ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

# "CYTOLOGICAL EVALUATION OF THYROID LESIONS BY BETHESDA SYSTEM IN TERTIARY CARE HOSPITAL"

AUTHORS: DR. JIGISHA MER[1], DR. BHUMIKA PADHIYAR[2], DR. PARTH KANERIA[3]

DR. HARDIK MAKWANA[4], DR. NAYNA LAKUM[5]

AFFILIATIONS: [1,2]SENIOR RESIDENTS, [3]ASSISTANT PROFESSOR, [4]ASSOCIATE PROFESSOR, [5]PROFESSOR AND HEAD

PATHOLOGY DEPARTMENT

GMERS MEDICAL COLLEGE, JUNAGADH, GUJARAT, INDIA.

CORRESPONDING AUTHOR: DR. JIGISHA MER

EMAIL ID: jigimer1392@gmail.com

## ABSTRACT

INTRODUCTION:

The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) established a uniform, tiered reporting system for thyroid lesions. TBSRTC gives proper use of the diagnostic categories, it recommends management and also implied the risks of malignancy.

METHODOLOGY:

A retrospective cross-sectional study was conducted at Department of Pathology, GMERS medical college and hospital, Junagadh over a period of two years from January 2023 to December 2024. Patient with thyroid swelling who came to ENT OPD and advised FNAC were considered for our study. FNAC slides were retrieved and reviewed, findings were recorded and data were entered in Microsoft Excel and descriptive data was obtained.

RESULT:

Total of 190 cases were studied. Majority of thyroid lesions were found in age group of 31-40 years. Most common lesions were of benign in origin and colloid goiter was the most common cause.

CONCLUSION:

FNAC of thyroid nodules found to be one of the most useful, safe, accurate, relatively simple, inexpensive, less time-consuming OPD procedures.

KEY WORDS:

Thyroid lesion, Benign and malignant lesion, Cytology, TBSRTC categories

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

## MAIN TEXT

INTRODUCTION:

Thyroid nodule is common problem seen in 50% of the adult. [1] Whether symptomatic or not, the differentiation of a benign from malignant thyroid swelling is a primary objective for all physicians.[2] Thyroid FNA is the primary diagnostic tool after ultrasonography. To achieve standardization of diagnostic terminology, morphologic criteria, and risk of malignancy for reporting of thyroid FNA, a 6-tier system is used named The Bethesda System for Reporting thyroid Cytopathology (TBSRTC). This study aims to evaluate the utility of The Bethesda System as it bridges the gap between clinician & cytopathologist. Evaluation of thyroid lesion by Fine needle aspiration cytology (FNAC) is the most broadly used investigative test as an initial procedure.[3]

AIM & OBJECTIVES:

1. To analyse various thyroid lesion according to age group and gender.

2. To assess the diagnostic accuracy of FNAC as an initial diagnostic modality for thyroid lesion.

3. To categorise Thyroid FNAC cytology as per the Bethesda system.

MATERIALS & METHODS:

1. Study design: Retrospective cross-sectional study

2. Study population: All patients who came for FNAC thyroid in cytology section of Pathology department of GMERS medical college and general hospital, Junagadh from January 2023 to December 2024.

3. Study duration: 2 Years

4. Sample size: Number of patients studied during 2 years for FNAC thyroid

- Inclusion criteria: All patients who came for FNAC thyroid lesions in cytology section of Pathology department of GMERS medical college and general hospital, Junagadh after taking approval from the Institutional Ethics Committee from January 2023 to December 2024.
- Exclusion criteria: Patients came for FNA and having other than thyroid lesion.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

5.Sampling method: FNAC slides of thyroid retrieved and reviewed. All the slides were observed and findings were recorded.

- FNAC was done with 23 gauze needle following standard procedure under aseptic precautions.[4] Slides were air dried, fixed with ethyl alcohol and stained by PAP stain, hematoxylin and eosin and Giemsa stain.
- All the slides were observed and findings were recorded.
- Then data was classified according to Bethesda category and tabulated in excel sheet.

