



ORIGINAL ARTICLE

**OPEN VS CLOSED PARTIAL LATERAL INTERNAL SPHINCTEROTOMY IN
MANAGEMENT OF CHRONIC ANAL FISSURE: A PROSPECTIVE RANDOMIZED STUDY**

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ABSTRACT

Background: Chronic anal fissure is a benign disorder that is associated with considerable discomfort. Surgical treatment in the form of lateral sphincterotomy has long been regarded as the gold standard of treatment. **Objectives:** This study was designed to compare the results of open and closed technique of lateral internal sphincterotomy in the treatment of chronic anal fissures. **Patients and Methods:** One hundred patients with a chronic anal fissure were admitted to the surgical unit of Rajah Muthiah Hospital, during the period of sep 2014 to sep 2016, treated by open or closed lateral internal sphincterotomy. The patients were followed up for a period of 12 months after surgery. The results of treatment were evaluated with reference to postoperative complications and outcomes. **Results:** Out of the 100 patients included in the study, 50 patients underwent open lateral internal sphincterotomy and the other 50 patients were subjected to closed lateral internal sphincterotomy. There was a significant difference in postoperative complications and outcome. **Conclusion:** Closed lateral internal sphincterotomy is the treatment of choice for chronic fissures as it is effective, safe, less expensive, and associated with a lower rate of complications than the open sphincterotomy technique

Keywords: Anal fissure, lateral sphincterotomy, open, closed

1.INTRODUCTION

Anal fissure is a benign yet highly prevalent condition that can cause considerable pain and discomfort. It is a longitudinal split or tear of the anal canal extending proximally from the anal verge towards the dentate line. Although it involves only the epithelial layer of the distal anal canal at the outset, it may eventually involve its full thickness. Fissures occur most often in the posterior midline and less often anteriorly owing to the relatively poor blood supply of the posterior commissural region (Oh et al., 1995). Locations other than the midline are involved in fissures arising from underlying conditions such as Crohn's disease, retroviral illness, or malignancy (Sailer et al., 1998). Fissures typically involve the internal anal sphincter and this goes into spasm and impedes healing by moving the two margins apart and diminishing the blood supply to the region. This, in addition to the exposure to fecal matter, accounts for the delays in the healing of fissures. When a fissure has been present for more than 6 weeks, it is referred to as chronic. A

chronic anal fissure (CAF) is distinguished by the presence of features such as a sentinel skin tag and hypertrophied anal papilla on examination (Hawley, 1969).

Acute fissures usually heal with conservative measures taken to relieve constipation and the associated pain. CAFs and fissures due to underlying diseases are unlikely to resolve with conservative management. The principle aim of treatment for a CAF is to reduce the tone of the internal sphincter and hence increase the blood flow with subsequent tissue healing. Treatment options include pharmacotherapy and surgery.

Conventional pharmacological treatment uses muscle relaxants, commonly topical drugs and occasionally drugs given by mouth. These drugs include nitrates (glyceryl trinitrate), calcium channel blockers, botulinum toxin, alpha-adrenoreceptor antagonists, beta-adrenoreceptor agonists, and muscarinic agonists (McNamara et al., 1990). New pharmacological drugs being tested include gonyautoxin, a paralytic neurotoxin derived from shellfish (Xynos et al., 1993).

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FIG 1: fissure in ano



FIG 3: open sphincterotomy



FIG 2: fissure with sentinel tag



FIG 4: closed sphincterotomy

Surgical treatment includes anal dilatation and posterior or lateral internal sphincterotomy. Finger anal dilatation is generally viewed by many colorectal surgeons to be an obsolete method as it has been associated with anal incontinence. Calibrated and controlled procedures with anal dilators or pneumatic balloons have been developed (Nelson, 1999; Nahas et al., 1997).

Lateral sphincterotomy has been regarded as the gold standard for the treatment of CAFs. Various studies have shown the superiority of lateral sphincterotomy over posterior sphincterotomy (Sultan et al., 1994; Notaras, 1996). Newer surgical treatments that have evolved include local flap procedures such as VeY advancement flaps and rotation flaps (Leong et al., 1995; Hananel and Gordon, 1997). Attempts at fissure revision have led to the development of fissurectomy and fissurotomy procedures (Ullah and Nadee, 2004; Melange et al., 1992). A new method of blunt division of the internal sphincter fibers called sphincterolysis has also been described (Giles, 1995). Surgical internal sphincterotomy is recommended as the first-line treatment in patients with anal hypertonia. It achieves permanent reduction of hypertonia with the relief of symptoms and is very successful in healing CAFs while causing minimal morbidity (Hiltunen, KM and Matikainen, 1991). CAF is a relatively benign ano rectal condition that causes substantial impairment of a patient's life.

