

Comparison of Spinal Anesthesia vs. Local Infiltration Anesthesia in Postoperative Pain in Patients Undergoing Sinusectomy Surgery

Abdurrahman Tünay¹, Mert Güler², Mert Ali Dölek², Selim Doğan², Özlem Ateşal¹, Sevim Baltalı¹, Hasan Ökmen², Mensure Yılmaz Çakırgöz³, Meral Kurt Durmuş¹, Ufuk Oğuz İdiz², Mehmet Toptaş¹

¹University of Health Sciences Turkey, İstanbul Training and Research Hospital, Clinic of Anaesthesiology, İstanbul, Turkey

²University of Health Sciences Turkey, İstanbul Training and Research Hospital, Clinic of General Surgery, İstanbul, Turkey

³University of Health Sciences Turkey, İzmir Tepecik Training and Research Hospital, Clinic of Anaesthesiology, İstanbul, Turkey

ABSTRACT

Introduction: Different anesthesia techniques were reported for the management of pilonidal sinus surgery, including local infiltration anesthesia (LIA), epidural anesthesia, spinal anesthesia (SA), and general anesthesia. However, even up to this date, the best anesthetic technique remains controversial. Here; we compared LIA SA for postoperative pain levels after pilonidal sinus disease surgery.

Methods: We conducted a single-center prospective observational clinical trial between May 2022 and January 2023 in our tertiary education hospital. A total of 60 patients with a diagnosis of pilonidal sinus were included in the study Postoperative 0-hour, 1 hour, 8 hours, and 24-hour numeric rating scores (NRS) of the patients were evaluated. Results were evaluated using Statistical Package for the Social Sciences.

Results: While 30 (50%) patients were operated under local anesthesia, 30 (50%) patients were operated under SA. 55 (91.7%) patients were male, 5 (8.3%) patients were female. The mean age of the patients operated under local anesthesia was 29.68 ± 6.85 years, while the mean age of the patients operated under SA was 26.23 ± 7.04 years. There was no statistically significant difference in age between the groups. When the comparison between postoperative NRS scores of SA and LIA was evaluated, there was no significant difference at postoperative 0 h and postoperative 1st hour. However, LIA NRS scores at 8th and 24th h were lower than SA scores. Recurrence was observed in 3 patients from both groups in the 3rd month outpatient controls. The difference between the groups was not statistically significant. All patients were discharged postoperatively on the 1st day of the surgery.

Conclusion: As a result, we may suggest using LIA for pilonidal surgery for the anesthetic technique.

Keywords: Spinal anesthesia, local infiltration anesthesia, sinusectomy surgery

Introduction

For 90% of anorectal interventions, the ambulatory approach was preferred among general surgery operations in our country (1,2). Different anesthesia techniques have been reported for the management of pilonidal sinus surgery, including local infiltration anesthesia (LIA), epidural anesthesia, spinal anesthesia (SA), and general anesthesia (1-5). But even up to date, the best anesthetic technique remains controversial.

Pilonidal sinus disease (PSD) was first reported in the 1880s, and different treatment possibilities have been described for PSD (6). PSD etiology was defined as chronic acquired inflammatory sickness that arises from the hair follicles of buttock cleft at the bottom of the spine with the

incidence rate of 26/100,000 of the total population and the incidence was 2.5 times higher for males (7,8).

The study compared the postoperative pain level of patients with PSD under SA vs. LIA. The secondary aim of our study was to investigate any possible complications associated with anesthetic techniques or surgery.

Methods

We conducted a single-center prospective observational clinical trial between May 2022 and January 2023 in our tertiary education hospital. All patients' consent was taken from them. The study was approved by the University of Health Sciences Turkey, İstanbul Training and



Address for Correspondence: Abdurrahman Tünay MD, University of Health Sciences Turkey, İstanbul Training and Research Hospital, Clinic of Anaesthesiology, İstanbul, Turkey

Phone: +90 212 459 63 39 **E-mail:** atunay.02@hotmail.com **ORCID ID:** orcid.org/0000-0001-7118-9312

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Research Hospital Local Ethics Committee (approval number: 143, date: 06/05/2022). We included patients aged between 18-65 years, American Society of Anesthesiologists I-III (ASA I-III), patients planning to undergo pilonidal sinus surgery, and patients who accepted to join our study. We excluded patients with a change of surgical technique in the operation or a change of anesthetic technique, allergy to local anesthetics, patients with bleeding disorders, patients with infection at the site of lumbar region from whom SA was planned, septic patients, and serious aortic valve stenosis.

