

AS6-1

Needle-type grasper assisted laparoscopic percutaneous extraperitoneal closure (LPEC) in pediatric inguinal hernia repair: a single-center experience with 1,377 cases

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Introduction: Recently, laparoscopic technique had become increasingly popular in the treatment of pediatric inguinal hernia. However, laparoscopic percutaneous extraperitoneal closure (LPEC) is often preferred. We herein describe a novel technique of LPEC assisted by our own patented surgical instrument needle-type grasper, and investigate its effectiveness in clinical practice.

Methods: The laparoscope was placed through a transumbilical incision with a 5-mm trocar. The needle-type grasper was introduced to assist the ligation of internal inguinal ring. Simultaneously, contralateral internal ring was routinely observed to find the occult hernia or patent processus vaginalis (PPV).

Results: From June 2013 to December 2015, a total of 1,896 hernia repairs were performed in 1,377 children (1,143 boys and 234 girls) with the age ranging from 0.9-15 years. Of the patients, there were 519 bilateral hernias and 858 unilateral hernias. 277 patients with clinically unilateral hernia were confirmed to have a contralateral occult hernia or PPV. The complicated or rare cases presented with 19 recurrent hernias, 69 hydrocele, 6 cyst of the round ligament, 8 irreducible hernias, 4 incarcerated hernias, 4 sliding hernias, 2 Amyand's hernias, 1 direct hernia, 1 femoral hernia and 1 saddle hernia. The follow-up time was 6-36 months. 2 umbilical incision dehiscence, 1 urinary retention and 2 recurrence (including 1 femoral hernia) were noted.

Conclusion: LPEC in pediatric hernia is safe and effective, and has the advantages of minimally invasive and improved cosmetic results. In addition, needle-type grasper assisted LPEC can be applied to various conditions of pediatric inguinal hernia.

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Modified single-port laparoscopic completely extraperitoneal repair of the patent processus vaginalis in children: a single-institute 10-year experience with 3,568 cases in china

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Background: The principle of the repair of indirect inguinal hernia or hydrocele in children consists of complete ligation of the patent processus vaginalis (PPV). We report our 10-year experience with a modified single-port laparoscopic technique to achieve completely extraperitoneal ligation of PPV without any skip areas.

Methods: A total of 3568 consecutive cases of children with inguinal hernia/hydrocele underwent mini-laparoscopic repair between June 2006 and February 2016. In modified single-port laparoscopic patent processus vaginalis closure (LPS), an orifice of PPV was encircled by extracorporeal suturing with an ordinary taper needle (1/2 Arc 11×34) and Endoclose needle (Auto suture, USA). The clinical data were retrospectively analyzed.

Results: Successful procedure were achieved in all the patients. During the operations, contralateral patent processus vaginalis was found and subsequently repaired in 786 cases (22.03%). The mean operative time was 10(range 6-14) min in 1791 cases of unilateral repair and 15(range 12-20) min in 1780 cases of bilateral repair. The mean of postoperative hospital stay was 48(range 26-52) h. complications occurred in seven cases (0.63%) and were properly managed, with no major impact on outcome of the operations. There were only 8 recurrent cases in the patients who had been followed-up for 6-36 months. There were no conversion occurred and no serious complication, such as damage to the vas deferens and the gonadal vessels, postoperative testicular atrophy were noted.

Conclusions: Our limited experience suggest that the modified single-port laparoscopic technique could be safe, reliable, effective, and more cosmetically appealing for the management of pediatric inguinal hernia and hydrocele.

AS6-3

A Comparison between Totally Laparoscopic Hydrocelectomy and Scrotal Incision Hydrocelectomy with Laparoscopic High ligation for Cord Hydrocele

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Purpose: The purpose of this study is to investigate the feasibility and safety of totally laparoscopic hydrocelectomy with high ligation (TLH) compared to scrotal incision hydrocelectomy with laparoscopic high ligation (SIH) for cord hydrocele (CH)

Methods: From September 2011 to February 2016, 148 patients underwent SIH, and 342 patients underwent TLH for CH. In the TLH group, large hydrocele that could not pass through the internal ring was removed after percutaneous syringe aspiration. Age, laterality of hydrocele, inguinal comorbidities, operation time, surgical complications and recurrences were evaluated.

