

Acute Abdomen Caused by Strangulated Right Paraduodenal Hernia in a Child: Case Report

Bir Çocukta Strangule Sağ Paraduodenal Herni'nin Neden Olduğu Akut Batın

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ABSTRACT Paraduodenal hernia is a congenital internal abdominal hernia caused by an abnormal rotation and fixation of the intestine. It is an uncommon cause of small bowel obstruction and rarely presents in children. Chronic abdominal pain and acute intestinal obstruction are most common findings and the symptoms are nonspecific. The mechanism for intestinal obstruction seems to be the constriction of the intestine at the hernial orifice. An acute episode of obstruction may lead to intestinal gangrene due to compression of vessels at the root of the mesentery. Early diagnosis and treatment are essential because of the high morbidity and mortality associated with strangulation. It is often difficult to diagnose preoperatively and, hence, often present at surgery or autopsy. In this study, we present a case of 5 years old with acute intestinal obstruction due to strangulation of a right paraduodenal hernia.

Key Words: Hernia; abdomen, acute

ÖZET Paraduodenal fıtık, barsakların anormal rotasyon ve fiksasyonu ile meydana gelen doğumsal abdominal internal hernidir. İnce barsak tıkanıklığının alışılmadık bir nedeni olup çocuklarda nadiren görülür. Semptomlar spesifik değildir, kronik karın ağrısı ve akut barsak tıkanıklığı en sık gözlenen bulgulardır. Barsak tıkanıklığının mekanizması, herni kesesi içerisine barsakların sıkışması gibi görünmektedir. Tıkanıklığın akut döneminde mezenter kökünde damarlara bası nedeniyle barsaklarda gangren meydana gelebilir. Yüksek morbidite ve mortalite düşümlenmeyle ilişkili olduğu için erken tanı ve tedavi oldukça önemlidir. Preoperatif tanı genelde zordur ve bundan dolayı çoğunlukla cerrahi ya da otopsi ile konur. Biz, bu çalışmada, sağ paraduodenal herni'nin düşümlenmeyle bağlı olarak gelişmiş, akut barsak tıkanıklığı olan 5 yaşındaki bir hastayı sunduk.

Anahtar Kelimeler: Herni; akut batın

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Paraduodenal hernia (PDH) is a type of congenital internal abdominal hernia caused by an abnormal rotation and fixation of the intestine. It is classified as either right or left hernia, depending on anatomic features and embryologic origin¹ PDH's are seen three times more frequently in males than in females and right PDH is three times less common than left PDH in both sexes^{1,2} Preoperative diagnosis is rare since the clinical presentation of PDH is variable and nonspecific. Therefore, diagnosis is made mostly during surgery. Because of the risk of strangulation of the hernia contents, even small hernias are dangerous and may be fatal^{1,3} We

present a very rare case of acute intestinal obstruction and necrosis of the small intestine led by a strangulation of a right paraduodenal hernia.

CASE REPORT

A 5-year-old girl presented at the Emergency Department complaining of suddenly onset lower abdominal pain, bilious vomiting and weakness. On her history she had experienced at least one episode of similar periodical abdominal pain, which had been resolved spontaneously. Physical examination revealed that skin was dehydrated, ashen grey in color, cool and peripherally constricted. Blood pressure was 80 mm Hg systolic, pulse was 130 beats/min, and temperature 36.2°C. The abdomen was distended. There was generalized guarding and rebound tenderness at right upper quadrant. Bowel sound was absent. WBC was 33.800/mm³, and Na: 128 mEq/l, and liver and kidney function tests had increased at mild degree. Plain abdominal radiography showed distended loops of small intestine. Abdominal ultrasonography (US) revealed massive peritoneal liquid, dilated bowel and no peristalsis. Following intravenous fluid replacement and antibiotics, the patient underwent an emergent laparotomy after 4 hours of her admission. A paramedian incision was made. Approximately one liter of necrotic fluid was present within the peritoneal cavity. The caecum was mobile and it was located in the right abdomen. Most of ileum and jejunum was trapped within a right paraduodenal hernia sac (Figure 1). The incarcerated loops were gangrenous and they were reduced with difficulty, and in spite of warm water application for 15 minutes, they were not returning normal perfusion (Figure 2). The gangrenous jejunum and ileum (approx. 120 cm) was resected and a primary anastomosis was performed. We also performed an appendectomy and the hernia sac was closed with nonabsorbable sutures. The liver enzymes increased in the postoperative period and therefore the patient was sent to the university hospital for further care. Her postoperative period was uneventful afterwards, and she was discharged in excellent condition.



