

Management of Obstructed Giant Parastomal Hernia – What a General Surgeon Should Know?

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DOI: <http://dx.doi.org/10.21276/ijcmsr.2021.6.3.9>

How to cite this article: M. Scott Arockia Singh, S. Sabu Jeyasekharan, D. Devaprasath Jeyasekharan, P. Bala Vidyasagar, C. Nithila, John Grifson. Management of obstructed giant parastomal hernia – what a general surgeon should know?. *International Journal of Contemporary Medicine Surgery and Radiology*. 2021;6(3):C36-C39.

A B S T R A C T

Introduction: Parastomal hernia is one of the common complications which occur after a stoma creation in the anterior abdominal wall. The association of abdominal compartment with giant parastomal hernia is often overlooked and underestimated.

Case report: We report here a case of obstructed parastomal hernia its association with abdominal compartment syndrome and its outcome.

Conclusion: General surgeon should be aware of its presentation, prolapse, recurrences, comorbidities like abdominal compartment hypertension, different modalities of management, and associated mortality. Obstruction of giant parastomal hernia is an unusual entity, early diagnosis and laparostomy as primary surgery and appropriate surgical repair at a later stage can save the patient from this benign life-threatening condition.

Keywords: Obstructed Giant, Parastomal Hernia, General Surgeon

INTRODUCTION

Parastomal hernia (PSH) invariably occurs in every case of ostomy. Sir John Cedric Goligher, popular colorectal British surgeon has described as “unavoidable complication” of colostomy¹. PSH can be silent or causes obstruction in which the bowel gets incarcerated, gangrene and sepsis ensues. The exact occurrence is unknown, often undetected clinically. In the United Kingdom, 2004 statistics showed 20000 stoma were constructed annually half of the patients develop stomal hernias, of which 30% require corrective surgery². CT scans can detect even small hernia and the incidence rate³ is 70%. Sjudahl et al⁴ noted that the stoma through the rectus sheath lower the risk of PSH, whereas Stephenson⁵ reported the lateral rectus abdominis positioned stoma (LRAPS) reduce the incidence of PSH.

We share our experience in managing a case of Giant obstructed PSH with abdominal compartment syndrome and its outcome. There are many reports in the literature on the elective management of parastomal hernia and results. However, less mention on role of emergency surgery in obstructed PSH and its association with abdominal compartment syndrome.

CASE REPORT

A 37-yr-old gentleman of BMI 33 kg/m² presented with abdominal pain and vomiting of ten hours duration. Well built, abdomen distended, noted an irreducible mass (parastomal hernia) in left pararectus position as shown in figure 1. He sustained blunt injury abdomen 10-yr ago with features of colonic perforation, pelvic bone fracture with hypovolemic shock and treated in our hospital. That time, resuscitated, underwent emergency laparotomy, sigmoid loop colostomy, recovered from sepsis, had a long stay in hospital and discharged home.

CT scan revealed a large parastomal hernia sac with small bowel loops within, neither pneumoperitoneum nor airpockets in the walls of obstructed bowel loops. Emergency laparotomy showed a large hernia sac size of 20cm with pregangrenous small bowel loops of length 30cm. Viable obstructed small bowel loops were reduced, excess sac excised and primary approximation of the defect done using 1°O polypropylene sutures with onlay polypropylene mesh placed around the prolapsed stoma of 10 cm length as shown in figure 2.

Postoperatively ventilated for 24 hours, extubated and developed immediate recurrence on day 2. A huge bulge noted in the operated site and he continued to have bilious

green coloured vomiting, abdominal pain and distension. CT scan confirmed recurrent hernia. Second surgery planned and laparotomy done through the parastomal previous surgery site. It showed grossly distended pregangrenous dusky coloured bowel loops, with moderate reactionary fluid in the peritoneal cavity. Sutures were disrupted and mesh dislodged from the site due to raised intrabdominal pressure. Stoma was relocated in the epigastric region through upper one-third rectus abdominis muscle after left colon mobilized adequately. Laparostomy was done in view of abdominal compartment syndrome. Custom made laparostomy sheet placed and anchored to the lineal alba and parietal peritoneum.

