

Repeat Transanal Advancement Flap Repair: Impact on the Overall Healing Rate of High Transsphincteric Fistulas and on Fecal Continence

Litza E. Mitalas, M.D., Martijn P. Gosselink, M.D.,
David D. E. Zimmerman, M.D., Ph.D., W. Ruud Schouten, M.D., Ph.D.¹

Colorectal Research Group Rotterdam, Department of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands

PURPOSE: Transanal advancement flap repair (TAFR) has been advocated as the treatment of choice for transsphincteric fistulas passing through the upper or middle third of the external anal sphincter. It is not clear whether previous attempts at repair adversely affect the outcome of TAFR. The purpose of the present study was to evaluate the success rate of a repeat TAFR and to assess the impact of such a second procedure on the overall healing rate of high transsphincteric fistulas and on fecal continence. **METHODS:** Between January 2001 and January 2005, a consecutive series of 87 patients (62 males; median age, 49 (range, 27–73) years) underwent TAFR. Median follow-up was 15 (range, 2–50) months. Patients in whom the initial operation failed were offered two further treatment options: a second flap repair or a long-term indwelling seton drainage. Twenty-six patients (male:female ratio, 5:2; median age, 51 (range, 31–72) years) preferred a repeat repair. Continence status was evaluated before and after the procedures by using the Rockwood Faecal Incontinence Severity Index (RFISI). **RESULTS:** The healing rate after the first TAFR was 67 percent. Of the 29 patients in whom the initial procedure failed, 26 underwent a repeat TAFR. The healing rate after this second procedure was 69 percent, resulting in an overall success rate of 90 percent.

Both before and after the first attempt of TAFR, the median RFISI was 7 (range, 0–34). In patients who underwent a second TAFR, the median RFISI before and after this procedure was 9 (range, 0–34) and 8 (range, 0–34), respectively. None of these changes were statistically significant. **CONCLUSIONS:** Repeat TAFR increases the overall healing rate of high transsphincteric fistulas from 67 percent after one attempt to 90 percent after two attempts without a deteriorating effect on fecal continence. [Key words: Transsphincteric fistula; Transanal advancement flap repair; Repeat repair; Fecal incontinence]

Transanal advancement flap repair (TAFR) has been advocated as the treatment of choice for transsphincteric perianal fistulas passing through the upper or middle third of the external anal sphincter. Initially, the reported healing rates varied between 84 and 100 percent.^{1–4} In a recent study among 105 patients, conducted in two tertiary referral centers, a healing rate of 69 percent was found.⁵ Similar results were reported by other authors.^{6–9} It is still unclear whether the outcome after TAFR is influenced by previous attempts at repair. According to some authors, previous procedures, such as fistulotomy, fistulectomy, and the use of fibrin glue, adversely affect the healing rate after TAFR.^{6,10} However, these findings could not be confirmed by others.^{7,11} Until now, data regarding the healing rate after repeat flap repairs and their impact on fecal continence have been scarce. It has been suggested that one single TAFR may result in incontinence. The reported

Read at the meeting of The American Society of Colon and Rectal Surgeons, Seattle, Washington, June 3 to 7, 2006.

Reprints are not available.

Correspondence to: W. Ruud Schouten, M.D., Ph.D., Colorectal Research Group Rotterdam, Department of Surgery, Erasmus Medical Center, Dr. Molewaterplein 40, 3015 GD, Rotterdam, The Netherlands, e-mail: w.r.schouten@erasmusmc.nl

Dis Colon Rectum 2007; 50: 1508–1511

DOI: 10.1007/s10350-007-9015-4

© The American Society of Colon and Rectal Surgeons

Published online: 14 August 2007

incidence of this side effect varies between 8 and 35 percent.^{2,6,7,10-12} According to some authors, inclusion of internal anal sphincter fibers, which is necessary to strengthen the flap, contributes to the impairment of continence. Based on this assumption it might be possible that a second flap repair further deteriorates fecal incontinence. This study was designed to investigate the healing rate after a repeat flap repair and to assess the impact of such a second procedure on the overall healing rate of high trans-sphincteric fistulas. In addition, fecal continence was assessed before and after the first and second flap repair, using the Rockwood Fecal Incontinence Severity Index (RFISI).¹³

