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ORIGINAL ARTICLE

Patient Satisfaction in Lumbar Decompression Surgery under Spinal Anesthesia: A Prospective Study

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ABSTRACT

Background: Spine surgery, particularly in the lumbar region, is often associated with significant anxiety due to concerns about anesthesia, positioning, and postoperative discomfort. Traditionally performed under general anesthesia, lumbar decompression procedures are increasingly being done under spinal anesthesia to reduce complications and enhance recovery. This study aimed to evaluate patient satisfaction with spinal anesthesia for lumbar decompression surgery and to identify factors influencing their experience.

Methods: This prospective study was conducted at Shamshad Aslam Hospital from July 2020 to June 2023. A total of 152 patients undergoing lumbar decompression under spinal anesthesia were enrolled. Patient demographics, intraoperative experiences, postoperative symptoms, and satisfaction levels were recorded using a structured questionnaire. Data were analyzed using SPSS version 27, with Pearson correlation applied to explore associations between patient variables and satisfaction ($p < 0.05$).

Results: The majority of patients (91.5%) reported satisfaction with the overall surgical experience, and 94.1% indicated they would recommend spinal anesthesia for similar procedures. Despite comprehensive preoperative counseling, 30.9% experienced moderate to severe pain during needle insertion, 40.1% reported shivering, and 64.5% experienced nausea or vomiting. Chest discomfort in the prone position was noted in 82.9% of patients. Postoperative issues such as spinal headache, numbness, or urinary retention were reported by 11.9%, with most resolving within 48 hours. Older age, higher BMI, and longer surgical duration were negatively associated with satisfaction ($p < 0.05$).

Conclusion: Spinal anesthesia for lumbar decompression surgery is a safe and well-accepted option, associated with high patient satisfaction and manageable complications. Careful patient selection and preoperative counseling can further improve outcomes.

Keywords: Spinal anesthesia, lumbar decompression, patient satisfaction, prone positioning, postoperative symptoms, minimally invasive spine surgery.

INTRODUCTION

Spinal surgery, particularly involving the lumbar region, is often met with apprehension by patients due to the invasive nature of the procedure and the complexities involved in its anesthetic management[1]. Traditionally, these surgeries have been performed under general anesthesia, which requires airway control, deep sedation, and careful intraoperative monitoring. However, general anesthesia in the prone position presents its own set of challenges, including cardiovascular instability, difficult airway access, and prolonged recovery time. These concerns have led many clinicians to explore alternative anesthetic techniques that offer better safety and patient comfort[2].

Spinal anesthesia has emerged as a promising option for selected spine procedures, especially those involving single or limited-level decompression[3]. By directly blocking nerve transmission at the spinal level, this technique provides effective analgesia while allowing patients to remain awake, breathe spontaneously, and recover more rapidly. In addition to avoiding the risks associated with general anesthesia, spinal blocks are associated with reduced postoperative pain, earlier mobilization, fewer systemic side effects, and shorter hospital stays. These benefits are particularly valuable in minimally invasive spine surgery, which aims to reduce tissue disruption and expedite functional recovery[4-6].

Despite its advantages, spinal anesthesia is not without limitations. Some patients may experience discomfort during needle insertion, intraoperative shivering, or anxiety related to being conscious during surgery. Moreover, positioning in the prone posture can lead to chest pressure, numbness, or other transient symptoms. While these issues are usually minor, they can affect the overall surgical experience and patient satisfaction[7, 8].

Patient satisfaction is a critical measure in evaluating the success of any medical intervention. It reflects not only the technical outcome but also the emotional, psychological, and physical comfort experienced throughout the surgical journey. Understanding how patients perceive spinal anesthesia—along with the factors that influence their satisfaction—can help guide clinical decision-making and improve care delivery.

The present study was designed to assess patient satisfaction following lumbar decompression surgery performed under spinal anesthesia at a private neurosurgical center. In addition to measuring satisfaction levels, we aimed to identify common intraoperative and postoperative complaints and explore demographic or clinical factors that may influence the patient experience.

