DOI: 10.21088/ijaa.2349.8471.12225.11

Indian Journal of Anesthesia and Analgesia
Volume 12 Number 2 April - June 2025

CASE REPORT

A Patient with Dorsal Scoliosis Posted for Transabdominal Hysterectomy Under Spinal and Epidural Anaesthesia

Sukriti Atram[1], Ganesh Sonawane[2], Shreyash Gosavi[3]

HOW TO CITE THIS ARTICLE:

Sukriti Atram, Ganesh Sonawane, Shreyash Gosavi. A Patient with Dorsal Scoliosis Posted for Transabdominal Hysterectomy Under Spinal and Epidural Anaesthesia. Ind J Anesth Analg. 2025; 12(2): 141-144.

ABSTRACT

Patient with scoliosis for major surgeries like Total abdominal hysterectomy present challenges for anaesthesia owing to long surgery duration, pulmonary complications, Intubation in case of general anaesthesia; And un-predictability of sensory blockade in case of neuraxial anaesthesia. In this case, a 56-year-old female, with Thoracic scoliosis, presenting complaints of abnormal uterine bleeding, diagnosed with multiple uterine fibroids, posted for Transabdominal hysterectomy decided to take under neuraxial anaesthesia by assessing risk benefit ratio. The anaesthetic management must address intraoperative hemodynamic stability and post operative analgesia, which achieved successfully in this case. This case highlights importance of preoperative assessment, imaging and planning in managing patient with scoliosis for major surgeries.

Key Messages: Thoracic scoliosis is condition with multisystemic involvement, which can cause difficulty in induction, maintenance of anaesthesia, and postoperative outcome in patients posted for major surgeries. Hence selection of anaesthetic technique should be appropriate.

KEYWORDS

• Thoracic scoliosis • Epidural anaesthesia • Spinal anaesthesia • Total abdominal hysterectomy

AUTHOR'S AFFILIATION:

[1] SukritiAtram, Associate Professor, Department of Anesthesia, Grant Government Medical College and JJ Group of Hospital, Mumbai 400008, Maharashtra, India.

[2] Ganesh Sonawane, Senior Resident Department of Anesthesia, Grant Government Medical College and JJ Group of Hospital, Mumbai 400008, Maharashtra, India.

[3] Shreyash Gosavi Junior Resident, Department of Anesthesia, Grant Government Medical College and JJ Group of Hospital, Mumbai 400008, Maharashtra, India.

CORRESPONDING AUTHOR:

SukritiAtram, Associate Professor, Department of Anesthesia, Grant Government Medical College and JJ Group of Hospital, Mumbai 400008, Maharashtra, India.

E-mail: sukritiatram@gmail.com

➢ **Received:** 10-03-2025 ➢ **Accepted:** 14-05-2025

INTRODUCTION

Scoliosis is a complex spinal deformity characterized by lateral curvature and vertebral rotation, often leading to thoracic rib deformation. The physiological effect of scoliosis is complex and affects multiple organ systems. In addition to musculoskeletal abnormalities, it can also lead to cardiovascular, pulmonary, and psychosocial effects.[1,2] It is commonly associated with restrictive pulmonary disease. Administering anesthesia in patients with scoliosis presents significant challenges, particularly in airway management and respiratory function. Anesthesiologists often hesitate to use epidural anaesthesia in scoliosis due to the difficulty of placement and the increased number of attempts required. However, despite these challenges, epidural anesthesia and analgesia are highly recommended, as they provide effective pain relief and promote a smoother recovery. Hence regional anaesthesia must not be absolutely ruled out[3,4,5]

CASE REPORT

A 56-y-old menopausal female, ASA II, had a height of 154 cm and weight 62 kg was diagnosed with multiple intramural fibroid uterus. She was scheduled for elective total abdominal hysterectomy (TAH). She had been known case of Dorsal scoliosis since childhood without any sensory/motor weakness. Also known case of Hypertension and diabetes for 5 years on medication. Hepatitis B antigen was detected in preoperative investigation hence universal precautions followed. On examination, heart rate was 90 beats per min, blood pressure 136/84 mmHg, Respiratory rate 20 breaths per minute and oxygen saturation was 98% on room air. On chest auscultation air entry was reduced on left > Right side. The airway assessment revealed Mallampati score-III, with intact dentition and normal neck movements. Radiographic examination of spine and chest revealed Scoliosis with primary thoracic curvature towards left side (Cobbs's angle 42 degrees) Figure 1. Pulmonary function test shown moderately restrictive pattern. All routine investigations and echocardiogram were within normal limits.