However, postoperatively, patient developed respiratory failure and cerebral hypoxia due to decreased cerebral perfusion pressure, seizures and fever secondary to sepsis. Even though, laparostomy, ventilatory support, supportive care and broad spectrum antibiotics were administered; septicemia with features of abdominal compartment syndrome worsened the condition of patient. But, on postoperative day 5, bowel was started functioning, pink in colour with active peristalsis noted via see-through laparostomy sheet. He battled on

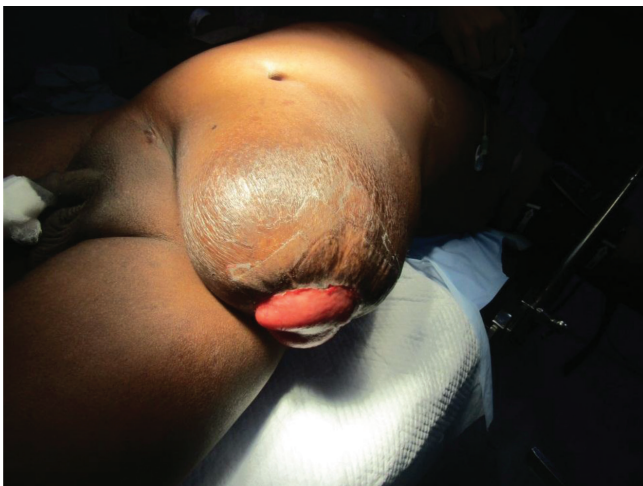


Figure-1: Giant parastomal hernia with associated prolapse of stoma

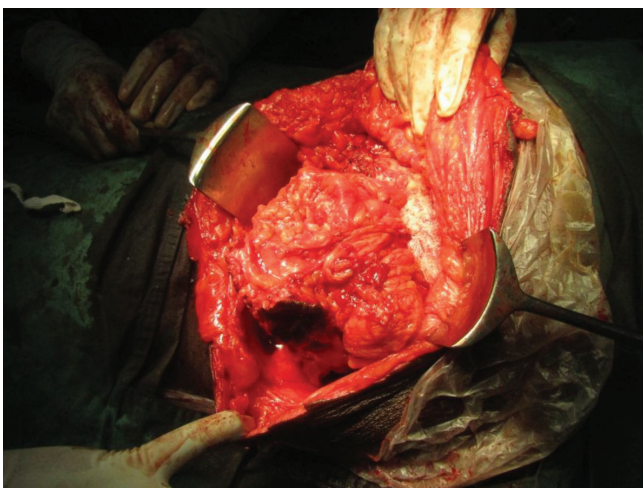


Figure-2: Per-operative picture shows large defect and bowel as content

ventilatory support (noninvasive ventilation) for 3 weeks with poor respiratory drive and succumbed after 2 months of domiciliary care.

DISCUSSION

World Society of Emergency Surgery proposed 2017 guidelines for complicated abdominal wall hernias management⁶. It strongly stresses that patients should undergo emergency hernia repair immediately when intestinal strangulation is suspected. In 2014, the European Hernia Society⁷ published a new classification (modified szczepkowski)

I – isolated, small parastomal hernia, (size smaller than 5cm)

II – small parastomal hernia (size- smaller than 5cm) with coexisting midline incisional hernia without any significant front abdominal wall deformity,

III – isolated, large parastomal hernia (larger than 5cm) with front abdominal wall deformity,

IV – large parastomal hernia (larger than 5cm) with coexisting midline incisional hernia, with front abdominal wall deformity.

Additionally, in each type one should note whether the hernia is primary or recurrent. Our patient belongs to category of subtype III

Nastro⁸ et al, found the following risk factors for the development of PSH. Obesity with body mass index (BMI) > 30 kg/m², waist circumference > 100 cm, diabetes, smoking tobacco, systemic and local infection, hard physical labour as a relative risk factor, ASA classification > II, low tensile strength of abdominal wall, chronic cough and/or chronic obstructive pulmonary disease (COPD), steroid therapy, eating or immune disorders and collagen metabolism disorders, Crohn's disease, cancer and ischemia. Our patient as well was obese, hard physical labourer (fisherman) had a waist circumference of 100cm, smoker with ASA grade more than 2.

Our patient had a longstanding prolapsed stoma with huge parastomal hernia sac. Both these factors lead to a loss of abdominal domain. The abdominal cavity volume was less than hernial sac volume, hence, a component separation technique combined with suture repair and mesh reinforcement would have given better results in our patient. Emergency component separation technique for an obstructed PSH is really challenging and needs technical expertise as well. We need to weigh the risk versus benefits ratio and individualize the treatment as per the situation like emergency or elective. Also, combined procedure in emergency situation has risks and outcomes varies from institution to institution. Pauli⁹ et al. described open TAR combined with Sugarbaker repair in which a large retrorectus space created and mesh placed for an elective repair of PSH, while more recently there have been reports with robotic approaches and laparoscopic techniques.

The available surgical options are

- Repair with relocation of stoma and repair without relocation,
- Onlay repair, sublay repair,
- Laparoscopic repair with mesh reinforcement.

