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Comparative study of lateral anal sphincterotomy for chronic Fissure-In-Ano under local Vs spinal anaesthesia

SAJID IBRAHIM ALI [1], ADIL MOHAMED [2], SACHIN MURUKANAHALLI BASAVARAJU [3] and B P SUNIL [3,*]

[1] *Department of general surgery SDM college of medical sciences and Hospital Manjushree nagar, Sattur colony Dharwad -580009, India.*
[2] *Registrar Manipal hospital HAL, old airport road Bengaluru-560017, India.*
[3] *Department of genral surgery, JSS medical college, Bannimantap, Mysuru- 570015, India.*

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Abstract

Background: Fissure-in-Ano is one of the common and most painful anorectal conditions encountered in surgical practice. An acute fissure is a simple tear in anoderm, whereas a chronic anal fissure is an ulceration with built-up scarred edges and exposed internal anal sphincter muscle fibres at its base, most of the time associated with sentinel pile. Surgical therapy traditionally has been recommended for Fissure in Ano that have failed medical therapy. surgical treatment in the form of Lateral Anal Sphincterotomy (LAS) remains the gold standard of treatment for Chronic Anal Fissures (CAF). LAS can be done under spinal anaesthesia or local anaesthesia.

Objectives: To compare post-operative outcomes of LAS done under local anaesthesia to spinal anaesthesia and to compare duration of stay in hospital of local anaesthesia to spinal anaesthesia.

Methods: Prospective comparative study conducted on 80 patients attending the outpatient department of Karnataka institute of medical sciences Hubli for treatment of chronic fissure in ano. Patients were divided into two groups, Group A under Local anaesthesia (LA) and Group B under Spinal anaesthesia (SA). After history, clinical examination and routine investigations patients were subjected to Lateral anal Sphincterotomy (LAS). The outcome variables studied were postoperative pain, early postoperative complications and hospital stay.

Results: In the study group 50 were males and 30 were females and majority were in 2nd and 3rd decade. There was no difference between both groups regarding sex wise distribution and age wise distribution. Most common presenting symptoms were pain during defecation (100%), bleeding per rectum (68.75%), constipation (46.25%) and pruritis ano (16.25%). Fissures noted 80% posteriorly, 15% anteriorly and both in 5%. Both groups underwent LAS and post-operative complications, duration of surgery, postoperative duration of hospital stay were documented. post-operative pain was significantly less in LA group (group A) at 4th hour, postop day 1 after surgery comparing to spinal anaesthesia group (group B). 17.5% patients in group A had postoperative bleeding and 25% patients in group B had postoperative bleeding. 32.50% patient had nausea & vomiting, 20% patient had retention of urine and 12.5% patients had head ache in group B which were not seen in group A patients. Duration of surgery was less in group A (23.75 ± 4.04 minutes) comparing group B (32.38 ± 7.07 minutes). Postoperative duration of stay was less in group A (0.83 ± 0.45) comparing to group B (1.45 ± 0.55). there was no difference in healing of wound between two groups with 92.5% of the patients had healing at 4 weeks and 7.5% at 6 weeks.

Conclusion: After these observations and findings, it is apparent that lateral anal sphincterotomy (LAS) done under local anaesthesia has significantly less postoperative pain, has lesser incidence of postoperative complications and lesser duration of hospital stay when compared to LAS done under spinal anaesthesia. Hence LAS can be satisfactorily

* Corresponding author: BP SUNIL

performed under local anaesthesia with added benefits and less complications and is best suited for resource-poor surgical settings.

Keywords: Chronic anal fissure; Sentinel pile; Lateral anal Sphincterotomy; Local anaesthesia; Spinal anaesthesia.

