Case Report

Indian Journal of Anesthesia and Analgesia
Volume 11 Number 2 April - June 2024
DOI: http: //dx.doi.org/10.21088/ijaa.2349.8471.11224.5

Challenging Airway Management in a Case of Massive Nodular Colloid Goitre: Case Report

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How to cite this article:
Arale Sangappa Sadvi, Ravi Madhusudhana. Challenging Airway Management in a Case of Massive Nodular Colloid Goitre: Case Report. Ind J Anesth Analg. 2024; 11(2) 83-86.

Abstract

Introduction: The term "goitre" describes an abnormal thyroid gland enlargement. Goiter prevalence ranges from 80% in iodine-deficient regions and 1%–4% in areas of affluent countries with abundant iodine. We anaesthesiologist face airway challenges while treating patients with severe neck swellings because tracheal intubation failure can have serious consequences for morbidity and mortality.

Case Report: In this case we present a 40-year-old male which is a case of colloid goitre posted for total thyroidectomy. Pre anaesthetic evaluation done, shifted to OT, pre-medicated with standard drugs. Difficult bag and mask ventilation were faced during pre-oxygenation. Hence Awake VLS was done to visualize vocal cords. Patient was induced with standard drugs and VLS with Bougie assistance airway was secured with ET tube 8mm ID. Intraoperative vitals stable, Patient reversed after assessing all the extubation criteria. Patient extubated and shifted to post-op ward. Patient got discharged under stable condition on POD 14.

Conclusion: In patients with goitres, difficult airways can be managed using a variety of strategies. We can proceed with conventional airway management if all the airway examination is within normal limits, and there is no tracheal compression or deviation. Awake intubation with video laryngoscopy is an ill-defined notion that largely depends on individual preference. In this case we have managed a case of neck swelling with awake VLS intubation.

Keywords: Awake Intubation; Difficult Airway; Nodular Goitre.

Key Messages: Any neck swellings pose a challenge for the anaesthetist interms of airway management and also it is shared airway with the surgeon. Awake intubation is preferred, it could be a blind nasal approach or with aid of fibreoptic intubating bronchoscope. In our patient we went ahead with awake video laryngoscope with mild sedation. Any long standing neck swellings over the trachea pose complication like Tracheomalacia for which Leak Test has to be done and if found positive a Tracheostomy may be necessary for the patient.

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Received on: 12.03.2024

Accepted on: 22.06.2024

INTRODUCTION

The term "goiter" describes an abnormal thyroid gland enlargement. Goiter prevalence ranges from 80% in iodine deficient regions and 1%–4% in areas of affluent countries with abundant iodine. We anesthesiologist face airway challenges while treating patients with severe neck swellings because tracheal intubation failure can have serious consequences for morbidity and

mortality. Additionally, tracheal intubation and facemask ventilation may become problematic due to full airway closure, which could result during induction of general anesthesia. Tracheomalacia in these patients is another issue because it might make intubation and extubation more difficult. Long-standing neck mass pressure on the trachea may have resulted in necrosis of some tracheal wall tissue, which can induce complete collapse of the airway when muscles relax.[1]

In patients with goiters, difficult airways can be managed using a variety of strategies. We can proceed with a conventional airway management if the thyroid edema is not too large, the airway evaluation is normal, and there is no tracheal compression or deviation.[2]

A significant development in the history of anesthesia for the management of challenging airways is the development of the video laryngoscope and awake intubation technique. Here, we discuss how to handle a case of a massive, multinodular goiter that required challenging intubation and extubation.[1]

CASE REPORT

A 40-year-old male with history of swelling over the right side of neck since 4 years which was initial of lemon size gradually progressed with not aggravating and reliving factors. Patient had no difficulty in breathing or swallowing, alteration of voice or weight loss or weight gain. No history of any breathless or cold or heat intolerance no trembling of legs. He is also not a known case of any comorbidities with no previous history of any surgeries or previous blood transfusion. On examination Vitals were stable with PR: 75 bpm, BP: 130/80mmhg, RR 18cpm, Spo_2 98% on room air. Systemic Examination was normal. Local examination Globular swelling of size 15*20 cms situated on right side of neck extending laterally up to posterior border of sternocleidomastoid muscle right side, medially up to anterior border of left side sternocleidomastoid muscle, superiorly crossing hyoid bone, inferiorily 1 cms below sternal notch (shown in Fig. 1). Surface of the swelling was smooth, skin over the swelling was normal, no pulsations over the swelling moved with degulation, no movement of protrusion of tongue, lower border of the swelling not seen on protrusion of tongue no prominent veins in the swelling or neck. On Indirect Laryngoscopy bilateral vocal cords mobile, swelling seen on the right side of posterior of pharyngeal wall, tubular epiglottis. Airway examination: teeth intact, no dentures, mouth opening two fingers unrestricted neck movement with MP 4. Thyromental distance and thyromandibular distance couldn't not be assessed as there was swelling in the right side of neck. Routine investigations were done and were within normal limits. FNAC of thyroid Cytology showed nodular colloid goitre and CT scan showed reactive cervical lymphadenopathy. Ultrasound of neck large well defined heterogenous hyperechoic predominantly solid lesion with few hemorrhagic, cystic and necrotic areas within arising from right lobe TRIADS III lesion. Lateral neck X-ray was also done perioperatively. (Fig. 2)

