



Case Report

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A case report on difficult intubation and accidental intraoperative extubation in large thyroid mass surgery

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Abstract

Despite the decrease in the incidence of goiter throughout the world, there are still cases reported having large thyroid masses presenting for surgery. These cases impose difficulty for definite airway management while providing anaesthesia to these patients. Recent advances in airway management and its widespread availability such as fiberoptic bronchoscope has decreased the rate of various complications.

Keywords: Intubation, Extubation, Thyroid, Fiberoptic bronchoscope.

INTRODUCTION

Thyroidectomy is one of the commonest surgery done throughout the globe^[1,2]. Majority of patients have deranged thyroid functions and sometimes may even have malignant changes in the thyroid gland^[3]. The most important concern in such cases involve the management of a potential difficult airway, especially in cases of an enlarged thyroid gland compressing over the trachea for a prolonged duration and retrosternal extension^[4,5]. Awake fiberoptic intubation (FOI) has been reported successfully in patients with enlarged thyroids in a difficult airway situation^[6,7]. We present such a case of successful intubation with help of fiberoptic bronchoscope (FOB).

CASE REPORT

A 67-year-old, 58 kg man presented with complain of gradually increasing swelling predominantly in right side in front of neck for past 12 years. Four years back, he was diagnosed as a case of hypothyroidism and was on tab. thyroxine 100mcg OD. He had history of dysphagia and change in voice, stridor, and difficulty in breathing which aggravated on lying down for last three months. Based on the clinical finding and investigations he was diagnosed as a case of carcinoma thyroid. O/E neck swelling was 5.6 cm × 5.5cm × 16 cm in size, firm in consistency, immobile, nodular, extending from lower jaw to the sternal notch [Figure 1]. The lower limit of the swelling was neither visualized nor palpable and it was not moving with deglutition. No distended veins seen on chest or neck.

Airway examination showed mouth opening of more than two fingers, Mallampati grading of 3, limited neck extension, severely restricted neck flexion and grossly deviated trachea to right side. An indirect laryngoscopy revealed normal vocal cord mobility. X-Ray Neck revealed gross lateral displacement of the trachea to the right on AP view and severe compression of trachea in lateral view. CT scan showed large, ill-defined soft tissue mass involving left lobe of thyroid which was superiorly extending up to the level of hyoid and inferiorly had retrosternal extension [Figure 2]. The lesion was encasing and compressing trachea, bilateral main bronchus as well as esophagus. Free T3, T4, and TSH levels were in normal limits.

In view of huge size and long history of the thyroid mass, we anticipated difficulty in mask ventilation, laryngoscopy, intubation as well as extubation, so, awake fiberoptic intubation and delayed elective extubation was planned. Difficult airway cart was kept ready along with surgeon's team for emergency tracheostomy. The procedure was explained to the patient, written consent was obtained and NPO (nil per oral) directions given. Tab thyroxine 100mcg was continued on the day of surgery and tab ranitidine 150 mg was given on night before and morning of surgery. No preoperative sedation was advised. On arrival of the patient to operation theatre (OT), all ASA standard monitors were attached, and the

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baseline vitals were recorded. Pulse rate was 90/min and BP was 140/90 mmHg and ECG showed sinus rhythm. Inj. glycopyrrolate 0.2 mg IV was administered to minimize the secretions. Xylometazoline drops were instilled in both the nostrils for nasal decongestion to facilitate smooth passage of FOB without mucosal injury. The patient's airway was anaesthetized with 4% lignocaine nebulization, and 10% lignocaine spray. Because of the distorted anatomy, superior laryngeal nerve block could not be given but transtracheal block with 3ml of 4% lignocaine with adrenaline was possible. Oxygen was administered via nasal prongs at a rate of 2 L/min. Inj. midazolam 1mg IV and Inj. fentanyl 50 mcg IV to allay anxiety. As the airway was grossly compressed, we used a size 6.5mm Flexometallic tube (FMT) railroaded in FOB. After explaining to the patient, FOB was inserted through one of the nostrils and advanced towards laryngeal inlet. On visualization of the vocal cords, 2 ml Inj Lignocaine 2% with adrenaline was sprayed over the vocal cords to block the superior laryngeal nerve. The FOB was then advanced and positioned above the carina and then FMT was threaded down the FOB. Inj fentanyl 150 mcg IV, inj propofol 100mg and Inj vecuronium 5 mg IV were administered for analgesia, induction and neuromuscular blockade respectively. The FMT was firmly secured and anaesthesia was maintained with O₂ in N₂O and isoflurane. Intraoperatively, suddenly there was failure in ventilation evident by decrease in the tidal volume being delivered. Immediately, the patient was taken on manual ventilation but a lot of resistance was felt. We suspected displacement of tube, so after deflating the pilot balloon it was pushed inside and was again tried for ventilation. After that ventilation was successful and so the patient was put back on ventilator. Post-procedure, patient was not extubated in view of probable tracheomalacia so the FMT was replaced by a normal endotracheal tube (ETT) using tube exchanger and the patient was shifted to ICU for planned extubation. On postoperative day 2, after patient was maintaining blood gases on "T – piece," tracheal tube cuff was deflated and leak test was performed. Leak was positive, so it was considered safe to extubate the patient. A trolley for emergency intubation with rigid bronchoscope was kept ready. Patient was extubated and kept observation for 24 hours before being shifted to ward.



