Histopathological Evaluation Of Thyroid Lesions

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Abstract: To study the spectrum of thyroid lesions and evaluate their histopathological patterns, and to analyze their distribution across age and sex. A retrospective observational study was conducted in the Histopathology section of the Department of Pathology, Dhiraj Hospital, SBKS MI & RC, Vadodara, from September 2024 to October 2025. A total of 58 specimens—including tru-cut biopsies, lobectomies, hemithyroidectomies, subtotal, and total thyroidectomies—were included. Inadequate or autolysed specimens were excluded. Tissue samples were fixed in 10% neutral buffered formalin, stained with Hematoxylin and Eosin, and examined microscopically. Data were analyzed using Microsoft Excel. Patients ranged from 22–66 years, with a marked female predominance (M:F = 1:7). Non-neoplastic lesions were more common than neoplastic lesions. Among neoplasms, benign tumors predominated. Follicular adenoma was the most frequent benign lesion, while papillary thyroid carcinoma was the most common malignant tumor. This study highlights that non-neoplastic and benign neoplastic thyroid lesions are more prevalent than malignant lesions. Despite the availability of preoperative diagnostic tools, histopathology remains the gold standard for accurate diagnosis and optimal management of thyroid diseases.

INTRODUCTION

Histopathological examination of Thyroid plays an important role in making a correct & accurate diagnosis of various lesions of thyroid, which has a profound impact on the further management of the patient.

Differentiation of follicular lesions like follicular adenoma and follicular carcinoma requires histopathologicalexamination to establish a definitive diagnosis, further management and prognosis of the patient.

Although tumors of the thyroid gland account for only 1% of the overall human cancer burden, they represent the most common malignancies of the endocrine system and pose a significant challenge to pathologists, surgeons and oncologists[2].

AIMS & OBJECTIVES

To study the various thyroid lesions and to evaluate the spectrum of histopathological patterns.
To distribute various thyroid lesions according to age and sex.

MATERIAL AND METHODS

This retrospective and observational study was carried out at the Histopathology section of the Department of Pathology, Dhiraj Hospital, SBKS MI & RC, Vadodara.

Duration period: September 2024 to October 2025.

Inclusion Criteria - All the thyroid tissue specimens like Tru-cut biopsy, lobectomy, hemi- thyroidectomy, subtotal thyroidectomy and total thyroidectomy were included during study period.

Exclusion Criteria - Inadequate biopsy and autolysed specimens were excluded from study.

NOTE –

All tissues were fixed in 10% Neutral buffered formalin. Representative tissue sections were taken and they were stained by Hematoxylin and Eosin (H&E) stain. Microscopic examination was done and histopathological diagnosis was rendered. The data were analyzed using MS Excel sheet.

RESULT AND DISCUSSION:

Type of Thyroid lesion		Diagnosis	No. Of cases	Percentage (%)
Non Neoplastic Lesions [n=33]	NonInflammatory (Hyperplasia) [n=30]	Colloid Goiter	12	20.68
		Nodular Goiter	**17**	**29.31**
		Diffuse toxic Goiter	1	1.72
	Inflammatory [n=3]	Hashimoto Thyroiditis	2	3.45
		Lymphocytic Thyroiditis	1	1.72
Neoplastic Lesions [n=25]	Benign [n=12]	Follicular adenoma	**10**	**17.2**
		Oncocytic adenoma	2	3.45
	Low risk [n=4]	NIFTP	3	5.17
		Hyalinizing Trabecular Tumor	1	1.72
	Malignant[n=9]	Papillary carcinoma	**7**	**12.1**
		Lymphoma	1	1.72
		Oncocytic carcinoma	1	1.72
Total			58	100

CLASSIFICATION OF THYROID NEOPLASMS

Follicular cell derived neoplasms:

1.) Benign tumors:
o Thyroid follicular nodular disease
o Follicular adenoma
o Follicular adenoma with papillary architecture
o Oncocytic adenoma of thyroid

