



Original Article

## Epidemiological Profile and Clinical Presentations of Thyroid Swellings: A Prospective Study at A Tertiary Care Centre

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### ABSTRACT

**Background:** Thyroid swellings are among the most common endocrine presentations in Otorhinolaryngology. Despite national iodine control programmes, iodine deficiency persists in many regions and contributes to regional variation in thyroid disease patterns. This study analyzes the epidemiological profile and clinical characteristics of thyroid swellings presenting to a tertiary centre.

**Objective:** To study the epidemiology and clinical presentations of thyroid swellings among patients undergoing thyroid surgery.

**Materials and Methods:** A prospective cohort study of 60 consecutive patients who underwent thyroid surgery from April 2014 to March 2015 at our medical college. All patients had detailed history, physical examination, thyroid function tests, high-resolution ultrasonography (USG), fine-needle aspiration cytology (FNAC) reported using standard cytology criteria, and postoperative histopathology. Data were analyzed for demographics, symptoms, duration, cytology and histopathology correlation.

**Results:** Of 60 patients, 56 (93.33%) were female and 4 (6.67%) were male (female: male = 14:1). Peak incidence was in the 31-40 year group (40%). Neck swelling was the presenting complaint in 100% of patients; pain occurred in 11.67%, dysphagia in 3.33%, and voice change in 1.67%. Most swellings were of gradual onset (85%) and measured 2-4 cm (73.33%). FNAC reported benign cytology in 90% of cases; postoperative histopathology confirmed 80% colloid goiter, 11.66% papillary carcinoma, 5% Hashimoto's thyroiditis, and 3.33% follicular adenoma.

**Conclusion:** Thyroid swellings in this cohort predominantly affected middle-aged women and were mostly benign. FNAC and USG are reliable first-line diagnostic modalities; histopathology remains the definitive diagnostic standard. Local epidemiological data can guide targeted screening and management strategies.

**Keywords:** Thyroid Swelling, FNAC, Histopathology, Cytology.

### INTRODUCTION

Thyroid swellings are a frequent presentation in outpatient head and neck practice worldwide and are influenced by regional factors such as iodine intake, autoimmunity and access to healthcare [1]. By palpation, thyroid nodules are detected in approximately 4–7% of adults and high-resolution ultrasonography reveals nodules in a substantially higher proportion of the population (reported up to two-thirds in some screening series) [3]. In India, thyroid disorders show a notable female predominance and variable regional prevalence, reflecting dietary and environmental heterogeneity [1].

Most palpable thyroid nodules are benign; the risk of malignancy in a solitary thyroid nodule is typically quoted around 5–10% in many series, which highlights the need for accurate preoperative evaluation [2]. Fine-needle aspiration cytology (FNAC), especially when performed under sonographic guidance, is the cornerstone of preoperative diagnostic workup and has been standardized by reporting systems such as the Bethesda categories [2]. Ultrasonography (USG)

provides complementary information regarding nodule size, composition, echogenicity, calcifications and suspicious features that help stratify malignancy risk and guide FNAC decisions [3].

Clinically, thyroid swellings commonly present as a painless midline or lateral neck mass moving with deglutition. Pressure symptoms — dysphagia, dyspnea or voice change — may indicate substantial goiter size or local invasion. Rapid enlargement with pain suggests haemorrhage within a cyst or subacute thyroiditis, while hoarseness raises suspicion for recurrent laryngeal nerve involvement or malignancy.

The present prospective cohort study was designed to evaluate the demographic pattern, symptom profile, and cytologic–histopathologic correlation of thyroid swellings managed surgically at a tertiary care centre. The aim is to provide locally-relevant evidence to inform clinical pathways for diagnosis and timely surgical intervention.

## OBJECTIVE

To assess the epidemiological pattern and clinical presentations of thyroid swellings among patients undergoing thyroid surgery.

## MATERIALS AND METHODS

Study design: Prospective cohort study.

Setting: Department of Otorhinolaryngology, J.L.N. Medical College and Associated Hospitals, Ajmer, Rajasthan.

Duration: April 2014 – March 2015.

Participants: 60 consecutive patients presenting with thyroid swellings who underwent thyroid surgery during the study period.

Inclusion criteria: Patients with solitary or diffuse thyroid swellings consenting for surgery; diffuse goiters unresponsive to medical therapy.

Exclusion criteria: Patients unfit or unwilling for surgery; patients with unstable/deranged thyroid function tests at presentation.

Ethical consideration: The study protocol was reviewed and approved by the Institutional Ethics Committee of J.L.N. Medical College and Hospitals, Ajmer. All patients provided informed consent before participation.

Preoperative evaluation: Detailed clinical history and head–neck examination, indirect laryngoscopy to assess vocal cord mobility, thyroid function tests, high-resolution neck ultrasonography, and FNAC (using 21–24G needle, USG guidance when indicated). FNAC samples were reported according to standard cytology practice and correlated with postoperative histopathology.

