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## Difficult intubation with inability to give spinal anaesthesia in a case of ankylosing spondylitis undergoing B/L total knee replacement: A case report

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### Abstract

Ankylosing spondylitis with spinal column involvement renders the spinal column more rigid and introduces difficulty in airway management of the patient. Use of spinal anaesthesia also becomes difficult due to bamboo spine. Use of advanced fibre optic bronchoscopy to facilitate intubation to secure difficult airways is well known. But this technique can be challenging due to difficulty in attaining appropriate position for intubation due to rigid curvature of the ankylosed spinal column and due to anxiety of the patients in view of it being awake intubation. In this case report we present a successful atraumatic nasotracheal intubation under FOB guidance in a case of Ankylosing Spondylitis undergoing Bilateral Total Knee Replacement under mild sedation.

**Keywords:** Ankylosing spondylitis, bamboo spine fibre optic bronchoscopy

### Introduction

Ankylosing spondylitis is a painful, chronic inflammatory arthropathy, which primarily affects the spine and sacroiliac joints and eventually leads to fusion and rigidity of the spine (bamboo spine). These patients are at greater risk of sustaining cervical spine injury following trauma due to stiffness, kyphosis and osteoporotic bones <sup>[1]</sup>.

Appropriate airway management is a vital part in an anaesthetist's day to day life. In a case of ankylosing spondylitis, it becomes all the more difficult to achieve appropriate position due to the rigid curvature of the ankylosed spinal column. So awake Fiberoptic Intubation under mild sedation is considered ideal. In this article we will see the management of an elective difficult airway.

### Case report

A 38 year old male presented to the OPD with secondary osteoarthritis of Bilateral hip posted for bilateral Total Hip Replacement. He was a known case of Ankylosing Spondylitis since 15 years.

### On Examination

Heart Rate- 90 beats per min, regular rhythm.

Blood Pressure- 120/70 mm Hg

Cardiovascular System- S1+, S2+

Respiratory System- Air entry bilaterally equal, clear chest.

Spine- Fused with no movement.

Investigations-

Haemoglobin- 12.7 gm%, TLC- 14560 / cu.mm,

Platelet- 3.70 lakhs/cu.mm, Serum Creatinine- 0.60 mg/dL,

Total Bilirubin- 0.56 mg/dL

X-ray Lumbosacral spine AP and Lateral view- Sclerosis of vertebrae noted along bilateral sacro-iliac joint with sacralization of transverse process of L5 vertebrae. Calcification of anterior spinal ligament along with squaring of L2, L3 vertebral bodies.

PFT- Mild restrictive ventilatory defect with poor reversibility.

Thus Spinal or Epidural Anaesthesia was ruled out.

### Airway Assessment

Mouth Opening was restricted to 2 fingers. Range of motion of neck flexion and extension was zero. AP and lateral X-rays of the neck also suggested of rigid curvature. Thus a difficult airway was anticipated.

We planned to proceed with FOB guided nasotracheal intubation under deep sedation. But in case of any untoward complication an emergency tracheostomy set was ready with the ENT team informed in advance.

Emergency cricothyrotomy set was also kept ready. The procedure was explained to the patient and written informed consent including consent for emergency tracheostomy was taken preoperatively.



**Fig 1:** Xrays AP, Lateral of lumbar spine and lateral view of cervical spine showing straightening of cervical spine.



**Fig 2:** AP and lateral externally.

### Preparation

NBM status was confirmed. Patient was then taken into the preoperative room. 20G IV cannula was secured. Inj Glycopyrolate 0.004 mg/kg IV was given to reduce secretions. Nebulisation with Lignocaine 4% was started followed by gargles with 2% Lignocaine viscous solution. Xylometazoline drops were put in both nostrils 30mins before shifting the patient into the OR.

Inside the OR all resuscitation equipment and difficult airway cart were kept ready. All necessary monitors including ECG, Pulse Oximeter, Non-invasive blood pressure and capnography were attached.

Patient was premeditated with Inj. Midazolam 0.05mg/kg and Inj. Fentanyl 1 mcg/kg. A cuffed endotracheal tube no.8 was loaded over the FOB and lubricated. The FOB was then gradually passed through the left nostril and 1ml of 2% lignocaine was injected through the suction port as soon as the vocal cords were visualised. The endotracheal tube was successfully passed through the cords without causing any trauma. Correct placement of the tube was again confirmed by waveform capnography, chest rise and auscultation. Inj Propofol 2mg/kg was administered followed by muscle relaxant in a dose of 1mg/kg of Inj. Atracurium. Patient was maintained on Isoflurane (MAC 1), Oxygen and Nitrous oxide.

Patient was vitally stable intra operatively and was extubated post operatively. He was monitored for 45 minutes post operatively and was found to be vitally stable, and so was later shifted to the ward.



**Fig 3:** Awake Fiberoptic intubation

### Discussion

Ankylosing spondylitis (AS; also known as Bechterew disease; Marie Strumpell disease), an autoimmune seronegative spondyloarthropathy, is a painful chronic inflammatory arthritis punctuated by exacerbations ('flares') and quiescent periods. It primarily affects the spine and sacroiliac joints and eventually causes fusion and rigidity of the spine ('bamboo spine') [2]. Preexisting ankylosing spondylitis with spinal column involvement renders the spinal column more rigid and introduces difficulty in airway management of the patient.<sup>1</sup> The cervical vertebrae are prone to fractures, especially with hyperextension, and injuries may be occult. Patients may also have unstable atlantooccipital joints and spinal stenosis [8].

FOB guided nasotracheal intubation is the gold standard. Blind naso tracheal intubations have a high failure rate and are also frequently associated with trauma and oedema. It can also cause trauma in case of undetected septal or nasal wall deformities. Tracheostomy is always the last and emergency resort.

For awake FOI, patient comfort and optimal intubating conditions both are of paramount importance. The main challenge is to provide adequate sedation while maintaining a patent airway and ensuring ventilation.<sup>1</sup> Maintenance of good oxygenation and mild sedation with Inj Midazolam and Inj Fentanyl allowing the anaesthetist time to use FOB and good topical anaesthesia to prevent laryngospasm are the essentials for successful fiberoptic intubation.

### Conclusion

In conclusion, our case demonstrates that awake FOI under mild sedation facilitates self-positioning and FOB guided nasotracheal intubation in patients with pre-existing ankylosing spondylitis.

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