RESULT:

TABLE 1: Frequency of Thyroid lesion according to age

| Age (Years) | No. of cases | Percentage (%) |
|---|---|---|
| 0-10 | 0 | 0 |
| 11-20 | 8 | 4.21 |
| 21-30 | 37 | 19.47 |
| 31-40 | 53 | 27.89 |
| 41-50 | 48 | 25.26 |
| 51-60 | 23 | 12.10 |
| 61-70 | 15 | 7.89 |
| >70 | 6 | 3.15 |

TABLE 2: Distribution of thyroid lesion according to gender

| Sex | No. of cases | Percentage (%) |
|---|---|---|
| Male | 32 | 16.84 |
| Female | 158 | 83.15 |

TABLE 3: Category wise distribution of thyroid lesion

| Category | | No. of cases | Percentage (%) |
|---|---|---|---|
| I | Nondiagnostic or unsatisfactory | 5 | 2.63 |
| II | Benign | 163 | 85.78 |
| III | Atypia of undetermined significance or follicular lesion of undetermined significance | 7 | 3.68 |

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

| | | | |
|---|---|---|---|
| IV | Follicular neoplasm or suspicious for follicular neoplasm | 5 | 2.63 |
| V | Suspicious for malignancy | 5 | 2.63 |
| VI | Malignant | 5 | 2.63 |

TABLE 4: Result of FNA in thyroid lesion

| Diagnosis | Category | No. of cases | Percentage (%) |
|---|---|---|---|
| A. Nondiagnostic or unsatisfactory | I | 5 | 2.63 |
| B. Benign | II | | |
| Cystic lesion | | 20 | 10.52 |
| Thyroiditis<br>Hashimoto/Lymphocytic<br>Autoimmune<br>Granulomatous | | <br>12<br>01<br>05 | <br>6.31<br>0.52<br>2.63 |
| Thyroglossal cyst | | 07 | 3.68 |
| Colloid goiter | | 82 | 43.15 |
| Benign nodular lesion | | 30 | 15.78 |
| Hyperplastic goiter | | 01 | 0.52 |
| Follicular adenoma | | 05 | 2.63 |
| C. Atypia of undetermined significance or follicular lesion of undetermined significance | III | 07 | 3.68 |
| D. Follicular neoplasm or Suspicious for follicular neoplasm | IV | 05 | 2.63 |
| E. Suspicious for malignancy | V | 05 | 2.63 |
| F. Malignant<br>Papillary thyroid carcinoma<br>Medullary thyroid carcinoma | VI | 05 | 2.63 |

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

DISCUSSION:

Total of 190 cases of Thyroid cytology were studied over a period of 2 years. In the present study, cytodiagnostic evaluation of thyroid lesions were done and classified according to The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC).

In present study, out of 190 cases, 165(86.84%) cases had complaint of midline neck swelling, 18(9.47%) cases had right sided thyroid swelling and only 7(3.68%) cases have left sided thyroid swelling.

Out of 190 cases, 5 cases were classified as category I (unsatisfactory) lesion.

In present study most of the patients fall under the age group of 31-40 years of age, which was comparable with Avashia N. et al[5], Smita S et al[6], Dhamecha et al[7] and Patel et al[8]

In our study majority of cases were present in female, these findings were similar to Dhamecha et al., Patel et al., Avashia N. et al., and Smita S et al.

In present study, majority of lesions were fall under the category II (Benign category). And in benign lesion, colloid goiter was the most common cause. These findings correlate well with Smita S et al., Dhamecha et al., Patel et al.