Fig. 1: Shows the Size of the swelling in Preoperative Period in sitting position

Fig. 2: Shows Lateral Neck X- Ray of the Patient

Patient was shifted to Operating room and multipara monitors attached vitals checked fluids initiated. Patient was premeditated with Inj. Glycopyrrolate 0.2mg, Inj. Fentanyl 100 mcg. During preoxygenation there was difficulty in bag and mask. Hence Awake Video Laryngoscopy was done to visualize vocal cords. Then patient was induced with Inj. Propofol 100mg then muscle relaxation with Inj. Succinylcholine 100mg was given and Video Laryngoscopy with Bougie assistance Endotracheal tube of 8mm ID airway was secured. After Confirming the Endotracheal tube position by five-point auscultation and $ETCO_2$. Surgery began. Intraoperative Patient was maintained with inhalation agents of (oxygen: Nitrogen: Isoflurane: 2:2:1 to 0.2) and muscle relaxation with Inj. Vecurronium 1mg given. Patient vitals monitored and stable. Before reversing the patient mobilisation of vocal cords was observed by direct laryngoscopy then patient reversed with Inj. Neostigmine 2.5mg and Inj. Glycopyrrolate 0.4mg after assessing all the extubation criteria. Patient extubated and shifted to post-operative ward for observation. (Fig. 3)

Patient got discharged under stable condition on POD 14.

Fig. 3: Shows the size of the swelling on Supine Position which was difficult to bag and mask

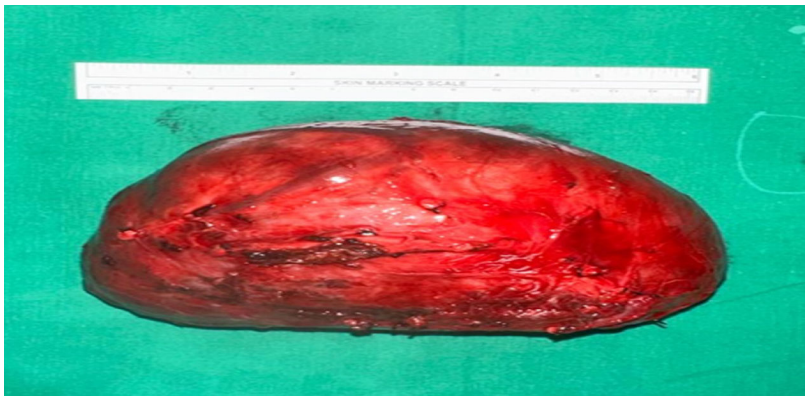

Fig. 4: Shows the mass which was removed from the patient

DISCUSSION

Massive thyroid enlargements present a significant problem to anaesthesiologists. The WHO has categorized goiters according to size, with Class 0 being a palpable mass within the neck structure, Class I being visible, palpable, and undermining the neckline's curves, and Class II being a very large goiter with retrosternal extension that causes tracheal deviation, tracheal compression, and oesophageal compression. Our patient has goiter that is classified as Class III.[4] Substernal components are present in up to 45% of goiter patients. Grade I retrosternal goiter is defined as being above the aortic arch, Grade II as being between the aortic arch and the pericardium, and Grade III as being below the right atrium. When a goiter is large and retrosternal, it seriously threatens the airway because it causes tracheal compression and deviation in addition to other airway structures being compromised. In a research published in 2004, Bouaggad et al. examined the likelihood of challenging tracheal intubation during thyroid surgery.[5] They found that tracheal intubation was simple in 36.9% of instances, mildly challenging in 57.8% of cases, and difficult in 5.3% of patients. (Fig. 4)

In their study, Bouaggad et al. found that tracheal deviation, compression, the presence of dyspnea, Mallampati Grades III and IV, and neck mobility of less than 90 degrees are associated with an increased frequency of difficulty during endotracheal intubation. All of these requirements were met in our case. Failure to intubate can result in morbidity and mortality, thus it should be assessed ahead, and intubation options should be prepared.

CONCLUSION

An enlarged thyroid gland that results in tracheal deviation, compression, or both may be the cause of intubation difficulty. It is difficult for the anesthesiologist to perform tracheal intubation on a patient who has tracheal deviation or compression.

In patients with goiters, difficult airways can be managed using a variety of strategies. Awake intubation with video laryngoscopy is an ill-defined notion that largely depends on individual preference.

Conflict of Interest: Nil

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