Author/s:
Belvedere, S;Foster, JD;Soucisse, ML;Warrier, SK;Heriot, AG

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Toxic megacolon due to Salmonella acute infectious colitis requiring total colectomy following loop ileostomy closure

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Belvedere Shane (Orcid ID: 0000-0002-6363-5025)
Soucisse Mikael (Orcid ID: 0000-0002-4576-5774)
Heriot Alexander (Orcid ID: 0000-0001-9846-8776)

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Running title: Toxic megacolon post ileostomy closure

Authors:

Dr Shane Belvedere[a,b] MBBS

Dr Jake D Foster[a] MD MA MBBS FRCS

Dr Mikael L Soucisse[a] MD FRCSC

Mr Satish K Warrier[a] MBBS MS BSC (Med) FRACS

Prof Alexander G Heriot[a] MB BChir MA MD MBA FRACS FRCS(Gen.) FRCSEd FACS

[a]Department of Surgical Oncology, Peter MacCallum Cancer Centre, Melbourne, Victoria, Australia

[b]Department of General Surgical Specialities, The Royal Melbourne Hospital, Melbourne, Victoria, Australia

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Corresponding author:

Shane Belvedere

300 Grattan Street
Parkville, Victoria
Australia 3050
Phone: +61(03)93427000
Fax: +61(03)93428580
Email: shane.belvedere@gmail.com

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Case

We report upon a case of a 75-year-old male who developed acute toxic megacolon caused by salmonella acute infective colitis which occurred following closure of his loop ileostomy.

The patient underwent a minimally-invasive ultra-low anterior resection for rectal cancer two years prior to this episode. Closure of his ileostomy was initially deferred following his cancer resection to allow him to have bioprosthetic aortic valve replacement with coronary artery bypass grafts. His past medical history also included chronic obstructive pulmonary disease, as well as being a current smoker.

After pre-operative assessment, he was admitted for an elective closure of ileostomy and repair of parastomal hernia with on-table flexible sigmoidoscopy. The low rectal anastomosis was widely patent and the bowel mucosa appeared grossly normal. The procedure was uncomplicated, and the patient followed a standardised Enhanced Recovery after Surgery (ERAS) protocol post-operatively.

A fever was recorded on post-operative day (POD) 3, without localising signs. His abdomen was distended, but not tender to examine. A CT scan of the abdomen was performed, which demonstrated a moderately distended caecum but no evidence of anastomotic leak or septic focus. He was subsequently commenced on intravenous antibiotics for presumed hospital acquired pneumonia as he had developed a productive cough. He had episodes of loose stools from POD 5, and stool sample was sent for microscopy and culture.

Given persistently elevated inflammatory markers and deteriorating abdominal pain, further CT scanning and a flexible sigmoidoscopy were organised. CT images showed persistent proximal colonic distension (Figure 1). Flexible sigmoidoscopy revealed altered vascularity of the recto-sigmoid colon reflective of non-specific colitis. Biopsies were taken for histopathology and microbiological analysis.

Faecal microscopy and culture returned on POD 8 and revealed Salmonella Typhimurium infection, with no evidence of Clostridium Difficile or Cytomegalovirus. Histopathological analysis of the biopsies taken at flexible sigmoidoscopy returned on POD 12 and demonstrated a combination of thickened bowel mucosa and submucosal fibrin raising the possibility phlegmonous colitis. Immunohistochemistry for cytomegalovirus was negative.

The patient remained stable without dramatic improvements in inflammatory markers, but then deteriorated on POD 11, with tachypnoea, tachycardia and hypotension. He was subsequently transferred to the Intensive Care Unit on POD 12 and managed for septic shock prior to being taken to the operating theatre for emergency total colectomy for fulminant toxic megacolon with impending caecal perforation (Figure 2). Care was taken to transect the rectum distal to the previous colorectal anastomosis. Post-operatively, the patient was weaned off inotropes and extubated within 24 hours, and had a relatively swift and uncomplicated recovery thereafter.

Histopathology of the colectomy specimen revealed toxic megacolon, with much of the proximal large bowel devitalized, and areas of transmural necrosis.

Discussion

Diverting loop ileostomy is a procedure which is commonly formed to divert the faecal stream from distal colonic disease or anastomosis. They are commonly formed following low rectal anastomoses to prevent septic complications in the event of an anastomotic leak[1, 2]. Closure of the loop ileostomy is usually completed after at least three months post-formation[3]. Commonly reported complications of closure of loop ileostomy include anastomotic leak, wound infection, incisional hernia, ileus, and bowel obstruction[2].

