THE MEDICAL BULLETIN OF
SISLI ETFAL HOSPITAL

DOI: 10.14744/SEMB.2025.78370
Med Bull Sisli Etfal Hosp 2025;59(3):263-272

Review

What Has Changed in the 2025 American Thyroid Association Management Guidelines for Adult Patients with Differentiated Thyroid Cancer? Part 1: Preoperative Evaluation, Diagnosis and Surgery

Mehmet Uludag, Isik Cetinoglu, Mehmet Taner Unlu, Ozan Caliskan, Nurcihan Aygun

Department of General Surgery, Division of Endocrine Surgery, University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye

Abstract

The guidelines for the management of thyroid nodules and differentiated thyroid cancer were first published by the American Thyroid Association in 1996 and subsequently updated in 2006, 2009, and 2015. In light of advances in technology and the accumulation of new scientific evidence, the guidelines were revised once again in 2025. The most notable change in the 2025 version is the exclusion of thyroid nodules, with the focus placed solely on differentiated thyroid cancer. This review aims to provide an overview of the major recommendation level changes introduced in the 2025 ATA guidelines compared with the previous version. This part specifically addresses the updates regarding the diagnosis and surgical management of differentiated thyroid cancer.

Keywords: ATA guidelines, diagnosis, differentiated thyroid cancer, papillary thyroid cancer, thyroidectomy

Please cite this article as "Uludag M, Unlu MT, Isik C, Caliskan O, Aygun N. What Has Changed in the 2025 American Thyroid Association Management Guidelines for Adult Patients with Differentiated Thyroid Cancer? Part 1: Preoperative Evaluation, Diagnosis and Surgery. Med Bull Sisli Etfal Hosp 2025;59(3):263-272".

American Thyroid Association (ATA) first published the guideline on the management of thyroid nodules and differentiated thyroid cancer (DTC) in 1996, with subsequent revisions published in 2006, 2009 and 2015.[1–4]

In light of recent advances in the management of thyroid nodules and DTC in the literature, ATA has decided to divide the subjects into two distinct sets of guidelines. After reviewing the available evidence, the first guideline was published on the management of DTC in adult patients.[5]

This guideline highlights several differences compared with the one published in 2015. In this study, we aimed to evaluate the changes introduced since the 2015 guideline. The 2015 guideline included a total of 101 recommendations: 31 related to thyroid nodules and 70 related to DTC.[4] However, the recent guideline includes 84 recommendations concerning DTC.[5]

As the first part of our review series, the updates regarding the diagnosis and surgical management of differentiated thyroid cancer are evaluated in this part.

Address for correspondence: Mehmet Taner Unlu, MD. Department of General Surgery, Division of Endocrine Surgery, University of Health Sciences Türkiye, Sisli Hamidiye Etfal Training and Research Hospital, Istanbul, Türkiye
Phone: +90 539 211 32 36 **E-mail:** m.taner.unlu@gmail.com

Submitted Date: September 25, 2025 **Accepted Date:** September 26, 2025 **Available Online Date:** October 13, 2025

Methods

Due to the growing body of knowledge regarding the management of thyroid nodules and DTC, it was decided to divide the topics into two separate updated guidelines. Task force chairs were appointed by the ATA President with approval from the Board of Directors. A committee was formed comprising experts with complementary specializations in Endocrinology, Surgery (endocrine surgery and otolaryngology–head and neck surgery), Nuclear Medicine, Pathology, Medical Oncology, Cancer Genetics, and Medical Informatics/Clinical Epidemiology. For the first time, a patient advocate was also included in the process. In accordance with ATA's policy to ensure broad specialty and geographic representation with fresh perspectives, at least one-third of the task force consisted of new members who had not participated in the development of previous ATA guidelines.

