

# A Randomized, Controlled Trial Comparing Epidural Block and Spinal Anesthesia for Pilonidal Sinus Surgery

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## ABSTRACT

**Background:** The condition of Pilonidal sinus happens to be a common condition which needs a surgical correction. It comprises of a hair-containing sinus or abscess to be precise. It is seen in the natal cleft of the sacrococcygeal region, and it usually occurs in males, especially young males. Pilonidal sinus is a result of debris accumulated in the cleft, which later gets infected and results as an abscess.

**Materials and Methods:** A randomized, controlled clinical trial was conducted here in our medical hospital and collage so as to compare the effects of spinal anaesthesia and epidural anaesthesia in pilonidal surgery. The study was conducted with the collaboration of department of anaesthesia and department of general surgery, which included 24 subject patients for a period of 15 months.

**Results:** The two groups so developed, group A was assigned to the 12 patients who had under gone the corrective surgery with spinal anaesthesia. The rest 12 were assigned to group B randomly and received epidural anaesthesia. The level of maximal sensorial block was significantly higher in the spinal anaesthesia group than in the epidural group. All patients were infused with 1liter of Ringer's lactate solution and 1liter of

isotonic saline for fluid replacement within 24 hours after the surgery.

**Conclusion:** In our view both spinal anaesthesia and epidural anaesthesia prove to be great use for the treatment of pilonidal corrective surgery, with some possible side effects in the spinal anaesthesia post-operatively.

**Keywords:** Epidural Block, Spinal Anesthesia, Pilonidal Sinus.

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## INTRODUCTION

The condition of Pilonidal sinus happens to be a common condition which needs a surgical correction. It comprises of a hair-containing sinus or abscess to be precise. It is seen in the natal cleft of the sacrococcygeal region, and it usually occurs in males, especially young males.<sup>1</sup> Pilonidal sinus is a result of debris accumulated in the cleft, which later gets infected and results as an abscess. In an effort to correct this situation, surgery is almost always performed in a prone position.<sup>2</sup> As a standard practice general anaesthesia is induced in the supine position to the patient, and then tracheal intubation is done. The patient is then turned back to the prone position.<sup>3</sup> Under the influence of general anaesthesia in the prone position patient might experience certain complications, such as limb, ophthalmic, and pressure injuries.<sup>4,5</sup> However, this change from supine to prone position might lead to endotracheal tube dislodgement and accidental dislocation of the intubation tube.<sup>6</sup> As to overcome such complication and challenges spinal anaesthesia was advocated as it possess less postoperative nausea and vomiting, a considerable less analgesic consumption after the surgery, therefore an early recovery after

the surgery.<sup>7</sup> Due to these reasons a regional anaesthesia is preferred to general anaesthesia for pilonidal sinus surgery. The most commonly used technique is spinal anaesthesia because of the rapid onset and ease of application.<sup>8</sup> Spinal anaesthesia did produced possible adverse events, such as hypotension, bradycardia, post-dural puncture headache, and urinary retention, are similar to those of epidural anaesthesia. These events may be more common and more severe in case of spinal anaesthesia as compared to epidural anaesthesia.<sup>9</sup> A few studies focusing the use of epidural anaesthesia in pilonidal surgery also confirmed that epidural method and less post-operative discomfort as compared to spinal method or a general anaesthesia.<sup>10</sup> The aim of the present study was to compare epidural block and spinal anaesthesia for pilonidal sinus surgery.

## MATERIALS AND METHODS

A randomized, controlled clinical trial was conducted here in our medical hospital and collage so as to compare the effects of spinal anaesthesia and epidural anaesthesia in pilonidal surgery. The

