

Delayed transanal repair of persistent coloanal anastomotic leak in diverted patients after resection for rectal cancer

J. Blumetti*, V. Chaudhry*, L. Prasad† and H. Abcarian*

*Division of Colon and Rectal Surgery, Stroger Hospital of Cook County, Chicago, Illinois, USA and †Department of Surgery, Colon and Rectal Surgery and Minimally Invasive Robotic Colon and Rectal Surgery, Center for Robotic Surgery, Advocate Lutheran General Hospital, Park Ridge, Illinois, USA

Received 30 August 2011; accepted 25 October 2011; Accepted Article online 10 January 2012

Abstract

Aim Anastomotic leakage is a feared complication of colorectal surgery and can be devastating in low pelvic anastomosis. With the advent of nonoperative treatments for leakage, the question of management of persistent low colorectal and coloanal anastomosis arises. A review of patients who have undergone transanal repair of anastomotic leakage is presented.

Method A review of all anastomoses performed in the Division of Colorectal surgery at two institutions, from January 2000 to June 2008, was performed. Anastomotic leakage was defined as the finding at reoperation of a dehiscence, or radiographic findings of extravasation from the anastomosis, or the identification of intra-abdominal abscess formation at the site of the anastomosis, enterocutaneous fistula or rectovaginal fistula. Patients who underwent transanal repair of the leakage were identified.

Results There were 663 low anterior resections performed during the study period. Of these, 36 experienced leakage of a low colorectal or coloanal anastomosis. Of these 36 patients, five underwent transanal repair of the anastomotic leak. All had had a low anterior resection for

rectal cancer (coloanal = 4; low colorectal anastomosis = 1). Four had had prior chemoradiation and ileostomy defunctioning at the initial operation. The fifth had an ileostomy created to treat a leak. Six transanal repairs were performed, including endorectal advancement flap ($n = 3$), dermal flap ($n = 1$), direct suture repair ($n = 1$) and debridement of an infected cavity ($n = 1$). At the time of the present assessment, four patients had undergone reversal of ileostomy after radiographic evidence of complete healing and the fifth patient has a persistent leak.

Conclusion Transanal repair of a persistent low colorectal or coloanal anastomotic leakage is feasible in selected cases, even when chemoradiation has been performed.

Keywords Anastomotic leak, transanal repair, rectal cancer

What is new in this paper?

The paper reports the success of local surgical repair of low pelvic anastomotic leakage after anterior resection for rectal cancer, even after preoperative radiation.

Introduction

Anastomotic leakage continues to be a devastating complication in colorectal surgery; it occurs in 2–23% of patients, with the highest rates occurring in low colorectal or anal anastomosis [1–7].

Most patients with anastomotic leakage are managed conservatively, and in those requiring surgery, most have a diverting ileostomy without any direct attention to the anastomosis [5]. The majority appear to heal, but in

those who do not, the question of further management arises. Reoperation with resection and reanastomosis is an option, but carries the morbidity associated with reoperative pelvic surgery. In patients with a discrete sinus tract, marsupialization is well described [8,9], and in patients with an ileal pouch-vaginal fistula, pouch advancement or flap procedures have been reported [10–12]. This report describes local surgical closure of persistent anastomotic leakage in patients after rectal resection for cancer.

Method

A retrospective review of all anastomoses within the Division of Colorectal Surgery at Stroger Hospital and

Correspondence to: Jennifer Blumetti, MD, Attending Surgeon, Division of Colon and Rectal Surgery, Stroger Hospital of Cook County, 1900 West Polk St, Room 406, Chicago, IL 60612, USA.
E-mail: jblumetti5@gmail.com

Lutheran General Hospital from January 2000 to June 2008 was undertaken. Anastomotic leakage was defined by the identification at reoperation of a defect, radiographic evidence of extravasation from the anastomosis, intra-abdominal abscess formation at the anastomosis, or enterocutaneous or rectovaginal fistula formation from the anastomosis. Patients with a low colorectal or coloanal anastomotic leakage who underwent transanal repair of the leak were analyzed.