Systematic review methods

A series of systematic reviews were conducted using the PICO framework (Population, Interventions, Comparisons, Outcomes) to guide the guideline development. The population was patients with DTC. Outcomes were prioritized by consensus, with survival and mortality given the highest priority, followed by oncologic (metastasis, progression, recurrence) and clinical outcomes (quality of life, function, adverse events), while intermediate outcomes were of lower priority.

For key questions on active surveillance versus immediate surgery and on the diagnostic accuracy of serum thyroglobulin (Tg) after thyroidectomy without radioactive iodine (RAI), systematic reviews were commissioned from the Pacific Northwest Evidence-based Practice Center.[6,7] Searches were performed in MEDLINE, Embase, and Cochrane Central, supplemented by reference list review, and limited to English-language studies. Two investigators independently screened and selected studies, extracted data, and assessed study quality (risk of bias). The overall evidence quality was evaluated using an approach adapted from the GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) Working Group, considering factors such as risk of bias, consistency, directness, precision, and potential reporting bias. Evidence was classified as having "high," "moderate," "low," or "very low" certainty, reflecting the level of confidence in the results. Following the modified GRADE methodology developed by the Clinical Guidelines Committee of the American College of Physicians; evidence deemed too limited to allow reliable conclusions was rated as "insufficient".[8]

For other key questions, task force members conducted their own literature searches with information specialist support, selected studies based on predefined criteria, and assessed evidence quality using GRADE-based methods.

Guideline development methods

Recommendations were created by subgroups using systematic review findings, then reviewed and revised by the full committee. Final approval was based on group discussion and majority consensus of non-conflicted members. The quality of included studies was assessed using criteria adapted from the U.S. Preventive Services Task Force and the Cochrane Collaboration.[9, 10] Each recommendation was graded as strong or conditional.[11]

Strong recommendations apply to all or nearly all people or situations, and are indicated when the benefits clearly outweigh the harms with at least moderate certainty. Other factors supporting strong recommendations include insensitivity to values/preferences regarding outcomes, high feasibility and acceptability, low or efficient cost and resource use, and anticipated positive impacts on equity. When certainty is low, strong recommendations require a strong rationale for benefit despite uncertainty in the evidence, along with supporting considerations (e.g., low cost, high feasibility, high acceptability, and/or likely positive impacts on equity). Conditional recommendations apply to most people or situations, but alternative approaches may be appropriate under certain circumstances. Conditional recommendations are indicated when the balance of benefits and harms is relatively close, when certainty regarding benefits and/or harms is lower, when decisions are preference-sensitive, or when there are important concerns regarding feasibility, acceptability, resource use, or equity impact.

When evidence was low or insufficient, a Good Practice Statement (GPS) was used as an alternative to a graded recommendation.[12] A GPS functions like a strong recommendation, applying to nearly all situations, and not following it would be considered outside of usual clinical practice. Benefits must be clear and highly certain, even without direct evidence, often inferred from indirect evidence. GPS required a unanimous consensus from the guideline group.

After recommendations were drafted, a final literature review was conducted up to July 1, 2024, with a single exception for the 2025 WHO tumor classification update by all panel members, until no further revisions were needed, ensuring full consensus. Patient representatives participated fully in all discussions.

The guidelines were reviewed and approved by the ATA Clinical Practice Guidelines and Statements Committee and the ATA Board of Directors, then shared with ATA members for feedback in Fall 2024. Feedback was incorporated before journal submission. The organization of recommendations is detailed in the table of contents.

