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COMPARISON OF OPEN AND CLOSED TECHNIQUES OF LATERAL INTERNAL SPHINCTEROTOMY IN TERMS OF PAIN RELIEF AND POST OPERATIVE COMPLICATIONS.

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ABSTRACT

OBJECTIVES *To compare open and closed techniques of lateral internal sphincterotomy in terms of pain relief and post operative complications.*
DESIGN: *It was a prospective, quasi-experimental study.*
PLACE AND DURATION OF THE STUDY *Surgical department, Combined Military Hospital Quetta. From May 2007 to April 2008*
SUBJECTS AND METHODS: *Sixty patients with chronic anal fissure were included in the study after taking informed consent. Thirty patients were randomized into each group (A & B). Group 'A' patients were treated by open while those in Group 'B' were treated by the closed technique under general anesthesia (GA) or caudal anesthesia. Patients were discharged and called/ contacted for follow up after two weeks, six weeks and six months.*
RESULTS: *Sixty patients (48 males and 12 females), aged 20 to 48 years with chronic anal fissure had lateral internal sphincterotomy. Satisfactory pain relief (more than 50% reduction) was equivalent, 28 (93.33%) in Group A compared to 27 (90%) in Group B. Immediate/ early complications were equivocal as only one patient with open technique developed post operative hemorrhage and one with closed sphincterotomy had hematoma formation. There were no cases of infection/ abscess formation. Among late complications, recurrence was slightly more common in closed sphincterotomy (2/30 compared to 1/30), while there was a slightly higher incidence (3/30 compared to 2/30) of incontinence in open technique. Overall new onset incontinence was however significant (5/60 or 8.33%). None developed postoperative fistulae.*
CONCLUSION: *There is no significant difference between open and closed lateral internal sphincterotomy in terms of symptomatic relief and postoperative complications in patients of chronic anal fissure.*

KEY WORDS: 1.Chronic Anal Fissure 2.Lateral Internal Sphincterotomy 3.Anal Incontinence

INTRODUCTION:

Anal fissure is one of the most common causes of severe anal pain. It commonly affects young and middle-aged adults. Anal fissures occur with equal frequency in both sexes. It is a linear ulcer, which occurs just distal to dentate line and is characterized by excruciating severe pain during and after defecation and passage of bright red blood. Most of the anal fissures are short-lived and heal spontaneously. If the fissure fails to heal within six weeks then it requires definitive treatment. It is associated with hypertonia of internal anal sphincter[1].

Recent studies have suggested that decreased blood flow and resulting ischemia of the mucosa are important in the pathogenesis of chronic anal fissure[2, 3]. It has been shown that mean maximum resting anal pressure has been found raised in patients with anal fissure[4].

In up to 90% cases, lateral internal sphincterotomy is the standard surgical treatment for fissure in ano and healing is achieved[5]. However, sphincterotomy carries a significant risk of incontinence in 6-30% of cases[6]. In various studies the lateral internal sphincterotomy was found to be safe and simple operation if done by skilled proctologic surgeons[7].

Anal dilatation has been the simplest procedure in the past. Great care and judgement had to be exercised, so that the anal sphincter was not overstretched. The risk of incontinence

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following this procedure made it unpopular. Although it might still be used for young men with high pressure sphincters who understand the slight risk[8].

In one study, lateral internal sphincterotomy was found a superior procedure to anal dilatation for the surgical treatment of fissure in ano[9]. In another study it was observed that anal dilatation should be the initial treatment of choice for chronic anal fissures[10].

Lateral internal sphincterotomy can be done by open or closed technique. Both techniques are practiced widely as per the choice and experience of the operating surgeon. In open technique the anal mucosa is breached and internal sphincter is thus divided. In the closed type of sphincterotomy, a submucosal type of sphincterotomy is carried out.

AIMS AND OBJECTIVES

The objective of the study was:

To compare open and closed lateral internal techniques in patients of chronic anal fissure at a tertiary care hospital in terms of symptomatic relief and postoperative complications.

Operational definitions:

SYMPTOMATIC RELIEF:

Pain: Relief of pain at the passage of first stool after operation. It was scored by the coin method.

POST OPERATIVE COMPLICATIONS:

Postoperative complications included both early (first 48 hours) and late complications.

Early Postoperative Complications:

a. Bleeding / Hematoma formation
b. Infection / Abscess formation

Late Complications:

a. Recurrence of fissure: At six weeks and six months
b. Incontinence: For faeces and flatus. At six weeks and six months according to Cleveland Clinic Score[56].

