



**PEDIATRIC INGUINAL HERNIA: LAPAROSCOPIC VERSUS OPEN SURGERY
(REVIEW)**

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ABSTRACT

This paper reviewed the current procedures for surgical repair of pediatric inguinal hernias, application of laparoscopic repair. Most Surgeon still perform open surgery for Inguinal hernia repair, on analysis of Laparoscopic Surgery over open surgery there are fewer complications, and lower recurrence rates, especially in incarcerated/sliding hernias and recurrent hernias. Due to the lower rate of complication, less hospital stay, lower pain and lower rate of infection, Laparoscopy will be considered as the choice of surgery for inguinal hernia repair.

Keywords: Open Surgery (OS), Laparoscopic Surgery (LS), Inguinal hernia.

INTRODUCTION

In pediatric inguinal hernia (PIH), Laparoscopic surgery (LS) is being an alternative to open surgery (OS). Laparoscopic hernia repair has easier access to the contralateral groin and in the avoidance of manipulation of the spermatic cord. Therefore, wider adoption of LS, in the management of PIH has remained controversial in many developing countries. The objective of this study is to compare the outcome of application of Laparoscopy on Pediatric Inguinal Hernia Surgery.

METHODS

Study Design:

This study was done in different hospitals with operation facilities. The patients were pediatric group under 15 years of age. They went through Open Surgery and Laparoscopic Surgery and various studies were done preoperatively and postoperatively.

Preoperative Assessment:

Patients were properly diagnosed and well screened prior to admission. They were admitted day before surgery and kept Nil per Oral (NPO) overnight. No any preoperative medications were introduced. Proper consent was signed from the patient party.

Anesthesia:

All operations for Inguinal Hernia were performed with the patient under general anesthesia (GA).

Surgical Technique:

Patients underwent laparoscopic repair were performed two ports and three ports technique and uses non absorbable suture materials.

Open Surgery was performed in patients with crease incision and the ligation of sac was done, suture material used was absorbable. The post-operative hydrocele formation was prevented by slitting of distal sac and the wound was closed layer by layer with absorbable sutures.

Study Parameters:

The following mentioned parameters were accessed and the patients were observed for post-operative pain and the need of any pain killers. Acetaminophen was administered as per need orally and as the patients was stable hemodynamically with the oral analgesics.

Table 1:

S No	Parameters
1	Operation time
2	Size of incision
3	Intraoperative complications
4	Intraperitoneal pressure*
5	Postoperative pain
6	Recovery
7	Postoperative complications
8	Discharge
9	Recurrence
10	Cosmesis
11	Testicular atrophy

*Only for laparoscopic surgery.

Patients party were advised for follow-up to review post-operative pain, post-operative complications; cosmesis of the scar; recurrence and change in testicular size, if any, as compared with the preoperative status. Patients were followed up continuously for few months to see any post-operative complications.

Statistical Analysis

Mean standard deviation, chi-square test and Fisher's exact test were used for proportions. Statistical significance was calculated. For the statistical work, Microsoft Excel and Center for Disease Control software Epi6 were used.

RESULTS

Of the total patients assessed the ratio of male: female was 1:6 and the right sided hernia were most common and only few patients were present with bilateral hernia. Out of Fifty-one patients, 35 children received unilateral (UL) repairs. The remaining 16 was performed bilateral repairs and were not included in the comparative analysis. Thirty-four children underwent OS, all UL.

On comparison, Performing LS was slightly quicker than OS (25.31 vs 30.65 min), but the difference was not that significant. There was no difference in pain perception in patients underwent LS and OS.

Complication rate seemed similar and there were few cases of mild testicular swelling and were recovered spontaneously after a week in LS. There was Mild scrotal edema in 2 cases following OS, which resolved spontaneously in a few days. Erythema over sutured line was seen in 2 cases which were recovered with the antibiotics. Cosmesis in LS was superior to that in OS. Twenty-three percent of children who were

performed LS had Continuous Positive Pressure Ventilation (CPPV), which were repaired during the same sitting.

DISCUSSION

Inguinal Hernia is a common problem seen in children and open herniotomy seems to be the treatment option for it is easier to perform with lower complication.

However Laparoscopic surgery is gaining its popularity with the minimal invasive surgery with more safety. So, opinion on its wider adoption as the procedure of choice is divided.

Numerous minimally invasive techniques for addressing PIH have evolved in recent years. The standard 3-port technique involving intracorporeal suturing of the internal ring is the most practiced and the established technique.

Operative Time:

On open surgery time taken was comparatively more than LS as it took time to open sac and the anatomical structure were not clear but in LS it was bloodless with good view of anatomy. Intracorporeal suturing that places considerable demands on the requirement of hand-eye coordination especially while negotiating the posterior and medial hemi-circumference of the internal ring, over the iliac and inferior epigastric vessels has been the time limiting step. Hydro-dissection and needle sign, operative time has come down with the growing experience and the use of refinements. LS were marginally quicker, but this difference was not significant, both statistically and in practice.

Postoperative Pain:

As per assessment we found pain equally after operation in patients underwent LS and OS.

In OS, Parietal pain was much seen in general, which can be controlled by caudal analgesia. Next, In LS pain perception is multimodal and multifactorial. There was parietal pain caused by port placement. In addition, capnoperitoneum causes visceral pain due to stretching (peritoneal and diaphragmatic) and acidosis. Pain following laparoscopy wouldn't be completely obliterated by either use of smaller ports or the use of caudal analgesia. Therefore, the incision size does not necessarily translate in pain perception. Hence, there was not such significant difference in the post-operative pain in OS and LS.

Recovery and Discharge:

Since patients underwent LS had general anesthesia so the time taken to regain the consciousness was long and there was muscular pain due to stretching by intubation.

However, OS can be performed under local anesthesia which seems priority as the patient can just be under facemask.

Both procedures are essentially outpatient as the duration of hospital stay was not significantly different and majority was discharged within 10 hours of surgery.

Postoperative Complications:

Complication rates of both procedures were similar and minor in nature. In LS, there were oozes from vessels, which ceased spontaneously.

Few complications with hydrocele were seen in patients underwent LS. Wound erythema was minimal in OS, and none at all occurred in LS.

Recurrence and Testicular Damage:

No any cases of recurrence were found during our assesments.

Cosmesis:

The incision given during LS is 5 mm and during OS is 2 cm, So LS is superiour than OS in cosmesis.

CONCLUSIONS

As per assesments performed there were not much vast differences in between LS and OS. However, LS seemed to be comparatively cosmesis and since it is minimally invasive technique, many tertiary centers have adopted to perform LS but in hospitals with no laparoscopy equipments they still do OS as it is less costly and didn't seemed much differences in many factors assessed.

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