Case Report

Gallbladder herniation and cholecystitis within a parastomal hernia: a case report and literature review

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Abstract: Gallbladder herniation with associated cholecystitis is an unusual presentation amongst parastomal hernias. We describe a case of a 63-year-old lady with a previous subtotal colectomy and end ileostomy for perforated diverticulitis, who developed a parastomal hernia containing the gallbladder with consequent cholecystitis and pancreatitis. She underwent a midline laparotomy, cholecystectomy and Sugarbaker repair of the parastomal hernia using a biological porcine dermal collagen mesh and remains well 5 months after surgery. Herniation of the gallbladder via a parastomal hernia is uncommon with 10 cases reported to date. While conservative and surgical measures have been applied in such cases with varying outcomes, optimal treatment remains debatable. Surgery may, however, play a role in counteracting acute complications including obstruction and inflammation. While utilising meshes for hernia repair may be a viable approach, the use of biological meshes may be preferred in a contaminated surgical field. Proper case selection is required and has to be weighed against the risks of complications and higher costs to better optimise patient outcomes.

Keywords: Cholecystitis; parastomal hernia; hernia; stoma; case report

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Introduction

Parastomal herniation is a common occurrence following stoma creation. Depending on the type of stoma created, the incidence of parastomal hernias ranges widely between 0 and 48.1%; occurring more frequently in individuals with end colostomies (1). Reports of gallbladder herniation, however, are few and far between with both surgical and non-surgical options documented.

In this paper, we outline a case of gallbladder herniation within a parastomal hernia with associated cholecystitis and pancreatitis. Existing literature was reviewed and their therapeutic approaches examined to explore the optimal treatment for this uncommon presentation. We present the following article in accordance with the CARE reporting checklist (available at http://dx.doi.org/10.21037/dmr-20-82).

Case presentation

A 63-year-old lady presented with abdominal pain and vomiting secondary to gallbladder parastomal herniation complicated by cholecystitis and pancreatitis. Her medical history includes congenital mental subnormality and perforated diverticulitis in 2014, necessitating an open subtotal colectomy and end ileostomy creation. She developed a parastomal hernia a year after her surgery, which was conservatively managed as the patient was asymptomatic.

She presented in January 2020 with epigastric discomfort and vomiting with abdominal examination revealing a tender epigastrium and an otherwise healthy stoma with associated parastomal hernia. Investigations revealed raised serum amylase of 156 U/L and neutrophilia on

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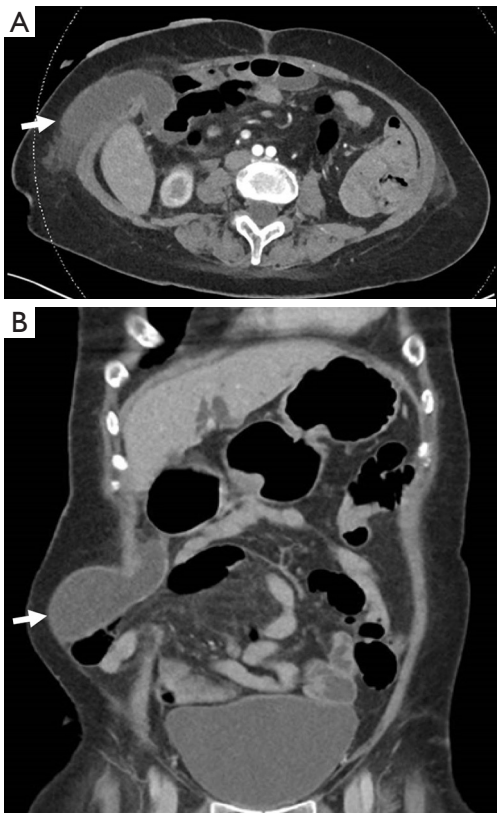

Figure 1 Computed tomography (CT) of the abdomen and pelvis showing parastomal herniation of the gallbladder (white arrow) in the (A) axial view and (B) coronal view.

