

TAYLOR'S LUMBOSACRAL PARAMEDIAN APPROACH FOR SPINAL ANAESTHESIA IN A PATIENT WITH ANKYLOSING SPONDYLITIS WITH BAMBOO SPINE POSTED FOR TURP**¹Dr. Mili Dogra, ²Dr. Neha Atwal and *³Dr. Sakshi Jaryal**^{1,2}MD Anaesthesia, Indira Gandhi Medical College, Shimla, H.P. India 171001.^{*3}MS Obstetrics and Gynaecology, Dr. Rajendra Prasad Government Medical College, Tanda, Kangra, H.P. India – 176001.***Corresponding Author: Dr. Sakshi Jaryal**

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ABSTRACT

Ankylosing spondylitis is a progressive inflammatory arthropathy that primarily affects the spine and sacroiliac joints. The affected joints undergo fusion with restricted mobility. The classic “bamboo spine” appearance seen radiographically in advanced disease is caused by ossification of the vertebral ligaments. Ankylosing spondylitis is associated with both a difficult airway as well as a difficulty in performing a regional neuraxial technique. Here we present a rare case of advanced ankylosing spondylitis with bamboo spine scheduled to undergo transurethral resection of prostate (TURP) for benign prostatic hypertrophy (BPH) under spinal anaesthesia using the Taylor's approach.

KEYWORDS: ankylosing spondylitis, bamboo spine, TURP, Taylor approach, spinal.**INTRODUCTION**

Ankylosing spondylitis is an autoimmune seronegative spondyloarthropathy that typically affects the spine and sacroiliac joints but may involve peripheral joints as well. It affects men disproportionately. Inflammation in the affected joints leads to formation of fibrocartilage and ectopic bone, and ultimately fusion of the joint resulting in rigid but frail spine. Cervical kyphosis may make direct laryngoscopy difficult due to reduced range of motion at the cervical and atlanto-occipital joints. Limitation at the temporomandibular joint may make mouth opening inadequate. The patients often show a restrictive pattern of pulmonary disease due to kyphosis and chest wall rigidity. These features make general anaesthesia a somewhat difficult choice in such patients.

The dorsolumbar spinal pathology may also make regional neuraxial techniques difficult. Furthermore the incidence of epidural hematoma is higher in ankylosing spondylitis patients. This could be due to higher incidence of traumatic needle placement, the prevalence of NSAID use among ankylosing spondylitis patients or a reduction in the epidural space. If neuraxial anaesthesia is indicated, ultrasound or fluoroscopic guidance may facilitate placement. But in resource poor settings, this may not be always feasible.

The traditional midline approach to spinal anaesthesia involves inserting the spinal needle through the various

ligaments (supraspinous, interspinous, and ligamentum flavum) to reach the intra thecal space. The rigidity and relatively fixed spine makes the midline approach difficult to perform.

In the paramedian approach, the needle traverses the various paraspinous muscles of the back to reach the thecal space via the inter-laminar gap.

Taylor's approach is a variation of the paramedian approach which is carried out at the L5-S1 interspace, the largest interlaminar interspace of the vertebral column that is least affected by arthritic, degenerative changes.

We report a case of a 75 year old man with BPH posted for TURP at a local hospital in Shimla with ankylosing spondylitis with severely restricted spine movement and fused interspaces.

CASE REPORT

A 75 year old man presented to the surgery OPD with complaints of hesitancy in urination and increased frequency of urination. Further workup by the urology department revealed he was suffering from benign hypertrophy of the prostate. His PSA (prostate specific antigen) level was 3 ng/ml and his post void residual volume was 100 ml. Ultrasound revealed an enlarged prostate with an estimated volume of 40 cc. He was

scheduled for TURP and was posted for a pre anaesthesia checkup for which he came to our department. During the PAC, auscultation of the chest revealed bilateral diffuse wheeze and a grade 3 mid-diastolic murmur. Local examination of the spine revealed reduced extension of the neck and no interspaces were palpated in the dorsolumbar region. His vitals at the time of PAC were: HR-86/min; BP- 156/92 mmHg; SpO₂- 88% on room air. Cardiac and pulmonology consultation was advised and an echocardiography and spirometry were performed by the respective departments. The patient was found to be suffering from COPD with moderate obstruction and a mixed restrictive pattern as well. Echo revealed moderate mitral stenosis with an ejection fraction of 50%. A chest X-ray revealed emphysematous changes and the dorsolumbar X-ray of the spine revealed the classic sign of “bamboo spine”. Rest of the blood investigations were within normal limits. Due to the increased risk of postoperative pulmonary complications, the surgery was planned under spinal anaesthesia after preoperative optimisation. The patient was put on nebulisation with salbutamol and incentive spirometry. Pre operative orders were explained to the patient, with fasting for 8 hours for solids and 2 hours for water.

