

Clinicopathological Features of Thyroid Carcinoma in 32 Patients: A Retrospective Study

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ABSTRACT

Objective: To describe the clinicopathological characteristics, histological types, recorded tumor stages, thyroid function tests, and surgical management of 32 patients with thyroid carcinoma. **Study Design:** A single-center retrospective descriptive study. **Place and Duration of the Study:** Dr. Hasan Sadikin General Hospital, Bandung, Indonesia, from January to July 2025. **Methodology:** Clinical registry records of 32 patients with thyroid carcinoma supported by tissue pathology reports were reviewed. All patients included complete data on age, clinical diagnosis, recorded TNM categories, surgical management, and thyroid function tests (TSH, fT4, and T3). Categorical variables were expressed as frequencies and percentages, while continuous variables were summarized using medians and interquartile ranges (IQRs). **Results:** The median age was 49 years (IQR, 33.25–58.00). Papillary thyroid carcinoma was the most common histological type (65.6%), followed by anaplastic (9.4%), medullary (9.4%), follicular (6.3%), oncocytic (6.3%), and differentiated high-grade carcinoma (3.1%). N1 and M1 categories were recorded in 62.5% and 18.8% of patients, respectively. Total thyroidectomy was the most frequently documented procedure (71.9%). The median recorded TSH level was 2.25 (IQR, 1.18–3.27). The staging basis, biochemical units, and completion of surgical procedures were not independently verified. **Conclusion:** Thyroid carcinoma showed diverse clinicopathological characteristics, with papillary carcinoma as the predominant histological type. The recorded nodal and distant metastatic categories highlight the importance of comprehensive staging. Accurate histopathological diagnosis and individualized management remain essential, while further studies are needed to evaluate prognostic factors and clinical outcomes.

Keywords: thyroid carcinoma; clinicopathological characteristics; histopathology; thyroid function; thyroidectomy; retrospective study

INTRODUCTION

Thyroid carcinoma includes several cancers with different cellular origins, histological features, clinical courses, and treatment needs. Global cancer data show that thyroid cancer is a major endocrine malignancy, although detection patterns and overdiagnosis may influence the types of cases seen at referral hospitals [1,2,3,4]. Descriptive clinicopathological studies can help explain the characteristics of patients treated at individual centers.

Follicular cell-derived carcinomas and parafollicular C-cell tumors have different biological behavior [5]. The 2022 World Health Organization (WHO) classification recognizes papillary, follicular, oncocytic, differentiated high-grade, medullary, and anaplastic thyroid carcinomas [6]. Changes in terminology, including the recognition of noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP), show why accurate pathological classification is important [7].

American Thyroid Association (ATA) guidelines also provide different management approaches for differentiated, medullary, and anaplastic thyroid cancers [8,9,10,11].

Ultrasonography, fine-needle aspiration cytology, surgical histopathology, and lymph node examination provide related but different information [12,13,14,15,16]. Tumor–node–metastasis (TNM) staging should indicate whether the classification is clinical or pathological and which staging edition was used [17]. In papillary thyroid carcinoma, the size and number of involved lymph nodes and extranodal extension may provide information beyond the N1 category alone [18,19]. Thyroid-stimulating hormone (TSH) is commonly measured during the evaluation of thyroid nodules. Some observational studies have reported associations between pretreatment TSH concentrations and thyroid malignancy or advanced disease [20,21].

However, levothyroxine treatment and postoperative TSH suppression can change hormone results [22]. Retrospective hormone measurements therefore need to be interpreted in relation to sampling time, laboratory units, and treatment status.

This study aimed to describe the age, histological types, recorded T/N/M categories, thyroid hormone test results, and documented surgical management of 32 patients with thyroid carcinoma. The study was descriptive and was not designed to identify risk factors, compare treatment outcomes, or establish causal relationships.

METHODS

Study design and setting

This was a single-center retrospective descriptive study using clinical registry data from Dr. Hasan Sadikin General Hospital, Bandung, Indonesia. The study period was January 1 to July 31, 2025, as specified by the investigators. The study included 32 patients with the required clinical and laboratory information and a tissue pathology conclusion supporting thyroid carcinoma. Patient-level eligibility dates still require confirmation against the original medical records.