2.) Low-risk neoplasms:
i. Non invasive follicular thyroid neoplasms with papillary like nuclear features (NIFTP)
ii. Thyroid tumors of uncertain malignant potential
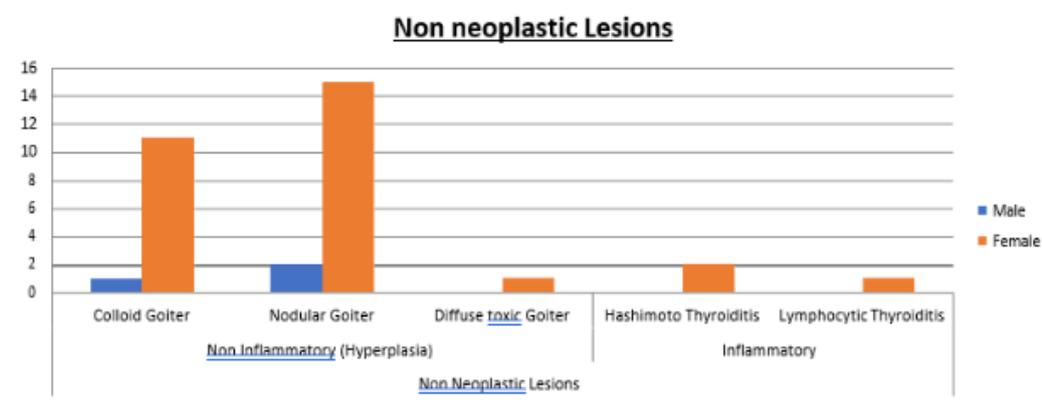iii. Hyalinizing trabecular tumor

3.) Malignant neoplasms:
a. Follicular thyroid carcinoma
b. Invasive encapsulated follicular variant papillary carcinoma
c. Papillary thyroid carcinoma
d. Oncocytic carcinoma of thyroid
e. Follicular derived carcinomas, high grade
i. Differentiated high grade thyroid carcinoma
ii. Poorly differentiated thyroid carcinoma
f. Anaplastic follicular cell derived thyroid carcinoma

An alternative terminology " Thyroid follicular nodular disease" was proposed to avoid defining a lesion as hyperplastic, neoplasia or adenomatous hyperplasia.
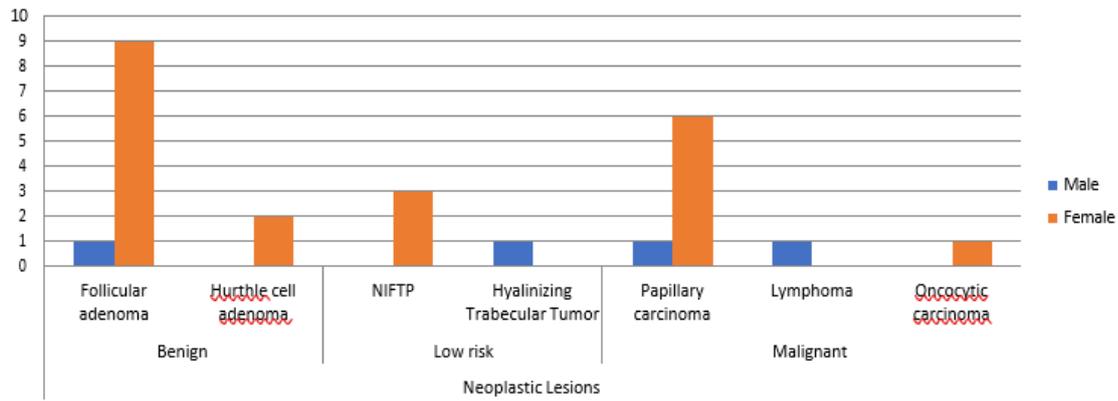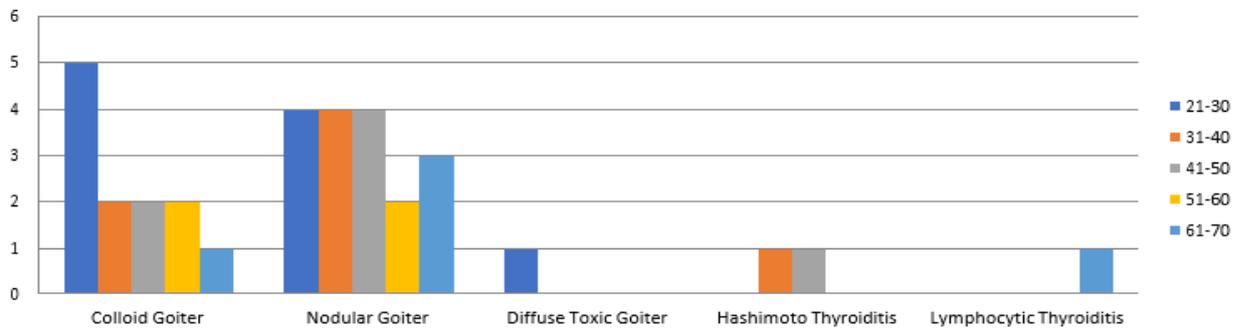
GENDER WISE DISTRIBUTION