MATERIALS AND METHODS

SETTING:

The study was conducted at the Department of Surgery of Combined Military Hospital, Quetta.

DURATION OF STUDY:

The study was commenced in May 2007 and completed over a period of one year till April 2008.

SAMPLE SIZE:

Sixty patients who had anal fissure confirmed on physical examination and fulfilled the inclusion and exclusion criteria were enrolled

Cleveland Clinic Incontinence Score[56]

	Gas	Liquid stool	Solid stool	Pad
Occasionally	1	4	7	1
> 1 per week	2	5	8	2
Daily	3	6	9	3

CCIS 0 Perfect continence
CCIS 1-7 Good continence
CCIS 8-14 Moderate incontinence
CCIS 15-20 severe incontinence
CCIS 21 Completely incontinent

Table I: Groups According to treatment modality & Pain Relief (n=60)

Pain Relief (Coin Method)		Satisfactory Pain Relief		Inadequate Pain Relief			Total with Satisfactory Pain Relief (75-100%)
		100 %	75 %	50 %	25 %	Nil	
Group A (n=30)	No	27	1	1	0	1	28
	% age	90	3.3	3.3	0	3.3	93.3
Group B (n=30)	No	26	1	1	0	2	27
	%age	86.6	3.3	3.3	0	6.6	90
Total (n=60)	No	53	2	2	0	3	55
	%age	88.3	3.3	3.3	0	5	91.6

Table II: Group According to treatment modality & Postoperative Complications (n=60)

Complications		Immediate/ Early		Late (6 weeks-6 months)		
		Bleeding/ Haematoma	Infection/ Abscess	Recurrence	Fistula	Incontinence
Group A (n=30)	No	01 (Bleeding)	0	01	0	03
	% age	3.3	0	3.3	0	10
Group B (n=30)	No	01 (Haematoma)	0	02	1	02
	% age	3.3	0	6.6	3.3	6.6
Total (n=60)	No	02	0	03	1	5
	% age	3.3	0	5	1.6	8.3

in the study. These 60 patients were randomized into two groups A and B, 30 in each using simple random table.

SAMPLING TECHNIQUE:
Purposive (non- probability)
After selecting the patients diagnosed as having chronic anal fissure, randomization of patients was done into two groups (A & B) using simple random table to draw lists of patients to be included in the study.

GROUP A:
Thirty patients in this group underwent the surgical procedure "Open lateral internal sphincterotomy".

GROUP B:
Thirty patients in this group underwent closed lateral internal sphincterotomy.

SAMPLE SELECTION:
Sixty patients who fulfilled the following inclusion and exclusion criteria were included in the study.

Inclusion Criteria:
All patients who presented in surgical out patients department with complaints of painful passage of stool, with or without bleeding, having chronic anal fissure on clinical examination.

Exclusion Criteria:
a. Multiple fissures
b. Patients having some associated known organic cause of fissure in ano e.g. tuberculosis, malignancy, inflammatory bowel disease, Crohn' s disease
c. Fissures in post operative patients of anal surgery

ETHICAL CONSIDERATION:
Informed consent was taken from all enrolled patients after detailed counseling. The contents of the consent were read to the patient in his/ her language.

STUDY DESIGN:
This was a quasi-experimental study.

DATA COLLECTION PROCEDURE:
Patients were enrolled from surgical outpatient and emergency departments. Patients were assigned to each arm of study at random using simple random tables.

PROCEDURE FOR GROUP A:
Patients in this group were admitted in surgical ward and routine investigations i.e. haemoglobin, blood sugar and urine complete examination were carried out. In patients above 40 years of age, ECG and Chest X-Ray were also performed. These patients were treated by Open lateral internal sphincterotomy under GA or caudal anesthesia on next available list. Record of pain relief and postoperative complications was maintained on Proforma at the time of discharge and at follow up visit after six weeks and six months.

Figure I:
Comparison between the two modalities regarding late complications in two groups (n=60)