Consequently, an effective solution with fewer associated complications is required.⁴ This study aimed to compare the open and closed techniques of lateral internal sphincterotomy.

2. METHODS

Study design

This study was a prospective, single-masked, parallel-group, clinical randomized comparative study conducted between September 2014 and September 2016.

Patients and grouping

50 patients for the open method and 50 patients for the closed method of lateral internal sphincterotomy were randomly assigned to either procedure. All patients of both sexes between the ages of 15 and 70 years presenting to our outpatient clinic with a CAF were included in the study. Patients were excluded if they underwent any other anorectal procedure at the time of anal sphincterotomy and if they had a history of previous sphincterotomy or anal dilatation. Other exclusion criteria included fissures associated with inflammatory bowel disease or malignancy.

Data collection

Following approval of the study protocol by the institutional ethical committee, written informed consent was obtained in the language understood by the patient. On admission, clinical details and examination findings were recorded on standardized forms. These details included a history of symptoms such as constipation, bleeding from the rectum, discharge, and soiling in addition to past clinical and treatment history. Fissures failing to heal within 6 weeks despite straightforward dietary measures, fissures with indurated margins and a lack of granulation tissue with secondary features such as a sentinel skin tag, hypertrophied anal papilla, or a degree of anal stenosis were all classed as CAFs.

Surgical procedures

Both surgical procedures were carried out in the lithotomy position under general, regional, or local anesthesia. In open sphincterotomy, the anal canal was visualized with an anoscope, a longitudinal incision was made in the anoderm, and the distal third of the internal anal sphincter was divided under direct vision followed by closure of the mucosa. In the closed technique, a stab incision was made with a Von Graefe's blade, either into the inter sphincteric groove or into the sub mucosa. The cutting edge of the blade was rotated toward the internal sphincter and a partial sphincterotomy was completed. The skin stab incision was left open.

Postoperative management

Prophylactic antibiotics in the form of metronidazole and a second generation cephalosporin were administered by mouth to all patients for 1 week postoperatively. A single dose of a non steroidal anti-inflammatory drug was injected intramuscularly on recovery and was repeated if additional analgesia was needed. Analgesic drugs given by mouth were also used as needed. The patients resumed eating a high fiber diet by mouth on the day of the operation. Laxatives or stool softeners for given for 2-3 weeks. The wound and perianal area were inspected for bruising or hematoma 8-12 hours after the operation. Patients were followed up to assess any complications of these procedures (pain, infection or abscess formation, incontinence, soiling, and recurrence) and to determine the mean duration of stay in hospital in the groups with open or closed sphincterotomy. Pain was measured using a visual analog scale representing an intensity of pain from 0 (no pain) to 10 (worst imaginable pain) and was assessed at 12 and 24 hours after the operation. Patients were followed up once a week for 2 weeks and then every 2 weeks for another 6 weeks to monitor fissure healing. They were subsequently followed up monthly by telephone questionnaire or by examination for at least 1 year. If the patients developed any related complications, they were called in for a consultation and evaluated.

Statistical analysis

The Chi-square test was used to compare sexes, fissure position, symptoms at presentation, and postoperative complications in the two groups. The Student t test was used

to compare age, postoperative pain, and length of stay. Quantitative variables such as age and time are presented as mean standard deviation values. Hypothesis testing was carried out by applying the Chi-square test at the $p < 0.05$ level of significance.

3.RESULTS

Among one hundred patients having a chronic anal fissure, 78% were male and 22 (22%) were female, with the male-to-female ratio being 3.5:1 (Table 1). Their age ranged from 20-50 years, with a mean age of 35 ± 5 years. The peak incidence age of patients with a chronic anal fissure was recorded in the age group 31- 40 (55%), while there was a lower incidence age in group 41- 50 (20%) (Table 2).

Most of the patients are having a posterior midline fissure 85(85%), while only 15 (15%) of the patients are having an anterior midline fissure, and no patients had a lateral fissure in ano (Table 3).

The patients in our study are presented with a history of pain during and after defecations, bleeding per rectum, constipation, pruritus ani and swelling at the level of the anal verge. Eighty-four (84%) patients complained of pain during and after defecation, either alone or associated with bleeding per rectum, especially in the form of a streak over the stool. Fifty-four (54%) patients suffer from some degree of anal pain alone, and about 30 (30%) patients suffer from anal pain with bleeding. Ten (10%) patients presented with perianal swelling and on examination, this was a sentinel pile. Only 5 (5%) patients presented with pruritus ani, and only one (1%) patient presented with constipation (Table 4).

