

# Study of Complications Following Thyroidectomy for Benign Thyroid Lesions in Rajasthan Population

Gaurav Kataria<sup>1</sup>, Aditi Saxena<sup>2</sup>, Hariom Gautam<sup>3</sup>, Narpat Singh<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of ENT, Government Medical College and Bangur Hospital, Pali, Rajasthan, India,

<sup>2</sup>Senior Demonstrator, Department of Pathology, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan, India, <sup>3</sup>Senior Resident, Department of ENT, Government Medical College and Bangur Hospital, Pali, Rajasthan, India, <sup>4</sup>Senior Medical Officer, Department of ENT, Government Medical College and Bangur Hospital, Pali, Rajasthan, India

## Abstract

**Background:** Surgery of the thyroid gland takes place in the area of complicated anatomy in which a number of vital physiological functions and special senses are controlled. Moreover, variations of blood supply to the thyroid are one of major complications during and after surgery.

**Materials and Methods:** Fifty patients having cytological and radiological evidences of benign thyroid disease were studied. Every patient underwent thyroid-stimulating hormone, T3, T4, and ultrasound of the neck, aspiration of fluid for cytological study from the suspected area. Computed tomography scan in tracheal compression patients, indirect laryngoscopy was done under pre-operatively to assess the position of vocal cords. Thyroidectomy was done general anaesthesia and administered by endotracheal intubation. Flexible strobolaryngoscopy was done when indirect laryngoscope was inconclusive.

**Results:** Seven (14%) hyperthyroidism, 13 (26%) retro-sternal extension, 3 (6%) tracheal compression, 16 (32%) firm feel, and 11 (22%) adhesion. Anatomical variations were - 8 (16%) anterior relation to inferior thyroid artery, and 1 (2%) had palsy, 13 (26%) had branching of recurrent laryngeal nerve (RLN), 2 (4%) had palsy, 29 (58%) had RLN close to anterior entry, and 3 (6%) had palsy. Vocal cord palsy 2 (4%) had retro-sternal extension, 2 (4%) had firm gland, and 3 (6%) adhesion.

**Conclusion:** The present pragmatic surgical study has proved that meticulous surgical dissection and thorough knowledge of the anatomy of the thyroid can minimize the post-surgical complications.

**Key words:** Inferior thyroid artery, Recurrent laryngeal nerve, Strobolaryngoscopy, Vocal cords

## INTRODUCTION

Thyroid disorders such as thyroid cancer, benign multinodular goitre, toxic goitre and Grave's disease are very common in adults of both sexes.<sup>[1]</sup> Despite advances in conservative management, treatment often involves surgery. Nowadays thyroidectomy is relatively safe, surgical procedure is associated with <5% morbidity.<sup>[2]</sup> The surgical procedure itself demands both perfect anatomical knowledge of the neck and meticulous surgical technique.

However, there is some debate about the suitability of thyroidectomy in the treatment of certain diseases because of risk factors.<sup>[3]</sup> Most significant operation complications included injury to recurrent or superior laryngeal nerve. Devascularisation, trauma and inadvertent removal of parathyroid glands will probably result in hypothyroidism and hypocalcaemia; however, the cause of post-operative hypocalcaemia is multifactorial and transient or permanent.<sup>[4]</sup> Meticulous identification of anatomy and preservation of blood supply and nerve supply will be a successful surgery but complications are unavoidable due to anatomical variations of neuro-vascular supply to the thyroid gland and neighbour structures of the neck.

The aim of this study is to evaluate the various complications and risk factors because the present study is likely to provide information which could be challenge to clinicians and surgeon as well.

### Access this article online



www.surgeryijss.com

Month of Submission : 06-2021

Month of Peer Review: 07-2021

Month of Acceptance : 08-2021

Month of Publishing : 10-2021

**Corresponding Author:** Aditi Saxena, Department of Pathology, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan, India.  
E-mail: dr.ukm1991@gmail.com

## MATERIALS AND METHODS

Fifty patients regularly visiting to ENT department of Government medical college and Bangur hospital Pali, Rajasthan-306401 were studied.

### Inclusive Criteria

Patients having clinical and cytological evidence of benign disease of the thyroid gland were selected for the study.

### Exclusion Criteria

Patients having malignancy of thyroid, having recurrent goitre cytological suspicion of malignancy and immune-compromised patients were excluded from study.

### Methods

Every patient underwent clinical examination followed by thyroid hormonal assay (thyroid-stimulating hormone, T3, T4) ultrasound of the neck. Aspiration of cytology was done from suspicious area. Computed tomography scan was taken in the tracheal compression; indirect laryngoscopy was done for pre-operative assessment of vocal cords.