The second surgery was delayed unfortunately for more

than 24-hrs in our case because the protuberant mass in the operated site misdiagnosed as seroma. But once the signs of intestinal obstruction set in, CT abdomen was made and confirmed it. Many authors shared similar reports of *delayed diagnosis* of strangulated hernia. They too found difficulty in differentiating between obstructed hernias and strangulated hernias clinically and biochemically as well. Fever, tachycardia, and leukocytosis and abdominal wall rigidity, are common indicators of strangulation. Remember, Systemic inflammatory response syndrome (SIRS), contrast-enhanced CT findings, serum lactate levels, serum creatinine phosphokinase (CPK), and D-dimer levels are predictive factors of bowel strangulation. But, Sarr¹⁰ et al. reported that the classic signs of strangulation—if at all present, signals late disease (ischemic bowel) and concluded that their presence indicated an advanced stage of strangulation, which would be of limited value for early diagnosis¹¹. Our patient had features of respiratory failure and status epilepticus secondary to SIRS, Sepsis and abdominal compartment (ACS). Surgery for the large hernial sac along with ACS causes devastating complications and magnitude of its issue is serious and often underreported in literature or poorly understood by the surgeon.

On the other hand, Serum lactate, CRP levels and D-Dimer levels are reliable early markers of bowel ischemia due to strangulation^{12,13}. Serum lactate and C-reactive protein levels were raised in our case as well.

CT scan helps in the early diagnosis of strangulation with reduced bowel wall enhancement in oral contrast study^{14,15}. Ultrasound has limitation in the diagnosis of PSH, although dynamic study shows promising result and is limited to only few dedicated centers. CT scan has undoubtedly proved that fairly stays ahead and choice of investigation in the diagnosis of PSH¹⁶. It is been emphasized by the international hernia society as well.

Peroperatively, the bowel was pregangrenous and hence not resected. Although, broad spectrum antibiotics were prescribed, continuous spikes of fever noted after second laparotomy due to associated sepsis

Does the surgical treatment vary between elective repair of PSH and obstructed PSH? There are well established surgical techniques for the successful elective repair of PSH, whereas no definite guidelines are available for an emergency management of PSH. Also, there are no strategies for PSH with abdominal compartment syndrome in the literature. Parastomal hernial sacs are generally large in size because of its delayed presentation or delay in diagnosis due to excess of lower belly fat or often missed or misdiagnosed as prolapse. In our case also, there was huge prolapse of stoma along with PSH.

Open abdomen is an accepted approach for a critically ill patient with ACS secondary due to severe abdominal sepsis or due to reduction of huge contents of large sized sac (more than 10cm). Intraabdominal Sepsis is defined as 'severe' when associated with organ dysfunction and as complicated when the inflammation or contamination spreads beyond a single organ, causing either localized or diffuse peritonitis.

Examination of abdomen showed thin, scarred skin on the summit of the huge protuberant PSH due to chronicity,

stomal prolapse and large size of the hernial sac. There was a "second abdomen" like picture due to the presence of giant PSH. Our patient developed respiratory failure probably secondary to ACS and sepsis and was on ventilatory support. European hernia society (EHS) recommends prophylactic placement of nonabsorbable mesh for all cases of end colostomy patients. Moreover, the society stresses that the definite treatment for PSH lacks evidence based report, no surgical method is proved to be superior either laparoscopy or open and specific mesh types. Hence, future audit of PSH and trials can bring standardization.

Watchful waiting in parastomal hernia is commonly practiced as most of the patients able to tolerate the minimal discomfort and majority surgeons also avoid surgeries for PSH, because of high recurrence rate. Similar policy (elective repair of PSH) is followed in our institute as well, and future early repair is strongly advocated and so that the high risks and mortality associated with emergency repair of PSH can be averted.

The lessons learnt from this case and knowledge gained through the extensive study of literature, international guidelines has made us to formulate the following principles in the management of emergency management of giant PSH.

1. Watch for hernia around colostomy sites, if in doubt do CT scan
2. Early repair prevent the complications associated with hernia like ischemia and sepsis.
3. Mesh repair is the gold standard which prevents recurrence
4. Remember coexistence of abdominal compartment syndrome with parastomal hernia
5. Do stoma relocation along with repair of hernial defect whenever possible.
6. Laparoscopy or robotic approach if expertise available.
7. Conclusion

Prevention of hernia formation by mesh placement in end colostomy is preferable. Treatment of parastomal hernia is always quite challenging and multidisciplinary approach gives best outcome.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 22-07-2021; **Accepted:** 25-08-2021; **Published online:** 30-09-2021