The results of postoperative complications in our study are as following: Two (4%) patients complain of pain in group A (closed method), while 4 (8%) patients complain in group B (open method). Two (4%) patients complain of postoperative bleeding in group B, while no one (0%) did in group A. Postoperative infection was recorded in 1 (2%) patient in group A and 4 (8%) patients in group B. Incontinence for flatus was 4 (8%) patients in group A and 10 (20%) patients in group B. Recurrence occurs in 4 (8%) patients in group A and 6 (12%) patients in group B (Table 5).

Table 1: Sex distribution.

Sex	No. of patients	Percentage %
Male	78	78
Female	22	22
Total	100	100

Table 2: Age distribution

Age (years)	No. of patients	Percentage %
20 – 30	25	25
31 – 40	55	55
41 – 50	20	20
Total	100	100

Table 3: Site of fissure

Site	No. of patients	Percentage %
Posterior	85	85
Anterior	15	15
Other (lateral)	0	0
Total	100	100

Table4: mode of presentation

Symptoms	No. of patients	Percentage %
Pain	54	54
Bleeding and pain	30	30
Perianal swelling	10	10
Pruritus ani	5	5
Constipation	1	1
Total	100	100

Table 5: post operative complications

Complications	Group A (CLOSED)		Group B (OPEN)		P value
	No. of patients	Percentage %	No. of patients	Percentage %	
Pain	2	4%	4	8%	< 0.001
Bleeding	0	0%	2	4%	< 0.001
Infection	1	2%	4	8%	< 0.001
Incontinence	4	8%	10	20%	< 0.001
Recurrence	4	8%	6	12%	< 0.001
Total	11	22	26	52	

4. DISCUSSION

Most of the anal fissures were found in middle-aged patients, about 55% of which were between 31 and 40 years of age, and the mean age in our study was 35 years \pm 5. The mean age reported in different studies ranges from 30-45 years (Nahas et al., 1997, Leong and Seow-Choen,1995; Hananel and Gordon,1997, Ullah and Nadee,2004).

Seventy-eight percent (78%) of patients are male and 22% of patients are female, with a male-to-female ratio of 3.5:1. In a study done by Ullah and Nadee,(2004), 84% of patients are male and 16% are female, with a male-to-female ratio of 5.1:1. Furthermore, in the study done by Nahas et al., (1997)70% of patients are males and 30% are females, with a ratio of 2.3:1, and in a study done by Melange et al., (1992), 52.2% are males and 47.8 % are females, with a ratio of 1.15:1. Moreover, in a study done by Oh et al., (1995), they reported that 50.3% are males and 49.7% are females.

The patients suffering from an anal fissure complain of pain, bleeding, swelling and pruritus ani. In our study, about 54% of patients presented with pain only during or after

defecation, and 30% of patients present-ed with bleeding and pain, which was very close to the results reported by Hananel and Gordon,(1997) (about 90.8% and 71.4%, respectively).

In our study, 85% of patients presented with a posterior midline fissure and 15% of patients presented with an anterior midline anal fissure, with 0 (0%) of a lateral type. Samual,(1995) described that anal fissures are more common posteriorly; Giles,(1995) also described that most of the anal fissures are at the posterior midline. Nahas et al., (1997) reported that 86.1% are posterior and that 13.9% are at the anterior midline, and Ullah and Nadee,(2004) reported that 88% of patients are at the posterior midline, 10% anterior midline and 2% other (lateral).

In the patients undergoing open lateral internal sphincterotomy, about 80% of patients were free of symptoms on the next postoperative day, while in the patients undergoing closed lateral internal sphincterotomy, about 92% were. Hiltunen and Matikainen,(1991) and Ullah and Nadee,(2004)described similar results in the case of lateral internal sphincterotomy.

In our study, the results of open and closed techniques are compared regarding pain (8% versus 4%), bleeding (4% versus 0%), infection (8% versus 2%), in-continance (20% versus sphincterotomy are effective in the treatment of a chronic anal fissure. However, this study showed that closed lateral sphincterotomy is significantly better than the open technique (p<0.001). Pernikoff et al.,(1994) and Ullah and Nadee,(2004)have also reported that the complications rate is relatively higher in the open technique than the closed technique.

Kortbeek et al. (1992) and Ullah and Nadee,(2004) had reported that closed lateral internal sphincterotomy for a chronic anal fissure is effective and may result in less postoperative discomfort, shorter postoperative length of stay and a comparable rate of complications compared with open lateral internal sphincterotomy.

5.CONCLUSION

Though both closed and open lateral internal sphincterotomies are effective in management of chronic anal fissures closed lateral sphincterotomy is significantly better than the open technique. Hence closed lateral internal sphincterotomy is the treatment of choice for a chronic anal fissure. It can be done under local anesthesia as a day case, effectively and safely with an acceptable rate of complications and less postoperative discomfort.

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