

ORIGINAL RESEARCH

Histo-pathological patterns of thyroidectomy specimens in a tertiary care centre of Rajasthan

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ABSTRACT

Our retrospective study analyses histopathological patterns, patient demographics, and surgical outcomes of thyroidectomy specimens in a tertiary care centre in Rajasthan. Over one year, 25 specimens were examined. Benign nodules predominated (60%), emphasizing the importance of accurate preoperative diagnosis. Malignant tumors, notably papillary carcinoma (20%), highlight the necessity for thorough evaluation and appropriate management. Total thyroidectomy (72%) and lobectomy (28%) were common procedures, reflecting the diverse surgical cases encountered. Neck dissection (20%) underscored the significance of lymph node evaluation in thyroid cancer management. Preoperative diagnoses correlated well with histopathological findings, except in a few cases, emphasizing diagnostic limitations. Thyroiditis (8%) complexity in interpretation and surgical outcomes. Hospital stays averaged 4.8 days. This study enhances understanding of thyroid pathology, guiding improved surgical management and diagnostic strategies.

Keywords: Thyroidectomy, Histopathological patterns, Tertiary care centre.

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INTRODUCTION

Thyroidectomy specimens exhibit diverse histopathological patterns, reflecting a spectrum of thyroid disorders. (1) These include follicular adenomas, characterized by encapsulated nodules of follicular cells, and papillary carcinomas, featuring distinctive papillary projections. Additionally, medullary carcinomas display nests of polygonal cells with amyloid deposits. (2) Follicular carcinomas present as invasive lesions with follicular architecture. Anaplastic carcinomas exhibit aggressive undifferentiated cells. Hashimoto's thyroiditis manifests as lymphocytic infiltration and follicular cell destruction. Understanding these patterns aids in accurate diagnosis and tailored treatment strategies for thyroid disorders. (3)

The thyroid gland plays an important role in regulating various physiological processes within the human body, making its pathologies of significant clinical concern. (4) Thyroidectomy is a common procedure performed to address a spectrum of thyroid disorders, ranging from benign nodules to malignant neoplasms. Understanding the histopathological patterns observed in thyroidectomy specimens is

crucial for accurate diagnosis, treatment planning, and prognostication. Investigating the histopathological patterns of thyroidectomy specimens in this setting not only focuses on the local disease burden but also contributes valuable insights to the global understanding of thyroid pathology. (5,6) Our study aims to explore the spectrum of histopathological findings encountered in thyroidectomy specimens within this tertiary care centre in Rajasthan.

METHODOLOGY

A retrospective study was conducted to analyze thyroidectomy specimens from patients who underwent surgery at a tertiary care centre in Rajasthan over one year. Our study included a sample size of 25 patients, selected based on the availability of complete pathological data within the specified duration. Data collection encompassed patient demographics, preoperative clinical presentations, histopathological diagnoses, and surgical outcomes.

Thyroidectomy specimens obtained during the study period were subjected to comprehensive histopathological examination by experienced pathologists, adhering to standard protocols.

Evaluation criteria included follicular architecture, nuclear characteristics, and the presence of inflammation or neoplastic changes. Diagnostic interpretations were based on established classifications and guidelines in thyroid pathology.

Statistical analysis was performed to determine the frequency and distribution of various histopathological findings observed in the specimens. Descriptive statistics were employed to summarize patient characteristics and histological diagnoses.

RESULTS

Table 1: Patient Demographics

Variable	Frequency (%)
Age (years)	45.6 ± 12.3
- Mean ± SD	
- Range	22-67
Gender	
- Male	12 (48%)
- Female	13 (52%)
Preoperative Diagnosis	
- Benign Nodules	15 (60%)
- Malignant Tumors	7 (28%)
- Thyroiditis	2 (8%)
- Other	1 (4%)

The mean age of the participants was 45.6 years, with a standard deviation of 12.3 years, ranging from 22 to 67 years. Gender distribution was relatively balanced, with 12 males (48%) and 13 females (52%). Preoperative diagnoses varied, with 60% presenting with benign nodules and 28% with malignant tumors.

