

Comparison of saddle block and pudendal nerve block by SEPTA technique for anorectal surgeries: A randomized control study



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ABSTRACT

Background: Simplified easily reproducible pudendal nerve block technique for anorectal surgery (SEPTA) is a novel technique of local anesthesia for anorectal surgeries. **Aims and Objectives:** The present study was undertaken to assess the feasibility of SEPTA technique in terms of perioperative anesthesia and patients satisfaction. **Materials and Methods:** A prospective, randomized, comparative single-blinded study was done with 30 patients in each of two groups. Patients in Group A received Saddle Block and in group B received pudendal nerve block by SEPTA technique. Patients were evaluated with respect to onset of anesthesia, first rescue analgesia, ambulation, and patient satisfaction scores. **Statistical Analysis:** Student's independent t-test or Mann-Whitney U-test was employed for comparing continuous variables. The chi-square test or Fisher's exact test, whichever appropriate, was applied for comparing categorical variables. **Results:** Onset of anesthesia was earlier (3.72 ± 2.78 min) in Group B as compared to Group A (7.15 ± 4.19 min). Time to first rescue analgesia was earlier in Group A (132.1 ± 23.75 min) as compared to Group B (223.2 ± 92.51 min). Group B patients had early ambulation (32 min) postoperatively as compared to Group A patients (297.1 min), which was statistically significant. **Conclusion:** SEPTA is a good alternative to Saddle Block for providing anesthesia for anorectal surgeries with added advantages of rapid onset, no risk of nausea, vomiting, back pain, urinary retention and early ambulation, and discharge of the patient.

Key words: Anorectal; Saddle block; Local anesthesia; Hemorrhoidectomy; Pudendal

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INTRODUCTION

Saddle block has been routinely used for surgeries involving the anorectal region. Although anorectal surgeries such as hemorrhoidectomy and fistula repair are surgeries of shorter duration, the dense sensory supply of the perineum leads to significant postoperative pain, making adequate anesthesia and analgesia important for pain relief.¹ Some studies reported that more than 70% of patients after hemorrhoidectomy had pain twice that of cholecystectomy and appendectomy.^{2,3}

Saddle block anesthesia involves administering low dose of drugs in intrathecal space to provide anesthesia over the saddle area, i.e., perineum, perianal area, and medial

aspect of legs and thigh.^{4,5} It blocks the sacral nerve roots and relaxes pelvic muscles with dense effect in sacral, lumbar, and lower thoracic dermatomes. As lower level of block is achieved, the hemodynamic derangement and chance of circulatory overload are less. Hence, saddle block is considered a selective form of spinal anaesthesia.⁶ However, after administration of the drug, the patient is recommended to keep sitting for a longer duration of time after administering the drugs, which can cause postoperative urinary retention in patients given the saddle block.⁷

Pudendal nerve block by simplified easily reproducible pudendal nerve block technique for anorectal surgery (SEPTA) is a novel technique of local anesthesia (LA). A simpler and easier to administer LA technique, SEPTA,

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has been devised by Ladha *et al.*, which is an appropriate alternative anesthesia technique for anorectal surgeries.⁸ In the SEPTA technique, the LA solution is simply injected into the center of the ischioanal fossa from where it percolates down to the pudendal neurovascular bundle. No finger is inserted in rectum which can be painful for the patient and there is a decreased risk of injury to the pudendal neurovascular bundle. It has advantage of rapid onset, no risk of urinary retention, early ambulation, and discharge of the patient because of less post-operative pain which can shorten the hospital stay.⁹

Aims and objectives

This study was aimed to assess the feasibility of pudendal nerve block by SEPTA technique in terms of perioperative anaesthesia and patient satisfaction score.

Secondary objectives include time to first rescue analgesia, time to ambulation and complications if any in two groups.

MATERIALS AND METHODS

This prospective, randomized, comparative, single-blinded study was conducted in the department of anesthesia and surgery from March 2021 to January 2023. After the approval from the institutional ethical committee and informed written consent, 60 patients of the American Society of Anesthesiologist (ASA) Grade I, II, and III scheduled for anorectal surgeries were included in our study.