Thyroidectomy was done under general anaesthesia administered by endotracheal intubation. All patients underwent direct laryngeal examination after extubation and indirect laryngoscopy in the post-operative period. Flexible stroboscopy was done when indirect laryngoscopy was inconclusive. The patients who were found to have defective vocal cord movements were reviewed every month for 6 months. Serum corrected calcium was estimated at 6 am on post-operative days and hypocalcaemia is defined as serum corrected calcium level <8.5 mg/dl. Patients with hypocalcaemia were followed for 6 months with monthly estimation of serum corrected calcium.

The clinical manifestations considered to influence the rate of complications were the presence of tracheal compression, Mediastinal extension and hyperthyroidism. Intra-operative features included consistency of goiter, adhesion to the parathyroid soft tissue, type of external division of superior laryngeal nerve, course of recurrent laryngeal nerve (RLN) and its relation to inferior thyroid artery (ITA) and the number of parathyroid glands identified and preserved. The consistency of the gland was recorded based on the subjective assessment of the surgeon and graded as firm when the goiter was not yielding to pressure and difficult to refract medially.

The duration of the study was January 2019 to March 2020.

### Statistical Analysis

Complications of gland following benign thyroid, and anatomical variations were classified with percentage.

The statistical data were analyzed in SPSS software. The ratio of females and males was 2:1.

## OBSERVATION AND RESULTS

Table 1: Study of various complications in benign. Thyroid 7 (14%) hyperthyroidism, 13 (26%) retro-sternal extensions, 3 (6%) tracheal compression, 16 (32%) firm feels, and 11 (22%) adhesion.

Table 2: A study of risk of palsy due to anatomical variations 8 (16%) anterior relation to ITA, 1 (2%) had palsy, 13 (26%) had branching of RLN and 2 (4%) patients had palsy, 26 (58%) had RLN close to the anterior entry, and 3 (6%) had palsy.

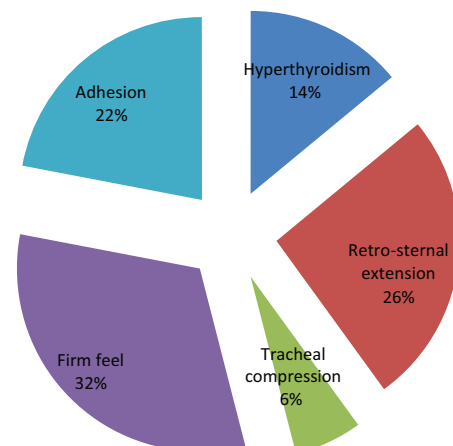
Table 3: Study of vocal cord palsy in different clinical manifestation – 7 (14%) had hyperthyroidism, 13 (26%) had retro-sternal extension and 2 (4%) had vocal cord palsy, 3 (6%) had tracheal compression, 17 (34%) had firm gland and 2 (4%) had vocal cord palsy, 10 (20%) adhesion of thyroid gland, and 3 (6%) vocal cord palsy.

## DISCUSSION

The present study of complications following thyroidectomy for benign thyroid lesions in Rajasthan Population. Complications of benign thyroid gland

**Table 1: Study of complication of benign thyroid gland**

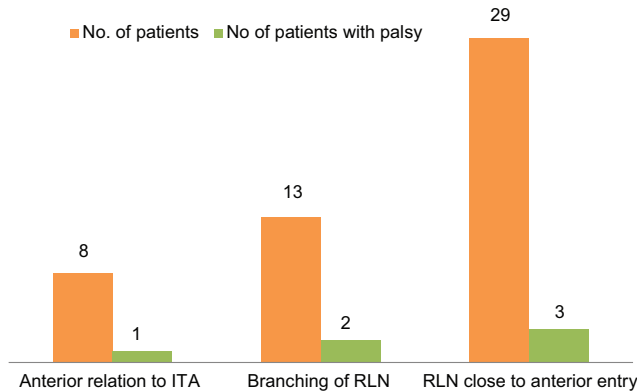
Complications	No. of patients (50)	Percentage
Hyperthyroidism	7	14
Retro-sternal extension	13	26
Tracheal compression	3	6
Firm feel	16	32
Adhesion	11	22



**Table 2: Study of risk of palsy due to anatomical variations**

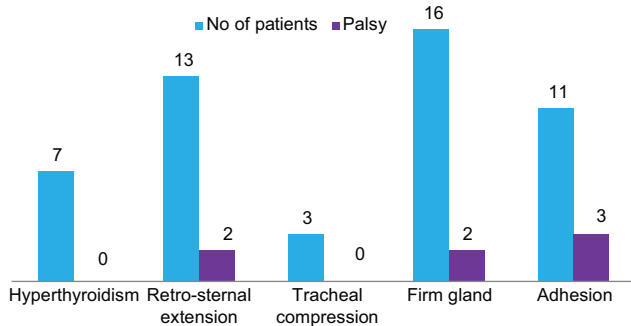
Anatomical Variations	No. of patients (%)	No of patients with palsy (%)
Anterior relation to ITA	8 (16)	1 (2)
Branching of RLN	13 (26)	2 (4)
RLN close to anterior entry	29 (58)	3 (6)