Results: Every case of CH in this study had spermatic cord cyst and patent processus vaginalis in proximity to hydrocele. The mean age of CH patients were 34.1±22.1 month. CHs are much more common on right side (61.0%) than on the left (35.7%). Bilateral CH occurs in 3.3%. Hernia (8.6%) and cryptorchidism (1.2%) were observed in Inguinal comorbidities. There were no complications except for two cases of wound hematoma in SIH group. There was one case of recurrence (0.7%) appeared in communicating hydrocele in SIH group. There were no significant differences in the age, laterality of hydrocele, inguinal comorbidities, operation time, complications and recurrences between TLH group and SIH groups. The mean operation time in TLH group was 15.1±12.0 minute and there was no intraoperative complication or conversion to open surgery.

Conclusion: TLH for CH is a feasible and safe procedure. Therefore TLH can be one of the surgical options for CH.

AS6-4

Single-Port mini Laparoscopic Herniorrhaphy for pediatric inguinal hernias by hernia forceps and spinal needle: a Simple Method of Hernia Repair in Children

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The clinical effectiveness of laparoscopic high ligation in treatment of inguinal hernial sac in children has gradually been accepted and approved by surgeon, but various methods of repair have been described. Basic principle is to close the internal inguinal ring either by intracorporeal or by extracorporeal suturing. The objective of our study is to describe and evaluate the outcome of a simple technique of internal ring closure by a hernia forceps and a spinal needle. A total of 98 hernias in 70 patients were repaired. A 2-0 prolene thread was passed percutaneously around the internal inguinal ring by threading it through a hernia forceps and a spinal needle under mini laparoscopic control. The suture is then tied extracorporeally in the subcutaneous plane. The 70 patients included 49 boys and 21 girls operated on for inguinal hernia. The age was 1.2 to 10 years. Right-sided hernia was present in 28 cases and left-sided hernia in 24 cases, and 18 cases had bilateral hernia. All surgery was successful without any intraoperative or postoperative complications. The mean operative time was 9 (range 7-12) min in 52 cases of unilateral repair and 19 (range 15-24) min in 18 cases of bilateral repair. This new technique has all the advantages of laparoscopic hernia repair in children (minimally invasive, less pain, less complication, and cosmesis). In addition, the method is simple, it is easy to perform and therefore is a worthy choice for pediatric inguinal hernias.

AS6-5

Needlescopic surgery in LPEC for treatment of pediatric inguinal hernia

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LPEC (laparoscopic percutaneous extraperitoneal closure) can perform the surgical operation that is equal to the Potts method as a gold standard surgical procedure for pediatric inguinal hernia. The necessary requirements for the radical operation of external inguinal hernia are closure without the gap of the patent internal inguinal ring and high ligation. LPEC can do extraperitoneal simple high ligation of hernia sac completely, but also can deal the contralateral side, too. We operate less-invasive LPEC using needlescopic surgery. We report on a design of the port placement for minimal invasive LPEC and touch upon a handling of a LPEC needle. Two thin ports are inserted through an umbilicus for an idea of transumbilical scopic surgery. We call this procedure transumbilical LPEC (TULPEC). We started LPEC in 2005, experienced 700 cases. 450 of 700 cases are performed with TULPEC. In this way reduce the destruction of the abdominal wall and in operating hours. We use a thin port with Veress needle for an initial port to insert it safely. As LPEC produce complete obstruction of the indirect hernia sac (the remnant of processus vaginalis) circumferentially, also is applied to treatment of communicating hydrocele testis.

AS6-6

Solo surgeon-high ligation for pediatric inguinal hernia

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Purposes: Solo surgeon surgery has been introduced for laparoscopic surgery primarily. Open high ligation for pediatric inguinal hernia is a relatively simple procedure. The aim of this study was to report our initial experience with high ligation for pediatric inguinal hernia repair in 26 patients by a solo surgeon without any assistant.

Methods: Between July 2014 and June 2016, 26 patients underwent solo surgeon-high ligation for pediatric inguinal hernia. The procedures that were performed in solo surgery did not differ from that in standard open high ligation. The self-retaining Lone star retractor replaced for first assistant. Patient demographics and operative and postoperative outcomes were assessed.

