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Case Report

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The Use of FlexHD® in the Management of a Giant Inguinoscrotal Hernia Associated with Loss of Domain

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Abstract

Giant inguinoscrotal hernias are uncommon in the practice of a general surgeon. Patients typically present with marked disruption in their quality of life and operative management of these hernias can be quite challenging, especially when accompanied by loss of domain. Various approaches to the management of giant inguinoscrotal hernias associated with loss of domain have been described in the literature. This case report describes the use of FlexHD® allograft and component separation with small bowel resection in the repair of a large left inguinoscrotal hernia in an elderly African American male.

Keywords: Allograft; Component Separation; FlexHD®; Hernia; Inguinoscrotal; Repair;Resection;Small Bowel

Introduction

Giant inguinoscrotal hernias increase in size over several months to years and can eventually contain significant lengthsof bowel. In addition to the risk of incarceration and obstruction, this condition can lead to long term deformity and disability causing back pain, stretching of the mesentery, and edema of the bowel. As these hernias develop, patients experience loss of domain, wherein the decreased volume of the abdominal cavity is no longer able to accommodate the herniated boweland the hernia sac behaves like a secondary abdominal cavity. This presents the challenge of returning the previously herniated bowel content back into the abdomen while minimizing the risk of an abdominal compartment syndrome. Diverse techniques have been employed to repair these defects but with limitations and associated complications.

Case Presentation

Our patient is a 67-year-old male with a past medical history of hypertension and gout who was referred for evaluation of a non-reducible left indirect inguinoscrotal hernia.He first noticed a bulge in his left groin about 5 years prior to presentation and over the last year it had rapidly increased in size prompting surgical evaluation. He denied any pain or symptoms of obstruction. Examination revealed an obese male with a body mass index (BMI) of 36 with a large left inguinoscrotal hernia approximately 25cm in diameter that descended to just above his knees (type II); (Figure 1A).

Figure 1(A-B): The preoperative presentation of the inguinoscrotal hernia (A) and scrotum following reduction (B).

There was no inflammation, excoriation or ulceration of the scrotal skin and no focal tenderness over the hernia. A Computed Tomography (CT) scan with oral and Intravenous (IV) contrast revealed a left-sided herniation of both small and large bowel into a sac confined to the scrotum. Operative planning involved a multidisciplinary team consisting of general surgery, plastic surgery and urology given the possibility of bowel resection, orchiectomy, and need for abdominal wall reconstruction,likely with some form

of bioprosthesis.

An 18cm curvilinear inguinoscrotal incision was made crossing the inguinal ligament to expose the internal inguinal ring. However, although the internal ring was very large, the contents of the sac could not be easily reduced.The decision was made to perform a lower midline laparotomy to attempt reduction from within the abdominal cavity. With gentle traction, the hernia was only partially reduced.Attempts at reduction using bimanual gentle traction from the peritoneum and gentle pushing from the groin were unsuccessful. The sac was eventually openedand the bowel contents eviscerated.There was a substantial amount of small and large bowel in the hernia including the cecum, appendix and the ascending and descending colon.The mesentery of the bowel was significantly thickened (6cm) and precluded complete reduction. The decision was made to resect approximately 180cm of small bowel with division of the mesentery.Reduction was successful post resection with no complications.The bowel was then examined in its entirety from within the abdomen and appropriately oriented with primary anastomosis of the resected ends. The remaining small bowel measured 260 cm with the entire colon intact. The urology team evaluated the testicle and cord structures, which proved to be viable with no need for orchiectomy.The floor of the inguinal canal was then reconstituted and approximated using a 5x2.5 cm patch of Alloderm®(LifeCell™, Bridgewater, NJ) and a 10 F Jackson-Pratt (JP) drain was placed in the scrotum.