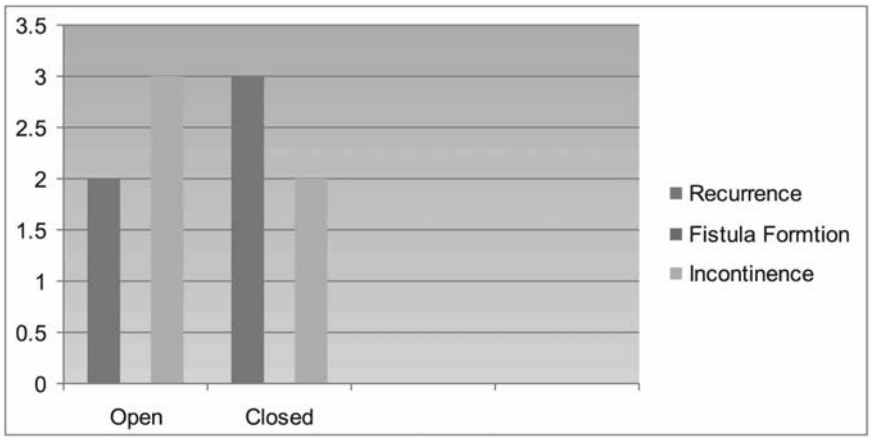
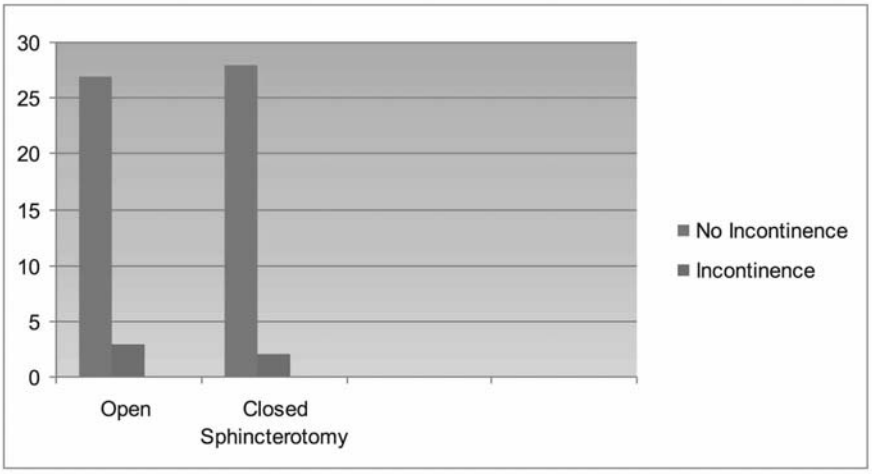


Figure II:
Comparison between the two modalities regarding anal incontinence in two groups (n=60)



PROCEDURE FOR GROUP B:
Patients who were randomized into group B were admitted in ward and routine investigations i.e. hemoglobin, blood sugar and urine complete examination was done for all patients. ECG and Chest X-Ray were also obtained in patients above 40 years of age. Closed Lateral internal sphincterotomy was performed under GA or caudal anesthesia on the next available list.
Patients were monitored clinically till being discharged on the second postoperative day and followed up after six weeks and six months. Record of pain relief and postoperative complications was maintained on proforma at the time of discharge and at follow up visit after six weeks and six months. The data was entered in the given 'Proforma'. Most of the patients had their fissures healed at the end of 2nd week.
The data was analyzed using SPSS version 13. Chi-square test was used to know the statistical difference in postoperative pain relief and different immediate and late post operative complications between the two groups of patients. Probability values of less than 0.05 were considered significant.

RESULTS
During the one-year study period from May 2007 to April 2008, a total of 60 patients were enrolled in the study. They were divided in two groups, 30 in each. Thirty patients in Group 'A' underwent "Open lateral internal sphincterotomy" procedure while

the thirty patients of Group 'B' were treated with closed lateral internal sphincterotomy. All patients underwent operative procedure under general or caudal anesthesia. No complication related to anesthesia occurred per operatively or during immediate postoperative period.

The mean age of patients in Group 'A' (open method) was 31.97 years (SD ±7.99) with range 20-48 while mean age in Group 'B' (closed method) was 30.53 years (SD ±7.51) and range 20-46. The mean age in both groups was 31.27 years (SD ±7.77) . The mean age was comparable in both groups (p value 0.495).

The study population consisted predominantly of male population.

Regarding the clinical presentation, pain during defecation was a predominant symptom seen in 55 patients (91.7%) with 28 (93.33%) patients in groups 'A' and 27 (90%) patients in-group 'B' respectively. It was followed by bleeding per rectum in 44 patients (71.3%) with 23 (76.66%) and 21 (70%) patients in-group A and B .

Eleven (36.67%) patients had a sentinel tag in group A on presentation while 7 (23.33%) out of those in group B presented with sentinel tags. Pruritis and discharge per ano were present in only a minority of patients.

Majority of the patients i.e. 48 (80%) presented with posterior midline anal fissure i.e. at 6 o' clock position (83.3% and 76.6% in group A and B respectively). Nine patients presented with anterior midline anal fissure i.e. at 12 o'clock position.

