

Outcomes of Minor Anorectal Surgeries under Local Anesthesia versus Spinal Anesthesia in a Tertiary Care Hospital - A Comparative Study

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Received: 29-09-2022 / Revised: 08-11-2022 / Accepted: 20-11-2022

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Conflict of interest: Nil

Abstract

Introduction: Minor ano rectal disorders presenting to the hospital are usually benign and easily manageable surgically. Treatment can be achieved by various methods of surgery under either spinal or local anaesthesia. This study compares the intraoperative and postoperative pain, complication rates, and duration of hospital stay between minor ano-rectal surgeries done under spinal and local anaesthesia.

Materials and methods: A randomized trial was conducted among 120 patients requiring surgical intervention in view of minor ano rectal disorders. Patients were divided into two groups – group A and group B (60 patients each) who underwent the procedures under spinal and local anesthesia respectively. Baseline data, intraoperative and postoperative data was collected, and results were compared.

Results: Intraoperative pain (Nil. In spinal group vs. 3/60 [5%] in LA group; $P = 0.079$) and post operative complications (19/60 [15%] vs Nil.; $P = 0.002$) in both groups were comparable. Whereas postoperative pain after 24hrs (mean 1.85 [SD-1.48] vs 1.2 VAS [SD-0.40]; $P < 0.001$) and hospital stay (4.05 days [SD-0.99] vs. 1.20 days [SD- 0.40]; $P < 0.001$) had significant favorable outcomes for patients of group B. Overall there was no technical failure or recurrence in both the groups.

Conclusion: Local anesthesia is effective and safe in minor anorectal surgeries, and it eliminates the need for prolonged hospitalization, thus minimizing lifestyle disturbances and giving the patient psychological benefit. It also decreases the surgeon's dependency on anesthesiologists, making it possible to do such procedure in smaller and peripheral hospitals with inadequate infrastructure, where the services of trained anesthetists are not always available. Patients being discharged after a very short hospital stay also will reduce the load on the capacity of surgical wards. More studies on the positive effects of local anesthesia need to be undertaken to come to a final and long-lasting conclusion, that all minor anorectal procedures should be converted from regional anesthesia to local anesthesia in all General Surgery centers.

Keywords: Minor anorectal disorders, spinal anesthesia, local anesthesia.

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Introduction

The history of management of minor anorectal disorders dated back to 460 BC when it was documented that Hippocrates treated hemorrhoids by the technique similar to the present day rubber band ligation procedure. In the Roman era physician by the name Celsius described ligation and excision surgeries and their possible complications. The Indian Susruta Samhita mentions treatments for anorectal disorders comparable with those of Hippocrates. Finally over the years various techniques and procedures have been documented but the present day procedure as mentioned by Ferguson, Milligan Morgan, Alexander Williams and Barron were additional development of the late 20th century [1].

More recently, options for treating transphincteric fistulae have included anal advancement flaps, fistula plugs, fibrin glue and collagen glue. More recently, the Ligation of Intersphincteric Fistula Tract procedure, and stem cell injections have been introduced.

Advancement flap produces superior results, resulting in fewer procedures required to treat the condition. However, it has also been counter argued that it demands more complicated skills and is associated with greater pain, bleeding and potentially more severe complications for the patient [2].

Fistula plugs have been introduced and a UK based randomized controlled trial FIAT-500 is currently underway comparing the SURGIS AFPTM anal fistula plugs to alternative fistula treatment of the surgeons' choice [3].

Current data do not seem to demonstrate any higher efficacy of fistula plug to that of conventional treatment options. The Ligation

of Intersphincteric Fistula tract procedure and Modified Ligation of Intersphincteric Fistula tract Procedure have produced promising results. The desired outcomes following surgery to treat fistula-in-ano are threefold; the first aim is to get rid of the fistula, second to preserve sphincter function and the third is to prevent recurrence [4,5].

Anal fissure is a linear or oval shaped tear in the anal canal starting just below the dentate line extending to the anal verge. Internal sphincterotomy was introduced for treating anal fissures in the 1950s. Initial experience with the posterior sphincterotomy was unsatisfactory, the main weakness of this procedure was a significant rate of recurrences and anal incontinence and a long period required for the wound to heal many of these drawbacks were overcome by the adoption of lateral subcutaneous internal sphincterotomy [6,7].

