(18)

Laparoscopic Approach to Treatment of Congenital Inguinal Hernia in Children (A Study of 45 Cases)

A SHAH[1] H GANDHI[2] AV SHAH[3]

Purpose

The authors report their initial experience in the laparoscopic treatment of congenital inguinal hernia in children.

Methods

Between February 2001 and October 2001, 45 children, 42 boys and 3 girls between 1 month and 10 years of age were treated laparoscopically for inguinal hernia repair; 28 patients (62%) presented with right inguinal hernia while 5 patients (11%) had left inguinal hernia. The repair involved placement of purse-string suture around the internal orifice of the inguinal canal. A routine search was undertaken for contralateral patent processus vaginalis, which was found in 8 patients (18%) and was repaired simultaneously. Twelve patients (27%) were found to have bilateral inguinal hernias.

Results

The surgery lasted 20 to 45 minutes, the duration decreasing with experience. There were no intra or postsurgical complications. Recurrence was noted in 1 patient (2%), which was repaired successfully by laparoscopy.

Conclusion

The early results suggest that laparoscopic surgery is a safe and feasible technique for the treatment of patent processus vaginalis and inguinal hernia in children. It is also an accurate procedure for exploration and repair of contralateral patent processus vaginalis in children, saving the trauma and morbidity of a second surgery.

Key Words : Inguinal hernia, patent processus vaginalis, laparoscopy.

Inguinal hernias in children are most often due to a patent processus vaginalis, necessitating a surgical treatment for the definitive occlusion of the same. This traditionally requires an inguinal exploration and ligation of the patent processus. It can be performed without any major complications in girls; whereas in boys it needs delicate separation of the important elements of the cord and the peritoneum.[1] The open method has a low incidence of complications

Department of Pediatric Surgery
VS Hospital, Ahmedabad
[1] Senior Registrar
[2] Resident
[3] Senior Pediatric Surgeon, Prof & Head

including scrotal edema, testicular atrophy and infertility.[2,3]

A considerable proportion (4.34%) of the children who undergo unilateral inguinal hernia have a second hernia on the contralateral side.[4,5] There is some controversy as to whether the asymptomatic contralateral inguinal region should be explored or observed. As a result of this some children need to undergo surgery a second time for an undetected hernia. Laparoscopy has recently been used to evaluate a contralateral patent processus vaginalis.[6,7] We present here our experience of 45 patients of inguinal hernias managed laparoscopically.

Materials and Methods

Between February 2001 and October 2001, we used laparoscopy to treat 45 children with inguinal hernia. Patients were informed about the evaluation of a contralateral processus vaginalis by laparoscopy and simultaneous repair during the same sitting. The contralateral repair was performed when a patent processus vaginalis was identified as a lumen allowing passage of the tip of a 3 mm instrument for a distance longer than 2 cm.

Patients were operated under general anesthesia with endotracheal intubation. The bladder was emptied by Crede method, and the anesthesiologist aspirated the stomach contents. A carbon dioxide pneumoperitoneum was created through a Veress needle and a pressure of 8 mm to 12 mm of Hg was maintained depending upon the patient's age. A 0° 3 mm telescope was inserted through the umbilicus and was attached to a Xenon light source and a video camera to examine the contralateral internal ring. Lifting the skin of the lower abdomen, compressing the inguinal area and applying traction to the spermatic cord helped to make the base of the ring more visible. Two 3 mm trocars were placed 3 cm to 4 cm below the umbilicus on the right and left side the exact positions of which depended upon the child's age. We place purse string sutures with 3-0 reabsorbable polyglactin suture around the internal orifice of the inguinal canal. We have never placed a prosthesis which is routine for laparoscopic correction of inguinal hernias in adults.

Our study of 45 cases, included 42 male and 3 female patients. Thirty three patients (73%) had unilateral hernias out of which 28 (62%) were right and 5 (11%) were left sided. We have found 12 patients (27%) to have contralateral patent processus vaginalis peroperatively of which, 2 had presented with a hernia on the left side whereas 10 had a hernia on the right.

