incidence of an initial, unilateral or bilateral, IHR in adulthood was 42.5% in men 5.8% in women.
Conclusion: IHR represent a substantial burden to the USA healthcare system. Their frequency varies significantly by age and sex, with nearly 1 in 2 men experiencing at least one IHR in their adult lifespan, as opposed to 1 in every 17 women. The societal and economic implications of these rates warrant further study.

P-1434
Laparoscopic repair of paraoesophageal hernia; clinical and radiological outcomes

Light D
NHS

Aims: To investigate the outcomes for patients following laparoscopic paraoesophageal hernia repair.
Methods: A retrospective study was undertaken over three district general hospital sites. Cases were reviewed over a 10 years period.
Results: 53 patients underwent laparoscopic repair. Mean age was 64 years. All patients had a gastroscopy and contrast study prior to surgery. Mean operative time was 109 minutes (range 33 to 230 minutes). 51 patients underwent suture repair, one patient had a mesh repair and one patient had no crural repair. 43 patients had a 360 degrees wrap and 10 patients had no wrap (6 of this group had a gastropexy and 4 had a crural repair only). Mean post op stay was 3.5 days. Mean follow up was 6 months (range 3 to 36 months). 22 patients had a follow up contrast study. A recurrence was shown in 6 patients (27%) and all were treated conservatively as they had a symptomatic improvement. Post operatively, 42 patients were asymptomatic, 4 patients had transient dysphagia and 12 had recurrent epigastric pain.1 of 10 in the group with no gastric wrap had ongoing symptoms (10%) while 11 of 43 in the group with a gastric wrap had ongoing symptoms (25%). In patients with a suture repair and a gastric wrap 3 out of 43 had a radiological recurrence (7%). In patients who had a suture repair and gastropexy 1 out of 8 had ongoing symptoms and radiological recurrence (13%).
Conclusions: Laparoscopic repair of paraoesophageal hernia is a safe procedure with a low rate of complications. Sutured crural repair has a good symptomatic benefit and low rate of recurrence. When combined with a sutured repair, a gastric wrap is associated with a higher rate of post operative symptoms and has a similar rate of recurrence to gastropexy.

P-1436
Physiopathology of hernia disease

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The genesis of inguinal hernia still represents a dilemma.
Despite innovation in surgical materials and techniques, no care has been taken concerning the etiology of hernia. Following a specific method, tissue samples were excised in 30 fresh male cadavers with inguinal hernias, from structures close to the hernia orifice, for his-

tological study. 15 cadavers without hernia served as control. The tissue excised demonstrated several histological changes. Among these, fibrohyaline degeneration and fatty dystrophy of the myocytes. Besides limpho-histiocytic and plasmacellular clusters, we found also vein fibrosis and congestion. The arterial structures showed thickening of the media due to hyperplasia leading to sub-occlusion, or even complete arterial obstruction. The nerves clearly demonstrated fibrotic degeneration, atrophy of the axons and thickening of the myelin sheath. The impact of these injuries on the physiology and kinetics of the groin, suggests the following scenario to be a realistic one:

- Degenerative changes of motor nerves and thickened myelin sheath could reduce motility, leading to muscle atrophy and to a weakened contractile response to visceral impact, when abdominal pressure arises.
- An additional weakening effect is consequent to artery sub-occlusion and obstruction, leading to ischemic degeneration of the groin structures.
- Venous congestion, vein fibrosis and inflammatory infiltrate could embody the outcome of chronic compression exerted by the abdominal viscera, followed by tissue edema and impaired metabolism.
- Hyaline degeneration, fibrosis and fatty muscle dystrophy could represent the result of the damages of the vascular and nervous structures.
- These multifactorial muscular injures are probably amplified by the direct compression of the viscera upon the lower abdominal wall.

The described outcome may facilitate understanding the multifactorial causes of the weakening of the inguinal area leading to hernia protrusion. A deeper knowledge of these mechanisms could result useful in developing more physiologic hernia repair systems.

