

## CASE REPORT

## REGIONAL ANESTHESIA

# Landmark based epidural anesthesia in a patient with scoliosis for transabdominal hysterectomy; a case report

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## ABSTRACT

We report a case of a 43-years-old female with thoraco-lumbar scoliosis; who was scheduled to undergo an elective total abdominal hysterectomy (TAH). The unique aspect of this case is that the surgery was performed with landmark-guided epidural anesthesia. Regional anesthesia is believed to be a safer alternative to general anesthesia where airway control is uncertain.

**Keywords:** Thoraco-lumbar scoliosis, epidural anesthesia, total abdominal hysterectomy.

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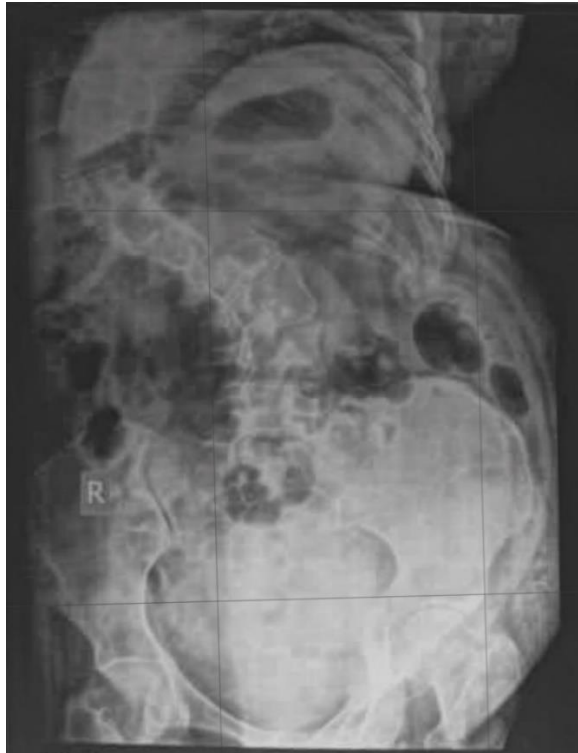
## 1. INTRODUCTION

Scoliosis is a complex spine malformation that causes lateral curvature and rotation of the vertebrae, as well as deformity of the rib cage, which also leads to thoracic rib deformation.<sup>1</sup> Scoliosis is generally associated with restrictive pulmonary disease, manifesting as decreased vital capacity, tidal volume, functional residual capacity, and increased respiratory rate, as well as ventilation-perfusion mismatch and hypoxemia, leading to cardiovascular compromise and, if left untreated, leading to pulmonary hypertension and respiratory failure.<sup>2</sup> Anesthesiologists face challenges while administering anesthesia to patients with scoliosis, especially with airway management and respiratory conditions.<sup>3</sup> Anesthesiologists are generally disinclined to opt for epidural anesthesia in patients with scoliosis because of the multiple attempts required and the unpredictability of the epidural placement. However, epidural anesthesia and analgesia are highly recommended in patients with scoliosis, as it provides long-lasting pain relief and ensures a smooth recovery.<sup>4</sup> Anesthesiologists are urged to keep all these aspects in sight during choosing type of anesthesia, and regional anesthesia must not be absolutely ruled out.

## 2. CASE REPORT

A 43-y-old unmarried female, ASA III, had a height of 158 cm and weight 50 kg, was diagnosed with fibroid uterus and bilateral endometrial cyst. She was scheduled for elective total abdominal hysterectomy (TAH). She had been a known case of thoraco-lumbar scoliosis since childhood with sensory and motor weakness for 11 y. The patient experienced a burning sensation in her lower torso, problems in maintaining balance and coordination, and a motor power of 4/5 in both upper and lower limbs bilaterally. During pre-anesthetic check-up, the patient disclosed a previously uneventful history of spinal surgery at the age of 8 y. On clinical examination, she was dyspneic, heart rate was 92 beats per min, blood pressure 124/74 mmHg, respiratory rate 22 breaths per min and oxygen saturation was 99% on room air. On chest auscultation air entry was adequate on both sides but mild crepitations were present at the bases. The airway assessment revealed Mallampati score-III, with intact dentition, and restricted neck movements. Radiographic examination of spine and chest revealed severe deformity of the spinal anatomical structures at lumbar as well as in thoracic area (Figures 1 and 2). All

routine investigations and echocardiogram were within their normal limits.



**Figure 1: X-ray spine AP view**



**Figure 2: X-ray chest PA view**

A preoperative anesthesia assessment was done, and the mode of anesthesia and surgery were discussed with her family and the surgeon. It was decided to proceed with the regional anesthesia considering an unpredictable recovery from general anesthesia (GA). In the operating

room (OR), 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 135 beats per min, BP 150/90mmHg, and SpO<sub>2</sub> 100% without supplementary oxygen.