Procedures

Transanal repair consisted of a simple suture, curettage or a flap procedure (Fig. 1). The opening in the anastomosis was identified and excised (Fig. 1a). A broad, U-shaped flap was raised and the opening of the cavity was closed with an absorbable suture (Fig. 1b). To allow for a tension-free anastomosis, a small portion of anoderm was

mobilized distally and the flap was secured with an absorbable suture (Fig. 1c). If there was concern of tension, this was combined with a dermal advancement flap (Fig. 1d). Alternatively, for a very low defect, a dermal flap may be the only feasible procedure.

Results

Of 663 low anterior resections, 36 cases of leakage of a low colorectal or coloanal anastomosis were identified. Nine (25%) were managed operatively, and 27 were managed nonoperatively. Of the former, two previously diverted patients had undergone surgical drainage, one a Hartmann's procedure and the remaining six a diverting ileostomy and drainage without manipulation of the anastomosis. Four of these six patients had a successful outcome with eventual reversal of the ileostomy. Among the nonoperative patients, 14 underwent percutaneous

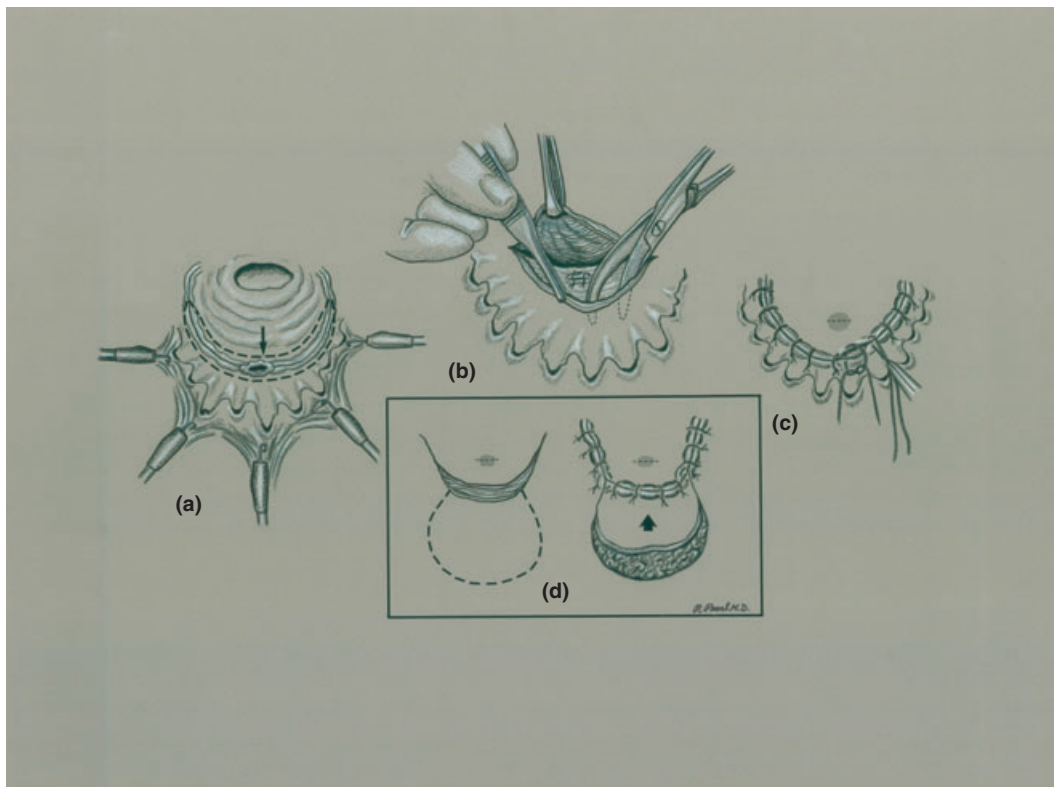


Figure 1 Operative technique for flap repair of anastomotic leak. All patients were diverted at the time of surgery. The patient was positioned in the prone jackknife position and a Lone Star Retractor was used. (a) The dentate line and anastomosis are exposed. The anastomosis and sinus opening (arrow) are excised (dashed lines) and the tract is curetted. (b) A broad-based U-shaped flap is created to include mucosa, submucosa and circular muscle and is mobilized until it can be easily pulled caudally. The opening of the sinus is closed with interrupted polyglactin sutures. The anoderm and a portion of internal sphincter are undermined to ensure a tension-free anastomosis. (c) The new anastomosis is completed using polyglactin sutures, avoiding the overlap of this suture line and the closure of the sinus track. (d) In case of too much tension at the anastomosis, a cutaneous flap can be created by mobilizing an island of skin and suturing it to the mobile flap. Alternatively, for a very low anastomotic leak with an anal fistula, the cutaneous flap may be utilized as the primary repair.

