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The changes in resting anal pressure after performing full-thickness rectal advancement flaps

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ABSTRACT

Background: Advancement flap is an accepted approach for treating complex fistula-in-ano.The purpose was to evaluate the changes in resting pressure along the anal canal after performing a full-thickness flap.

Methods: Manometric review of patients who have undergone a full-thickness rectal advancement flap procedure for complex anal fistulas of cryptoglandular origin. Recurrence and continence were evaluated. Resting Anal Pressure was assessed along the anal canal by two measures: maximum resting pressure(MRP) and inferior resting pressure(IRP) at 0.5 cm from the anal verge.

Results: 119 patients were evaluated. Overall recurrence rate was5.9%. Anal continence was maintained intact in 76.5%. Manometric study showed a significant decrease in postoperative MRP(90.6 ± 31.9 to 45.2 ± 20 mmHg; $p < 0.001$), while IRP values did not differ significantly(28.2 ± 18.3 to 23.2 ± 13.5 mmHg; $p = 0.1$).

Conclusions: Performing a full-thickness rectal flap causes a decrease of the MRP in the middle third of the anal canal, due to the inclusion of the internal sphincter in flap. It seems crucial to preserve the distal internal sphincter intact as it helps both to maintain the resting pressure in the lower third and avoid deformities of the anal margin.

1. Introduction

The rectal advancement flap achieves the healing of a fistula in a significant number of patients, with a wide variability of results.[1] Some authors advocate for full-thickness advancement flap of the internal sphincter, based on previous reports. These publications affirm that as the thickness of the flap increases, rates of success get higher,[2,3] this is probably due to greater vascular irrigation and strength of the flap.[2]

In previous papers, we reported our long-standing experience concerning clinic and manometric results in full-thickness flaps.[4–6]The purpose of the present study was to evaluate the changes in anal resting pressure along the anal canal after performing a full-thickness flap, which is mainly a function of the internal anal sphincter.

2. Material and methods

This is a manometric review of patients who have undergone a full-thickness rectal advancement flap procedure for complex anal fistulas of cryptoglandular origin. Patients with fecal incontinence prior to surgery, Crohn's disease and mucosal advancement flaps were excluded.

Transanal rectal advancement flap repair was performed as reported previously.[4] The internal opening was identified and excised with the crypt-bearing tissue around. A full-thickness flap consisting of mucosa, submucosa and internal sphincter was dissected proximally, with special care taken in preserving the integrity of the internal sphincter distal to the internal opening (Fig. 1). The flap was advanced over the closed internal defect and was sutured to the distal internal sphincter with interrupted sutures.

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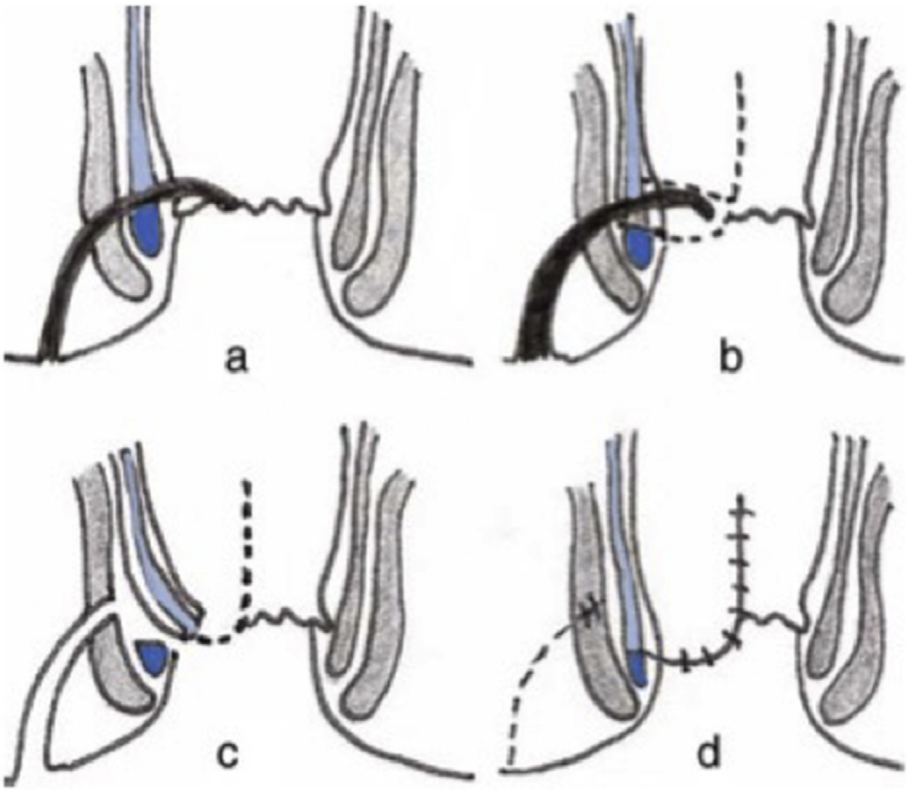

