

AGL1-1

Physiopathology of inguinal region and hernia genesis: opening a window to the future of hernia repair

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Despite advances in materials and techniques, the dilemma of hernia genesis remains undisclosed. Etiology and pathogenesis of inguinal hernia still represents an open question. One question regards the discrepant numbers of inguinal hernia incidence between women and men. Is this connected to the gender related differences in pelvis conformation between the two sexes?

Recent studies on the functional anatomy of the groin supported by histological evidence has shown an unexpected world that needs to be interpreted. Significant damage to muscle fibers (ranging from hyaline degeneration along with fibrosis to fatty dystrophy) were detected. These changes, associated to chronic inflammatory infiltrate, venous fibrosis and congestion, medial hyperplasia with sub-occlusion of the artery, nerve atrophy and fibrosis, demonstrate a common trait: that of chronic compressive injury.

It would logically appear that no other source of chronic compression exists in the lower abdomen but visceral impact. Therefore, by considering the different outlines of the pelvis, it can be assumed that the vector forces originating from the orthostatic posture produce a steady visceral impact in the abdominal cavity, affecting the lower pelvis in women and the inguinal backwall in men. This seem to be culprit of the protrusion disease that, in women, mainly produces pelvis prolapse and, in men, inguinal hernias.

Consequently, to respect the physiology of the groin, surgical treatment of inguinal hernia should be performed with fixation free, dynamic compliant devices to achieve:

- 1) Permanent protection the inguinal backwall from visceral impact
- 2) Regeneration of the damaged inguinal barrier

AGL1-2

The efficacy and Safety of Cremaster Muscle splitting When Separating Spermatic Cord in Inguinal Hernia Repair with PHS

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Purpose: Dissection of the hernia sac is the basic step in inguinal hernia surgery. At first, it is necessary to separate the spermatic cord from the hernia sac. If poorly understood about the spermatic cord, it causes limitation touse mesh, as well as injury of the surrounding structure in inguinal hernia repair. the aim of this study was to assess the efficacy and safety of method that minimally splits the cremaster muscle in the repair of inguinal hernia with PHS.

Methods: We had analyzed 417 patients undergoing inguinal hernia repair at Daegu Fatima Hospital from January 2006 to April 2016. We retrospectively reviewed the medical records.

Results: The mean age of 2417 patients was 54.9 years. Right inguinal hernias were more frequent (71.9%). Hospital stay over 3 days was 379 cases (15.7%). Among these, There were 13 cases postoperative complication that was affected by prolonged hospital stay. The most frequent complication was Hematoma (54%). There were no postoperative recurrences and chronic pain.

Conclusion: In my opinion, minimally splitting of the cremaster muscle offers more safety, more efficacy in the repair of inguinal hernia with PHS.

AGL1-3

1993-2013: TWENTY YEARS OF TRABUCCO'S SUTURE LESS HERNIOPLASTY

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Background: SUTURES LESS TRABUCCO'S TECHNIQUE, is really important because it is the unique technique of hernioplasty that requires the positioning of prosthesis without any system of anchorage to the tissues.

Methods: Since 1993 we have begun to make, in the Catanzaro City Hospital, systematically, procedures of hernioplasty with the original technique of Trabucco: Sutures Less tension Free "Sliding Mesh" Hernioplasty. The wellness of all patients has been the appeal of other patients and the number of surgeries has increased tenfold since we started to perform sutureless technique under local anesthesia and immediate patient discharge. We make the original technique, standardized. It requires the use in preperitoneal fat of the internal inguinal ring, of a bidimensional plug, T4, and, under the external oblique fascia, of preshaped 10 cm x 4,5 cm polipropylene mesh. It stay flat in the inguinal region without sutures, screw or glue because it is more heavy than other light meshes existing in commerce.

Results: Hertra mesh not submitted to wrinkles and shrinkage, cover completely inguinal region. The main point of our technique is positioning the mesh without application of points in such way that the mesh is free to slide on the muscles and to adapt in position of confort (Sliding mesh).

Conclusion: In the last twenty years we have been performed more than 3.000 procedures of hernioplasty with quickly dismissal of the patients. Follow up shows confort of the patients.