1. Introduction

Proctologic diseases are as old as mankind itself. They include different group of diseases that generates significant patient discomfort[1]. Among them anal fissure is a common problem which causes substantial morbidity in otherwise healthy subjects. An anal fissure is a longitudinal ulcerated area in the vertical axis of squamous lining of the anal canal between the anal verge and dentate line.[2]

Acute fissure is a simple tear in the anoderm. Chronic anal fissure is more than 6 weeks duration and characterized by hypertrophied anal papilla internally and sentinel tag externally between which there is slightly indurated anal ulcer overlying the fibres of internal sphincter.[3]

Fissure is the condition characterised by a tear in the distal anal canal with severe pain after defecation and bright red rectal bleeding. Spasm of the anal sphincter may occur. Current evidence suggests that fissure is caused by high sphincter pressures and secondary local ischaemia[4].

It is commonly seen in young adults and equally in both Men and Women5. Pathogenesis is thought to be related, in few cases, to severe constipation. Persistence of anal hypertonia after fissure healing suggests that the increased sphincter pressure may be a major factor in the pathogenesis of the tear.[6]

Healing of fissure usually occurs uneventfully, although some fissures become chronic and respond poorly to medical treatment. Several studies have been conducted to find out the reasons for the failure of some fissures to heal spontaneously. Angiographic anatomical studies of the inferior rectal artery[7] have demonstrated reduced blood flow and a reduction of end capillaries in the region of the posterior midline (the site of >90% of chronic anal fissures). Thus, a relative ischemia may explain poor-healing.

The standard algorithm for anal fissure therapy has traditionally consisted of a trail of fibre supplementation, sitz bath and topical analgesics. Surgical therapy traditionally has been recommended for Fissure in Ano that have failed medical therapy. Surgical treatment in the form of Lateral Anal Sphincterotomy (LAS) remains the gold standard of treatment for Chronic Anal Fissures [5] This approach has been modified in recent years with the better understanding of fissure pathophysiology.

Lateral anal sphincterotomy traditionally done under spinal anaesthesia. At present there are few attempts to perform lateral sphincterotomy on an Ambulatory basis under local anaesthesia.

As chronic fissure in ano is very common in our region, and there has been no studies in KIMS Hubli, comparing the post-operative outcomes of lateral anal sphincterotomy done under local anaesthesia to spinal anaesthesia, we felt the need to study the lateral anal sphincterotomy for chronic anal fissure under local anaesthesia and spinal anaesthesia, and compare the post-operative outcomes, pain relief and duration of hospital stay.

2. Methodology

All cases that were clinically diagnosed with Fissure in Ano presenting to the department of surgery in KARNATAKA INSTITUTE OF MEDICAL SCIENCES HUBLI in a study period from November 2017 to July 2019

2.1. Method of collection of data

Patients presenting with Fissure in Ano were divided into 2 groups A and B by Lottery method. Group A patients were taken up for Lateral Sphincterotomy under local anaesthesia with 10ml 2% lignocaine + 10ml 0.5% Bupivacaine + 10ml of normal saline while Group B was taken up for Lateral Sphincterotomy under spinal anaesthesia.

All patients data will be collected in a pro forma on post-operative pain, bleeding, nausea/vomiting, quality of defecation, and duration of post-operative stay This data along with type of surgery will be recorded.

2.1.1. Sample size

sample size calculated by testing hypothesis by 2 proportions of post-operative pain among lateral anal sphincterotomy by local anaesthesia and spinal anaesthesia taking alpha error as 35% and power as 80, sample size works out to be 39 in each group.

This was a prospective comparative study which included all patients presenting with Fissure in Ano, and those that were willing for and also fit for surgery.

Patients who do not give consent for surgery under local anaesthesia, Patients associated with other Ano Rectal diseases, allergy or hypersensitive to local anaesthesia, bleeding disorders and those with local infections at site of infiltration were excluded from the study.

Data collected will be entered in MS Excel Sheet and will be analyzed by Chi squared for categorical variables and using unpaired T test for continuing variables.

Follow Up: Patients are followed at 1st, 2nd ,4th ,6th & 8th weeks intervals and during each visit patients are evaluated for complications and clinical examination. Results are tabulated & analysed.

All patients were investigated with standard bio-chemical test to assess the general condition of the patients.