METHODOLOGY

This prospective observational study was carried out at Shamshad Aslam Hospital, Wah Cantt over three years, from July 2020 to June 2023. The primary aim was to assess patient satisfaction following lumbar decompression surgeries performed under spinal anesthesia. Ethical approval was obtained before the commencement of the study, and informed written consent was taken from all participants after explaining the purpose and details of the procedure.

A non-probability consecutive sampling method was employed. Every patient undergoing lumbar spine decompression surgery who met the inclusion criteria during the study period was approached for participation. The study followed a single-arm, observational design without a control group.

The sample size was calculated using the standard formula for proportions. Based on a prior study[9]reporting an 83.2%

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satisfaction rate, and keeping a 5% margin of error with 90% confidence level (Z = 1.645), the required sample size was determined to be 152 patients.

Patients aged between 18 and 80 years, with an American Society of Anesthesiologists (ASA) physical status classification of I to III, and a BMI less than 40 kg/m², were eligible for inclusion. All participants had consented to undergo spinal anesthesia. Patients younger than 18 or older than 80 years, those with ASA class IV, or with BMI over 40, as well as those unwilling to receive spinal anesthesia, were excluded from the study.

A structured proforma was developed after reviewing relevant literature. The form collected information on patient demographics (age, gender, BMI), comorbidities, type and duration of surgery, intraoperative symptoms, and postoperative recovery. Patient satisfaction was assessed using a 5-point Likert scale, covering various aspects including preoperative counseling, comfort during the procedure, and postoperative experiences.

Intraoperative experiences such as shivering, nausea, discomfort in the prone position, and needle prick pain were noted. Postoperative outcomes like numbness, back pain, spinal headache, urinary retention, and recovery time were also recorded. Any complications or readmissions within the first 48 hours were carefully documented.

All procedures were performed by experienced anesthetists using a standard midline approach. Patients were placed in a sitting position, and after aseptic preparation, local infiltration with lidocaine was used before inserting the spinal needle. A hyperbaric solution of bupivacaine was administered into the subarachnoid space. Positioning for surgery was done after achieving an adequate block. Light sedation was given only when necessary, and patients remained conscious and communicative during surgery.

The collected data were entered and analyzed using SPSS version 27. Descriptive statistics were used to present frequencies, means, and standard deviations. The Pearson correlation coefficient was applied to examine the relationship between satisfaction scores and variables such as age, BMI, and duration of surgery. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 outlines the baseline characteristics of the 152 patients who underwent lumbar decompression surgery under spinal anesthesia. The average age was 47.89 years, with a standard deviation of 13.9, reflecting a mid-to-late adult population. The mean body mass index (BMI) was within the overweight range at 26.73 kg/m². A slightly higher proportion of females (56.6%) than males (43.4%) participated in the study. The average duration of surgery was approximately 90 minutes, indicating a moderate procedural time for single or two-level decompression procedures. These demographic and procedural features provide a representative overview of the population assessed in this study.

Table 1: Baseline Characteristics of Study Participants (n = 152)

Variable	Value
Mean Age (years)	47.89 ± 13.9
Mean BMI (kg/m²)	26.73 ± 3.27
Gender Distribution	
— Male	66 (43.4%)
— Female	86 (56.6%)
Mean Duration of Surgery (min)	90.39 ± 28.91

Table 2 summarizes the intraoperative experiences encountered by patients during spinal anesthesia. Nearly one-third of patients (30.9%) reported moderate to severe pain during the spinal needle insertion, often describing the prick as the most apprehensive part of the procedure. Shivering was noted in 40.1% of patients soon after the spinal block, a commonly observed physiological response. Additionally, 64.5% experienced nausea or vomiting during surgery, and a significant majority—82.9%—reported mild to moderate chest discomfort while in the prone position. These findings underscore the need for better intraoperative symptom control, even when patients are under regional anesthesia.

Table 2: Intraoperative Experiences Reported by Patients

Experience	Number of Patients (n)	Percentage (%)
Moderate to severe needle prick pain	47	30.9%
Shivering immediately after spinal block	61	40.1%
Intraoperative nausea or vomiting (IONV)	98	64.5%
Chest discomfort in prone position	126	82.9%

Table 3 presents data on postoperative complications observed in the study population. A total of 11.9% of patients experienced transient symptoms, including numbness, positional back pain, spinal headaches, and urinary retention. These issues typically resolved within 24 to 48 hours without requiring invasive intervention. Only one patient (0.7%) required readmission due to a spinal headache, which was managed conservatively. Overall, postoperative complications were minimal and self-limiting, indicating the relative safety of spinal anesthesia in this surgical setting.

