

Congenital Inguinal Hernia Laparoscopic Percutaneous Extracorporeal Closure (Lpec) By A Spinal Needle Vs Open Herniotomy Surgery

^{1*}Dr.nivash.s, ²DR.stalin raja.c

Department Of General Surgery,

Rajah Muthiah Medical College And Hospital, Annamalai University, Chidambaram.

Corresponding author: *Dr.nivash.s

Introduction: Herniotomy /open surgery has been the time honored treatment for congenital inguinal hernia. Laparoscopic surgery has recently emerged as an alternative but wider adoption of laparoscopic surgery remains controversial. Therefore the need for comparison of the two techniques for addressing congenital inguinal hernia propelled us to prospectively evaluate the differences and outcomes.

Methods: This prospective study was conducted in our hospital from July 2015 to July 2016 with the approval of the hospital ethical committee. 60 children underwent either Laparoscopic Surgery(38) OR Open Surgery(22) for congenital inguinal hernia. Operative time, intra and postoperative complications, postoperative pain, hospital stay and cosmetics aspects were recorded and compared for difference in outcome. Patients were followed for an average of 4 months to evaluate the outcomes.

Results: In open surgery unilateral herniotomy was done. In laparoscopic surgery, contralateral patency of processus vaginalis was detected intraoperative and repaired simultaneously. Laparoscopic surgeries were quicker to perform than open surgeries. Cosmesis, complications, postop pain were less in laparoscopic Surgery than Open Surgery.

Conclusion: We conclude that LPEC method is a safe and efficacious procedure with its own advantages that should be viewed as an acceptable alternative to the traditional open approach.

Keywords: LAPAROSCOPIC PERCUTANEOUS EXTRACORPOREAL CLOSURE(LPEC)

Date of Submission: 01 -08-2017

Date of acceptance: 23-08-2017

I. Introduction

Congenital Inguinal hernia is one of the most frequently performed operations in infant and children. Herniotomy /open surgery has been the time honored treatment for congenital inguinal hernia. Laparoscopic surgery has recently emerged as an alternative in recent years. Laparoscopic hernia repair is routinely performed in many centers and its efficacy and safety are well documented. Recently a unique technique of extracorporeal circuit suturing of congenital inguinal hernia defects using a minimally invasive technique as afforded by a needle assisted one. We devised simple method of encircling the internal ring by using a conventional spinal needle. The aim of the study is to evaluate the feasibility, efficacy, and safety of the procedure in randomly selected cases in comparison with the open surgery.

II. Materials And Methods

This prospective study was conducted in our hospital from July 2015 to July 2016 with the approval of the hospital ethical committee. 60 children underwent either Laparoscopic Surgery(38) OR Open Surgery(22) for congenital inguinal hernia. Laparoscopic procedures were done under general anaesthesia. Open surgeries were under regional anaesthesia. The operative mode was chosen by parents. The operative time, length of hospital stay, intra & postoperative complications, cosmetic aspects and treatment of contralateral occult hernia between the two groups were compared. 5mm supraumbilical camera port is made through which grasper is also inserted. Internal ring identified to confirm the patent process vaginalis and look for contralateral occult hernia. A small 3mm stab incision made in the inguinal region through which a 22G needle with folded 2-0 prolene is inserted lateral to internal ring forming a loop medial to the ring another 22G needle with 2-0 prolene is inserted. The needle along with the prolene is inserted inside the loop. The loop is drawn out along the medially inserted prolene. The ring is encircled in an extraperitoneal plane for the placement of purse string suture. The knot is tied extracorporally and buried beneath the skin. The following steps are shown in fig. In the male patients, the main limiting factor was avoiding the vas and vessels. All the patients were discharged on the same day and called for follow-up visits at 2 weeks, 1 month, 3 months and 6 months. During follow-up,

outcome measurements—scrotal edema, postoperative hydrocele formation, recurrence rate, and cosmetic results were evaluated.