On the morning of surgery anxiolysis was provided with alprazolam.

Standard monitors were attached and vitals recorded. Two large bore IV lines were secured in both upper limbs.

The patient was positioned in the sitting position for the spinal. After cleaning the site the parts were draped under all aseptic precautions. Subarachnoid block was performed by using 26 gauge Quinkey Babcock needle initially using the classic midline approach at L2-L3 and L3-L4 level. After a couple of attempts the midline approach was abandoned due to encountering bone everywhere.

A Taylor's paramedian approach was used at L5-S1 level which resulted in a successful CSF tap in the very first attempt. Spinal was given using 12.5 mg of heavy bupivacaine with 20 micrograms of fentanyl added as an additive. The rest of the intraoperative period was uneventful and the patient was shifted to the post anaesthesia care unit with stable vitals.

DISCUSSION

The spinal anaesthesia can be used to provide surgical anaesthesia for all procedures carried out on the lower half of the body, lower limbs, pelvis, genitals, and perineum. Relevant anatomy must be kept in mind while inserting the spinal needle for establishing the subarachnoid block. Patients with deformed spine due to scoliosis, kyphoscoliosis, or arthritis (osteoarthritis, rheumatoid arthritis, and ankylosing spondylitis) represent specific challenges to the anaesthesiologist due

to anatomical and technical difficulty for establishing the successful subarachnoid block.^[1-3]

The anatomic midline approach is the technique of first choice because it is often easier to appreciate and requires anatomical projection in only two plans-sagittal and horizontal and provides a relatively avascular plane. When difficulty in needle insertion is encountered due to scar tissue, arthritic changes or scoliosis of the spine, one option is to use the paramedian route. It does not require the same level of patient cooperation and reversal of lumbar lordosis for success of lumbar puncture. The paramedian approach requires an additional oblique plane to be considered.^[4]

Taylor's approach, a variation of the paramedian technique, provides a useful way of performing a subarachnoid block. It involves inserting the spinal needle in the paramedian position at a point 1 cm medial and caudal to the posterior superior iliac spine. The needle is directed in a medial and cephalad direction in between the vertebral laminae. If bone is met, it indicates the needle is touching the lamina of the vertebra. Redirecting the needle more cephalad and walking the needle up the lamina till loss of resistance is met, usually alleviates this problem. The L5-S1 interspace is usually less affected by arthritic and degenerative changes. Subarachnoid block at L5-S1 interlamina space offers distinct advantages. It is the lowest and widest available lumbar space, so the chances of trauma to the spinal cord are negligible. This space is least affected by arthritic and degenerative changes; hence, Taylor's approach is a better alternative than a midline approach for establishing the subarachnoid block with adequate sensory and motor blockade for the surgical procedure. Taylor's approach is a useful technique and should be practiced regularly in normal spines to get familiar with the procedure, before attempting it in a grossly abnormal spine. Previously Jindal *et al*^[5], Kumkum Gupta *et al*.^[6] and M.Saraswat *et al*.^[7] have successfully used this technique in kyphoscoliotic patients and have stressed on the necessity to teach this technique under supervision. The acquisition of knowledge and skills pertinent to the use of Taylor's approach for establishing the subarachnoid block is an important part of learning. The teaching of procedures facilitates the learning curve and increases safety. It shortens the duration of procedure and increases the comfort due to reduced number of attempts and subsequent trauma.

CONCLUSION

Subarachnoid anaesthesia has the potential to provide excellent operating conditions with fewer side effects but patients with deformed spine due to scoliosis, severe arthritis, or prior spine surgery represent challenges due to anatomical and technical difficulty for establishing the successful subarachnoid block. Taylor's approach could provide a reliable and less traumatic alternative to midline approach for lumbar puncture in deformed spine

and should be taught to residents on normal spine to facilitate the learning curve.



Fig. 1: Dorsolumbar spine X-ray showing the characteristic “bamboo spine” of the patient in advanced ankylosing spondylitis.

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