The surgery lasted 20 to 40 minutes, the duration descreasing with experience. There were no intra or postsurgical complications in our study. There was a recurrence on the same side in 1 patient who was operated for ventriculoperitoneal shunt, which was repaired successfully by laparoscopy. On laparoscopy, the evaluation of the shunt function could also be done simultaneously. Advantages of the laparoscopic approach are a very small scar and a very short painless stay in the hospital as compared to traditional surgery. The patients were followed up to evaluate both the efficacy and reliability of the technique.

Discussion

Inguinal hernia repair is one of the most common and most successful operations

performed in children. The treatment of inguinal hernia still remains enigmatic as regards the exploration of the asymptomatic contralateral side, the incidence of complications related to the possible damage of the vas deferens and the spermatic vessels and the complications related to the surgical technique, such as recurrences of hernia or iatrogenic crytorchidism.[8,9,10] Physical examination does not reliably identify a contralateral hernia in small children. Routine contralateral surgical exploration may help avoid the psychological trauma and anesthetic risk of a second operation and the risk of testicular ischemia caused by a strangulated hernia. But routine bilateral exploration may cause injury to the vas deferens[11] and testicular vessels[12,13,14] and many children may undergo unnecessary exploration of the contralateral side. The incidence of these complications is often underestimated, especially because the follow up of the patient who has undergone surgery for an inguinal hernia is rather short, whereas these complications occur much later and may be casually detected during adolescence. Many investigators have acknowledged that routine bilateral exploration would disclose a contralateral sac in about 50% to 90% of cases (>89% in the first year of life), but contend that only a small percentage of these sacs (5.6% to 16%) would evolve into clinical hernias.[10,15,16,17]

Laparoscopic examination of the processus vaginalis in children was first reported by Lobe and Schropp in 1992.[7] A pneumoperitoneum was created with a Veress needle and a 3 mm 0° laparoscope was introduced via the umbilicus. Chu et al[18] in 1993 and Groner et al[19] in 1995 used a modified procedure in which the laparoscope was introduced into the peritoneal cavity via the hernia sac to aviod a puncture wound. They used a 30° lens, whereas a 70° instrument was recommended by Liu et al[20] in 1995 to visualize the depth of the internal ring. These investigators have compared all the positive laparoscopic findings to those at surgical exploration. This method had a low false positive rate (3%).[20] False negative laparoscopic results were evaluated by surgical exploration in the initial study by Lobe and Schropp[7] and in follow up observations by others. The current study confirms the specificity of laparoscopy and shows that it is a sensitive method.

The advantages expected from this technique are the opportunity to evaluate the contralateral side and the elimination of the complications from wall and cord lesions.[7,21,22,23,24] In case of laparoscopic evidence of contralateral patency of the processus vaginalis, it is possible to perform a bilateral closure of both the deep inguinal orifices. This prolongs the surgical procedure by only 10 to 15 minutes without the need for any additional trocar. Considering the 5.6% to 16% chances for children with monolateral pathology to develop a contralateral inguinal hernia after some time, the advantage of laparoscopy is that it resolves the problem of bilaterality at once, thus avioding the need for a second operation and anesthesia and reducing both the economic impact and risks to the patient.

We have not encountered any complications related to the use of the Veress needle for insufflations till date. However the chance of any complications may be eliminated with

the use of open approach for the introduction of the first trocar. Moreover the technique of laparoscopic hernia repair does not require coagulation, thus decreasing the risks related to monopolar coagulation. Finally laparoscopy requires the same or slightly more operating time as conventional surgery in cases of unilateral inguinal hernia, but may be faster in cases of bilateral inguinal hernias, as compared to conventional surgery. The postoperative course is painless and very short.