Inclusion criteria

All patients:

- Aged between 18 and 60 years
- ASA Grade I, II, and III
- Haemorrhoidectomy and fistula repair.

Exclusion criteria

All patients with:

- ASA Grade IV
- High up fistula in ano
- Patients refusal
- Contraindication of spinal anesthesia
- History of allergy to amide local anesthetic drug
- Bleeding disorders
- Infection at the site of injection
- Ejection fraction below 45%.

Using GPOWER software (Version 3.0.10), it was estimated that the least number of patients required in each group with 80% power, effect size of 0.65, and 5% significance level is 26 per group. We increased the total number of patients to 30 per group to include the dropouts. The patient was not aware as to which treatment he/she is getting, making the study single blinded. The same

surgical and anesthesiology team performed all cases. All patients underwent routine preanesthetic checkup, and informed written consent was obtained. They were kept fasting for 6 h for light meals and 10 h for heavy meals before performing the block. The patients were randomly divided into two groups of 30 each by computer-generated randomization. On arrival in the operation theater, heart rate (HR), noninvasive blood pressure (NIBP), oxygen saturation (SpO₂), and electrocardiography monitors were applied, and the baseline values were noted. Intravenous (iv) line was secured and iv fluid started.

Group A patients were administered saddle block in sitting position. Patient's back was cleaned and draped followed by the identification of L3/L4 space by anatomical landmark. The patient received 1.5 mL of 0.5% bupivacaine (Hyperbaric) and was kept in sitting position for 10 min and then laid supine with one pillow under the head. The level of sensory block was assessed for temperature by cotton wool soaked in ethyl alcohol.

Group B received Pudendal Nerve Block by SEPTA technique using 20 mL of 0.25% bupivacaine.

Procedure of pudendal block by SEPTA technique

This technique was devised by Ladha *et al.*, in 2018. The patient was placed in lithotomy position, and topical anesthesia was attained with 10% lignocaine solution sprayed around perianal area. After waiting for 3 min, about 5 mL of LA solution was injected in the subcutaneous plane in posterior perianal region in circumanal manner, 2.5 mL of LA solution on each side. Needle is then changed to 25 G spinal needle and 5 mL of LA solution was injected in each ischioanal fossa approximately 6 cm deep. No finger was inserted in rectum while giving the block. No attempt was made to take needle near pudendal vessel. After this, 3 mL of LA was injected in posterior presacral space and 2 mL was injected anteriorly in the sphincter complex. After waiting for 1–2 min, a well-lubricated finger was inserted in rectum and slight traction was given posteriorly to relax sphincter complex. The surgeon was allowed to start surgery after assessing sphincter relaxation. Operative ease was recorded by the surgeon which was defined as no pain at two finger dilatation on the scale of 3 with scale 1 being fully relaxed, scale 2 means incompletely relaxed, and scale 3 being not relaxed.¹⁰ If the patient complained of pain intraoperatively, injection tramadol 2 mg/kg slow iv was given. If the operative ease was scale 3 according to surgeon or if the patient's pain or discomfort persisted, GA was administered.

Perioperative monitoring included HR, NIBP, and SpO₂. They were recorded immediately after giving the block which was recorded as time 0. Monitoring was recorded every 5 min for the first 15 min followed by every 15 min till the end of

surgery. Total duration of surgery was recorded in both the groups. The patient was monitored for postoperative pain every hour (h) for first 4 h, followed by 2 hourly for the next 8 h and 4 hourly thereafter until 24 h. The pain was assessed objectively by numeric rating score (NRS) which ranges from 0 to 10 with 0 representing no pain while 10 represents worst imaginable pain. Time to first rescue analgesia and time to ambulation was recorded. Rescue analgesia was given when NRS was >4 with injection paracetamol 1 g i/v infusion. Total pain-free period was defined as the period from the block administration till the demand for first rescue analgesia. Time to ambulation was recorded as the time when the patient could walk to the toilet without any assistance. Complications, if any, such as bleeding, urinary retention, headache, nausea, and vomiting were noted. Postoperatively, patients were asked about the satisfaction with the anesthesia technique which was recorded as Grade 1 - very satisfied, Grade 2 - satisfied, and Grade 3 - unsatisfied.

