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Short Term Effects of Minor Anal Surgeries on Stool Incontinence

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Abstract

Background: Fecal incontinence (FI) is the inability to regulate the release of bowel contents or the involuntary flow of fecal matter via the anus.

Aim and objectives: To show and track the development of fecal incontinence following anorectal surgeries, such as hemorrhoidectomy, fistulotomy, sphincterotomy, and fistulectomy, at the 2-, 4-, and 6-week postoperatively.

Patients and methods: This is a prospective, cross-sectional and observational study carried out on sixty (60) patients; twenty (20) patients with hemorrhoid disease surgeries, twenty (20) patients with fissure disease surgeries, and twenty (20) patients with anal fistula disease surgeries recruited from outpatient surgery clinic of Misr University for science and technology Hospital (MUST) and Sheikh Zayed specialized hospital by simple random sampling technique in the period from May 2023 to December 2023.

Results: Two Patients out of 20 who underwent lateral internal sphincterotomy got fecal incontinence. 7 out of 20 get incontinence after fistulotomy. No fecal incontinence was detected in 20 patients after open haemorrhoidectomy.

Conclusion: In actuality, inadequate intestinal continence is a significant side effect following anorectal procedures, when sphincter damage frequently results in anal continence issues. While almost all patients with chronic anal fissures have healing and relief from symptoms after lateral internal sphincterotomy, incontinence is a common side effect. The majority of incontinence episodes are brief and mild.

Keywords: Anal surgeries; Stool incontinence

1. Introduction

The inability to control the release of bowel contents or the involuntary passing of fecal matter through the anus is known as fecal incontinence (FI). Its intensity might vary from an involuntary flatus passage to a complete fecal matter evacuation. A patient's quality of life is significantly impacted by the disease, depending on how severe it is. Individuals who experience fecal incontinence inadvertently lose either liquid or solid stool. The anal sphincter's loss of control causes the premature emission of feces in cases of actual anal incontinence. However, hemorrhoids, rectal prolapse, enlarged skin tags, and poor hygiene can all cause fecal incontinence. Inflammatory bowel disorders, the use of laxatives, and parasite infections are other frequent reasons.¹

Many problems can lead to post-operative

fecal incontinence after anorectal surgery. The deliberate division of sphincter muscle with an underestimate of the functional implications may have occurred in circumstances like fistulotomy. Occasionally, inadvertent harm is done to the anal sphincter or related nerves. This may result from future infection or direct mechanical or thermal stress. The anal sphincter should not inadvertently be damaged, hence precise surgical technique is essential. A prior-to-operation informed consent form must also address the risk of fecal incontinence. Particular anorectal procedures-related incontinence.²

The pathological alterations in the anal cushions, a typical part of the anal canal that helps with stool evacuation and regulates anal continence, are represented by hemorrhoids. One of these pathological alterations is the vascular plexus's expansion due to the cushions' underlying connective tissue breakdown.

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The pathophysiology of hemorrhoids explains the symptoms related to the condition, such as swelling, prolapse, bleeding, and seepage caused by a disruption in the delicate balance of continence, which irritates the skin around the perianal area. More severe signs could be pain-producing thrombosis.³

The study's objective is to show and track the development of fecal incontinence following anorectal surgeries, including fistulectomy, fistulotomy, sphincterotomy, and hemorrhoidectomy, at intervals of two, four, and six weeks.

2. Patients and methods

This study had sixty (60) patients and was prospective, cross-sectional, and observational; twenty (20) patients with hemorrhoid disease surgeries, twenty (20) patients with fissure disease surgeries, and twenty (20) patients with anal fistula disease surgeries recruited from outpatient surgery clinic of (MUST) and Sheikh Zayed specialized hospital by simple random sampling technique in the period from May 2023 to December 2023.

Inclusion criteria: perianal Fistulectomy/Fistulotomy patients (low-level fistulas), anal fissurectomy/Sphincterotomy patients, hemorrhoidectomy patients, age ranges from 18 to 70 years old, patients belonging to both sexes and willing to provide pictures and follow up studies.