Figure 1: Showing thyroid gland enlargement in midline with right displacement of trachea

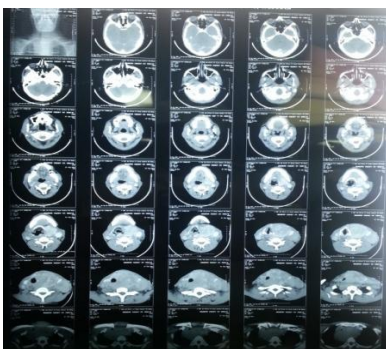


Figure 2: CT scan showing retrosternal extension of thyroid gland

DISCUSSION

Difficult intubation can be caused by an enlarged thyroid gland producing tracheal deviation, compression, or both^[8]. Upper airway obstruction due to thyroid gland has been reported up to 31% and difficult intubation has been reported in 11%^[9,10]. Induction of general anesthesia in such cases is risky because it may precipitate complete airway closure and make mask ventilation and tracheal intubation nearly impossible. Pressure on trachea exerted by a long-standing neck mass could have caused laxity to the parts of tracheal wall, which can lead to complete collapse of the airway with muscle relaxation. Fiberoptic intubation (FOI), safely and promptly secures the airway, has been recommended for the airway management in patients with difficult airways. In our case, there were both obstructive and compressive symptoms and trachea was grossly deviated, so we went ahead with awake FOB guided intubation.

Malhotra and Sodhi^[11] have reported a strategy for airway management of thyroid patients: inhalation induction with sevoflurane in the semi-supine or semi-sitting position, awake FOI, tracheotomy, or ventilation through a rigid bronchoscope. Problems like failure to visualize the glottis, trauma, bleeding, and laryngospasm has been reported with FOI^[12]. However, compared with inhalation induction, the risk of losing the airway is minimal^[6]. Retrograde passage of an epidural catheter through the cricothyroid membrane and passage of a tracheal tube over the catheter from above^[13], or introduction of a trans-tracheal cannula was also an option^[14] but was discarded due to large thyroid mass and indistinct anatomical landmarks. Due to the airway problems encountered with thyroid disease, thyroidectomy under local anesthesia was advocated by some anesthesiologists^[15]. However, a patient with huge thyroid causing compromised airway is a major limiting factor for this technique too as the landmarks couldn't be identified. The safe options of airway management left in our case were as follow: Awake FOI or ventilation via rigid bronchoscopy. Complete airway obstruction during awake FOI has been reported in whom the use of local anesthetic precipitated acute loss of the airway, so that urgent surgical intervention was required^[12]. The intra operative displacement of the tube was due to massive surgical manipulation, head extension and the use of smaller size tube. After displacement, the tip of the tube was probably stucked against the anterior part of the anterior commissure. This caused blockade of the tube resulting in increased resistance to manual ventilation. Meticulous planning for managing difficult airway and perioperative care in planned extubation after confirming the absence of airway compromise is of prime importance. Difficult airway algorithms and experience of the anesthesiologist plays a major role in management and outcome of the procedure. The early identification of all probable outcomes and prompt mobilization of resources allowed a favorable outcome in this case.

CONCLUSION

Meticulous planning for managing difficult airway and perioperative care in planned extubation after confirming the absence of airway compromise is of prime importance. Difficult airway algorithms and experience of the anesthesiologist plays a major role in management and outcome of the procedure. The early identification of all probable outcomes and prompt mobilization of resources allowed a favorable outcome in this case.

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