2025 RECOMMENDATIONS

Low-risk neoplasms

The World Health Organization defined endocrine and neuroendocrine tumors in its 5th edition. In this edition, non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP), follicular tumor of uncertain malignant potential, and hyalinizing trabecular tumor were classified as low-risk neoplasms.[13]

There was no recommendation regarding the management of these tumors in the 2015 guideline. The first recommendation of the current guideline addresses these tumors and is presented as a good practice statement. Recommendation 1 states that NIFTP and other tumors of uncertain malignant potential [follicular tumor of uncertain malignant potential, hyalinising trabecular tumor) can be diagnosed pathologically. The malignant potential of these tumors is minimal, and in fact lower than that observed in the lowest-risk DTC. Completion thyroidectomy, lymphadenectomy, and/or RAI are not routinely recommended as additional treatments. There is still uncertainty on the best postoperative follow-up strategy for these tumors.[5]

Screening in individuals with familial follicular cell–derived DTC

In the ATA guideline, the issue of screening for familial follicular cell–derived DTC was first addressed in Recommendation 1 within the section on thyroid nodules in the 2015 revision. This recommendation stated that screening of individuals with familial follicular cell–derived DTC may lead to earlier detection of thyroid cancer. But still there is no advice either in favour of or against ultrasound screening, due to the lack of evidence to suggest a decrease in morbidity or mortality.[4]

In the 2025 guideline, new recommendations on genetic predisposition to follicular-derived thyroid cancers and related genetic testing were introduced, grouped under four recommendations (Recommendations 2, 3, 4, and 5). Recommendation 2 states that germline genetic testing may be considered when there is suspicion of a syndrome associated with DTC. These scenarios include:[5]

A. Suspected Cowden/PTEN hamartoma tumor syndrome [PHTS) based on the combination of DTC and associated extra-thyroidal malignancies, tumors, or characteristic features.

(Conditional recommendation, Moderate certainty of evidence)

B. In patients diagnosed with FNMTC during childhood, clinical and family history should be evaluated for features of DICER1 tumor predisposition. Germline DICER1 testing may be considered in patients from families with paediatric DTC.

(Conditional recommendation, Very low certainty of evidence)

C. Pathological diagnosis of cribriform-morular thyroid carcinoma associated with the APC gene.

(Conditional recommendation, Moderate certainty of evidence)

D. The occurrence of other tumor and/or cancer combinations in a patient and/or family members, including rare conditions such as Carney complex or Werner syndrome, may raise concern for an inherited predisposition. In such cases, genetic counselling and testing may be suggested.

(Conditional recommendation, Moderate certainty of evidence)

The issue of whether patients with non-syndromic FNMTC should undergo genetic testing is addressed in Recommendation 3. Recommendation 3 states that there is insufficient evidence to support the clinical use of germline genetic testing in non-syndromic FNMTC. In such cases, the presence of extra-thyroidal malignancies within the family may influence the decision regarding genetic testing.[5]

(Conditional recommendation, Moderate certainty of evidence)

Thyroid cancer screening in family members of patients with FNMTC

This issue is addressed in Recommendation 4. It states that individuals with a family history of FNMTC should undergo a careful history taking and direct neck examination as part of routine health care. When three or more affected relatives (first- or second-degree) fulfill the clinical definition for FNMTC, ultrasound screening may be taken into consideration for first-degree relatives of such persons. If there are additional worrisome features (especially young age at diagnosis) or if the family structure is limited, ultrasound screening may also be considered in families with only two affected members. More research is needed to determine the ideal age for such screening to begin, and should be considered cautiously against the risk of overtreatment.[5]

(Conditional recommendation, Very low certainty of evidence)

The advice to consider germline genetic testing in patients with DTC in whom somatic alterations are detected in tumor samples is addressed in Recommendation 5.

Genomic analysis of tumor tissue undertaken for clinical purposes may reveal not only somatic but also germline variants. If a variant is identified that could indicate a clinically significant predisposition to cancer, it is recommended that the patient and their family history be reviewed for clinical correlation, and referral for genetic counselling with potential germline testing should be made.[5]

(Conditional recommendation, Moderate certainty of evidence)

Impact of surgical experience on thyroidectomy complications

Although surgical complications were discussed in the 2015 revision, the effect of surgeon experience on complication rates is specifically addressed in the 2025 guideline. Recommendation 6 states that patients with thyroid cancer, especially those requiring more complex procedures, should be referred to high-volume thyroid surgeons (performing >25–50 thyroidectomies annually), as they have lower complication rates and overall better outcomes.[5]