The patient was seated on the OT table. After cleaning and draping the area with all aseptic precautions, the spinous processes were identified by palpation, counting from the Tuffier's line. Skin and subcutaneous tissue was infiltrated with 2 ml of 1% lidocaine with 23G hypodermic needle at entry point and an 18-gauge Tuohy needle was inserted in the suspected L1–L2 epidural space, advancing slowly till loss of resistance was felt at a depth of 4.5 cm, indicating successful entry into the epidural space in a single attempt. The epidural catheter was inserted and secured at a depth of 9.5 cm. A test dose of 3 ml of 1% lidocaine with 1:100,000 epinephrine was given to check for intravascular or intrathecal injection, but there was no pain or paresthesia reported by the patient. To achieve sensory and motor block upto T6 level, 0.5% plain bupivacaine was given in incremental doses, and a total of 10 ml bupivacaine was given over a period of two hours. The height of block was checked by chilled saline equally on both sides.

The patient had adequate pain control while the epidural catheter was in place. Throughout the surgical procedure, the patient remained hemodynamically stable and at ease. Perioperatively, she received 25 µg dexmedetomidine and 50 mg ketamine for sedation, along with 5 L of oxygen via face mask. The surgery proceeded uneventfully without any complication. The patient remained stable throughout the procedure. There was minimal blood loss of 350 ml and was given 1.5 L of crystalloid fluids and transfused one unit of packed red cells during the procedure. The surgery lasted for two and a half hours.

The patient was shifted to post-anesthesia care unit (PACU) for continuous monitoring after surgery. Post-operative analgesia was provided with epidural infusion of 0.125% bupivacaine @ 4 ml/h. Good analgesia was achieved with epidural. The catheter was removed on postoperative day three without any sequelae. On the fourth day following surgery, the patient was discharged home.

### 3. DISCUSSION

Transabdominal hysterectomy can be performed with ease under either GA or central neuraxial block. General anesthesia is a standard technique under which TAH can be performed. Patients with scoliosis pose challenges in administration of anesthesia during surgical procedures. Despite normal pulmonary function tests during rest,

scoliosis patients have a significantly lower ventilatory capacity and oxygen consumption. They also experience alveolar hypoventilation, CO<sub>2</sub> retention, and severe hypoxemia, which can result in pulmonary hypertension and respiratory failure that may be irreversible and necessitate post-operative intensive care.<sup>1</sup> Consequently, there is a good chance that these individuals will have a significant risk during GA. Regional anesthesia is believed to be safer alternative to GA where airway control is uncertain. In a patient with scoliosis, administering epidural anesthesia using a surface landmark-guided approach can be difficult for the anesthesiologist. Patients with scoliosis can benefit from epidural anesthesia when it is administered and assessed appropriately without hindering respiratory functions and provides an efficacious pain relief postoperatively.<sup>5</sup> It provides hemodynamic stability during the procedure and the overall decrease in blood loss, which minimizes the risk of transfusion. It allows early hospital discharge as the postoperative period is relatively brief and uneventful and reduces the overall management cost.

#### 4. CONCLUSION

The advantages of epidural anesthesia exceed the risks, making it a safe and efficient choice of anesthesia in a patient with scoliosis. The key purpose for reporting this case was to showcase that epidural anesthesia can be performed in a scoliotic patient with a landmark guided approach, both for surgical anesthesia and postoperative analgesia, while maintaining the pulmonary function. The anesthesiologist administering the epidural anesthesia with landmark technique requires specialized expertise because of the anatomical malformation of the spine for a successful epidural blockade.

#### 5. Conflict of interests

None declared by the authors.

#### 6. Ethical issues

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

#### 7. Authors contribution

All authors took part in the conduct of this case and preparation of this manuscript.

### 8. REFERENCES

1. Mokini Z, Vrenozi D, Forget P, editors. Yao & Artusio's Anesthesiology: Problem Oriented Patient Management. Philadelphia: LWW; 2021.
2. Kulkarni AH, Ambareesha M. Scoliosis and anaesthetic considerations. *Indian J Anaesth.* 2007;51(6):486-95. [[FreeFullText](#)]
3. Goel A, Jeelani TM, Saleem B. Study of spinal anesthesia in patients with scoliosis at a tertiary hospital. *Asian J Med Sci.* 2021;12(2). DOI: [10.3126/ajms.v12i2.30935](#)
4. Bajwa SJ, Bajwa SK, 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. [[PubMed](#)] DOI: [10.4103/0259-1162.69299](#)
5. Erdogan MA, Ozgul U, Ucar M, Korkmaz MF, Aydogan MS, Ozkan AS, Colak C, Durmus M. Patient-controlled intermittent epidural bolus versus epidural infusion for posterior spinal fusion after adolescent idiopathic scoliosis: prospective, randomized, double-blinded study. *Spine (Phila Pa 1976).* 2017;42(12):882-6. [[PubMed](#)] DOI: [10.1097/BRS.0000000000001937](#)