



## Incidence of Recurrent Laryngeal Nerve Injury in Total Thyroidectomy Done for Multinodular Goitre

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### ABSTRACT:

**Objectives** - To study the incidence of recurrent laryngeal nerve (RLN) palsy in Total thyroidectomy done for multinodular goitre. Surgical safety of total thyroidectomy in Multinodular goitre and type of vocal cord paralysis studied. Voice changes in immediate post-operative period and within three weeks following total thyroidectomy are assessed.

**Materials & Methods:** A prospective, longitudinal and an observational study. Patients between 18 and 65 years of age with multinodular goitre considered for study. Study conducted in hospitals attached to Kasturba Medical College, Mangalore. Pre op evaluation indirect laryngoscopy (IDL) to visualise B/L vocal cord movements was done. Postoperative voice changes and vocal cord mobility noted in immediate post op, post-operative day 3 and 3 weeks following surgery.

**Results:** During the study period 76 patients underwent total thyroidectomy for multinodular goitre. In the current study percentage proportion of hoarseness observed in total thyroidectomy done for Multinodular Goitre out of 76 subjects was 14.47% (11 patients). Unilateral palsy noticed by abnormal vocal cord movements in IDL (indirect laryngoscopy) was noted in 2 subjects out of 76 patients. Percentage proportion of temporary Recurrent Laryngeal Nerve Paralysis (RLN paralysis) presented in total thyroidectomy done in Multinodular Goitre out of 76 subjects was 2.6% (2 patients) while permanent paralysis incidence was nil. None of study subjects had stridor or laryngeal obstruction requiring tracheostomy.

**Conclusion:** Total Thyroidectomy done for Multinodular Goitre is a safe procedure with minimal incidence of recurrent laryngeal nerve injury. Total Thyroidectomy for Benign Multinodular Goitre can be done as procedure of choice in all patients with minimal risks and nil recurrence rates.

**Keywords:** Multinodular goitre, total thyroidectomy, IDL and recurrent laryngeal nerve paralysis.

### I. INTRODUCTION

Multinodular goitre (MNG) is described as an enlargement of the thyroid gland with increase in volume along with formation of nodules. Surgery may be indicated in benign multinodular goitre for compressive symptoms like dysphagia and shortness of breath, suspected malignancy, recurrence and cosmetic concerns.<sup>1,2</sup> As one of the most commonly performed endocrine surgeries, thyroidectomy needs to be assessed for its safety and to avoid disabling complications. Bilateral subtotal thyroidectomy is the surgical option in MNG to avoid complications like hypoparathyroidism and recurrent laryngeal nerve palsy which are associated with total and near total thyroidectomy.<sup>7</sup> However during last few years a more aggressive approach has become the trend in the surgery for benign multinodular goiter.<sup>1,2,3.</sup>

### II. MATERIALS AND METHODS

Study design: An observational prospective study

Sample size: Time bound observational study

Study period: May 2014 – August 2016

Study centre: Kasturba Medical College Hospital, Attavara, Mangalore

Government Wenlock Hospital, Mangalore

Kasturba medical college hospital, Ambedkar circle, Mangalore

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**Inclusion criteria:**

1. Patients of 18-65years of age undergoing total thyroidectomy for multinodular goitre
2. Both males & females cases

**Exclusion criteria:**

1. Patients without consent for study
2. Patient with malignancy in multinodular goitre
3. Patients <18 years and >65 years of age
4. Patients undergoing other forms of surgery for multinodular gaiter like subtotal and hemi thyroidectomy

**Application methodology**

Pre-operative vocal cord evaluation of vocal cord palsy/movements were performed on these patients  
Pre op evaluation indirect laryngoscopy (IDL) to visualise B/L vocal cord movements Postoperative change in voice or hoarseness Postoperative assessment of vocal cords

