



NAVIGATING AIRWAY CHALLENGES : ANAESTHETIC MANAGEMENT OF A CASE OF AN UNANTICIPATED RESPIRATORY DISTRESS FOLLOWING TOTAL THYROIDECTOMY

Dr. Rajkumar M*	Post Graduate Resident, Department Of Anaesthesiology, Sree Balaji Medical College And Hospital, Chennai, India *Corresponding Author
Dr. Raj Murugan	Assistant Professor, Department Of Anaesthesiology, Sree Balaji Medical College And Hospital, Chennai, India
Dr. Krishnagopal Vinod	Professor, Department Of Anaesthesiology, Sree Balaji Medical College And Hospital, Chennai, India

ABSTRACT Post thyroidectomy airway complications are due to several causes. Sometimes the uncommon cause may surprise us as a common cause. Here we report a case of 71 year old female patient diagnosed with papillary carcinoma thyroid who underwent total thyroidectomy with modified radical neck dissection. Post extubation, the patient developed stridor and after few minutes dyspnea necessitating intensive airway management. This report highlights the challenges & strategies in managing such a condition & underscores the importance of vigilant monitoring, timely intervention in the perioperative period.

KEYWORDS : Enlarged thyroid, Post Total thyroidectomy, Respiratory distress, tracheomalacia, NIV, Mechanical ventilation.

INTRODUCTION:

The overall airway complications post-total thyroidectomy has an incidence of 12.8%.¹ Post operative respiratory distress in patients with enlarged thyroid may occur due to pre-existing conditions and several perioperative factors that may weaken and damage the airway. They are prolonged pressure on airway by the enlarged thyroid, recurrent laryngeal nerve palsy, local hematoma, laryngeal edema, drug recovery, inadequate reversal, hypocalcemia and tracheomalacia. If not attended on time it may affect the patient's quality of life and may result in morbidity and even mortality.

Case report:

71 year old female, a known case of Type 2 Diabetes mellitus, Hypertension of height 148 cm and weight 65 kg with BMI of 30.9 presented with swelling in front of neck for more than 2 years with no pressure symptoms. She was diagnosed as papillary carcinoma of left lobe of thyroid by FNAC. The CT findings showed enlarged thyroid left more than right and tracheal deviation to the right which was evident in the preoperative chest x ray also. The patient was planned to undergo total thyroidectomy with modified radical neck dissection. Laboratory findings showed euthyroid state and other investigations were within normal limits. Patient was having buck tooth with MPC of grade 3 with anticipated difficult airway. Preoperatively ENT opinion was obtained for the examination of vocal cord which is free and mobile in videolaryngoendoscopy. Patient was explained about the procedure, plan of anaesthesia and the possible complications. Pre operative optimization of Diabetes was done with oral hypoglycemic agents and Hypertension by oral anti-hypertensive medications. After getting consent from patient with fasting of 8 hours, patient was shifted to OT with two wide bore iv lines. Standard ASA monitor connected and airway management cart kept ready. Patient was adequately pre oxygenated and premedicated with Inj. Glycopyrrolate 0.2 mg iv, Inj. Midazolam 1 mg iv and Inj. Fentanyl 2 mcg/kg iv. The patient was induced with Inj. Propofol 2 mg/kg iv and paralysed with Inj. Succinylcholine 100 mg iv. Using direct laryngoscopy, the visualised CL grade was 3, after applying external cricoid pressure over right side, CL grade became 2B. Patient was intubated with flexometallic endo tracheal tube 7.0 size in single attempt using stylet. The ET tube was fixed at 20 cm on the left side at the lip level after confirming bilateral equal air entry. Inj. Vecuronium 6 mg iv bolus given. Anaesthesia was maintained with Oxygen & Nitrous oxide of 2 litres/min each, Isoflurane at the flow rate of 1.4 % and Vecuronium of 1mg iv every 30 minutes. Inj. Morphine 7.5 mg im given as intraoperative analgesic. The procedure lasted for 4 hours with stable hemodynamic intraoperative period. Periodic CBG checkings showed values of 105 mg/dl and 129mg/dl respectively. The blood loss was around 300 ml and adequately replaced with crystalloids. Hourly urine output was adequate. The patient was reversed with Inj. Neostigmine 5mg + Inj. Glycopyrrolate 1mg iv. With thorough suctioning, the patient was extubated after adequate muscle power & tone and tidal volume. Patient was connected to 4 litres of oxygen/min via face mask with head up support. After few minutes, the patient became drowsy

