

AS9-4

Progressive Preoperative Pneumoperitoneum Preparation for Surgery of Large Incisional Hernias with Loss of Domain

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Strategies for functional repair of complex abdominal wall defects

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AS10-1

A Report of 4,445 Cases of Laparoscopic Inguinal Hernia Repair: 15-year Experience from A Single Center

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Objective: To perform a systematic evaluation of the clinical effect of laparoscopic inguinal hernia repair (LIHR) retrospectively based on large population of patients.

Methods: The clinical data of 4,445 cases (5,530 hernias) who underwent LIHR at our hospital between January 2001 and December 2015 were analyzed retrospectively. There are 2,402 TAPPs in 2,125 cases, 2,907 TEPs in 2,306 cases, and 21 IPOMs in 20 cases, including 6 cases underwent TAPP and IPOM simultaneously. The 5,330 hernias included 3,216 indirect hernias (60.3%), 1,164 direct hernias (21.8%), 399 recurrent hernias (7.5%), 479 complex hernias (9.0%), and 72 femoral hernias (1.4%). All procedures were accomplished by the same surgical team, and the surgical technique was selected by the surgeons. The median time of follow-up is 51 months (range from 7-187 months).

Results: The average operative time is 30.2 ± 11.2 min, 27.1 ± 8.7 min for unilateral hernia repair, and 43.0 ± 11.0 min for bilateral hernias repair. No patient required analgesics. The average length of hospital stay is 1.4 ± 1.1 d. 99.4% and 99% of patients returned to normal activities by 2 and 4 weeks, respectively. Totally, there were 12 recurrent cases (0.2%), including 5 after TAPP and 7 after TEP. There are 250 seroma (4.7%), 68 urinary retention (1.3%), transient neuropraxia (0.4%) and 3 paralytic intestinal obstruction (0.1%).

Conclusion: LIHR is a safe and efficient strategy for hernia repair. With systematic evaluation of patients, appropriate selection of surgical procedures, and standardized practice, LIHR could achieve satisfied clinical results.

AS10-2

Modified tumescent TAPP: laparoscopic inguinal hernia repair after the preperitoneal tumescent injection of diluted lidocaine, epinephrine, anapeine, saline solution and a high amount of carbon dioxide gas

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Purpose: Laparoscopic transabdominal preperitoneal inguinal hernia repair (TAPP) is technically difficult and its learning curve is very long for inexperienced or training surgeons, therefore postoperative complications often occur. To simplify the procedure of TAPP and reduce postoperative complication and pain, Dr. Tokumura et. al (Dept. of Surgery, Tohoku Rosai Hosp.) devised a novel procedure TAPP, that is carried out after the inguinal preperitoneal infiltration of diluted lidocaine, ropivacaine, epinephrine saline solution and carbon dioxide (CO₂) gas (tumescent TAPP). We add infiltration of a high amount of CO₂ gas (150ml) in the procedure of tumescent TAPP. This report aims to describe the author's initial experience with modified tumescent TAPP for inguinal hernia in 99 patients.

Methods: About 120 ml of diluted lidocaine, anapeine, epinephrine solution and 150 ml of CO₂ gas were infiltrated into the inguinal preperitoneal space through a transabdominal stung needle before making peritoneal flap in TAPP. Modified tumescent TAPP was performed for 99 patients (72 men, 17 women; amean age, 68.4 years).

Results: Using modified tumescent TAPP, we found that it was easier to recognize the inguinal anatomy and dissect widely the preperitoneal layer and inguinal floor without massive bleeding. The mean operation time of unilateral type was 113.9 min and there were few postoperative complications and minimal pain.

Conclusions: Modified tumescent TAPP makes conventional or tumescent TAPP easier and safer; however, this procedure should be checked exactly by a comparative study with conventional or tumescent TAPP.

AS10-3

The novel technique of TAPP herniorrhaphy for direct inguinal hernia: repair of hernia defect wall

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Objective: To evaluate the efficacy of defect wall repair of laparoscopic herniorrhaphy for direct inguinal hernia/

Background: Laparoscopic surgery of direct inguinal hernia conventionally has two ways, TAPP and TEP. In both methods, laparoscopic herniorrhaphy is currently performed using synthetic mesh without repairing the hernia defect.

Methods: Laparoscopic herniorrhaphy (TAPP) had been performed on 187 direct inguinal hernia patients from January 2013 to December 2015. The patients were categorized into two groups as follows: group #1 (those who had conventional TAPP without defect wall repair, "cTAPP"), group #2 (those who had TAPP with defect wall repair, "rTAPP").

Results: We have performed cTAPP on 99 patients. The other 88 patients were operated using rTAPP method. Postoperative hospital stay was significantly shorter in group #2 (10.6±8.42 hours) than in group #1 (27.0±12.3 hours) (p<0.001). The mean operation time and postoperative pain were both significantly less in group #2 than group #1 (p<0.001). Time to return to daily life for group #1 was 5.19 days which is shorter than 6.64 days of group #1(p<0.001).

Conclusions: Defect wall repair suture in laparoscopic herniorrhaphy can be carried out for direct inguinal hernia. TAPP surgery with hernia defect wall repair followed by the use of a smaller mesh is an effective method for treating direct inguinal hernia.

AS10-4

Locking methods to prevent recurrent indirect inguinal hernia

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Introduction: Laparoscopic hernioplasty has been a standard procedure for inguinal hernia. However, the recurrence rate is still higher than open procedure with prosthesis. Considering about the recurrence, out-swing-door phenomenon at the inguinal ring, which have been reported by Kawaguchi, should be concerned to prevent recurrence. Then, new procedure at the inguinal ring is developed to lock the swing door. Aim of this study is evaluation of the locking procedure.

