

AS28-5

Laparoscopic total extraperitoneal inguinal hernia repair with non fixation of the mesh v/s fixation of mesh: A retrospective study

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Background: This study aimed to review our case series regarding the effectiveness, postoperative pain, recurrence rate and cost of totally extraperitoneal (TEP) procedure for inguinal hernia repair, using an anatomical 3D mesh, without fixation and to compare with those for repairs using fixation of mesh.

Methods: A retrospective analysis was conducted over a 2-year period for 210 patients (406 hernias) who had undergone TEP using anatomical 3D mesh. The recurrence rate, pain scores at 1 week and 1 month, hospital stay, seroma formation, urinary retention rates and cost incurred were noted.

Results: Of the 210 patients (406 hernias), the mesh was fixed for 106 patients (212 hernias) named as group A and not fixed for 104 patients (194 hernias) named as group B. The patients were followed-up for a period of 12 months. The two groups did not differ significantly in terms of mean operating time. There was no difference in proportions of patients reporting pain at the end of 1 month, the incidence of seroma formation, incidence of urinary retention and the hospital stay in both the groups. The cost of surgery in the group A was greater than the cost of surgery in the group B. One patient (0.9%) in the group B had recurrence.

Conclusions: Laparoscopic TEP inguinal hernia repair with an anatomical 3D mesh without additional fixation can be performed safely with minimal long-term postoperative pain and the procedure results are comparable with repairs done using fixation devices.

AS29-1

Learning curve & Training in laparoscopic TEP repair

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Laparoscopic surgery is now increasingly being done for inguinal hernias due to its advantages of decreased pain and early return to daily activities. Inguinal hernias can be repaired either trans-abdominal pre-peritoneal (TAPP) or totally extra peritoneal (TEP). Both repairs are acceptable; however, TEP has some advantages with decrease in incidence of bowel injury and post operative adhesions. TEP repair, however, has a steeper learning curve. This learning curve can be shortened by standardizing the procedure. Appropriate training is extremely important to decrease the learning curve and this can be achieved through mentoring by expert, fellowship in minimal access surgery and attending workshops.

AS29-2

Learning curve in consecutive 100 cases of laparoscopic groin hernia repair performed by a single surgeon

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Background: Few data are available to assess the learning curve in laparoscopic groin hernia surgery.

Objective: The purpose of this present study was to evaluate the learning curve for laparoscopic surgery for groin hernia by a single surgeon.

Method: We analysed a total of 100 consecutive cases of laparoscopic groin hernia repair (TAPP) performed by a single surgeon at the same institute from April 2012 to July 2016. Operative time was divided into three parts, preparation of preperitoneal space, unfolding mesh and suturing of peritoneum. A cumulative sum method (CUSUM) and a moving average method for total operative time and duration of three parts were used to derive the learning curve.

Results: Average total operative time was 89.9±21.9 minutes (mean±S.D.). Preparation of preperitoneal space, unfolding mesh and suturing of peritoneum times were 42.0±16.2, 8.2±3.7 and 19.8±8.1 minutes. The learning curve of total operative time was completed after 70 cases by CUSUM analysis. CUSUM analysis of unfolding mesh and suturing of peritoneum times demonstrated the learning curve completion at 22 and 32 cases. Learning level in preparation of preperitoneal space was strongly correlated to total operative time. No intra-postoperative complications and no recurrence cases were encountered.

Conclusion: At least 70 cases were needed for obtaining the learning peak for laparoscopic groin hernia repair.

AS29-3

A single institutional study on operative outcomes of the open inguinal hernia repair: residents v.s. non-residents

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Purpose: Previous studies have demonstrated that open hernia repairs performed by residents were associated with higher recurrence rates than those repaired by non-residents. We retrospectively evaluated operative outcomes of the open inguinal hernia repair performed by residents at a single high volume institute.

Methods: We compared the operative outcomes of the open hernia repair operated by residents of the second year after graduation (Group I) with those by non-residents (Group II). A total of 612 repairs performed from 2011 to 2015 (Group I in 197, Group II in 415) were evaluated.

Results: Age, sex, diseased side and type of inguinal hernia were not significant difference between the two groups. Group I had significantly longer operative time compared with Group II (60 min (23 -157) v.s. 55 min (19-172), P=0.001). The blood loss was similar between the two groups (5ml (0 -100) v.s. 5ml (0-300), P=0.84) Complication rates were not different between the two groups (4.1% v.s. 5.8%, P=0.44). Recurrence rates were significantly higher in Group I than in Group II (5.1% v.s. 0.7%, P<0.001). In univariate analysis, hernia repair by residents was a unique risk factor for recurrence (Odds ratio=7.344; 95% CI= 2.00-26.99; P=0.001)

Conclusions: Open hernia repairs performed by residents were associated with higher recurrence rate than those repaired by non-residents. It is important to perform the open hernia repair by residents under enough and careful instruction.