but arousable and obeying commands. She developed noisy breathing and increased work of breathing. The patient was started desaturating, on auscultation bilateral expiratory stridor was present and hence O₂ support was increased. Inj. Hydrocortisone 200 mg iv stat given and nebulized with Levosalbutamol and Budesonide. As nerves are already preserved by surgeon during the surgery, possible clinical diagnosis of Tracheomalacia was made and patient was shifted to ICU. Patient was connected to NIV and reassessed after 2 hours. ABG and serum calcium sample was taken. Patient was having still increased work of breathing and ABG showed respiratory acidosis. Serum calcium value report found to be within normal limits. So the plan of reintubation was made. Hence the patient was reintubated with 7.0 size ET tube by using Inj. Fentanyl 100 mcg iv, Inj. Succinylcholine 100 mg iv. The ET tube was fixed at 20 cm at the lip level after confirming bilateral equal air entry. During the direct laryngoscopy, there was no vocal cord edema. The patient was connected to mechanical ventilation. Other appropriate and supportive measures were given including chest physiotherapy. Patient's breathing pattern and other parameters were monitored closely and improved well. Serial ABGs were done which showed recovery from respiratory acidosis. So a plan of extubation was made. ENT opinion was obtained to check for vocal cord mobility prior to extubation which was found to be mobile. Precautionary cuff leak test was made and there was a leak around the cuff. Hence the patient was extubated on post operative day 2. Post extubation, patient was encouraged with breathing exercises, incentive spirometry and other supportive measures. Patient was improved well and shifted out of ICU to ward on post operative day 4.

DISCUSSION:

Total-Thyroidectomy always poses perioperative airway challenges to anaesthesiologists. Tracheomalacia is a condition characterized by the collapse of the tracheal walls due to the weakening or softening of the tracheal cartilage which leads to significant airway obstruction. Post Total-thyroidectomy tracheomalacia should be anticipated in high risk patients like long standing goitre and thyroid malignancy since previous studies suggest incidence rate of 0% to 5.3 % of post thyroidectomy tracheomalacia and some studies showed even upto 10%.² Previous studies suggest that tracheal patency and vocal cord mobility can be checked using flexible bronchoscopy pre operatively and at the end of thyroid surgeries in spontaneous respiration before extubation. Some studies suggest prophylactic tracheostomy³ preoperatively and also tracheostomy during the end of thyroidectomy surgery especially in thyroid malignancies to avoid post extubation respiratory distress which may avoid reintubations and prolonged mechanical ventilation.⁴ Tracheostomy has more safety margin than prolonged intubation and reintubations because the former causes fibrosis and there may be early recovery from tracheomalacia but the latter will worsen tracheomalacia.⁵

Post thyroidectomy tracheomalacia can be successfully managed by predicting the pre operative risk factors and meticulous perioperative observation. Anecdotal evidences suggest few risk factors to predict

post total thyroidectomy tracheomalacia which can be taken into account. If more than 2 are present, anticipate tracheomalacia.⁶They are

- 1) Goitre for > 5 years
- 2) Retrosternal/Retrotracheal extension
- 3) Pre operative recurrent laryngeal nerve palsy
- 4) significant tracheal narrowing/deviation
- 5) Difficult tracheal intubation

But in our case only one factor was present and possible clinical diagnosis of tracheomalacia was made and managed meticulously. The management includes anticipating tracheomalacia ,keeping difficult airway management cart ready, immediate actions like prompt transport of the patient to ICU , ⁷NIV support to prevent tracheal collapse, elective ventilation, prophylactic/end of thyroidectomy tracheostomy, respiratory physiotherapy, breathing exercises, slow and careful feeding, control of infection by antibiotics and other supportive measures. Recent advances suggest tracheal stent placement and tracheopexy.

CONCLUSION:

This case underscores the importance of a proactive approach in managing unanticipated post total thyroidectomy respiratory distress caused by a rare but serious complication – Tracheomalacia. Early recognition and prompt interventions are crucial to prevent life threatening airway complications. A Multidisciplinary team effort is essential for successful management and patient outcomes.

REFERENCES

1. Ayandipo OO, Adigun TA, Afuwape OO, Afolabi AO, Daniel A: Airway complications and outcome after thyroidectomy in Ibadan: a 15 year review. Arch Med. 2016; 8:7
2. Findlay JM, Sadler GP, Bridge H, Mihai R. Post-thyroidectomy tracheomalacia: Minimal risk despite significant tracheal compression. Br J Anaesth 2011;106:903-6.
3. Hasegawa I, Boisselle PM, Raptopoulos V, Hatabu H. Tracheomalacia incidentally detected on CT pulmonary angiography of patients with suspected pulmonary embolism. AJR Am J Roentgenol 2003;181:1505-9
4. Jiang AG, Gao XY, Lu HY. Diagnosis and management of an elderly patient with severe tracheomalacia: A case report and review of the literature. Exp Ther Med 2013;6:765-8
5. Mayilvaganan S, Agarwal A. Management of post-thyroidectomy tracheomalacia. World J Endoc Surg. 2014 May;6(2):96-8.
6. Rahman GA. Possible risk factors for respiratory complications after thyroidectomy: an observational study. Ear, Nose & Throat Journal. 2009 Apr;88(4):890-2.
7. National Library of Medicine. Tracheomalacia (<https://medlineplus.gov/ency/article/007310.htm>). Accessed 12/6/2022.