

THYROID SWELLINGS AND AIRWAY PROBLEMS

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Abstract

Throughout the world, thyroidectomy is the most common endocrine surgical procedure being carried out. A prospective study among 43 patients with thyroid swellings has been conducted and the preoperative airway assessment with x-ray soft tissue neck revealed tracheal deviations in 16 patients and 8 of them had gross tracheal deviations which got improved postoperatively. 30% of patients got symptomatic improvement following thyroidectomy. Airway deformity in huge goitres can give rise to a difficult airway; in some cases, it leads to flexible bronchoscopic intubation. From the study, it is evident that preoperative airway assessment is imperative which helps in directing anaesthesiologists and to foresee dreadful complications.

Introduction

The enlargement of the thyroid gland is called a Goitre. Around 40 million people throughout the Indian subcontinent are affected by Endemic goitres due to Iodine deficiency. The thyroid gland encircles the trachea and oesophagus. Compression of these structures can occur due to goitre. Initially, it grows anteriorly as cervical goitre, which is the pathway of least resistance. Posterior growth is restricted by the trachea and vertebra. Later, the growth occurs inferiorly as substernal goitres. The progressive nature of the disease can cause severe tracheal deviations and airway distress. In cases of huge goitre with major respiratory compromise, it is always a serious situation as the patient is at risk of sudden asphyxiation before an operation can be performed, and anaesthetic and surgical difficulties are greater.(1,2)

Aims and Objectives

To investigate goitres and problems dealing with the airway of patients with thyroid enlargement

Materials And Methods

Study design: Hospital-based Prospective Study for a period of 12 months (April 2021- March 2022)

Sample size: 43 patients

Methods of study

- In patients with thyroid swellings, Roentgenography of soft tissue neck, anteroposterior and lateral views were used to identify the tracheal deviations and airway compressions
- Euthyroid patients are selected for the study

Exclusion criteria

1. Patients with previous neck surgeries
2. Patients with previous thyroid surgeries
3. Patients with deranged TFT
4. Cases with Neuromuscular disorders

No of patients with thyroid swellings=43	No of patients	Symptoms and signs improvement postoperatively
Ways with tracheal deviations	16	Improved
Gross deviation	8	Improved
Symptoms of mild choking (Aggravated on recumbency)	9	Improved
Cough	3	Improved
Stridor	1	Improved
Hoarseness	Absent	-

Histopathology	No. of patients	Tracheal deviations
Colloid goitre	37	16
Papillary carcinoma	4	nil
Follicular carcinoma	2	nil



Fig1: patient with a huge goitre



Fig2: intraoperative picture



Fig 3: X-ray soft tissue neck showing tracheal deviation



Fig 4: intraoperative picture of multinodular goitre

Discussion

Airway deformity constitutes an aggravating factor for difficulty in direct laryngoscopy. Prolonged compression of the trachea by huge goitres leads to tracheal deviation, collapse or tracheomalacia. Long-standing goitres cause pressure over the trachea and there will be necrosis of tracheal rings. Collapse mostly occurs in the anteroposterior direction. Usually, the thyroid tissue will be supporting the trachea. Postoperatively, this support will be lost leading to tracheomalacia or tracheal collapse.(3,4)

Due to slow development & patient adaptation, tracheal compression often remains unrecognised. In our study, deviation of the trachea is not causing any symptoms in some of the patients. Sudden deterioration in patients with a long-standing history of minimal compressive symptoms are occurring secondary to intrathyroidal haemorrhage or upper respiratory tract infections. Gradual deterioration may be due to retrosternal extension as well.(3-6)

According to Poisseulle's law, the rate of airflow is proportional to the fourth power of the radius of the trachea. Thus, there will be considerable improvement in air flow rate, following the expansion of the tracheal lumen. Our results are favourable with this physical principle which is obtained postoperatively.(5)

Other problems associated with huge goitres and with retrosternal extensions include large volume of blood loss, prolonged operating time, postoperative tracheomalacia, superior venacaval syndrome, cerebral hypoperfusion as a result of arterial compression, thyrocervical steal, phrenic and recurrent laryngeal nerve palsies, Horner's syndrome, pleural effusion, chylothorax, pericardial effusions etc.(6,8)

For huge goitres with airway compromise, tracheostomy under local anaesthesia is contraindicated in most cases and under general anaesthesia, it is not preferred as there are chances of profuse

bleeding and due to deviation of the trachea, it will be extremely difficult to locate. Surgical decompression will be the treatment of choice in such cases.

In the immediate postoperative period, if the patient develops stridor, it may be due to laryngeal oedema, hematoma formation, or laryngospasm; here tracheomalacia should be ruled out with fiberoptic endoscopy. In huge goitres, postoperatively, an intubation tube can be kept in situ as a precaution, until awake extubation is possible under close observation.

Thyroidectomy for huge goitre also demonstrates substantial improvement in tracheal anatomy and this correlates with the increase in Health-Related Quality of Life. Patients with the largest compression also experience the most noticeable improvements in Impaired Daily Life.(5) The assessment of the airway before thyroidectomies can anticipate possible complications; proper management of such complications and thereby reduce the incidence of prolonged hospital stay or ICU care. Airway management in such patients poses unique challenges and one should be thoroughly prepared for any anticipated or uncertain airway difficulty.(9,10)

Conclusion

- From the study, it is evident that preoperative airway assessment is essential for the prediction of difficult airway, which helps in directing anaesthesiologists and to foresee dreadful complications like tracheomalacia
- It is also evident that long-standing huge benign thyroid lesions are more serious than carcinomas with short duration for causing airway symptoms

Consent

Written and informed consent was obtained from the patients regarding the use of the patients' pictures and the reports of the investigations that were conducted.

Conflict of Interest: The authors declare no conflicts of interest during the course of the making of this paper.

Ethical Clearance: Ethical clearance was taken

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