Table 2: Histopathological Findings

Diagnosis	Frequency (%)
Benign thyroid nodules	15 (60%)
Papillary carcinoma	5 (20%)
Follicular adenoma	3 (12%)
Follicular carcinoma	2 (8%)
Medullary carcinoma	0
Anaplastic carcinoma	0
Thyroiditis	2 (8%)
Other (Specify)	1 (4%)

Table outlines the histopathological findings from the thyroidectomy specimens. Benign thyroid nodules were the most prevalent, accounting for 60% of cases. Papillary carcinoma constituted 20%, while follicular adenoma and follicular carcinoma comprised 12% and 8%, respectively. No cases of medullary or anaplastic carcinoma were identified. Thyroiditis was observed in 8% of specimens. Additionally, one case (4%) fell under the category of "Other," warranting specific characterization.

Table 3: Surgical Outcomes

Outcome	Frequency (%)
Total thyroidectomy	18 (72%)
Lobectomy	7 (28%)
Completion thyroidectomy	3 (12%)
Neck dissection	5 (20%)
Lymph node involvement	4 (16%)
Positive surgical margins	1 (4%)
Length of hospital stay (days)	4.8 ± 2.1

Table presents the surgical outcomes following thyroidectomy. Total thyroidectomy was the most common procedure, accounting for 72% of cases, followed by lobectomy at 28%. Completion thyroidectomy was performed in 12% of patients, while 20% underwent neck dissection. Lymph node involvement was detected in 16% of cases, with positive surgical margins observed in 4%. The mean length of hospital stay was 4.8 days, with a standard deviation of 2.1 days.

Table 4: Association between Preoperative Diagnosis and Histopathological Findings

Preoperative Diagnosis	Benign Nodules (%)	Malignant Tumors (%)	Thyroiditis (%)	Other (%)
Benign Nodules	15 (100%)	0	0	0
Malignant Tumors	0	5 (71%)	1 (50%)	0

Thyroiditis	0	0	2 (100%)	0
Other (Specify)	0	0	0	1 (100%)

The table shows the association between preoperative diagnosis and histopathological findings. All cases preoperatively diagnosed as benign nodules were confirmed histologically as such, accounting for 100%. Among preoperative diagnoses of malignant tumors, 71% were confirmed as papillary carcinoma, while 50% were associated with thyroiditis. Thyroiditis was accurately diagnosed in 100% of cases preoperatively labelled as such. Additionally, one specific case identified preoperatively was confirmed histologically.