Out of 190 cases, 10 patients of category V and VI were advised for surgical intervention. 5 patients of category I were advised for repeat FNAC. Patients of category II were managed clinically and they advised for follow up examination. Category III and IV patients were advised for biopsy for histopathological examination.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

Table 5: Comparison of category wise distribution with other studies

| Study | Year | Category I | Category II | Category III | Category IV | Category V | Category VI |
|---|---|---|---|---|---|---|---|
| Muratli et al[9] | 2014 | 10.8 | 59.5 | 8.7 | 0.6 | 2.8 | 17.6 |
| Mamtha et al[10] | 2015 | 10.84 | 60 | 12.5 | 3.34 | 4.16 | 9.16 |
| Mehra et al[11] | 2015 | 7.2 | 80 | 4.9 | 2.2 | 3.6 | 2.2 |
| Joshi et al[12] | 2015 | 0 | 65.5 | 7.3 | 14.5 | 4.5 | 8.2 |
| Dhamecha et al[7] | 2018 | 10 | 82 | 1.25 | 5.75 | 0.25 | 0.75 |
| Avashia N. et al[5] | 2020 | 1.81 | 88.18 | 0.90 | 1.81 | 5.45 | 1.81 |
| Smita S et al[6] | 2020 | 2.42 | 88.48 | 1.81 | 4.24 | 1.21 | 1.81 |
| Patel et al[8] | 2023 | 2.8 | 89.6 | 0 | 1.9 | 0 | 5.7 |
| Present study | 2025 | 2.63 | 85.78 | 3.68 | 2.63 | 2.63 | 2.63 |

## CONCLUSION:

The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) is a uniform and standardized reporting system with a good accuracy. It provides clarity for communication among pathologists, radiologists, endocrinologists, and surgeons. Its application helps in early and precise diagnosis of various thyroid lesions.

## REFERENCES:

**ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025**

1.Jiang H, Tian Y, Yan W, Kong Y, Wang H, Wang A, Dou J, Liang P, Mu Y. The Prevalence of Thyroid Nodules and an Analysis of Related Lifestyle Factors in Beijing Communities. Int J Environ Res Public Health 2016;13(4):442. doi:10.3390/ijerph13040442, PMID:27110805.

2.Qureshi R, Usmani MH, Singh UR, Kol PC, Valame S. FNAC in the diagnosis of thyroid nodules. Indian J Basic Appl Med Res. 2015;4(2):286–91.

3. Unnikrishnan AG, Menon UV. Thyroid disorders in India: An epidemiological perspective. Indian J Endocrinol Metab. 2011;15(Suppl 2):S78-81. doi: 10.4103/2230-8210.83329.

4. T.J. Smit, H. Safali, E.A. Foster, R.B. Reinhold Accuracy and cost effectiveness of fine needle aspiration biopsy Am J Surg, 149 (1985), pp. 540–555

5. Avashia N. et al : July-December 2020 Evaluation of thyroid lesions by Fine Needle Aspiration Cytology according to the Bethesda System GCSMC J Med Sci Vol (IX) No (II)

6. Smita S S, Tamane K, Pandit G A, Patil M, Kharat P, Bendre M. Thyroid lesions-cytological evaluation by bethesda system. Indian J Pathol Oncol 2020;7(4):527-531

7. Dhamecha M.P, Swami S.Y, Valand A.G. FNAC study of thyroid lesions using the Bethesda system. Trop J Path Micro 2018;4(1):101-108. doi: 10.17511/jopm.2018.i1.18.

8. Patel K A, Anandani G, Sharma B S, et al. (April 10, 2023) Study of Fine Needle Aspiration Cytology (FNAC) of Thyroid Gland According to the Bethesda System. Cureus 15(4): e37371. DOI 10.7759/cureus.37371