Procedure Steps



1. Supraumbilical Camera & Grasper Inposition



2. Internal Ring Identified To Confirm Patent Processus Vaginalis & Evaluate For Contralateral Occult Hernia



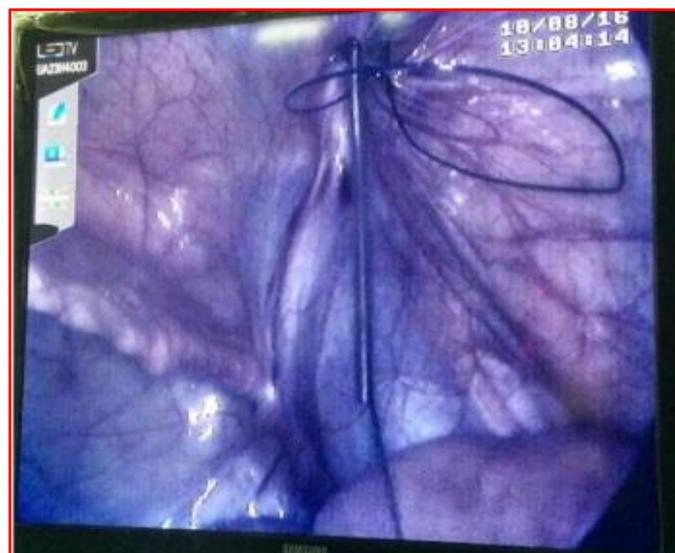
3. Lateral To Internal Ring, A 22g Needle With Folded 2-O Prolene Is Inserted Forming A Loop



4. The Loop Is Formed



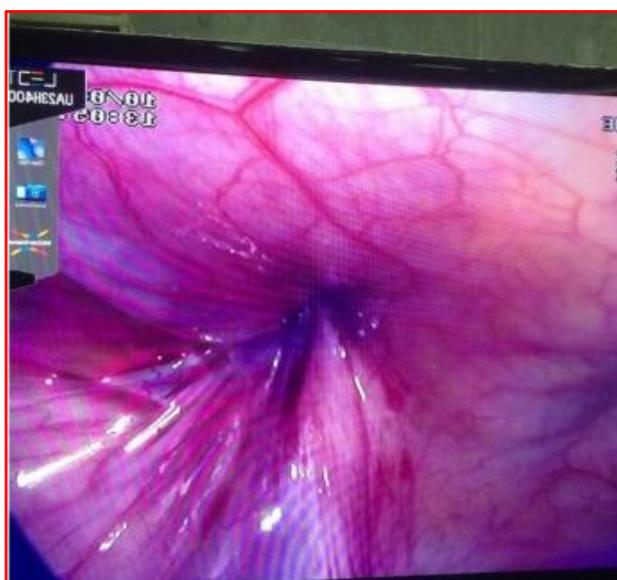
5. Medial To The Ring, Another 22g Needle With 2-0 Prolene Is Inserted



6. The Needle Along With The Prolene Is Guided Into The Loop



7.The Loop Is Drawn Out Along With The Medially Inserted Prolene



8.The Ring Is Encircled In An Extraperitoneal Plane For The Placement Of The Purse Sting Suture

