

# A 50 Year old Female with a Large Multi nodular goitre and Kyphoscoliosis Posted for Total Thyroidectomy - Perioperative Challenges

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## Abstract

Thyroidectomy is reported the most common endocrine surgical procedure being carried out throughout the world. The challenges faced by an anesthesiologist during thyroid procedures are never ending, scenarios being ranging at any stage, be it preoperative, intra operative or post operative. Thyroid surgery mandates optimal preparation on one hand, while enlarged gland further adds to the anesthetic challenges with an anticipated difficult airway. Various other cardiac comorbidities add on to the difficulty. Thyroid storm in an inadequately prepared patient can occur due to various causes adding the burden on to the anesthesiologist. Complications such as hemorrhage, laryngeal edema, nerve palsies, tracheomalacia, tetany, pneumothorax etc. that develop postoperatively pose a challenge in the post operative recovery area. Our present review aims at a detailed analysis of the risks faced and challenges encountered during a successful administration of anesthesia in a 50 year old female Mrs. Kiran Sharma with a progressively increasing large multi nodular goiter posted for total thyroidectomy.

**Keywords:** Difficult airway; thyroidectomy; tracheomalacia; multi nodular goiter;

## Introduction

Thyroidectomy is the most common endocrine surgical procedure being carried out worldwide. Most of the patients that visit pre anesthetic check up clinic have deranged thyroid profile and various other co morbidities [1]. The potential challenge to an anesthetist being an anticipated difficult airway, retrosternal or mediastinal involvement, an enlarged gland pressing upon vital neck structures such as the oesophagus and the trachea, the close proximity of neck vessels to the operative surgical field etc [2]. Cardiac complications are equally challenging. Moreover, vascular complications are always a dreadful threat to both the surgeon and the anesthesiologist.

## Pre-op assessment

Our primary goal as an anesthesiologist in patients posted for thyroidectomy is to render the patient euthyroid. Apart from the hormonal profile, significant emphasis is laid on the risks associated with a potential difficult airway [3].

## History

A 50 year old female, Kiran Sharma came to surgical ops with chief complaints of a progressively increasing swelling of neck, diffuse on both the sides, associated with pain intermittently [4]. There was no associated discharge, breathlessness, dyspnoea, orthopnea, stridor or dysphagia specifically on assuming supine position. The patient was on tab Neomercazole 5mg OD. The patient has a past history of kyphoscoliosis and poliomyelitis, since birth for which she had been operated on her right lower limb. There was no other significant history. Such patients are specifically investigated about any symptoms related to autonomic dysfunction or any associated multiple endocrine neoplasia (MEN) [5].

## Clinical and Physical Evaluation

Our main aim was to find out the presence or absence of signs related to thyroid dysfunction (hypo or hyperthyroidism) and to rule out other cardio, respi or endocrinological abnormalities. Size of the swelling was examined and further evaluation was done with regard to consistency, duration and extent of enlargement. Gland was examined for any adherence to the underlying structures or hardness. Tests (Pemberton's) were carried to check for the retrosternal extension. Airway examination revealed a Mallampatti grade 4, neck movements slightly restricted (atlanto-axial extension), mouth opening adequate, neck-short, thyromental distance - adequate and inter-incisor gap was 3 fingers breadth [6].



**Figure 1 & Figure 2:** Patient with a large MNG intubated using a wire reinforced tube

Routine investigations were conducted. Hb was 11gm with a blood group of O -ve, white blood cell count was adequate, serum electrolytes (Na, K, Ca), RFT's (Urea, creatinine), chest x- ray, x-ray antero-postero and lateral view of neck, ECG were included in the investigations. Pulmonary Function Tests revealed mild restrictive pattern of airway disease.

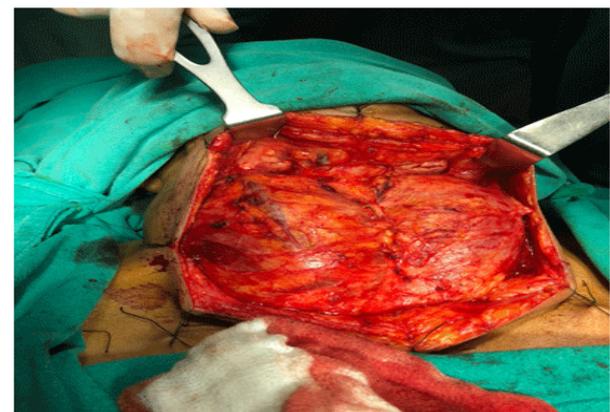
Thyroid Function Tests were conducted which revealed a TSH level of T3,T4. A detailed cardiological, endocrinological consultation was advised. Indirect laryngoscopy was carried out to check for vocal cord function (Figure 1 & 2).