(Strong recommendation, Moderate certainty of evidence)

Role of Diagnostic Imaging and Laboratory Tests in Preoperative Staging

Use of ultrasonography

Although recommendations regarding preoperative imaging and testing remain in the new revision, some minor changes are noteworthy. Preoperative ultrasonography was addressed in Recommendation 32 of the 2015 revision and is now included as Recommendation 7 in the 2025 revision. The ultrasonography recommendation consists of three components:[5]

A. Preoperative neck ultrasonography is recommended to assess both central and lateral lymph nodes, as well as for the detection of gross extrathyroidal extension in all patients scheduled for surgery with malignancy confirmed by cytology or molecular findings. The addition of "gross extrathyroidal extension" is a new element in this recommendation.

B and C recommendations remain the same with 2015 edition.

B. For lymph nodes appearing suspicious on US and measuring greater than 8–10 mm in the smallest dimension, fine-needle aspiration (FNA) is recommended to confirm malignancy if the result might influence the treatment strategy.

(Strong recommendation, Moderate certainty of evidence)

C. In selected patients, FNA with Tg washout may be added for the assessment of suspicious cervical lymph nodes. However, interpretation may be challenging in patients with an intact thyroid gland.

(Conditional recommendation, Low certainty of evidence)

Cross-sectional Imaging and 18F-Fluorodeoxyglucose PET Imaging

In the 2015 revision, Recommendation 33 included two items: one on cross-sectional imaging and one on PET. In the 2025 revision, these recommendations were combined into Recommendation 8, now presented in three sections. The cross-sectional imaging recommendations are detailed in two sections and have been expanded compared with the 2015 guideline.

In the 2015 revision, preoperative intravenous (IV) contrast-enhanced cross-sectional imaging (CT or MRI) was recommended in addition to ultrasound for patients with clinically suspected advanced disease, including invasive primary tumors or clinically apparent multiple or large lymph node metastases.

(Strong recommendation, Low-quality evidence)

The 2025 revision expands this recommendation, advising preoperative IV contrast-enhanced cross-sectional imaging of the neck and mediastinum (CT or MRI) for patients with clinical suspicion of advanced or invasive disease. This includes primary tumors with gross extrathyroidal extension, extensive (e.g., large or invasive) adenopathy, or involvement of the aerodigestive tract and/or thoracic structures. Imaging should be performed in addition to physical examination and ultrasound.

(Strong recommendation, Moderate certainty of evidence)

In addition, the 2025 guideline introduces a new recommendation not present in 2015 regarding distant metastasis evaluation. It suggests preoperative cross-sectional imaging of the chest, abdomen, and pelvis when the results are expected to change the surgical plan.

(Good Practice Statement)

Regarding preoperative PET imaging, the recommendation remains largely unchanged from 2015: routine use of preoperative 18F-fluorodeoxyglucose (FDG)-PET/CT is not advised.

(Strong recommendation, Moderate certainty of evidence)

In the 2025 revision, the phrase "prior to surgery" was added to specify the timing.[5]

Serum thyroglobulin measurement

This recommendation remains unchanged in the 2025 revision compared with 2015 and is presented as Recommendation 9. Preoperative assessment of serum Tg or thyroglobulin antibodies (TgAb) is not advised regularly.[5]

(Conditional recommendation, Low certainty of evidence)

Should preoperative somatic genomic testing be performed to guide the extent of surgery?

Genomic testing was not included in the 2015 revision; however, the 2025 revision addresses the use of preoperative genomic tests in Recommendation 10. Routine genomic testing of histologically confirmed DTC before surgery is not advised. Nevertheless, when the genomic profile is available, the presence or lack of specific alterations may be assessed in relation to clinical, radiographic, and cytopathological findings when determining the extent of surgery.[5]

(Conditional recommendation, Low certainty of evidence)

Are there patients for whom active surveillance or percutaneous ablation are appropriate treatment options?