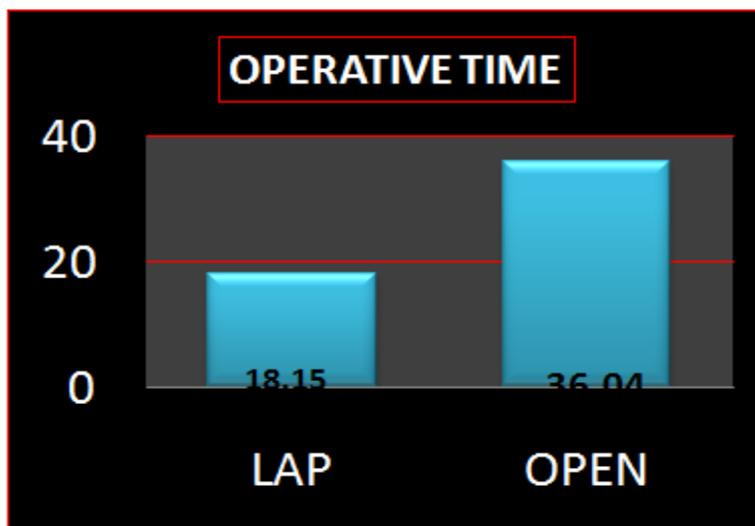
III. Results

There were 60 patients(48 male and 12 female) patients.38 underwent laparoscopic surgery and 22 patient underwent open surgery.In male patients, 35 hernias were on the right side and 13 hernias on the left side. In the females, 9 hernias were on right side and 3 on the left side. In 4 cases Contralateral occult hernias were detected by laparoscopy and repaired at the same time. Operative timelap(18.15min) open surgery(36.04min), intra and postoperative complications, postoperative pain, hospital stay and cosmetics aspects.There was no major complication during surgery except excessive bleeding (external) from the stab wound site in one case but stopped spontaneously by pressure. Vas and vessels were spared in all cases. There was no case of conversion due to technical difficulty.

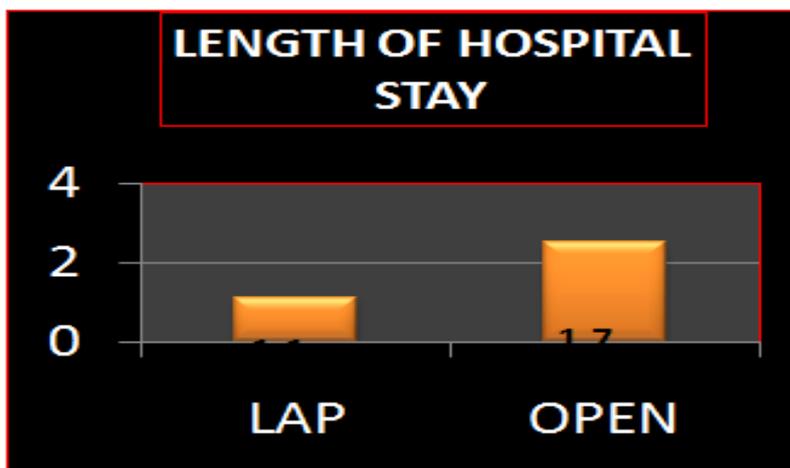
All the patients tolerated feed after 6 h. Pain could be managed by oral analgesic (acetaminophen or ibuprofen) and no case needed injectable analgesic for postoperative pain. Postoperative scrotal edema was minimal even in cases with large hernias.During follow-up visits, there was no case of testicular atrophy, testicular ascent, or hydrocele.Stab wound site was inconspicuous, 3-mm port sites healed with no or minimal scar, and the umbilical incision was unobvious.Nil recurrence in both the procedure.

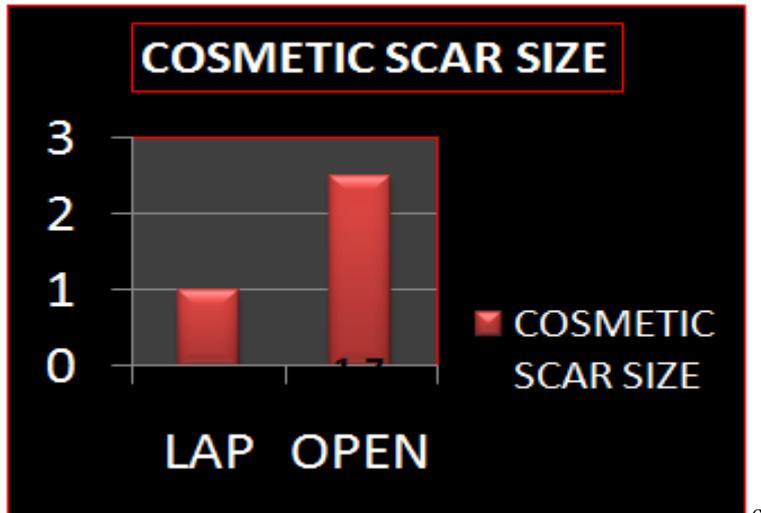
	LAPAROSCOPIC SURGERY GROUP (LPEC)	TRADITIONAL OPEN SURGERY GROUP
Mean operative time	18.15 min	36.04 min
Intra & Post op complications	1	3
Contralateral occult hernia*	4	0
Mean Length of hospital stay	1.1 day	1.7 day
Cosmetic aspects (mean scar size)	1cm	1.7cm
Recurrence	nil	nil
Follow up	6 months	6 months