The Anesthesia Technique

Two groups of anesthesia techniques were planned for the study. The first group (group S) SA was administered for the surgery. A second group (group L) LIA was planned for the surgery. All patients had standard ASA suggested monitorization with non-invasive blood pressure, heart rate, and pulse oximetry, and they were given iv. 2 mg of midazolam before surgery sedation. We administered a local anesthetic solution of 10 mL 2% lidocaine +20 mL bupivacaine 0.5% at the prone position. For the anesthetic technique of group S, SA was made at L3-L4 or L4-L5 levels with bupivacaine heavy 3.0 mL 0.5%. A 25- or 26-G spinal needle was used to enter the subarachnoid space. The patient was turned to prone position.

Pain assessment was performed numeric rating score (NRS) pain scores were examined at 0, 1, 8 and 24 h after surgery. Evaluation of 0-10 (0: No pain, 10: Most severe pain) by asking the patient at the hour and evaluating it with an anesthesia doctor who was blinded to the study groups.

We administered 1 g paracetamol during the operation period to both patient groups for analgesia. Non-steroid analgesics were prescribed for pain management during the postoperative period, and the patient was discharged.

Surgical Technique

Patients with infected pilonidal sinus, patients with more than 4 orifices, and patients with a distance between orifices of more than 8 cm were excluded from the study. The limited excision (sinusectomy) surgical technique described by Soll et al. (9) was applied to all patients. The patients were placed in a prone position on the operating table. The intergluteal fold was separated by tape. Sinus staining was achieved by injecting diluted methylene blue through the pilonidal sinus orifices. The orifices and sinuses were excised. After hemostasis the wound was left open for secondary healing. Patients were instructed to wash their wounds at least twice a day. The patients were checked in the outpatient clinic (9).

Statistical Analysis

Data analysis was done with the Statistical Package for the Social Sciences (SPSS version 26.0, IBM, Armonk, NY, USA) program. The distribution of variables was measured using the Kolmogorov-Smirnov test. If continuous data were normally distributed, they were expressed as mean \pm standard deviation (SD), otherwise as a median-interquartile range. Descriptive statistics, numbers, and percentages for categorical variables and mean, SD, median, minimum, and maximum for

numerical variables were given. Comparisons of numerical variables in two independent groups were made with Student's t-test for the variable satisfying the normal distribution condition and with the Mann-Whitney U test when the normal distribution. P-value <0.05 was accepted as statistically significant. Chi-square test was used in qualitative data.

Results

A total of 60 patients with a diagnosis of pilonidal sinus were included in the study. While 30 (50%) patients were operated under local anesthesia, 30 (50%) patients were operated under SA. All patient demographic data are presented in Table 1. Postoperative 0-, 1-, 8-, and 24-hour NRS scores of the patients were evaluated. While 55 (91.7%) patients were male, 5 (8.3%) were female. Of the patients operated under local anesthesia, 28 (93.3%) were male and 2 (6.7%) were female. Of the patients who were operated under SA, 27 (90%) were male and 3 (10%) were female. The mean age of the patients operated under local anesthesia was 29.68 ± 6.85 years, while the mean age of the patients operated under SA was 26.23 ± 7.04 years (Table 2). There was no significant difference age between groups ($p=0.716$).

When the comparison between postoperative NRS scores of SA and LIA was evaluated, there was no significant difference at postoperative 0 hour ($p=0.830$) and postoperative 1st hour ($p=0.172$). However, we have reported a statistically significant difference in terms of NRS scores at the 8th hour ($p=0.002$) and 24th hour ($p=0.015$). LIA NRS scores were significantly lower than SA scores (Table 2).