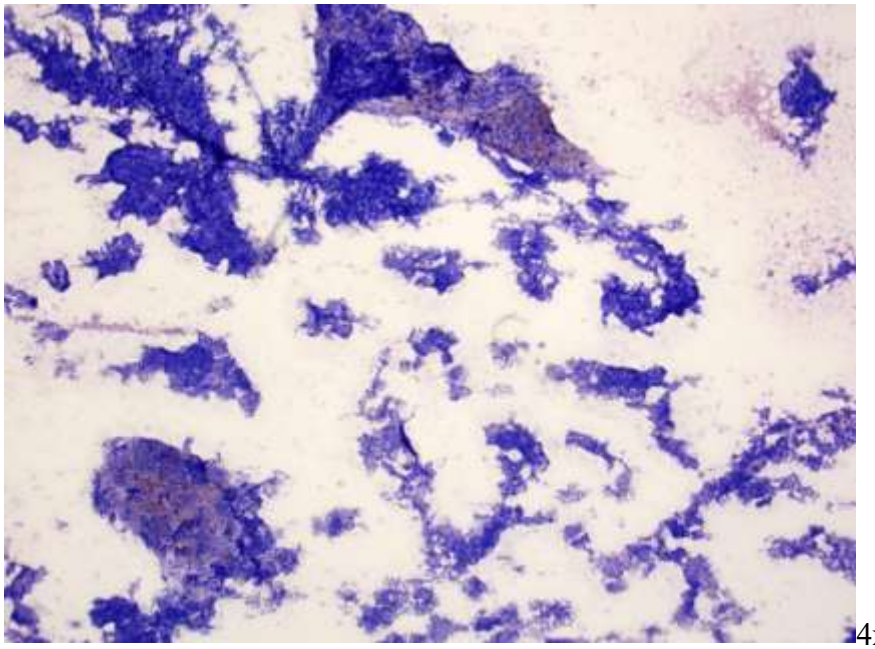
9. Muratli A, Erdogan N, Sevim S, Unal I, Akyuz S. Diagnostic efficacy and importance of fine needle aspiration cytology of thyroid nodules. Journal of Cytology. 2014; 31:73-77.

10. Mamatha M, Sekhar SC, et al.. A comparative study between conventional system and the Bethesda system applied for reporting thyroid cytopathology. International Archives of Integrated Medicine. 2015; 2(3): 87-95.

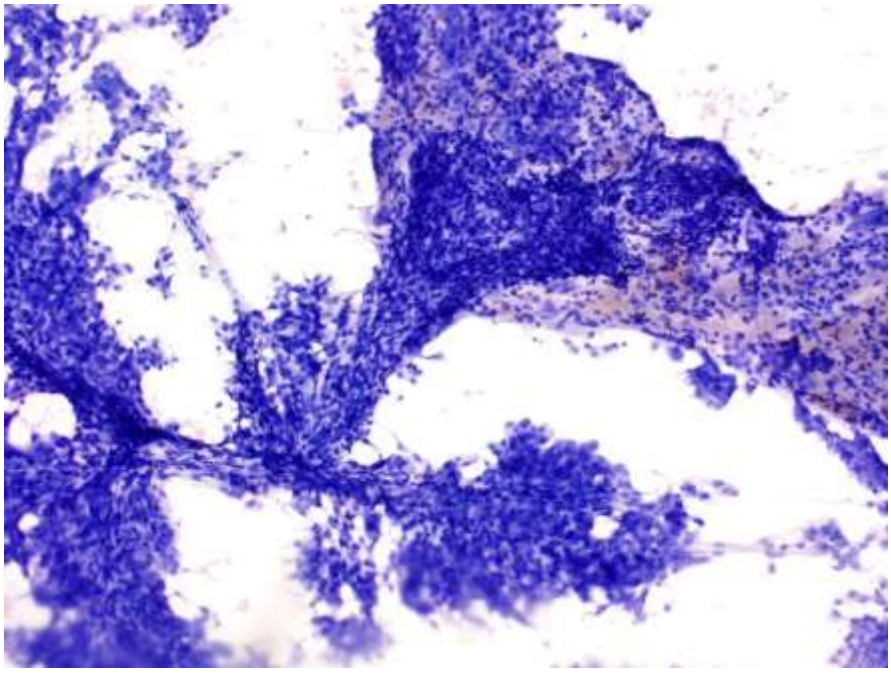
11. Mehra P, Verma AK. Thyroid Cytopathology Reporting by the Bethesda System:A Two-Year Prospective Study in an Academic Institution. Pathology Research International.2015, 1-11.