study was conducted with the collaboration of department of anaesthesia and department of general surgery, which included 24 subject patients for a period of 15 months. All patients were older than 18 years of age with American Society of Anaesthesiologists physical status class I or II scheduled to undergo an elective pilonidal corrective operation in the prone position were included in the study as samples. The contraindications for the surgery were; coagulation disorders, infection at the injection site, or mental disorders, and a positive history of allergy to local anaesthetics. Patients were allotted to the spinal anaesthesia group and epidural anaesthesia group using a simple, computer-generated randomization method. A day before surgery, all of the patients was briefed about the surgery and a routine preoperative visit for regional anaesthesia was made by the assigned anaesthesiologist. The surgery was done by same team of anaesthesiologist and general surgeons. All the patients were given amoxicillin 1000mg daily for 5 days before the surgery. During the surgery an intravenous line was established using an 18-G intravenous catheter. All of the patients did received 10 mL/kg of Ringer's lactate solution for volume loading for 20 minutes prior the regional anaesthesia administration. The anaesthesia delivery was performed in the sitting position with a standard midline approach under strict sterile conditions. First of all two mL of 2% lidocaine was injected intradermal to achieve local anaesthesia in the injection site. Each group had 12 patients each. The spinal anaesthesia was administered with the use of 26-G Whitacre pencil point spinal needle in the L3-L4 intervertebral space. On the presence of cerebrospinal fluid, 1.5 mL mg 0.5% hyperbaric bupivacaine was injected into the subarachnoid space. In case of epidural anaesthesia group, an 18-G Tuohy needle was inserted into the L3-L4 intervertebral space and the epidural space. This was identified by the use of loss of resistance to saline technique. After achieving negative aspiration of blood or cerebrospinal fluid, first a 2 mL of lidocaine 2% was administered as a test dose. Three minutes later, 15 mL 0.5% hyperbaric bupivacaine was injected for epidural anaesthesia. After 1-minute exactly, the sensorial block level was checked using the pinprick test and motor block was evaluated.

A Standard anaesthesia monitoring was done, which included; non-invasive arterial blood pressure, continuous electrocardiography, heart rate, and peripheral oxygen saturation levels were maintained throughout. Now the corrective surgery was performed, all the surgeries were completed uneventfully. All of these monitoring parameters were maintained and recorded immediately before any volume loading. This was at every 1-minute interval for 15 minutes after the anaesthesia procedure, at 5-minute intervals until the patient was returned to the hospital ward, and also every 30 minutes until the 24 hours after the completion of surgery. As a standard protocol, the entire surgery was recorded manually and later presented in an electronic format, including; time of first anaesthesia, time of first incision, time and amount of anaesthesia delivered and time of last suture. Post-operative follow-up was conducted after every 12 hours so as to keep a score of pain levels and possible side effects of anaesthesia. All the data was arranged in a tabulated form and analysed statistically.