Patients and Methods: From April 2013 to November 2014, laparoscopic hernioplasties were included for this cohort study prospectively. Locking procedure. To adhere around the deep inguinal ring, completely dissect around the inguinal ring and firm fixation of prosthesis were performed without nerve injury. Depend on the inguinal area, three procedure were performed: Trans abdominal preperitoneal approach (TAPP), TAPP like but using small prosthesis (TAPlug), and plugging at the inguinal ring (Plug).

Results: Of all inguinal hernioplasty, laparoscopic procedures were performed in 61 in men. Then, sides of inguinal hernia were 15 in right, 14 in left, and 32 in bilateral. Then, 81 lesions were performed laparoscopic hernioplasty. Median surgical time is 110 min in bilateral and 66 min in hemi-lateral. The type of hernia were indirect 45, direct 28 and combined type 7. The follow up time was median 17 months (IQR: 12 to 25). There were no severe complications and no recurrence.

Conclusions: This study showed inguinal locking procedure effective and feasible for laparoscopic hernioplasty about two years follow.

AS10-5

Acute Post-operative Pain Difference Between Two Mesh-fixation Technique In Laparoscopic Total Extraperitoneal (TEP) Inguinal Hernioplasty In Long-standing Hernia: A Prospective Randomized Clinical Trial

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Introduction: Inguinal hernia repair has evolved towards better outcome on post-operative pain, early return to activities, and low recurrence rate.

Objectives: A prospective randomized trial looking at outcome in post-operative pain, and early recurrence between two mesh fixation methods in laparoscopic TEP inguinal hernioplasty.

Results: 82 laparoscopic TEP inguinal hernioplasties were performed in multi-ethnics patient (median age, 50 years; range 20-78 years). Randomization done into two groups; glue (GG) and tacks (TG) with 40 patients each group. Median duration of symptoms was 7-months with 18 (22.5%) had pre-operative pain. Median hernia size was 3cm. One patient in each group had conversion to open repair. A significant difference was observed between two groups in median duration of surgery (glue 45 vs tacks 39 minutes; $p=0.020$), post-operative pain score at 1-hour (glue 4 vs tacks 5; $p=0.006$), and 6-hours (glue 3 vs tacks 4; $p=0.012$). At 1-week, incidence of seroma formation is significantly higher in GG, 8 (10.0%) vs 2 (2.5); $p=0.043$, whereas urinary incontinence was higher in TG, 9 (11.3%) vs 1 (1.3%); $p=0.007$. No difference in duration of symptoms, hernia size, rescue drug requirement, post-operative hematoma or recurrence. One patient in GG had recurrence at 6-weeks, while another in TG had chronic pain up to 6-months. No incidence of post-operative infection reported. Return time to activities was sooner in GG, 1-week vs 2-weeks in TG; $p=0.001$.

Conclusions: Mesh fixation with tissue glue in laparoscopic TEP hernioplasty was superior in terms of lesser acute post-operative pain score and post-op urinary incontinence, and early return to normal activities.

AS10-6

Obese Patients Have Comparable Perioperative Outcomes to Non-obese patients in Laparoscopic Inguinal Hernia Repairs

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Purpose: To determine the impact of obesity on outcomes of laparoscopic totally extraperitoneal (TEP) inguinal hernia repair in obese patients compared with non-obese patients.

METHODS: This is a retrospective cohort analysis of consecutive patients undergoing TEP inguinal hernia repair between January 2009 and July 2016. Bilateral and recurrent hernias were excluded. Perioperative data including demographics, operation time, pain scale, length of hospital stay, recurrence, and complications were obtained. The perioperative outcomes of obese patients (BMI ≥ 25) and non-obese patients (BMI < 25) were compared.

RESULTS: A total of 508 patients met inclusion criteria; 298 (59%) and 210 (41%) patients were classified as non-obese and obese respectively. Demographics were similar in the two groups. The obese group had a slightly longer operative time (111 vs 105 mins, $P=0.262$). However, other perioperative outcomes were similar in non-obese and obese patients, including post-operation recurrence rate (1.2% vs 1.3%, $P=0.741$), peri-operation complications rate (11.9% vs 12%, $P=0.569$), rate of narcotics requirement (5% vs 5%, $P=0.976$), visual analogics scale (2.35 vs 2.31, $P=0.861$) and length of hospital stay (3.13 vs 3.21 days, $P=0.791$).

CONCLUSIONS: Obese patients does not present inferior perioperative outcomes in laparoscopic inguinal hernia repairs compared with non-obese patient.

AS10-7

SEROMA PREVENTION TECHNIQUE IN TEP- DOES DRAIN HELP?

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The incidences of groin seroma in laparoscopic hernia repair (TEP) is documented between 20-30 % which requires aspirations in 20% cases. This is a prospective non randomised trial of a single surgeon over 10 years period. We have routinely used closed suction drain through the top 5 mm port in all cases of TEP since 2011 and before that we never used drain in the former 5 years period. Total number of patients were 750 in 10 years of which bilateral TEP was 650 (total herniae were 1400). Drain group had 450 patients and 300 in the non drain group. Eighty percent herniae were Llyod Nyhus class III & IV. Standard follow up protocol was 7 days, 15 days, 3 months and one year.

we observed seroma incidences were significantly down to 10% in drain group as compared to 30 % in non drain group. In the drain group only one patient required seroma aspiration twice and the reason behind that was accidental clamping of drain tube for 8 hours post operatively. In the non drain group almost 30 percent of those seromas required aspiration once or twice. Average drain out put in 8 hours was 150 ml (range from 60 -500 ml) Incidence of mesh infection in the drain group was nil but in the non drain group was one in 300 cases (0.3%).

in conclusion, our study has shown routine use of closed suction drain in TEP is safe and significantly reduces post operative seroma and hereby subsequent aspiration .