Exclusion criteria: patients who refuse to participate in the study, patients who get treated from fistula with FiLaC (fistula laser closure) or LAFT (laser ablation of fistula tract), pts who get treated from hemorrhoids with laser haemorrhoidoplasty, patients underwent combined anorectal surgical procedures, patients with intestinal diseases treated by medications (as Crohn's disease), patients with high-level fistulas, patients with malignant fistula, patients underwent previous anal surgeries and patients with congenital anorectal diseases

Method: Every patient is subjected to the following:

Explanation of the nature and purpose of the research to the patient and inform him that he must follow up by attending the outpatient clinic of the hospital or by making a phone call after two weeks, four weeks, and six weeks of surgery—medical informed consent obtained from every patient participating in this study.

History taking: Personal history: name, age, sex, and occupation. Residence, social status, body mass, and unique behaviors. The complaint focuses on the following aspects: the beginning, progression, length, history of bowel habits; prior medical history (constipation/diarrhea; acute

severe illness; terminal illness; severe cognitive impairment; limited mobility; patient ability to communicate); neurological disorders; history of obstetrics or weak pelvic floor; history of perianal trauma or surgery; history of diet and fluids; consequences of fecal incontinence (itching, soreness, timing of incontinence); and, lastly, the impact on quality of life as a whole.

General examination: Patients' capacity to use the bathroom is evaluated by cognitive and behavioral testing, which looks at things like access, movement, clothing adjustment, and washing after using the restroom

Anorectal examination: Analyzing the anus visually, evaluating the perineal descent, Digital rectal examination for fecal loading assessment, anal tone, and voluntary anal sphincter squeezing.

Preoperative assessment: documentation of the ailment that requires surgery. Evaluation of the patient's general state of health. Perioperative risk assessment. Patient education regarding anesthesia, surgery, perioperative care, and complications following surgery. A complete medical history of the patient's overall health was obtained. Before anesthesia, the heart, lungs, and airways must be examined physically. Workup in the laboratory (complete blood count, international normalized ratio, or INR), activated partial thromboplastin time, electrolytes, tests for the liver and kidneys (SGOT, SGPT), urea, creatinine, and fasting glucose). Electrocardiograph (for old age patients with a history of heart disease and hypertension). Chest radiograph (for history of cardiac or pulmonary diseases). Drug history (especially antihypertensives, anticoagulants, insulin, painkillers, laxatives, and antibiotics). Perioperative risk assessment using the American Society of Anesthesiologists grading system

Treatment options include: Wearing absorbent pads, Diet changes, Over counter medicines like loperamide and bismuth subsalicylate, Pelvic floor muscles exercises, Biofeedback therapy, Sacral nerve stimulation, Vaginal balloons for females, non-absorbable bulking agents, sphincteroplasty, Artificial anal sphincter and Colostomy.

Ethical consideration

This study was performed with the approval of the Faculty of Medicine, Misr University for Science and Technology research ethical committee before beginning. The participants were informed about the objectives and details of the examination during the study. Also, the confidentiality of their information and their right not to participate were respected. Medical informed consent was obtained from every patient participating in this study.

Sample size calculation

Probability simple random sampling method. Confidence level and confidence interval were observed.

The sample consists of several kinds of minor anal procedures. Fecal incontinence following surgery, per Cleveland Clinic Score for fecal incontinence in Florida.

The formula below was used to determine the sample size:⁴

$$n = \left[\frac{Z_{\alpha/2}}{E} \right]^2 * P(1 - P)$$

Where:

N is the size of the sample. $Z_{\alpha/2}$ is 1.96. (The crucial number that separates the Z distribution's center, 95%, from its tail, 5%). E equals the confidence interval's width (margin of error) = 0.0470. P is the outcome variable's prevalence, which is 2.3%.

So, by calculation, according to the patients' visits to post-operative minor anal surgeries in our department, the sample size is estimated at 60 cases (twenty (20) patients with hemorrhoid disease surgeries, twenty (20) patients with fissure disease surgeries, and twenty (20) patients with anal fistula disease surgeries) after inclusion and exclusion criteria.

Statistical analysis

IBM SPSS Statistics (Statistical Package for Social Sciences), version 22.0, IBM Corp., Chicago, USA, 2013, was used to code, tabulate, and statistically analyze the gathered data.

For quantitative data that is typically distributed, descriptive statistics are performed on the minimum and maximum of the range, mean ± SD (standard deviation), and median and first and third interquartile range; qualitative data are performed on the number and percentage.

