Closed versus open lateral internal anal sphincterotomy for chronic anal fissure in female patients

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Objective
The aim of the study was to determine the best technique for surgical treatment of chronic anal fissure in female patients.
Study designs
The study was designed as a prospective randomized study.
Place and duration of study
The study was conducted in Surgical Unit, Al Kuwait University Hospital and Al Huribi Hospital (Sana'a, Yemen) from January 2007 to December 2010.
Patients and methods
A total of 205 female patients undergoing surgery were divided into two groups. In group A, there were 100 patients who were treated by closed lateral internal anal sphincterotomy, and in group B there were 105 patients who were managed by open lateral internal anal sphincterotomy method. Patients were followed up for 6 months following surgery to observe for pain, bleeding, infection, incontinence, and recurrence.
The exclusion criteria were patients who had in addition hemorrhoids or any other anorectal diseases.
Results
There was acceptable difference in postoperative acute complications between the two methods of internal anal sphincterotomy. However, in group A, six patients (6%) were complicated with very low anal fistula postoperatively, whereas the recurrence rate was 6 versus 1.9% in group A versus group B, respectively ($P = 0.015$).
Conclusion
Lateral internal sphincterotomy either with open or closed method is the treatment of choice for chronic anal fissure in female patients and can be performed effectively and safely with acceptable rate of complications; however, the open method is considered to have less morbidity and rate of recurrence.

Keywords:
anal fissure, postoperative complications, sphincterotomy

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Introduction

Anal fissure is a benign painful condition of the anoderm, characterized by raised resting internal anal sphincter pressure, which is important in the pathogenesis of anal fissure, possibly by impairing tissue perfusion and leading to ischemic ulcer [1,2].

Chronic fissures are characterized by a sentinel tag, hypertrophic anal papillae, anal spasm, and/or fibrosis of the internal sphincter muscle. With the patient in a recumbent position, chronic fissures are commonly seen posteriorly at 6 o'clock and occasionally anteriorly at 12 o' clock position. Fissures at any other position need further investigation of the underlying cause. Possible causes are Crohn's disease, anal intercourse, sexually transmitted disease, or anal carcinoma [3].

The usual presentation is severe pain at the initiation of defecation that lasts for few hours afterwards. The pain is usually tearing or burning in nature. Few patients may complain of bleeding per rectum along with pain. Bleeding is usually small in amount staining the stool surface or in the shape of drops after defecation; occasionally, it may be severe [4].

On clinical examination, the fissure can usually be seen by gently parting the buttocks and everting the anal verge. Digital rectal examination and proctosigmoidoscopy are not recommended except under proper anesthesia [4].

Most of the acute fissures can be treated conservatively with bulking agents, stool softeners, local anesthesia creams, and sits path. Chronic fissures are more difficult to treat conservatively [4].

Topical glycerol trinitrate 0.2% ointment applied twice a day for weeks is effective in alleviating the symptoms of chronic anal fissure, with a 69.9% success rate after 2 months of follow-up [5].

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Most common surgical procedure performed for chronic anal fissure is lateral internal anal sphincterotomy, which may be performed by open or closed method. The main objective was to divide the lower third to half of the internal sphincter, thus reducing the internal sphincter spasm and increasing local anoderm blood flow [4].

Surgical sphincterotomy leads in most cases to quick healing of chronic fissure. In all, 94.7–96% of fissures heal at 6 weeks postoperative and has a low recurrence rate [5–7]; two large studies have demonstrated a 2.3–3% failure rate at 5 years [8].

Patients and methods

This was a prospective study on 205 female consecutive patients admitted for surgery to Kuwait University Hospital and Al Huraibi Hospital (Sana'a, Yemen) from January 2007 to December 2010. In our study, chronic anal fissure was defined on clinical examination when induration at the edge of the fissure was visible and horizontal fibers of the internal anal sphincter could be seen in the base of the lesion and when anal pain on defecation was for at least 2 months, which failed to resolve with medical treatment. Patients who had hemorrhoids or any other anorectal diseases were excluded.

