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EC PAEDIATRICS
Case Report

Herniation of Appendix through Trocar Site Following Laparoscopic Pyeloplasty in an Infant

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Abstract

Trocar site and drain site hernias are uncommon complications following laparoscopic procedures, especially in infants. Although herniation through 5 mm port sites is considered rare, neonates and young infants may be at increased risk due to their underdeveloped abdominal wall musculature. We present a rare case of herniation of appendix through a 5 mm trocar site subsequent to drain placement in a 3 months old infant following laparoscopic pyeloplasty for right sided pelviureteric junction (PUJ) obstruction.

Keywords: *Appendiceal Herniation; Trocar Site Complications; Prolapse at Drain Site*

Introduction

Trocar site and drain site hernias are uncommon complications following laparoscopic procedures, especially in infants.

Case Presentation

A 3 month old infant with antenatally detected right sided gross hydronephrosis was referred to our institution for further evaluation. Ultrasound confirmed significant right hydronephrosis with an AP diameter of 33.2 mm. Further evaluation with EC scan revealed decreased function of right kidney and pelviureteric junction obstruction, and the infant subsequently underwent Laparoscopic Dismembered Reduction Pyeloplasty. An intra-peritoneal perinephric drain was placed through one of the 5 mm trocar sites and was removed on post operative day 5. The infant was clinically stable, asymptomatic and discharged on the same day.

5 days later, the infant was brought to the outpatient department with the complaints of persistent cough and a mass protruding through the drain site. Clinical examination revealed a tender reddish mass protruding through the site (Figure 1), without systemic signs of infection. Initial differential diagnosis included wound infection, herniation of bowel or omentum, or drain site abscess. The baby was taken up for exploration. Intraoperatively, the mass was identified as appendix (Figure 2). An appendicectomy was performed through the same site without further opening the abdomen. The post operative period was uneventful, and the infant was discharged after routine postoperative care on the 2nd day. Histopathological examination was consistent with appendicitis (Figure 3 and 4).

Figure 1: *Mass protruding through the drain site.*

Figure 2: *Intraoperative finding: appendix herniating through the drain site.*

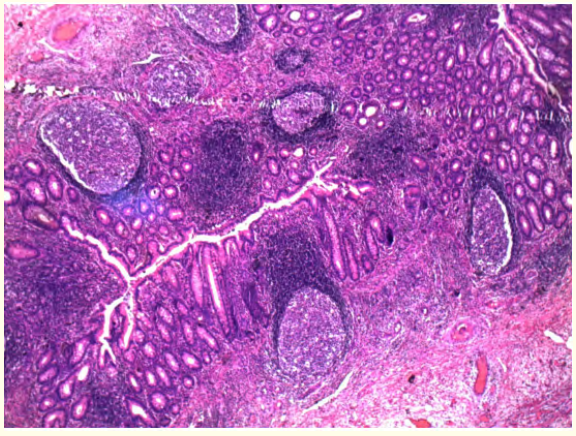

Figure 3: *Section from appendix showing hyperplastic follicles.*

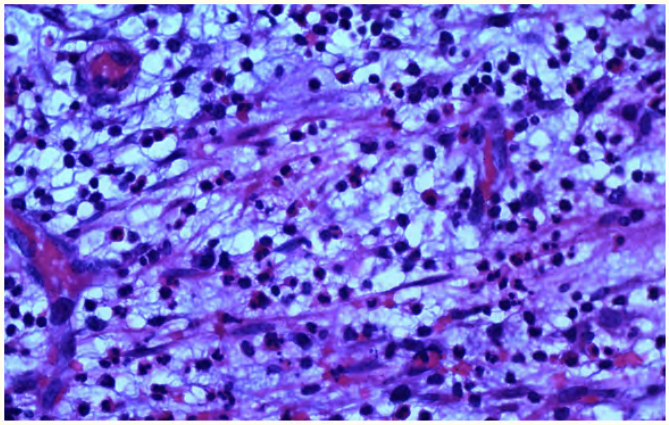

Figure 4: *Focal eosinophilic and neutrophilic infiltrates.*

Discussion

The trocar site hernias and drain site hernias are uncommon with prevalence ranging from 0.1 - 3.4% in adults and significantly less in the pediatric population [1]. To our knowledge, this is the first reported case of herniation of appendix through a laparoscopic trocar site in an infant. While trocar site herniation is a known complication of laparoscopic surgery, it is more common in older children and adults and typically involves small bowel, omentum or fat [3,4]. There is a case reported in an adult where the appendix was located at the port-site [2].

Several anatomical and procedural factors contribute to the development of trocar or drain site hernias. These include the size of the port or drain, increased intra-abdominal pressure, inadequate fascial closure, and postoperative factors such as infection or increased abdominal pressure resulting from coughing or excessive crying in infants.

In this case, the onset of persistent cough could have precipitated the herniation due to raised intra-abdominal pressure. The initial clinical presentation was confusing, as the localized reddish swelling raised suspicion of a wound infection or abscess. However, the lack of systemic signs and the tender, irreducible nature of the mass prompted further evaluation. The differential diagnosis of a post-surgical drain site swelling includes drain site abscess, incisional hernia (containing bowel or omentum), and stitch granuloma.

Intraoperative findings in our patient confirmed a herniated appendix, necessitating an appendectomy through the same site. Histopathological report came as consistent with appendicitis. Whether the appendix was pre-existingly inflamed or became inflamed secondarily after herniation remains speculative. However, ischemia from strangulation at the fascial defect could have contributed to the development of appendicitis.

This case highlights several important considerations. First, drain or port sites, even as small as 5 mm, can serve as potential hernia sites in infants, particularly if not closed adequately or subjected to increased intra-abdominal pressure. Second, vigilant postoperative follow-up is critical, especially in neonates and infants who may not manifest typical signs of intra-abdominal pathology. Third, unusual contents such as the appendix can herniate through port or drain sites, and clinicians must maintain a high index of suspicion for atypical herniation.

Current recommendations regarding fascial closure in pediatric laparoscopic surgery remain variable. While some authors suggest closing port sites ≥ 10 mm [5], others advocate for routine closure of all port and drain sites in children to prevent the risk of herniation [6].

Conclusion

This case underscores a rare, yet significant complication of laparoscopic surgery in infants. Despite the small size of the trocar, the underdeveloped musculature and increased intra-abdominal pressure from post operative factors such as coughing can predispose infants to herniation, even through seemingly low risk sites. The atypical presentation and unusual content of hernia highlight the need for a high index of suspicion in the postoperative period. Early recognition and prompt surgical intervention are key to prevent morbidity. This case supports the consideration of routine closure of all port and drain sites in neonates and infants, regardless of size, to avoid the risk of such complications.

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