Fig. 1. Rectal advancement flap. a) Fistula tract treatment. b) Internal opening excision. c) Full-thickness flap creation and preservation of the integrity of the internal sphincter distal to the internal opening. d) Advancement of the flap over the closed internal defect.

The data were collected in a prospective database that included demographic characteristics (age, sex, smoking, ASA), previous anorectal operation, type of fistula (anatomy, horseshoe extensión, supralevator cavity) and surgical outcome (postoperative stay, complications, recurrence and incontinence). Clinical results were obtained from direct interview and exploration at a minimum follow-up of 12 months. The Wexner Score[7] was used to evaluate the continence status and was considered unaffected when there was no change in score after surgery. It was performed before and 3 months after operation.

The functional outcome of fistula surgery has been also quantified by anal manometry, before and three months after surgery. Was performed using a water-perfused system (Arndorfer Medical specialties, Greendale, WI, USA) with a four-lumen catheter (Synectics AB, Stockholm, Sweden). To evaluate the changes in anal resting pressure along the anal canal after full-thickness flap, two parameters were analyzed: maximum anal resting pressure (MRP) and inferior resting pressure (IRP). MRP as the mean of the maximum pressure values obtained at each port, which is usually located in the middle third of anal canal. MRP shows the changes caused by the inclusion of internal sphincter on the flap. IRP as the mean of the pressure values obtained at each port measured at 0.5 cm from the anal verge, which shows modifications in the lower third, where the internal sphincter is intact.

The statistical analysis was performed using SPSS version 22.0 for Mac (SPSS, Chicago, IL, USA). Variables was presented as percentage or mean ± SD. Manometric data were expressed as mean ± SD. Continuous measures were analyzed using the Mann-Whitney *U* test for independent variables and the Wilcoxon test for associated variables. $P < 0.05$ was considered statistically significant.

3. Results

From January 1995 to June 2013, a total of 119 patients were qualified for inclusion into this study. The demographic and clinical characteristics of these patients is summarized in Table 1. All patients were followed for a minimum of 1 year, and the overall median follow-up period was 28.9 months. Fistula recurrence

Table 1
Demographic and clinical characteristics of the patients.

Sex, Male, n (%)	80 (67.2)
Age, m ± SD	49.8 ± 12.4
Smoking, n (%)	64 (53.8)
• Ex-smoker	10 (8.4)
• <10 cigarettes/day	11 (9.2)
• 10–40 cigarettes/day	30 (25.2)
• >40 cigarettes/day	4 (3.4)
Diabetes mellitus, n (%)	10 (8.4)
Arterial hypertension, n (%)	24 (20.2)
ASA grade, n (%)	
• I	51 (42.9)
• II	61 (51.3)
• III	7 (5.8)
Previous abscess, n (%)	
• No	21 (17.5)
• 1	56 (46.7)
• >1	42 (35.8)
Previous fistula surgery, n (%)	11 (9.2)
Anatomy of the fistula, n (%)	
• Medium transsphincteric	32 (26.9)
• High trabssphincteric	81 (68.1)
• Suprasphincteric	6 (5)
Horseshoe extensión, n (%)	29 (24.4)
Supralevator cavity, n (%)	15 (12.6)