*Contralateral occult hernia was probed and treated at the same time in Laparoscopic surgery group but hospitalization again in traditional open group



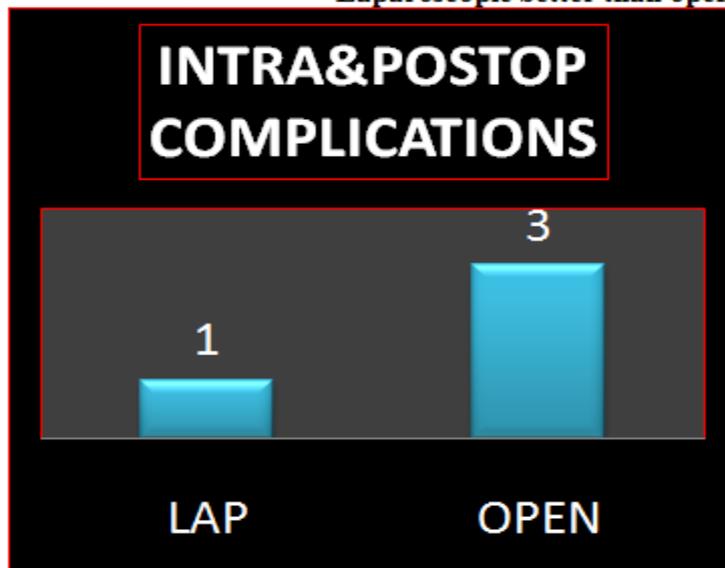
Graph depicts comparison between lpec and open herniotomy on the following parameters. A) operative time;b)length of hospital stay ;c)cosmetic scar size



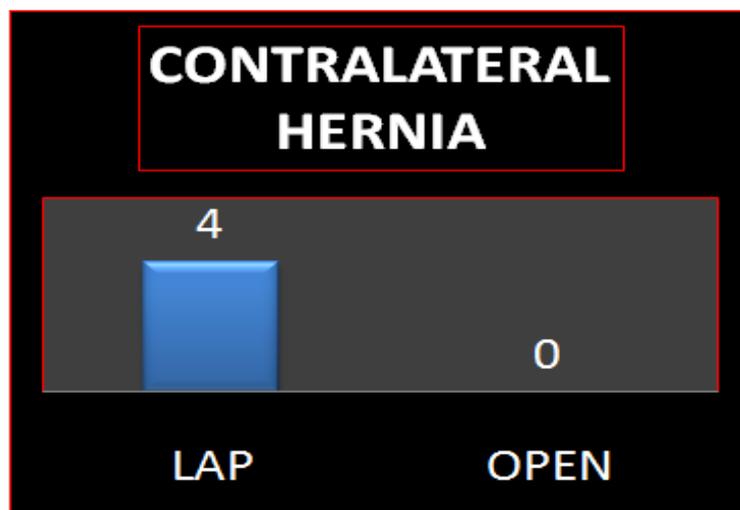


P<0.05 SIGNIFICANT

Laparoscopic better than open in all three parameters



Contralateral Occult Hernia Detection And Less Tissue Handling Made Lpec Superior



Contralateral Occult Hernia Detection And Less Tissue Handling Made Lpec Superior

IV. Discussion

In children, the standard surgical treatment of inguinal hernia is limited to ligation of the hernia sac at the IIR [5]. Internal ring is normally reached by dissecting the hernia sac from the cord structures, which bears potential risk of injuring the spermatic vessels and the vas deferens, hematoma formation, wound infection, iatrogenic testicular ascent, testicular atrophy, and recurrence of the hernia. It also carries potential risk of damaging the tubes and ovaries which may lead to infertility. Laparoscopic repair of hernia in children has emerged recently as an alternative method of treatment and is rapidly gaining popularity with more and more authors endorsing its feasibility, efficacy, and safety. Advantages of laparoscopic repair include excellent visual exposure, ready evaluation of the contralateral side, minimum dissection and avoidance of injury to vas and vessels and iatrogenic ascent of the testis, and decreased operating time especially in obese child and in recurrent cases. In the open hernia repair, initial time is spent in gaining access to the internal ring by localizing and dissecting the sac from the cord structures. Whereas, in laparoscopy internal ring is visualized directly from within the abdomen which makes the area of dissection bloodless, and magnification renders anatomy very clear, making surgery precise. In addition, the incidence of testicular atrophy is rare in laparoscopic hernia repair because of the multiple collaterals of the testis which are not disturbed. Different laparoscopic techniques of inguinal hernia repair in children have been described. Schier (1998) used 2-mm instruments without a trocar for intraabdominal suturing of the IIR in 25 girls by the placement of two Z-sutures with good result. Lee and Liang performed microlaparoscopic high ligation of IIR in 450 patients with good results and low recurrence rate (0.88 %).

