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Case Report: Open Access

Difficult Fibreoptic Intubation in a Patient with Fused Cervical and Atlantoccipital Joint - A Case Report

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ABSTRACT

Management of difficult airway is widely recognized as one of the serious challenges of the anesthesiologists. The complications related to it are known to be life threatening. One of the difficult airway scenario is fused cervical and atlanto occipital joints. Awake fibreoptic intubation remains the gold standard for such situations. Herewith, we present such a case where we faced difficulty in doing awake fibreoptic bronchoscope because of fixed c-spine and lateral head tilt due to skeletal tuberculosis and overgrowth of pharyngeal soft tissue. We were able to successfully intubate the patient after changing the position of anesthetist from behind the head of patient to sideways and manipulating the scope. He was a known case of skeletal tuberculosis and ankylosing spondylosis. His head was fixed in permanent left lateral tilt with nil neck movement. Most airway problems can be fixed with available gadgets and techniques but clinical judgment, experience and expertise is required to implement these tools in any difficult airway scenario.

Keywords: Fibreoptic intubation, Saygo – spray as you go, Atlanto-occipital joint, FOB (fibre-optic bronchoscope)

INTRODUCTION

Airway management in cervical spine abnormality is of paramount importance for an anesthesiologist. Fibreoptic intubation seems to be a boon in difficult airway cases [1]. In our patient we encountered difficulty in doing fibreoptic intubation due to anatomical and bony changes as the patient had past history of skeletal tuberculosis and ankylosing spondylitis. Tubercular osteomyelitis and arthritis arises from reactivation of bacilli lodged in bone during the mycobacteremia of primary infection. Tuberculous arthritis is a consequence of extension of an initial infectious focus from the bone to the joint [2]. In nearly 50% of the cases tubercular vertebral osteomylitis commonly affects the thoracic or thoracolumbar segments, this is followed by lumbar segments and to lesser extent cervical segment [3]. Paraplegia, quadriplegia, joint destruction and joint fusions are complications which warrant anesthesiologist's attention [4].

CASE REPORT

45 years old, 75 kg male with BMI 29 kg/m^2 was posted for open cholecystectomy. He had history of pulmonary and skeletal TB for which he completed ATT 2 years ago. He is an also a K/C/O HTN since 3 years, on T. Amlodipine 10 mg OD. His blood pressure was well controlled. He underwent THR for frozen hip 2 years ago; he gave history suggestive of awake laryngoscopy on O.T. table. His rest of the surgical and anesthetic history was uneventful.

O/E – multiple fused joints were observed including shoulder, cervical and atlanto-occipital joints. His head was permanently fixed in left lateral tilt. Multiple bony overgrowths were observed all over the body including over the clavicles **(Figure 1)**. He was unable to lie flat due to fixed cervical spine deformity **(Figure 2)**.

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Figure 1. Bony growth over clavicles.

Figure 2. Inability to lie down flat.

Airway examination:

- Nasal patency: left>right
- Mouth opening: <2 fingers **(Figure 3)**
- TMD<6.5 cm
- Neck movement: Nil (no extension, flexion or lateral rotation)
- Investigations: Within normal limits
- Chest X-Ray: Pleural thickening along with right tracheal deviation
- X-ray cervical spine (lat): Fusion of cervical vertebrae with absent atlanto-axial gap
- He was kept NPO for 8 h, tab Ranitidine 150 mg at bed time and coming morning and tab. clonazepam 0.5 mg at bed time was advised. Informed high risk consent was obtained in view of difficult airway and tracheostomy if needed.

Figure 3. Limited mouth opening.

We planned for awake oral fibreoptic intubation. I.V. line was secured and inj. glycopyrrolate 0.2 mg was given 30 min prior. Xylometazoline nasal drops were used for nasal mucosa vasoconstriction. Total dose of lignocaine was calculated according to body weight and half of the dose was kept for SAYGO and rest was used for nebulization and other blocks [5]. Patient was nebulized with 2 ml of 4% lignocaine diluted to 5 ml with NS for 30 min **(Figure 4)**. Cotton pledgets soaked in 2% lignocaine were used to block glossopharangeal nerve. 10% xylocaine spray was used to spray both nostrils and tongue. Injection dexmedetomidine 0.25 mcg /kg/min was started 15 min prior to procedure. Patient was taken to O.T.; standard ASA monitoring was started with recording of baseline parameters. Patient was explained the procedure on table. Oxygen through nasal cannulae @4 L/min was started. Fibreoptic scope was introduced through the mouth, structures were visualized but epiglottis was not seen. Multiple pockets of pharyngeal soft tissues were seen and were very confusing, on searching for epiglottis for 5 min, it was finally seen extremely pushed towards right side. But it was not possible to go beyond epiglottis as it was closely approximated to posterior pharyngeal wall and could not be centralized.

Figure 4. Nebulisation with 4% lignocaine.

