



Anaesthetic Management of a Patient with Ankylosing Spondylitis With Fixed Neck Flexion Undergoing Total Thyroidectomy for Retrosternal Goiter -Case Report.

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Introduction

Ankylosing spondylitis (AS) is a form of seronegative spondyloarthropathy that can lead to significant stiffness and fusion of the spine, particularly the cervical region. When these patients require surgery, particularly procedures that involve the head and neck, the anaesthesiologist faces several challenges. This case report describes the anaesthetic management of a 57-year-old male patient with Ankylosing spondylitis, presented with fixed neck flexion, undergoing a total thyroidectomy for retrosternal goiter. In addition, multinodular goiter and airway concerns made awake fiberoptic intubation with a flexometallic tube the optimal approach for airway management.

Case Report:

A 57-year-old male with a long-standing history of ankylosing spondylitis since last 20 years without any medication history presented for total thyroidectomy due to a retrosternal goiter. His weight was 65 kilograms and Height was 168 centimetres . He had significant cervical spine involvement, with limited range of motion, especially in the neck, leading to permanent neck flexion. His medical history included controlled hypertension and with snoring . No significant history of breathing or swallowing difficulties.The patient was otherwise healthy, with no other systemic involvement of Ankylosing spondylitis. He had no prior history of any surgery or intubation, though his cervical spine rigidity and the multinodular goiter raised concerns for airway management.

Preoperative Assessment:

-Airway Examination : Mouth opening 2 finger breadth present. All teeth present. Unable to examine for Mallampati examination due to fixed flexion of neck. Due to the retrosternal goiter, airway obstruction and difficulty in Conventional tracheal intubation were anticipated, particularly in the presence of restricted neck movement.

- Cervical Spine Examination :Due to ankylosing spondylitis, the patient had restricted cervical spine mobility. Radiological evaluation confirmed significant fusion of the cervical vertebrae. It was noted that neutral head positioning was not achievable.

- Cardiovascular Examination: Blood pressure was well-controlled on antihypertensive medication. No signs of cardiac involvement were noted.

- Respiratory Examination:Bilateral Air entry present,equal on both side,clear. patient is neither on continuous positive airway pressure (CPAP) therapy nor any other medications.

- Thyroid Function Test :Laboratory workup confirmed normal thyroid function markers within normal limit.

-On CT Scan report: Right lobe measurement:10.6*5.6*10.3 centimetre

Left lobe measurement:6.6*5.3*8.4 centimetre

Isthmus : 3.8 centimetre. Retrosternal and superior mediastinal extension present.

-Pulmonary Function Test shows moderate Restriction.

Rest all Blood investigations, chest x-ray , 2D echo cardiography with in normal limit.

X-ray Neck lateral : Minimal compression over trachea present.

Indirect laryngoscopy : Bilateral vocal cords normal,mobile.Bilateral pyriform fossa clear.

Cytology examination : Bethesda category II ,Benign thyroid lesion Suggestive of Multinodular Goiter



Anaesthetic Plan:

Given the complexities of the patient's condition, the anaesthetic plan was tailored to address airway management, the risk of cervical spine injury, and the need for a controlled surgical environment.

Preoperative Preparation:

The patient was educated on the perioperative plan and the risks associated with his condition.

A second-line anaesthetic provider with expertise in difficult airways was present for assistance.

Nebulisation with 4% lignocaine , inj. Glycopyrrolate given according to 4 micrograms/kg intra muscular route, adrenaline soaked wicks applied to nostrils after administration of nasal drops bilaterally.

Induction and Airway Management

- After attachment of standard monitors to patient, 10% lignocaine spray applied with help of tongue depressor for airway topicalisation.
- A fiberoptic bronchoscope was used to visualize the airway and navigate through the restricted neck position. The fiberoptic technique was chosen due to its ability to navigate around the goiter and provide real-time visualization of the trachea despite the restricted movement.
- A 7.5mm flexometallic tube was selected for intubation, offering enhanced flexibility and resistance to kinking, making it ideal for the challenging airway.
- Fiberoptic bronchoscope inserted through right nostril , further airway topicalisation done with injection lignocaine 2% via "spray as you go technique ".After visualisation of vocal cord endotracheal tube was successfully passed into the trachea under fiberoptic guidance, and secure placement was confirmed with air entry check and capnography.
- After intubation, the tube was secured, and the patient's head and neck were kept secured ,with cervical spine precautions to avoid undue movement.
- The patient was then induced with inj.Propofol 1.5 mg /kg . inj. Atracurium 0.5 mg/ kg for muscle relaxation and inj. Fentanyl 2 mg/kg given. Patient kept on mechanical ventilation for the duration of the surgery.

Intraoperative Management

- Anaesthesia was maintained with oxygen with sevoflurane as volatile agent and muscle relaxation was achieved with Atracurium, and monitoring included standard ASA monitors including capnography. Analgesia was achieved with injection paracetamol 15 mg / kg intravenously.
- The surgical team maintain position in such a way to avoid excessive manipulation of the patient's neck to minimize the risk of spinal injury.

Postoperative Care

- The patient was reversed and extubated once fully awake and able to follow commands with reversal agent injection Neostigmine 0.05 mg /kg with injection Glycopyrrolate 8 micrograms/ kg.
- Inview of history of snoring, the patient was monitored in a high-dependency unit overnight for respiratory compromise.
- Pain management was provided with a multimodal approach, including paracetamol , non-steroidal anti-inflammatory drugs, and opioids if required.
- Cervical spine precautions were maintained during postoperative positioning to prevent neck strain.

Discussion

This case highlights the challenges of anaesthetizing a patient with ankylosing spondylitis, particularly in the context of restricted cervical spine mobility, airway concerns related to the multinodular goiter, and potential airway difficulties. Several key factors were considered in the anaesthetic management:

- Airway Management: In patients with ankylosing spondylitis and multinodular goiter, the limited neck mobility and potential compression of the airway can make intubation difficult. The use of fiberoptic intubation with a flexometallic tube is a reliable technique that provides excellent visualization and flexibility, which is critical in such cases.

-Cervical Spine Protection:Due to the fusion of cervical vertebrae, the head and neck should be maintained in a fixed position during both intubation and surgery to avoid injury. The use of a reinforced endotracheal tube helps secure the airway while minimizing movement.

- Ventilation: With the potential for airway complications, maintaining oxygenation and ventilation is critical. Postoperative monitoring in a higher-dependency setting may be required to detect early signs of respiratory failure.

- Multidisciplinary Approach:Close coordination between anaesthesiologists, surgeons, and other healthcare providers is necessary to ensure that the patient's cervical spine is protected throughout the perioperative period.

Conclusion

The anaesthetic management of patients with ankylosing spondylitis and multinodular goiter undergoing neck surgery requires careful consideration of airway management, cervical spine protection, and the potential for postoperative complications. Awake Fiberoptic intubation with a flexometallic tube proved to be the optimal choice for this patient's airway management, given his fixed neck flexion and retrosternal goiter. This case demonstrates the importance of thorough preoperative assessment, appropriate anaesthetic techniques, and vigilant postoperative monitoring. A tailored, multidisciplinary approach can ensure safe anaesthesia and optimal outcomes for patients with this complex condition undergoing high-risk surgery such as total thyroidectomy.

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