Participants and inclusion criteria

Each patient contributed one record to the analysis. The required information was: (1) age; (2) a recorded clinical diagnosis; (3) a documented surgical procedure or surgical plan; (4) identifiable T, N, and M categories; (5) numeric TSH, free T4 (fT4), and T3 results; and (6) a pathology narrative with a tissue diagnosis supporting thyroid carcinoma. Non-numeric laboratory results were not estimated or imputed. These criteria defined the 32 patients included in this analysis.

Histopathological classification

Histological diagnoses were taken from the conclusions of available tissue pathology reports from the thyroid or related metastatic sites. Fine-needle aspiration cytology alone was not used to assign a definitive histological type. Cases were grouped as papillary, anaplastic, medullary, follicular, oncocyctic, or differentiated high-grade thyroid carcinoma according to the reported findings. The original tissue slides were not re-reviewed centrally.

Study variables and statistical analysis

We recorded age, the initial clinical diagnosis, histological type, reported papillary carcinoma pattern, T/N/M categories, the surgical procedure listed in the registry, and numeric TSH, fT4, and T3 results. T/N/M categories were transcribed from the clinical records. They were not reclassified as formal clinical TNM (cTNM) or pathological TNM (pTNM) because the source information was insufficient. Likewise, a listed procedure was not assumed to have been completed. Decimal separators were standardized, but laboratory units, reference ranges, blood sampling dates, and treatment status were not assumed. Categorical variables were reported as numbers and percentages, and continuous variables as medians, IQRs, and ranges. No hypothesis tests or regression models were performed. Reporting followed relevant principles from STROBE and RECORD [23,24,25,26,27].

RESULTS

Patient characteristics and recorded stage

The study included 32 patients with thyroid carcinoma. All had recorded age, T/N/M categories, surgical management information, numeric TSH, fT4, and T3 values, and a tissue pathology conclusion supporting thyroid carcinoma (Table 1).

TABLE 1: Baseline characteristics recorded T/N/M categories and thyroid function results (n = 32).

Variable	Result
Age, median (IQR), years	49.0 (33.25–58.00)
Age range, years	12–69
Age <18 years, n (%)	4 (12.5%)
Recorded T1 / T2 / T3 / T4, n	1 / 10 / 16 / 5
Recorded N0 / N1, n (%)	12 (37.5%) / 20 (62.5%)
Recorded M0 / M1, n (%)	26 (81.3%) / 6 (18.8%)
TSH, median (IQR)	2.25 (1.18–3.27)
Recorded TSH range	0.20–5.10
fT4, median (IQR)	1.30 (1.08–1.40)
Recorded fT4 range	0.70–1.50
T3, median (IQR)	1.20 (1.05–1.40)
Recorded T3 range	0.80–1.90
Numeric values for all three hormones, n (%)	32 (100%; required for inclusion)

Note: TNM categories were transcribed from diagnostic notes without confirmation of clinical versus pathological staging or the AJCC edition. Laboratory units, reference ranges, and blood sampling dates were not verified. Hormone values are presented as recorded.

The median age was 49 years (IQR, 33.25–58.00; range, 12–69 years). Four patients (12.5%) were younger than 18 years. The recorded T categories were T1 in one patient, T2 in 10, T3 in 16, and T4 in five. N0 was recorded in 12 patients and N1 in 20. M0 was recorded in 26 and M1 in six (Table 1). These categories came from clinical notes and could not be consistently verified as clinical or pathological stage.

Histological spectrum

Based on the available tissue pathology conclusions, 21 patients (65.6%) had papillary thyroid carcinoma, three (9.4%) had anaplastic carcinoma, three (9.4%) had medullary carcinoma, two (6.3%) had follicular carcinoma, two (6.3%) had oncocytic carcinoma, and one (3.1%) had differentiated high-grade carcinoma (Table 2).

TABLE 2: Distribution of thyroid carcinoma histological types according to available pathology reports (n = 32).