The Shapiro-Wilk, ANOVA, and Kruskal-Wallis tests were used for inferential analyses of quantitative variables when the data was non-normally distributed, and there were more than two independent groups. The Chi-square test was used for proportional differences, and Fisher's exact test was used for variables with small anticipated numbers in inferential analyses of qualitative data for independent variables. We tested survival functions using the log-rank test. A P value of less than 0.050 is considered significant, whereas a value of less than 0.05 is not.

3. Results

Table 1. Results of detection of fecal incontinence complication after lateral internal sphincterotomy intervention.

ITEMS	CATEGORIES	COUNTS (%)
SEX	Male	13 (65%)
	Female	7 (35%)
AGE MEAN ± SE		32.75 ± 1.7
CONSERVATIVE TRAIL	Yes	20 (100%)
	No	0
OPERATION (LAT INT SPHINCTEROTOMY) 1 MONTH		20 (100%)
	Satisfied	19 (95%)
	Not satisfied	1 (5%)
COMPLAINT		0
SITE OF FISSURE	minor incontinence	18 (90%)
		2 (10%)
	Anterior	2 (10%)
	Posterior	18 (90%)
CLEVELAND CLINIC FLORIDA FECAL INCONTINENCE SCORE		0
		4
		2 (10%)

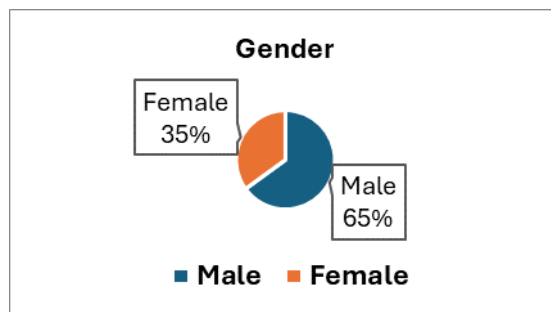


Figure 1. Classification of patients in this study who underwent lateral internal sphincterotomy according to gender.

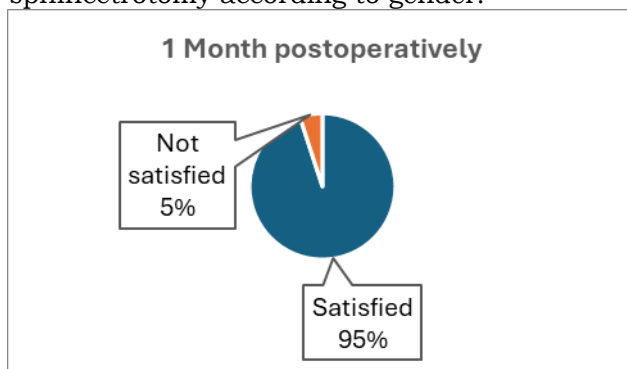


Figure 2. Demonstrates percentage of patients with postoperative fecal incontinence complication (not satisfied) of total patients underwent lateral internal sphincterotomy in this study.

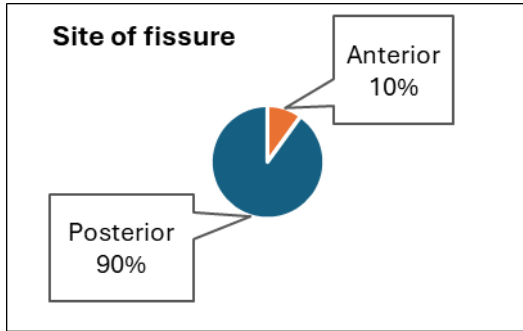


Figure 3. Demonstrates site of fissure in patients underwent internal anal sphincterotomy in this study.

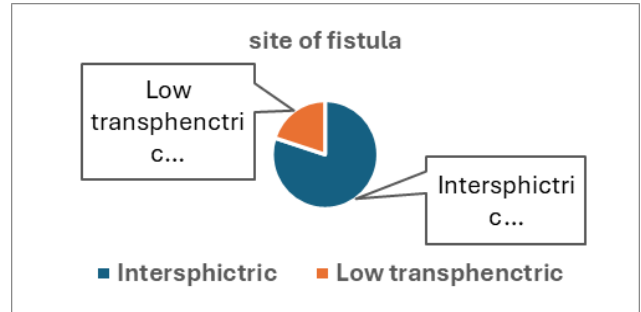


Figure 6. Classify site of fistula according to its position to sphincter in patients underwent lay open fistulotomy in this study.

