

Efficacy of Perianal Block versus Spinal Anesthesia in Patients Undergoing Perianal Procedures

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ABSTRACT

Objectives: To compare the efficacy of perianal block versus spinal anesthesia in patients undergoing perianal procedures.

Study Design: Quasi-experimental study.

Place and Duration of Study: Combined Military Hospital, Rawalpindi Pakistan, from Sept 23 to Feb 24.

Methodology: 56 patients who were planned to undergo elective perianal surgery were included in the study and were divided into Perianal Block Group (Group-A) and Spinal Anesthesia Group (Group-B) alternatively in order of presentation. Intra-operative and post-operative anesthesia related outcomes were assessed and compared between groups. Data was analyzed by SPSS 20.00.

Results: Mean age was 34.98 ± 8.32 years. There were 37(66.07%) males and 19(33.93%) females. Most commonly performed perianal surgeries were fistulotomy 17(30.36%) and fistulectomy 17(30.36%) followed by hemorrhoidectomy 14(25.00%) and lateral internal sphincterotomy (LIS) 8(14.29%). Mean duration of anesthesia onset in perianal block group was 2.60 ± 0.83 minutes while in spinal anesthesia group it was 5.96 ± 1.29 minutes, ($p < 0.001$). Mean duration taken to ambulate in perianal block group was 18.28 ± 4.05 minutes while in spinal anesthesia group it was 248.71 ± 41.67 minutes, ($p < 0.001$). Mean duration for which patients remained pain free in perianal block group was 269.60 ± 31.11 minutes while in spinal anesthesia group it was 138.82 ± 15.23 minutes, ($p < 0.001$).

Conclusion: Perianal block is much better and more efficacious option for regional anesthesia as compared to spinal anesthesia (SA) in patients who undergo perianal surgeries without spinal anesthesia associated with complications like headache and hypertension.

Keywords: Anesthesia, Outcomes, Perianal, Spinal Anesthesia, Surgeries.

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INTRODUCTION

Outpatient surgeries provide a low-risk and cost-effective method for treating frequent Non-Suppurative Perianal Disorders, such as Hemorrhoids and Anal Fissures that are frequently seen in the surgical outpatient departments (OPDs).¹ According to estimates stated in previous literature, prevalence of Hemorrhoids on the global scale has been reported at 4.4% and can reach much higher up to 13% of the general population.² Similarly, Anal Fistula which is a common sequel of Anal Abscess also is a highly common perianal condition with previous literature reporting that among patients who develop abscess of the Perianal region, 15-60% people develop Anal Fistulas.³ Owing to such high disease burden of these conditions, these surgeries are amongst the most commonly performed procedures despite the fact that during the medical training programs these are often under-represented.⁴

Like any other surgical procedure, perianal

surgeries also require comprehensive knowledge regarding the choice of anesthesia to be used while performing the surgery that can reduce post-operative morbidities, particularly the pain and ability to ambulate after-care or ambulatory surgery, which is influenced by a variety of factors.⁵ In general, such surgeries are performed either under the short duration general anesthesia or regional anesthesia, Spinal Anesthesia (SA) and Saddle Block Anesthesia which in recent times have been considered preferable choices of anesthesia in these types of surgeries.^{6,7}

However, more recently, an additional mode of anesthesia has been utilized by surgeons performing ambulatory perianal surgeries which is Perianal Block which involves the infiltration of the anesthetic agent locally in the perianal region.⁸ This technique has several advantages over the standard practice of using spinal anesthesia (SA), including substantially lower cost and decreased chances of having spinal anesthesia related complications like retention of the urine.⁸ However, when it comes to choosing Perianal Block over the conventional choice of Spinal Anesthesia (SA) there is a lack of consensus of surgeons towards the

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use of Perianal Block. This is may be driven by the fear of inadequacy of post-operative pain relief but is largely due to association of this anesthesia technique with injection pain due to repeated punctures and inadequate relaxation of the surgical field essential for performing the procedure.⁹ Therefore, in order to address this discrepancy, keeping in view the potential advantages of perianal block over Spinal Anesthesia (SA) reported in literature ⁹, present study was conducted with the aim of comparing the efficacy of Perianal Block (PB) versus Spinal Anesthesia (SA) in patients undergoing perianal procedures.