In the ATA guideline, active surveillance and percutaneous therapies as primary treatment were included for the first time in the 2025 revision under Recommendation 11. Following Recommendations 12, 13, and 14 also present new guidance regarding active surveillance.

Part A of the Recommendation 11 indicates that active surveillance may be an appropriate treatment strategy for selected patients with cT1aN0M0 papillary thyroid cancer (PTC). The guideline emphasises the importance of shared decision-making between the patient and the clinical team, carefully weighing the potential risks and benefits.

(Conditional recommendation, Low certainty of evidence)

Additionally Part B states that, in certain patients with cT1aN0M0 PTC, ultrasound-guided percutaneous ablation may be an alternative to surgery or active surveillance, with the same emphasis on collaborative decision-making and careful assessment of risks and benefits.[5]

(Conditional recommendation, Low certainty of evidence)

Optimal approach for patients under active surveillance

According to Recommendation 12, disease progression in patients under active surveillance should be followed up using neck ultrasound.[5]

(Good Practice Statement)

Recommendation 13 states that routine measurement of serum Tg and/or TgAb is not indicated in patients on active surveillance.[5]

(Good Practice Statement)

Are there clear indications for when surgery is required in patients under active surveillance?

Recommendation 14 provides guidance on surgical indications for patients undergoing active surveillance. Surgery is considered in cases of newly detected lymph node metastases confirmed by biopsy, primary tumor growth exceeding 3 mm, presence of distant metastases, documentation of extrathyroidal extension, posterior tumor growth, patient concern, failure to continue follow-up, and/or patient preference for surgery.[5]

(Good Practice Statement)

What is the optimal operative approach in DTC?

Surgery remains the primary treatment for differentiated thyroid cancer (DTC). Compared with the 2015 revision, the 2025 update includes notable changes and new recommendations regarding the surgical approach. The section previously titled "Operative Approach for Biopsy Diagnostic for Follicular Cell-Derived Malignancy" in the 2015 guideline has been revised in 2025 to "Optimal Operative Approach in DTC."

In the 2015 revision, surgical interventions for the thyroid were presented in Recommendation 35 under three main categories.[5]

A. If there are no contraindications, the primary surgery for patients with thyroid cancer larger than 4 cm, or with gross extrathyroidal extension (clinical T4), or with clinically detectable lymph node metastases (clinical N1) or distant metastases (clinical M1) should be a near-total or total thyroidectomy, including complete removal of all gross primary tumor.

(Strong recommendation, Moderate-quality evidence)

B. In patients with thyroid cancer between 1 cm and 4 cm without extrathyroidal extension and with no clinical evidence of lymph node metastasis (cN0), both a bilateral operation (near-total or total thyroidectomy) or a unilateral operation (lobectomy) can be preferred as the initial surgical approach. In cases of low-risk papillary or follicular carcinoma, a lobectomy alone may be adequate as first-line therapy, although total thyroidectomy may be chosen by the treatment team to facilitate radioactive iodine (RAI) treatment or improve surveillance, depending on tumor characteristics and patient preference.

(Strong recommendation, Moderate-quality evidence)

C. In patients with thyroid cancer smaller than 1 cm, without extrathyroidal extension and clinically negative lymph nodes (cN0), if surgery is indicated, the initial surgery should be a lobectomy. This is relevant only if there is no reason to intervene the contralateral lobe. Lobectomy alone is considered adequate for small, unifocal, intrathyroidal carcinomas in patients without a history of prior head and neck radiation, familial thyroid cancer, or clinically detectable cervical lymph node metastases.