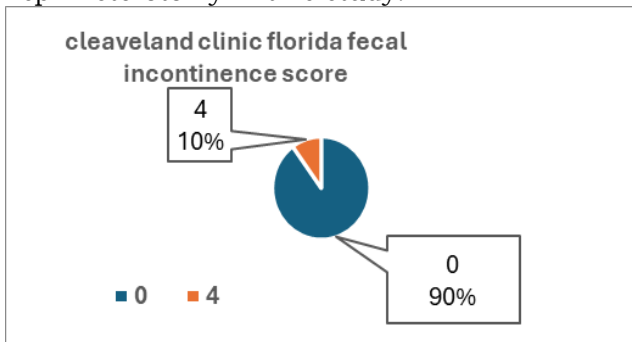


Figure 4. Demonstrates percentage of patients with different scores of fecal incontinences according to Cleveland clinic Florida fecal incontinence score.

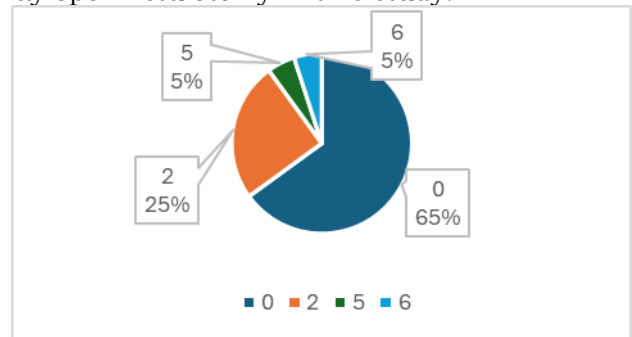


Figure 7. Demonstrates percentage of patients with different scores of fecal incontinence complication in this study according to Cleveland clinic Florida fecal incontinence score after lay open fistulotomy intervention (65% with no fecal incontinence, 25% with score 2,5% with score 5,5% with score 6).

Table 2. results of detection of fecal incontinence complication after lay open fistulotomy intervention.

ITEMS	CATEGORIES	COUNTS (%)
SEX	Male	16 (80%)
	Female	4 (20%)
AGE		38.8±2.63
MEAN ± SE		
LAY OPEN		20 (100%)
SITE OF FISTULA	Intersphinctric	14 (70%)
	Low transphenctric	6 (30%)
CLEVELAND CLINIC FLORIDA FECAL INCONTINENCE SCORE	0	13 (65%)
	2	5 (25%)
	5	1 (5%)
	6	1 (5%)

Table 3. Results of detection of fecal incontinence after open haemorrhoidectomy intervention.

ITEMS	CATEGORIES	COUNTS (%)
DEGREE OF PILES	3 rd	13 (65%)
	4 th	7 (35%)
DISCHARGE FROM HOSPITAL	After 48 hours	1 (5%)
	Same day	19 (95%)
READMISSION	Yes	1 (5%)
	No	19 (95%)
TYPE OF OPERATION	Open	20 (100%)
	Hemorrhoidectomy	
COMPLAINT DAY ZERO (POSTOPERATIVE)	Bleeding	1 (5%)
	Pain	7 (35%)
	pain requires strong Analgesia	4 (20%)
2 WEEKS POST OP COMPLAINT	pain tolerable	8 (40%)
	2 (10%)	1- Minimal bleeding 2- Wound discharge
4 WEEKS POST OP	0	0
6 WEEKS POST OP	0	0
CLEVELAND CLINIC FLORIDA FECAL INCONTINENCE SCORE	0	20 (100%)

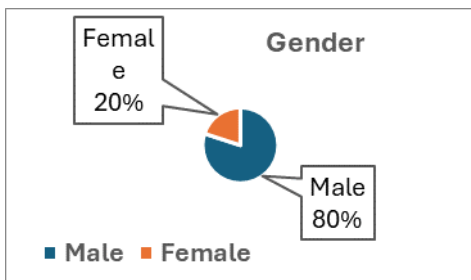


Figure 5. Classification of patients underwent lay open fistulotomy in the study according to gender.