METHODOLOGY

This quasi-experimental study was conducted at CMH, Rawalpindi, Pakistan, from Sept 23 to Feb 24 after taking approval from the institutional ethical review board under letter no. IRB # 612. Appropriate sample size was calculated using following formula:

For calculations, following assumptions were used; level of significance of 5%, power of 95%, anticipated mean duration of anesthesia onset in perianal block group of 3.17±1.28 minutes and anticipated mean duration of anesthesia onset in spinal anesthesia group of 6.24±4.28 minutes.⁹ This gave a sample size of 56 (28 in each group).

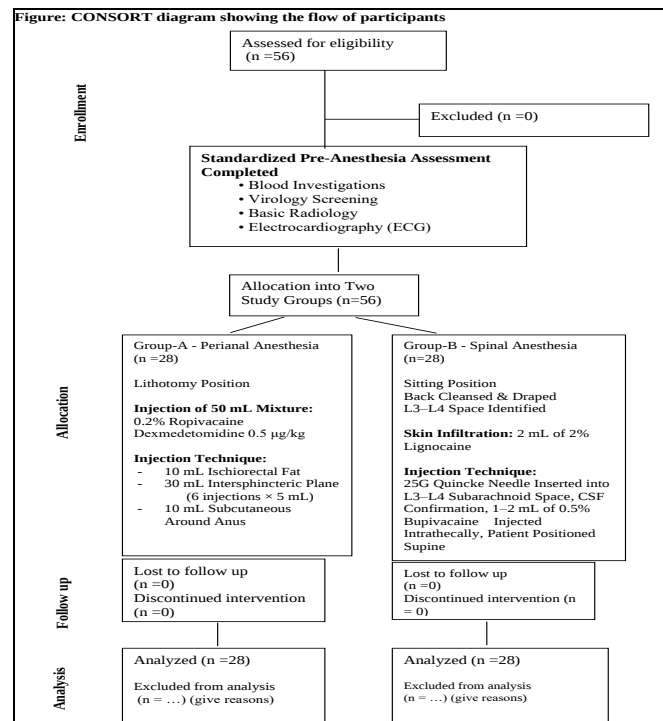
$$n = \frac{2\sigma^2(z_{1-\alpha/2} + z_{1-\beta})^2}{(\mu_1 - \mu_2)^2}$$

Inclusion Criteria: Patients who had the age ≥18 years, both males and females, who were scheduled to undergo perianal surgeries under regional anesthesia were included in the study.

Exclusion Criteria: Patients who had history of hypersensitivity to anesthesia drugs, age younger than 18 years, unfit for surgery, American Society of Anesthesiology (ASA) status ≥III and who had psychological phobia towards awake surgery were excluded from the study.

Patients were selected by using non-probability consecutive sampling technique. Baseline characteristics of the patients including age (in years), gender, BMI (in kg/m²), ASA status, co-morbidities and type of perianal surgery (hemorrhoidectomy/ fistulotomy/ fistulectomy/lateral internal sphincterotomy) were documented. Signing of an informed consent proforma was made essential pre-requisite before inclusion in the present study. Once a detailed institution standardized pre-anesthesia assessment (through blood tests, virology screening, basic

radiology and electrocardiography) was completed, patients were alternatively assigned one of the two anesthesia options. In Group-A, patients prior to surgery were put in the lithotomy position with support under the buttocks of the patients. Elastoplast was used to improve field of vision. After cleansing and draping, 10ml out of 50ml mixture of 0.2% Ropivacaine with 0.5 µg/kg Dexmedetomidine was taken in a 10cc syringe which was injected in the ischioanal fat just beside the external anal sphincter. After that needle was advanced forward around 2.5cm to reach levator muscle. Next 30ml of anesthesia mixture was injected in six columns of 5ml each in the inter-sphincteric region. Last 10ml was injected in subcutaneous layer around the anus. In Group-B, patient was put in sitting position and the back was cleansed and draped. Using anatomical landmarks, space between L3 and L4 was identified and the skin was anesthetized by injecting 2ml of 2% Lignocaine solution in a 3cc needle. After this, in the identified spinal space, 25G Quincke spinal needle was inserted and after confirmation of entry in the spinal space (by visualizing CSF expression), 1-2ml of 0.5% Bupivacaine was injected, and patient was laid down in supine position. Onset of anesthesia was assessed through commonly used modified Bromage scale,¹⁰ and duration of onset of anesthesia (in minutes) was documented (Figure).