A preoperative assessment was done, and the mode of anaesthesia and surgery were discussed with her family and surgeon. It was decided to proceed with regional anaesthesia considering an unpredictable recovery from general anaesthesia, and post-operative pulmonary complication. In the operating room standard ASA monitoring was applied including electrocardiography, non-invasive blood pressure and pulse oximetry. Two IV lines were established. At induction her heart rate was 88 beats per min, BP 138/82 mmHg, and SpO2 100% without supplementary oxygen.

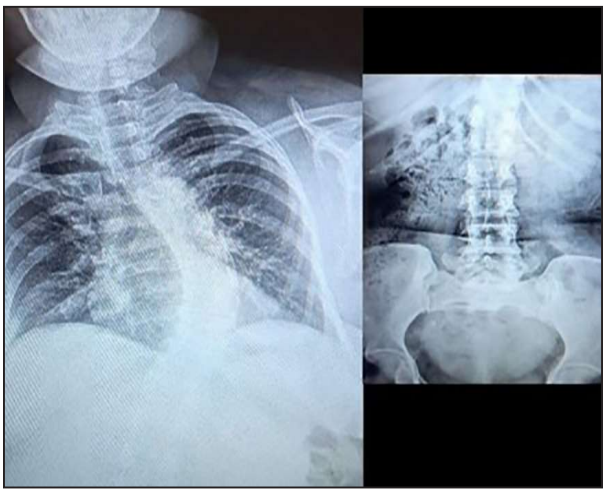

Figure 1

Figure 2

The patient was seated on OT table, after cleaning and draping area with all aseptic precautions, the spinous processes were identified by palpation, counting from Tuffiers

line. X-ray Spine was used to identify plane of entry. Skin and subcutaneous tissue was infiltrated with 2 ml of 1% lidocaine at entry point and an 18-gauge Tuohy needle was inserted in the suspected L2-L3 epidural space Figure 2, advancing slowly till loss of resistance was felt at a depth of 4.5 cm, indicating successful entry into epidural space. The epidural catheter was inserted and secured at depth of 10 cm. A test dose of 3ml of 2% lidocaine with 1:100000 epinephrine was given to check for intravascular or intrathecal injection, but there was no increase in heart rate/blood pressure and no paresthesia reported by patient. In same position, 25G Quincke's spinal needle was introduced in L3-L4 interspace until clear CSF was obtained. Spinal anaesthesia was then administered by injecting 3.0 ml of 0.5% bupivacaine with Dexmedetomidine 10 microgram. The patient was then placed in supine position and sensory blockade was confirmed by loss of sensation to pin prick below T6 dermatome. Oxygen was supplemented to the patient. Sensory level did not recede below T6 up to 2.5 hrs. Duration of surgery lasted for 4 hrs. due to excessive bowel and bladder adhesions of mass. The patient remained stable hemodynamically throughout the procedure. There was blood loss of 450 ml and was given 1.5 L of crystalloid fluid transfused one unit of packed red cells during the procedure. 0.125% bupivacaine with Fentanyl 30 microgram given epidurally at the end of procedure for post operative analgesia.

The patient was shifted to ward after 30 minutes monitoring in recovery room. Bupivacaine 0.125% given epidurally every 12 hours, or as and when required. The catheter was removed on post operative day three without any sequelae.