Salmonellae are motile, gram-negative rod-shaped bacteria that commonly infect humans, and cause characteristic clinical infections including gastroenteritis and enteric fever[4]. Transmission of salmonellae is usually by consumption of contaminated food, however human-to-human transmission and animal-to-human transmission is also possible[5]. Salmonella is a rare cause of toxic megacolon, and it is unclear how our patient became infected with salmonella. As diarrhoea is expected following closure of loop ileostomy due to atrophied colonic mucosa, the loose stools the patient complained of did not raise suspicion of gastrointestinal infection initially.

Acute infective colitis is a rare complication following ileostomy closure. Of these cases, clostridium difficile and cytomegalovirus are the more frequently encountered causative organisms. As demonstrated by this case however, other organisms can also lead to an acute severe colitis following ileostomy closure, and the finding of an unusual pathogen should not divert the clinician from the potential serious nature of such an infection. It is possible that the altered microenvironment of the diverted colon makes it susceptible to infection and overgrowth of pathogenic organisms following restoration of intestinal continuity. The CT images in this case

demonstrated persistent caecal distension, however little in the way of radiological mural thickening and no pneumatosis to reflect the severity of infection. Clinical evidence of toxic megacolon mandates urgent total colectomy for patient survival.

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Figure 1. Coronal CT image demonstrating colonic distension