Table 1 Details of the patients treated by local repair.

Patient	Age (years)	Anastomosis	Radiation	Management leak	Repair type	Time to repair	Success?
1	66	4 cm, stapled	No	Operative treatment, diversion, drainage of posterior abscess	1. Endorectal flap 2. Curettage/debridement of cavity	1. 8 months 2. 15 months	1. No 2. Yes
2	31	Coloanal, handsewn	Yes	Percutaneous drainage of posterior pelvic collection	Endorectal flap	8 months	Yes
3	56	Coloanal, handsewn	Yes	Antibiotics for small posterior pelvic collection	Endorectal flap	14 months	No
4	52	Coloanal, handsewn	Yes	Asymptomatic, posterior sinus, diagnosed on contrast enema	Direct suture repair	12 months	Yes
5	51	Coloanal, stapled	Yes	Drainage of lateral abscess, seton in lateral fistula	Cutaneous flap	15 months	Yes

drainage of a pelvic abscess, one underwent endoscopic drainage of the pelvic cavity, one had fibrin glue inserted into the anastomosis and the remainder were treated with antibiotics alone. Thirteen of the 14 anastomotic leaks were successfully closed.

Five patients were identified who underwent a transanal repair of a persistent low anastomotic leak. All had had a low anterior resection for rectal cancer. The type of anastomosis and management of the initial leak are shown in Table 1. Four patients had received prior chemoradiotherapy and all had a diverting ileostomy placed at the initial operation. The remaining patient had an ileostomy constructed during a reoperation for leakage without manipulation of the anastomosis. Four patients had radiographic demonstration of persistent leakage on a contrast enema prior to repair and the fifth had an anastomosis to a cutaneous fistula on clinical examination.

In all, six transanal repairs were performed in the five patients at 8–15 months from the original anterior resection. One patient underwent a simple suture repair of a small defect in the anastomosis with no persistent posterior cavity identified. This subsequently healed.

The remaining four patients underwent a local flap procedure, as described in the Method section and in Fig. 1. In two patients, the flap repair resulted in healing of the fistula. Of the remaining two patients, one was found to have a persistent defect upon digital rectal examination, which prompted additional local curettage with successful healing of the fistula. The remaining patient was planned to undergo a repeat transanal procedure for persistent leakage, but this was prevented by the development of distant metastases. Radiological confirmation of closure

was obtained in all four of the successful closures and all underwent reversal of ileostomy. Of these, three were followed for at least 1 year and all remained closed.

Discussion

Anastomotic leakage, a devastating complication in colon surgery, occurs in up to 23% of anastomoses, with low rectal and coloanal anastomoses having the highest rates [1–7]. In one study the risk for low rectal anastomoses (< 5 cm from the anal verge) was six times higher than for a high rectal anastomosis [13]. The addition of an ileostomy in patients who have undergone preoperative chemoradiation may ameliorate the severity of the symptoms of anastomotic leakage, but does not appear to decrease the rate of leakage in these patients [14].

There has been a recent shift in the management of anastomotic leakage, with more patients undergoing nonoperative management. In this report, the majority were managed nonoperatively, and of those who required surgery, most underwent diversion and drainage without manipulation of the anastomosis, which has been demonstrated to be safe [5]. There is little information in the literature of how to manage those patients who undergo conservative management but continue to have persistent leakage, particularly in patients who have undergone preoperative chemoradiation for rectal cancer. Pouch advancement or flap creation have been well described for management of persistent sinuses or fistulae after restorative proctocolectomy and ileal pouch-anal anastomosis [10–12]. Curettage and marsupialization are also techniques utilized in the treatment of pouch sinuses [8,9].

Patients who are candidates for transanal repair should have documentation of a persistent sinus or cavity on contrast enema with no evidence of recurrent cancer and no comorbidity, which would prevent them from undergoing operative repair.