Histological type	n	%
Papillary thyroid carcinoma	21	65.6
Anaplastic thyroid carcinoma	3	9.4
Medullary thyroid carcinoma	3	9.4
Follicular thyroid carcinoma	2	6.3
Oncocytic thyroid carcinoma	2	6.3
Differentiated high-grade thyroid carcinoma	1	3.1
Total	32	100.0

Note: Histological categories were assigned from transcribed tissue pathology conclusions without central slide review. Percentages may not total exactly 100% because of rounding.

In four patients, an initial clinical label of papillary carcinoma differed from the reported tissue pathology conclusion: two were classified as oncocytic carcinoma, one as differentiated high-grade carcinoma, and one as anaplastic carcinoma.

All histological categories were based on transcribed reports rather than central slide review. The distribution of recorded T, N, and M categories across the six histological types is presented in Table 3.

TABLE 3: Recorded T/N/M categories by histological type (n = 32).

Histological type	n	T1/T2/T3/T4	N0/N1	M0/M1
Papillary	21	1/7/11/2	7/14	19/2
Anaplastic	3	0/0/0/3	0/3	1/2
Medullary	3	0/2/1/0	2/1	2/1
Follicular	2	0/0/2/0	1/1	2/0
Oncocytic	2	0/1/1/0	1/1	2/0
Differentiated high-grade	1	0/0/1/0	1/0	0/1
Total	32	1/10/16/5	12/20	26/6

Note: These values describe categories written in clinical records and do not establish pathologically confirmed metastases.

Among the 21 papillary carcinomas, nine were described as classic type, five as follicular variant, three as tall-cell predominant, two as oncocytic papillary type, and two without a specific subtype

(Table 4). One case in the classic group was recorded as microcarcinoma, and another included a minor tall-cell component of 20%. The original reporting terms were retained.

TABLE 4: Reported papillary thyroid carcinoma patterns (n = 21).

Pattern or subtype in pathology report	n	% of PTC
Classic (including microcarcinoma and a minor tall-cell component)	9	42.9
Follicular variant	5	23.8
Tall-cell predominant	3	14.3
Oncocytic papillary type	2	9.5
Not specified	2	9.5
Total PTC	21	100.0

Note: One case in the classic group was reported as having a minor tall-cell component of 20%. Categories follow the original report wording and were not centrally re-reviewed.

Thyroid function tests and documented surgery
All 32 patients had numeric TSH, fT4, and T3 values. Median TSH was 2.25 (IQR, 1.18–3.27; recorded range, 0.20–5.10), median fT4 was 1.30 (IQR, 1.08–1.40; range, 0.70–1.50), and median T3 was 1.20 (IQR, 1.05–1.40; range, 0.80–1.90) (Table 1). Laboratory units, reference ranges, and timing in relation to surgery or hormone treatment were not consistently available. Therefore, thyroid function was not categorized as normal or abnormal.

The surgical-management field mentioned total thyroidectomy in 23 patients (71.9%), completion thyroidectomy in four (12.5%), isthmolobectomy in four (12.5%), and subtotal thyroidectomy in one (3.1%) (Table 5). Some records also referred to neck dissection or surgical preparation. As the documentation did not always distinguish planned from completed procedures, these values describe recorded procedure names rather than confirmed operations.

TABLE 5: Thyroid procedures mentioned in surgical-management records (n = 32).

Procedure listed	n	%
Total thyroidectomy	23	71.9
Completion thyroidectomy	4	12.5
Isthmolobectomy	4	12.5
Subtotal thyroidectomy	1	3.1
Total	32	100.0

Note: The procedure field may include planned operations. Concomitant neck dissection was not treated as a separate category.

DISCUSSION

This retrospective descriptive study of 32 patients showed a broad spectrum of thyroid carcinoma types. Papillary carcinoma was the most common, but anaplastic, medullary, follicular, oncocytic, and differentiated high-grade carcinomas were also present. Recorded stage categories and surgical plans varied across cases. However, the retrospective nature of the documentation limits interpretation of these categories as fully verified stages [5,6,17].

