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CASE REPORT

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Neonatal acute appendicitis: a strangulated appendix in an incarcerated inguinal hernia

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Abstract A 4-day-old infant with acute appendicitis (AA) due to incarceration of a right inguinal hernia is presented. Although appendicitis is the most common condition requiring abdominal surgery, the reported occurrence of AA subsequent to neonatal hernia incarceration is exceptionally rare.

Keywords Neonatal appendicitis · Incarcerated inguinal hernia · Inguinal hernia · Appendicitis

Introduction

The incarceration of an inguinal hernia, especially on the right side, occurs most frequently during first few months of life. On the other hand, appendicitis in newborns is uncommon [1–5], difficult to diagnose, and associated with significant morbidity and mortality. Generally, acute appendicitis (AA) is associated with Hirschsprung's disease (HD) [6, 7], necrotizing enterocolitis (NEC) or incarceration of the appendix inside the hernia sac [8, 9].

Reports of the occurrence of neonatal AA subsequent to right inguinal hernia incarceration are exceptionally rare. We present a case of AA caused by strangulation of the inside an inguinal hernia sac in a newborn.

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Case report

A male infant was born vaginally after a 38-week gestation with bilateral inguinal hernias. On day 4 of life, he developed a right inguinal swelling with local warmth, redness, and pain, associated with fever and vomiting (Fig. 1). With a diagnosis of irreducible inguinal hernia, he underwent immediate surgical exploration via a transverse incision in the lowest inguinal crease. On opening the sac, the strangulated and mummified appendix was found inside it (Fig. 2) with free, yellow foul smelling peritoneal fluid. A separate abdominal incision was made to allow better visualization and to inspect the bowel and peritoneal cavity. The mummified appendix was reduced via the second incision and mobilized by dividing the mesoappendix. The stump was ligated and overlapped using a pursestring suture. After removal of the appendix, the wound was irrigated with saline and the muscle layers were closed. The peritoneal fluid was drained using peritoneal and inguinoscrotal drains. A standard hernia repair was performed.

The patient had an uneventful recovery and was discharged on the 4th postoperative day. Follow-up revealed primary healing of the inguinal and abdominal wounds without any evidence of infection.

Discussion

Although neonatal appendicitis is rare a review of the literature by Srouji and Buck [8] revealed 106 cases. The rarity can be explained by the anatomic shape of the appendix in newborns. The appendix is first visible at a gestational age of 8 weeks, and at birth its diameter is only 20% to 25% of the diameter of the cecum. It has a relatively wide base in newborns and during infancy, which may explain why the risk of developing appendicitis is lowest at this stage of development. In this period, AA is generally associated with HD, NEC, or incarceration inside an inguinal hernia sac [9].

In 1735, Claudius Amyand [10] removed the appendix in a surgical correction of an inguinoscrotal hernia complicated by a stercoraceous fistula. For this reason, such a hernia is called Amyand's hernia. For these cases to develop the clinical signs and symptoms of AA, the appendix needs to have penetrated the hernia sac and become compressed and strangulated.

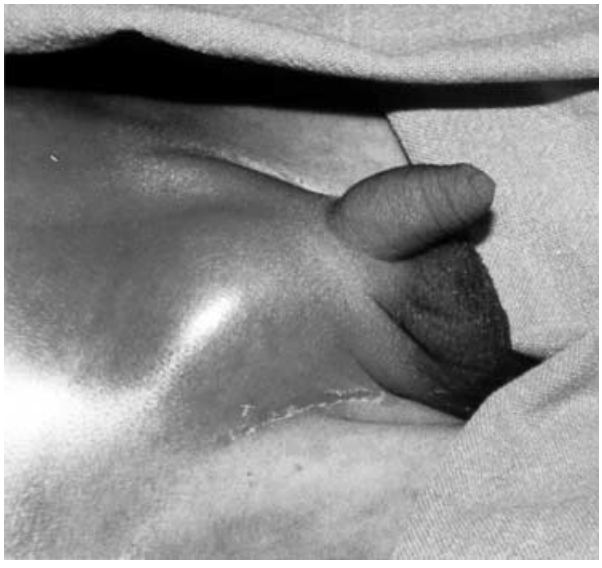

Fig. 1 Right incarcerated inguinal hernia with local inflammatory signs

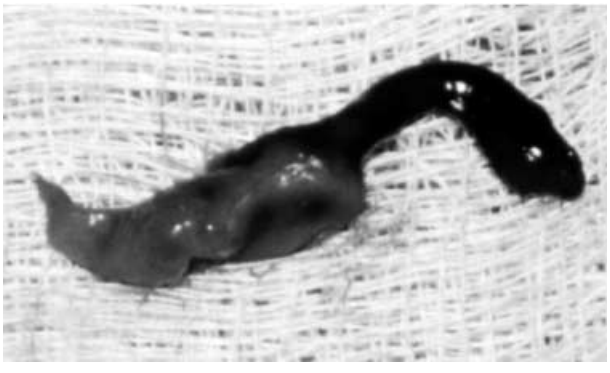

Fig. 2 Necrotic, mummified appendix

The diagnosis of AA in newborns is difficult because the signs and symptoms are not specific. Often, the only findings are generalized abdominal pain, fever, and an increase in volume of the inguinal region. The clinical picture can be similar to an acute scrotum, with massive scrotal edema caused by the appendix and AA inside the scrotum or as a scrotal mass [11, 12]. Sometimes it is necessary to use separate incisions (inguinal and abdominal), as were used in our case, to achieve adequate surgical exposure.

In summary, although AA is rare, it can occur in newborns and be misdiagnosed and can be associated with an incarcerated inguinal hernia.

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