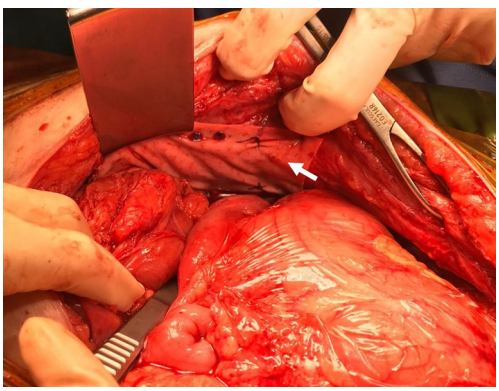

Figure 2 Parastomal hernia repair with Permacol mesh (white arrow).

full blood count. Computed tomography (CT) of the abdomen showed a herniated gallbladder in the parastomal hernia with groove pancreatitis. The patient was managed conservatively with fluids and bowel rest as her family declined any surgical intervention. She was discharged well after a week of hospitalisation but returned soon after with recurrent abdominal pain and fever. Serum amylase and alkaline phosphatase were elevated with neutrophilia on full blood count. A repeat CT showed recurrent pancreatitis, a dilated common bile duct (CBD) with new pericholecystic stranding suggestive of acute cholecystitis (*Figure 1*).

The patient's family was counselled and agreeable with surgery given a repeated presentation and deteriorating clinical condition from the initial admission. The patient was started on broad spectrum antibiotics and underwent a midline laparotomy, intraoperative cholangiogram (IOC), cholecystectomy and parastomal hernia repair using a biological Permacol (Covidien, Mansfield, USA) mesh. Intra-operatively, the gallbladder had herniated within the parastomal hernia with a fascial defect of 4cm. IOC revealed a dilated CBD with no filling defects. The fascial defect was repaired primarily followed by the Sugarbaker technique of intraperitoneal onlay Permacol mesh application (*Figure 2*). Her recovery was complicated by hospital acquired pneumonia for which she completed a course of antibiotics. She remains well to date, 5 months after surgery, with no hernia recurrence.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient's legal guardian. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Discussion

The management of parastomal hernias remains debatable. Significant morbidity with high recurrence rates between 37–76% questions the utility of an aggressive surgical approach (2,3). A variety of surgical techniques, including primary fascial repair, mesh repair and stoma relocation, have been performed with varying outcomes; though little is known of their application in cases of parastomal hernias complicated by gallbladder herniation.

Existing literature was reviewed with 10 reported cases of gallbladder parastomal herniation (*Table 1*) (4-13). Including our case, the median age of presentation was 73.5 years old (range, 50–88) with a preponderance of female patients (81.8%). Eight patients underwent open surgical intervention (7 cholecystectomies, 6 hernia repairs), 2 patients underwent manual hernia reduction and 1 patient

Table 1 Reported cases of parastomal gallbladder herniation

Year of publication	Age/ gender	Type of stoma	Clinical presentation	Significant laboratory results	Treatment	Outcome
2005; (4)	73/female	Ileal conduit	Incarcerated gallbladder	↑ WBC; ↑bilirubin	Laparotomy, cholecystectomy and primary hernia repair	No recurrence
2005; (5)	63/female	Transverse colostomy	Abdominal pain and nausea	Normal bilirubin	Manual reduction	No recurrence after 16 months
2009; (6)	74/female	End ileostomy	Small bowel obstruction secondary to incarcerated hernia	↑ WBC ↑bilirubin	Laparotomy, cholecystectomy and hernia mesh repair (mesh material not mentioned)	Recurred after 20 months with stoma resited
2013; (7)	76/male	End ileostomy	Abdominal pain	↑ WBC; ↑creatinine	Laparoscopic converted to open surgical detorsion and cholecystectomy; hernia repair not reported	Discharged well, follow up not reported
2015; (8)	85/female	Ileal conduit	Abdominal pain and fever	↑ WBC	Laparotomy, cholecystectomy; hernia not repaired	Patient well at 1 month
2017; (9)	50/female	Right hypochondrium diverting colostomy	Abdominal pain and vomiting	Not reported	Right subcostal laparotomy, cholecystectomy and primary hernia repair	Discharged well, follow up not reported
2017; (10)	88/female	Transverse loop colostomy	Abdominal pain and fever	↑ WBC	Manual reduction	Discharged well, follow up not reported
2017; (11)	89/male	Diverting loop ileostomy	Abdominal pain and nausea	↑ Neutrophils	Conservative management	Discharged well, follow up not reported
2018; (12)	63/female	End transverse colostomy	Abdominal bloating	↑ Neutrophils	Colostomy takedown, ascending colon to rectal anastomosis, cholecystectomy, appendectomy and abdominal wall reconstruction with bioprosthetic onlay mesh	No recurrence at follow up, duration not stated
2019; (13)	75/female	End ileostomy	Abdominal pain and nausea	Not reported	Lateral transverse incision, reduction of gallbladder and onlay hernia repair with synthetic mesh	No recurrence after 6 months

