

Role of Laparoscopy in Paediatric Ventral Hernia Repair

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Introduction

Common ventral hernias in paediatric age group are: Indirect inguinal hernia, femoral hernia, umbilical and paraumbilical hernia. Exact incidence is not known but it has been reported between 1-5 %. 60% right side, 30% left side and 10% bilateral. Premature infants have more incidences ie. 2% female and 7-30% male (1). Inguinal hernia is much more common in male i.e 4-8:1 than female who are premature and risk of incarceration is also more in such group of patients. Most of paediatric hernias appear in 1st year but may also appear in adulthood (1).

Aims and Objectives

The aims of this study are to review different articles and conclude the role of laparoscopy in the management of ventral hernia in paediatric age group. As the laparoscopic procedures are being established at least in adults, as sole procedure the role in paediatric age group is also been effective. But as for as hernia management is concerned, these are in their primitive era and long term study and research needed to ensure 100% safe and reliable method for paediatric hernia repair. Which type of hernia is best suited and which type of hernia is risky. Which procedure should be performed and which should not in different types of hernia. What are the complications and what is long term result. What are the other roles a laparoscopy can play in the management of paediatric ventral hernia? So that at last of our study we can conclude whether the laparoscopic technique of paediatric ventral hernia repair is safe, quick effective durable and cosmetically acceptable and also whether it is economical and satisfactory to surgeon patient and parents.

Material and Methods

About 100 of articles are reviewed and 15 articles are selected to complete the study. Some books of renowned authors are also concerned and studied articles are search on Google, Springer link and high wire press and it has been tired that most recently published articles are selected. Among all the articles the benefits and role of laparoscopy was noted as some are studied to diagnose the contra lateral hernia and at same time procedures are also performed. So what should be the exact and optimum age of operation, procedure to performed and compared with traditional and established methods of open repair of all hernias. What will be the role of laparoscopy when an infant with large hernia, challenges to a paediatric surgeon. Some articles sited the experience of laparoscopy repairs of large hernia.

Age of the procedure (Repair)

Umbilical hernias usually do not cause any symptom and so is repaired only after 5 years of age. (1). Inguinal hernia in paediatric age should be repaired / operated as early as possible except congenital hydrocoel. Which can be managed after 1 year of age, because of fear of incarceration and strangulation, a fetal complication (1)? Large omphalocele should be operated after 9 months so that abdominal cavity could accommodate the content at this time. In another study - mean age 4.2 years for umbilical hernia - 2 year for epigastric hernia (6).

Diagnostic Methods

History & clinical examination are key to the diagnosis. But because chances of bilateral inguinal hernia are 10% present, the contra lateral diagnosis is necessary. The role of contra lateral exploration in neonates, infants and childrens presenting with unilateral hernia is controversial (2). In this study 100, neonates infants and childrens under went laparoscopic evaluation for a contra lateral patent processus vaginalis (CPPV) through the ipsilateral hernia sac. There were 79 boys and 21 girls. 48% has a CPPV identified which was confirmed operatively 31 of 68 patients (46%) with a right sided and 18 of 32(56%) with a left sided hernia has a (CPPV) (P=.39). 36 of 36 (64%) patients younger than 6 months of age has (CPPV) compared to 13 to 44(30%) elder than 6 month (p=.001). Fourteen of 21 (67%) girls has a (CPPV) compared to 35 of 79(44%) boys (.087). laparoscopy through the hernia sac is a safe and effective means of identifying the presence of a CPPV and avoiding unnecessary contra lateral inguinal exploration infants (<6 months) are much more likely to have a CPPV (2). In another study laparoscopy is quoted as a sensitive and specific tool to diagnose contra lateral hernia. 964 patients were analysed, among them 376 had contra lateral hernia. All of these patients went open contra lateral exploration have 373 hernia ie. Sensitivity of laparoscopy was 99.4% so laparoscopy may be the ideal tool of diagnose contra lateral hernia (9). Laparoscopy accurately identifies the nature of the defect in children with recurrent groin hernias, detecting unsuspected contra lateral indirect, direct or femoral hernias in 44% of those undergoing laparoscopy (4). Us may be an effective noninvasive tool. Its accuracy is 95%. But the diagnosis was made by criterion of size of deep ring, presence of fluid or organs in the inguinal canal at rest or during straining. So it may not be 100% sure, whether criterion were appropriate one to advocate future development of contra lateral hernia (5).

Procedure

Three procedures are necessarily performed in childrens in open operation i.e

1. High ligation of the peritoneal sac with anatomic closure
2. High ligation of the peritoneal sac with placcation of the floor of the inguinal canal (the transversalis fascia)
3. High ligation of peritoneal sac combined with reconstruction of the floor of the canal

All depends on size of hernia, time since hernia and condition of the inguinal floor (1).

Laparoscopic procedures

1. Internal ring was closed with 4-0 non absorbable suture using 2mm instruments. Patients were prospectively video documented (7).
2. High ligation of processus vaginalis through the side of hernia (1).

