



E-ISSN: 2616-3470

P-ISSN: 2616-3462

© Surgery Science

www.surgeryscience.com

2019; 3(2): 28-30

Received: 15-02-2019

Accepted: 19-03-2019

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Repair of the giant inguinal hernia: More than mere reduction and reinforcement

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DOI: <https://doi.org/10.33545/surgery.2019.v3.i2a.09>

Abstract

Inguinal hernia repair is among the most commonly performed surgeries across the globe. Lichenstein's tension-free technique of open hernioplasty remains the gold-standard, and laparoscopic techniques have gained popularity over recent decade. Giant inguinal hernias that extend below the midpoint of the inner thigh are uncommon, challenging to manage and are more prone for post-operative complications. There is no standard treatment protocol or surgical procedure designated for the management of giant hernias which are associated with grossly disrupted local tissue architecture and compromised tissue integrity and dynamics. Large volumes of omentum and bowel make up the contents of the hernia sac, which with the natural pathological processes involved, further complicate the management. This care report and review of literature aims to elucidate a clear management protocol for Giant Inguinal Hernias.

Keywords: Inguinal hernia, giant inguinal hernia, hernia, loss of domain, component separation

Introduction

Repair of abdominal hernias are amongst the most commonly performed elective surgeries across the globe, accounting for over 15% of all surgeries performed every year ^[1]. Over 20 million hernias are operated annually ^[2], and with global incidence of hernia surgery being 3 per 1000 population ^[2], India would account for about a quarter of all hernia surgeries annually, proving a high disease burden of the condition on the subcontinent.

The gold-standard procedure remains Lichenstein's tension-free mesh repair hernioplasty, and laparoscopic techniques have gained acceptance in recent times ^[3].

Giant inguinal hernias are defined as those that extend beyond the midpoint of the inner thigh when the patient stands erect ^[4]. Alternatively, an irreducible hernia present for over 10 years measuring at least 30cm on antero-posterior diameter or 50cm on a latero-lateral diameter also defines the condition ^[5].

These are long-standing conditions and at presentation years or even decades of herniation have compromised the local tissue integrity, thus complicating their management.

Case report

A 60-year-old man presented with a 20-year history of left inguinoscrotal swelling following surgery for bilateral inguinal hernia. The swelling was first noticed about 1 year after surgery and was slowly and gradually increasing in size, but as there was no associated pain or discomfort until about 6 months back, when he started having intermittent attacks of pain and bloating. He did not suffer from any comorbidities but was a chronic smoker with a *40-pack-year* index.

Examination revealed a large left-sided inguinoscrotal swelling, which descended to the mid-thigh on standing erect (Figure 1). There were no features of inflammation and the swelling was non-tender and irreducible.

Groin crease surgical scars were noted bilaterally, trademarks of the previously performed hernia repairs. Divarication of recti was seen on head and leg raising tests with the patient supine; Malgaigne's bulges in both flanks, paraumbilical hernia and a small epigastric hernia were also clinically demonstrable.

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Fig 1: Left Giant Inguinal Hernia

Multiple hypopigmented patches were seen on the abdomen. They were non-pruritic and did not reveal scaling, suggestive of pityriasis versicolor (figure 1). Grade one clubbing was noted in all digits, and a BMI of 29.4 suggested he was over-weight and nearing obesity.

Routine investigations were unremarkable and patient was counselled regarding smoking cessation, lifestyle modification

and was prepared for surgery, however on the morning of the scheduled procedure he rejected the surgical option citing failure of the previous procedure and the resulting recurrent hernia being even larger than the initial one.

At one month follow up he had not adopted any lifestyle changes nor had he tapered his smoking habit, but claimed frequency of symptoms had reduced. Further attempts at counselling were brushed aside. As of 6 months later, he had not returned for follow-up.

Discussion

Giant hernia are a potential source of severe distress to the patient, and may hamper basic functionality by interfering with mobility and cause pressure effects manifested by urinary retention and intestinal obstruction [5]. Intertrigo and emaciation of scrotal skin progressing to scrotal skin ulceration is also frequent. These complications are associated with high morbidity and mortality.

Evaluation of patient involves radiological assessment of the contents of the sac. Barium enema is an effective and economical way by which the contents can be identified, and is preferable to colonoscopy, as the latter is associated with risk of bowel perforation when navigating the hernia sac [6]. Pre-operative colonic assessment is important since bowel resection might be required based on viability and reducibility of the herniated bowel [7].

A recently proposed classification system [7] categorizes giant hernias into three types based on the severity and extent of herniation (Table 1). Our patient had a Type 1 Giant Hernia.

Table 1: Trakarnsahna *et al.* Classification of Giant Hernias and their management

Category	Extent of Hernia	General Management	Surgery
Type I (Mild)	Extends below mid inner thigh but above arbitrary point at lower thigh	Usually can be reduced with force.	Simple hernioplasty with polypropylene mesh
Type II (Moderate)	Extends below lower thigh arbitrary point but not beyond patella	May require resection of contents	Debulking as required, Marlex mesh scaffold and creation of ventral defect for volume incrementation.
Type III (Severe)	Extends below patella	Required resection of contents and abdominal volume increment	

Manual reduction should be attempted in all cases, failing which surgical management is considered. Surgery is performed via the conventional transverse groin crease incision in order to reduce the hernia sac and accommodate the returning bowel by debulking, which can be achieved by omentectomy or bowel resection; and hence preoperative bowel preparation is mandatory. Assessment of spermatic cord integrity and testicular viability should be performed [7].

The long-term herniation of abdominal viscera results in changes in pressure gradients, predisposing an attempted repairs to complications. The abdomen loses its tone and becomes habituated to the extra space created by the displaced viscera, a phenomenon called *loss of domain*. Reduction of the hernia disturbs this adapted equilibrium, and can result in cardiorespiratory failure, wound dehiscence, abdominal compartment syndrome, potentially fatal intra-abdominal hypertension and in the long-term, recurrence of the hernia [8]. The challenge imposed by the loss of domain may be circumvented by debulking procedures, phrenectomy, perioperative pneumoperitoneum, creation of ventral hernias with Marlex mesh and scrotal skin flaps [9], or laparoscopic component separation, whereby release of the rectus muscle from the posterior rectus sheath is undertaken, resulting in reduced tension and enlargement of the abdominal space [8].

Redundant scrotal skin may be excised or used for reconstruction of the anterior abdominal wall if volume enhancing ventral hernias are to be created [10]. Orchiectomy may be indicated in case of adhesions to the hernia sac, to prevent post-procedural orchitis or facilitate closure of the hernia defect. If laparoscopic repair is being undertaken, prior reduction of volume of herniated viscera should be performed to facilitate the reposition maneuver [10].

Conclusion

Surgery for giant inguinal hernias is challenging and limited by the *loss of abdominal domain*, and attempted return of the herniated viscera back into the abdomen is oft met by violent pressure changes and resulting morbidity and mortality. Efforts should be made to prevent delayed intervention for large hernias with the potential for catastrophic pressure effects. The Loss of domain should be treated specifically as well, for it will comprise any attempts at repair. Creation of adequate volume either by debulking or volume enhancement procedures is imperative for successful repair.

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