AGL1-4

Groin hernia repair after radical prostatectomy and adenomectomy: 498 cases. Long term outcome versus long term outcome for patient without prostatectomie” French database results

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From September 1st, 2011 to April 15th, 2016, 14,254 groin hernias in 12,089 patients (18-101 years old) have been operated on including: -10,287 patients [18-79 years old] in the "control" group. -498 patients [36-96 years old] in the prostatectomy and open adenomectomy group -335 after radical prostatectomy -163 after open adenomectomy Results There were more bilateral hernias in the prostatectomy group There were less laparoscopic procedure in the prostatectomy group but the percentage of TAPP procedure is more important The rate of medical and local complications is the same in the two groups The rate of the per operative complications is the same in the two groups Post-operative pain at 8, 30, [90-180] days is the same in the two groups At two years the satisfaction rate is the same in the two groups There were less ambulatory setting in the prostatectomy group The emergency surgery rate is the same in the two groups. Conclusions: In the prostatectomy group there are more bilateral hernias. The surgeons preferred not to do laparoscopic procedure, but if they choose laparoscopy, they prefer the TAPP technique. We can observe less ambulatory setting in the prostatectomy group The groin hernia repair after prostatectomie don't give more post-operative pain or more complication. The two years follow up is as good in both groups. A complete statistical evaluation will be given.

AGL1-5

In which cases of TAPP-repair is mesh-fixation needed? A prospective analysis of 11.228 male patients included in the Herniamed Registry

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Introduction: IEHS-Guidelines of endoscopic hernia repair reveal that there is no necessity for routine mesh-fixation in TEP-technique whereas in TAPP-repair mesh fixation can be omitted only at larger defects nevertheless the level of evidence for this recommendation in cases of TAPP-repairs is weak.

Methods: Analysing prospective data from the Herniamed Registry the authors wanted to find an answer to the question in which cases mesh-fixation is necessary in TAPP-repair of primary inguinal hernia of men with regards to defect-size and location (according to the EHS-Classification), presence of risk factors. In the period September 01, 2009, to January 31, 2014, 11,228 male patients were operated on with the TAPP technique for a primary unilateral inguinal hernia and were followed up for 1 year.

Results: Mesh was fixed in 66.1 % of patients included. Unadjusted analysis did not show any significant difference in recurrence rate (0.88 % with fixation vs. 1.1 % without fixation; $p = 0.259$). Multivariable analysis of all potential influence factors (age, ASA, BMI, risk factors, defect size, mesh fixation, localization of defect, mesh size) did not identify any factor that influenced recurrence on 1-year follow-up with the exception of medial and combined defect localization versus lateral localization of the defect ($p < 0.001$).

Conclusion: By fixing the mesh and implanting a larger mesh, it was possible to reduce the recurrence rate significantly only in large medial hernias in this series ($p = 0.046$). In all other situations no mesh-fixation can be recommended.

AGL1-6

Standardization of TEP Safety efficacy and cost effectivity

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Minimally invasive surgery for groin hernias is now well-established. The pre-peritoneal space can be approached trans-abdominally or by extra-peritoneal route. Our preferred approach is bilateral TEP for all groin hernias. In our experience of nearly 2000 groin hernias repaired over the last 5 years, we have been following a standardized surgical protocol, especially for certain key steps such as the creation of the extra-peritoneal space, dissection technique and preparation of the mesh for deployment and easy handling in the limited potential space available.

Intra-operative complications are almost negligible when this standardized surgical protocol is followed. In the post-operative period, the only complication seen is occasional urinary retention requiring catheterization. Patients are advised regarding the appearance of seroma and that no intervention is required for this.

The standardization helps us to keep the costs economical. All ports and instruments used are re-usable. The pre-peritoneal space dissector is indigenously prepared using the fingers of a size 8 sterile glove. The mesh used is polypropylene as there is no contact with intra-abdominal viscera.

The biggest advantage of the TEP approach is that it covers entire myo-pectineal orifice, ensuring a nearly zero % recurrence rate. We are also firm proponents of bilateral repair.