Table 3: Postoperative Symptoms and Complications

Complication / Symptom	Number of Patients (n)	Percentage (%)
Numbness, positional backache, or spinal headache	18	11.9%
Urinary retention	Included in above	—
Readmission due to spinal headache	1	0.7%

Note: Most symptoms were transient and resolved within 24–48 hours without long-term sequelae.

Table 4: Overall Patient Satisfaction with Spinal Anesthesia

Satisfaction Category	Number of Patients (n)	Percentage (%)
Satisfied	139	91.5%
Neutral	11	7.2%
Dissatisfied	2	1.3%
Willing to recommend spinal anesthesia	143	94.1%

Table 5: Factors Associated with Patient Satisfaction (Pearson Correlation Analysis)

Variable	Correlation with Satisfaction	p-value	Interpretation
Age	Negative	0.030	Statistically significant
BMI	Negative	0.010	Statistically significant
Duration of surgery	Negative	0.040	Statistically significant

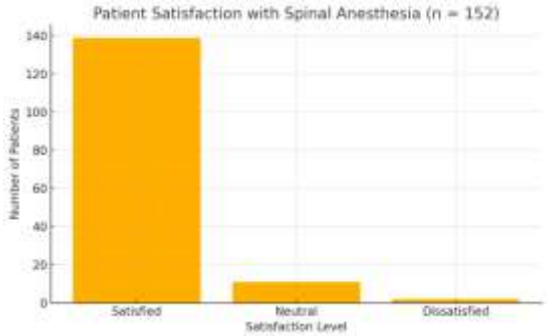

Figure 1: The graph shows that most patients were satisfied with spinal anesthesia, with 139 out of 152 reporting a positive experience. Only 11 remained neutral and just 2 were dissatisfied. This reflects a high overall acceptance of spinal anesthesia for lumbar decompression, with very few patients expressing negative feedback.

Table 4 reflects the overall satisfaction levels reported by patients. A high satisfaction rate was noted, with 91.5% expressing

satisfaction with the perioperative experience. Only a small fraction remained neutral (7.2%) or dissatisfied (1.3%). Importantly, 94.1% of patients stated that they would recommend spinal anesthesia for similar procedures in the future. These outcomes highlight that, despite some discomforts, the overall patient experience with spinal anesthesia was highly favorable.

Table 5 explores the correlation between demographic or clinical factors and patient satisfaction. The analysis showed that increasing age, higher BMI, and longer surgery duration were significantly associated with lower satisfaction scores (p-values < 0.05). These findings suggest that patient selection and optimization, especially in elderly or overweight individuals, may play a role in improving satisfaction outcomes. Understanding these associations can help tailor preoperative counseling and intraoperative management to better meet patient expectations.

DISCUSSION

The primary objective of this study was to assess patient satisfaction following lumbar decompression surgery performed under spinal anesthesia. The findings revealed that spinal anesthesia was well-tolerated by the majority of patients, with 91.5% expressing satisfaction with their perioperative experience and 94.1% willing to recommend this technique to others. These results support the growing preference for regional anesthesia in spine procedures, particularly in minimally invasive settings[10-12].

Several elements contributed to the high satisfaction levels observed in our study. First, preoperative counseling played a vital role in easing patient anxiety, especially concerning the idea of remaining awake during surgery and being positioned prone. Many patients acknowledged that detailed explanations from the anesthetist and surgical staff helped them mentally prepare for the procedure. Similar observations were reported by studies emphasized the psychological importance of patient education in enhancing satisfaction with spinal anesthesia, particularly in obstetric patients undergoing cesarean sections[13-15].

Another factor influencing positive outcomes was the use of minimally invasive decompression techniques. These surgeries typically result in less tissue trauma, reduced bleeding, and quicker postoperative recovery. Our results were in line with studies highlighted the advantages of microscope-assisted minimally invasive spine surgery, noting shorter hospital stays and reduced postoperative pain as key benefits. These attributes likely reinforced the favorable impressions patients held about their surgical experience[16-18].