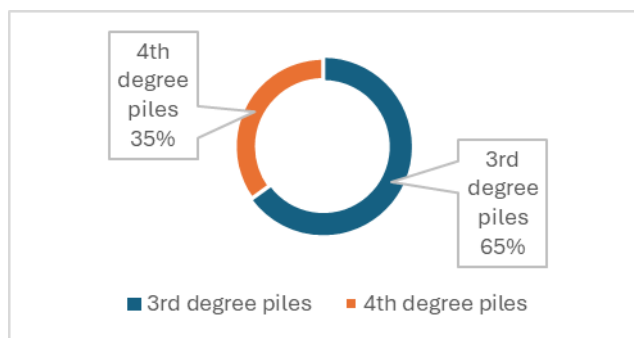


Figure 8. Demonstrates different degrees of piles in patients underwent open haemorrhoidectomy in this study.

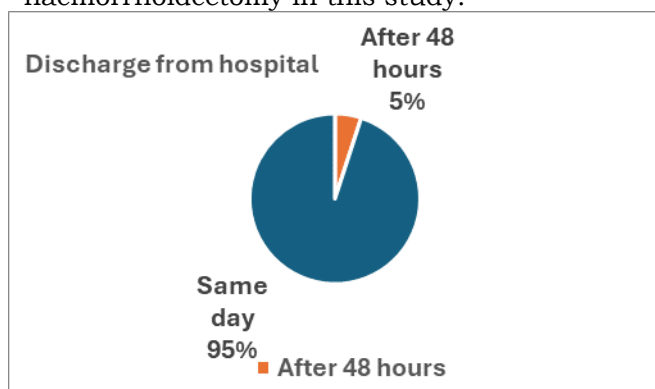


Figure 9. Demonstrates percentage patients with open haemorrhoidectomy discharged from hospital in same day and patients discharged after 48 hours.

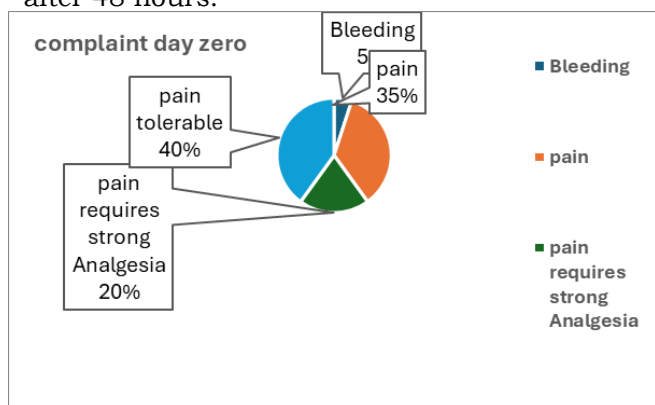


Figure 10. Demonstrates percentage of patients in this study with different complaints at day zero after open haemorrhoidectomy intervention.

4. Discussion

An analysis of the study's findings revealed that the procedure to treat an anal fistula posed the greatest danger to anal continence. The study shows by follow-up of 20 patients who underwent surgical correction of fistula by lay open fistulotomy technique that three patients with low transsphincteric fistula get fecal incontinence score 2 (based on Cleveland Clinic Florida fecal incontinence score, following surgery for two weeks), two patients with intersphincteric fistula get fecal incontinence

score 2 (4 weeks postoperative), one patient with intersphincteric fistula get fecal incontinence score 5 (1 week postoperative) and one patient with intersphincteric fistula get fecal incontinence score 6 (1 week postoperative). These changes in anal pressure can be explained by cutting the external anal sphincter muscle during surgery, which decreases its tone and contraction power. While a large number of cases are needed to clarify the role of anal fistula surgery in changing the rectal sensations.