- Complete Blood Picture Including Hb%
- Urine Routine and Microscopy
- Blood Sugar Estimation (RBS/FBS/PPBS)
- HIV And Hbs Ag
- Blood Urea, serum creatinine, serum electrolytes.
- Chest Radiograph
- ECG For Patients Above 40 Years

All the cases subjected to surgery were adequately prepared by administration of antibiotics and proctoclysis enema preoperatively. Surgery was done under local anaesthesia in group A and spinal anaesthesia in group B.

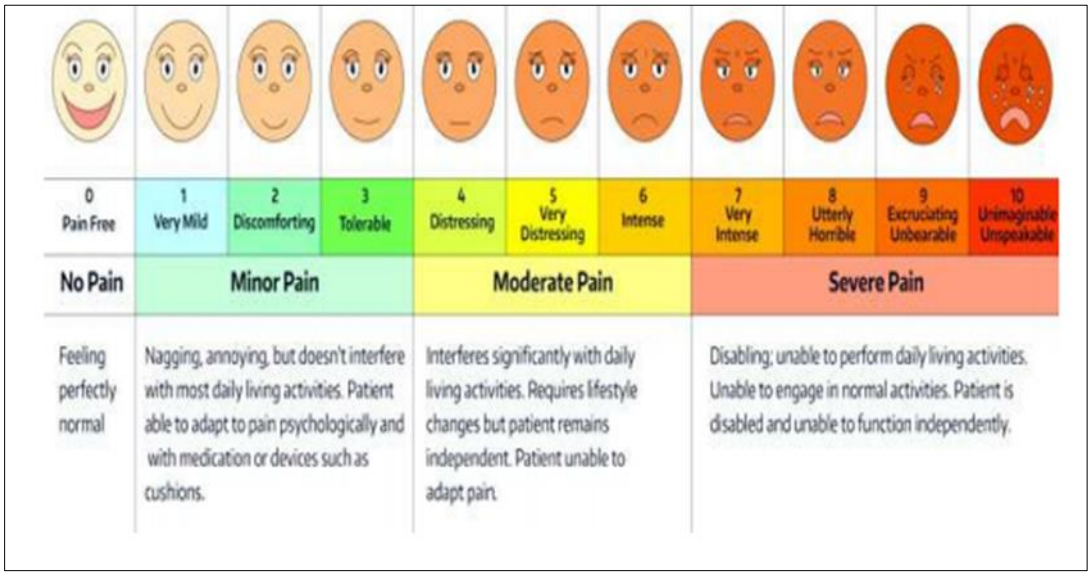

Figure 1 Visual analogue score

Lateral internal partial sphincterotomy was done in all patients. Post operatively patients were allowed orally after 2 hours in group A and as soon as patient recover from anaesthesia in group B, allowed liquid diet for 1 day and semi-solid diet thereafter, antibiotics and analgesics were also given. Cases were watched for post-operative complications like pain, bleeding, discharge, infection and incontinence.

Patients were usually discharged when relieved from pain and advised with laxatives and sitz bath. The patients were asked to follow up after 1st, 2nd ,4th ,6th & 8th weeks intervals and on each visit patients were examined for pain, bleeding, infection and incontinence and documented.

Post-operative pain was evaluated using visual analogue scale at 4 hours, postoperative day 1 and postoperative day 7.

2.2. Procedures done

After taking informed written consent to undergo lateral internal sphincterotomy, patients were admitted and necessary investigations were done and parts prepared the day before surgery. Patients were subsequently divided into group A under LOCAL ANAESTHESIA and group B under SPINAL ANAESTHESIA by Lottery method

Operative procedure

2.2.1. Under local anaesthesia (pudendal block):

Local anaesthesia mixture preparation done with 10 ml 0.5% bupivacaine + 10 ml 2% lignocaine + 10 ml Normal saline.

Patients were put in lithotomy position and skin around the anus, perineum, and thighs are painted with povidone iodine solution and draped.