P-1439
Fixation-free inguinal hernia repair, using a dynamic self-retaining implant inducing enhanced biologic response. Results of a midterm follow up

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Introduction: Implant fixation and how to ensure adequate mesh overlap are key issues in abdominal hernia repair. A newly developed technique for ventral and incisional hernia repair using a proprietary implant with incorporated straps makes fixation unnecessary through tissue friction. This new implant allows for a broader coverage of the abdominal wall and results in simplified repair. Midterm follow-up in a cohort of patients indicates a decrease in postoperative complications and no recurrences to date.
Material and methods: A lightweight, large porous polypropylene mesh with a central body and eight radiating arms was used to repair ventral or incisional hernia. The implant was placed in open preperitoneal or retromuscular sublay in 30 patients. The straps were delivered by means of a proprietary needle, tunneled laterally through the abdominal wall muscles.
Results: There were no significant intraoperative complications to report. An overlap of the defect of at least 30% was achieved in all patients. In a follow up from 30 to 36 months, 3 seromas and 1 infection occurred, successfully managed without mesh removal. Postoperative ultrasound detection showed that all straps were well integrated within the abdominal wall. No mesh dislocation, hematoma, chronic pain or recurrences have been reported to date.
Conclusions: The described prosthetic straps system allowed for much smaller incisions and eliminated challenging maneuvers associated to mesh fixation. The straps showed to ensure a firm, correctly orientated mesh positioning. A very wide lateral mesh placement with broad defect overlap was accomplished. Friction and straps elongation helped to absorb forces impacting the implant during early recovery, avoiding mesh dislodgement. In our belief these advantages are clearly demonstrated and result in: fixation-free mesh placement, simplified procedure, broader coverage of the abdominal wall, shortening of the operative time. Additional advantages are decreased postoperative complications and absence of recurrences.

P-1440
Fixation free prosthetic repair of large umbilical hernia granting a broad defect overlap

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Introduction: Umbilical hernia is a common surgical disease, accounting for 10–14% of all hernias and having many therapeutic options. Pure tissue repair is affected by a recurrence up to 40%. Prosthetic mesh repair is now widely utilized with a decrease of recurrences up to 10%. Nevertheless, if large defect are present, assuring a wide overlap and a fixation-free technique still represent an issue. In this report we describe the outcomes of an umbilical hernia repair technique via a new implant with radiating straps at its boundary.
Material and methods: A light weight, large porous polypropylene implant having a central body of 12x15 cm in diameter and eight radiating straps was used to repair umbilical hernia in 31 patients with defect size >2 cm.
The implant was placed via open technique in preperitoneal or retromuscular sublay position. To secure the mesh in place, the straps were tunneled laterally through the rectus muscles by using a specially designed passing needle. No fixation of the implant was necessary. Median follow-up was 2,8 years (range 3,6-2 years).
Results: With this new method and prosthetic implant we achieved a simplified and faster surgical procedure. There were no intra-operative complications to report. In the follow up, we recorded 2 seromas. No hematoma, chronic pain, strap pain or recurrences have been reported to date.
Conclusions: The integrated straps seemed to allow a very wide lateral mesh placement, assuring sufficient defect overlap; important if mesh shrinkage occurs. The inherent elongation of the straps helps to absorb forces exerted upon the implant during early recovery, thus avoiding mesh dislodgement in this critical phase before tissue ingrowth has occurred. These advantages are clearly demonstrated and result in: fixation-free mesh placement, simplified procedure, broader coverage of the abdominal wall, shortening of the operative time and decreased postoperative complications.

P-1441
Bioabsorbable synthetic mesh for abdominal wall reconstruction in a complex operative field

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Options for treating patients who have an abdominal wall defect and contamination of the operative field are limited. Removal of the mesh is typically required, but repair with permanent synthetic mesh is inadvisable. Expensive biologic mesh has been promoted as a solu-