After regional anesthesia, surgery was performed by the consultant surgeons as per standard techniques and duration of surgery (in minutes) was documented. After completion of surgery, patients were sent in the recovery. Patients were closely monitored for the first 24 hours after the surgery to assess for duration taken to ambulate (in minutes) and duration for which patients remained pain free (in minutes). At the end of 24 hours, proportion of patients who were pain free (defined as pain VAS ≤ 1) was also documented.

Data analysis was performed using Statistical package for Social Sciences version 20.00. Quantitative data was represented using Mean $\pm$ SD. Qualitative data was represented by using percentage and frequency. Comparison of qualitative variables between groups was performed using Chi-square test while for quantitative variables, Student samples t-test was used. A $p \leq 0.05$ was taken as significant.

RESULTS

In this study, 56 patients (28 in each group) were included. Mean age was 34.98 $\pm$ 8.32 years. There were 37(66.07%) males and 19(33.93%) females. Mean BMI was 24.28 $\pm$ 2.88 kg/m². 26(46.43%) patients had ASA status I and 30(53.57%) had ASA status II. 21(37.50%) had no co-morbidity, 11(19.64%) were diabetics, 11(19.64%) were hypertensive, 10(17.86%) had history of stable ischemic heart disease and 3(5.36%) were smokers. Most performed perianal surgeries were fistulotomy 17(30.36%) and fistulectomy 17(30.36%) followed by hemorrhoidectomy 14(25.00%) and lateral internal sphincterotomy (LIS) 8(14.29%). Comparison of baseline characteristics between groups is tabulated form below in Table-I.

Mean duration of anesthesia onset in Group-A was 2.60 $\pm$ 0.83 minutes while in Group-B it was 5.96 $\pm$ 1.29 minutes, ($p < 0.001$). Mean duration of surgery in Group-A was 42.53 $\pm$ 8.93 minutes while in Group-B it was 41.57 $\pm$ 9.53 minutes, ($p = 0.698$). Mean duration taken to ambulate in Group-A was 18.28 $\pm$ 4.05 minutes while in Group-B it was 248.71 $\pm$ 41.67 minutes, ($p < 0.001$). Mean duration for which patients remained pain free in Group-A was 269.60 $\pm$ 31.11 minutes while in Group-B it was 138.82 $\pm$ 15.23 minutes, ($p < 0.001$). Frequency of patients who were pain free after 24 hours of surgery in Group-A (perianal block anesthesia) was 20(71.43%) while in Group-B (spinal anesthesia) it was 11(39.29%), ($p = 0.016$). This data is summarized below in Table-II.

Table-I: Comparison of baseline characteristics between groups (n=56)

Characteristic	Group-A (Perianal Anesthesia) (n=28)	Group-B (Spinal Anesthesia) (n=28)	p-value
Mean age	34.92±8.52 years	35.03±8.27 years	0.962
Gender			
Male	18(64.29%)	19(67.86%)	0.778
Female	10(35.71%)	9(32.14%)	
Mean BMI	24.42±3.09 kg/ m2	24.14±2.72 kg/ m2	0.718
ASA status			
I	13(46.43%)	13(46.43%)	1.000
II	15(53.57%)	15(53.57%)	
Comorbidity			
No	7(25.00%)	14(50.00%)	0.367
Diabetes	7(25.00%)	4(14.29%)	
Hypertension	7(25.00%)	4(14.29%)	
Stable ischemic heart disease	5(17.86%)	5(17.86%)	
Smoking	2(7.14%)	1(3.57%)	
Type of perianal surgery performed			
Hemorrhoidectomy	5(17.86%)	9(32.14%)	0.630
Fistulotomy	9(32.14%)	8(28.57%)	
Fistulectomy	10(35.71%)	7(25.00%)	
LIS	4(14.29%)	4(14.29%)	

*BMI – Body Mass Index, ASA – American Society of Anesthesiology, LIS – Lateral Internal Sphincterotomy

Table-II: Comparison of efficacy outcomes between groups (n=56)