12. Joshi D, Jesalpura NS. Comparison between Bethesda System and Conventional System in Thyroid Cytopathology. IJSR. 2015; 4(9): 78-80.

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025

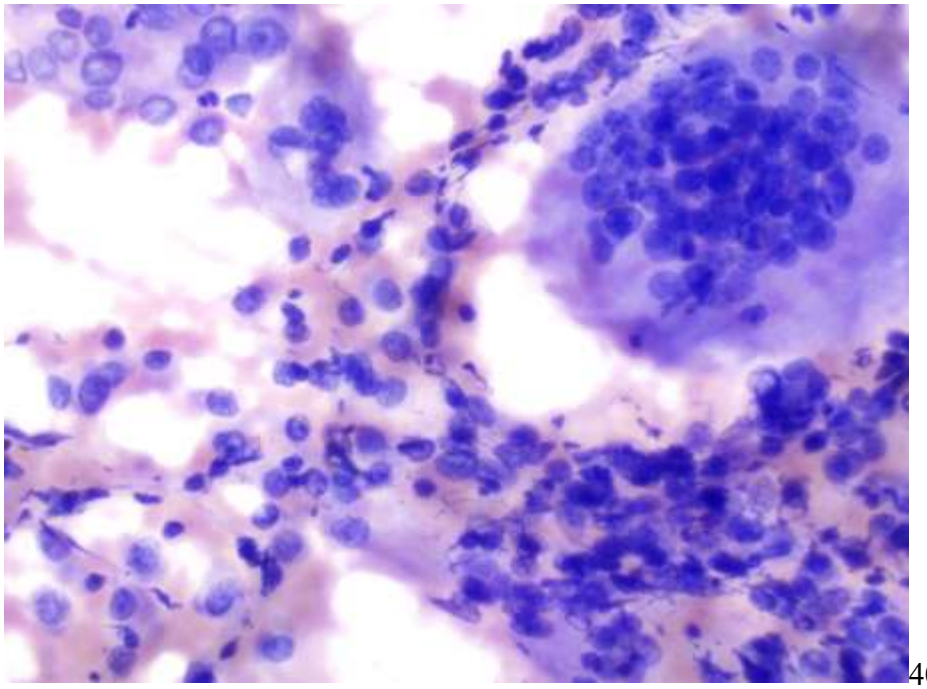


