DOI: https://doi.org/10.53350/pjmhs2216848

ORIGINAL ARTICLE

Single Port Laparoscopic (SPL) Inguinal Hernia Repair in Girls

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ABSTRACT

Background: Inguinal hernia in children is a very common surgical condition. Various techniques are being done for hernia repair in children. Single port needlescopic assisted hernia repair in girls is a time honoured technique with minimum complications and excellent Aim**:** To determine the outcome of single port needle assisted hernia repair in girls.
Study design: Descriptive case series
Place and duration of study: Department of Paediatric Surgery Sahiwal Teaching Hospital and Sahiwal Medical College Sahiwal between March 2021 and February 2022.
Methodology: Twenty eight female patients from 3-13 years old with inguinal hernia underwent single port needlescopic assisted hernia repair. Follow up was done for three months to evaluate outcome with respect to recurrence, stitch abscess and cosmetic appearance.
Results: Maximum patients between 7-10 years 12(42.85%). Fifty percent were right sided inguinal hernias. Four (14.28%) girls were developed complications. Two (7.14%) developed retroperitoneal intraoperative hematoma, 1(3.57%) stitch abscess and 1(3.57%) recurrence respectively. One patient with intraoperative hematoma was converted to open herniotomy. Stitch abscess was managed conservatively and recurrent hernia was repaired by open herniotomy.
Conclusion: Single port laparoscopic needlescopic assisted hernia repair in girls is a simple and safe procedure with minimum complications and excellent cosmetic results.
Keywords: Hernia, Inguinal, Girls, Single port, Needlescopic

INTRODUCTION

Inguinal hernia repair in children is simply high ligation of the hernia sac. Performing an inguinal incision and dissecting the hernia in children who undergo traditional open herniotomy, can disrupt the inguinal canal's native structures and anatomy.[1] The conventional strategy leaves comparatively more damage behind and may lead to numerous difficulties and complications in future. Moreover, a contralateral occult hernia will be missed. Given the advancement pertaining to laparoscopic surgical methods, laparoscopic inguinal hernia surgery can prevent these flaws and enabling the hernia sac's high ligation can minimize the rate of recurrence.[2] Since its beginning in the early 1990s, laparoscopic inguinal hernia repair (IHR) has changed in many aspects.[3] Since then, many procedures have been described, including a single-port laparoscopic percutaneous extraperitoneal closure assisted with optical forceps and a transabdominal three-port treatment including suturing the neck of the hernia sack.[4] Shorter recovery period for bilateral hernias[5], a decrease in the occurrence of metachronous hernia formation[6] and the ability to explore and proactively correct otherside hernia are all definite benefits of laparoscopic inguinal hernia surgery. Laparoscopic IHR has been associated with fewer overall postoperative complications[7].

Over the past ten years, a number of laparoscopic methods have been developed to enhance the results. The different approaches to the internal inguinal ring suturing and knotting, the quantity of ports employed during the procedures, and the method of hernial sac dissection vary among the techniques.[8] In a study conducted by Kumar et al inguinal hernia recurrence was recorded in 2.7% of patients after needlescopic percutaneous repair, although stitch abscess was nonexistent and the cosmetic results were 100% after needlescopic percutaneous repair[9]. Another study found that after needlescopic percutaneous repair of inguinal hernias in the juvenile age group, there were 1.98% occurrence of recurrence and 100% cosmetic success.[10] While in another study, cosmetic outcomes were also better with laparoscopic approach in children with inguinal hernias, stitch abscess was discovered in 3.3% of cases with 0% recurrence[11].

The purpose of this study was to determine the outcome in terms of recurrence of inguinal hernia, stitch abscess and cosmetic results after needlescopic percutaneous repair of inguinal hernia in females of pediatric age group. Not much work has been done in which can help us to determine the needlescopic percutaneous repair as an appropriate method for inguinal hernia repair in female children.