These are common disorders mainly seen in young adults requiring adequate and optimal surgical interventions for satisfactory post-operative healing and pain control. Patients desire early return to home and work for minimal loss of working days.

Thus to achieve the above mentioned goals, anesthetic techniques for minor anorectal disorders have undergone a gradual change from the use of spinal anesthesia to a more effective and safer use of local anesthesia because of simplicity in administration, lower dose of anesthesia, lower post-operative complications and shortened hospital stay [8].

Materials and Methods

Source of data

All the patients with hemorrhoids (2nd and 3rd degree), fistula in ano (excluding recurrent and high fistula) and fissure in ano admitted to General Surgery Ward, at Vydehi Institute of Medical Sciences and Research Centre, Bangalore during the period of January 2019 to June 2020 were included in our study.

Method of collection of data: A Randomized study was conducted on 120 patients.

Sample size: Minimum of 120 cases admitted in VIMS & RC. 20 Patients in each surgical group (Haemorrhoidectomy, Fistulotomy, Lateral Anal Sphincterotomy).

Inclusion criteria: Male and female patients over 18 years and below 60 years of age suffering from Grade-2 & Grade-3 hemorrhoids, low fistula in ano, fissure in ano who are willing for the surgery and who have no contraindication for spinal anesthesia.

Exclusion criteria: Patients with fistula following perianal trauma, multiple fistulas, high fistula in ano, congenital fistulas and who are not willing for local anesthesia were excluded.

Data was collected from a case recording proforma pertaining to patients particulars, history, clinical examinations, investigations, diagnosis & surgical procedure.

Lottery method of Randomization was used to allocate the patients to following groups:

Group A (60): patients underwent minor anorectal surgeries under spinal anesthesia

A1:20 patients with Grade-2 & Grade-3 hemorrhoids
A2:20 patients with low fistula in ano

A3:20 patients with fissure in ano

Group B (60): patients underwent minor anorectal surgeries under local anesthesia

B1:20 patients with Grade-2 & Grade-3 hemorrhoids
B2:20 patients with low fistula in ano

B3:20 patients with fissure in ano

Statistical methods

The Statistical analysis was performed by STATA 11.2 (College Station TX USA). Shapiro wilk test has been used to check normality. Students independent sample t-test were used to find the significance difference between the age, pain scores, post-operative number of analgesia and length of hospital stay with anesthesia group (spinal and local) and its expressed as mean and standard deviation.

Chi square test were used to measure the association between the age distribution, gender, diagnosis, comorbidity, sedation, urinary spinal retention and post-operative spinal headache with anesthesia group (spinal and local) and it's expressed as frequency and percentage. Number of Intraoperative pain for local analgesia and operative procedure were reported as frequency and percentage. $p < 0.05$ considered as statistically significance.

Aim of the study is:

-To compare the complications of anorectal surgeries conducted under local anesthesia versus spinal anesthesia.

-To evaluate the average duration of hospital stay and cost effectiveness after anorectal surgeries under local anesthesia and spinal anesthesia.

Results and Discussion

70% patients were males and the age group ranged between 50-71 years, with the mean age of 38.83years in group A and 38.18years in group B (Table 1).

20 patients each in group A and group B presented with Grade-2 & Grade-3 hemorrhoids, low fistula in ano and fissure in ano. All patients underwent standard surgical procedures under SA and LA.

95% of LA patients were pain free during surgery and only 5% patients required an

additional dose of analgesia. Postoperatively, pains scoring in both the groups were found to be similar hence requirement of Inj. Tramadol (50mg) IV was similar in either groups up to 12 hours of surgery.

On the first postoperative day all LA patients were pain free and hence could be discharged

from hospital. Side effects of spinal opioids like urinary retention and post-operative spinal headache were seen in 9(15%) and 7(12%) respectively and hence patients required a longer hospitalization of approximately 4-5 days after SA.

Table 1: Age wise distribution of study participants

Age	Group A	Group B	Total	P-Value
≤30	18 (30%)	16 (27%)	34	0.659
31-40	16 (27%)	17 (28%)	33	
41-50	15 (25%)	18 (30%)	33	
51-60	9 (15%)	9 (15%)	18	
61-70	2 (3%)	0	2	
Total	60	60	120	

Diagnosis of Patients: - in either group, hemorrhoid, fissure, fistula in ano were found in 20 Patients each are forming a total of 60 patients in group A and 60 patients in group B (Table 2).