- a. During extubation
- b. Post-operative day 3
- c. 3 weeks later surgery

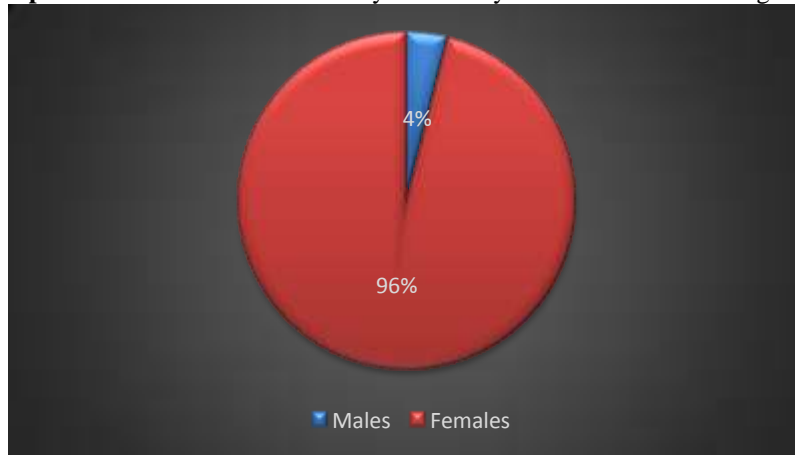
**III. RESULTS**

Proportion and clinical characteristics of study subjects with laryngeal nerve palsy in total thyroidectomy done for Multinodular Goitre:

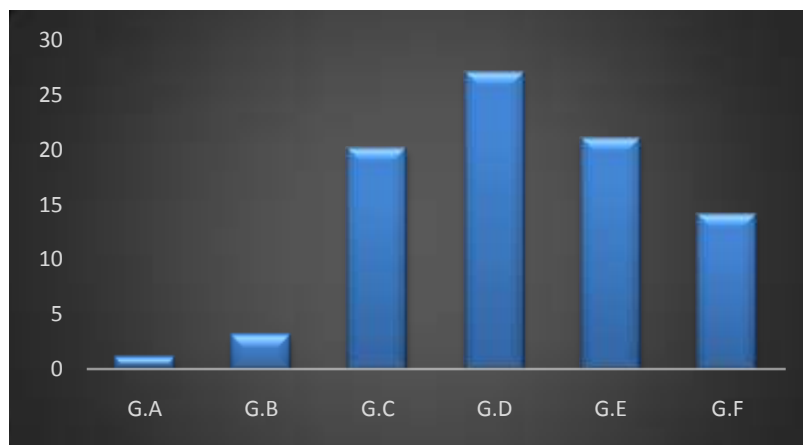
During the study period 76 patients underwent total thyroidectomy for multinodular goitre. In the present study among the cases operated, 73 were females (96.05%) and 3 were males (3.94%). It was observed that the mean ages of patients included in the study was  $43.88 \pm 10.02$  (mean  $\pm$  SD).

Most common age group affected in the age at 4 and 5<sup>th</sup> decade.