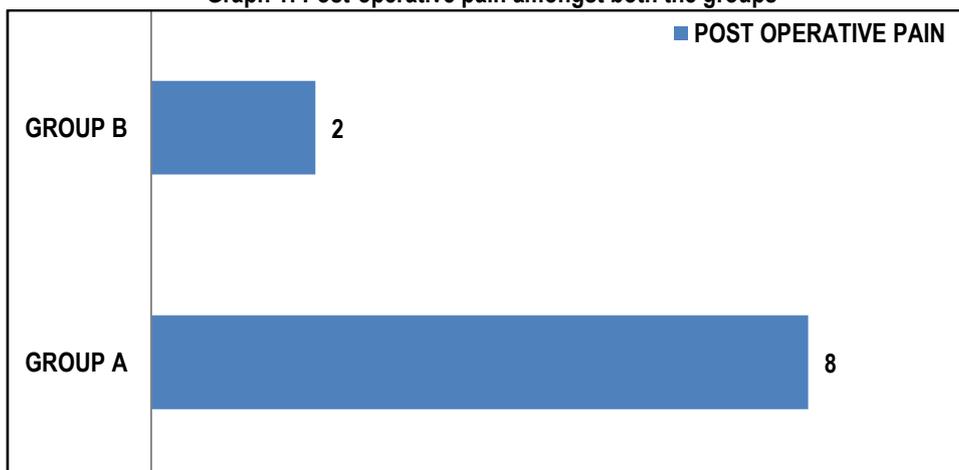
**RESULTS**

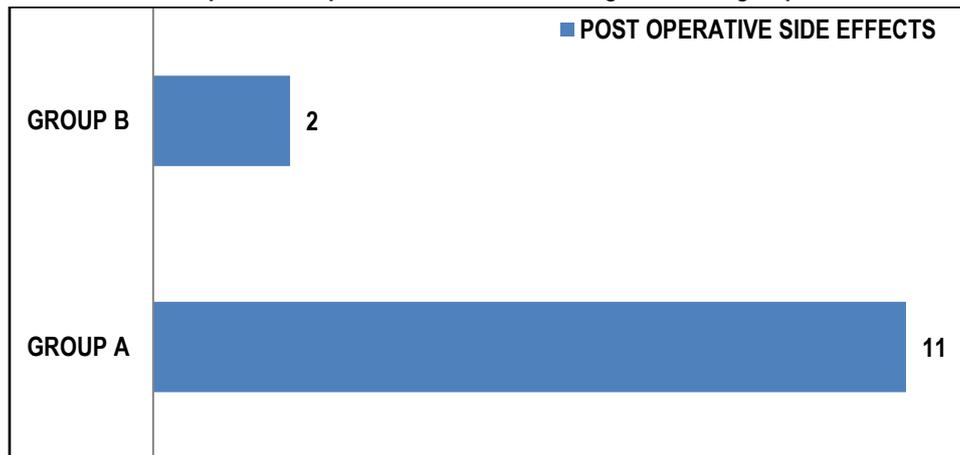
The two groups so developed, group A was assigned to the 12 patients who had under gone the corrective surgery with spinal anaesthesia. The rest 12 were assigned to group B randomly and received epidural anaesthesia. The level of maximal sensorial block was significantly higher in the spinal anaesthesia group than in the epidural group. All patients were infused with 1liter of Ringer's lactate solution and 1liter of isotonic saline for fluid replacement within 24 hours after the surgery. Now comparing the postoperative pain scores, group A showed considerably high score when compared to group B. 8 patients out of 12 in group A (67%) had severe pain episode within 4 hours of the surgery. Whereas only 2 patients (17%) complained of severe pain and demanded some medication for the pain in group B. (Table 1, Graph 1) Possible side effects of anaesthesia including dizziness, stiffness of back and nausea were hardly seen in group B (17%). Whereas in group A almost all patients did had post-operative symptoms. (83%). All the patients with post-operative pain were given mild doses of tramadol to ease the pain. (Graph 2)

**Table 1: Post-operative pain and side effects in groups**

Column1	Male	Female	Post-Operative Pain	Post-Operative Side Effects
Group A	10	2	8	11
Group B	8	4	2	2

**Graph 1: Post-operative pain amongst both the groups**



**Graph 2: Postoperative side effects amongst both the groups.**

## DISCUSSION

In this study, we were able to analyse both anaesthesia systems very efficiently. The patients of the epidural anaesthesia (group B) had a lower postoperative pain score, when compared to those in the spinal anaesthesia patients (group B). The possible reason behind it can be the quantity of pre-emptive analgesia delivered. Secondly, the pharmacological blockade of the nociceptive pathways before the surgical incision can be the possible reason.<sup>11,12</sup> It was established that the segmental regression of analgesia was much faster for spinal anaesthesia when compared with epidural anaesthesia postoperatively.<sup>13</sup> It was established, that epidural anaesthesia might cause a greater reduction in the pain response compared with spinal anaesthesia. Now, considering a study comparing spinal anaesthesia and total intravenous anaesthesia with endotracheal intubation for pilonidal corrective surgery concluded that none of the patients required any analgesic treatment post-operatively after spinal anaesthesia. However, nearly 6 patients did require analgesics after total intravenous anaesthesia method. It has been established that epidural anaesthesia is associated with the loss of a complete motor block.<sup>14-17</sup> We did also observed that all of the patients in the spinal anaesthesia group had a complete motor response blocking of the lower limbs, but none of the patient developed motor block in the epidural anaesthesia group. In our study, rarely any cardiovascular changes were seen. Symptoms of bradycardia were not seen in any of the patient. During the surgery hypotension was not observed in any of the patients. Sometimes, the regional anaesthesia causes decreased systemic vascular resistance and the venous return to the heart because of the sympathetic blockage.<sup>18</sup> It was also observed that the chances and severity of hypotension was directly related with the sensorial block level.<sup>19</sup> Some texts do report a chance of hypotension in 8% for spinal anaesthesia in pilonidal corrective surgery. The chances of urinary retention and post-Dural puncture headache were well established side effects of regional anaesthesia. In some cases postoperative urinary retention might cause urinary tract infection due to urinary catheterization, which might cause a delayed discharge.<sup>20</sup> In reputed texts, the chances of urinary retention post spinal anaesthesia has been reported up to 19% for any anal surgery. Some even suggest that patient didn't develop any urinary retention post pilonidal corrective surgery.<sup>21</sup> No chance of spinal headache in epidural anaesthesia was observed as there were no Dural punctures.

## CONCLUSION

In our view both spinal anaesthesia and epidural anaesthesia prove to be great use for the treatment of pilonidal corrective surgery, with some possible side effects in the spinal anaesthesia post-operatively. The lack of a motor block and no post-Dural puncture headache, and extended period of action of the sensorial block are benefits of epidural anaesthesia over spinal anaesthesia. The rapid onset effects of spinal anaesthesia still make it a popular choice of anaesthesia method today.

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