



# The Comparison of Outcomes and Postoperative Side Effects of Partial and Total Sphincterotomy in Patients With Anal Fissure

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## Abstract

**Background and Objectives:** Anal fissure is a painful wound in the anoderm and distal to dentate line, the chronic fissure leads to hypertrophy and fibrosis. In this study, we compared partial and total sphincterotomy in patients with chronic anal fissure.

**Methods:** In this comparative cohort, 100 patients (52 female and 48 male) mean age  $43.34 \pm 15.28$  years with chronic anal fissure referred to the Shahid Mohammadi hospital, Bandar Abbas, Iran were randomly assigned into partial or total sphincterotomy groups (50 patients in each group). Then the postoperative complications including, pain, bleeding, incontinence to flatus or to flatus and soiling, infection and abscess, hematoma, anal stenosis and recurrence of anal fissure within one year after operation were compared between 2 groups.

**Findings:** The flatus incontinence in total group was significantly more than partial, and the level of pain in total group was significantly lower than partial. The rate of recurrence and incontinence to flatus and soil in total group was non-significantly more than the partial group. On the other hand, bleeding and hematoma, infection, abscess and discharge in total group was lower than partial, but the difference was not significant. Satisfaction in the 2 groups was the same.

**Conclusions:** Our study revealed the effectiveness of partial and total sphincterotomy techniques in patients with chronic anal fissure and showed the 2 approaches were associated with comparable outcomes, in terms of side effect, recurrence, and satisfaction. However, total sphincterotomy was related to lower pain and partial sphincterotomy with lower flatus incontinence.

**Keywords:** Anal fissure, Partial sphincterotomy, Total sphincterotomy, Flatus and soil incontinence, Pain

## Background and Objectives

An anal fissure is a chronic and benign pain in anoderm region, mostly, because of increased resting internal anal sphincter pressure that reduces the perfusion of the tissue of anoderm and create ischemia and ulcer.<sup>1,2</sup> The most important sign of anal fissure is severe pain along with defecation initiation or during defecation, moreover, in some cases, a small amount of bleeding may be seen.<sup>3</sup> The base of treatment is the reduction of anal sphincter tone and in the most of the patients with acute disease, this aim is accessible conservatively by diet change, laxative, and local anesthesia, however in some cases, mostly with a chronic condition, surgery is inevitable.<sup>4,5</sup>

Standard surgery procedure for this purpose is lateral internal sphincterotomy that reduces the pressure, relief the pain and is associated with acceptable side effects.<sup>6</sup> In this technique, a posterior sphincterotomy is performed for the patients and it is successful in most of the patients by 95%,<sup>7</sup> however, fecal incontinence was reported as the most annoying postoperation side effect with this technique by 10%.<sup>6,8,9</sup> A study by Tocchi et al performed total sphincterotomy on 164 patients and showed negligible postoperative side effects and long term satisfaction rate by the 96% of the patients.<sup>10</sup> Moreover, another study by Gandomkar et al found suitable results with partial lateral internal sphincterotomy on 50 patients with chronic fissure by 94% healing rate during one year after surgery.<sup>11</sup> However, to the best of our knowledge, there is no study, comparing total

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and partial sphincterotomy. Therefore, to address these concerns we compared the efficacy of partial and total sphincterotomy in 100 patients with chronic anal fissure in terms of satisfaction, symptomatic relief, postoperative side effect and the rate of recurrence.

## Methods

In this comparative study, 100 patients including 48 male and 52 female mean age  $43.34 \pm 15.28$  with anal fissure being referred to the Shahid Mohammadi in Bandarabbas were recruited. The patients were randomized into partial or total sphincterotomy groups based on the 2 numbers of the right side of the patients' files. The patients were included if they had 18 years old, a chronic fissure with no response to the conservative medication such as diet, laxative, anesthesia and fibrotic infiltration or visible internal sphincter fibers. On the other hand, the excluding criteria were: other anorectal diseases such as stricture, abscess, fistula and hemorrhoid, moreover anal cancer, AIDS, sexually transmitted diseases (STD), diabetes, inflammatory bowel diseases and coagulation disorders. The included patients were interviewed and demographic information such as sex, age was recorded. Moreover, fully examination was performed for the patients and the location of the fissure, the duration of diseases, the signs and the symptoms of fissures were recorded.