### Pre op Preparation and Pre Medication

After obtaining a cardiological and endo consultation, the patient was advised to continue Tab Neomercazole alternate days in view of low TSH levels. Tab Propranolol 0.5mg was started in view of resting tachycardia and cardiac stability for the potential high risk of other complications like a trial fibrillation, exaggerated hypertension and thyroid storm. The same was advised to be continued till the day of surgery. A mild anxiolytic Tab alprazolam 0.5mg was advised bedtime, night before surgery. a proton pump inhibitor Tab Pantoprazole 40mg was advised in order to reduce gastric acidity. adequate blood was asked to be arranged and the patient was well hydrated preoperatively.

On the day of surgery, in the pre op recovery area, a large bore 16-G iv cannula was secured on the dorsum of hand, RL was started. Patient was adequately hydrated. OT room temperature was kept cool. Anti-Sialogauge dose of Inj Glycopyrrolate 0.1mg/kg body weight was administered in order to dry the secretions and clear up the airway. In the OT room, all the routine monitors (NIBP, ECG, spO2) were attached. Rolled sheets were placed below the shoulders of the patients in order to overcome difficulty in neck extension and achieve an adequate sniffing position. Eyes were covered with soft cotton pads. head up position is a desired feature as it drains the blood away from the surgical site due to gravity. General Anaesthesia using a wire reinforced endotracheal tube

(sizes ID 7,7.5 & 8) was planned [7]. Preoxygenation with 100% O<sub>2</sub> was commenced in order to enhance FRC and thus providing enough time to secure the access to difficult airway. Anesthesia was commenced using inducing agents Inj Propofol 2mg/kg body wt, Inj Fentanyl 1mcg/kg body wt. Inhalational Halothane 1-1.2% was started. Relaxation was achieved using 1.5mg/kg Inj Scoline & Inj Lignocaine was administered to blunt the sympathetic response to laryngoscopy and endotracheal intubation. Gentle laryngoscopy was done using conventional laryngoscopy with MAC blade 4 and patient was intubated using a wire reinforced Endotracheal tube railroaded on a stylet. Anesthesia was maintained with 33% and 66% O<sub>2</sub>:N<sub>2</sub>O and top up doses of Inj Rocuronium 0.05 - 0.1mg/kg. End tidal CO<sub>2</sub> was attached and the patient was closely monitored throughout the surgery (Figure 3).



**Figure 3:** MNG enlarged lobes

Urine output and temperature were closely monitored. Head up position is a desired feature as it drains the blood away from the surgical site due to gravity. The surgery went uneventful. Towards the end of the surgery Inj Ondansetron 4mg was given in

order to allay postoperative nausea vomiting. Before extubation direct laryngoscopy was done in order to look for any bleeding and vocal cord function was assessed for the proper functioning of the Superior laryngeal nerve. Extubation was done using Inj Neostigmine 0.5mg/kg body wt and Inj Glycopyrrolate 0.1mg/kg body wt. The patient was then shifted to surgical ward where all the vitals were monitored and surgical site was assessed for the next 24 hours.

## Conclusion

The perioperative morbidity in patients with thyroid disease can be greatly reduced by adequate preoperative preparation and optimization of physiological status of the patient with regard to his thyroid profile. Airway management in such patients poses unique challenges to the surgeon as well as anesthesiologist and one should be thoroughly prepared for any anticipated or unanticipated airway difficulty. In the immediate postoperative period, any incidence of hemorrhage leading to formation of hematoma can cause respiratory obstruction. Extreme caution has to be catered both by the surgeons and anesthesiologist for any possible incidence of any nerve injuries and palsies, hypothermia, tracheal collapse and tracheomalacia as well as hypocalcemia due to accidental injury to parathyroid glands and should be managed accordingly. Both during elective and emergency surgery, the cardiovascular system have to be meticulously examined as it bears the maximum brunt of deranged thyroid functional status.

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