Surgical management: Procedures (hemi/total/completion thyroidectomy) were performed as indicated by clinical, cytologic and radiologic findings. Standard capsular dissection techniques were employed to preserve parathyroid glands and recurrent laryngeal nerves.

Follow-up and outcome measures: Patients were followed for a minimum of 6 months postoperatively. Primary outcomes included final histopathological diagnosis, operative procedure, and immediate postoperative complications.

Statistical analysis: Descriptive statistics (counts, percentages) were used to summarize demographic and clinical data.

## RESULTS

Sixty patients were enrolled; 56 (93.33%) were female and 4 (6.67%) male (female: male = 14:1). Age distribution showed the largest group in 31–40 years (40%) followed by 41–50 years (23.33%) (Table 1). All patients presented with a neck swelling (100%); pain was present in 11.67%, recent increase in size in 5%, dysphagia in 3.33%, and voice alteration in 1.67%. Most swellings had gradual progression (85%).

Preoperative FNAC reported benign cytology in 54/60 (90%), atypia/follicular lesion of undetermined significance in 1 (1.66%), follicular neoplasm/suspicious for follicular neoplasm in 2 (3.33%), suspicious for malignancy in 2 (3.33%) and malignant in 1 (1.66%). Final histopathology showed 48 (80%) colloid goiter (including MNG), 7 (11.66%) papillary carcinoma, 3 (5%) Hashimoto's thyroiditis, and 2 (3.33%) follicular adenoma (Table 2).

A total of 65 operations were performed in 60 patients (some patients had completion procedures): hemithyroidectomy 53 (81.53%), total thyroidectomy 7 (10.76%), completion thyroidectomy 5 (7.69%) (Table 3).

Complications included transient RLN palsy in 2 patients (recovered within 1 month), transient hypoparathyroidism in 2 patients (recovered with supplementation), and 3 cases of reactionary haemorrhage. No permanent RLN palsy or permanent hypoparathyroidism was recorded.

**Table 1. Age and sex distribution of study participants**

Age Group (years)	Male	Female	Total (%)
11-20	0	4	6.67
21-30	0	8	13.33
31-40	2	22	40.00
41-50	2	12	23.33
>=51	0	10	16.67

**Table 2. Histopathological distribution of thyroid lesions**

Histopathology	No. of Cases	Percentage (%)
Colloid goiter / MNG	48	80.00
Papillary carcinoma	7	11.66
Hashimoto's thyroiditis	3	5.00
Follicular adenoma	2	3.33

**Table 3. Surgical procedures performed**

Procedure	No. of Surgeries	Percentage (%)
Hemithyroidectomy	53	81.53
Total thyroidectomy	7	10.76
Completion thyroidectomy	5	7.69

## DISCUSSION

This prospective cohort confirms a strong female predominance for surgically managed thyroid swellings (female:male = 14:1), consistent with national and international series [4]. The hormonal and autoimmune differences between sexes likely contribute to this disparity [1]. Peak incidence in the third to fourth decades (31–40 years) mirrors other surgical and epidemiologic studies of goiter and nodular disease, underlining the active-age presentation of thyroid pathology in this population [1,6].

FNAC demonstrated good utility as a first-line diagnostic tool in this cohort (90% benign cytology), supporting its role in preoperative evaluation as recommended in the Bethesda framework [2]. However, FNAC has intrinsic limitations: follicular carcinoma diagnosis requires histologic evidence of capsular and/or vascular invasion, a feature not discernible on cytology, which explains occasional discordance between FNAC and final histopathology [2]. Thus, surgical excision remains the gold standard for definitive diagnosis in indeterminate cytology cases.

Ultrasonography provided additional risk stratification and guided FNAC sampling; high-resolution probes and standardized reporting improve detection rates and selection for biopsy [3]. The combination of clinical assessment, USG and FNAC allowed appropriate selection for hemi versus total thyroidectomy in our series.

Operative procedures favored hemithyroidectomy for unilateral benign disease and total/completion thyroidectomy for bilateral or malignant cases. This approach is consistent with established surgical practice and with larger outcome studies showing acceptable complication profiles with careful capsular dissection [7]. Transient complications (temporary RLN palsy, transient hypoparathyroidism) occurred at low rates and all recovered; no permanent RLN palsy or permanent hypoparathyroidism was observed.

Limitations of our study include single centre design and limited sample size, which may affect generalizability. Also, as a surgical series, the population is biased toward patients selected for surgery (cosmetic concerns, pressure symptoms or suspicious cytology) and may under-represent conservatively managed thyroid nodules.

In summary, the present series supports that most surgically resected thyroid swellings are benign and that FNAC coupled with USG is effective in preoperative decision making. Local epidemiologic data can guide screening and management strategies and highlight the continued importance of histopathology for definitive diagnosis.

## CONCLUSION

In this tertiary care surgical series, thyroid swellings chiefly affected middle-aged women and were predominantly benign (colloid goiter). FNAC and high-resolution ultrasonography together guided appropriate surgical management; final histopathology confirmed the diagnosis. Careful capsular dissection and nerve/parathyroid-preserving technique resulted in low, largely transient complication rates.

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