



## Case Report

# Taylor's approach as a savior in difficult spine anatomy

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### ABSTRACT

We report a case which was managed by spinal anaesthesia using Taylor's approach. The patient had an altered spine anatomy due to previous L4-L5 laminectomy and discectomy with L4, L5, S1 transpedicular fixation and fusion. Patient's history of post-operative confusion and apprehension about general anaesthesia (GA) made spinal anaesthesia our first choice. However, in view of the altered spine anatomy, Taylor's approach was used successfully to manage anaesthesia to avoid GA.

**Conclusion:** Although SAB is a relative contraindication for patient with history of previous spine surgery mostly due to altered spine anatomy, SAB can be safely administered via Taylor's approach when general anaesthesia has to be avoided.

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## 1. Introduction

Spinal anaesthesia (Sub arachnoid block: SAB), has a great impact on modern-day surgery. In lower abdominal and lower limb surgery SAB is widely used. It offers several advantages over general anaesthesia (GA) like faster onset, intense motor block, ease of technique, avoid polypharmacy to name a few. However, there are several absolute and relative contraindications to perform SAB. Among them previous spine surgery is a relative contraindication. Although previous spine surgery does not increase risk of neurological complication following spinal anaesthesia,<sup>1</sup> there may be difficulty in reaching subarachnoid space due to post-surgical anatomy, fibrosis, adhesion etc. We are reporting a case where a post - L4-L5 laminectomy, discectomy and transpedicular fixation patient posted for biopsy and wound debridement of chronic osteomyelitis of left tibia who was managed with spinal anaesthesia by Taylor's approach.

## 2. Case Report

A 65-years old male patient of average built (weight 62 kg, height 162 cm) was posted for biopsy and wound debridement of left leg ulcer.

During preoperative evaluation patient gave history of a surgery on the spine 3 months back. Documents revealed patient was operated for lumbar degenerative disease with L4-5 disc prolapse with instability. Patient had undergone L4-5 laminectomy, discectomy with L4, L5, S1 transpedicular fixation and fusion using local bone graft under GA. Patient had post-operative confusion and was monitored for more than 24 hours for the same. Otherwise recovery was uneventful as per the records. No history of other major illness and surgery.

On examination the airway had adequate mouth opening and no difficulty was anticipated. The back had a healed linear scar mark observed over midline extending from L1 to S1 spine.

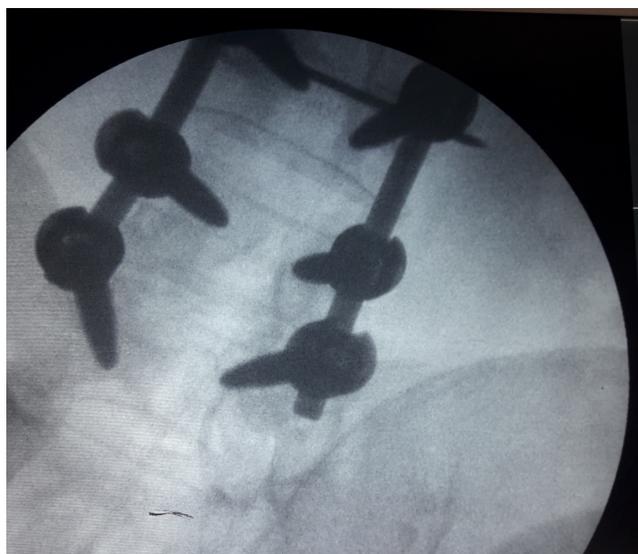
On palpation spinous process and interspace were poorly palpable on L1 and L2. The spines were not palpable on L3, L4 and L5. Neurological examination did not reveal any significant deficit in the lower limb. All other system examinations were normal. In view of the history

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of delirium in post-operative period and the patient's apprehension about the same, we decided to avoid GA and give a trial of spinal anesthesia by Taylor's approach. However, we informed the patient about chance of failure of technique and possibility of conversion to GA. Consent of the patient was taken accordingly.

Patient came to operating room with 18-gauge IV cannula in right hand. On the operating table basic non-invasive monitors like pulse-oximeter, non-invasive blood pressure (NIBP), continuous electrocardiogram (ECG) were attached. Preloading was done with 1-liter normal saline (NS). Patient was placed in sitting position. Proper antisepsis preparation was done over lumbar area. Expecting difficult SAB in median and paramedian approach, Taylor's approach attempted with 25G Quincke spinal needle. Posterior superior iliac spine (PSIS) palpated, 1cm medial and 1cm caudal to PSIS needle inserted and directed towards cephalo-medial direction. After advancing needle bony obstruction was felt. Walking over the bone "loss of resistance" was elicited and stylet removed. Position of needle tip in subarachnoid space confirmed by clear and free backflow of cerebrospinal fluid. Three ml of hyperbaric Bupivacaine 0.5% was injected. Patient was positioned supine after injection. Level of blockade was checked and found adequate. The surgery lasted for 50 minutes. Intra-operative and post-operative periods were otherwise uneventful.



**Fig. 1:**

### 3. Discussion

SAB is preferred by many anesthesiologists in view of cost effectiveness, low risk of cognitive dysfunction, thromboembolic events, post-operative respiratory morbidity, renal failure and prolonged post-operative hospital stay.<sup>2</sup>



**Fig. 2:**

For a successful SAB surface anatomy and palpation of spinous process, interspaces are important. In some clinical scenario like ankylosing spondylosis, kyphoscoliosis, previous spine surgery, it may be difficult or impossible to identify anatomical landmarks. This may lead to multiple attempts at lumbar puncture, which may lead to discomfort and pain for the patient or risk causing epidural/spinal hematoma which is a very serious complication.<sup>3</sup>

Post-Spine surgery status is a relative contraindication to SAB. Particularly after laminectomy the spinous process, bony lamina of adjacent two vertebra and ligamentum flavum is removed. So, anatomy of spine alters. Therefore, elucidation of surface anatomy of spine becomes almost impossible in post spine surgery.<sup>4</sup> This has been overcome by use of ultrasound imaging.

In a case report by Chin KJ et al. ultrasound was used to facilitate successful SAB in a case of previous lumbar laminectomy and fusion.<sup>5</sup> Similarly, in a case report by Costello JF et al. ultrasound guided SAB was given in a case of poliomyelitis with Harrington instrumentation.<sup>6</sup> But use of ultrasound is a highly skilled technique, moreover avoidance of multiple punctures is also not guaranteed by this technique.

In our case spinous process of L4, L5 were absent along with adjacent lamina and ligamentum flavum. Moreover, scar tissue (extending from L1 to S1) made palpation of interspace difficult. Considering these problems, we planned a SAB via Taylor's approach.

In a case report by Jindal P et al. intrathecal injection was given via Taylor's approach in a case of ankylosing spondylosis posted for percutaneous nephrolithotomy.<sup>7</sup> Similar case report done by Patil AD et al where SAB given using Taylor's approach helped to avoid GA in short stature asthmatic patient.<sup>8</sup> Study done by Gupta K et al with 174 patients, revealed teaching of Taylor approach were encouraging where acceptable failure rate in deformed spine were 15%.<sup>9</sup>

#### 4. Conclusion

Although SAB is a relative contraindication for patient with history of previous spine surgery mostly due to altered spine anatomy, SAB can be safely administered via Taylor's approach when GA has to be avoided.

#### 5. Source of Funding

None.

#### 6. Conflict of Interest

None.

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