

# Spinal anesthesia using Taylor's approach helps avoid general anesthesia in short stature asthmatic patient

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## ABSTRACT

The case history of a 35-year-old female patient with short stature is presented. She was posted for rectopexy in view of rectal prolapse. She was a known case of bronchial asthma. She had crowding of intervertebral spaces, which made administration of spinal anesthesia via the normal route very difficult. Taylor's approach for administration of the same was tried and proved successful, thus saving the patient from receiving general anesthesia in the presence of bronchial asthma, for a perineal surgery. The possible cause for the difficulty in administration of spinal anesthesia and the Taylor's approach are discussed, and reports of similar cases reviewed.

**Key words:** Short stature, spinal anesthesia, Taylor's approach

## INTRODUCTION

Achondroplasia is the most common form of dwarfism (short stature) which results from abnormal cartilage formation at epiphyseal growth plates.<sup>[1]</sup> It is also known as short-limbed dwarfism.

## CASE REPORT

A 35-year-old female patient, weight 35 kg and height 120 cm was posted for rectopexy in view of rectal prolapse as a routine case. The patient had presented to the outpatient department with the symptoms of a sensation of something protruding from the anus at the time of defecation and slimy stool for the past 2-3 months. On examination, the diagnosis of rectal prolapse was reached, and the patient posted for rectopexy.

Preanesthetic examination was revealed short stature crowding of intervertebral spaces (IVSs), more so in

the lower thoracic and lumbar regions. Her past history was notable for bronchial asthma with sporadic episodes with trigger unknown. She gave a history of regular levosalbutamol inhaler use, and that of the episodes of bronchospasm persisted notwithstanding the same. On auscultation of the chest, she had a bilateral wheeze. Rest of the physical examination was normal. Laboratory values of complete blood count and coagulation profile were normal. Pulmonary function tests (PFTs) of the patient revealed restrictive lung disease with chest X-ray showing otherwise normal lung fields and the patient was planned for spinal anesthesia.

On the operating table, basic noninvasive blood pressure (NIBP) monitor, pulse-oximeter and electrocardiogram (ECG) monitor were attached to the patient. The vitals were a heart rate of 82 beats/min an NIBP of 112/78 mm of Hg. ECG showed a normal tracing. The patient was given sitting position with back straight and the head bent forward. After proper painting and draping, the IVSs in the lumbar region were palpated. The spaces were found to be narrow. Using all aseptic precautions a 25 gauge, spinal needle was introduced into IVS L<sub>2</sub>-L<sub>3</sub>. The attempt at obtaining a free flow of cerebral spinal fluid (CSF) did not succeed as the needle was met with bone in all directions. Even after multiple attempts by senior anesthesiologists in other IVSs, the standard method of administration of spinal anesthesia proved to be unsuccessful. This was when

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the decision of trying the Taylor's approach<sup>[2]</sup> was made. Bilateral posterior superior iliac spines (PSIS) were palpated and marked. On the left side, a point 1 cm inferior and 1 cm medial to the PSIS was chosen as the point of insertion of the spinal needle. The needle was inserted in a cephalad and medial direction from the point of insertion, theoretically targeting the L<sub>5</sub>-S<sub>1</sub> interspace. The needle was advanced and on feeling of "loss of resistance," the stylet withdrawn. A free flow of clear CSF was obtained, and 1.5 ml of 0.5% heavy injection bupivacaine was injected intrathecally after positive aspiration of CSF into the syringe. The patient was made to sit for 5 min aiming for a saddle block, after which she was given lithotomy position for the surgery. The sensory and motor block was adequate; intraoperative and postoperative period was uneventful.

## DISCUSSION

Technical difficulty and multiple attempts at central neuraxial blockade are associated with a higher risk of complications, including spinal hematoma. Therefore, patients need to be followed-up for signs and symptoms of a developing spinal hematoma during the early (24 h) and late (1-week) postoperative phases.<sup>[3]</sup>

Caution has been advised against giving regional anesthesia as neurological anomalies caused by spinal anomalies may be attributed to it.<sup>[4]</sup> Problems may be encountered while giving central neuraxial blockade because of the difficulty in identifying the interspinous spaces due to lumbar hyperlordosis, reduced interpeduncular distance, osteophytes formations and malformed vertebrae. There may be spinal stenosis making it difficult to perform spinal anesthesia.<sup>[5]</sup> In our patient, repeatedly dry tap was obtained on attempting lumbar puncture. It has been advocated that single shot subarachnoid block should be avoided due to the unpredictability of spread<sup>[6]</sup> as the spinal cord may end at a lower level.<sup>[7]</sup>

The Taylor approach of spinal anesthesia is an alternative safe approach in elderly patients with severe scoliosis and kyphoscoliosis with a success rate of 100%.<sup>[8]</sup> Following unsuccessful standard midline spinal anesthesia approach we decided to attempt Taylor's approach, which is a modification of the paramedian approach for spinal anesthesia. It is carried out at L<sub>5</sub>-S<sub>1</sub> interspace, the largest interlaminar space of the vertebral column. Spinal needle is inserted in a cephalomedial direction through a skin wheal raised 1 cm medial and 1 cm caudal to the lowermost prominence of the PSIS.<sup>[2]</sup> Kumar and Mehta showed that spinal anesthesia by the lateral approach is a feasible and useful technique for lower limb surgery in ankylosing spondylitis patients.<sup>[9]</sup> Several textbook of anesthesia

consider that any form of anesthesia, whether general or more particularly regional, is hazardous despite reports of successful use of caudal epidural anesthesia.<sup>[10]</sup> The excessive cephalad spread of the neural blockade during epidural or spinal anesthesia may result in high motor blockade, may affect innervations of the diaphragm and acute cardiovascular effects of sympathetic blockade.<sup>[9]</sup>

Preoperative cardiorespiratory evaluation (ECG, echocardiogram, PFTs) is essential to determine the risk in valvular and conduction cardiac defects. The sudden and intense variation in systemic vascular resistance caused by the spinal anesthesia is not tolerated by patients with these problems. External cardiac massage in the presence of a rigid thoracic wall may be ineffective. Our patient had restriction of chest expansion. PFTs of patient revealed restrictive lung disease with chest X-ray showing otherwise normal lung fields. Therefore, the possibility of requirement of postoperative ventilator support was discussed, and the consent for the same was taken. Traditional landmark guided neuraxial blockade technique can be extremely challenging in patients with crowding of IVSs. Preoperative ultrasonography of the lumbar spine may facilitate successful central neuraxial blockade in such patients, by indicating the presence and location of a soft tissue window into the vertebral canal.<sup>[10]</sup>

## CONCLUSION

Neuraxial techniques should not be regarded as unachievable even in technically complex cases. A thorough preoperative assessment is imperative in evaluating the severity of the disease and in deciding the anesthesia technique. Subarachnoid block using a Taylor approach has been advocated as an alternative when general anesthesia is risky and conventional spinal anesthesia seems to be technically impossible.

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