FIGURE 1: Sac of right paraduodenal hernia.

DISCUSSION

Paraduodenal hernia is a rare congenital internal hernia which arises from malrotation of the mid-gut with entrapment of the small intestine beneath the developing colon. It can be presented at any age but typically seen between the fourth and sixth decades of life.⁴ To the best of knowledge, there are only 33 pediatric cases with paraduodenal hernia in the English literature.^{1,5-12} Symptoms may appear at any age, including the neonatal period.^{10,13} Fifty percent of paraduodenal hernias cause obstruction; the rest is diagnosed incidentally at laparotomy or at necropsy.¹⁴ It is important to remember that it usually presents as intestinal obstruction, and before laparotomy, it is often misdiagnosed. Mortality increases significantly with delays in surgical treatment.⁸ Besides symptoms in relation with intestinal obstruction, there are reported cases of sudden death associated with strangulation. However such cases are uncommon in children¹⁵

Physical examination of these cases during a symptom-free period is likely to be normal. Physical findings are usually not diagnostic during strangulation. Occasionally, a palpable mass representing the small bowel loops contained within the hernial sac is present in association with local or diffuse abdominal tenderness.⁸ When discovered incidentally, it should be repaired to avoid the mortality associated with intestinal obstruction and



FIGURE 2: Transitional zone and gangrenous loops of jejunum and ileum.

emergent surgery (20%).^{11,13} Recent literature implicate recurrent abdominal pain and awareness of the consequences of PDH may increase the rate of early diagnosis.⁹ Our patient had one episode of similar periodical abdominal pain one month before, which had been resolved conservatively. Her recent complaints had started 16 hours before admission.

In general, preoperative diagnosis of paraduodenal hernia is elusive. Similarly, preoperative diagnosis was not obtained in the current case. Abdominal X-ray may show a cluster of dilated small bowel loops at one side of the abdomen that cannot be displaced by changing the patient's position.^{11,15} US may sometimes show an abdominal mass with cystic and tubular internal components and a surrounding membrane at one side of the abdomen, which corresponds to a cluster of encapsulated small bowel loops.^{13,15} Upper gastrointestinal series and computed tomography may show paraduodenal hernia.^{1,16} Especially, contrast-enhanced CT scan is highly recommended as the most specific method of diagnosis for PDH.^{1,13,17,18} In our case, abdominal X-ray revealed dilated loops of small bowel. US showed massive intraperitoneal fluid. Un-

fortunately, there was no time to order any contrast study.

The therapeutic surgical principles for right PDH were already set and universally accepted. They are (1) medial laparotomy, (2) right paracolic opening of the sac, (3) reduction of the incarcerated intestine with possible removal of the affected part and fixation of the intestine in the congenital position.⁹ Successful laparoscopic repair of PDH's in adults has been reported,¹⁹ but, currently, it is still not recommended for children.^{10,13} In respect of the general condition of the patient, we performed an emergent laparotomy, resected the necrotic bowel loops, an end-to-end anastomosis and closed the hernia sac.

As conclusion, the majority of patients with paraduodenal hernia admit with a nonspecific clinical picture, leading to diagnostic difficulties. Since the time interval between obstruction and necrosis of bowel may be very short, it has a high mortality. Any time consuming diagnostic work up before surgery may endanger life. The diagnosis should particularly be borne in mind in case of intestinal obstruction in patients having no previous abdominal surgery.

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