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Bilateral inguinoscrotal hernia with gastric contents and subsequent perforation: Lessons in operative management

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ABSTRACT

INTRODUCTION: Inguinoscrotal hernias often contain bowel, but it is rare to see it contain part or all of the stomach. These patients tend to present in extremis.

PRESENTATION OF CASE: This is the case of a 74 year old gentleman who presented in obstruction and acutely unwell from giant bilateral inguinoscrotal hernias. CT scan confirmed the left hernia contained the majority of the bowel and stomach. He underwent laparotomy and repair of the left sided hernia. Intraoperatively he was also found to have a gastric perforation and underwent distal gastrectomy. 7 days post operatively he returned to theatre for repair of his right sided hernia. The patient made a full recovery.

DISCUSSION: Review of similar literature highlights numerous surgical methods in repairing these hernias. A two-stage approach appears to mitigate the risk of abdominal compartment syndrome, whilst also allowing for an interval hernia repair in a non-hostile environment. Gastric perforation repair technique also varies, with majority of literature reporting primary repair.

CONCLUSION: We hope our approach to management can help guide others faced with similar challenging cases. Moreover, it highlights some operative challenges including dealing with associated gastric perforation and mitigating the risk of abdominal compartment syndrome.

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1. Introduction

Inguinoscrotal hernias regularly contain bowel, however it is rare to see an inguinoscrotal hernia containing all or part of the stomach. Moreover, when these patients present acutely they tend to be in extremis. This report outlines an approach to such a case and in turn can hopefully guide other teams faced with similar challenging cases. In particular, it highlights operative difficulties such as managing associated gastric perforation and mitigating the risks of abdominal compartment syndrome.

2. Presentation of case

The 74-year old male patient in this case presented with a 24-h history of multiple episodes of dark vomitus and generalised abdominal tenderness. This was on a background of bilateral, long-standing, large, irreducible inguinoscrotal hernias for which he had not sought medical attention. Further past medical history included hypertension and type two diabetes mellitus. He was independent

with all activities of daily living and his only regular medication was an ACE-inhibitor.

Initial examination revealed the abdomen was tender but not peritonitic. Bowel sounds were present but quiet on auscultation. Additionally, the inguinoscrotal hernias were tender and not reducible.

The patient's observations on admission were within normal parameters apart from a tachycardia of 117bpm. Bloodwork demonstrated only a mildly raised CRP and mild acute kidney injury (creatinine 137 µmol/L). However, his lactate on venous blood gas was raised at 3.9.

An erect chest radiograph performed was normal.

Subsequent CT scan of the abdomen and pelvis showed massive bilateral inguinal hernias with the majority of small bowel and stomach extending into the left side and air fluid level within it suggestive of perforation. Coronal and sagittal sections can be seen in [Figs. 1 and 2](#) respectively.

The patient was resuscitated and underwent a midline laparotomy. The stomach within the left inguinal hernia was found to be necrotic and had perforated at the antrum. The decision was made to carry out a distal gastrectomy. A gastro-jejunostomy was formed with Echilon 60 and the enterotomy was then closed with Stratifix. An inguinal incision was then made, and the left hernia repaired using a Bassini technique, preserving the cord. However, the right

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Table 1
Table detailing operative approaches in prevention of abdominal compartment syndrome.

Author	Summary of case	Treatment strategy for prevention of abdominal compartment syndrome	Authors comments
Sayad et al. 2018	Giant inguinoscrotal hernia with associated gastric perforation. Primary suture repair of gastric perforation. Elective inguinal hernia repair 3 months later.	Two stage closure	"we were able to avoid an initial repair of a complex hernia. . . where the intra-abdominal pressure is already increased secondary to the peritonitis and the ileus."
Staubitz et al. 2017	Right sided inguinoscrotal hernia containing 2/3rds small bowel, colon. Midline laparotomy with inguinal hernia mesh repair. Abdomen closed using component separation.	Component separation.	Patient declined pneumoperitoneum. They opted to avoid bowel resection given risks associated with anastomosis. Abdomen closed using component separation as contents were "too voluminous to allow direct tension-free suturing of the lower part of the laparotomy wound" Minimal risk to patient. Of less utilisation in acute presentations.
Oprea et al. 2014	Study assessing use of pneumoperitoneum in 17 patients with loss of domain secondary to giant abdominal wall defects.	Pneumoperitoneum	
Lajevardi et al. 2015	Giant inguinoscrotal hernia with associated 10 cm lesser curvature gastric perforation. One stage repair approach taken with primary gastric repair, and hernia repair with pre-peritoneal mesh. Subtotal colectomy also performed with ileo-sigmoid anastomosis.	Bowel resection	Subtotal colectomy performed to allow primary abdominal wall closure and reduce volvulus risk.
Fitz et al. 2016	Bilateral giant inguinoscrotal hernia, containing distal stomach duodenum and head of pancreas on right. Left side contained almost entire small bowel and colon. 11 cm perforation on lesser curvature of stomach. Initial laparotomy and primary repair of gastric perforation followed by relook laparotomy and Bassini repair of hernia.	Delayed primary closure	"Due to the chronic nature of the hernias, there was a substantial loss of domain which prohibited abdominal closure. The large bilateral inguinal hernia sacs were reduced into the peritoneal cavity and temporarily sutured to the abdominal sidewall to prevent re-herniation, and a wound vacuum-assisted closure device was placed"



Fig. 1. Coronal plane CT image.