Give each 5 ml of anaesthetic mixture at 2 ‘o’ clock 4 ‘o’ clock 8 ‘o’ clock and 10 ‘o’ clock position with 10 ml syringe (22G) around 5cm deep.36 Total 20ml of mixture is utilized. 25 G spinal needle is taken with 10 ml syringe and remaining 10 ml of local anaesthetic mixture, needle is injected in ischiorectal fossa midway between anal edge and ischial tuberosity with needle positioned laterally. Needle is inserted about 6cm - 8 cm. An attempt is made to reach the ischial tuberosity, following which the piston is withdrawn, needle shifted medially and then 5ml of anaesthetic mixture was given. Similarly, 5ml is injected on other side ischiorectal fossa midway between anal edge and ischial tuberosity. Gentle massage at the anal region done for two minutes. Then proctoscopy examination was done. The intersphincteric groove is identified. About 1 cm radial incision is made on the left intersphincteric groove and the internal anal sphincter is identified and hooked up by using a blunt artery forceps and brought out of the incision, internal anal sphincter is identified by its glistening pearly white fibres running longitudinally along the anal canal. The internal anal sphincter is divided under direct vision up to the level of dentate line and pressure applied for few minutes and incision is closed by 2-0 vicryl. Sentinel pile or skin tag if present was excised and left open Anal canal packed with lignocaine-soaked gauze and dressing and T bandage applied.

