Hernia (2012) 16:597–599
DOI 10.1007/s10029-011-0785-1

CASE REPORT

Management of congenital giant inguinal scrotal hernias in the newborn

N. Khozeimeh · M. C. W. Henry · C. A. Gingalewski · E. P. Nadler

Received: 20 October 2010 / Accepted: 9 January 2011 / Published online: 23 January 2011
© Springer-Verlag 2011

Abstract Giant inguinoscrotal hernias are a rare entity seen largely in the adult population. Presentation in the child is more unusual, with only one case previously documented. As there is scant literature regarding these hernias in children, their management may be challenging. Here, we present the case of a newborn born with giant bilateral inguinal hernias complicated by in utero perforation and meconium peritonitis managed by laparoscopy and then laparotomy for repair. The case illustrates several points that may be useful for pediatric surgeons who may encounter this condition.

Keywords Giant hernia · Pediatric · Inguinal

Introduction

In the adult literature, giant inguinoscrotal hernias are defined as 'hernias that extend below the mid-point of the inner thigh in the standing position [1]. Although described in the literature, these are still considered rare in adults. This entity is even more unusual in children, and previously unrecognized in newborns; there has only been one report in a 5-year old in the English literature over the past 40 years [2]. Given the scant literature regarding these hernias in children, their management may be challenging. Specific considerations one may encounter in newborns include the possibility of loss of abdominal domain in the newborn, and whether there was an in utero event in conjunction with the lesion. Here, we present a case of a newborn born with bilateral giant inguinal hernias that was managed initially with laparoscopy and then laparotomy for bowel resection, anastamosis, and hernia repair.

N. Khozeimeh (✉) · M. C. W. Henry · C. A. Gingalewski · E. P. Nadler
Department of Pediatric Surgery,
Children's National Medical Center,
111 Michigan Avenue, NW, Washington, DC 20010, USA
e-mail: nini@gwu.edu

Case report

A male neonate born at 39 4/7 weeks was transferred to our institution for evaluation of a scrotal mass. The scrotal mass was first diagnosed on prenatal ultrasound (US) 1 week prior to birth. The child's birth was uneventful, but a surgery consult was requested due to the scrotal mass. A scrotal US was recommended and performed, showing peristalsis and bowel loops with speckled hyperechoic foci suggestive of peritoneal calcifications. On exam, his abdomen was noted to be flat and soft with large bilateral inguinal hernias. The scrotum extended to the patient's knees with palpable bowel loops (Fig. 1). The hernias were partially reducible with no evidence of incarceration. Secondary to the large hernias, the testicles were difficult to assess.

The patient underwent an upper gastrointestinal contrast study that did not reveal any evidence of gross perforation. Oral contrast was seen traversing into the hernia and through the small bowel and the large intestine on follow-up X-ray examination (Fig. 2). He also underwent repeat scrotal US which visualized bilateral testes and herniated bowel loops but no calcifications as previously visualized.

Due to the contradictory clinical picture of a benign physical exam, the intact intestinal continuity on contrast examination, and the conflicting US reports, the decision was made to proceed to the operating room on the 3rd day



Fig. 1 Shortly after birth the patient was found to have an enlarged scrotum extending to his knees with palpable bowel loops