AGL1-7

A Prospective Randomized Comparison of Testicular functions, Sexual functions and Quality of Life Following Laparoscopic Totally Extra Peritoneal (TEP) and Trans Abdominal Pre-Peritoneal (TAPP) Inguinal Hernia Repair

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Background: There is very scant literature on the impact of inguinal hernia mesh repair on testicular and sexual functions following inguinal hernia repair. This randomized study compares TAPP and TEP in terms of testicular and sexual functions, quality of life and chronic groin pain.

Methods: 160 patients with uncomplicated groin hernia were randomized to TAPP or TEP. Testicular functions were assessed by measuring testicular volume, testicular hormone levels pre operatively and at 3 months follow up. Sexual functions were assessed using BMSFI and quality of life was assessed using WHO-QOL BREF scale pre operatively and at 3 months and 6 months post operatively.

Results: Median duration of follow up was 13 months. Mean pre-operative pain scores and chronic groin pain was similar at follow up. Testicular resistive index and volume did not show any significant change at follow up. No significant difference was observed in testicular resistive index and volume when comparing TEP and TAPP group at 3 months (p value >0.05). There was a statistically significant improvement in the sexual drive score, erectile function and overall satisfaction following laparoscopic inguinal hernia repair. Quality of Life showed a significant improvement at follow up. QOL was comparable between TEP and TAPP.

Conclusions: Laparoscopic groin hernia repair improves the testicular functions, sexual functions and quality of life but TEP and TAPP repair are comparable in terms of these long term outcomes.

AGL1-8

Laparoscopic Inguinal Hernia repair will ever become Gold standard

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Inguinal Hernia is the most frequently encountered clinical situation requiring surgery in men all over the globe. You can judge the worth of a surgeon by the way he does a hernia.

Controversy is not new in the history of Inguinal hernia repair. As early as the Middle ages, surgical history documents conflicting views concerning the appropriate hernia repairs.

Every stage in the evolution of hernia repair has continued to generate controversy including the introduction of Laparoscopic hernia repair, first in 1982 by Ger. In 1990 the Laparoscopic hernia repair achieved enough notice to ignite controversy.

Surgeons who were pushed in to doing Laparoscopic Cholecystectomy accepted it with open arms as it was beneficial to the patients. Some surgeons have rebelled against being similarly pushed in to Laparoscopic hernia repairs as they do not see much benefit to patients.

The said advantage of the Laparoscopic repair of less post operative pain, cost effective, early return to work are easily matched by open procedure. Another benefit of open procedure can be performed under any anesthesia for all age groups as a day care surgery by all ranks of surgeons.

By for the most widespread obstacle to the adoption of Laparoscopic hernia repair as a procedure of choice is the fact that it turns relatively simple outpatient procedure in to a rather complex, expensive, time consuming, with a few complications which are unheard in open procedure.

Are surgeons satisfying their ego or it is really beneficial to the patients. Literature review.

AGL1-9

Recurrent inguinal hernia repair Should we follow the Guidelines?

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Introduction: On the basis of six meta-analyses, the Guidelines of the European Hernia Society (EHS) recommend laparo-endoscopic recurrent repair following previous open inguinal hernia operation and, likewise, open repair following previous laparo-endoscopic operation. So far no data are available on implementation of the guidelines or for comparison of outcomes. Besides, there are no studies for comparison of outcomes for compliance versus non-compliance with the guidelines.

Patients and Methods: In total, 4,812 patients with elective unilateral recurrent inguinal hernia repair in men were enrolled between September 1, 2009, and September 17, 2014 in the Herniamed Registry. Only patients with one-year follow-up were included.

Results: Out of the 2,482 laparo-endoscopic recurrent repair operations 90.5 % of patients, and out of the 2,330 open recurrent repair procedures only 38.5 %, of patients, were operated on in accordance with the Guidelines of the EHS. Besides, on compliance with the guidelines multivariable analysis demonstrated for laparo-endoscopic recurrent repair a significantly lower risk of pain at rest (OR=0.643 [0.476; 0.868]; p=0.004) and pain on exertion (OR=0.679 [0.537; 0.857]; p=0.001). Comparison of laparo-endoscopic and open recurrent repair in settings of compliance versus non-compliance with the guidelines showed a higher incidence of perioperative complications and recurrences for recurrent repairs that did not comply with the guidelines.

