Mesenteric tissue for the treatment of septic pelvic complications in the absence of greater omentum

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Introduction

A presacral abscess or sinus is a potentially devastating complication. These may result from an infectious disease or post-operative complications such as anastomotic leakage. A persisting presacral sinus may lead to fistula formation [1, 2]. Salvage surgery may be indicated, and an omentoplasty or myocutaneous flap reconstruction can be used to fill dead space and control local pelvic sepsis [3]. Greater omentum is not always available, and tissue flaps have the risk of flap necrosis. We describe four cases in which mesenteric tissue surrounding either branches of the inferior mesenteric or ileocolic artery was used to fill the pelvis.

Technique

All patients had a pre-existing deviating ileostomy or colostomy. To resect the remaining rectum or ileal pouch-anal anastomosis, a transanal intersphincteric approach was used with thorough debridement of the presacral sinus/abscess. There was not enough omentum to create an omentoplasty of sufficient length and volume. The colon or ileum was dissected close to the bowel, thereby leaving the recto-sigmoid mesentery or ileocecal mesentery in situ with its vascular supply. Mesentery was fully mobilised and moved towards the pelvic dead space (Fig. 1). Fixation to the pelvic wall and/or pubic bone was performed to prevent small bowel loop herniation. Pelvic drains were placed.

Results

Baseline patient characteristics are displayed in Table 1. In one patient, resection of a coloanal anastomosis was performed for persistent leakage, with a history of iatrogenic rectal perforation after cystoprostatectomy. Another patient had a persistent presacral sinus due to fistulisation from an ileal pouch-anal anastomosis. The third patient also had an ileal pouch-anal anastomosis for ulcerative colitis, but was re-diagnosed with Crohn’s disease. Indications for pouch excision were persisting pouchitis and cuffitis with perianal
| Baseline characteristics | Patient 1 | Patient 2 | Patient 3 | Patient 4 |
|--------------------------|-----------|-----------|-----------|-----------|
| Sex                      | Male      | Male      | Male      | Male      |
| Age at surgery (years)   | 74        | 55        | 44        | 69        |
| BMI (kg/m²)              | 28.1      | 26.6      | 22.1      | 21.0      |
| ASA classification        | 2         | 2         | 3         | 2         |
| Diagnosis                | Bladder cancer | Ulcerative colitis | Crohn’s disease | Bladder cancer |
| Previous (abdominal and/or pelvic) surgery | Cystoprostatectomy complicated by rectal perforation treated with Hartmann’s procedure (’11) | Perforated colon treated with subtotal colectomy + ileostomy, second-stage completion proctectomy + ileo-pouch-anal anastomosis (’03) | Toxic megacolon treated with subtotal colectomy, complicated by idiopathic thrombocytopenic purpura (’11) | Cystoprostatectomy (’96), complicated by abscess + fistulas |
|                          | Coloanal pouch + loop colostomy + Ramirez plasty + bridging biomesh, complicated by anastomotic leakage treated with endosponge (’13) | Perianal fistulas + pouchitis treated with loop ileostomy + fistula drainage (’15) | Completion proctectomy + ileal –pouch-anal anastomosis + ileostomy + splenectomy, complicated by bleeding treated with relaparotomy + coiling inferior mesenteric artery (’12) | Hartmann’s procedure (’03) with multiple stoma revisions + endosponge (’05) |
|                          |           |           |           |           |
|                          |           |           |           |           |

*BMI* body mass index, *ASA* American Society of Anesthesiologists
fistulas. The fourth patient had a history of cystoprostatec- 
tomy and a Hartmann’s procedure, complicated by 
recurrent abscess and fistula formation from the rectal 
stump, for which a coloanal reconstruction with diverting 
colostomy and multiple endosponge procedures were 
performed.

Surgical details are presented in Table 2. The post-op-
erative course was uneventful in one patient (Table 3). One 
patient developed a subhepatic abscess, which was punc-
tured. The two remaining patients had persisting pelvic 
abscesses, treated by antibiotics in one patient, and, in the 
other, percutaneous drainage which failed necessitating 
surgical drainage. Eventually, all patients recovered with-
out signs of pelvic infection.

**Table 2** Surgical characteristics of included patients

| Surgical characteristics | Patient 1                       | Patient 2                                  | Patient 3                                  | Patient 4                       |
|--------------------------|--------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------|
| Indication               | Persisting leakage coloanal    | Ileal pouch-anal anastomosis with persistent fistulas | Ileal pouch-anal anastomosis with persistent presacral sinus | Persistent leakage of coloanal anastomosis |
| Surgery                  | Resection efferent loop of     | Excision of ileal pouch-anal anastomosis with creation of end ileostomy | Excision of ileal pouch-anal anastomosis with creation of end ileostomy | Resection of efferent loop of diverting colostomy and rectal stump with debridement of presacral abscess |
| Approach                 | Laparotomy                     | Laparotomy                                 | Laparotomy and transanal minimally invasive surgery | Laparotomy and transanal minimally invasive surgery |
| Setting                  | Elective                       | Elective                                   | Elective                                   | Elective                       |
| Blood loss (ml)          | NR                             | 400                                        | 100                                        | 100                            |

NR not reported

**Table 3** Post-operative outcomes of included patients

| Post-operative outcomes        | Patient 1    | Patient 2    | Patient 3                                  | Patient 4                      |
|--------------------------------|--------------|--------------|--------------------------------------------|--------------------------------|
| Post-operative stay (days)     | 19           | 6            | 25                                         | 16                             |
| Post-operative complications   | Pelvic abscess | No           | Subhepatic abscess and ileus               | Small pelvic abscess           |
| Reintervention                 | Percutaneous drainage | No           | Diagnostic puncture and peripherally inserted central catheter for total parenteral nutrition | No                             |
| Readmission (within 30 days)   | Yes          | No           | No                                         | No                             |
| Late complications             | Persistent pelvic abscess     | No           | Granuloma at stoma site                    | No                             |
| Follow-up to date (months)     | 22           | 4            | 4                                          | 1                              |

Discussion

Salvage surgery for pelvic septic complications following colorectal surgery most often dictates radical removal of pelvic bowel structures with a definitive ostomy [4]. Patients undergoing redo surgery are prone to develop recurrent infectious complications. Contaminated pelvic dead space after salvage surgery may progress into a sinus with persistent abscesses and the risk of secondary complications. Previous research suggests that obliterating the pelvic space with an omentoplasty after abdominoperineal resection for rectal cancer results in enhanced perineal wound healing and a decrease in sinus formation due to angiogenesis and enhancement of the inflammatory response [5]. Pelvic dead space obliteration after salvage surgery is also described for this purpose [4]. In the absence of omentum, and considering the morbidity associated with autologous tissue flaps, obliteration of pelvic dead space with viable mesentery of a bowel segment that has to be removed as part of salvage procedures seems to be a valuable alternative. Although one patient had a persistent pelvic abscess, complete pelvic sinus healing was accomplished in all four patients.

More research is necessary to understand the physiological immune responses of mesentery, which may be of value in controlling infectious complications not just for anatomical filling. Availability of mesenteric tissue of adequate length and volume has to be assessed in every
single patient, but might be preferred over myocutaneous flap reconstructions.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval For a retrospective study we did not need to obtain ethical review as with prospective studies or randomized controlled trials. Data could not be lead back to the patients and no questionnaires were sent.

Informed consent All patients, of course, gave informed consent for the surgery and registry.

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