ITA: Inferior thyroid artery, RLN: Recurrent laryngeal nerve



**Table 3: Study of vocal cord palsy in different clinical manifestations with vocal cord**

Clinical Manifestation	No of patients (%)	Palsy (%)
Hyperthyroidism	7 (14)	--
Retro-sternal extension	13 (26)	2 (4)
Tracheal compression	3 (6)	--
Firm gland	16 (32)	2 (4)
Adhesion	11 (22)	3 (6)



were 7 (14%) hyperthyroidism, 13 (26%) retro-sternal extension, 3 (6%) tracheal compression, 16 (32%) firm feel, and 11 (22%) adhesion [Table 1]. Risk of palsy due to anatomical variations – 8 (16%) anterior relation to ITA and 1 (2%) had palsy, 13 (26%) branching of RLN and 2 (4%) had palsy, 29 (58%) had RLN was close to anterior entry [Table 2]. In the study of vocal palsy, 2 (4%) due to retro-sternal extension, 2 (4%) due to firm thyroid gland, and 3 (6%) had adhesion of gland

[Table 3]. These findings are more or less in agreement with previous studies.<sup>[5-7]</sup>

Most common post-surgical complications include hypocalcaemia following total thyroidectomy. Complications can be life-threatening if not diagnosed and treated properly.

Retro-sternal extension increase difficulty in thyroidectomy and may result into hypocalcaemia.<sup>[8]</sup> The patients with thyroiditis had hypocalcaemia. This could be due to the presence of adhesions. Majority of the patients had Graves’s disease, colloid goiter and oedema. Although majority of the cases are temporary and correct themselves over time, most of them still need calcium supplementation to prevent or treat the symptoms associated with hypocalcaemia (ranged from 1% to 4% even in unilateral lobotomy).<sup>[9]</sup> It is also reported that some surgeons administrativeal calcium supplements as a part of routine post-operative management. This may mask the immediate onset of post-operative hypocalcaemia, tending to deflate overall incidence immediately diagnosed post-operative hypoparathyroidism.

It is believed that injury to RLN is either temporary or permanent occurred during total thyroidectomy often have more advanced diseases.<sup>[10]</sup> Hence a rate of unilateral or bilateral vocal cord palsy has to be predicted meticulously.

### SUMMARY AND CONCLUSION

In the present study, it was observed that transient hypocalcaemia and vocal cords palsy are common complications of total thyroidectomy. Hyperthyroidism seems to have an increased predisposition for hypocalcaemia. The presence of adhesions and retro-sternal extension predisposes to post-operative hypocalcaemia and vocal cord palsy. Identification of parathyroid glands, proper anatomical knowledge of neck structures will minimise the risk of injury to RLN and ITA.

This research paper was approved by Ethical Committee of Govt. Medical College and Bangur hospital Pali, Rajasthan-306401.

### REFERENCES

1. Barczynski M, Kanture KA. Total thyroidectomy for benign disease; is it really worth while? *Ann Surg* 2011;254:724-9.
2. Ho TW, Shaheen AA. Utilization of thyroidectomy in benign disease. *Am J Surg* 2011;201:570-4.
3. Gough JR, Wilkinson D. Total thyroidectomy for management of thyroid disease. *World J Surg* 2000;24:962-5.
4. Bron LP, O’Brien CJ. Total thyroidectomy for clinically benign disease of thyroid gland. *Br J Surg* 2004;91:569-74.

5. Canaris GJ, Manowitz NR. Thyroid disease prevalence study. *Arch Int Med* 2000;160:526-34.
6. Bhattacharya N, Fried MP. Benchmarks for mortality, morbidity and length of stay head and neck surgical procedures. *Arch Otolaryngol Head Neck Surg* 2001;127:128-32.
7. Mishra A, Agarwal G. Safety and efficacy of total thyroidectomy in hands of endocrine surgery trainees. *Am J Surg* 1999;178:377-80.
8. Kihara M, Yokomise H. Recovery of parathyroid functions after total thyroidectomy. *Surg Today* 2000;30:333-8.
9. Wilson RB, Erskine C. Hypo-magnesia and hypocalcaemia after thyroidectomy; prospective study. *World J Surg* 2000;24:722-6.
10. Prim MP, Deigo DE. Factors related to nerve injury and hypocalcaemia in thyroid gland surgery otolaryngology. *Head Med Surg* 2001;124:111-4.

**How to cite this article:** Kataria G, Saxena A, Gautam H, Singh N. Study of Complications Following Thyroidectomy for Benign Thyroid Lesions in Rajasthan Population. *IJSS Journal of Surgery* 2021;7(5):40-43.

**Source of Support:** Nil, **Conflict of Interest:** None declared.