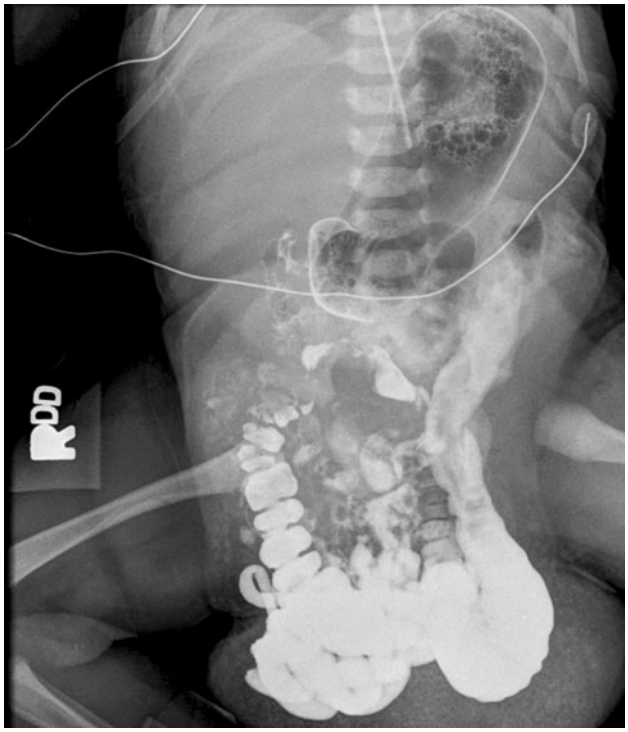


Fig. 2 Abdominal X-ray after upper gastrointestinal series shows contrast traversing through the small and large bowel. Ileal loops are seen in the *right* hernia sac and colon is noted in the *left* hernia sac

of life for diagnostic laparoscopy and bilateral inguinal hernia repair. Diagnostic laparoscopy revealed hemosiderin staining and meconium throughout the abdomen. In addition to the fresh meconium, a fair amount of stool was expressed from the left groin upon attempting reduction. The decision was then made to convert to a lower midline laparotomy. Upon entering the abdomen, copious meconium was found and evacuated. The bowel from the right inguinal hernia was returned to the abdomen as the right inguinal hernia contained the preponderance of the small bowel. After reduction, a small viable right testicle was identified that was eventually tacked in the scrotum. The hernia was then repaired including repairing the floor of the inguinal canal without compromising the cord structures.

The left inguinal hernia was then inspected and found to contain only the colon, which was then completely reduced. The defect on the left side was much smaller than that of the right side. The hernia was repaired internally by closing off the hernia sac. The left testicle was palpable and larger than the right testicle and remained in the scrotal sac, therefore no orchiopexy was required.

Due to the large amount of meconium stained fluid, the bowel was examined for any signs of perforation. The small bowel was inspected from the ligament of Treitz to the ileocecal valve and no small bowel injury was noted. However, on evaluation of the colon, a contained perforation in the transverse colon was found. This portion of transverse colon was resected and a primary anastamosis was performed. Transrectal irrigation of the bowel showed no evidence of extravasation at the anastamosis. The abdomen was closed and a 7-french Jackson-Pratt drain was placed in the right scrotum.

The patient was transferred to the Neonatal Intensive Care Unit intubated but was quickly extubated on post-operative day 1. Post-operatively, a nasogastric tube was placed for decompression and the patient was kept nothing per os with parenteral nutrition. Bowel function returned on post-operative day 4 and the patient was started on enteral feeds. Feeds were slowly advanced to goal, tolerated, and discharged thereafter.

Post-operatively the patient's excessive scrotal skin persisted and he has been referred to our pediatric urologists for scrotoplasty and management of his buried penis.

Discussion

Inguinoscrotal hernias commonly present in adults as a long-standing hernia that has enlarged and presents either as an obstructive emergency or electively. The surgical treatment of giant inguinoscrotal hernia has been described in the adult population, albeit rarely. There are few surgical techniques described for repair of these hernias as they are uncommon and vary from case to case.

Pre-operative pneumoperitoneum (PPP) is a method first described in 1947 by Moreno to expand the abdominal domain [3, 4]. Air is insufflated into the peritoneal cavity on successive days in the hope of increasing the abdominal cavity size. There are few reports of this application in the adult literature as it usually requires a prolonged hospital stay with concern for spread of insufflated volume into the hernia space [5–7]. The adult literature also describes a

'debulking procedure', which involves resection of the herniating organs—usually the colon, small intestine, or omentum [8, 9]. The surgical approach for repair can vary from midline laparotomies, inguinal incisions, or a combination of both.

