CASE REPORT

Spontaneous rupture of a congenital umbilical hernia in an infant: A rare complication

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Summary Umbilical hernia is not uncommon in children. Most of these hernias close spontaneously as the children grow; they are often remarkably free from complications. Although this did not affect the accepted principles of management of umbilical hernia, we feel that this case of spontaneous rupture is worth reporting because of the severity of the evisceration of the small intestines in a 45-day-old female infant. The presence of discoloration, ulceration, or a rapid increase in the size of the umbilical hernia signals impending rupture, particularly in cases of large umbilical hernias with small fascial defects. The physicians and parents should be informed about these warning signs and immediately consult a pediatric surgeon for a timely intervention.

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1. Introduction

Congenital umbilical hernia (CUH) is a congenital malformation, not uncommon in infants, and the male-to-female ratio is roughly equal.1 Although sometimes quite large, most umbilical hernias in children resolve on their own without any treatment if they are asymptomatic, reducible, and do not enlarge by the age of 2–3 years.2 When the fascial defect is small (<1 or 2 cm), 90% of all umbilical hernias close within 3 years (85% in some reports), regardless of size.3 Complications of an umbilical hernia that require immediate surgical intervention are incarceration or strangulation and in extremely rare cases, rupture, when the skin over the hernia breaks open, exposing the
tissue inside the hernia sac. These complications are rare as the underlying defect in the abdominal wall is larger than in the inguinal hernia of the newborn. The size of the base of the herniated tissue is inversely correlated with the risk of strangulation (i.e., a narrow base is more likely to strangulate). In developing countries, patients with emergency surgical problems present late, often after complications have developed. A total of 20 cases of spontaneous rupture of pediatric umbilical hernia have been reported in the literature and we will add such a case of a 45-day-old girl with evisceration of the small intestine.

2. Case report

A 45-day-old girl had a CUH, but it was easily reducible. Treatment was not thought to be necessary by her parents, as they were advised to let the child have conservative management by a physician. On the day of rupture, the hernia appeared normal. It developed suddenly during crying episodes after a feed. Her mother noticed that the umbilical swelling which had been reducible before, became irreducible. Crying episodes became more frequent and the swelling enlarged and rapidly became tense, and as a result of an obstructed loop of bowel within it, the abdomen became increasingly distended. Redness appeared on the inferior aspect of the skin around the swelling. Severe vomiting ensued, and this forced the parents to ask for another medical opinion. Following intravenous support at a local hospital, the baby was referred to our institute for further management. On the way to the hospital, crying episodes caused spontaneous rupture of the thinned umbilical skin with subsequent evisceration of the loops of bowel within the defect. The infant was rushed to our department. Clinically the patient was stable except for the ruptured umbilical hernia with eviscerated ileum (Fig. 1). The surrounding tissues appeared edematous, but there was no evidence of infection or necrosis. Careful inquiry failed to elicit any other cause for the rupture except for a history of paroxysms of crying probably due to incarceration of the bowel during morning hours. There was no suggestion of trauma by the napkin-pin. An assessment of the spontaneous rupture of the umbilical hernia was made. The infant was resuscitated with intravenous fluid and nasogastric tube suction, and the eviscerated bowel was covered with saline-soaked sterile gauze. The patient was also treated with sedatives, analgesics, and antibiotics. Laboratory investigations were carried out and the patient underwent an emergency operation.

At laparotomy, eviscerated ileal loops were found to be viable, but congested. The eviscerated bowel measured approximately 45–50 cm in length. The loops were reduced into the peritoneal cavity after toileting with warm normal saline. The rest of the viscera looked normal. The size of the ruptured skin hole measured approximately $2 \times 1.5$ cm and that of the fascial defect, $1.5 \times 1.2$ cm. The hernia sac and overlying skin were excised. A repair of the umbilical hernia was carried out and the abdomen was closed in layers. The postoperative period was uneventful.

3. Discussion

Spontaneous rupture of an umbilical hernia in children is extremely rare and occurs predominantly in cirrhotic patients. The first reported case of spontaneous rupture of an umbilical hernia from ascites was reported by Mixter in 1901. MacLean recorded spontaneous rupture in a 3-month-old infant after a bout of crying. Ninh and Hoanh reported a similar case in a 20-day-old malnourished infant. Strange recorded a spontaneous rupture in a 3-month-old Chinese child, where death occurred on the 3rd day after surgery. Extrusion of the intestine occurred through the wide umbilical ring and the child died. Brandon and Whitehouse reported an infant who was brought to
hospital and was found to have a small triangular piece of omentum protruding through apparently normal skin at the apex of the hernia. The surrounding tissues appeared normal, and there was no evidence of infection or necrosis. Three Nigerian infants with spontaneous rupture of an umbilical hernia, who were brought to hospital between 1983 and 1996, were described by Ahmed. In two, the hernias developed in the neonatal period following umbilical sepsis. Rupture occurred at the ages of 2 months and 3 months, respectively, and was probably precipitated by raised intra-abdominal pressure resulting from excessive crying. The third child had a large, ulcerated umbilical hernia which ruptured at 10 months and was precipitated by damage to the overlying skin. The children were treated successfully. Jamabo reported a spontaneous rupture of an umbilical hernia with evisceration of small intestines in a 16-year-old girl aggravated by severe retching and vomiting. Spontaneous rupture of umbilical hernia in infants is precipitated by a sudden rise in intra-abdominal pressure due to respiratory infection, intussusception, and ascites. It may also result from damage to overlaying skin in the form of umbilical ulceration or sepsis, failure of the fresh umbilical wound, or a weak scar that is unable to withstand the stress of raised intra-abdominal pressure associated with coughing, vomiting, or defecation in early life. The precipitating factors for rupture may also include local trauma. In our patient, rupture was probably precipitated by incarceration of the bowel since the skin showed swelling, and the hernia could not be pushed back, causing the delay in treatment. Crying episodes which led to a sudden rise in intra-abdominal pressure and the stretching and thinning of the overlying skin further precipitated the event.

Rupture of CUH should be distinguished from gastroschisis and ruptured omphalocele, as they are the two most common congenital abdominal wall defects, but the resuscitation of children with CUH is similar to that for these latter two conditions. Primarily the treatment is the prevention of heat loss from the open abdominal cavity and exposed bowel by wrapping the herniated bowel in warm saline-soaked gauze, drying of the baby, and the use of a radiant heat warmer. The child should be positioned on the right side to prevent kinking of the mesentery and resultant bowel ischemia.

CUH is remarkably free from complications, with the most common being incarceration. Rupture of CUH is extremely rare globally, especially in India. The presence of discoloration, ulceration, or a rapid increase in the size of the umbilical hernia signals impending rupture, particularly in cases of large umbilical hernias with small fascial defects. Such manifestations justify prevention by early repair of large umbilical hernias with small fascial defects and irreducible umbilical hernias with or without local skin erosion.

References