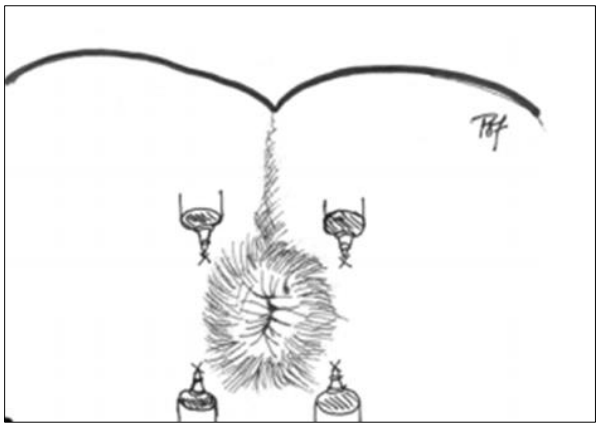

Figure 2 local anaesthetic mixture being given at 4 quadrants perianal region

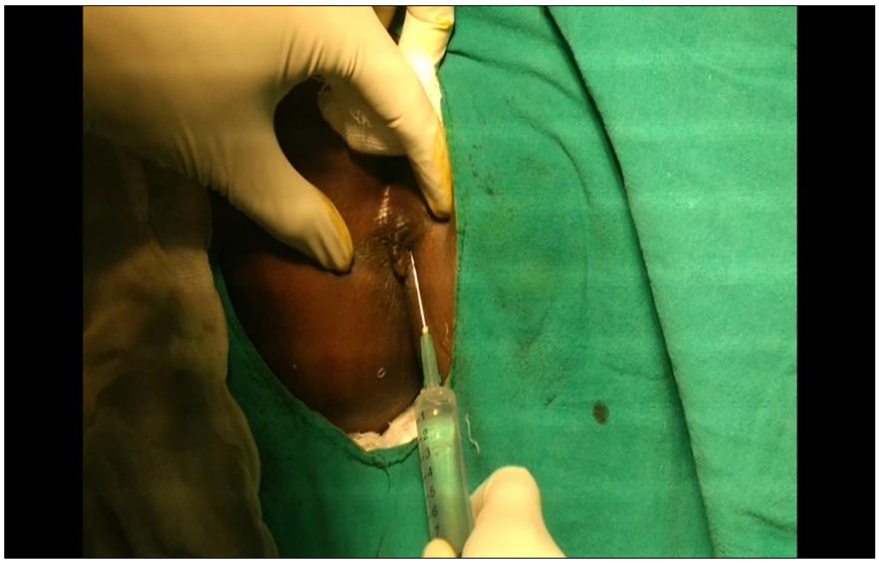

Figure 3 Local anaesthetic mixture being given at 2 “o” clock potion

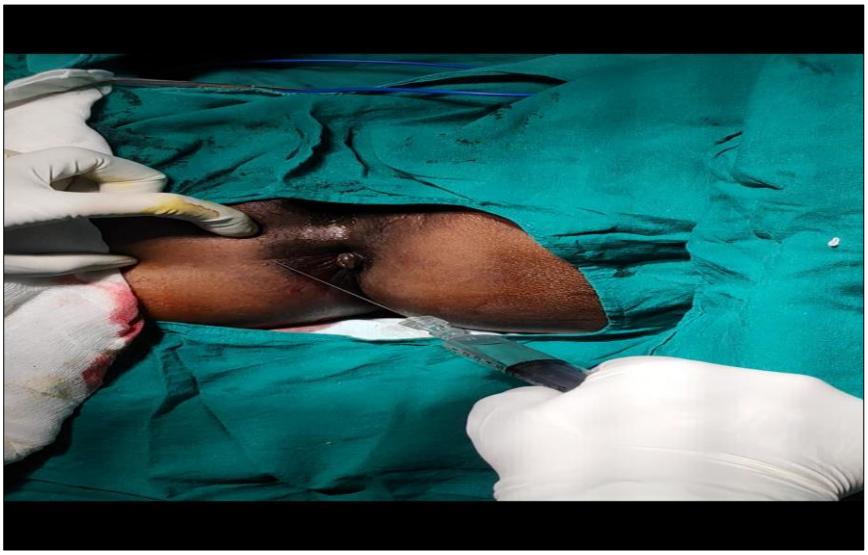

Figure 4 Local anaesthetic mixture being given at right ischial spine

2.2.2. Under spinal anaesthesia

Under spinal anaesthesia patients were put in lithotomy position and skin around the anus, perineum and thighs painted with povidone iodine solution and draped. Then proctoscopy examination was done. The intersphincteric groove is identified. About 1 cm radial incision is made on the left intersphincteric groove and the internal anal sphincter is identified and hooked up by using a blunt artery forceps and brought out of the incision, internal anal sphincter is identified by its glistening pearly white fibres running longitudinally along the anal canal. The internal anal sphincter is divided under direct vision up to the level of dentate line and pressure applied for few minutes and incision is closed by 2-0 vicryl. Sentinel pile or skin tag if present was excised and left open. Anal canal packed with lignocaine-soaked gauze and dressing and T bandage applied.

3. Results

In this study total 80 cases, (n=80) diagnosed to have chronic anal fissure were included. Most of the patients were in the age group of 20 years to 40 years, i.e. 59 patients comprising 73.75% of the study population.

In this study males had the mean age of presentation of 34.42 ± 10.20 (SD) years. Whereas females had 36.63 ± 11.77 (SD) years. Overall the mean age of presentation was 35.25 ± 10.80 (SD) years. Among 80 cases (n= 80) chronic fissure

in ano was seen in 50 males and 30 females, with P-value = 0.3420 which is statistically not significant. There is no significant difference in the incidence of fissure in ano among males and females.

In this study 80 patients underwent surgery for chronic fissure in ano. Alternate Patients presenting with chronic fissure were divided into group A and group B, group A being operated under pudendal block and group B under spinal anaesthesia. 40 patients (50%) have under gone lateral internal sphincterotomy under pudendal block and 40 patients (50%) have undergone lateral internal sphincterotomy under spinal anaesthesia. There was no significant difference between distribution of age Among group A and group B.

In the present study 80/80 patients (100%) presented with pain during defecation. Bleeding during defecation seen in 58/80 (68.75%) patients. 37/80 (46.25%) patients presented with constipation. 13/80 (16.25%) patients presented with pruritus and 05/80 (6.25) patients presented with mass per anus.

On per rectal examination fissure was found to be in the posterior midline in 64 (80%) patients (n=80). In males 44 (n= 50) patients had posterior midline fissure alone, 3 (patients had both anterior and posterior fissures, and 3 had anterior fissure only. In females 20 patients (n=30) had posterior midline fissure, 9 patients had anterior midline fissure 1 had combined anterior and posterior midline fissures.

The mean duration of surgery in group A is 23.75 +/- 4.04 min and in group B is 32.38 +/- 7.07 min. The difference in the duration of surgery is statistically significant in both the groups with p value of 0.0001.