Despite the overall positive feedback, a subset of patients did report discomforts, primarily intraoperative shivering, nausea, and chest pressure while in the prone position. These symptoms, though not life-threatening, contributed to transient dissatisfaction. Nausea and vomiting, in particular, were commonly associated with spinal anesthesia and have been documented in various studies as expected side effects due to autonomic dysregulation. Studies also noted that prolonged prone positioning can lead to mechanical and hemodynamic stress, causing pressure-related symptoms and discomfort, which were echoed in our findings[19, 20].

Postoperatively, only a small proportion of patients experienced complications such as numbness, positional pain, low-pressure headaches, or urinary retention. Most of these issues resolved within 24 to 48 hours without long-term consequences. One patient required readmission due to a spinal headache, which was treated conservatively. These findings are comparable to those observed in similar studies, discussed factors associated with dissatisfaction following spinal anesthesia and emphasized the importance of managing minor complications promptly[21].

An interesting aspect of our analysis was the correlation between certain patient characteristics and their satisfaction levels. Higher age, elevated BMI, and longer surgical durations were significantly linked to lower satisfaction. This suggests that patient selection and preoperative optimization might influence the overall success of the anesthetic experience. These variables should be carefully considered when planning spinal anesthesia, especially in older or obese individuals who may be more sensitive to discomfort or procedural fatigue.

Our findings contribute to the growing body of evidence supporting spinal anesthesia in lumbar spine surgeries. While general anesthesia remains the standard in many centers, particularly for multi-level or complex spinal procedures, our data indicate that spinal anesthesia is not only feasible but also highly acceptable for appropriately selected cases. The ability to maintain spontaneous breathing, early return to oral intake, and shorter recovery times offer meaningful advantages for patients and care teams alike.

CONCLUSION

This study demonstrates that spinal anesthesia is a well-tolerated and effective alternative for lumbar decompression surgery, offering high levels of patient satisfaction with minimal and mostly self-limiting complications. Most patients reported a comfortable perioperative experience and expressed a willingness to recommend this approach to others. While a small number experienced issues such as shivering, nausea, or transient postoperative discomfort, these were manageable and did not outweigh the overall benefits. Factors such as older age, higher BMI, and longer surgical duration were linked to reduced satisfaction, suggesting that careful patient selection and tailored perioperative management are important. These findings support the broader use of spinal anesthesia in suitable spine surgery candidates and encourage further research to refine its application in diverse patient populations.

REFERENCES

1. Debono B, Corniola MV, Pietton R, Sabatier P, Hamel O, Tessitore E. Benefits of enhanced recovery after surgery for fusion in degenerative spine surgery: impact on outcome, length of stay, and patient satisfaction. Neurosurgical focus. 2019;46(4):E6.
2. Talukder MH, Ahmed M, Khondaker Shaheen Hossain MBU, Shikder S, Ahmed F. Comparison of Patient Satisfaction between Spinal versus General Anaesthesia for Lumbar Disc Surgery. Sch J App Med Sci. 2022;3:357-61.
3. Patil H, Garg N, Navakar D, Banabokade L. Lumbar spine surgeries under spinal anesthesia in high-risk patients: a retrospective analysis. World neurosurgery. 2019;124:e779-e82.
4. Qureshi F, Meena SC, Kumar V, Jain K, Chauhan R, Luthra A. Influence of epidural ropivacaine with or without dexmedetomidine on postoperative analgesia and patient satisfaction after thoraco-lumbar spine instrumentation: a randomized, comparative, and double-blind study. Asian Spine Journal. 2020;15(3):324.
5. Baenziger B, Nadi N, Doerig R, Proemmel P, Gahl B, Hodel D, et al. Regional versus general anesthesia: effect of anesthetic techniques on clinical outcome in lumbar spine surgery: a prospective randomized controlled trial. Journal of neurosurgical anesthesiology. 2020;32(1):29-35.
6. Deng H, Coumans J-V, Anderson R, Houle TT, Peterfreund RA. Spinal anesthesia for lumbar spine surgery correlates with fewer total medications and less frequent use of vasoactive agents: a single center experience. PLoS One. 2019;14(6):e0217939.
7. De Biase G, Chen S, Ziu E, Garcia D, Bojaxhi E, Carter RE, et al. Assessment of patients' willingness to participate in a randomized trial of spinal versus general anesthesia for lumbar spine surgery. World neurosurgery. 2022;161:e635-e41.
8. De Cassai A, Geraldini F, Boscolo A, Pasin L, Pettenuzzo T, Persona P, et al. General anesthesia compared to spinal anesthesia for patients undergoing lumbar vertebral surgery: a meta-analysis of randomized controlled trials. Journal of Clinical Medicine. 2020;10(1):102.
9. Finsterwald M, Muster M, Farshad M, Saporito A, Brada M, Aguirre JA. Spinal versus general anesthesia for lumbar spine surgery in high risk patients: Perioperative hemodynamic stability, complications and costs. Journal of clinical anesthesia. 2018;46:3-7.
10. Jonayed SA, Alam MS, Choudhury AAM, Akter S, Chakraborty S. Efficacy, safety, and reliability of surgery on the lumbar spine under general versus spinal anesthesia-an analysis of 64 cases. Journal of Clinical Orthopaedics and Trauma. 2021;16:176-81.
11. Krzanowska E, Liberacka D, Przewłocki R, Wordliczek J, Moskała M, Polak M, et al. The frequency and risk factors for surgery dissatisfaction in patients undergoing lumbar or cervical surgery for