(Strong recommendation, Moderate-quality evidence)

In the 2025 revision, recommendations regarding surgical interventions for the thyroid are presented in Recommendation 15 under three main categories. In this recommendation:

A. In patients with thyroid cancer smaller than 2 cm (cT1N0M0), without gross extrathyroidal extension or metastases, surgery can be performed, when surgery is indicated, lobectomy should be the first treatment of choice, provided there are no bilateral tumors or other reasons to remove the contralateral lobe.

(Strong recommendation, Moderate certainty of evidence)

B. Given its lower risk profile and side effects, lobectomy may be the recommended initial surgical strategy for patients with low-risk, unilateral thyroid tumors measuring 2–4 cm (cT2N0M0). But, in cases where worrisome contralateral nodules are present or based on patient preference, the medical team and patient may decide to perform a total thyroidectomy in order to facilitate RAI therapy and/or better follow-up. When lobectomy is selected as the first course of treatment, patients should be informed that they may need to have a completion thyroidectomy if higher-risk features are found after surgery, or that they may need to convert to a total thyroidectomy intraoperatively.

(Conditional recommendation, Low-to-moderate certainty of evidence)

C. Total thyroidectomy with lymph node dissection should be preferred as the initial surgical treatment in patients with thyroid cancer larger than 4 cm (cT3a), any tumor of any size with gross extrathyroidal extension (cT3b or cT4), or those with clinically evident nodal (cN1) or distant metastatic disease (cM1), if there are no contraindications.

(Strong recommendation, Moderate certainty of evidence)

Differences in thyroidectomy recommendations

Significant differences in surgical recommendations can be observed between the two revisions. In the 2015 guidelines, for intrathyroidal tumors smaller than 1 cm without metastases, lobectomy was recommended as the initial surgical approach if there was no indication to remove the contralateral lobe. In the 2025 revision, however, this recommendation has been extended to include tumors smaller than 2 cm, with lobectomy now proposed as the preferred initial procedure in such cases.

In 2015 edition, for thyroid cancers >1 cm and <4 cm without extrathyroidal extension or clinical evidence of lymph node metastasis (cN0), either bilateral surgery (near-total or total thyroidectomy) or unilateral surgery (lobectomy) was considered appropriate. By contrast, the 2025 guidelines specify that in patients with low-risk, unilateral thyroid cancer measuring >2 cm but <4 cm (cT2N0M0), lobectomy may be preferred as the initial operation due to its lower risk and morbidity profile. Importantly, patients should be informed about the possibility of conversion to total thyroidectomy intraoperatively or the need for completion thyroidectomy postoperatively if higher-risk features are discovered. Nonetheless, similar to the 2015 revision, the 2025 guidelines still acknowledge that total thyroidectomy may be selected for tumors in the 2–4 cm range, either to facilitate RAI therapy, improve follow-up, or in the presence of suspicious contralateral nodularity or based on patient preference.

For tumors larger than 4 cm, those with gross extrathyroidal extension, or with lymph node or distant metastases, the 2015 guidelines recommended total thyroidectomy with complete removal of the primary tumor. The 2025 revision expands on this by recommending total thyroidectomy with lymph node dissection in such cases. Depending on the clinical scenario, this may involve either prophylactic or therapeutic lymph node dissection. Thus, while the 2025 guidelines adopt a more conservative surgical approach for smaller tumors, they simultaneously advocate for a more extensive operation in patients with advanced disease compared to the 2015 recommendations.

Lymph node dissection

In the 2015 revision, recommendations regarding central lymph node dissection were presented in Recommendation 36 under three subcategories:[4]

A. To ensure clearance of disease from the central neck, a therapeutic central compartment (level VI) neck dissection and a total thyroidectomy should be performed in patients with clinically affected central lymph nodes.

(Strong recommendation, Moderate-quality evidence)

B. In patients without clinically evident central neck lymph node involvement (cN0) but with advanced primary tumors (T3 or T4), or with papillary thyroid carcinoma presenting with clinically apparent lateral neck node metastases (cN1b), or where the information would guide subsequent therapy, prophylactic central compartment neck dissection (ipsilateral or bilateral) may be considered.