Received on 06-03-2022
Accepted on 26-07-2022

MATERIALS AND METHODS

This descriptive case series was conducted at Paediatric Surgery Department of Sahiwal Teaching Hospital Sahiwal between March 2021 and February 2022 after approval from Ethical Review Committee. A total of 28 girls with either a clinical or radiologically confirmed inguinal hernia underwent single port needlescopic assisted surgery. Patients with congenital bleeding disorders (PT >15sec), incarcerated inguinal hernias (based on clinical examination), diabetic patients (BSR >186mg/dl), recurrent inguinal hernias, and patients with irreducible ovaries that could not be manually reduced before or after anaesthesia were also disqualified from the study. All patients were admitted through the OPD, baseline investigations were completed, and ultrasound was performed in cases that were deemed to be questionable after a clinical assessment.

After a successful anaesthesia, patients were placed in supine position with their hips properly cushioned. Abdominal walls were elevated, a longitudinal incision of about 5mm in length was made in the middle of the umbilical region, and a small veress needle was abruptly pushed into the peritoneal cavity. A pneumoperitoneum pressure of 8–10 mm Hg was then created. A 5-mm trocar was used to make a puncture in the abdominal cavity. The 30-degree, 5-mm laparoscope was inserted to check for patency of processus vaginalis on the contralateral side, and the deep inguinal ring of the afflicted side was also marked. A 2-mm skin incision was done in the affected inguinal area along the inguinal crease for cosmetic purposes. In order to create a tiny incision in the peritoneum, a 22-gauge epidural needle (out-diameter, 1.40mm; length, 80mm) was inserted and progressed along the lower part of the internal inguinal ring under laparoscopic guidance. The epidural needle was threaded with a 2-0 non-absorbable suture holding both ends of the suture outside, so that a loop will of suture will be inserted in the abdomen piercing the internal inguinal ring. Adequate loop of prolene was left by piercing half of the ring. Holding both ends of the suture outside needle was withdrawn. Needle was again inserted through the same incision through remaining half of the internal ring. Thread was passed through the needle and already present loop. Needle was brought out leaving suture in the peritoneal cavity through the loop. When ends of loop outside the abdomen were pulled, the second suture came out. Both ends of the second suture were tied. The hernial defect was repaired, and an extracorporeal knot was tied outside the abdomen. With this method, the knot was elevated above the fascia. The intervention to contralateral patent processus vaginalis

was done in similar fashion. Usually, the round ligament will be included into the suture circle. The umbilical port incision and the puncturing small incision were closed with 3/0 vicryl suture by subcutaneous and intradermal technique. The incision was covered with aseptic dressing. During the whole procedure, we remained careful that there should not be any damage to the inferior epigastric vessels. Patients were shifted to post-surgical wards after surgery and monitored there until discharge. For three months, the OPD monitored these patients for recurrence, stitch abscess, and cosmetic outcomes. Patients who experienced recurrence and stitch abscess were dealt accordingly.

All the data was recorded and analyzed using SPSS-25. Data was stratified for age, weight and duration of symptoms. P-value ≤0.05 was taken as significant.

RESULTS

There were 8(28.6%) girls between 3-7 years, 12(42.8%) girls between 7-10 years while 8 (28.6%) girls between 10-13 years respectively. Regarding side of hernia, 14(50%) were right sided, 8(28.6%) left, 3(10.7%) bilateral and 3 (10.7%) occult found during the laparoscopic procedure. Mean operative time ranged from 13 minutes for unilateral hernia to 27 minutes for bilateral hernias with mean was as 16.94±5.50. Mean operative time for right sided unilateral hernia was 14.17±2.55 (range 10-15 minutes) and left sided unilateral hernia was 11.54±1.51 (range 12-14 minutes) and for bilateral hernias it was 24.01±2.10 (range 21-25 minutes). Bilateral inguinal hernias were diagnosed preoperatively but occult peroperatively. All cases were successfully completed except one who was converted into open due to puncture of inferior epigastric vessel. Patients were followed for three months, all patients remained well except one who presented with recurrent inguinal hernia and the other with stitch abscess with complication rate of (3.57%) each (Table 1).

Table 1: Demographic information of the girls (n=28)

Variable	No.	%
Age (years)		
3 – 7	8	28.6
7 – 10	12	42.8
10 – 3	8	28.6
Side of hernia		
Right	14	50
Left	8	28.6
Bilateral	3	10.7
Occult	3	10.7
Complications		
Per-operative haematoma	2	7.2
Stitch abscess	1	3.6
Recurrence	1	3.6

DISCUSSION

In recent past, laparoscopy, a minimally invasive procedure, has become very popular in the whole world for the management of impalpable testicles and inguinal hernias in children[12]. The concept of minimum intervention with extracorporeal knotting was introduced by Ozgediz et al[13] making single port laparoscopic inguinal hernia repair easy, simple and less invasive procedure. Because there is less tissue disruption, ease in access, less dissection, less postoperative pain, minimum bleeding, and an earlier return to work and age related activities, single port laparoscopic inguinal hernia repair has been demonstrated to be the most effective and safe in paediatric age group[14].