PATIENTS AND METHODS

Between January 2001 and January 2005, a consecutive series of 87 patients (62 males) with a transsphincteric fistula of cryptoglandular origin, passing through the middle or upper third of the external anal sphincter, underwent TAFR. Median age at the time of repair was 49 (range, 27-73) years. Before the procedure, all patients underwent endoanal magnetic resonance imaging (MRI) to confirm the transsphincteric course of the fistulous track. This imaging technique also was performed to identify the location of the internal opening and to detect the presence of any horseshoe extensions. This first attempt at repair failed in 29 patients (33 percent). These subjects were offered two further treatment options: a second flap repair, or a long-term indwelling seton drainage. Twenty-six patients (male:female ratio 5:2; median age, 51 (range, 31-72) years) preferred a repeat repair. Three patients were treated by the loose-seton technique. This loose-fitting seton is left *in situ* for at least three to four years. In our experience, the seton slowly migrates through the external sphincter. When it reaches the subcutaneous level, it is removed and the remnant of the fistulous tract is excised.

Surgical Technique

Patients underwent complete mechanical bowel preparation (polyethylene glycol). After induction of general endotracheal anesthesia, metronidazole (500 mg) together with cefuroxime (1,500 mg) was administered intravenously. With the patient in prone jackknife position, the internal opening of the fistula was exposed by using a Lone Star retractor (Lone Star

Retractor System[®], Lone Star Medical Products, Inc., Houston, TX). The crypt-bearing tissue around the internal opening, as well as the overlying anodermis was then excised. The fistulous tract was cored out of the sphincters. The defect in the internal anal sphincter was closed with absorbable sutures. A flap consisting of mucosa, submucosa, and some of the most superficial fibers of the internal anal sphincter was raised from the level of the dentate line and mobilized over a distance of 4 to 6 cm proximally. The base of flap was approximately twice the width of its apex. The flap was advanced and sutured to the neodentate line with absorbable sutures. One surgeon performed all operations. Exactly the same surgical technique was used in both the first and the second repair.

Postoperative Care

All patients were immobilized for five days. During these five days, a Foley catheter was given to obtain complete bed rest. All patients received a clear liquid diet for five days. During this time period, metronidazole and cefuroxime were administered intravenously three times daily. Average duration of hospital stay was seven days.

Assessment of Fecal Continence

Impairment of continence was evaluated both before and after the first and second attempt by using the Rockwood Fecal Incontinence Severity Index (RFISI). This is a validated index based on a type X frequency matrix. The matrix includes four types of leakage commonly found in the fecal incontinent population: gas, mucus, liquid, and solid stools; and five frequencies: once to three times per month, once per week, twice per week, once per day, and twice per day. For the specification of the weighting scores, patient input was used. Scores range from zero (total continence) to 61 (complete incontinence to solid stool on daily bases).

For statistical analysis, the Fisher's exact test was used. *P* value < 0.05 was considered to be statistically significant.

RESULTS

Median duration of follow-up was 15 (range, 2-50) months. Fistula healing was observed in 58 of 87 patients (67 percent). Of the 29 patients in

whom the initial procedure failed, 26 underwent a repeat TAFR. The healing rate after this second procedure was 69 percent, resulting in an overall success rate of 90 percent.

Before the first attempt at TAFR, the median RFISI was 7 (range, 0–34). The median score did not change after the first procedure. In three of these patients the RFISI improved, and in three patients it worsened. In all other patients, RFISI did not change after the first procedure. Before and after the second repair, the median RFISI was 9 (range, 0–34) and 8 (range, 0–34), respectively. This change was not statistically significant. In 1 of these patients, the RFISI improved, in 1 it worsened, and in 24 patients RFISI did not change after the second procedure.