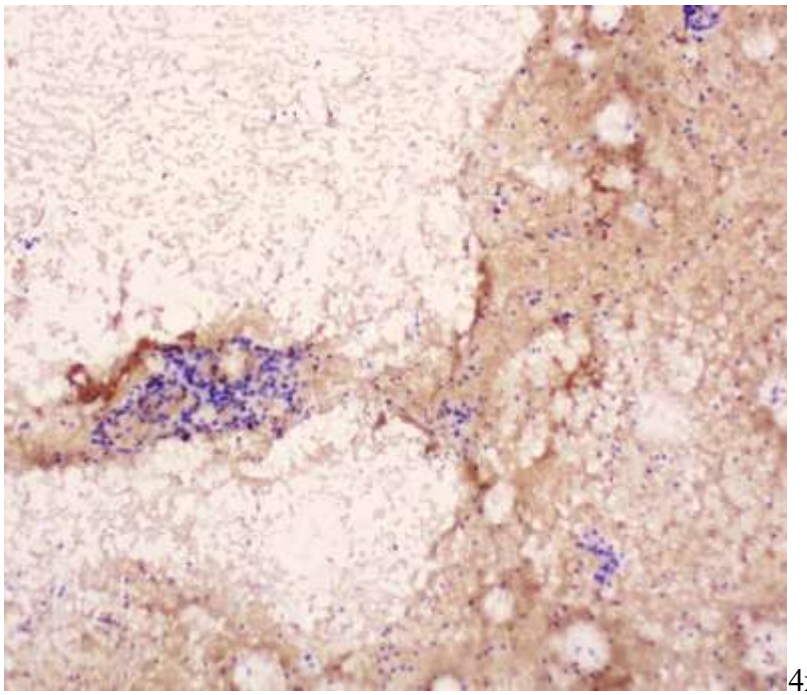
4x



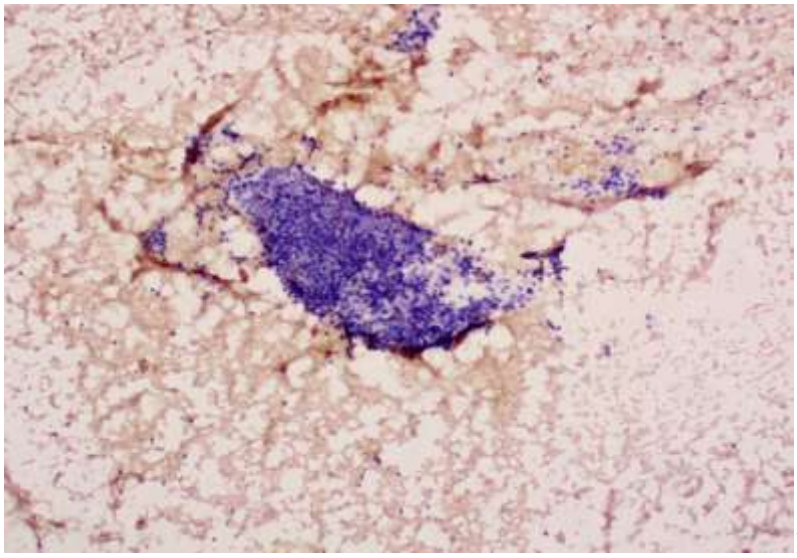
10x

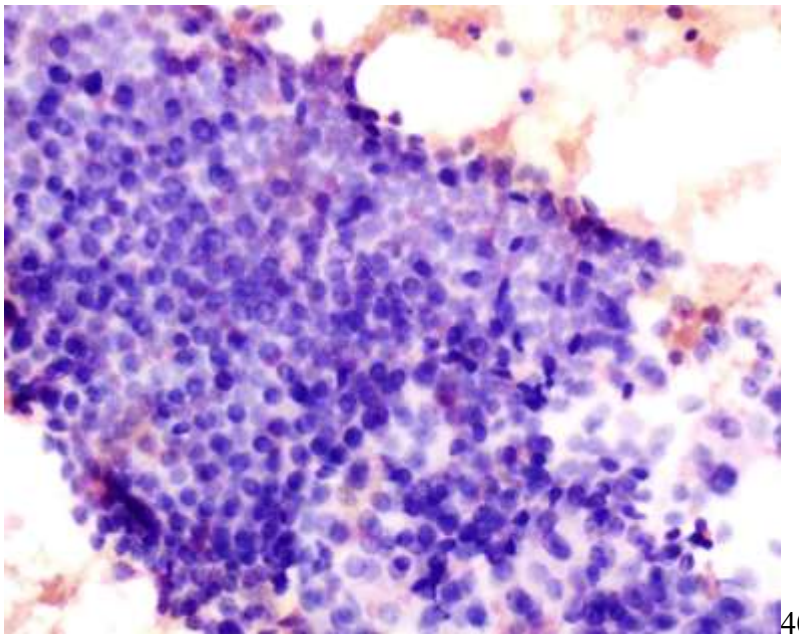
ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025


40x


4x

ISSN: 0975-3583,0976-2833 VOL 16, ISSUE 5, 2025


10x


40x