Only one case in the pediatric population has been described in the literature: a 5-year-old male with a ventriculo-peritoneal shunt who was found to have a giant inguinoscrotal hernia that developed over the course of several years [2]. The hernia was repaired using the Bassini method with a polypropylene mesh. No pre-operative pneumoperitoneum or debulking was utilized.

Repair of our patient's hernia varies from the previously described cases in the literature as it was diagnosed prenatally and was complicated by an in utero perforation. Although in utero perforations often heal spontaneously and do not require surgery, we had concern for continued spillage. Synthetic mesh has been used in the adult population for repair of large hernias [10, 11]. However, synthetic mesh is not ideal in situations with contamination in the field, and is rarely used in young children. Debulking is also not preferred in children, as preservation of bowel length in newborns and infants is imperative to prevent short bowel syndrome and its inherent complications. Preoperative pneumoperitoneum to enhance abdominal domain is also not an option as there was concern for perforation, and would be difficult to manage in a newborn infant.

Our technique focused on evaluation of the hernias prior to deciding on operative technique (laparotomy vs inguinal incision). We recommend diagnostic laparoscopy to begin any operation of a child with giant inguinal hernias. Laparoscopy allows the surgeon to evaluate the extent of bowel involved in each hernia, evaluate the hernia defect, and assist in reduction of the hernia. Repair could then be approached via an inguinal incision or, in some cases, a primary laparoscopic hernia repair may even be feasible. The timing of surgery is also an important consideration. In our case, with concern for meconium peritonitis, the decision was made to proceed early to the operating room and with an open repair. However, if there were no concern for perforation, the option of delaying the surgery until the child had grown may have been entertained. The issues of abdominal domain may be mitigated by delaying the repair.

In summary, we present here a case of a prenatally diagnosed giant inguinal/scrotal hernia complicated by in utero perforation and meconium peritonitis. The case illustrates several points that may be useful for pediatric surgeons who may encounter this condition. In patients where perforation is part of the differential diagnosis, an early diagnostic laparoscopy followed by hernia repair is our recommended course of action. If the patient has no indication of intestinal perforation, a delayed approach may be undertaken. The utility of laparoscopy in the latter condition is less clear, but may help determine the type of repair to be performed.

References

1. Hodgkinson DJ, McIlrath DC (1984) Scrotal reconstruction for giant inguinal hernias. Surg Clin North Am 64:307–313
2. Stahl TJ, Snyder CL, Leonard AS (1989) Giant inguinal hernia in a 5-year-old with hydrocephalus: a case report. J Pediatr Surg 24:1198–1200
3. Moreno IG (1978) The rational treatment of hernias and voluminous chronic eventrations: preparation with progressive pneumoperitoneum. In: Nhyus LM, Condon RE (eds) Hernia, 2nd edn. Lippincott, Philadelphia, pp 536–560
4. Moreno IG (1947) Chronic eventration and large hernia: preoperative treatment by progressive pneumoperitoneum. Surgery 22:945–953
5. Forrest J (1979) Repair of massive inguinal hernia with pneumoperitoneum and without using prosthetic mesh. Arch Surg 114:1087–1088
6. Beiles MB (1980) Progressive pneumoperitoneum in the treatment of massive inguinal hernia. S Afr J Surg 18:27–30
7. King JN, Didlake RH, Gray RE (1986) Giant inguinal hernia. South Med J 79:252–253
8. Mehendal FV, Taams KO, Kingsnorth AN (2000) Repair of giant inguinoscrotal hernia. Br J Plast Surg 53:525–529
9. El Saadi AS, AL Wadan AH, Hamerna S (2005) Approach to a giant inguinoscrotal hernia. Hernia 9:277–279
10. Merrett ND, Waterworth MW, Green MF (1994) Repair of giant inguinoscrotal hernia using marlex mesh and scrotal skin flaps. Aust N Z J Surg 64:380–383
11. Kovachev LS, Paul AP, Chowdhary P, Choudhary P, Filipov ET (2010) Regarding extremely large inguinal hernias with a contribution of two cases. Hernia 14:193–197