Shalaby et al. used Reverdin needle (Martin Medizin Technik, Tuttlingen, Germany) for extracorporeal ligation of the IIR in 187 groin hernias in 150 patients with superior results over intracorporeal techniques. Endo and Ukiyama introduced the Endoneedle that is designed especially for extracorporeal closure of the patent processus vaginalis. Tam et al. had reported laparoscopic extracorporeal hernia repair by hook method in 433 cases with low recurrence rate (0.35 %). Shalaby et al. had further compared the intracorporeal purse string suture with extracorporeal closure using Reverdin needle (RN). Laparoscopic hernia repair by RN resulted in a marked reduction of operative time and excellent cosmetic results with low recurrence rate. Common features of all the laparoscopic repairs are ligation the internal ring by an encircling suture. On these footings, we devised an innovative the technique of encircling the internal ring by a spinal needle which is readily available. This method does not need any special needle or hook and can be performed by a surgeon with basic laparoscopic skill without knowledge of intracorporeal knotting techniques.. Literature search revealed that a similar method was described by Tatekawa in 2012 by the use of an epidural needle and preperitoneal hydrodissection to separate the vas and vessels. We believe that complete encirclement of the ring, emptying the sac, and reducing the abdominal pressure before tying may help in reducing hydrocele formation and recurrence of hernia. We have not encountered any hydrocele during the 6month follow-up. Due to learning period, we took longer time at the beginning but it is significantly reduced at present (from 25 to 10 min).

Contralateral exploration for patent processus vaginalis (PPV) remained a controversial topic. But during laparoscopy, it becomes obvious automatically. Some authors suggest that PPVs less than 2 mm may be left alone, but other had routinely ligated it to avoid development of metachronous hernia. In our series, contralateral hernias were detected in four cases by laparoscopy and were repaired at the same time. We conclude that our technique is simple, safe, and efficacious for pediatric inguinal hernia repair. It does not need any special equipment and the procedure can be performed by surgeons with basic laparoscopic skill.

References

- [1]. Schier F. Laparoscopic inguinal hernia repair—a prospective personal series of 542 children. *J Pediatr Surg.* 2006;41:1081–1084. doi: 10.1016/j.jpedsurg.2006.02.028. [PubMed] [Cross Ref]
- [2]. Shalaby RY, Fawy M, Soliman SM, Dorgham A. A new simplified technique for needlescopic inguinal herniorrhaphy in children. *J Pediatr Surg.* 2006;41:863–867. doi: 10.1016/j.jpedsurg.2005.12.042. [PubMed] [Cross Ref]
- [3]. Tam YH, Lee KM, Sihoe JDY, et al. Laparoscopic hernia repair in children by the hook method. A single-center series of 433 consecutive patients. *J Pediatr Surg.* 2009;44(8):1502–1505. doi: 10.1016/j.jpedsurg.2008.10.071. [PubMed] [Cross Ref]
- [4]. Shalaby R, Ismail M, Durham A, et al. Laparoscopic hernia repair in infancy and childhood: evaluation of 2 different techniques. *J Pediatr Surg.* 2010;45(11):2210–2216. doi: 10.1016/j.jpedsurg.2010.07.004. [PubMed] [Cross Ref]
- [5]. Lee Y, Liang J. Experience with 450 cases of micro-laparoscopic herniotomy in infants and children. *PediatrEndosurgInnov Tech.* 2002;6(1):25–28. doi: 10.1089/10926410252832410. [Cross Ref]
- [6]. Schier F. Laparoscopic herniorrhaphy in girls. *J Pediatr Surg.* 1998;33(10):1495–1497. doi: 10.1016/S0022-3468(98)90483-3. [PubMed] [Cross Ref]
- [7]. Endo M, Ukiyama E. Laparoscopic closure of patent processus vaginalis in girls with inguinal hernia using a specially devised suture needle. *PediatrEndosurgInnov Tech.* 2001;5(2):187–191. doi: 10.1089/10926410152403147. [Cross Ref]
- [8]. Lloyd DA, Rintala RJ (1998) Inguinal hernia and hydrocele. In *Pediatric Surgery, J. A. O'Neill Jr., 5th Edn., pp. 1071–1086, Mosby, St. Louis, Mo, USA*
- [9]. Takehara H, Yakabe S, Kameoka K. Laparoscopic percutaneous extraperitoneal closure for inguinal hernia in children: clinical outcome of 972 repairs done in 3 pediatric surgical institutions. *J Pediatr Surg.* 2006;41(12):1999–2003. doi: 10.1016/j.jpedsurg.2006.08.032. [PubMed] [Cross Ref]