Fig. 2. Axial plane CT image.

was not repaired in order to reduce the risk of abdominal compartment syndrome. The patient was managed post-operatively in ITU.

The patient recovered well post-operatively but failed to open his bowels or pass flatus and CT abdomen and pelvis on day 7 showed a tight necked loop of obstructed small bowel in the right inguinal hernia.

He was immediately returned to theatre and underwent open mesh repair of the right inguinal hernia, with the return of the small bowel to the abdominal cavity relieving the obstruction. Corrugated drains were inserted, and the patient was again managed post-operatively on ITU. He had a 4 week inpatient stay after this owing to an episode of atrial fibrillation and 12 × 10 cm right groin collection requiring ultrasound guided drainage.

Nonetheless at follow up one month post discharge he had made a remarkable recovery with well healed wounds and he was completely asymptomatic, with no recurrence.

At 6 month review the patient continued to show no signs of recurrence.

3. Discussion

This a rare case and as such its value lies in adding to the limited body of published material on the management of giant inguinoscrotal hernias with gastric contents.

Of note in this case is how the risk of raised intra-abdominal pressure was managed. It has long been known that the reduction and repair of large hernias involves the risk of suddenly increasing abdominal pressure and compromising respiration, due to loss of domain [1]. Many techniques have been used to mitigate this risk which can be seen in Table 1. These include a one stage complete repair, two stage technique with initial perforation repair and delayed hernia repair, delayed primary closure, pre-operative progressive pneumoperitoneum, abdominal component separation and resection of bowel [1–5]. In this case we opted for a two stage repair, only repairing the immediately offending left hernia and returning to repair the right side at a later date to reduce the risk of abdominal compartment syndrome. However, this had the unintended consequence of leading to post operative obstruction from the unrepaired side. One stage complete repair with close observation post operatively may be a superior method, as utilised elsewhere with no ensuing abdominal compartment syndrome [6].

In this case the patient was acutely unwell and required distal gastrectomy due to perforation of the stomach. It is thought that the descent of the greater omentum into the large hernial sac draws the stomach down [7], which in turn stresses the peritoneal attachments and vasculature putting it at high risk of perforation. Gastric perforation has been regularly reported in other cases of inguinoscrotal hernias containing stomach and seems to be a recurrent issue. However, it has been invariably managed with primary repair rather than gastrectomy as in this case [4,5,8,9].

Midline laparotomy with inguinal incision for repair of hernia defect, were the incisions of choice in the operative management of our patient. Similar literature of giant inguinoscrotal hernias with associated gastric perforation highlights a varied approach.

Since the turn of the millennium there have been four reported cases of giant inguinoscrotal hernia with associated gastric perforation. Two of these opted for a two-stage approach to management. Sayad et al. employed a two stage approach with initial laparotomy and primary suture repair of gastric perforation, followed by open inguinal hernia repair at a 3-month interval [2]. Fitz et al. used a two stage approach, initially laparotomy with primary suture repair of the gastric perforation with the hernias reduced and temporarily sutured to the abdominal side wall. A wound vacuum-assisted closure device was placed, due to difficulty closing the abdomi-

nal wall. One week later the patient underwent relook laparotomy and Bassini repair of the hernia [5]. Lajevardi et al. opted for a one stage approach with primary gastric repair and hernia mesh repair, using midline laparotomy only [4]. Doggar et al. opted for a similar approach to us. They utilised a midline laparotomy and performed gastrectomy with end-to-end anastomosis. During the same operation they made an inguinal incision and repaired the hernial defect [10].

All four cases report initial success but do not comment on long term follow up outcomes. We are the only case to document successful results from surgical management of giant inguinoscrotal hernia containing stomach, with long-term follow up to the length of six months.

We feel midline laparotomy allows for optimal management and repair of the gastric perforation, alongside the standard open approach for inguinal hernia repair.

As seen from review of the literature, there is currently a breadth of approaches to the management of giant inguinoscrotal hernias with and without gastric perforation, despite a brevity of literature. Indeed, a formal review of similar cases would be helpful in forming a consensus on optimum management. This case was reported in line with the SCARE guideline [11].

4. Conclusion

These hernia often present in extremis, and can be complicated by gastric perforation and require gastrectomy or primary repair. Patients are at risk of raised intra-abdominal pressure post-operatively due to loss of domain, and surgeons should be aware of this risk when planning operative management.

Conflicts of interest

None.

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Ethical approval

Ethical approval was not required for this manuscript.

Consent

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Author contribution

Study concept and design: Daniel Campioni-Norman and Joseph Heylen

Data collection and interpretation: Daniel Campioni-Norman and Joseph Heylen

Interpretation and organisation of figures: Daniel Campioni-Norman and Joseph Heylen

Writing the paper: Daniel Campioni-Norman and Joseph Heylen

Critical revision of the manuscript for important intellectual content: Daniel Campioni-Norman and Joseph Heylen

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