In another study by Chang, SC.; Lin, JK, Following the procedure, the maximal resting anal pressure as well as the resting pressure in the distal 2 cm of the anal canal were significantly decreased. Following the procedure, the maximum contractile pressure was comparable to what it was previously. Patients and women with lower pretreatment resting pressure had considerably worse continence control. According to multivariate analysis, reduced preoperative resting pressure was the sole independent predictor associated with worse continence control following fistula surgery.⁵

Chang, SC.; Lin, JK. Documented decline in anal pressure at rest and continence following the laying open of intersphincteric fistulas; individuals with low preoperative resting tone are at a higher risk. In certain instances of intersphincteric fistulas, both recommended conservative surgeries should be considered.⁵

In 2004, Pescatori indicated that rather than using manometry to predict soiling following fistulectomy and surgery, sphincter division, diarrhea, and anal deformity may be the cause. Rectal sensation may also be involved, but further research is needed to fully understand this.⁶

In 2005, Perez abolished the post-fistulotomy decrease in anal pressure by performing primary sphincter repair after fistulotomy.⁷

In 2007, Toyonaga noted a decrease in maximal squeeze pressure if non-sphincter splitting surgery was performed but not in maximal resting pressure.⁸

No study showed a change in the rectal after anal fistula surgery that needs further investigation to prove and explain the role of anal fistula surgery in changing the rectal sensation. Moreover, the study shows that the second intervention in small anal operations that most significantly impacts continence is anal fissure correction surgery, such as lateral sphincterotomy.

The study shows that, after following up on 20 patients who underwent lateral internal sphincterotomy intervention, one patient with an anterior fissure got a fecal incontinence score of 4 (according to the Cleveland Clinic Florida fecal incontinence score) postoperatively, and one

patient with a posterior fissure got a fecal incontinence score four after one month.

Although lateral sphincterotomy typically results in rapid healing of chronic fissures and has a low recurrence rate, it may cause anal incontinence over the long term.

Incontinence episodes are, in fact, mild and temporary.

Evidence confirmed by another study reported that Fissurectomy and median sphincterotomy have been associated with unacceptable rates of fecal incontinence, particularly for fluids and gases. To improve these rates, in recent years, lateral internal sphincterotomy has been chosen, which is currently considered the treatment of choice for anal fissures that do not respond to medical treatment.⁹

In another study by Roberta Tutino, lateral internal sphincterotomy was established as the most effective procedure regarding healing rate. Fissurectomy did not reduce the incidence of new-onset postoperative incontinence but led to lower Vaizey ratings in patients who experienced this issue. Patient satisfaction was reduced in individuals experiencing new-onset postoperative incontinence following lateral internal sphincterotomy.¹⁰

In a study published in 2011, Avi Levin showed that a late consequence following anal fissure surgery could be fecal incontinence. A surgical repair of the anal fissure may hasten the anal sphincter mechanism's age-related physiologic deterioration, or incontinence may be linked to additional cofactors that become more prevalent over time. The possibility of this consequence should be explained to anal fissure surgery candidates.¹¹

The most effective treatment for persistent anal fissures is still lateral internal sphincterotomy, notwithstanding advancements in medicine. However, this procedure is unpopular because of the possibility of fecal incontinence. It has been shown that while some incontinence may occur in the first few days following a sphincterotomy, continence typically gets better over time.

Analysis of the results of this study also shows that open haemorrhoidectomy intervention for 20 patients complaining of 3rd and 4th-degree piles has late complications, including tolerable pain, pain that needs strong analgesics, minimal bleeding, and wound discharge. However, fecal incontinence wasn't detected during the follow-up of 20 patients in the study 2 weeks, 4 weeks, and 6 weeks postoperatively.

Altomare found that all subjects under analysis had restored anal continence six months following a hemorrhoidectomy.¹²

Yan-Dong Li shows that removing anal cushions is a safe technique because it does not affect a patient's fecal continence in those who

have a valid indication for the procedure. In patients with hemorrhoids, it is not essential to provide the anal cushion undue care. Anal continence should be thoroughly investigated in order to reduce the risk of problems following surgery.¹³

4. Conclusion

In actuality, inadequate intestinal continence is a significant side effect following anorectal procedures, when sphincter damage frequently results in anal continence issues. While almost all patients with chronic anal fissures have healing and relief from symptoms after lateral internal sphincterotomy, incontinence is a common side effect. The majority of incontinence episodes are brief and mild. The degree of sphincter involvement during fistulotomy/fistulectomy surgeries dictates whether or not postoperative fecal incontinence will happen. The degree of fecal incontinence rises with sphincter division duration, although it has no long-term effects on quality of life. This study does not provide data to support the hypothesis that an open hemorrhoidectomy is linked to partial or complete sphincter damage.

Disclosure

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All authors have a substantial contribution to the article

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Conflicts of interest

There are no conflicts of interest.

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