Patients undergoing surgery (205) were divided into two groups. In group A, there were 100 patients who were treated by closed lateral sphincterotomy, and in group B there were 105 patients who were managed by open lateral sphincterotomy method. All patients were viral markers (HBsAg, HCAb, and HIV) free.

After a routine preoperative assessment, all patients were operated as a day case, under general anesthesia.

Both procedures were performed under general anesthesia, with the patient in the lithotomy position. In the closed method, the left index finger is inserted in the anal canal to palpate the internal sphincter and feel the intersphincteric groove. A 1-cm incision is made in the groove between the internal and external sphincter, and scalpel is used to divide the lower third of internal sphincter controlled by the left index finger. In the open method, park retractor is used to retract the anal canal and feel the intersphincteric groove. A small 1-cm incision is made in the intersphincteric groove, and a scissor is used to separate the muscle from the mucosa and the lower third is divided followed by pressure for 3 min to control bleeding; the wound is closed with Vicryl 4/0 suture. Small dressing is applied at the end of the procedure. Patients were followed up for 6 months following surgery to observe for pain, bleeding, infection, incontinence, and recurrence.

Statistical analysis

Data were analyzed using a computer SPSS program, version 18 (Developers: IBM Corporation, University of Chicago). The Fisher test and Student's test were used for statistical analysis.

Result

The patients included in this study presented to out-patients clinic of Kuwait university hospital and Al Huribi Hospital with history of pain especially during defecation, bleeding per rectum, pruritus ani, and swelling at the level of anal verge. The chief complaint of most of the patients was pain on defecation (Table 1). The mean age was 32.2 years with a range between 18 and 45 years (Fig. 1).

About 182 (88.8%) of the patients were married, among whom in 80% the pain initiated after normal delivery (Table 2).

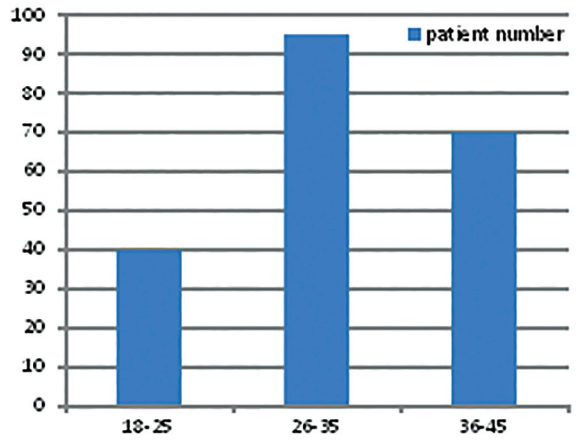
The position of the anal fissure was documented in 205 patients. In all, 175 patients were having posterior midline fissure, 20 patients were having anterior fissure, and 10 patients were having both (Table 3).

In patients undergoing open lateral internal anal sphincterotomy, 75 of 105 were free of symptoms on

Table 1 Mode of presentation

Symptoms	Number of patients (%)
Pain only	135 (65.85)
Pain and bleeding	70 (34.15)

Figure 1



Age distribution.

Table 2 Epidemiological data

Epidemiological data	All patients	Group A	Group B
Age (mean ± SD)	32.2 ± 8.19	32.4 ± 9.35	31.9 ± 6.94
Marital status [*n* (%)]			
Single	23 (11.2)	13 (13.0)	10 (9.5)
Married	182 (88.8)	87 (87)	95 (90.5)
Possible cause [*n* (%)]			
Postdelivery	160 (78.0)	80 (80.0)	80 (76.2)
Postconstipation	45 (22.0)	20 (20.0)	25 (23.8)

Table 3 Site of fissure

Site	Number of patients (%)
Posterior	175 (85.36)
Anterior	20 (9.75)
Both	10 (4.89)

Table 4 Postoperative complications

Complication	Number of patients	Group A [*n* (%)]	Group B [*n* (%)]
Pain	50	20 (20.0)	30 (28.5)
Bleeding	4	4 (4.0)	Nil (0.0)
Infection	2	1 (1.0)	1 (0.95)
Temporary incontinence	12	5 (5.0)	7 (6.7)
Fistula	6	6 (6.0)	0 (0.0)
Recurrence	8	6 (6.0)	2 (1.9)

Fisher's test; $P = 0.015$.

the next postoperative day, and, in patients undergoing closed lateral internal anal sphincterotomy, 80 of 100 were free of symptoms.