o **Non neoplastic Lesions**
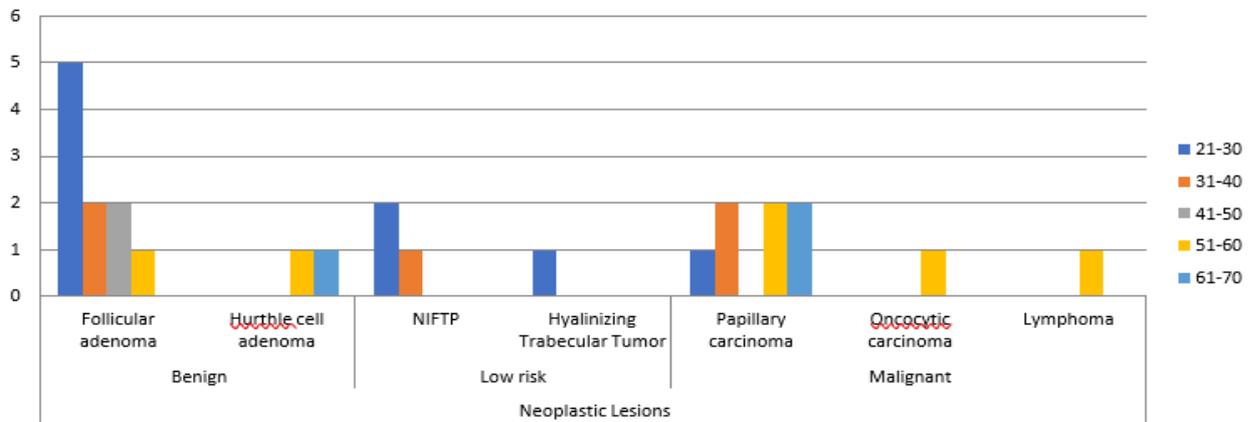

o **Neoplastic Lesions**

Neoplastic Lesions

AGE WISE DISTRIBUTION

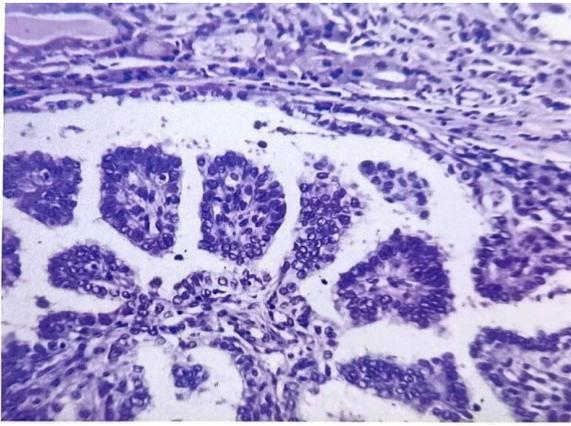Non neoplastic leasions

Neoplastic lesions

Fig 1: Papillary Carcinoma (4x power) power)
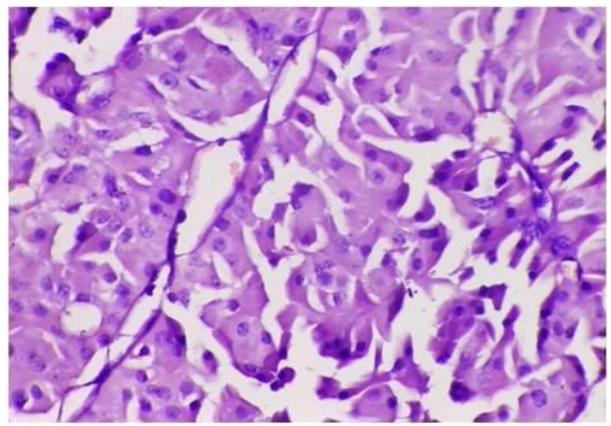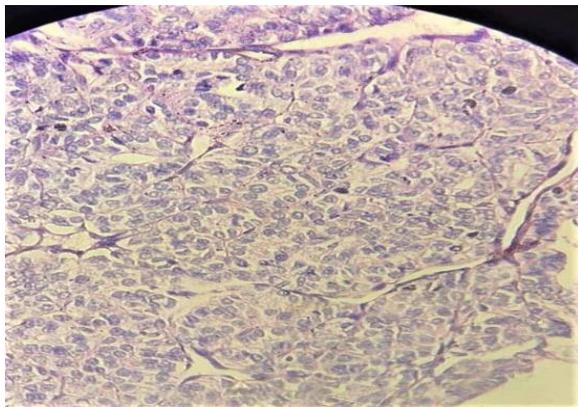

Fig 2: Oncocytic Carcinoma (40x

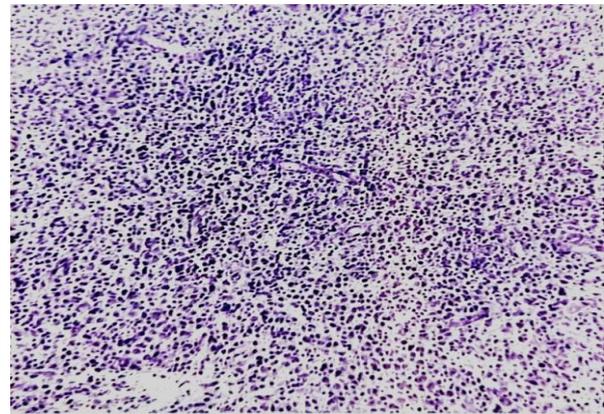Fig 3: Hyalinizing Trabecular Tumor (4x power) Lymphoma (20x power)

Fig 4: Non-Hodgkin's

CONCLUSION

A retrospective and observational study to evaluate the various histopathological patterns of thyroid lesions was undertaken from May 2020 to October 2022. During study period, total 58 thyroid specimens were received in our department. During study period, total 58 thyroid specimens were received in our department. The age group of patients ranged from 22-66 years with a mean age of 42.3 years. Thyroid lesions were most common in age group of 21-30 years (Third decade). A striking female preponderance was observed with male to female ratio of 1:7. The non-neoplastic lesions were more common than neoplastic lesions.

Among the neoplastic lesions, benign lesions were more common than malignant lesions. Follicular adenoma was the commonest benign thyroid lesion. The most common thyroid malignancy was **papillary thyroid carcinoma.**

We conclude that, it is necessary to study all thyroid lesions carefully as incidence and trend changes over time and depends on multiple factors.

Though, different preoperative modalities are available for the diagnosis of thyroid diseases, histopathological examination of the thyroid specimens proves to be the **gold standard** tool for the diagnosis and further management of thyroid lesions.

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