Results: Solo surgeon-high ligation for pediatric inguinal hernia was successful in all 26 patients. The median operative time and postoperative length of stay were 30 min (range: 24-40) and 3.8 hours (range: 1.46-3), respectively. The median incision length was 7 mm (range: 5-9). There was no perioperative complications.

Conclusions: In our experience, solo surgeon-high ligation for pediatric inguinal hernia using the self-retaining Lone star retractor was safe and feasible. The efficacy warrants further investigation and experience.

AS6-7

The application on two kinds of Self-made needle for using in laparoscopic pediatric inguinal herniorrhaphy

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Objective: To explore the clinical value on Self-made double-hole needle which use for laparoscopic pediatric inguinal herniorrhaphy.

Methods: To analyzed the data of postoperative that 1532 cases were reviewed, who were divided into the single-hole needle group (652 cases) and the double-hole needle group (880 cases), All of they were treat by Laparoscopic from April, 2006 to April, 2016.

Results: The average operation time of the group of single-hole needle was 17.7 mins which 4.4ml blood loss; 23 cases suffered small hematoma under the abdominal wall; and 3 patients recurred. The average operation time of the double-hole needle group was 7.4 mins which 1.2ml blood loss; 2 cases suffered small hematoma under the abdominal wall; and 1 patients recurred. Two groups of children staid in hospital with average of 2 days. The operation time, volume of bleeding, rate of complication in double-hole needle group were significantly less than those in the single-hole needle group ($P < 0.05$). The hospital stay, recurrence rate was not statistically significant ($P > 0.05$).

Conclusion: Self-made double-hole needle in laparoscopic pediatric inguinal herniorrhaphy with short operation time, less trauma, simple operation, in the clinically more efficiently, and that was worth generalizing and applying.

AS6-8

Laparoscopic Percutaneous Extraperitoneal Closure (LPEC) for pediatric inguinal hernia in our institute

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Dr. Hiroo Takehara and colleagues published a new operative method "Laparoscopic Percutaneous Extraperitoneal Closure (LPEC)" for pediatric inguinal hernia in 2000. It has been adopted as an alternative to traditional methods in a large number of institutions in Japan. This procedure is minimally invasive that enables to close hernia orifice without destroying the inguinal canal structure. In our institute, we have performed 657 cases of pediatric inguinal hernia by LPEC from 2005.

LPEC procedure in our institution is as follows:

1. First port insertion

First port is inserted by "Umbilical center insertion method". This technique can reduce the time for port insertion with no complications.

2. Port setting

A 3-mm laparoscopic dissecting forceps is inserted in the right lateral abdomen. The operator maneuvers the LPEC needle with the right hand.

3. Handling of the needle

LPEC needle holding doubled 3-0 non-absorbable sutures was punctured from the inguinal region just above the internal inguinal ring. The orifice of the hernia sac is closed with circuit extraperitoneal suturing around the internal inguinal ring using the LPEC needle.

4. Closure of the hernia orifice

One of the doubled sutures is lifted, so that the ligature can not to loosen.

All patients had no complication in need of treatment in perioperative period. 3 patients (0.46%) had recurrent hernia or hydrocele after LPEC. LPEC is suitable for pediatric inguinal hernia as a standard operative method with low complication and recurrence rates.

AS7-1

Diaphragmatic Hernia- does approach differ in management

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Diaphragmatic hernia require a high degree of suspicion for diagnosis. This is a study of 62 patients over last 14 years in a tertiary referral centre. There were 41 males. 28 of these patients presented in emergency with symptoms as breathlessness, penetrating or blunt trauma, intestinal obstruction, fecothorax and inappropriately placed intercostal drain in the stomach. Isolated diaphragmatic injuries were identified in only 9 patients and all patients were operated through a laparotomy. Average hospital stay was 12.5 days with mortality of 3 patients and morbidity in about 13 patients. 34 patients were laparoscopically operated. 22 patient required only sutures to close the defect, however 10 patients required reinforcement with a dual mesh and 2 patients required neodiaphragm creation. Average hospital stay was 5.7 days with no morbidity.

Conclusion; Diagnosis of diaphragmatic hernia requires high grade of suspicion. Patients with acute presentations are better treated with laparotomy, however laparoscopy may be attempted if facilities and expertise is available.