Many factors have been mentioned in development of inguinal hernia like prematurity, lung diseases, increased intra abdominal pressure due to various causes, increased intra abdominal volume due to ascites and ventriculoperitoneal shunting[15]. Early repair of inguinal hernia is advocated in girls due to risk of strangulation or torsion of ovary which may result in high morbidity and mortality. Open herniotomy is well known technique but due to excessive dissection, tissue disruption and trauma to mini structures like vas deferens or fallopian tube minimum invasive technique has been found with less complications and better cosmetic effects especially in girls.[4] The contralateral incision can be avoided in case of contralateral hernia if needed and morbidity related to dissection is avoided[16].

One main benefit of laparoscopic repair over open hernia repair is the identification and repair of contralateral patent deep inguinal ring which is occult hernia otherwise which may result into metachronous hernia in future. In our study, the incidence of occult hernia was found to be 3(10.7%). This finding was a bit similar to a study conducted by Kumar and colleagues[9] which showed that incidence of occult hernia was 16.67%. Safety of laparoscopic single port herniotomy with respect to recurrence, wound infection and cosmetics has also been mentioned by Ergun et al[17]. Recurrence rate in our research was 3.57% (1/28) while Zenitani et al[18] reported similar results in their series of 120 patients with regard to safety and efficacy in children and a lower rate of metachronous contralateral inguinal hernia. In their investigation, the recurrence rate was 0.83% with no substantial morbidity. Patkowski et al[19] reported no recurrences and only minor intraoperative complications. In contrast to 22 patients who underwent open surgery, 17 children from study of Shibuya et al[20] on percutaneous IH repair in extremely low birth weight infants exhibited one recurrence (5.9%). Choi et al[21] mentioned high recurrence rates in older children 4% vs. 1% in younger children by single port laparoscopic herniotomy.

The success rates of alternative (laparoscopic) paediatric inguinal hernia repair methods have been compared to those of the open herniotomy, the gold standard. Recurrence rates for open herniotomies in children have been observed to range from 2-6.3%[13]. In three port laparoscopic methods recurrence rate is 0-5.3%[22]. For the single port procedures, the reported rates of recurrence are 0-4.8%[23]. The recurrence in our series is comparable to these numbers. If we talk about other complications, in any laparoscopic procedure visceral or vascular injury is always a possibility due to transperitoneal access. The complications rate in a study to evaluate the risk of needle and trocar injuries in laparoscopic procedures was 0.41% and 1.58%.[24] Luckily in the present study, patients had no such problem. Two (7.14%) cases had retroperitoneal hematoma due to puncture of some vessels. One case was managed by deflating pneumoperitoneum and putting pressure on abdomen externally. Then the procedure was completed by laparoscope. Second case was completed by open herniotomy. Kumar et al[9] mentioned 1 (2.7%) rate of per-operative hematoma formation in their patients. According to Hossain et al[11], stitch abscess was discovered in 3.3% of cases with 0% recurrence. It is very similar to our result of 3.57% rate of stitch abscess. Patient was managed with topical treatment.

Our study has limitation with respect to patients with recurrence of hernia or incarcerated hernias which were excluded from our study. We feel that safety and efficacy of SPL inguinal hernia repair should also be evaluated in these cases with respect to morbidity and mortality. Sample size is small and comparative analysis was not performed with open herniotomy in girls.

CONCLUSION

Single port needlescopic assisted inguinal hernia repair in girls is a safe and quick technique. It does not need high skills in laparoscopy and even the beginners can perform this procedure under supervision. Complications of this procedure are minimum while there is benefit of repairing occult hernia in the same setting. Cosmetic surgery is always preferable in girls. This procedure does not leave any scar on the abdomen because scar of the incision used for camera will be hidden in the umbilicus.

Conflict of interest: Nil

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