We changed our plan and went for nasal fibreoptic intubation. A rubber catheter lubricated with xylocaine jelly was inserted through left nostril and found to be patent. The FOB was inserted and epiglottis was seen in extreme right. 2-3 ml of 2% xylocaine was sprayed over epiglottis. We changed our position by standing on left side of patient and asked the patient to stick out his tongue and with great difficulty and maneuvering posterior part of vocal cords were seen **(Figure 5)**. 2 ml of 2% xylocaine was sprayed over vocal cords. After waiting for 30 s FOB scope was advanced and trachea was intubated **(Figure 6)**. After confirmation of bilateral air entry Injection propfol 120 mg and injection vecuronium 6 mg was given. It took about 12 min to intubate the patient **(Figure 7)**. Our patient was maintaining 99% SPO_2 and was calm and cooperative throughout the procedure.

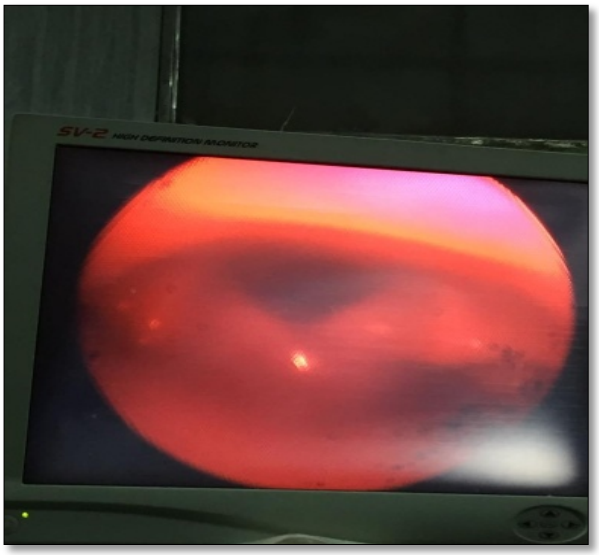

Figure 5. Glottic view.

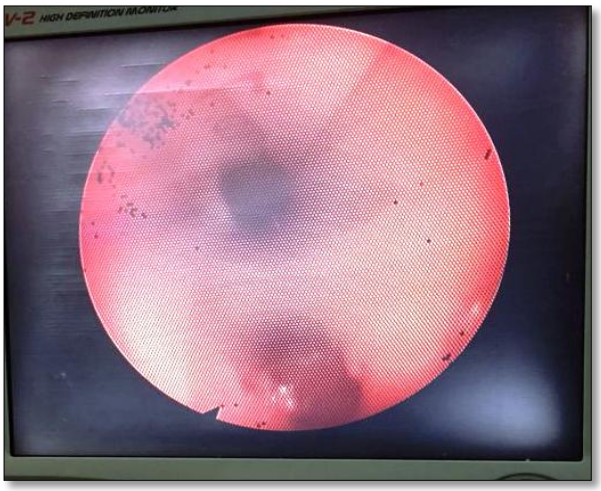

Figure 6. View of carina.

Figure 7. After intubation.

DISCUSSION

Awake fibreoptic laryngoscopy like direct laryngoscopy may prove to be difficult or even impossible. Ovassapian has classified the causes of difficult fibreoptic intubation as [6]:

1. Distorted airway anatomy (mass, hematoma, previous surgery or radiation therapy)
2. Secretions or blood
3. Decreased space between tip of epiglottis and posterior pharyngeal wall
4. Reactive airway (inadequate topical anesthesia)

The reasons for decreased space between tip of epiglottis and posterior pharyngeal wall are:

a) Large floppy epiglottis

b) Elevation of floor of the mouth and tongue as a result of edema and cellulitis

c) Obesity (OSA)

d) Displacement of larynx secondary to severe flexion deformity of cervical spine

e) Supraglottic mass causing dorsiflexion of the epiglottis

Our case could be classified into 3 groups. Our patient had a fixed craniocervical junction with absent atlanto-axial gap on a lateral radiograph, a finding which has positive predictive value of more than >70% for grade 3 laryngoscopy [7].

We opted for awake fibreoptic intubation because the technique described is associated with cardiovascular stability, low incidence of hypoxemia and reasonable degree of patient acceptance [8]. In addition awake fibreoptic is recommended not only because of possible difficulties in visualizing vocal cords but because forcible manipulation of neck under GA may cause cervical # or vertebrobasilar insufficiency [9]. Advantage of awake intubation is that

failure does not endanger the patient. So, it can be regarded as most promising technique in difficult airway [10,11].

CONCLUSION

1. Adequate preparation is the key to a successful awake fibreoptic intubation in deformities of cervical spine.
2. Changing the position of anesthetist from just behind the back of head of patient to contralateral position may improve the view.
3. Introducing the scope slightly away from midline can lead to visualization of cords in cases where trachea is shifted.
4. External manipulation of larynx can help in cases of tracheal shifting.
5. In cases where there is decreased or no space between tip of epiglottis and posterior pharyngeal wall, asking an awake patient to stick out his tongue can help to facilitate fibreoptic intubation.

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