Intraoperative Laparoscopy by a Flexible Scope: Is it Reliable in Contralateral Childhood Hernias?

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ABSTRACT

Background and Objectives: Negative contralateral groin exploration for childhood hernias raises the question of whether contralateral groin exploration is necessary or not. To find out whether a contralateral processus vaginalis was patent, we performed laparoscopy with a flexible scope.

Methods: After carbon dioxide insufflation, a flexible laparoscope was inserted through the opened hernia sac and the contralateral processus vaginalis orifice was examined. We considered a patent processus vaginalis as a potential hernia. The study involved 20 children: 16 boys and 4 girls. The symptomatic side was explored in a conventional manner and laparoscopy was performed through the opened hernia sac.

Results: A contralateral processus vaginalis was found in 6 children: 4 boys and 2 girls. These results were confirmed by exploring the opposite groin. We did not explore if the laparoscopic examination was within normal limits. There was one false-positive result in a female patient.

Conclusions: Intraoperative non-puncture laparoscopy utilizing a flexible laparoscope through the hernia opening is an uncomplicated, reliable and precise method for identifying a patent contralateral processus vaginalis. It may represent a satisfactory alternative to routine bilateral inguinal exploration. Also, use of the flexible laparoscope may be more beneficial than use of a rigid laparoscope passed through the umbilicus or hernia sac.

Key Words: Laparoscopy, Hernia, Inguinal, Pediatric.

INTRODUCTION

Evaluation of the contralateral side in children who have manifest unilateral inguinal hernias is still controversial. The incidence of contralateral hernias is not low, and pediatric surgeons need to re-evaluate their policies on this issue.

If there is no evidence of a patent processus vaginalis at the contralateral side, it does not seem reasonable to explore these patients. If one could evaluate the contralateral side for the existence of a patent processus vaginalis before operating on it, it would help in avoiding unnecessary interventions and avoid the risk of injury to the contralateral spermatic cord elements. Methods such as intraoperative pneumoperitoneum, transperitoneal probing, and herniography have been advocated in the past to detect contralateral hernias but none have developed into routine use. Recently, laparoscopy, using rigid scopes of various sizes and angles, has been reported to be used with success by several authors.

Using the laparoscopic concept, we first searched for limitations of the described techniques and then looked for a way to improve the examination. A flexible scope seemed to offer several potential advantages.

MATERIALS AND METHODS

The study involved 20 children, 16 boys and 4 girls, whose ages ranged from nine months to four years. Approval was obtained from the Institutional Ethics Committee. The symptomatic side was explored under epidural anesthesia through a transverse inguinal incision. The hernia sac was carefully dissected and the sac opened. A 5 mm cannula was introduced into the peritoneal cavity through the sac in patients above one year of age. The flexible scope was introduced through the cannula (Storz Endoscopy Systems, Cat # 11272AA). In younger patients we inserted the scope directly without a cannula. The abdomen was insufflated with CO₂ and the contralateral side was examined. The contralateral processus vaginalis was visualized lateral to the lateral umbilical fold. The contralateral processus vaginalis was considered to be patent if an open, funnel-shaped internal ring was observed in the contralateral groin. A high ligation of the opened sac was performed and the other side...
Intraoperative Laparoscopy by a Flexible Scope: Is it Reliable in Contralateral Childhood Hernias?, Harun Gursoy M.

explored if the processus vaginalis was patent. An exploration was not performed if a contralateral patent processus vaginalis was not visualized. All patients were discharged on the day of the procedure. Intraoperative laparoscopy averaged approximately 25 minutes.

RESULTS

An open contralateral processus vaginalis was found by flexible endoscopy in 6 children: 4 boys and 2 girls. Positive results were confirmed by exploring the opposite groin. There was one false-positive result in a girl in whom we did not find a patent processus vaginalis in the contralateral side. The other girl and 4 boys had patent processus vaginals.

There were no early complications associated with this laparoscopic technique. The postoperative course was uneventful. No patient experienced postoperative pain due to laparoscopy. Those who did not demonstrate a patent processus vaginalis were followed for at least one year to determine whether they would develop a contralateral hernia. None of them have developed a hernia to date.

DISCUSSION

A patent processus vaginalis does not always mean a hernia. The processus vaginalis is patent in 80% to 94% of infants at birth, and in 57% of infants between the ages of four months and one year.² The incidence of patent processus vaginalis is 20% among adults.³ Intraoperative laparoscopy can only identify whether there is a patent processus vaginalis, however, in this way it helps the surgeon make a choice regarding contralateral exploration. Non-puncture laparoscopy with a flexible scope proved to be a satisfactory method for evaluating the contralateral side in this study. It added less than half an hour to the procedure even during our learning curve and we believe it was effective in preventing unnecessary contralateral exploration. No unexpected contralateral hernia occurred in this study and we believe the laparoscopic technique to be quite reliable.

It has been suggested by many authors that contralateral groin exploration be employed if an accurate and safe technique is available to determine patency of the processus vaginalis.⁴ A major advantage of this laparoscopic technique is that there is no need for a puncture wound or incision. The opened hernia sac is all that is needed for the cannula to be inserted into the abdomen. Authors who have used rigid scopes for this purpose advocate a 30-degree or wider laparoscope to better evaluate the internal inguinal ring. The internal ring lies just beside the lateral umbilical fold and can be difficult to visualize with a 0-degree laparoscope.

Non-puncture laparoscopic techniques, with either rigid or flexible scopes, seem to be effective in detecting the patency of a contralateral processus vaginalis. However, Chin et al., in a series with rigid scopes using a non-puncture inguinal technique, experienced difficulties which included a tear of the hernia sac and tear of a distended urinary bladder.⁵ In another series by Holcomb et al., after initial insertion through the hernia sac, had to convert to an umbilical site because they were unable to identify the internal inguinal ring or the sac was too thin to cannulate.⁴ In our series, we did not face such problems because the flexible scope was easy to manipulate, and if the sac was thin, we inserted the laparoscope directly though the sac and performed an examination while insufflating the abdomen. For this reason, we believe that the flexible laparoscopic technique is superior to a rigid scope technique and advocate its use in evaluating the contralateral groin during pediatric inguinal hernia repair.

References:

1. Wolf SA, Hopkins JW. Laparoscopic incidence of contralateral patent processus vaginalis in boys with clinical unilateral inguinal hernias. J Pediatr Surg. 1994;29:1118-1120.

2. Snyder WH Jr, Greaney EM Jr. Inguinal hernia. In Mustard WT, Ravitch MM, Snyder WH Jr, et al. eds. Pediatric Surgery (ed 2). Chicago: Year Book Medical; 1969:692-704.

3. Morgan EH, Anson BJ. Anatomy of region of inguinal hernia. IV. The internal surface of parietal layers. Q Bull Northwest Univ. Med. School. 1942;16:20-37.

4. Holcomb GW III, Morgan WM III, Brock JW III. Laparoscopic evaluation for contralateral patent processus vaginalis: part II. J Pediatr Surg. 1996;31:1170-1173.

5. Chin T, Liu C, Wei C. The morphology of the contralateral internal inguinal rings is age-dependent in children with unilateral inguinal hernia. J Pediatr Surg. 1995;30:1663-1665.