Of the eight patients in whom the second flap repair failed, one patient was successfully treated with anocutaneous advancement flap repair. The other seven patients were treated with long-term indwelling seton drainage (Table 1).

DISCUSSION

Transanal advancement flap repair has been advocated as the treatment of choice for transsphincteric perianal fistulas passing through the upper or middle third of the external anal sphincter. Initially, healing rates between 84 and 100 percent were reported.^{1–4} During the last decade, several studies have revealed considerably higher recurrence rates.^{5–8,10,14} In a Dutch study among 105 patients, conducted in two tertiary referral centers, a recurrence rate of 31 percent was observed.⁵ Similar results have been reported by other investigators.^{6–8,10,14} There is some evidence that previous attempts at repair are a negative predictor of outcome. A previous study, conducted at our own institution, revealed a less favorable outcome in patients who had undergone two or more previous attempts at repair, such as fistulotomy or fistulectomy.¹⁰ In 44 patients who underwent a flap repair,

we found that the healing rate was 87 percent in patients who had undergone no or only one previous attempt at repair. This healing rate dropped to 50 percent in patients who had undergone two or more previous attempts at repair. A similar finding was observed by Ozuner and coworkers.⁶ According to others, however, the number of previous repair does not affect the outcome of TAFR.^{7,8,11}

Until now data regarding the healing rate after repeat flap repairs and their impact on fecal continence have been scarce. According to Lindsey *et al.*,¹⁵ the efficacy of a repeat TAFR is limited because “the scarring associated with a failed advancement flap compromises the changes of success with subsequent flaps.” In a study conducted by Kodner *et al.*,⁴ nine patients in whom the initial flap repair failed underwent a second operation, which was successful in all patients. In a study conducted by Mizrahi *et al.*,⁷ 12 patients underwent repeat surgery because of initial failure, of whom 8 healed (67 percent). These two small series indicate that a repeat flap repair might be worthwhile. However, the impact on fecal continence was not assessed in these two studies. The data obtained from our present study are in accordance with those reported by Kodner *et al.* and Mizrahi *et al.* The healing rate of the second procedure was 69 percent. This successful outcome resulted in an overall healing rate of 90 percent. We do not know which factors are predictors of outcome and why flaps that initially failed did succeed on the second repair. We choose to report this data after a median follow-up of 15 months. Although this time period might seem relatively short, there are indicators that more than 80 percent of the recurrences are within the first 12 months.⁶

In a study conducted by Athanasiadis *et al.*, 90 percent of recurrent fistulas developed within the first year after treatment.¹⁶ The reported incidence of disturbed continence after TAFR varied between 8 and 35 percent.^{2,4,5,7,10,11} It has been postulated that the inclusion of internal anal sphincter fibers,

Table 1.
Results of Repeat TAFR

	No. of Patients	Median Follow-Up (mo)	Healing Rate (%)	Median RFISI Before	Median RFISI After
First repair	87	15	67	7	7
Second repair	26	15	69	9	8
After two repairs	87	15	90	8	8

TAFR = transanal advancement flap repair; RFISI = Rockwood Fecal Incontinence Severity Index.

which is necessary to strengthen the flap, contributes to the impairment of continence.¹⁷ A second flap also requires inclusion of internal anal sphincter fibers, which might result in further impairment of fecal continence. In a previous study, we were able to demonstrate that the use of a Parks retractor has a deteriorating effect on fecal continence. This side effect was not observed after flap repair with the use of a Lone Star retractor.¹⁸ In the present study, this ring retractor, with multiple skin hooks on elastic bands, was used to gain access to the anal canal.

Although internal anal sphincter fibers were included to strengthen the second flap, no deterioration of continence was observed after the repeat flap repair. Therefore, it seems unlikely that inclusion of internal anal sphincter fibers contributes to the impairment of fecal continence after transanal advancement flap repair. In our opinion, avoidance of anal stretch during the procedure is far more important in reducing the risk of postoperative continence disturbances. The median postoperative RFISI score observed in our patients was 8. It seems likely that this minor deterioration of continence did not affect the quality of life of our patients, because it has been reported that only a score > 30 has a detrimental effect on quality of life.¹⁹

Based on the data obtained from the present study, it is recommended to offer all patients a repeat TAFR after a failed first flap repair.