Table 2: Diagnostic

Diagnosis	Group A	Group B	Total	P-Value
F-AND	18 (30%)	20 (33%)	38	0.662
F-AND + FS	1 (2%)	0	1	
F-ANO+PAPILOMA	0	1 (2%)	1	
FS	19 (32%)	19 (32%)	38	
FS+F-ANO	1 (2%)	0	1	
HM	20 (33%)	20 (33%)	40	
RF-ANO	1 (2%)	0	1	
Total	60	60	120	

Details of study participants

Study participants were divided into 3 groups of hemorrhoids, fissure and fistula in ano; hence they underwent open Milligan Morgan's hemorrhoidectomy, lateral anal sphincterotomy and fistulotomy respectively (Table 3).

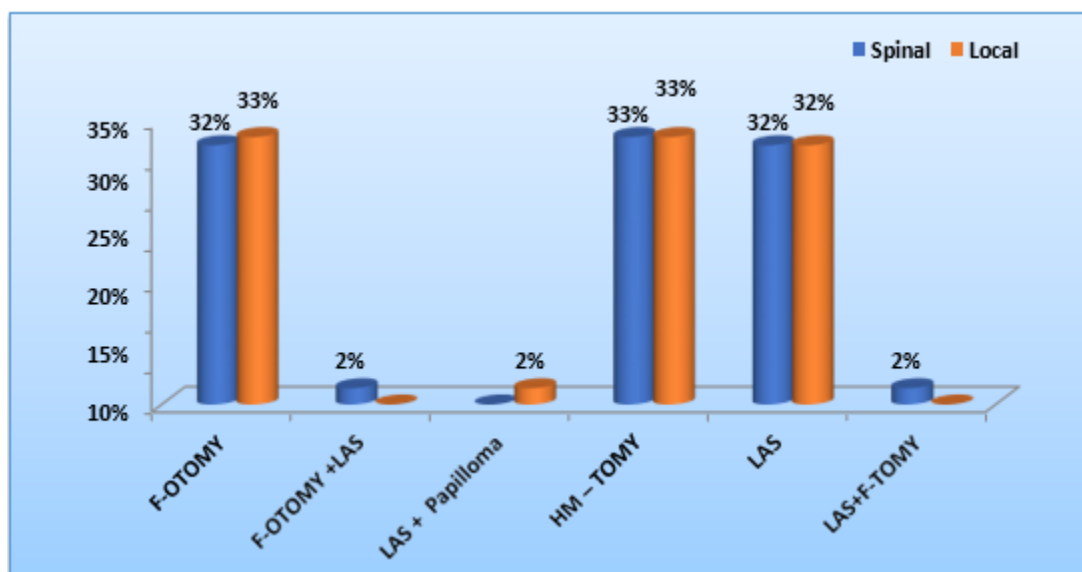


Figure 1: Operative procedure

Intra-operative pain (during LA) and requirement of post-operative analgesics (LA+SA):-

Pain scoring was recorded by the VAS scale ranging between 1-10. In local anesthesia group 57(95%) patients had a VAS scoring of 1, hence were pain free during surgery. Only 3 patients (5%) had a VAS of 4-5, for which intra-operative additional sedation was given in the form of Inj Midazolam (2mg) as shown in (TABLE :4,FIG:4) .This additional requirement of anesthesia in the 3 patients, was due to the prolonged duration of surgery as compared to the other 57(95%). In the series by Singh S *et al* [3]. local anesthesia patients had a mean VAS of 4 while few patients recorded score of 5-6. So their VAS scoring was higher than our series but the authors have failed to mention about the requirement of extra analgesics both intra-operative and post-operative .

In comparison, Harmandeep S Chahal *et al* [9]. mentions that of their local anesthesia patients, 84% were pain free while only 12% had mild pain and 4% had moderate pain during surgery, for which intraoperative analgesics was not

administered .Postoperative analgesia was required in 46% patients between 2-4 hours, in 48% patients after 4-6 hours and 4% patients after 7-8 hours. Majority (86%) were ambulatory within 60 minutes and all within 90 minutes.

In the postoperative period in our study group, local anesthesia patients were administered Injection Tramadol (50 mg) IV at 6 hours and 12 hours. One day after surgery patients had a significant low VAS of 1.20 +/- 0.40 for which only 2 patients required additional Injection Tramadol. All patients were ambulated within 2-4 hours post op. This hourly distribution of analgesic requirement has also been shown above in the study by Harmandeep S Chahal *et al* [9].