The plastic surgery team then proceededto close the midline fascial defect, approximately 15 cm centered at the umbilicus. The rectus muscle was medialised bilaterally by incising the conjoined tendon,and the midline defect as well as the left lower abdominal wall and inguinal floor were reconstructed with aFlexHD®(Musculoskeletal Transplant Foundation, Edison, NJ) underlay. A 15 F Blake drain was placed between the bioprosthesis and the posterior rectus sheath and a 19 F Blake drain in the subcutaneous space.The patient recovered well from the operation and was extubated the next morning. However, his course was complicated by neuropraxia of the left arm and alcohol withdrawal from which he recovered fully and was discharged home on postoperative day 10.The patient returned to clinic for follow-up 1 week after discharge (POD17). He was tolerating a full diet and there was minimal tenderness around the well-healing incisions on examination.He reported episodes of diarrhea and was informed that it was likely secondary to the partial small bowel resection and his body would adapt over time. He was asked to follow-up if it continued. Also on examination, the patient was found to have developed candidiasis of the scrotum, having expressed fear of washing the surgical sites. He was counseled again on proper wound care and prescribed Nystatin cream, which resolved the infection. The patient again returned to clinic 4 months after surgery for final follow-up. He had no further concerns and described his bowel function as normal. There was no evidence of reherniation. The possibility of removing his excess scrotal tissue was discussed, but he expressed no desire to proceed.

Discussion

The appropriate management of giant inguinoscrotal hernias can be challenging, especially with accompanying loss of domain. There are various techniques that have been described in the literature, both tension and tension-free.Some of these include the use of preoperative progressive pneumoperitoneum to reestablish domain prior to repair, the Rives-Stoppa technique which utilizes a pre-peritoneal inorganic mesh for tension-free closure of the abdominal cavity[1], and laparoscopically pulling the distal sac out of the scrotum and fixing it to the posterior inguinal wall[2]. Though it is generally not desirable, bowel resection is sometimes necessary for successful repair using these techniques. This patient's small bowel resided in his scrotum for such a significant period of time that it is likely that adaptive processes occurred including thickening of the mesentery to withstand the temperatures of the scrotum. This edematous mesentery of the small bowel made reduction of the hernia difficult and as such, resection was performed to facilitate repair.

Component separation, advancement of the rectus abdominus muscle medially via fascia release, is typically employed to achieve a tension-free closure of a midline ventral defect. First described in 1990, it has in many instances, replaced the older techniques of myocutaneous flaps and split-thickness skin grafting for closure of complex abdominal wall defects.FlexHD® is an acellular hydrated dermal matrix derived from human allograft skin developed to facilitate abdominal wound closure in hernia repairs(Figure 2).

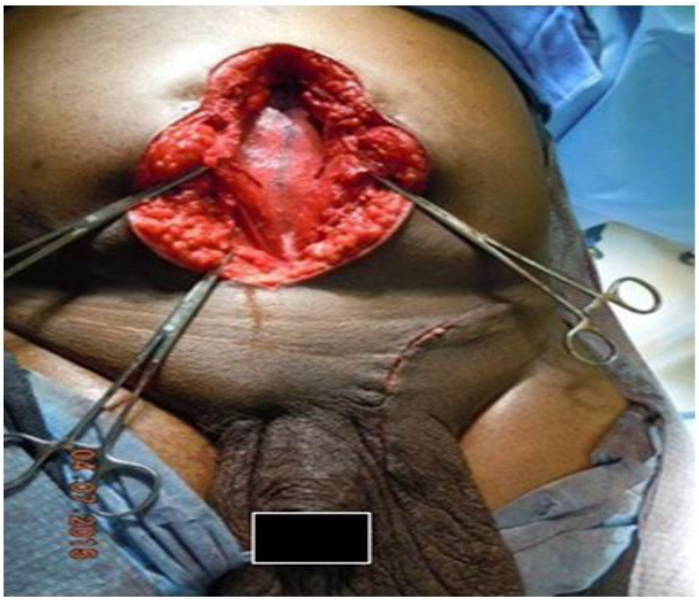

Figure 2: TPlacement of FlexHD® with component separation to achieve primary laparotomy incision closure.

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