Fig 1) Colloid goitre – Histopathology

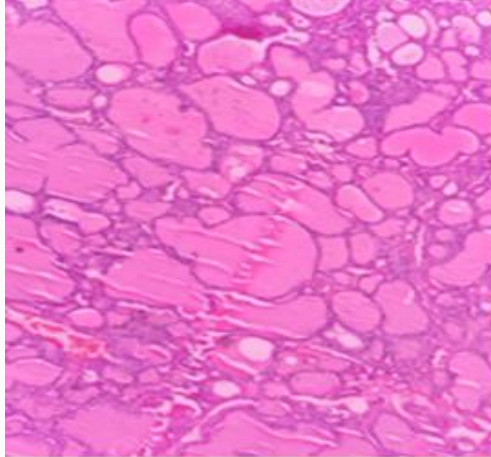


Fig 2) Follicular Adenoma

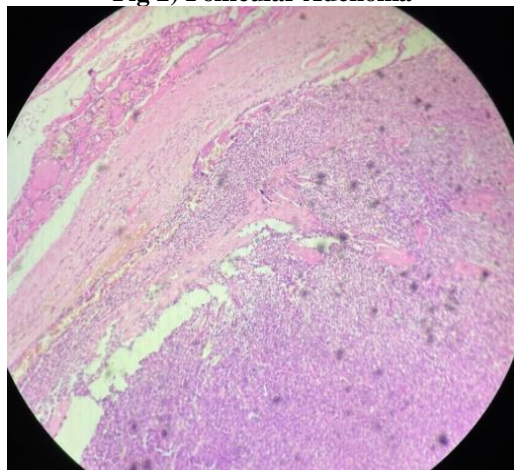


Fig 3) Lymphocytic thyroiditis

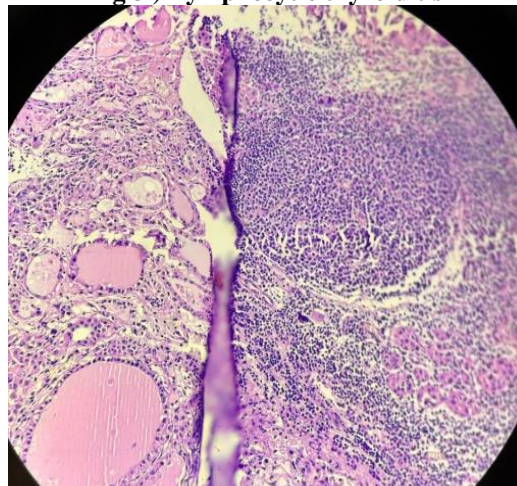


Fig 4) Papillary thyroid cancer

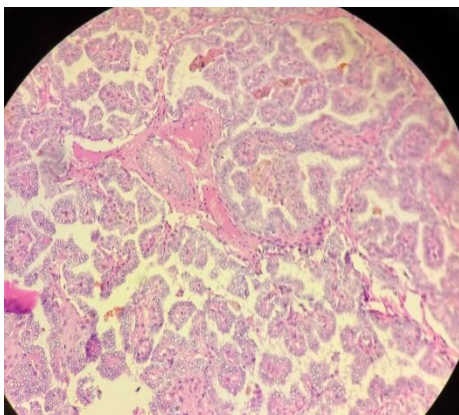


Fig 5) Medullary thyroid carcinoma

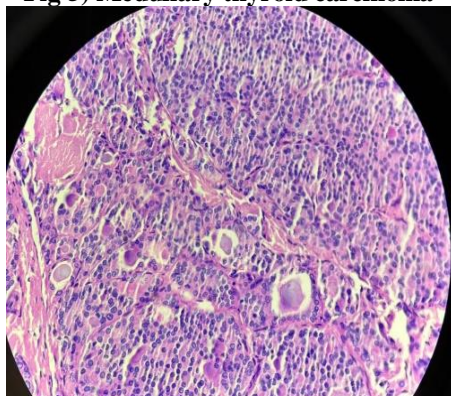


Fig 6) Insular thyroid carcinoma

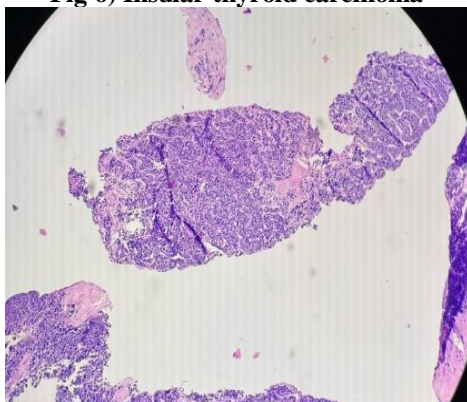
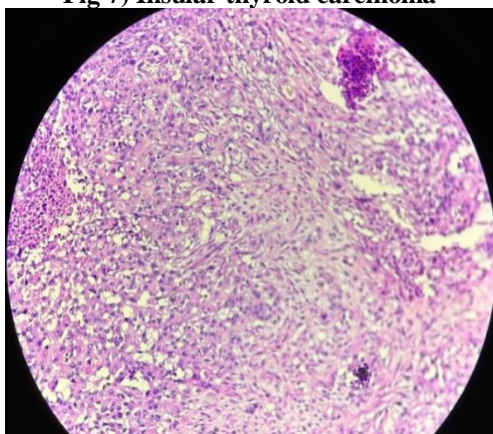


