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ORIGINAL ARTICLE

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Direct inguinal hernias in children: laparoscopic aspects

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Abstract Among 109 children treated laparoscopically for inguinal hernias, 5 had direct hernias, more than would normally be anticipated. Two of the hernias were recurrences of indirect hernias operated upon previously using the open technique. Direct hernias are easier to detect with the laparoscopic technique.

Key words Inguinal hernia · Children · Direct · Recurrence

Introduction

Pediatric surgical textbooks state that direct inguinal hernias (IH) in children are "extremely rare" [3]. In a series of 5,452 IH operations, there were 13 children with direct hernias (0.2%). One-third of these had undergone a previous repair on the same side for "presumed indirect hernia" [1]. In another series 1,600 IH operations, 14 children had direct hernias (0.9%), and one half of these were recurrences [4]. The present study concerns a series of 109 laparoscopic IH operations, at which 4.5% of hernias were found to be direct. The figure indicates that direct IHs occur more frequently than is commonly believed.

Materials and methods

Laparoscopic herniorrhaphies were performed in 109 children (39 girls and 60 boys) aged 3 weeks to 13 years (average 3.5 years) whose weights ranged from 2.7 to 50 kg (average 17.2, median 14 kg). Inspection of both internal inguinal rings was carried out in all cases. The patients had presented with groin swellings identical to those seen in indirect IHs. In 1 boy, the swelling was slightly more medical than usual. All children were otherwise healthy; none had a connective-tissue disorder or other hernias.

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The laparoscopic technique has been described previously [2]. The boys in this series were operated upon using the same technique. Direct hernia openings were closed with intracorporeal 4–0 sutures. Although the borders of direct hernias appear to be well defined, their margins, in fact, are rather soft and can easily be pulled aside. The margins of indirect hernias are firmer. The median umbilical ligament lies immediately medial to a direct hernia. This ligament was used as a cover by including it in the last stitch that closed the direct hernia (Fig. 1). The follow-up was from 2 to 14 months.

Results

Four children had direct IHs (Figs. 2–5) and 1 had a combination of a direct and an indirect hernia (Fig. 6). All were boys, and all hernias were on the right side. The ages ranged from 18 months to 10 years. One boy had been operated upon once previously using the open technique, and a 2nd had been operated upon three times, for indirect hernias in all cases.

Discussion

Direct IHs seem to occur mostly in boys and on the right side [1, 4]. In contrast to Wright, we have observed direct hernias as a sequel to indirect hernias only on the ipsilateral side. It is probable that direct IHs are not as rare as commonly believed. Since hernia surgery is considered a "beginner's procedure," direct hernias may often remain undiagnosed. One of our patients had been operated upon three times by experienced pediatric surgeons, yet the hernia was not recognized as being direct until laparoscopy was carried out (Fig. 4). In 1 of our 5 patients, we noted (after surgery) that the bulge was located slightly more caudal than usual (Fig. 5). All the others presented with the usual clinical picture of an IH. The direct hernia was not provoked or aggravated by the increased intra-abdominal pressure during laparoscopy: in all cases the diagnosis was established prior to laparoscopy.

Wright has described five different types of direct hernia [4]. The first type, lacking a significant sac, has