Postoperatively, only few patients showed complications. Twenty patients complained of postoperative pain in group A compared with 30 patients in group B; the pain improved within 2 weeks postoperatively. Bleeding after surgery was found in four patients in group A. Infection was found in two patients, one in each group. Mild incontinence to flatus, which was temporary, was found in five patients in group A compared with seven patients in group B. Recurrence was noticed in six patients in group A, whereas it was seen in only two patients in group B. Six patients were complicated by very low anal fistula postoperatively in group A (Table 4).

Regarding operative time, the operation took 2.6 (SD 0.78) min in group A compared with 6.6 (SD 1.03) min in group B ($P < 0.001$).

Discussion

In our study, of 205 patients, 105 patients were treated by open method and the rest were managed by the closed method of lateral internal anal sphincterotomy. The main aim of the study was to determine the best technique for the treatment of chronic anal fissure in female patients.

The majority of the fissures were found in the young age group. Ninety-five patients were between 26 and 35 years of age and the mean age in present study was 30.85 years. The mean age reported in different studies range from 30 to 45 years [9,10].

Patients suffering from anal fissure complain of pain, bleeding, discharge, and pruritus ani. A total of 135 (65.85%) patients presented with pain during or after defecation and 70 (34.15%) patients presented with bleeding with or without pain, which was not very close to 90.80 and 71.4% reported by Hanaanel and Gordon [10], respectively.

In our study, 175 patients (85.36%) presented with posterior midline fissures, 20 patients (9.75%) presented with anterior anal fissures, and 10 patients (4.89%) presented with anterior and posterior fissures. Samual [11] described that anal fissures are more common posteriorly. Giles [12] also described that most of the fissures are posteriorly midline. Nahas *et al*. [9] reported 86.1% posterior midline and 13.9% anterior fissures.

In patients undergoing open versus closed lateral internal anal sphincterotomy, 71.4 versus 80% were free of symptoms on the next postoperative day, respectively. Hiltunen and Matikainen [13] has described a similar result in case of closed lateral internal anal sphincterotomy, whereas Ullah and Nadeem [14] reported that 90 versus 88% were free of symptoms on the next day postoperative in patients undergoing open versus closed lateral internal sphincterotomy, respectively.

Our results of open and closed techniques regarding complications were as follows: pain (28.6 vs. 20%), bleeding (0 vs. 4%), infection (0.95 vs. 1%), incontinence (6.7 vs. 5%), fistula (0 vs. 6%), and recurrence (1.9 vs. 6%) ($P = 0.015$). It was noted that the complication rate is significantly higher in closed lateral internal sphincterotomy, whereas the time consumed during operation with closed versus open technique was 2.6 versus 6.6, respectively ($P < 0.001$).

Several other studies have also reported that there were no significant differences in the morbidity between open and closed method of sphincterotomy [15–17]. Pernikoff *et al*. [15] have reported that the complication rate is relatively higher in open lateral internal sphincterotomy.

In our study, it is clear that open and closed techniques are effective for treatment of chronic anal

fissure; however, the morbidity and recurrence rates are relatively less common in open lateral internal sphincterotomy.

Conclusion

Lateral internal sphincterotomy either with open or closed method is the treatment of choice for chronic anal fissure in female patients and can be performed effectively and safely with acceptable rate of complications; however, the open method is considered to have less morbidity and rate of recurrence.

Acknowledgements

Conflicts of interest

None declared.

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