- [10]. Barqawi A, Furness P, III, Koyle M. Laparoscopic palomovaricocelectomy in the adolescent is safe after previous ipsilateral inguinal surgery. *BJU Int.* 2002;89(3):269–272. doi: 10.1046/j.1464-4096.2001.01623.x. [PubMed] [Cross Ref]
- [11]. Riccabona M, Oswald J, Koen M, Lusuardi L, Radmayr C, Bartsch G. Optimizing the operative treatment of boys with varicocele: sequential comparison of 4 techniques. *J Urol.* 2003;169(2):666–668. doi: 10.1016/S0022-5347(05)63988-2. [PubMed] [Cross Ref]
- [12]. Lobe TE, Schropp KP. Inguinal hernias in pediatrics: initial experience with laparoscopic inguinal exploration of the asymptomatic contralateral side. *J Laparoendosc Surg.* 1992;2(3):135–140. doi: 10.1089/lps.1992.2.135. [PubMed] [Cross Ref]
- [13]. Tsai YC, Wu CC, Yang SSD (2010) Open versus minilaparoscopic herniorrhaphy for children: a prospective comparative trial with midterm follow-up evaluation. *SurgEndosc* 24(1):21–24 [PubMed]
- [14]. Bharathi RS, Dabas AK, Arora M, Baskaran V. Laparoscopic ligation of internal ring—three ports versus single-port technique: are working ports necessary? *J LaparoendoscAdvSurg Tech A.* 2008;18(6):891–894. doi: 10.1089/lap.2007.0246. [PubMed] [Cross Ref]
- [15]. Tatekawa Y. Laparoscopic extracorporeal ligation of hernia defects using an epidural needle and preperitonealhydrodissection. *J Endourol.* 2012;26(5):474–477. doi: 10.1089/end.2011.0498. [PMC free article] [PubMed] [Cross Ref]
- [16]. Shalaby R, Ibrahim R, Shahin M, Yehya M, Abdalrazek M, Alsayaad I and Shouker MI (2012) Laparoscopic hernia repair versus open herniotomy in children: a controlled randomized study. *Minimally Invasive Surgery* 2012;Volume 2012, Article ID 484135, 8 pages [PMC free article] [PubMed]
- [17]. Marte A, Sabatino MD, Borrelli M, Parmeggiani P. Decreased recurrence rate in the laparoscopic herniorrhaphy in children: comparison between two techniques. *J LaparoendoscAdvSurg Tech A.* 2009;19(2):259–262. doi: 10.1089/lap.2008.0292. [PubMed] [Cross Ref]
- [18]. Ozgediz D, Roayaie K, Lee H, et al. Subcutaneous endoscopically assisted ligation (SEAL) of the internal ring for repair of inguinal hernias in children: report of a new technique and early results. *SurgEndosc.* 2007;21(8):1327–1331. doi: 10.1007/s00464-007-9202-3. [PubMed] [Cross Ref]

*Dr.nivash.s. "Congenital Inguinal Hernia Laparoscopic Percutaneous Extracorporeal Closure (Lpec) By A Spinal Needle Vs Open Herniotomy Surgery." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* 16.8 (2017): 12-19.