## Surgery Technique

An intravenous line was prepared for all patients and the patients were in placed in the lithotomy position and the anal canal was anesthetized using local anesthesia. Before the operation, the proctoscopy was performed and all pathologies in the anal and rectal canal were fully examined. Then the proctoscope was withdrawn and the retractor (Park) was entered and a 1 cm incision was performed in the internal sphincter. Then the epithelial of internal sphincter was removed using a clamp and the internal and external sphincter were divided and the sphincter was clamped for 30 seconds. In the total technique, the exposed part of the internal sphincter was fully removed but in partial technique, 50%-75% of exposed part of the internal sphincter was removed. Finally the incision was sutured continuously and was packed. The patients were discharged in a stable position and were followed for one year. During the follow-up period, the short and long-term side effects of surgery such as pain, bleeding, incontinence, discharge, abscess, hematoma, infection, stricture, and recurrence were assessed. The study was approved by the Hormozgan University of Medical Sciences, moreover, the procedure was explained to all patients and informed written consents were taken.

## Statistical Analyses

The data were analyzed using Statistical Package for Social Studies version 16.0 (SPSS Inc, Chicago, Ill). Categorical data are presented as numbers (%), and continuous data as mean  $\pm$  SD. We used the chi-square test to compare categorical variables  $P < 0.05$  was considered significant.

## Results

In a partial group, 21 were male and 29 female and in total group 27 male and 23 female (Table 1). Two patients in total group and one patient in the partial group experienced recurrence, moreover, bleeding was detected in 1 patient in total and in three patients in the partial group, the difference between 2 groups was not significant regarding recurrence and bleeding (Table 2). Gas incontinence was significantly more among patients with total sphincterotomy than partial ( $P = 0.03$ ), however, the difference between 2 group regarding Fecal and gas incontinence was not significant (0.31). On the other hand hematoma, discharge, infection, and abscess among the partial group were more than total group, but the difference was not significant ( $P > 0.05$ ). One of the most important concerns among patients with partial surgery was postoperative pain, that was seen in 16% of the patients in this group and was significantly higher than total operated patients. The satisfaction rate in total group

**Table 1.** Patients' Characteristics at Baseline

Age	Mean	SD	Range
Male	39.4	11.20	23-74
Female	47.26	17.75	18-77
Partial sphincterotomy	43.12	13.25	18-77
Total sphincterotomy	44.35	14.52	18-77
Total	43.34	15.28	18-77

**Table 2.** Postoperative Side Effects in 2 Groups

Postoperation Side Effects	Total No. (%)	P
Recurrence	2 (4)	0.55
Bleeding	1 (2)	0.30
Flatus incontinence	9 (18)	0.03
Fecal and flatus incontinence	1 (2)	0.31
Hematoma	1 (2)	0.16
Discharge	6 (12)	0.56
Infection and abscess	4 (8)	0.50
Pain	0 (0)	0.01
Satisfaction	48 (96)	0.89

was 96% and in the partial group was 98% the difference between 2 groups was not significant (Table 2).

