Surgical treatment of perianal and rectal fistula
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Chapter 10

*Endo-sponge treatment of anastomotic leakage after ileoanal pouch anastomosis*

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ABSTRACT

Background
Anastomotic leakage is a feared complication following colorectal surgery. It is associated with considerable morbidity and mortality. Recently, application of local vacuum sponge treatment has shown to be effective to treat contained anastomotic leakage after low anterior anastomosis in rectal cancer patients. The negative pressure of the endo-sponge results in constant drainage and potentially infection control, reduction of the size of the cavity, increased blood flow and therefore the stimulation of granulation tissue.

Results
Two patients (1 male, 18 years; 1 female, 40 years) who underwent proctocolectomy because of ulcerative colitis with ileo-anal J-pouch reconstruction developed a localized anastomotic leakage without general peritonitis. This was endoscopically managed by transanal placement of an endo-sponge (B. Braun Medical B.V., Melsungen, Germany) after a diverting ileostomy was performed. The sponge was frequently replaced until resolution of the sinus was obtained in respectively 35 and 56 days.

Conclusions
Endo-sponge placement can be helpful in treatment of anastomotic leakage after ileo-anal pouch surgery.
INTRODUCTION

Anastomotic leakage is a feared complication following colorectal surgery. It is associated with considerable morbidity and mortality including pelvic sepsis, prolonged ICU stay and even death. After pouch surgery, anastomotic leakage is a serious complication which is known to be an important cause of long term pouch failure.\(^1\) Prolonged pelvic sepsis before resolution or persistent presacral sinus are responsible for this.

Recently, the application of local vacuum sponge treatment has shown to be effective to treat locally contained anastomotic leakage after low anterior anastomosis in rectal cancer patients.\(^2\) In this study, four patients were described achieving rapid closure of the presacral cavity. The vacuum sponge was installed in the cavity endoscopically. The time until closure was considerably lower compared to a group treated with conservative treatment in a previous 5-year period.

The negative pressure of the endo-sponge results in constant drainage and potentially infection control, reduction of the size of the cavity, increased blood flow and therefore the stimulation of granulation tissue.\(^3\) Since rapid resolution of the pelvic sepsis and closure of the presacral sinus is considered to be an important factor in long term pouch function, an aggressive approach treating this condition is justified. Two cases with anastomotic leakage after restorative proctocolectomy are described.

METHODS

Endo sponge material

The material used for the sponge was an open-pored polyurethane sponge (Figure 10.1, B. Braun Medical B.V., Melsungen, Germany). The sponge was installed transanally after examination and rinsing (saline 0.9%) of the abscess cavity using a small calibre flexible gastroscope (GIF-100 Video Gastroscope, Olympus, 9.8 mm in diameter). The length and size of the abscess cavity was estimated and the size of the endo-sponge was cut accordingly. A plastic tube positioned over the gastroscope was installed into the deepest point of the cavity. After the gastroscope was withdrawn with the plastic tube in place, the endo-sponge was inserted through the tube by using a pushing probe after which the plastic tube was retracted. Next,
the sponge was connected to a low vacuum suction bottle (Redyron TRANS PLUS suction device), creating a constant negative pressure in the sponge. No fixation of the sponge was necessary, because low pressure suction fixed the sponge in the abscess cavity. The endo-sponge was changed every 3-4 days to prevent the tissue from growing into the sponge causing painful sponge exchanges.

![Figure 10.1 – 1/2/3 Installation of the endo-sponge in the abscess cavity (altered with the permission of B. Braun Medical B.V.) *abscess cavity, †mucosa bridge, ‡pouch. a) Endoscopic view of abscess cavity before endo-sponge treatment. b) After two weeks of endo-sponge treatment. c) End result after 5 weeks of endo-sponge treatment.](image)

**RESULTS**

**Case 1**

An 18-year-old male underwent an open restorative proctocolectomy with ileoanal J-pouch reconstruction for therapy-resistant ulcerative colitis diagnosed four years earlier. The pouch was constructed using a 100mm linear stapler (Proximate linear cutter 100 mm, Ethicon) and an ileo-anal anastomosis was made using the double stapled technique (Proximate ILS Circular Stapler CDH29, Ethicon). As the patient was on high dose of steroids a protecting loop-ileostomy was performed. There were no intra-operative complications. With the exception of an episode of urinary reten-
tion, the postoperative course was uneventful and the patient was discharged on day seven after surgery. Three days later the patient was readmitted with abdominal pain and anal blood loss. A CT scan with transanal contrast showed an anastomotic leakage with abscess formation. A relaparotomy was performed changing the diverting ileostomy into an end-ileostomy due to insufficient defunctioning. In the same procedure the size of the anastomotic leakage and abscess cavity were assessed endoscopically. A two third circumferential anastomotic dehiscence was present (Figure 10.1a). The large cavity was extensively cleansed and two endo-sponges were installed. During the following weeks multiple replacements of the endo-sponge were performed under a light sedative (5 mg Midazolam). This was partially done in the endoscopy suite of the outpatient’s clinic. After 35 days the cavity had resolved and vacuum treatment was stopped (Figure 10.1b,c). The ileostomy was closed ten weeks after resolution.

