

Successful fiberoptic orotracheal intubation by lifting large thyroid mass and tongue protrusion in left lateral position: a case report

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Abstract

Introduction: Awake fiberoptic bronchoscopy has long been considered the criterion standard for the management of difficult airways because of large thyroid malignancies. After an unsuccessful attempt to intubate with a fiberoptic bronchoscope in the supine position, the decision to switch to the left lateral position was made. We present this case to propose the utilization of the lateral position for awake intubation.

Case presentation: We report a rare case of a patient with a large papillary carcinoma of the thyroid planned for surgical excision. The patient presented to our hospital with complaints of difficulty breathing while lying down in the supine position and oozing blood from the necrotic tissue. The breathing difficulties subsided in the lateral position.

Conclusion: We demonstrated how the left lateral position with an adjunct maneuver facilitates intubation in large thyroid malignancies.

Keywords: Awake intubation, Case report, Lateral position, Thyroid malignancy

Introduction

Airway management is challenging when the thyroid glands are heavily swollen. The incidence of intubation difficulties is approximately 13% in cases of thyroid gland enlargement.^[1] When swelling of the thyroid gland is complicated by an additional airway deformity, intubation becomes more difficult.^[2] A large thyroid swelling compresses and deviates the trachea, causing breathing difficulty, which makes it difficult to perform mask ventilation and intubation. In addition to endocrine and metabolic effects, the mass may extend substernally, making it more challenging for anesthesiologists to manage the airway.^[3] Moreover, the administration of general anesthesia can be dangerous because it can lead to complete closure of the airway, making mask ventilation and tracheal intubation impossible. Another concern is tracheomalacia, which can complicate intubation and extubation. The pressure on the trachea exerted by prolonged lying on the neck mass can cause necrosis of parts of the tracheal wall, leading to complete collapse of the airway after muscle relaxation. We present the following case according to the consensus-based clinical case reporting guidelines:

Case presentation

A 70-year-old female patient (American Society of Anesthesiologists score grade II) presented to our hospital with complaints of difficulty breathing while lying down in the supine position and oozing blood from the necrotic area on the thyroid swelling. She was diagnosed with a large papillary carcinoma of the thyroid with a dimension of 10.7 cm × 12.1 cm × 9.4 cm (Fig. 1). Airway examination revealed an adequate mouth opening of 3 cm, modified Mallampati class III, and mild limitation of neck extension, but severely restricted neck flexion due to the tumor extending to the angle of the mandible. Computed tomography of the neck (Fig. 2) revealed a large lobulated, heterogeneously nonenhancing area along the right side of the neck arising from the lower pole of the right lobe of the thyroid gland and extending from the upper border of the C3 to the T2 vertebral body. Tumor-node-metastasis cancer staging was designated as T4 N1b M1.

Treatment

Awake fiberoptic bronchoscopic intubation (AFOBI) in the left lateral position was planned because the patient was dyspneic in the supine position, and the trachea had deviated toward the left. The procedure was explained to the patient, who agreed to cooperate. On the arrival of the patient in the operating theater, standard American Society of Anesthesiologists monitors were applied. The airway of the patient was anesthetized with 4 mL of 4% lignocaine nebulization for 5 minutes and 10% lignocaine spray on the dorsum of the protruded tongue during mouth breathing. A low-flow nasal cannula with 8 L/min of oxygen was inserted. Thereafter, oral AFOBI was performed with an armored endotracheal tube (ETT) of size 7.0 mm along with an adjunct maneuver of pulling traction forward on the tumor by an assistant with the patient in left lateral position. The patient was instructed to take deep breaths and to protrude the tongue to facilitate vocal cord identification. The ETT was then threaded over the fiberoptic bronchoscope (FOB) beyond the tracheal narrowing under vision, and the FOB was removed. After confirming the ETT inside the trachea by capnography, general anesthesia was administered with an injection of fentanyl 2 µg/kg, propofol 2 mg/kg, and atracurium 0.5 mg/kg. The patient was placed in the supine position. In the case of failure to secure the airway with the FOB, Plan B

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Figure 1. A large papillary carcinoma of the thyroid with central necrosis.

was to perform awake video laryngoscopy-guided intubation, and a BlockBuster laryngeal mask airway (Tuoren Medical Instruments Co, Ltd, Changyuan, China) was kept ready as a rescue device. Tracheostomy was not possible in this case because of anatomical restrictions.

Patient outcome

Following 8 hours of surgery for wide local tumor excision with a flap, the patient was successfully extubated after 12 hours of elective ventilation after confirming no tracheomalacia with a negative cuff leak test and fiberoptic examination of the trachea when the patient was out of neuromuscular blockage. Extubation was performed under the guidance of an airway exchange catheter. Histopathological reports showed papillary carcinoma of the thyroid with vascular invasion.

Discussion

Awake fiberoptic bronchoscopic intubation is recommended as an early option in airway management for patients with difficult airways associated with tracheal deviation or compression due to large thyroid swelling or neck masses.^[4] To avoid airway catastrophe during intubation, tracheal intubation in a sitting position is recommended as a safe alternative for airway management.^[5] The lying-down left lateral position also has the added advantage of facilitating gravitational drainage of oral secretions.

Fiberoptic bronchoscope was successfully used for securing the airway in a near-obstructive vallecular cyst during “EEEE” phonation and tongue protrusion, which provided a clear view into the glottis reported in the literature.^[6]

Awake fiberoptic bronchoscopic intubation was considered the first option because the chances of successful intubation were higher before excessive bleeding and edema occurred. The success of AFOBI

depends on the preoperative topicalization of the airway, meticulous planning of the anticipated difficult airway, and patient consent for the awake fiberoptic procedure.^[7] Recumbent intubation seems to be more complicated, particularly when the patient is awake. Anesthesiology trainees found that tracheal intubation on a mannequin was more difficult in the left lateral decubitus position than in the supine position.^[8] However, the left position was prioritized over the right position for intubation to prevent the laryngeal structure from collapsing.^[9] Awake extubation is as important as awake intubation in cases of large thyroid swelling over an extended period. Chronic large thyroid swelling causes erosion of the tracheal cartilage and predisposes patients to tracheomalacia after extubation. Preoperative computed tomography studies will enable the assessment of the degree of tracheal cartilage erosion. However, there were no such findings in our case; thus, we decided to proceed with gradual awake extubation.

Conclusion

We propose that the left lateral decubitus position, along with an adjunct maneuver of pulling traction forward on the tumor by an assistant, may be the best maneuver for awake fiberoptic intubation in cases of large thyroid swelling causing airway compression.

Conflict of interest statement

The authors declare no conflict of interest.

Author contributions

Ahmad S, Kumar N, and Kumar A formulated the study idea and wrote the first draft of the manuscript. Palasevam S collected case data and revised the manuscript.



Figure 2. Computed tomography scan of the neck shows a large lobulated heterogeneously nonenhancing area along the right side of the neck arising from the lower pole of the right lobe of the thyroid gland extending from the upper border of the third cervical (C3) to the second thoracic (T2) vertebral body.

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Ethical approval of studies and informed consent

The study followed the principles of the Declaration of Helsinki as revised in 2013. The institution's ethics committee states that the publication of case reports is exempt from ethical approval. Written informed consent was obtained from the patient for the use of her data and for the publication of the data that appear in this article.

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