Due to the effect of spinal anesthesia none of the group A patients had any intraoperative pain, but in the post op period like group B patients at 6 hours and 12 hours, all patients were administered Injection Tramadol (50 mg) IV. While one day post-surgery the VAS score being 1.85 +/- 1.48, 5 of the patients (8.33%) required additional dose of Midazolam. This finding is statistically significant with the p value of <0.001. Ambulation was initiated as soon as the effect of spinal anesthesia was negated (4-6 hours)

In the comparative study of local anesthesia by Singh S *et al* [9]. post-operative analgesic

requirement has not been highlighted for comparison with our study.

Table 3: Details of additional sedation

Additional sedation	Group A	Group B	Total	P-Value
Yes		3 (5.00%)	3	0.079
No	60 (100%)	57 (95%)	117	
Total	60	60	120	

Studies on the complications of regional anesthesia are limited, but authors Jūratė Gudaitytė *et al* [3]. in their study have clearly mentioned the effects of spinal opioids like long acting Bupivacaine, which has been found to cause significant urinary retention in comparison to short acting local anesthesia like Lignocaine. This is because long acting Spinal opioids directly anaesthetize sacral nociceptive neurons and autonomic centers with direct inhibition. In addition, excessive intravenous fluid infusion for correction of hypotension during spinal anesthesia can lead to over distension of urinary bladder. This inhibits detrusor function, and normal reflex is not restored even after emptying urinary bladder with a catheter [10,11].

In this study similar findings of urinary retention due to spinal anesthesia was seen in 9(15%) of the patients. None of the patients of local anesthesia had this complication. All

patients of spinal anesthesia were assisted to pass urine by stimulation without any requirement for catheterization. The patients of urinary retention were assisted for bladder evacuation by natural stimulation and hence none of the patients required urinary catheterization (Table 4)

Another complication of spinal anesthesia in our series was post-operative spinal headache which was seen in 7(12%) of group A patients (Table 5). Author Jūratė Gudaitytė *et al* [12]. do not make any mention about spinal headache in their series. None of our patients in group A suffered from post spinal hypotension. Postoperative complications like urinary retention and post spinal headache were not encountered in any of the local anesthesia patients, since both these complications were related to spinal anesthesia.

Table 4: Details of urinary retention

Complications	Group A	Group B	Total	P-Value
Present	9 (15%)		9	0.002
Absent	51 (85%)	60 (100%)	111	
Total	60	60	120	

Table 5: Details of postoperative complications

Complications	Group A	Group B	Total	P-Value
Present	7 (12%)		7	0.113
Absent	53 (88%)	60 (100%)	113	
Total	60	60	120	

Duration of hospital stay Post-operative VAS was found to be significantly low in our group of local anesthesia patients with early ambulation (as mentioned above), and hence the duration of hospital stay was a mean of 1.20 ± 0.40 days. Thus, all patients were discharged by first to second postoperative day. However for group A patients the mean duration of hospital stay was 4.05 ± 0.99 days. Hence, showing that spinal anesthesia patients had a longer hospital stay with a

significant p value of <0.001 . All the above-mentioned authors have also concluded about the shorter duration of hospital stay after surgery with local anesthesia, ranging between 1-2 days.

Due to the lesser duration of hospital stay and saving on costs of spinal anesthesia drugs and equipment's, patients of group B had an overall lower financial burden than the other group of patients (TABLE:7,FIG 7).

Table 6: Duration of hospital stay

Hospital stay	Spinal	Local	P-Value
	Mean \pm SD	Mean \pm SD	
Hospital Stay	4.05 ± 0.99	1.20 ± 0.40	<0.001

Conclusion

Local anesthesia is effective and safe in minor anorectal surgeries, and it eliminates the need for prolonged hospitalization, thus minimizing lifestyle disturbances and giving the patient psychological benefit. It also decreases the surgeon's dependency on anesthesiologists, making it possible to do such procedure in smaller and peripheral hospitals with inadequate infrastructure,

where the services of trained anesthetists is not always available. Patients being discharged after a very short hospital stay also will reduce the load on the capacity of surgical wards. More studies on the positive effects of local anesthesia need to be undertaken to come to a final and long-lasting conclusion, that all minor anorectal procedures should be converted from regional anesthesia to local anesthesia in all General Surgery center.

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