DISCUSSION

Transabdominal hysterectomy can be performed with ease under either GA or central neuraxial block. Patient with scoliosis pose challenges in administration of general anaesthesia, as they have significantly lower ventilatory capacity. They also experience alveolar hypoventilation, CO2 retention, and severe hypoxemia, which can result in pulmonary hypertension and respiratory failure that may necessitate post-operative intensive care. Regional especially, neuraxial is believed to be safer to GA in this case due to lesser incidence of hypertension and tachycardia, blood loss, and post operative hospital stay.[6] As In a patient with scoliosis, administering neuraxial anaesthesia using surface landmark-guided approach can be difficult for the anaesthesiologist. Modified paramedian approach should be used if lumbar curvature is also associated along with thoracic scoliosis. The presence of abnormal spinal curves complicates the prediction of how posture affects the distribution of spinally administered drugs[7] Caution is necessary, as excessively higher sensory blockade leading to respiratory insufficiency have been reported. Other challenges include unsuccessful insertions and multiple attempts before achieving proper placement. Lower doses of local anesthetics may produce a higher-than-expected block level, increasing the risk of hypotension. In patients with severe spinal curvature, hyperbaric solutions may accumulate in the dependent areas of the spine, resulting in an inadequate block.[7,8,9] Preoperative Radio imaging and Ultrasound usage increases success rate in neuraxial anaesthesia in such abnormality of spine 10. Transversus abdominis plane block can also be used as part of multimodal anaesthesia in such condition if unpredictability of sensory blockade suspected.[11]

CONCLUSION

The advantage of neuraxial anaesthesia exceed the risks, making it safe and efficient choice in patient with scoliosis. The key purpose of reporting this case was to showcase that neuraxial anaesthesia can be performed in a scoliotic patient with landmark guided approach, both for intraoperative anasethesia and post-operative analgesia, while maintaining pulmonary function. The anaesthesiologist administering anaesthesia in such cases requires expertise because of malformation of spine for successful sensory blockade.

Conflict of interests: None declared by the authors.

Ethical issues: Written informed consent for publication in the academic interest was obtained from the patient.

REFERENCES

1. Hudec J., Prokopová T., Kosinová M., Gál R. Anesthesia and Perioperative Management for Surgical Correction of Neuromuscular Scoliosis in Children: A Narrative Review. J Clin Med. 2023 May 24; 12(11): 3651. doi: 10.3390/jcm12113651. PMID: 37297846; PMCID: PMC10253354.
2. Rafiq M., Hussaini, Siraj S., Marium W., Talha S. Landmark based epidural anesthesia in a patient with scoliosis for transabdominal hysterectomy; a case report. Anaesth. pain intensive care 2024; 28(4): 762−764
3. Kulkarni A.H., Ambareesha M. Scoliosis and anaesthetic considerations. Indian J Anaesth. 2007; 51(6): 486-95.
4. Bajwa S.J., Bajwa S.K., Kaur J., Singh A., Bakshi G., Singh K., Panda A. Admixture of clonidine and fentanyl to ropivacaine in epidural anesthesia for lower abdominal surgery. Anesth Essays Res. 2010; 4(1): 9.
5. Goel, A., Jeelani, T.M., & Saleem, B. (2021). Study of Spinal anesthesia in patients with Scoliosis at a tertiary hospital. Asian Journal of Medical Sciences, 12(2), 44–48. Retrieved from https://www.nepjol.info/index.php/AJMS/article/view/30935
6. Walcott B.P., Khanna A., Yanamadala V., Coumans J.V., Peterfreund R.A. Cost analysis of spinal and general anesthesia for the surgical treatment of lumbar spondylosis. J Clin Neurosci. 2015; 22: 539–543.
7. Kumar K.P. and Jagadesh G. Regional anesthesia in patients with scoliosis-A single centre clinical experience in India. MedPulse International Journal of Anesthesiology. 2018; 8(2): 65-69. https://doi.org/10.4103/0975-2870. 194226
8. Klienman W. Spinal, Epidural, and Caudal Blocks. Clinical Anaesthesiology. 4th ed. New York: Mc Graw Hill Inc; 2006: 289-323.
9. Ozyurt G., Basagan-Mogol E., Bilgin H., Tokat O. Spinal anesthesia in a patient with severe thoracolumbar kyphosis. Tohoku J Exp Med. 2005; 207: 39-42.
10. Chin K.J., Perlas A., Chan V., Brown-Shreves D., Koshkin A. and Vaishnav V. Ultrasound imaging facilitates spinal anesthesia in adults with difficult surface anatomic landmarks. Anesthesiology. 2011; 115: 94–101.
11. Geng, Z.Y., Zhang, Y., Bi, H. *et al*. Addition of preoperative transversus abdominis plane block to multimodal analgesia in open gynecological surgery: A randomized controlled trial. BMC Anesthesiol 23, 21 (2023).