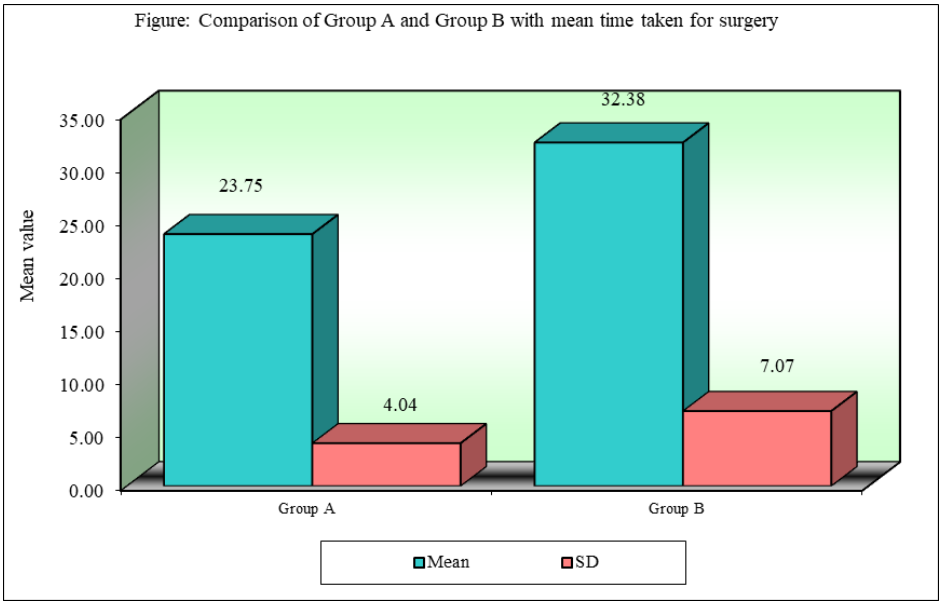

Figure 5 Comparison of mean duration of surgery between the two groups

The mean duration of post-operative hospital stay in group A is 0.83 +/- 0.45 days and in group B is 1.45 +/- 0.55 days. 8 (20%) patients (n=40) in group A has been discharged on same day, whereas no patient has been discharged on same day in group B. 31(77.50%) patients in group A and 23(57.20%) patients in group B stayed for a period of one day postoperatively among total 54 (67.50%) patients (n=80). Only one patient (2.5%) stayed for 2 days postoperatively in group A, whereas 16 patients (40%) stayed for 2 days in group B. one patient (2.5) in group B stayed for 3 days postoperatively. The difference in duration of post-operative hospital stay is statistically significant in both the groups with p value 0.0001.

The mean average pain score intraoperatively in group A was 0.83+/-1.06 and in group B was zero with p value of 0.0011. At 04 hrs, group A patients had mean average pain score of 1.73+/- 1.32 and in group B 4.98+/-1.05 with p value of 0.0001 which was statistically significant. On postoperative day 1 it was 0.58+/- 0.93 in group A where as in group B it was 2.65+/- 1.03 with p value of 0.0001 which was statistically significant. On postoperative day 7 average pain score was 00 in group A and 0.15+/- 0.53 in group B with p value of 0.5637 which was statistically not significant.

Immediate post-operative complications noted in many patients of group B as compared to group A. only bleeding was noted postoperatively in group A patients. 7 (17.5%) patients in group A had bleeding postoperatively and 17 (21.25%)

patients in group B. 5 (12.5%) patient in group B developed head ache, None of the patients in group A experienced head ache. 13 (32.5%) patients in group B & no patients in group A experienced nausea & vomiting (P=0.001, statistically significant). 8 patients in group B (20%) experienced retention of urine which required catheterization, No patient with group A experienced retention (p= 0.023, statistically significant).