**Graph 1: Sex distribution in total thyroidectomy done for Multinodular goitre.**

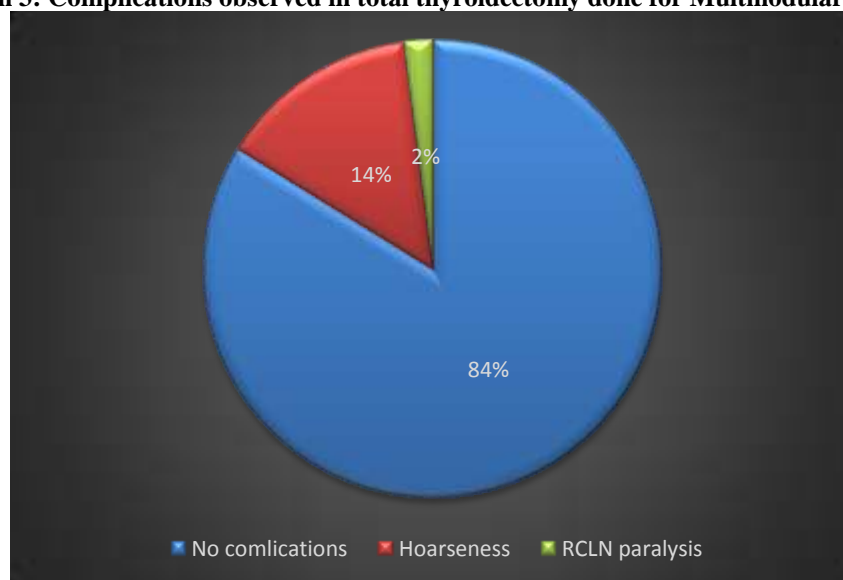


**Graph 2: Age distribution among patients of thyroidectomy in Multinodular goitre**



G.A-10-19yrs, G.B-20-29 yrs, G.C-30-39 yrs, G.D-40-49 yrs, G.E-50-59 yrs, G.F-60-69yrs

**Graph 3: Complications observed in total thyroidectomy done for Multinodular goitre.**



In the current study percentage proportion of hoarseness observed in total thyroidectomy done for Multinodular Goitre out of 76 subjects was 14.47% (11 patients). Percentage proportion of temporary Recurrent Laryngeal Nerve Paralysis (RLN paralysis) presented in total thyroidectomy done in Multinodular Goitre out of 76 subjects was 2.6% (2 patients) while permanent paralysis incidence was nil. Unilateral palsy noticed by abnormal vocal cord movements in IDL (indirect laryngoscopy) was noted in 2 subjects. Percentage proportion of stridor or laryngeal obstruction observed in total thyroidectomy done in Multinodular Goitre out of 76 subjects was nil.

#### IV. DISCUSSION

This prospective study was confined to 76 patients where 73 were females (96.05%) and 3 males (3.95%). Out of the 76 operated cases of total thyroidectomy for multinodular goitre, 2 patients (2.6%) had temporary Recurrent Laryngeal Nerve Paralysis (RLN paralysis) and no permanent recurrent laryngeal nerve paralysis.

Large number of females in study population is a result of fact that disease prevalence is more amongst females as compared with males. Age distribution in the study was  $48 \pm 10$  years. This is well compared with other situations of Chung et al.<sup>4</sup> (43 years) and Mbogoh<sup>5</sup>. Overall, the rate of recurrent laryngeal nerve injury (RLN) was 2.6% temporary paralysis and nothing of permanent type. Similar observations are found in other studies<sup>6,7</sup>. Unilateral vocal cord abnormal movements were noted in 2 patients (2.6%) with temporary RLN palsy which had recovered on subsequent follow ups.

Total thyroidectomy done in multinodular goiter can achieve safe results with respect to surgery related complications like RLN injury, dysphonia/hoarseness. Total thyroidectomy can achieve very negligible complications and recurrence rates<sup>8,9</sup>. Efremidou et al. opined that total thyroidectomy is a safe procedure particularly in patients with increased risk of recurrence<sup>6</sup>. Bage et al. believes that it is safe to perform total thyroidectomy in benign bilateral MNG<sup>10</sup>. In this study 11 patients (14.4%) had hoarseness with no obvious vocal cord abnormality recorded. Transient hoarseness in patient without RLN injury can be attributed to other causes like intubation, manipulation of the nerve during surgery and hematoma.

Age distribution in the study with relevance to RLN paralysis had no significance (p value 0.105). Chiang et al.<sup>11</sup> observed that age was no significant factor with incidence of RLN paralysis after surgery. Sex was not a risk factor influencing recurrent laryngeal nerve injury despite the fact that RLN palsy occurred in female patients. This was due to large female population in the study.

#### V. CONCLUSION

Incidence of recurrent laryngeal Nerve injury in total thyroidectomy done for multinodular goitre was 2.6% of temporary paralysis and permanent paralysis was nil. Total Thyroidectomy done for Multinodular Goitre is a safe procedure with minimal incidence of recurrent laryngeal nerve injury. Total Thyroidectomy for Benign Multinodular Goitre can be done as procedure of choice in all patients with minimal risks and nil recurrence rates.

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