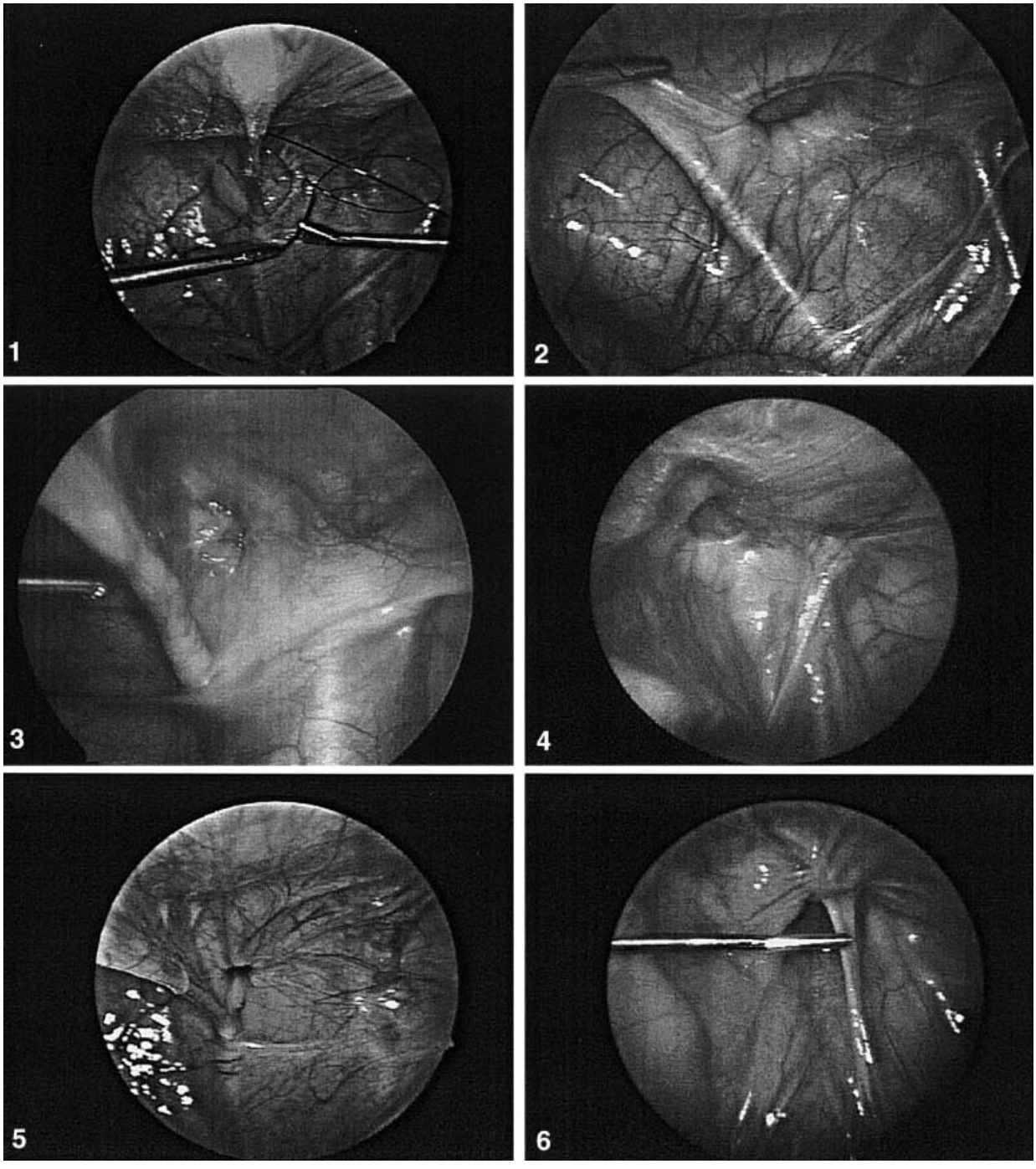

Fig. 1 Closure of direct hernia with median umbilical ligament

Fig. 2 Four-year-old boy who had bilateral herniotomies as a premature infant

Fig. 3 Six-year-old boy: opening hardly visible

Fig. 4 Eighteen-month-old boy who underwent three previous open operations for indirect hernia

Fig. 5 Ten-year-old boy: contained omentum

Fig. 6 Eight-year-old boy: combined direct and indirect hernia

also been observed by us (Fig. 3). In addition, we have seen the combination of a direct and indirect hernia (Fig. 6). Wright has described this type as a hernia "en pantalon." In fact, this configuration resembles the two legs of trousers, and has also been reported by Fonkalsrud et al. [1].

On three occasions we have seen distinct sacs due to a direct hernia without the presence of indirect sacs (Figs. 2, 4, 5). We have never seen diffuse, or even destructive, weakness of the posterior wall of the inguinal canal. It is possible that the shape and appearance of the abdominal wall changes when the abdomen is insufflated. None of the openings appeared large enough to accommodate a full sling of small bowel, not to mention the multiple bowel loops we have seen in some indirect

hernias. In 1 child part of the greater omentum had prolapsed into the opening. It is most likely that these direct hernias were only partial hernias (so-called Littré hernias).

In a child, the risk of recurrence after open repair of a direct hernia is low. We could not find any reports in the literature concerning the recurrence of direct hernias. Laparoscopically, the repair of a direct hernia appears more demanding than that of an indirect hernia, as it is difficult to locate any anatomic structures in the vicinity of the defect that are sufficiently stable for suturing. This is why we used the adjacent median umbilical ligament to provide additional cover for the defect. In summary, we believe that laparoscopic repair of a direct hernia is more reliable than open surgery, especially since it is impossible to make a mistaken diagnosis using laparoscopy.

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