The recorded data were compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean±SD and categorical variables were summarized as frequencies and percentages. The Student's independent t-test or Mann-Whitney U-test, whichever feasible, was employed for comparing continuous variables. The Chi-square test or Fisher's exact test, whichever appropriate, was applied for comparing categorical variables. A P<0.05 was considered statistically significant.

RESULTS

A total of 60 patients were enrolled in the study with 30 patients in each group. The two groups were comparable with respect to age, gender, weight, ASA status, type, and duration of surgery (P>0.05) (Table 1).

The outcome parameters such as onset of anesthesia, time to first rescue analgesia, and time to ambulation were noted in each group. Onset of anesthesia was earlier in Group B 3.72±2.78 min compared to Group A with onset of 7.15±4.19 min (Table 2). Time to first rescue analgesia was earlier in Group A with 132.1±23.75 min compared to Group B with 223.2±92.51 min (Table 2). Group B patients had early ambulation at 32 min postoperatively compared to Group A patients who had delayed ambulation after about 297.1 min which was statistically significant (P<0.0001) (Table 2).

With regard to complications, only four patients in Group B had urinary retention relieved by catheterization, but it was not statistically significant (Table 3). Grades of pain during injection were comparable in two groups

(Table 4). 25 (83.3%) patients in Group A and 23 (76.7%) patients in Group B had moderate pain during injection (Table 4). 6 (20%) patients in Group A and 10 (33.3%) patients in Group B were highly satisfied with the respective techniques but was not statistically significant (Table 4). One person in Group A was not satisfied with the technique due to delayed ambulation and retention of urine for which he was catheterized (Table 4).

Table 1: Demographic characteristics of study patients in two groups

Parameter	Group A (n=30)	Group B (n=30)	P-value
Mean age in years±SD	42.7±9.34	40.9±8.18	0.431
Gender (%)			
Male	13 (43.3)	11 (36.3)	0.598
Female	17 (56.7)	19 (63.3)	
ASA (%)			
ASA I	24 (80)	23 (76.7)	0.754
ASA II	6 (20)	7 (23.3)	
Mean weight in kg±SD	69.8±8.61	71.4±7.26	0.439
Type of surgery (%)			
Hemorrhoidectomy	19 (63.3)	22 (73.3)	0.405
Fistulectomy	11 (36.7)	8 (26.7)	
Duration of surgery in minutes±SD	67.4±7.92	65.7±8.14	0.416

SD: Standard deviation, ASA: American society of anesthesiologists

Table 2: Outcome parameters in two groups

Parameter	Group A (n=30)	Group B (n=30)	P-value
Onset of anesthesia (min)	7.15±4.19	3.72±2.78	<0.001*
Time to first rescue analgesia (min)	132.1±23.75	223.2±92.51	<0.001*
Time to ambulation (min)	297.1±56.42	32.7.6±21.42	<0.001*

*Statistically significant difference (P<0.05)

Table 3: Complications in two groups

Parameter	Group A (n=30) (%)	Group B (n=30) (%)	P-value
Urinary retention	4 (13.3)	0 (0)	0.112
Bleeding	0 (0)	0 (0)	-
Perianal abscess	0 (0)	0 (0)	-
Headache	1 (3.33)	0 (0)	

Table 4: Patient satisfaction in two groups

Parameter	Group A (n=30) (%)	Group B (n=30) (%)	P-value
Pain during injection			
Mild	4 (13.3.7)	7 (23.3)	0.386
Moderate	25 (83.3)	23 (76.7)	
Severe	1 (3.3)	0 (0)	
Patient satisfaction score			
Highly satisfied	6 (20)	10 (33.3)	0.331
Satisfied	23 (76.7)	20 (66.7)	
Not satisfied	1 (3.3)	0 (0)	

DISCUSSION

Saddle block is useful for providing anesthesia for various obstetric, urological, and perianal procedures. It is a form of low spinal anesthesia that targets the sacral segments, thereby sparing the sympathetic outflow and leading to minimal hemodynamic derangement.^{7,11} It has advantages of rapid onset, dense block, early patient mobilization, and a short hospital stay useful for providing anesthesia in perianal surgeries in day-care setup.¹² It has disadvantage of recumbency in bed for a longer duration of time which can cause urinary retention in patients given saddle block.^{7,13} It also has additional side effects such as nausea, vomiting, and headache due to dural puncture.