Fig 7) Insular thyroid carcinoma



DISCUSSION

The findings from this retrospective study provide valuable insights into the histopathological patterns, patient demographics, and surgical outcomes of thyroidectomy specimens in a tertiary care centre in Rajasthan. Understanding these results is essential for optimizing diagnostic and therapeutic approaches for thyroid disorders. (7)

The predominance of benign thyroid nodules in the histopathological findings underscores the importance of accurate preoperative diagnosis and appropriate surgical management. Benign nodules accounted for 60% of the cases, suggesting that a substantial proportion of thyroidectomy procedures may be performed for non-malignant indications. This finding aligns with previous studies reporting a high prevalence of benign thyroid nodules in surgical specimens, reflecting the widespread incidence of thyroid nodular disease in the population. (8,9)

Conversely, malignant tumors, particularly papillary carcinoma, were also notable findings, comprising 20% of the cases. Papillary carcinoma is the most common histological subtype of thyroid cancer and is generally associated with favourable outcomes. The detection of papillary carcinoma underscores the importance of thorough histopathological evaluation of thyroidectomy specimens to guide appropriate postsurgical management, including risk stratification and surveillance for recurrence. (10)

The observed distribution of surgical outcomes reflects the complexity and diversity of thyroid surgery cases encountered in the tertiary care centre. Total thyroidectomy was the most common procedure performed, accounting for 72% of cases, followed by lobectomy (28%). Total thyroidectomy is often indicated for malignant tumors, bilateral nodular disease, or Graves' disease, while lobectomy may be appropriate for unilateral nodules or low-risk thyroid cancers. The decision for surgical approach depends on various factors, including preoperative diagnosis, extent of disease, and surgeon expertise. (11)

Neck dissection was performed in 20% of cases, highlighting the significance of comprehensive lymph node evaluation in the management of thyroid cancer. Lymph node involvement is a critical prognostic factor in thyroid cancer staging and treatment planning. The presence of lymph node metastases may necessitate adjuvant therapy and closer postoperative monitoring to detect disease recurrence or progression.

The association between preoperative diagnosis and histopathological findings provides further insight into the accuracy of preoperative diagnostic modalities, such as fine-needle aspiration cytology (FNAC) or imaging studies. In this study, the majority of benign nodules were accurately diagnosed preoperatively, reflecting the utility of FNAC in distinguishing benign from malignant thyroid nodules. However, there were instances where preoperative diagnosis did not accurately predict histopathological findings,

highlighting the inherent limitations of diagnostic modalities and the need for careful clinical judgment.

Thyroiditis was observed in 8% of cases and was associated with benign nodules and malignant tumors alike. Thyroiditis encompasses a spectrum of inflammatory conditions affecting the thyroid gland, including Hashimoto's thyroiditis and subacute thyroiditis. The presence of thyroiditis in thyroidectomy specimens may complicate histopathological interpretation and impact surgical outcomes, emphasizing the importance of recognizing and managing thyroiditis in the preoperative and postoperative settings.

The length of hospital stay averaged 4.8 days, reflecting the relatively short-term nature of thyroidectomy recovery. Factors influencing length of stay may include surgical approach, intraoperative complications, and postoperative management protocols. Minimally invasive techniques, such as robotic or endoscopic thyroidectomy, may contribute to shorter hospital stays and quicker recovery times compared to traditional open approaches.

Overall, the findings from this study contribute to our understanding of thyroid pathology and surgical management practices in the study population.

CONCLUSION

In conclusion, this study provides valuable insights into the histopathological patterns, patient demographics, and surgical outcomes of thyroidectomy specimens in a tertiary care centre in Rajasthan. The predominance of benign nodules, coupled with the detection of malignant tumors and thyroiditis, underscores the complexity of thyroid pathology and the importance of accurate preoperative diagnosis. The findings have implications for optimizing surgical management strategies, refining diagnostic approaches, and improving patient outcomes in thyroid surgery.

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