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Difficult Airway Management – A Multi-pronged Approach Usually Increases your Chances of Success

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Dear Editor,

Ankylosing spondylitis (AS) is a chronic inflammatory disease that affects the spine and sacro-iliac joints leading to progressive rigidity and deformities. From an anaesthetic perspective, patients with poorly controlled or advanced AS present a significant airway management challenge. Cervical spine involvement, particularly in the form of limited flexion-extension and fixed kyphotic deformities, can make alignment for direct laryngoscopy nearly impossible. Patients with AS are at high risk of vertebral fractures, even after minor trauma, which often results in spinal cord injury. Airway management in AS patients presents major challenges for anesthesiologists in the operating room, as some patients are unable to perform extension at Atlanto-axial joint [1]. Additionally, mouth opening is limited in more than 35% of cases significantly reducing the success rate of conventional intubation and necessitating alternative approaches [2, 3]. We present a challenging case of AS grade- 3 with severe restriction of movement at Atlanto-axial joint coming for Laser excision of vocal cord polyp. This case illustrates the preparedness of anesthesiologist in securing the patients airway. This man was a 43-year-old with no comorbidities and presented to our institution with hoarseness of voice for the past 2 months. Flexible fibreoptic laryngoscopy revealed a pedunculated polyp at the level of anterior 1/3rd and posterior 2/3rd of the left vocal cord. He was on NSAIDS and sulfasalazine which also indicated presence of inflammatory bowel disease. Rheumatologist and neurologist opinion was sort and was advised no neck extension with risk of quadriplegia on table if attempted. Base line blood investigations, ECG, 2-D echo were unremarkable. There was no previous history of any surgical interventions. Patient was accepted for proposed procedure with written informed consent of high risk procedure, highlighting major neurological deficits, possible chance of tracheostomy, airway fire and prolonged ventilation with post-operative pulmonary complications under ASA-III. This case vividly illustrates meticulous planning and exceptional team efficiency in successfully managing a difficult airway scenario through deployment of multiple back-up plans.

Step 1– Preparation of the patient for awake Fibreoptic Bronchoscopic intubation.

The patient was counselled well before in his native language of understanding about the procedure and he had consented to it. On the day of procedure, inj. Glycopyrrolate 0.2 mg I.V was given 30 minutes before procedure for its anti-sialagogue effects to set in. Both the nostrils were tropicalized with Navision (Oxymetazoline Hydrochloride 0.05%) spray. 4% lignocaine nebulization was also given before wheeling in the patient. Trans-tracheal injection was given inside the OR with 2 ml of 4% lignocaine and patient was asked to cough vigorously to maximize its spread.

Pre-requisite 1- Considering the patient's Grade 3 ankylosing spondylitis, with severe cervical rigidity and risk of catastrophic spinal cord injury (e.g., intraoperative quadriplegia) if neck extension is attempted, alongside the added anaesthetic concern of avoiding airway burns during planned laser surgery, the following airway management strategy were devised -

Plan A- Sedation was started using inj. Dexmedetomidine at 1 mcg/kg bolus over 10 minutes followed by 0.5 mcg/kg/hr. of infusion. Bi-spectral index monitor placed. Patient was asked to open his mouth and the posterior pharyngeal wall was anaesthetized using 10% lignocaine spray. A bite guard was placed and a pediatric bronchoscope was gently introduced through the nose and simultaneously a cooks (FROVA) intubating/ventilating bougie was introduced into the cords and oxygenation started. The bronchoscope was removed and the bougie was secured in the midline at 25 cms. Patient was tolerating it well and 1mg of midazolam was given before starting the procedure. The laser bronchoscope with working channel was introduced through the right nostril and an attempt to tropicalize the cords with 2 ml of 4% lignocaine the patient had rigorous cough. Post waiting a few minutes he couldn't tolerate the foreign body sensation and that's when we switched to PLAN- B. Anaesthetic concern here is airway fire and damage to surrounding areas if done in a awake patient.

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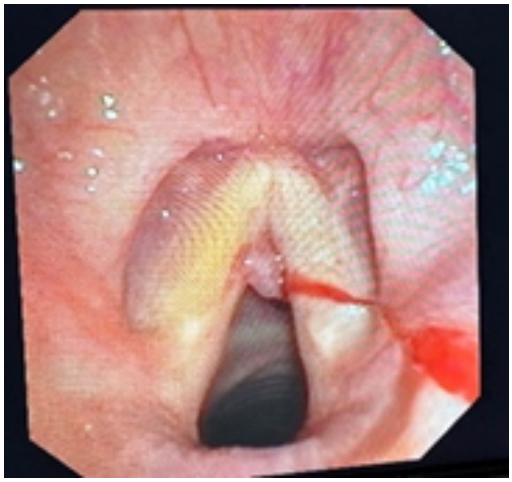

Figure 1: Showing lesion in anterior 1/3rd and posterior 2/3rd of Left VC

Figure 2: Showing stable vitals with satisfactory BIS values.

PLAN-B – The FROVA was taken out and as the patient was spontaneously breathing, we decided to place a I-gel size 4 (LMA) which is a second generation supraglottic device with dedicated gastric port. The plan was to induce and immobilize the patient after placing i-gel using muscle relaxant rocuronium at a dose of 1mg/kg. There are reports associated with airway fire even with delivery of minimum Fio2 as less as 30% during laser surgery [4]. Considering the complexity of the plan and its uncertainty we switched to PLAN-C.

PLAN-C We finally decided to go ahead with placement of I-gel size 4 and after pre-oxygenation for 5 minutes, induced the patient with inj. propofol 2mg/kg, loxicard 2% (preservative free lignocaine) at 1 mg/kg, followed by rocuronium at 1 mg/kg. After placing the I-gel we introduced 5mm poly-vinyl chloride (PVC) Micro-laryngeal tube (MLS) through it. Furthermore, we introduced a pediatric 4mm size flexible bronchoscope into the 5 mm PVC MLS to ensure its correct placement. After confirming the position, i-gel was removed and patient end of tube was connected to the ventilator. This was a definitive and a successful one. The procedure lasted for 30 minutes and prophylactic dose of steroid inj. dexamethasone was given at a dose of 0.1 mg/kg. Neuro-muscular blockade was reversed with Inj. Suggamadex at 8 mg/kg. Patient's trachea was extubated after he obeyed criteria for extubation. Procedure was uneventful and was shifted to post-anesthesia care unit for observation (PACU). (Fig. 1, 2)

Conclusion-Difficult airway situations can occur unexpectedly in any clinical setting, highlighting the need for constant preparedness among anaesthesia providers. Early identification of patients at risk is essential, using thorough airway assessments to guide planning. Predicting and preparing for a difficult airway improves patient safety by allowing time to select appropriate equipment and techniques. Anaesthesiologists must be proficient with both basic and advanced airway devices, and these tools should be readily available, ideally via a standardized difficult airway trolley. Reference to structured, evidence-based algorithms—such as those from DAS or ASA—can support decision-making during emergencies. Each institution should establish context-specific airway management protocols that reflect team expertise and available resources. However, theoretical knowledge alone is insufficient. Competency in managing complex airway scenarios requires regular simulation-based training to develop technical skills, crisis management, and teamwork. A comprehensive approach that combines prediction, preparation, protocol use, and hands-on practice is key to ensuring patient safety during difficult airway management [5].

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the Journal. The patient understands that his/her name and initials will not be published, and due efforts will be made to conceal his/her identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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