REFERENCES

- Oh C. Management of high recurrent anal fistula Surgery 1983;93:330–2.
- Aguilar PS, Plasencia G, Hardy TG Jr, Hartmann RF, Stewart WR. Mucosal advancement in the treatment of anal fistula Dis Colon Rectum 1985;28:496–8.
- Wedell J, Meier zu Eissen P, Banzhaf G, Kleine L. Sliding flap advancement for the treatment of high level fistulae Br J Surg 1987;74:390–1.
- Kodner IJ, Mazon A, Shemesh EI, Fry RD, Fleshman JW, Birnbaum EH. Endorectal advancement flap repair of rectovaginal and other complicated anorectal fistulas Surgery 1993;114:682–90.
- Zimmerman DD, Delemarre JB, Gosselink MP, Hop WC, Briel JW, Schouten WR. Smoking affects the outcome of transanal mucosal advancement flap repair of trans-sphincteric fistulas Br J Surg 2003;90:351–4.
- Ozuner G, Hull TL, Cartmill J, Fazio VW. Long-term analysis of the use of transanal rectal advancement flaps for complicated anorectal/vaginal fistulas Dis Colon Rectum 1996;39:10–4.
- Mizrahi N, Wexner SD, Zmora O, *et al.* Endorectal advancement flap: are there predictors of failure? Dis Colon Rectum 2002;45:1616–21.
- Sonoda T, Hull T, Piedmonte MR, Fazio VW. Outcomes of primary repair of anorectal and rectovaginal fistulas using the endorectal advancement flap Dis Colon Rectum 2002;45:1622–8.
- Jones IT, Fazio VW, Jagelman DG. The use of transanal rectal advancement flaps in the management of fistulas involving the anorectum Dis Colon Rectum 1987;30:919–23.
- Schouten WR, Zimmerman DD, Briel JW. Transanal advancement flap repair of transsphincteric fistulas Dis Colon Rectum 1999;42:1419–23.
- Ortiz H, Marzo J. Endorectal flap advancement repair and fistulectomy for high trans-sphincteric and supra-sphincteric fistulas Br J Surg 2000;87:1680–3.
- Golub RW. Endorectal mucosal advancement flap: the preferred method for complex cryptoglandular fistula-in-ano J Gastrointest Surg 1997;1:487–91.
- Rockwood TH, Church JM, Fleshman JW, *et al.* Patient and surgeon ranking of the severity of symptoms associated with fecal incontinence: the fecal incontinence severity index Dis Colon Rectum 1999;42:1525–32.
- Dixon M, Root J, Grant S, Stamos MJ. Endorectal flap advancement repair is an effective treatment for selected patients with anorectal fistulas Am Surg 2004;70:925–7.
- Lindsey I, Smilgin-Humphreys MM, Cunningham C, Mortensen NJ, George BD. A randomized, controlled trial of fibrin glue *vs.* conventional treatment for anal fistula Dis Colon Rectum 2002;45:1608–15.
- Athanasiadis S, Helmes C, Yazigi R, Kohler A. The direct closure of the internal fistula opening without advancement flap for transsphincteric fistulas-in-ano Dis Colon Rectum 2004;47:1174–80.
- Aguilar PS. Invited editorial. Dis Colon Rectum 1999;42:1422–3.
- Zimmerman DD, Gosselink MP, Hop WC, Darby M, Briel JW, Schouten WR. Impact of two different types of anal retractor on fecal continence after fistula repair: a prospective, randomized, clinical trial Dis Colon Rectum 2003;46:1674–9.
- Cavanaugh M, Hyman N, Osler T. Fecal incontinence severity index after fistulotomy: a predictor of quality of life Dis Colon Rectum 2002;45:349–53.