Characteristic	Group-A (Perianal Anesthesia) (n=28)	Group-B (Spinal Anesthesia) (n=28)	p-value
Mean duration of anesthesia onset	2.60 $\pm$ 0.83 min	5.96 $\pm$ 1.29 min	<0.001
Mean duration of surgery	42.53 $\pm$ 8.93 min	41.57 $\pm$ 9.53 min	0.698
Mean duration taken to ambulate	18.28 $\pm$ 4.05 min	248.71 $\pm$ 41.67 min	<0.001
Mean pain free duration after surgery	269.60 $\pm$ 31.11 min	138.82 $\pm$ 15.23 min	<0.001
Patients pain free after 24 hours of surgery			
Yes	20(71.43%)	11(39.29%)	0.016
No	8(28.57%)	17(60.71%)	

DISCUSSION

This study focused on comparing the outcomes and efficacy of perianal block versus spinal anesthesia in patients undergoing perianal procedures, and addressed one important aspect of perianal surgeries, i.e., the choice of regional anesthesia to be used during the surgery. In this instance, large number of previous studies have shown spinal anesthesia (SA) to be used as a preferred choice of anesthesia while performing all types of day-care surgeries.¹¹ However, in perianal surgeries, local anesthesia infiltration and block may be a more suitable alternative to SA as has been reported in multiple studies.¹²

In present study, most patients who underwent perianal surgeries were male with an average age of thirty-five years. This corresponds to the finding of various previous studies that have reported that

perianal conditions like hemorrhoids and Anal Fistulas are more common in middle aged men.¹³ In present study, average BMI of the patients fell in the healthy range which differed from the fact that perianal conditions (both hemorrhoids and Anal Fistulas) are much more common in patients who have higher BMI lying in overweight to obese range.¹⁴ Most commonly performed surgeries in present study were anal fistula surgeries and hemorrhoidectomy. In terms of efficacy, present study found that perianal block should significantly higher efficacy and provided much better outcomes in terms of anesthesia onset duration, time taken by the patients to ambulate, duration for which patients remained pain free and number of patients who were completely pain free by the end of 24 hours after the surgery. Hong *et al.*, compared with spinal anesthesia, perianal local anesthesia was associated with faster postoperative recovery, earlier ambulation, and shorter hospital stay without compromising surgical outcomes in appropriately selected patients.¹⁵

Perianal local anesthesia resulted in a lower incidence of anesthesia-related complications, particularly urinary retention, hypotension, and post-dural puncture headache, than spinal anesthesia.¹⁶ Ye *et al.*, reported similar results compared to present study reporting significantly higher efficacy of perianal block compared to SA and concluding perianal block to be used as a preferred anesthesia choice in perianal surgeries.¹⁷ Huang *et al.*, highlighted that although spinal anesthesia provides reliable and dense sensory blockade, perianal local anesthesia offers an equally effective, safe, and cost-efficient alternative for many minor to moderate perianal procedures, particularly in ambulatory surgical settings.¹⁸

Similarly, Sharma *et al.*,¹⁹ reported significantly lower post-operative pain after 24 hours of surgery in patients who were operated on through perianal block as compared to those who had perianal surgery under spinal anesthesia (SA). Opposite to the findings of present study, Peterson *et al.*,²⁰ reported that in terms of pain after 24 hours of perianal surgery, there was no difference of statistical significance between patients who had perianal surgery through perianal block as compared to those who were operated on under spinal anesthesia (SA).

Findings of present study clearly show a significant advantage and superior efficacy of perianal block as compared to spinal anesthesia in patients

undergoing perianal procedures. Based on this, it is strongly recommended that perianal block should be used as preferred anesthesia choice in patients undergoing perianal surgeries. There were a few limitations of present study including limited sample size, study being confined to single center, limited follow up period and assessment of all perianal surgeries as a single unit. In future, it is recommended that further studies in this regard should address and stratify the efficacy outcomes in different perianal surgeries individually.

CONCLUSION

In conclusion, perianal block is much better and more efficient for regional anesthesia as compared to spinal anesthesia in patients who undergo perianal surgeries.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

MBSN & BS: Data acquisition, data analysis, critical review, approval of the final version to be published.

ABS & MAL: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

AAH & MSA: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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