In this series, all patients with low colorectal/coloanal anastomotic leakage undergoing transanal repair had undergone resection for rectal cancer, and all but one had had preoperative chemoradiation. Despite this, transanal repair combined with ileostomy was successful in four out of five of these selected patients. Local repair has been well described in the treatment of radiation-associated rectourethral fistula [15,16]. The use of this technique avoids a major laparotomy with reoperative pelvic dissection and its attendant morbidity. It also allows for a repeat procedure if the first attempt fails, as in one patient in this series. Flap repair is the authors' preferred technique for these leaks, although other techniques (direct suture repair and curettage) were also utilized and were successful.

Transanal repair of a persistent low colorectal or coloanal anastomotic leak is feasible in selected cases, even after chemoradiation for rectal cancer.

Acknowledgements

The authors would like to acknowledge Dr Russell Pearl for the operative drawings.

References

- 1 Kanellos I, Vasiliadis K, Angelopoulos S *et al.* Anastomotic leakage following anterior resection for rectal cancer. *Tech Coloproctol* 2004; **8**: s79–81.
- 2 Byrn JC, Schlager A, Divino DM, Weber KJ, Baril DT, Aufses AH. The management of 38 anastomotic leaks after 1684 intestinal resections. *Dis Colon Rectum* 2006; **49**: 1346–53.
- 3 Phitayakorn R, Delaney CP, Reynolds HL *et al.* Standardized algorithms for management of anastomotic leaks and related abdominal and pelvic abscesses after colorectal surgery. *World J Surg*, 2008; **32**: 1147–56.
- 4 Matthiessen P, Hallbrook O, Anderssen M, Rutegard J, Sjobahl R. Risk factors for anastomotic leakage after anterior resection of the rectum. *Colorectal Dis* 2004; **6**: 462–9.
- 5 Hedrick TL, Sawyer RG, Foley EF, Friel CM. Anastomotic leak and the loop ileostomy: friend or foe? *Dis Colon Rectum* 2006; **49**: 1167–76.
- 6 Hyman N, Manchester TL, Osler T, Burns B, Cataldo PA. Anastomotic leaks after intestinal anastomosis, it's later than you think. *Ann Surg* 2007; **245**: 254–8.
- 7 Lim M, Akhtar S, Sasapu K *et al.* Clinical and subclinical leaks after low colorectal anastomosis: a clinical and radiologic study. *Dis Colon Rectum* 2006; **49**: 1611–9.
- 8 Stewart BT, Stitz RW. Marsupialization of presacral collections with the use of an endoscopic stapler. *Dis Colon Rectum* 1999; **42**: 264–5.
- 9 Whitlow CB, Opelka FG, Gathright JB, Beck DE. Treatment of colorectal and ileoanal anastomotic sinuses. *Dis Colon Rectum*, 1997; **40**: 760–3.
- 10 Galandiuk S, Scott NA, Dozois RR *et al.* Ileal pouch-anal anastomosis, reoperation for pouch related complications. *Ann Surg* 1990; **212**: 446–52.
- 11 Fleshman JW, McLeod RS, Cohen Z, Stern H. Improved results following the use of an advancement technique in the treatment of ileoanal anastomotic complications. *Int J Colorectal Dis* 1988; **3**: 161–5.
- 12 Wexner SD, Rothenberger DA, Jensen L *et al.* Ileal pouch vaginal fistulas: incidence, etiology and management. *Dis Colon Rectum* 1989; **32**: 460–5.
- 13 Rullier E, Laurent C, Garrelon JL, Michel P, Saric J, Parneix M. Risk factors for anastomotic leakage after resection of rectal cancer. *Br J Surg*, 1998; **85**: 355–8.
- 14 Wong NY, Eu KW. A defunctioning ileostomy does not prevent clinical anastomotic leak after low anterior resection: a prospective comparative study. *Dis Colon Rectum* 2005; **48**: 2076–9.
- 15 Nayam DCNK, Pemberton JH. Management of iatrogenic rectourethral fistula. *Dis Colon Rectum* 1999; **42**: 994–9.
- 16 Prasad L, Nelson R, Hambrick E, Abcarian H. York Mason procedure for repair of postoperative rectoprostatic urethral fistula. *Dis Colon Rectum*, 1983; **26**: 716–20.