References

1. Potts WJ, Riker WL, Lewis JE. The treatment of inguinal hernia in infants and children. Ann Surg 1950; 132: 566-576.
2. Rothemberg RE, Barnett T. Bilateral herniotomy in infants and children. Surgery 1955; 37: 947-950.
3. Zhang JZ, Li XZ. Inguinal hernia in infants and children in China. Pediatr Surg Int 1993; 8: 458-461.
4. Kiesewetter WB, Parenzan L. When should hernia in the infant be treated bilaterally? JAMA 1959; 171: 287-290.
5. Packard GB, McLaughlin CH. Treatment of inguinal hernia in infancy and childhood. Surg Gynec Obste 1953; 97: 603-606.
6. Holcomb GW III. Laparoscopic evaluation for a contra lateral inguinal hernia or a nonpalpable testis. Pediatric Annals 1993; 22: 678-684.
7. Lobe TE, Schropp KP. Inguinal hernias in pediatrics : Initial experience with laparoscopic inguinal exploration of the asymptomatic contralateral side. J Laparoendosc Surg 1992; 2:135-141.
8. Gilbert M, Clatworthy HW. Bilateral operations for inguinal hernia and hydrocele in infancy and childhood. Am J Surg 1959; 97: 255-259.
9. Tepas III JJ, Stafford PW. Timing of automatic contra lateral groin exploration in male infants with unilateral hernias. Am Surg 1986; 52: 70-71.
10. Grosfeld JL, Minnick K, Shedd F, et al. Inguinal hernia in children : Factors affecting recurrence in 62 cases. J Pediatr Surg 1991; 26: 283-287.
11. Matsuda T, Horii Y, Yoshida O. Unilateral obstruction of the vas deferens casused by childhood inguinal herniorrhaphy in male infertility patients. Fertil Steril 1992; 58: 609-613.
12. Bock JE, Sobye JV. Frequency of contralateral inguinal hernia in children. Acta Chir Scand 1970; 136: 707-709.
13. Hamrick LC, Williams JO. Is contralateral exploration indicated in children with unilateral inguinal hernia? Am J Surg 1962; 104: 52-53.
14. McGregor DB, Halverson K, McVay CB. The unilateral pediatric inguinal hernia. Should the contra lateral side be explorated? J Pediatr Surg 1980; 15: 313-317.
15. Rathause F. Historical overview of the bilateral approach to pediatric inguinal hernias. Am J Surg 1985; 150: 527-532.
16. Sparkman RS. Bilateral exploration in inguinal hernia in juvenile patients. Surgery 1962; 51: 393-406.
17. Melone JH, Schwartz MZ, Tyson KRT, et al. Outpatients inguinal herniorrhaphy in premature infants : Is it safe? J Pediatr Surg 1992; 27: 203-208.
18. Chu CC, Chou CY, Hsu TM, et al. Intraoperative laparoscopy in unilateral

hernia repair to detect a controlateral patent processus vaginalis. Pediatr Surg Ing 1993; 8: 385-388.

[19] Groner JI, Marlow J, Teich S. Groin laparoscopy : A new technique for contra-lateral groin evaluation in pediatric inguinal hernia repair. J Am Coll Surg 1995; 181: 168-170.

[20] Liu C, Chin T, Jan SE, et al. Intraoperative laparoscopic diagnosis of contra lateral patent processus vaginalis in children with unilateral inguinal hernia. Br J Surg 1995; 82: 106-108.

[21] Misra D, Hewitt G, Potts SR, et al. Transperitoneal closure of internal ring in incarcerated infantile inguinal hernias. J Pediatr Surg 1995; 30: 95-96.

[22] Holcomb III GW, Brock III JW, Morgan III WM. Laparoscopic evaluation for a contra lateral patent processus vaginalis. J Pediatr Surg 1994; 29: 970-974.

[23] Grossmann PA, Wolf SA, Hopkins JW, et al. The efficacy of laparoscopic examination of the internal ring in children. J Pediatr Surg 1995; 30: 214-218.

[24] Stylianos S, Jacir NN, Haris BH. Incarceration of inguinal hernia in infants prior to elective repair. J Pediatr Surg 1993; 28: 582-583.