Most of the patients underwent rapid healing and resolution of their symptoms. In group 'A', 02 patients (6.66%) had non-satisfactory pain relief post operatively defined as 50% or less pain relief. The corresponding figure for group B was 03 (10%). (Table I)

Bleeding in the immediate post operative period was not observed in any patient from group B while one patient (3.33%) in group A had this complication necessitating packing of wound on the evening after surgery. (Table II)

Only one patient (3.33%) developed a haematoma after surgery, which had to be evacuated on 2nd postoperative day. (Figure I) This patient belonged to group B. There were no cases of postoperative wound infection or abscess formation in any of the patients undergoing this study.

The patients presented for follow up visits at six weeks and six months to observe the late complications of surgery in both groups i.e. fistula formation, recurrence of fissure and development of incontinence. None of the patients undergoing this study developed a fistula post operatively.

Three (5%) patients who initially healed their fissures suffered a recurrence. Recurrence of fissure in ano was seen in 01 (3.33%) patient from group A and 02 patients (6.66%) from group B. (Figure II) Moderate degrees of incontinence were observed in 02 patients (6.66%) of patients undergoing open sphincterotomy (Group A) and in only 01 patient undergoing closed sphincterotomy (3.33%). The difference between the two groups regarding incontinence after surgery was not statistically significant (p value: 0.628).

DISCUSSION

Patients suffering from chronic anal fissures are commonly seen in surgical outpatient departments. Anal fissure management has rapidly progressed in the last 15 years as understanding of fissure pathophysiology has developed. All methods of treatment aim to reduce the anal sphincter spasm associated with chronic anal fissures[11].

Therefore surgical procedures are required to eliminate the spasm of the internal sphincter. Treatment of anal fissure by sphincterotomy is not new and was first suggested in 1818 by Boyer[12]. Since the introduction of lateral internal sphincterotomy by Eisenhammer in 1951[13], this procedure has been used with increasing frequency and is now considered the treatment of choice for anal fissure.

A variation of results has been reported as regards symptom relief and adverse effects associated with both techniques. In our study, it was concluded that both treatment modalities have similar fissure healing rates and no recurrence in long-term follow-up. Both of the treatments are equally effective in the treatment of CAF patients.

In our study, recurrence of fissure in ano was seen in 3.33% patient from OIS group and 6.66% from CIS group. The difference between the two groups was not statistically significant. It showed that differences in persistence of symptoms (3.4 OIS vs. 5.3% CIS), recurrence of the fissure (10.9 vs. 11.7% CIS) and need for reoperation (3.4% OIS vs. 4 % CIS) were statistically not significant[14].

Internal sphincterotomy remains the "gold standard" for treatment of anal fissure but is associated with a risk of imperfect continence.

However, another study carried out in United States shows different results. It concludes that LIS is highly effective in treatment of chronic anal fissure but is associated with significant permanent alterations in continence. CIS is preferable to OIS because it effects a similar rate of cure with less impairment of control[14].

Lewis et al[15] found some degree of postoperative incontinence in 17% of their patients; in two thirds of these patients, this complication was only temporary.

It was concluded in a study conducted in Australia that lateral subcutaneous internal sphincterotomy is well tolerated and the majority of patients are more than moderately pleased with the outcome. There was however a significant incidence of minor impairment in anorectal control but this did not detract from the perceived success of the procedure[16].

Troublesome faecal incontinence after a satisfactorily performed lateral internal sphincterotomy is often associated with coexisting occult sphincter defects[17].

In another study conducted in New Jersey, complication rates in open versus closed sphincterotomy were 15 percent versus 8 percent ($P < 0.01$). Disorders of fecal continence occurred in 8 percent of patients over the long term. The authors concluded that extended follow-up after partial lateral internal sphincterotomy demonstrates a higher complication rate than was seen in patients being followed for shorter periods. However, the complication of impaired fecal continence only occurred in 8 percent of our patients, compared with 15 percent reported in the current literature, although using the same evaluative criteria. Patient satisfaction with the results of surgery was 98 percent. Careful patient selection, absence of preoperative continence problems, and meticulous surgical techniques are necessary to achieve this type of result.

The results of our study do not show any statistically significant difference in the outcome when both these techniques are compared to each other. However, larger scale, randomized controlled studies with long term follow up are needed before making firm conclusions about the advantages of either of the treatment modality.

CONCLUSION

There is no significant difference in open and closed lateral internal sphincterotomy techniques in terms of symptomatic relief and post operative complications in patients of chronic anal fissure. The technique (closed vs. open) does not seem to influence post-operative incontinence rates.

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