Case 2

A 40-year-old female underwent a subtotal colectomy with a diverting ileostomy two years earlier for therapy-resistant ulcerative colitis. Recently, an open completion proctocolectomy with ileoanal J-pouch reconstruction was done without a defunctioning ileostomy. The pouch was constructed as described in Case 1. There were no intra-operative complications. Postoperatively anticoagulant therapy (Fenprocoumon) was restarted for a known protein S deficiency. Unfortunately, due to high international normalized ratio (INR) a bleeding occurred resulting in the development of a large presacral hematoma. A relaparotomy was performed on the ninth postoperative day because of an anastomotic leakage diagnosed with a rectal contrast-enhanced CT. The presacral hematoma was evacuated and a diverting ileostomy was constructed. The patient recovered slowly and two weeks later the endo-sponge was inserted after endoscopic examination and washing out of the cavity. A three fourth anastomotic dehiscence was seen at this first postoperative endoscopy. The patient was discharged from the hospital 7 1/2 weeks after the primary surgery. The sponge was frequently replaced under a light sedative until complete resolution of the sinus was obtained after 56 days. Only a very small sinus remained after treatment on endoscopic examination. Ileostomy closure has not been scheduled yet because of patients’ preference.
DISCUSSION

Restorative proctocolectomy is the preferred surgical option to treat patients with ulcerative colitis and familial adenomatous polyposis coli. It leads to a good functional outcome and good long-term quality of life.\textsuperscript{4,5} Historically the anastomosis was performed hand-sewn. At present, most surgeons use the double stapled technique. Anastomotic leakage is a feared complication which is one of the most important determinants of long term pouch failure.\textsuperscript{1} For this reason, most surgeons routinely fashion a covering ileostomy reducing the clinical significance of anastomotic leakage when occurring. This diverting ileostomy is usually closed six to 12 weeks after radiological assessment of the anastomosis and pouch. If a leak is discovered, the resolution of this leak is generally assessed using gastrografin enemas. Most of the small leaks will eventually heal, but some of them cause a persistent presacral sinus precluding ileostomy closure. The prolonged pelvic sepsis and fibrosis is held responsible for impaired long term pouch function after ileostomy closure in many of those patients. Aggressive treatment of the presacral abscess enforcing quick resolution of the pelvic sepsis might be important for long term outcome. Small presacral sinuses are generally defunctioned and a wait and see policy is applied with sometimes successful outcome. Occasionally a redo-procedure is needed. Large sinuses can be treated with a transanally inserted double lumen Foley catheter enabling irrigation. The difficulty treating these presacral sinuses is essentially an inadequate drainage of the sinuses.

Vacuum-assisted closure therapy is nowadays extensively used for different appliances, ranging from diabetic ulcers to postoperative wound dehiscences.\textsuperscript{6} In the treatment of the open abdomen the vacuum-assisted wound management is also used increasingly.\textsuperscript{7} However it is not yet clear whether overall vacuum assisted therapy is superior to alternative options. Further research is in this field is warranted.\textsuperscript{8} Weidenhagen \textit{et al.} recently presented their first experience with a vacuum assisted closure of presacral sinuses after anastomotic leakages of low anterior resection.\textsuperscript{9} A series of seven patients with a large anastomotic leak were treated with the endo-sponge. Time until closure was between 21 and 42 days. Nagell \textit{et al.} reported on a small group of four patients successfully treated with a vacuum-assisted device for anastomotic leakage after rectal resection.\textsuperscript{2} All patients had a protective ileostomy and sponges were replaced every 2-3 days. Sponge changing was stopped.
when the cavity was smaller than the sponge and enough granulation tissue was present. Three out of four patients were followed (one patient died from cerebral hemorrhage) and healing times were 43, 51 and 195 days.

In the present study, two cases of large presacral abscesses after a semicircular anastomotic dehiscence after restorative proctocolectomy were closed effectively using the endo-sponge technique. Although the treatment is quite intensive as changing the sponge is necessary every 3-4 days, most of the replacements could be done in an outpatient setting. Resolution of the large cavities in these two cases was achieved in 35 and 56 days. A persistent presacral sinus was thereby avoided. Although these results are promising, long term pouch function after ileostomy closure has to be awaited.

In conclusion, use of the endo-sponge in the treatment of anastomotic leakage after ileoanal pouch anastomosis resulted in quick resolution of the presacral abscess cavity and finally healing of the anastomosis. Endo-sponge treatment can be considered a promising method avoiding prolonged pelvic sepsis and fibrosis in patients with leakage of low ileoanal pouches. This treatment might improve ostomy closure rate and long term functional outcome after restorative proctocolectomy complicated by anastomotic dehiscence.

REFERENCES


Chapter 10