degenerative spinal conditions. Psychology, Health & Medicine. 2022;27(5):1084-94.
12. Munoli S. A study of lumbar spine surgeries under spinal anaesthesia. Int J Orthop Sci. 2020;6:259-61.
13. De Biase G, Gruenbaum SE, Quiñones-Hinojosa A, Abode-Iyamah KO. Spine surgery under spinal vs general anesthesia: prospective analysis of quality of life, fatigue, and cognition. Neurosurgery. 2022;90(2):186-91.
14. Soffin EM, Vaishnav AS, Wetmore DS, Barber L, Hill P, Gang CH, et al. Design and implementation of an enhanced recovery after surgery (ERAS) program for minimally invasive lumbar decompression spine surgery: initial experience. Spine. 2019;44(9):E561-E70.
15. Morris MT, Morris J, Wallace C, Cho W, Sharan A, Abouelrigal M, et al. An analysis of the cost-effectiveness of spinal versus general anesthesia for lumbar spine surgery in various hospital settings. Global Spine Journal. 2019;9(4):368-74.
16. Garg B, Mehta N, Bansal T, Shekhar S, Khanna P, Baidya DK. Design and implementation of an enhanced recovery after surgery protocol in elective lumbar spine fusion by posterior approach: a retrospective, comparative study. Spine. 2021;46(12):E679-E87.
17. Khattab MFM, Sykes DA, Abd-El-Barr MM, Waguia R, Montaser A, El Ghamry S, et al. Spine surgery under awake spinal anesthesia: an Egyptian experience during the COVID-19 pandemic. Neurosurgical Focus. 2021;51(6):E6.
18. Ehsan MA. Interventional Lumbar Spine Surgeries under Spinal Anesthesia Compared General Anesthesia: A Prospective Study Tertiary Hospital in Bangladesh. Saudi J Biomed Res. 2021;6(10):241-5.
19. Ziino C, Guzman RA, Koltsov J, Montgomery BK, McMains C, Alamin T. Local anesthetic with sedation is a viable alternative to general anesthesia for lumbar spinal decompressions: A retrospective cohort feasibility study and short-term analysis of outcomes. Current Orthopaedic Practice. 2020;31(3):252-7.
20. Lee J-K, Park JH, Hyun S-J, Hodel D, Hausmann ON. Regional anesthesia for lumbar spine surgery: can it be a standard in the future? Neurospine. 2021;18(4):733.
21. Yayik AM, Cesur S, Ozturk F, Ahiskalioglu A, Ay AN, Celik EC, et al. Postoperative analgesic efficacy of the ultrasound-guided erector spinae plane block in patients undergoing lumbar spinal decompression surgery: a randomized controlled study. World neurosurgery. 2019;126:e779-e85.

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