## Discussion

In this comparative cohort, we performed partial and total sphincterotomy on 100 patients with chronic fissure who did not a response to the conservative treatment. The postoperative complications during 1-year follow-up were discharged in 14%, flatus incontinence in 10%, infection, and abscess in 10% and pain in 8%. Moreover, bleeding occurred in 4% and the recurrence rate was 3%. Incontinence for both flatus and soil was rare and only was seen in one patient in the total sphincterotomy group. However, the flatus incontinence was more and was seen in 10%. Regarding the comparison between 2 techniques, the flatus incontinence in total sphincterotomy was significantly higher than partial (18% vs 2%,  $P=0.03$ ), on the other hand, patients in a partial group significantly experienced more postoperative pain than total group (16% vs 0%,  $P=0.01$ ). The difference between 2 groups regarding other side effects was not significant moreover 2 groups showed comparable postoperative satisfaction by 97%. The chief complaint of anal fissure among the patients are pain and in some cases bleeding.<sup>10-18</sup> In current cohort, all recruited patients had pain during or after defecation and about 40% of the patients experienced bleeding. Our findings were in line with the previous report showed pain in all patients,<sup>15</sup> and bleeding and swelling in 40% and 90% of the patients.<sup>16</sup> On the other hand, the most important postoperative concern related to the surgery that decreases the quality of life is incontinence to flatus and soil and recurrence of the fissure.<sup>4-11</sup> Memon et al in 2010 performed the posterior midline sphincterotomy for 136 patients with chronic anal fissure and reported transient incontinence to flatus and soil in 3.7% and 2.2% that was near to those we reported here.<sup>12</sup> Mousavi et al in a study on 62 patients with chronic fissure reported no cases with postoperative incontinence.<sup>14</sup> Conversely, the incidence of incontinence was high in some of the studies. For example, Garcia-Aguilar et al reported a high incidence of incontinence about 16.1%-26.7% among patients undergoing lateral sphincterotomy<sup>14</sup> and in a study by Amanullah the incidence of soil incontinence was 13%.<sup>15</sup> In a study in Yemen by Al Sanabani et al, the lateral internal anal sphincterotomy was performed on 205 patients with chronic fissure and the transient incontinence was detected in 6% of patients.<sup>16</sup> Simultaneously, Aslam et al reported 6.6% postoperative incontinence among 30 patients undergoing internal sphincterotomy.<sup>17</sup> We did not detect any study that compared the partial and total sphincterotomy, however, 2 separate studies were near

to our practice. Gandomkar et al in a study performed partial lateral internal sphincterotomy on 55 patients and showed 16% incontinence.<sup>11</sup> Furthermore, Tocchi et al performed total sphincterotomy for 164 patients with chronic fissure and detected the transient incontinence in 15 patients and long-term incontinence in five patients.<sup>10</sup> As it is obviously seen, the rate of incontinence to flatus and soil is remarkably different among the studies. This difference may be because of different surgery technique and surgeon proficiency. Moreover, it may be related to the duration of follow-up, due to some of the patients only have transient incontinence a short time after surgery and it disappears by the time, as mentioned in the Tocchi et al work.<sup>10</sup> As mentioned above the postoperative recurrence rate in our trial was 3%, that was near to that reported by Al-Raymoony<sup>18</sup> by 4% and lower than Al Sanabani et al study by 7.9%.<sup>16</sup> However, Gandomkar et al<sup>12</sup> reported no recurrence after partial lateral internal sphincterotomy and Tocchi et al<sup>10</sup> showed the same results after total lateral internal sphincterotomy. In line with these authors, Memon et al detected only one case of recurrence among the patients after 8 months of surgery.<sup>12</sup> Regarding other postoperative side effects, Memon et al reported similar outcomes to our practice such as postoperative pain in 4.4%,<sup>12</sup> but, in an experience, by Al-Raymoony it was 24% and they reported that pain is the most postoperative complications.<sup>18</sup>

The mean age of our patients was 43 years (range 18-77), other studies reported age range 20-65 years and mean age near to 40 years old.<sup>12</sup> Moreover, we did not show a significant difference between 2 genders regarding the prevalence of fissure. In agreement with these findings, some authors indicated that the incidence of the fissure is equal between male and female.<sup>13,14</sup> However, Memon et al in Pakistan showed a higher incidence of fissure among female.<sup>12</sup>

The patient satisfaction in our practice in total group was 96% and in partial group 98%, that was similar to Tocchi et al study by 96% satisfaction after total sphincterotomy.<sup>10</sup>

The main limitations of our study were the relatively small sample size, so, further investigations are recommended with larger series to validate the findings reported here. Further follow-up of current cohorts will answer the question regarding whether these approaches are true disease modifiers.

## Conclusions

Total sphincterotomy was related to lower pain and partial sphincterotomy with lower flatus incontinence. However, the outcomes of partial and total sphincterotomy techniques in patients with chronic anal fissure were comparable

regarding side effect, recurrence and satisfaction.

### Competing interests

The authors declared no competing interests.

### Authors' contributions

The authors contributed equally to this study.