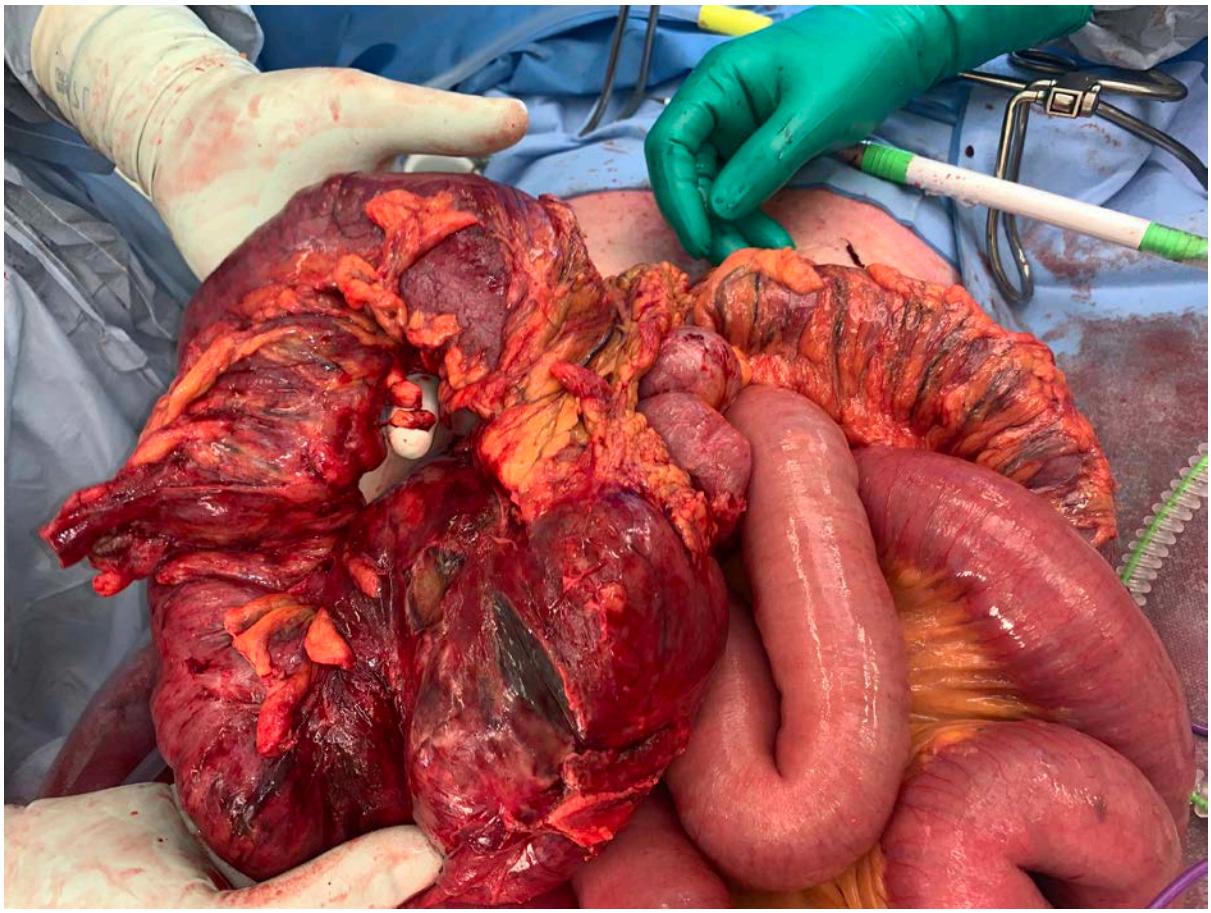
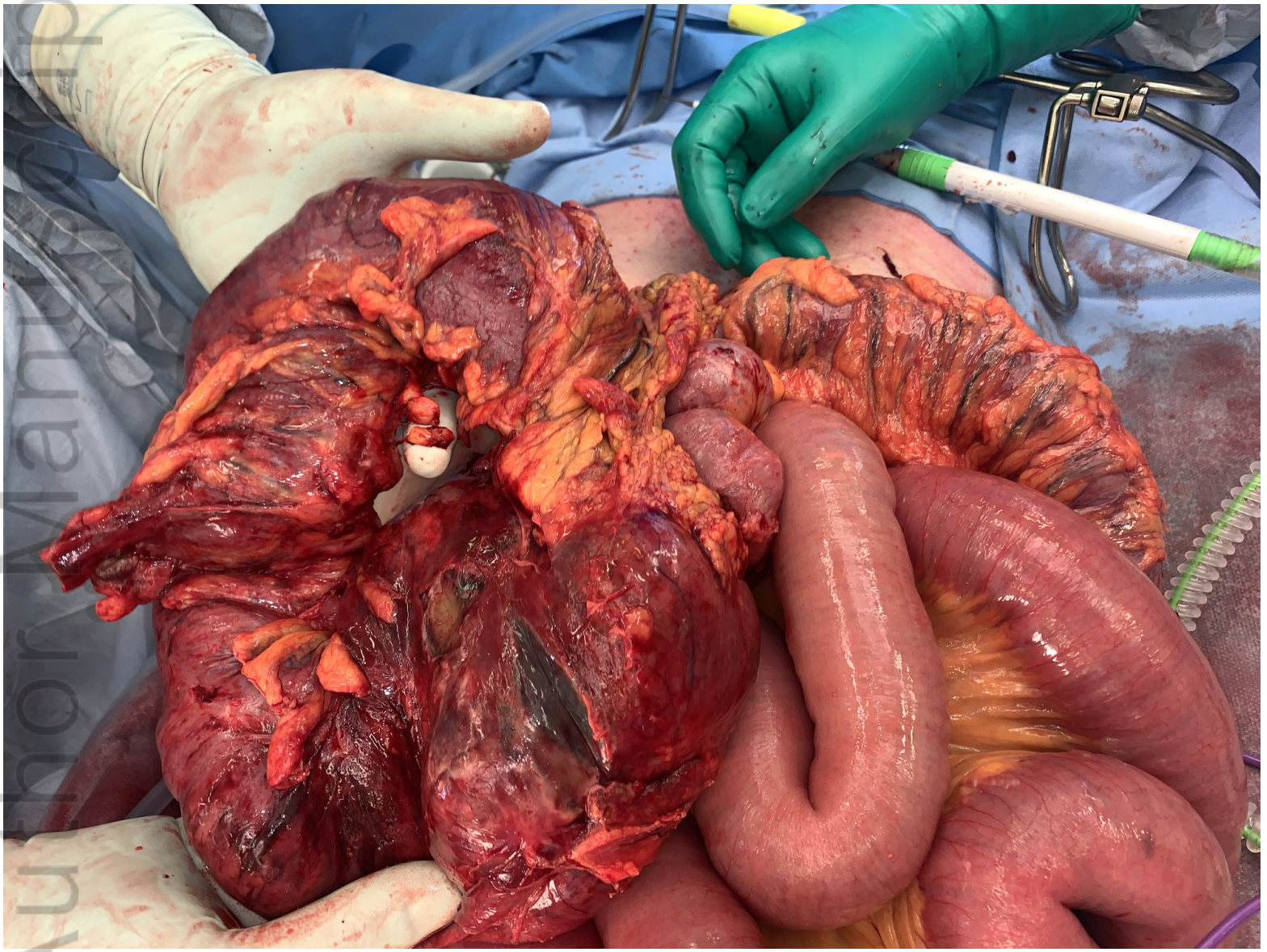


Figure 2. Operative photograph demonstrating toxic megacolon with necrotic areas.

ANS_15973_Figure 1.PNG



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