WBC, white blood cell.

was managed conservatively. Of the hernia repairs, 2 were repaired primarily while 4 others received a mesh repair (2 biological mesh, 1 synthetic, 1 not reported). All patients were discharged well with no stoma recurrence with the exception of Rashid *et al.* reporting subsequent recurrence at 20 months and stoma resited.

In spite of high recurrence rates, parastomal hernias warrant surgical intervention for those who develop complications from the hernia or whose quality of life is affected by the hernia. In the case of gallbladder parastomal herniation, gallbladder inflammation or incarceration necessitates surgical intervention and complicates repair in a potentially contaminated surgical field.

Primary fascial repair, stoma relocation and mesh repair are some of the techniques for parastomal hernia repairs. Whilst a simple technique with limited morbidity, direct fascial repair has limited longevity with exceedingly high recurrence rates of 59–69.4%, unacceptable by today's standards (14-16). The comparatively shorter and less morbid procedure may, however, apply to individuals with a poor premorbid state and limited lifespan or in those whom prosthetic reinforcement may be contraindicated. On the other hand, stoma relocation has lower recurrences of 26.4–29% but poses greater morbidity with a prolonged operation and puts the new stoma and previous stoma site at risk of another herniation, potentially resulting in 2 hernias from 1 (15,17,18).

Mesh repair has emerged to be superior to primary fascial repair and stoma relocation in terms of recurrence rates with acceptable morbidity risks. The differing techniques of the onlay, retromuscular sublay as well as the intraperitoneal onlay mesh (IPOM) techniques has reported risks of recurrence ranging between 2.1–39% (16,17,19). IPOM techniques, including the Sugarbaker and keyhole methods, have documented superior outcomes of reduced recurrence, lower mesh contamination, haematoma and seroma formation whilst avoiding extensive abdominal wall fascial dissection (20,21). We have opted for a Sugarbaker repair in our case given the comparatively similar recurrence rates without having to create a mesh opening. The alternative keyhole method also has the potential of obstruction from an inadequately sized hernia mesh aperture and is deemed unsuitable in the repair of ileostomies as small bowel can easily herniate through the mesh opening. A biological mesh was applied in this setting of a herniated inflamed gallbladder to further reduce the chances of mesh contamination. There is currently insufficient evidence in promoting the superiority of biological over synthetic meshes under contaminated conditions. While studies have shown no difference in surgical site infections and recurrence rates between the types of meshes, the cases are often not comparable due to differences in mesh placement techniques and short follow up duration (22). This case series is limited in its promotion of one technique over the other due to the small number of cases described. It has, however, provided a basis of comparison between the varying techniques and their outcomes which offers insight into future care and management. Further prospective studies are required to compare the utility of synthetic versus biological meshes.

Given the rarity of gallbladder parastomal herniation, optimal treatment requires careful consideration even as existing reports suggest surgical intervention confers benefit without significant detrimental risks. Perhaps further exploration in the prevention of parastomal hernias in the first place, may be key in circumventing its complications. Until then, any benefit reaped from surgery has to be weighed against a myriad of patient and surgical factors including their potential complications.

Conclusions

Parastomal herniation of the gallbladder and its complications, remains an uncommon presentation that requires further evaluation. An aggressive surgical approach may be used with appropriate case selection and acceptable morbidity and mortality risks.

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at http://dx.doi.org/10.21037/dmr-20-82

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/dmr-20-82). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are

appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient's legal guardian. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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