Table 1 Comparison of Group A and Group B with pain scores at different time points by Mann-Whitney U test

Time points	**Group A**			**Group B**			**U-value**	**Z-value**	**p-level**
	Mean	**SD**	**Sum of ranks**	**Mean**	**SD**	**Sum of ranks**			
Intra op	0.83	1.06	1960.0	0.00	0.00	1280.00	460.00	-3.2717	0.0011*
At 4hours	1.73	1.32	878.00	4.98	1.05	2362.00	58.00	-7.1399	0.0001*
Day 1	0.58	0.93	975.00	2.65	1.03	2265.00	155.00	-6.2065	0.0001*
Day 7	0.00	0.00	1560.00	0.15	0.53	1680.00	740.00	-0.5774	0.5637

*p<0.05

Table 2 Comparison of Group A and Group B with mean post-operative duration of stay in days by independent t test

Groups	n	Mean	SD	SE	t-value	P-value
Group A	40	0.83	0.45	0.07	-5.5653	0.0001*
Group B	40	1.45	0.55	0.09		

*p<0.05

In group A in 38 out of 40 patients, fissure healed approximately at 4 weeks and in remaining 2 patients it healed at approximately 6 weeks, where as in group B in 36 out of 40 patients fissure healed at approximately at 4 weeks and in remaining 4 patients it healed at approximately 6 weeks with p value of 0.6710 which was statistically not significant.

4. Discussion

Chronic anal fissure is a common painful proctological problem associated with significant morbidity among otherwise healthy individuals. This condition usually presents with pain on defecation, bright streaky anal bleeding on the side of stool and sometimes with pruritus ani along with discharge. History and clinical examination is always diagnostic which reveals fissure and characteristic spasm of internal anal sphincter muscle.[8]

Chronic anal fissures have been treated by Surgical management traditionally as an effective and standard procedure which results in healing of fissures in 90% of cases. Lateral internal sphincterotomy (LIS) is gold standard treatment for the same. This can be done by either open or closed method under general anaesthesia, spinal anaesthesia or local anaesthesia in the out-patient department.

The present study is to compare post-operative outcomes of local anaesthesia to spinal anaesthesia and to compare duration of stay in hospital of local anaesthesia to spinal anaesthesia.

The present study group comprised of 50 (65.50%) males and 30(37.50%) females with slight male preponderance which is statistically not significant with P=0.1660. Ravikumar manoharan et al and Sourav Sarkar et al have reported a male preponderance with M:F ratio of 2.3:1 and 2.1:1 respectively. In this study also there is male preponderance.

There are 80 patients in our study. The age range of the patients is 18-65 years with mean age of 35.25 ± 10.80 years.

Middle age group patients are commonly presenting with Chronic fissure in ano as also seen in the present study with most of the cases found between 20 - 40 years. 59 cases were in this range accounting for 73.75% of the study group. Between 20-30 years there were 30 cases accounting for 37.50% and between 31-40 years 29 cases, accounting for 36.25%. The mean age of presentation was 35.25 ± 10.80 years. These findings are similar to that of various studies which have reported the mean age between 30-40 years. In study done by Sourav Sarkar et al mean age of presentation was 36 years.

In this study all patients i.e. 100% presented with pain during defecation, which is similar to Sarbjith et al and Sandesh Pawar et al. 68.75% patients had bleeding per rectum, 46.25% had constipation and 16.25% had pruritus ano, 6.25% had mass per anus.

In the present study 80% presented with posterior fissures, 15% with anterior and 5% had both. The site of fissure observed in this study is similar to study done by Tocchi A et al with posterior fissure of 83.5% and anterior fissure of 15.8% incidence. Various other studies mentioned below have shown posterior midline as a most common site for fissure in ano. The posterior midline was most common site of fissure in both males and females but anterior midline fissure was common in women than in men. Study done by Magdy M.A. Elsebae shows that anterior fissure was seen in 34.4% females.12.7% males had anterior fissure, which is similar to this study findings in which anterior fissure was seen in 30% females and 6% males.