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### References

- Gibbons CP, Read NW. Anal hypertonia in fissures: cause or effect? *Br J Surg.* 1986;73(6):443-445. doi:10.1002/bjs.1800730609.
- McNamara MJ, Percy JP, Fielding IR. A manometric study of anal fissure treated by subcutaneous lateral internal sphincterotomy. *Ann Surg.* 1990;211(2):235-238.
- Vila S, Garcia C, Piscocoya A, et al. [Use of glycerol trinitrate in an ointment for the management of chronic anal fissure at the National Hospital "Cayetano Heredia"]. *Rev Gastroenterol Peru.* 2009;29(1):33-39.
- Suknaic S, Patrlj L, Steresinic M, Skopljanac Macina A, Erdelez L. [Surgical or biologic sphincterotomy in the treatment of chronic anal fissure]. *Acta Med Croatica.* 2008;62(1):73-80.
- Collins EE, Lund JN. A review of chronic anal fissure management. *Tech Coloproctol.* 2007;11(3):209-223. doi:10.1007/s10151-007-0355-9
- Neufeld DM, Paran H, Bendahan J, Freund U. Outpatient surgical treatment of anal fissure. *Eur J Surg.* 1995;161(6):435-438.
- McCallion K, Gardiner KR. Progress in the understanding and treatment of chronic anal fissure. *Postgrad Med J.* 2001;77(914):753-758. doi:10.1136/pgmj.77.914.753.
- Shafiqullah, Nadeem M. Closed versus open lateral sphincterotomy in chronic anal fissure: a comparative study of postoperative complications and results. *Pak J Med Res.* 2004;43:34-8.
- Syed SA, Waris S, Ahmed E, Saeed N, Ali B. Lateral internal anal sphincterotomy for anal fissure: with or without associated anorectal procedures. *J Coll Physicians Surg Pak.* 2003;13(8):436-439. doi:08.2003/jcpsp.436439.
- Tocchi A, Mazzoni G, Miccini M, Cassini D, Bettelli E, Brozzetti S. Total lateral sphincterotomy for anal fissure. *Int J Colorectal Dis.* 2004;19(3):245-249. doi:10.1007/s00384-003-0525-9.
- Gandomkar H, Zeinoddini A, Heidari R, Amoli HA. Partial lateral internal sphincterotomy versus combined botulinum toxin A injection and topical diltiazem in the treatment of chronic anal fissure: a randomized clinical trial. *Dis Colon Rectum.* 2015;58(2):228-234. doi:10.1097/dcr.0000000000000307.
- Memon AS, Siddiqui FG, Hamad A. Fissurectomy with posterior midline sphincterotomy for management of chronic anal fissure. *J Coll Physicians Surg Pak.* 2010;20(4):229-231. doi:04.2010/jcpsp.229231.
- Mousavi SR, Sharifi M, Mehdikhah Z. A comparison between the results of fissurectomy and lateral internal sphincterotomy in the surgical management of chronic anal fissure. *J Gastrointest Surg.* 2009;13(7):1279-1282. doi:10.1007/s11605-009-0908-5.
- Garcia-Aguilar J, Belmonte C, Wong WD, Lowry AC, Madoff RD. Open vs. closed sphincterotomy for chronic anal fissure: long-term results. *Dis Colon Rectum.* 1996;39(4):440-443. doi:10.1007/bf02054061.
- Amanullah A. Lateral Internal Anal Sphincterotomy for Management of Chronic Anal Fissure. *Gomal Journal of Medical Sciences.* 2008;6(1):1-4.
- Al Sanabani J, Al Salami S, Al Saadi A. Closed versus open lateral internal anal sphincterotomy for chronic anal fissure in female patients. *Egypt J Surg.* 2014;33(3):178-181. doi:10.4103/1110-1121.141905.
- Aslam MI, Pervaiz A, Figueiredo R. Internal sphincterotomy versus topical nitroglycerin ointment for chronic anal fissure. *Asian J Surg.* 2014;37(1):15-19. doi:10.1016/j.asjsur.2013.07.004.
- Al-Raymoony AE. Surgical treatment of anal fissures under local anesthesia. *Saudi Med J.* 2001;22(2):114-116.

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