Conclusion: The EHS Guidelines for recurrent inguinal hernia repair are not yet being observed to the

AGL1-10

COMPLEX GROIN HERNIA: MANAGEMENT STRATEGIES

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To share our experience of Endoscopic Total Extraperitoneal repair in cases of complicated groin hernias i.e. incarcerated / large irreducible / sliding / recurrent hernias. Endoscopic approach for groin hernia has evolved rapidly over the past decade. We adopted the total extraperitoneal repair early as we believe in preserving the sanctity of the coelomic cavity. Once well versed with the approach we have found it to be an efficient method for treating complicated groin hernias as well. For partially reducible hernias, we take a total extraperitoneal approach where in contents are reduced under vision after opening the hernial sac. In case of large irreducible and sliding hernias, we take a combined approach in which contents are reduced under direct vision through a trans abdominal approach and followed by a total extraperitoneal repair. Even recurrences after an anterior repair are treated by a similar approach. Except strangulated hernias, there are, at present, no strict exclusion criteria for a total extraperitoneal approach which should be considered the approach of choice for minimal invasion and maximal exposure.

AGL1-11

Complicated Inguinal hernias: Strangulated, Incarcerated and Obstructed hernias

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Complicated inguinal hernias (acute incarcerated, strangulated and obstructed hernias) are found predominantly in aged population which frequently associated with coexisting diseases. Since the "watch and wait" protocol become an optional management in asymptomatic and mildly symptomatic inguinal hernia, the average yearly rate of irreducibility associated with non-operative approach is 0.4% (max 2.7%), and a significant increased in need for emergency repair, which has been reported in association with higher risk of adverse event and mortality. Whereas early diagnosis and management still play an important role to ensure a good outcome, presenting symptoms may vary and sometimes misleading especially in femoral hernia. This review article focus on how to make a diagnosis, investigation and assessment. Consideration in surgical management each particular steps including peri-operative preparation, timing of surgery, assessment method to evaluate of bowel viability and prosthesis repair in potentially contaminated field which has been more reported will all be defined, so as the option in surgical approach which has been changed by the impact of the era of laparoscopic surgery.

AGL1-12

Laparoscopic and CTA Measurements of inguinal Area to estimate mesh size for preperitoneal inguinal herniorrhaphy

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Purpose: Surgical repair is the only method to cure adult inguinal hernias. The aim of inguinal hernia surgery is to achieve the reinforcement of the myopectineal orifice (MPO) with mesh. However, there is little data about the dimensions of the MPO and the mesh size is still a critical problem undergoing discussion. This clinical study is to estimate the mesh size for preperitoneal inguinal herniorrhaphy by Laparoscopic and CTA Measurements of inguinal area.

Methods: 89 patients, 131 groin areas in Chinese adults were measured by Laparoscopic and CTA Measurements to deduce the mesh size needed for preperitoneal inguinal herniorrhaphy in Chinese population.

Results: The distance from the internal inguinal ring to the anterior superior iliac spine is 5.9 ± 1.1 cm in laparoscopic group (5.9 ± 0.7 cm in CTA group, $P > 0.05$); to the pubic tubercle, 4.8 ± 0.9 cm (5.4 ± 0.4 cm, $P < 0.05$); to the pectineal ligament, 3.1 ± 0.6 cm (2.9 ± 0.5 cm, $P > 0.05$), and to the apex of the inguinal triangle, 4.4 ± 1.4 cm (4.2 ± 1.0 cm, $P > 0.05$). There is significant differences between distance from the internal inguinal ring to the pubic tubercle in different gender (females > males, $P < 0.05$). The length and width are not significantly correlated with height, BMI, hernia type or interspinal diameter.

Conclusions: The recommended size of the patch that can fully cover the inguinal area defects in the Chinese is 14 cm x 12 cm. The size of the patch needed is not correlated with height, BMI, hernia type or interspinal diameter.