Group A patients who underwent LAS under local anaesthesia Intraoperatively had little pain and discomfort due to lithotomy position as limbs are not paralysed, while giving local anaesthesia, and during use of cautery compared to spinal anaesthesia. Mean Visual analogue score (VAS) was 0.83 in group A patient while group B had no pain. Patients who complained pain intraoperatively were given injection midazolam for sedation. Intraoperative findings are similar to Bhimanagouda Venkanagouda Goudar et al study which had p value of <0.001. But comparing to intraoperative pain score with 4-hour pain score between local anaesthesia and spinal anaesthesia group, it was found that patients of local anaesthesia group had less pain than spinal anaesthesia group with statistically significant p value of 0.0001. While evaluating pain at 4 hours, group A patients had mean VAS of 1.73 and group B patients had 4.98 with statistically significant P value of 0.001. These findings are similar to S. Mohsen Towliat Kashani et al and Sourav Sarkar et al.

4.1. Comparing both group with immediate postoperative complications

Group A patients had only postoperative bleeding as complications, whereas group B patients had many more complications. In group A(n=40) 07 patients (17.5%) had postoperative bleeding, whereas in group B (n=40) 10 patients (25%) had bleeding. In group B 5 patients (12.5%) had headache,13 patients (32.5%) developed nausea and vomiting with statistically significant p value of 0.001, 08 patients (20%) developed retention of urine with significant p value of 0.023. Local anaesthetic group had none of these spinal anaesthesia related complications. These results are similar to the results obtained by S. Mohsen Towliat Kashani et al and Bhimanagouda Venkanagouda Goudar et al. None of the patients in either of the group had Flatus incontinence or Incontinence to stool.

4.2. Time taken for surgery

Mean duration of surgery was 23.75 ± 4.04 minutes in Group A patients who underwent lateral anal sphincterotomy under pudendal block, whereas group B who underwent under spinal anaesthesia had 32.38 ± 7.07 minutes with statistically significant p value of 0.0001.

4.3. Post-operative duration of stay

Patients who underwent lateral anal sphincterotomy under pudendal block were discharged early comparing to spinal anaesthesia group. 08 patients (20%) patients has been discharged on same day in group A (local anaesthesia) and none have been discharged on same day in spinal anaesthesia group. Minimum postoperative duration was zero in group A and 01 day in group B, maximum postoperative duration was 02 day in group A and 03 in group B. Mean duration of stay in group A was 0.83 ± 0.45 days and in group B it was 1.45 ± 0.55 days with significant p value of 0.0001. These findings were similar to Bhimanagouda Venkanagouda Goudar et al, which showed that patients who underwent surgery under local infiltration (group A) had discharged earlier compared to group B (spinal anaesthesia) patients with p value <0.001 which was statistically significant.

4.4. Post-op wound healing

In this study fissure was healed at 4 weeks in 95% patients of group A and 90% patients of group B. There was no statistically significant difference between two group (P = 0.6710).

5. Conclusion

Lateral internal sphincterotomy is the most accepted surgical method for treatment of Chronic fissure in ano. Lateral anal Sphincterotomy provides complete relief of symptoms and early healing of chronic anal fissures in majority of patients. Lateral anal Sphincterotomy is a safe and excellent procedure with high patient satisfaction rate with very minimal complications

Lateral anal Sphincterotomy is easy procedure which can be done under local anaesthesia as a day care procedure. Local anaesthesia provides adequate pain relief for the procedure and has the advantage of easy palpability of the sphincter. Choice of anaesthesia for the procedure is at the discretion of the surgeon and depends on the availability of anaesthetist. As our study showed postoperative pain relief could be better achieved by local anaesthesia. There is no significant difference in the complications or the healing of the fissure when compared with Spinal anaesthesia.

After comparing the two group, it's evident that local anaesthesia is better modality of anaesthesia for lateral anal sphincterotomy due to following findings.:

- Lesser duration of surgery
- Better postoperative pain relief
- Shorter duration of hospital stays
- LAS can be done as an Outpatient procedure under local anaesthesia
- Less postoperative complications especially no spinal anaesthesia related complications
- No significant difference in the healing of the fissure when compared with spinal anaesthesia.

With above observations and findings, it can be concluded that it is better to perform lateral anal sphincterotomy under local anaesthesia than spinal anaesthesia to treat chronic fissure in ano, which can be done effectively and safely with less complication rate and excellent results.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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