Several studies have shown the feasibility of LA as sole anesthetic method for anorectal surgeries.^{14,15} There are several techniques for giving LA with added advantage of decreased side effects such as nausea, vomiting, headache, decreased hospital stay, cost, and quick turnover between cases.¹⁶

In our study, onset of anesthesia was earlier with longer duration of analgesia (223 min) in patients given LA through SEPTA technique. Study by Bharathi *et al.*, and Jinjil *et al.*, also noted the longer duration of analgesia of around 5 h and 287 min, respectively, compared to our study.^{10,17} Bharathi *et al.* in their study of perianal block noted that the mean duration of analgesia lasted approximately 5 h. This could be because they used 30 mL of 0.25% of bupivacaine along with 1% lignocaine and adrenaline solution. Jinjil *et al.* used additional adjuvant dexmedetomidine along with ropivacaine which could explain their longer duration of action compared to our study.¹⁰

Time to ambulation was shorter in patients given LA through SEPTA technique as it implies local infiltration of drug with no hemodynamic variation and no motor blockade. However, the patient cooperation is needed, so proper counseling of the patient was done and informed written consent taken.

Anal canal and perianal skin are very sensitive areas, so pain associated with injecting LA is one of the reasons of hesitancy of giving LA in anorectal surgeries.^{18,19} Some studies have used EMLA cream or 5% lignocaine-based ointment about an hour before injecting LA.^{10,20,21} Scarfone *et al.* suggested that lower injection rate of LA is associated with less pain because of less rapid distension of local tissue and activation of fewer nerve endings.²² We used 10% lignocaine spray just before injecting LA through SEPTA technique, and the area was infiltrated slowly to avoid pain to sensitive area. Furthermore, no finger was inserted in rectum in SEPTA technique which can be

painful for the patient, thus improving patient satisfaction for this technique.⁸

Overall patient satisfaction score was better in Group B with more number highly satisfied with the procedure, but it was not statistically significant. One person in saddle block group was not satisfied with the technique due to delayed ambulation and retention of urine, for which he was catheterized. The better patient satisfaction scores in SEPTA technique group were due to early ambulation, lesser side effects such as nausea, vomiting, headache, and longer duration of analgesia. Similar findings were observed by Jinjil *et al.*, who observed in their study that perianal block using ropivacaine 0.2% with dexmedetomidine as an adjuvant provides long-lasting postoperative analgesia and is acceptable to the surgeon.¹⁰ Anorectal surgeries such as hemorrhoidectomy under LA have advantage of expediting return to baseline functional status and reduction in costs associated with reduced length of stay and complications similar to findings observed by Sikakulya *et al.*,²¹ Like our study, other studies have also reported no case of perianal abscess after LA technique.^{20,23}

Adverse effects of LA on CNS, CVS, and respiratory system after absorption are not seen in our study since we used less concentration and volume of LA and site of injection was also away from pudendal neurovascular bundle.

Limitations of the study

Small sample size and it includes only two types of anorectal surgeries, namely, hemorrhoidectomy and fistula-in-ano repair. The study can be extrapolated to larger sample size and include other anorectal surgeries such as fissure-in-ano, hemorrhoidoexy, and perianal abscesses.

CONCLUSION

SEPTA technique has advantage of rapid onset, no risk of urinary retention, early tolerance to oral feeds, early ambulation, and discharge of the patient. Hence, it can be used as an alternative to Saddle Block for providing anaesthesia in anorectal surgeries after proper consent and counseling about the procedure.

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Authors' Contributions:

HS - Definition of intellectual content, prepared first draft of manuscript, data collection, data analysis, manuscript preparation, and implementation of study protocol; **RA** - Concept, clinical protocol, design of study, data collection, manuscript preparation, editing, manuscript revision, and submission of article; **AMC** - Design of study, revision of manuscript, literature survey, and preparation of figures; **RRS** - literature survey, coordination, and manuscript revision.

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