Recurrence was observed in 3 patients from both groups in the 3rd month outpatient controls. It was statistically not significant. All patients were discharged postoperatively on the first day of surgery. We did not encounter any anesthesia-related complications.

Discussion

In this study, we reported a significant difference in pain scores for LIA than SA at 8th and 24th hour. Both techniques had comparable pain scores during the early postoperative period because the effect of SA persisted at that period. However, starting from the 8th hour, the applied LIA technique demonstrated improved pain levels. With this technique, we did not encounter any possible SA-associated complications and we think that using the LIA technique with better pain scores and less complications should be suggested.

Table 1. Demographic data

Age (mean \pm SD) (years)	25.91 \pm 6.85
Sex (%)	
Male	55 (91.7%)
Female	5 (8.3%)
Anesthesia type	
Spinal anesthesia	30 (50%)
Local infiltration anesthesia	30 (50%)
ASA score	
I	-
II	-
SD: Standard deviation, ASA: American Society of Anesthesiologists	

Table 2. Comparison of variables

	Local Infiltration anesthesia (n=30)	Spinal anesthesia (n=30)	p-value
Age (mean ± SD) (years)	26.6±6.7	26.23±7.04	0.716
Sex (%)			
Male	28 (93.3%)	27 (90%)	1.00
Female	2 (6.7%)	3 (10%)	
NRS score 0. hour (mean ± SD)	1.53±1.27	2.10±2.45	0.830
NRS score 1. hour (mean ± SD)	1.43±1.33	2.30±2.18	0.172
NRS score 8. hour (mean ± SD)	1.57±1.40	3.47±2.50	0.002*
NRS score 24. hour (mean ± SD)	1.33±1.52	2.80±2.54	0.015*
Recurrence	3 (10%)	3 (10%)	1.00

*P-value <0.05 was accepted as statistically significant. SD: Standard deviation, NRS: Numeric rating score

A recent study by Barada et al. (4) investigated the effectiveness of sacrococcygeal local anesthesia for complicated pilonidal surgery in 394 patients. They reported lower post-operative pain scores and analgesic consumption for using LIA (4). Similar to our findings, they also suggested to use LIA to eliminate the risk of complications associated with general and SA (4,10). There are studies in the literature operated their pilonidal sinus surgeries with LIA and they all report favorable results (11,12).

Sungurtekin et al. (1) compared the local anesthesia technique with sedation combination and SA for ambulatory pilonidal disease. They concluded that LIA with sedation resulted in a faster hospital stay and diminished hospital expenses, without any serious side effects when compared with SA (2). We reported similar results with their findings, but our LIA patients pain scores were even better.

Although we did not see any SA-related complications in our study, the use of SA for ambulatory surgery may end up with the possibility of facing postural spinal headache, temporary radicular irritation, and even urinary retention (1,13). In addition to that transient neurologic symptoms may occur after the administration of SA (1,14).

In terms of surgical complications, we found similar results between the groups. Both groups had a %10 recurrence rate, and we did not encounter any other surgical complications. In a recent study, Garg and Yagnik (6) reported a 3.7% recurrence rate, which was less than our results. However, in the literature, there are studies reporting a recurrence rate for pilonidal sinus surgery between 0-11.9% for excision with open healing treatment and between 0-20% for excision with midline closure treatment or between 0-11% for midline closure with different flaps (6,15-17). These results were similar to our study outcomes. In a study investigating the recurrence rate of the pilonidal sinus between general and SA groups, the authors could not show any association with anesthesia type (18).

Study Limitations

We have some limitations for our study; first, our sample size was small, and a larger sample size could give more precise results. Second, we used NRS for evaluating pain level of the patients and it is a subjective test battery for the assessment. But to date it has been widely used in many studies. The third one is that this research was a single-centered study.

Conclusion

We have reported improved results for LIA when we compared it with SA. Pilonidal surgery our patients whom we administered LIA had lower pain scores at 8th and 24th hours and two groups showed similar complications. As a result, we may suggest using LIA for pilonidal surgery for the anesthetic technique.

Ethics Committee Approval: The study was approved by the University of Health Sciences Turkey, İstanbul Training and Research Hospital Local Ethics Committee (approval number: 143, date: 06/05/2022).

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