Papillary carcinoma accounted for 21 of 32 cases (65.6%). This is consistent with the well-established predominance of papillary carcinoma among thyroid cancers [1,2,5,6]. However, our selected group does not represent all thyroid carcinoma patients treated at the hospital, so these proportions should not be interpreted as hospital-wide histological prevalence. The presence of anaplastic, medullary, and differentiated high-grade tumors also emphasizes the need for histology-specific assessment and management [8,9,10,11]. Four patients were younger than 18 years; adult management guidance may not apply directly to these patients.

The papillary carcinoma reports included classic, follicular, tall-cell predominant, and oncocytic patterns. These patterns may affect clinicopathological interpretation and risk assessment [6,7,8,9]. In four patients, the initial clinical diagnosis of papillary carcinoma differed from the tissue pathology conclusion. This finding shows the importance of distinguishing a working clinical diagnosis from the final reported tissue diagnosis. Histological classification in this study was extracted from written reports, without central review of tissue slides [12,13,14,15,16].

N1 was recorded in 20 patients (62.5%) and M1 in six (18.8%). These proportions cannot be taken as confirmed lymph node or distant metastasis rates because the staging method and timing were not consistently verified. In papillary thyroid carcinoma, the number and size of metastatic lymph nodes and extranodal extension can provide additional prognostic information beyond the N category [17,18]. The recorded stage categories in this study therefore describe documentation, rather than established recurrence risk.

All 32 patients had numeric thyroid hormone results. Although the median recorded TSH was 2.25, clinical interpretation requires information on the laboratory method, units, sampling time, and any levothyroxine or TSH-suppressive treatment [20,21,22]. Because these details were not uniformly available, we did not compare hormone results between histological types or test their association with tumor behavior.

Total thyroidectomy was the most frequently recorded procedure, followed by completion thyroidectomy, isthmolobectomy, and subtotal thyroidectomy. The choice of procedure may depend on tumor features, previous surgery, and individual clinical decisions, but these factors were not assessed in this study. Because some procedure entries may describe plans rather than completed operations, the results cannot be used as an audit of surgical practice or outcomes.

This was a descriptive study, and no hypothesis testing or causal analysis was performed. Secondary clinical data can be useful for describing a case series, but inconsistencies in diagnostic terminology, staging, and laboratory documentation must be acknowledged. Reporting of the available variables and their limitations was guided by STROBE and RECORD principles [23–25,27].

Strengths and limitations

The strength of this study is its focus on 32 patients with tabulated clinical data and tissue pathology conclusions, allowing a clear description of histological types and recorded T/N/M categories. Important limitations are the small sample size, single-center selected cohort, possible selection bias from requiring all three hormone measurements, and lack of patient-level date verification. No central pathology slide review was performed. The distinction between cTNM and pTNM, confirmation of completed surgery, laboratory units, and test timing in relation to treatment were also unavailable. These results should not be used to estimate the hospital-wide distribution of thyroid carcinoma types or to identify metastatic risk factors.

CONCLUSION

This study of 32 patients at Dr. Hasan Sadikin General Hospital showed a diverse clinicopathological spectrum of thyroid carcinoma, with papillary carcinoma as the most common type (65.6%). Other types included anaplastic, medullary, follicular, oncocytic, and differentiated high-grade carcinoma, reflecting the range of cases seen at a tertiary referral center. N1 and M1 categories were recorded in 62.5% and 18.8% of patients, respectively, although these categories still require source-record verification. The findings support the importance of accurate histopathological diagnosis, consistent staging, and management tailored to each patient. They also provide a descriptive basis for future studies of prognostic factors and clinical outcomes.

DECLARATIONS

Consent for publication: The manuscript contains no identifiable patient images or individual case descriptions. Any applicable consent requirements must be confirmed by the authors.

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Data availability: Source records contain patient identifiers and are not publicly available. Requests for de-identified data are subject to institutional approval and applicable ethical restrictions.

Author contributions (for both authors to verify): Muhamad Saifuddin-conceptualization, data curation, descriptive analysis, and drafting; Kiki Ahmad Rizki-methodology, clinical supervision, interpretation, and critical revision.

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