AS29-4

Impact of standardization for operative procedure of the transabdominal preperitoneal (TAPP) approach for groin hernia. - It improves the surgical technique of young generation of surgeons.-

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In recent years, laparoscopic groin hernia repair has been attracted attention and widespread in Japan. The transabdominal preperitoneal (TAPP) approach has been the first choice for adult groin hernias in our institution since 2009. To standardize its procedure, we introduced an effective surgical technique named "Spiral method" for TAPP approach since 2013 for over 400 patients. With dissecting clockwise for right sided groin hernia (counterclockwise for left sided one) after cutting of the peritoneum, we can make more speedy and safety operation by dissecting the tissue one by one gradually without excessive tension to prevent unnecessary injury or blood loss. Average operation time has become much shorter. (Group A: before the surgical technique established; 120.7min, Group B: after introducing Spiral method; 87.6min, P value< 0.001) Moreover the learning curve of young generation of surgeons have improved significantly after introducing this technique. The concept of this method is easy to understand even for the beginners and our results suggest that "Spiral method" for TAPP approach have a good possibility to become the standard technique by doing the stylized operative procedure.

AS29-5

Development of the training system for laparoscopic inguinal hernia Repair

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Background: There has been a rapid rise in the number of laparoscopic inguinal hernia repair surgery. However, the procedure has a long learning curve and there is no standard training system. We have previously developed and validated a TAPP checklist for the evaluation and feedback of TAPP procedure. The purpose of this presentation is to introduce the TAPP training system that we have developed based on the TAPP checklist.

TAPP training system: We developed a TAPP educational video explaining each items of the TAPP checklist and basic knowledge of the procedure. A training manual was developed for the instructors which would help them to educate, evaluate and give feedback to the trainees using the TAPP checklist. We integrated a training tool with the evaluation and feedback where the trainees used them to learn the procedure. Currently we have implemented this training system in 5 practicing programs of the affiliated hospitals of our institute and there are 7 residents who are currently being trained under this program.

Conclusion and Future directions: We have developed a training system for TAPP procedure based on the TAPP checklist and have implemented in the practicing programs of affiliated hospitals of our institute. We will study and report about the educational value of this tool in the future.

AS29-6

Hands-on training system for laparoscopic ventral hernia repair using newly developed training box and porcine model

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Laparoscopic ventral hernia repair (LVHR) has recently been introduced. However, its training system has not yet been established. We have started a new Hands-on training course using newly developed training box and porcine model for LVHR in 2005. Training box is covered with a double layer seat. The outer layer is made of silicon sponge and the inner layer is made of polyethylene foam with a defect of 2cm in diameter. This model was used for training for IPOM. In a porcine model, a 5cm of laparotomy was made near the umbilicus and only the skin was closed. This animal model was used for IPOM with or without defect closure. We prepared two Hands-on courses, one day course using the training box and two day course using the training box and the animal model performed concomitantly with a laparoscopic inguinal hernia repair, which was named "Master Class".

In the Master Class, all trainees had lectures for TAPP, TEP and LVHR and had Hands-on box training for TAPP and LVHR in the first day. In the second day, Hands-on training for TAPP, TEP and LVHR was performed. From 2005 to 2015, more than 200 trainees attended our training course. 75% of participants evaluated this course as excellent or good. And all participants considered introducing LVHR. This new training system is effective for safe introducing LVHR.

AS30-1

Lichtenstein repair of indirect inguinal hernias with acellular tissue matrix grafts in adolescents and young adult patients (13 to 45 years old)

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Objective: To evaluate the outcomes of Lichtenstein hernioplasty using acellular tissue matrix (ACTM) grafts in adolescents and young adult patients (13 to 45 years old).

Methods: In this study, 317 patients, 13 to 45 years old, with primary unilateral indirect inguinal hernias, received Lichtenstein hernioplasty using ACTM mesh (ThormalGEN[®] thoracic surgical graft produced by Grandhope Biotech Co., Ltd., bovine pericardium tissue graft, Guangzhou, China). The outcome measures were the length of the operation, postoperative visual analogue scale (VAS) pain score, length of hospitalization, postoperative complications and recurrence rate.

Results: The operative time was (31.2±5.8) min and the length of hospitalization was (1.4±0.7) d. The minimum follow-up was 24 months, there were 2 postoperative wound infections (0.6%) and fully recovered by change of dressing for 1 month; there were no chronic postoperative pain (visual analogue score > 4, lasted 3 months) or local foreign body sensation occurred; 13 patients (4.1%) developed scrotal hydroceles and recovered by the scrotal puncturation. There were no recurrences and other complications.

Conclusions: Lichtenstein hernioplasty using ACTM grafts is a safe and available treatment in adolescents and young adult patients (13 to 45 years old).

AS30-2

Utility of laparoscopic percutaneous extraperitoneal closure for young adult patients with indirect hernia

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Laparoscopic percutaneous extraperitoneal closure (LPEC) is a common technique for indirect hernia repair in infants, whereas tension free technique is conventionally performed for indirect hernia in adult. The most common cause of indirect hernia in infants is patent processus vaginalis. Since the mechanism of indirect hernia in young adult (between ages 16 to 30) is similar to that of infants, we hypothesize that LPEC can be applied for indirect hernia in young adults. Between 2009 and 2016 we performed LPEC for 13 young adult patients, 7 men and 6 women. 4 patients had left indirect hernia, 6 patients had right inguinal hernia, and 3 patients had bilateral hernia. The results were satisfactory, with average operation time of 34.7 and 44 minutes for unilateral and bilateral cases, respectively, with no postoperative recurrence. In addition, with LPEC, the risk of spermatic cord stenosis, a rare complication of conventional tension free technique, can be avoided, intraabdominal observation with laparoscopy allows diagnosis of occult hernia, and smaller incision with less postoperative pain can lead to improved patient satisfaction.

In conclusion, LPEC is justified for indirect hernia in young adults.