3. The hernia opening was repaired with a peritoneal flip-flap anchored with a single tension –free intra corporeal suture. The vas and testicular vessels were completely untouched. The valve mechanism of the flip-flap helped to avoid scrotal collection and prevent hernia (8).
4. Simple primary closure of the fascial defect under the umbilical with absorbable suture (1).
5. Only in case of an extremely large umbilical hernia mesh may be applied (1).
6. Diagnostic laparoscopy was performed under general anesthesia with a telescopic port at the umbilicus. If the internal ring was open, two working ports were introduced pararectally on either side. An open internal ring was considered an indication for hernia repair. The needle carrying 3-0 nylon non-absorbable suture was introduced through the groin skin at the internal inguinal ring and the internal inguinal ring was closed by taking continuous sutures to approximate the edges of the ring. The needle was then taken out through the entry point and the knot was tied extra corporeally and buried in the sub continuous tissue (un known article).

Discussion

Approximately 400 years ago, a French surgeon Ambroise pare, described the reduction of an incarcerated paediatric hernia and the application of trusses. He recognized that inguinal hernias in children were probably congenital in nature and that they could be cured. Unfortunately there is no any medical management of inguinal hernia. All paediatric inguinal hernias require operative treatment to prevent the development of complications, such as inguinal hernia incarceration or strangulation. (1). for over 50 years there has been debate our how to manage the contra later groin hernia in children who present with a unilateral inguinal hernia. In 1992 laparoscopy was introduced as a new diagnostic test by combining all published studies and using the technique of meta analysis intra operative laparoscopy can be shown to be effective in diagnosing a contra later patent processus vaginalis in children undergoing unilateral inguinal herniorrhaphy(9). Laparoscopy may be the ideal tool to diagnose a contra lateral patent processus vaginalis intra operatively it is sensitive, specific, fast and safe. Although the presence of a patent processus does not imply that the patient will go on to develop a metachronous hernia. Identifying and ligating a patient processus should certainly prevent the development of an indirect inguinal hernia. As for as procedure is concerned, for long open operation has been the main management of paediatric hernias. But due to its complication and trauma of the procedures, it has been varying trouble some. Although the long tem results are very applicable and there is negligible recurrence rate. The other demerits of open operation is at a time we can miss the contra lateral small hernia and also if Bilateral hernia is present, then child is probably prove to the danger of double the time of operation and complication of operative and anesthesia are more. After the introduction of laparoscopy in 1992 as a new diagnostic tool for contra lateral diagnosis of patent processus vaginalis, laparoscopic ventral hernia are being perform and being assessed regularly in the favor of paediatric ventral hernia management. Laparoscopy repair offers equivalent out comes to open repair, with the additional benefits of greater patient satisfactions and reduced hospitalization. Complication like testicular atrophy and reduced size off testis on operated side are negligible as in laparoscopic hernia repair vas and testicular vessels were completely untouched. Laparoscopy hernia repair is especially advantageous for bilateral and recurrent diseases in childrens because it avoids vas injury. Complication related to anesthesia and with operation in just not comparable between open and laparoscopy repair

because with laparoscopy bilateral hernia can be performed in just 45 minutes Means less complication with open operation it is not true.

Conclusion

Laparoscopy accurately identified the nature of the defect in children with recurrent groin hernias detecting unsuspected contra lateral indirect, direct, and femoral hernia. Laparoscopy can also be performed through the hernia sac and is a safe and effective means of identifying the presence of a contra lateral patent processus vaginalis with avoids unnecessary contra lateral inguinal exploration. Any type of paediatric hernia can be performed by laparoscopy within a minimum time and with less tissue trauma and so with less intra operative and post operative complication. But some study have shown, more recurrence rate then with open methods. But some procedures performed by some surgeons have shown some good results with minimal recurrence rate. Laparoscopy hernia repair is especially advantageous for bilateral or recurrent disease in children because it avoids vas injury but it is technically more demanding. At last it have been concluded that inguinal hernia repairs in infants and babies is a routine operation, but many issues have not been addressed scientifically. Thus it is not know eg. If all children with a hernia should be operated on, what is the best timing of surgery, or if the operation should be performed with a open approach or laparoscopic ally. The review is a critical discussion of these and the issues in pediatric herniorrhaphy pointed out the need for further research (10).

References

1. Andre Hebra, Md paediatric hernias article last up dated: May 30, 2006 given JP Rubin sz. Occurrence of contra lateral inguinal hernia following unilateral repair in a pediatric hospital. J Pediatr surg. Oct 1989; 24. miltenburg Dm, Nuchteran , Jaksic T, etal laparoscopic evaluation of the pediatric inguinal hernia-a meta-analysis J.Pediatr surg. June 1998; 33(6); 874/9.
2. American surgeon iss0003-1348 coden amsuamo recorlaf.j; west k.w; engums.a; schererl.r, grosfeld j.l; estesnc.
3. Journal of paediatric surgery issn.3468 codemjpsa3 perlsteinnj du boisj.j.
4. Comparative study; journal article chouty, chuss diauey, wush. Guens mk. Radiology 1966; 201; 385-8.
5. Journal of paediatric surgery volume 41. Issue 4 page 859-862. C.Albanese, S.Rangul, D. Bermudez.
6. Department of paediatric surgery university medical center 550101 mains Germany.
7. K.F . Yip P.k.H Tam and Mk w.li 2 July 2003 online 27 May 2004.
8. Laparoscopic evaluation of the paediatric inguinal hernia-a-meta analysis journal of paediatric surgery volume 33, issue 6 pages 874-879. D.Miltanbury. j.nuchteran , T jaksic c kozinetiz, m brandt.
9. Spring paris issn 1265-4906 (print 1248-2008 April page 113-115 springerlink date Monday Dec 3, 2007.

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