(Weak recommendation, Low-quality evidence)

C. For small (T1 or T2), non-invasive, clinically node-negative papillary thyroid carcinoma (cN0), as well as for most follicular thyroid cancers, thyroidectomy without prophylactic central neck dissection is considered appropriate.

(Strong recommendation, Moderate-quality evidence)

Recommendation 37 addressed therapeutic lateral neck dissection. It stated that in patients with biopsy-proven metastatic lateral cervical lymphadenopathy, a therapeutic lateral compartment neck dissection should be performed.

(Strong recommendation, Moderate-quality evidence)

In the 2025 revision, prophylactic lymph node dissection is addressed separately in Recommendation 19, while therapeutic lymph node dissection is covered in Recommendation 20. Unlike the 2015 revision, which defined the central neck dissection field as level VI, the 2025 revision specifies that the relevant compartment includes both levels VI and VII.

In Recommendation 19;

A. For the majority of patients with FTC or small, non-invasive, clinically node-negative PTC (cT1–T2, cN0), prophylactic central compartment lymph node dissection is not recommended.

(Strong recommendation, Moderate certainty evidence)

B. For patients with more advanced thyroid cancer (T3 or T4) who are clinically node-negative (cN0), or in cases where nodal status would inform subsequent therapeutic decisions, prophylactic central compartment dissection may be considered. However, the potential benefits of this approach should be balanced against the surgical risks of thyroidectomy.

(Conditional recommendation, Low certainty evidence)

What is the best approach for therapeutic central and lateral compartment lymph node dissections?

In the 2025 revision, Recommendation 20 states:

A. In patients with clinically involved central lymph nodes (cN1a), a therapeutic central compartment (Level VI and upper Level VII) neck dissection with thyroidectomy should be performed for the disease clearance from the central neck.

(Strong recommendation, Moderate certainty evidence)

B. For patients presenting with clinically positive lateral neck lymph nodes (cN1b), it is advised that therapeutic central lymph node dissection of the ipsilateral central compartment be performed alongside lateral neck dissection and thyroidectomy.

(Conditional recommendation, Low-certainty evidence)

C. In cases where biopsy confirms, or clinical examination reveals, metastatic involvement of the lateral neck compartment, an initial surgical approach should include therapeutic dissection of the lateral neck lymph nodes, generally encompassing Levels IIa, III, IV, and Vb.

(Strong recommendation, Moderate-certainty evidence)

Differences in neck lymph node dissection

In the 2015 revision, prophylactic and therapeutic neck dissections were addressed within a single recommendation and presented in three sections. In contrast, the 2025 revision separates these into two distinct recommendations: prophylactic central neck dissection is addressed in a two-point recommendation (Recommendation 19), while therapeutic neck dissection is presented in a separate three-point recommendation. A notable trend between the two revisions is a shift away from routine prophylactic central neck dissection.

Although the 2015 revision suggested that prophylactic central neck dissection could be omitted during thyroidectomy in most small, non-invasive, clinically node-negative PTCs (cT1–T2, cN0) and most FTCs, the 2025 revision explicitly states that prophylactic central neck dissection should not be performed in these tumors, with a strong recommendation.

In 2015 edition, prophylactic central compartment neck dissection (ipsilateral or bilateral) should be considered for patients with clinically node-negative advanced primary tumors (T3 or T4), patients with clinically involved lateral neck nodes (cN1b), or patients with PTC in whom the information may be used to guide further treatment (Weak recommendation). In the 2025 revision, this was downgraded to may be considered for patients with advanced (T3–T4) PTC who are clinically node-negative (cN0) or when the information may guide further treatment, but it is recommended that this approach be weighed against the risks associated with thyroidectomy (Conditional recommendation, Low-certainty evidence). The key difference is the addition of a risk–benefit consideration of lymph node dissection relative to thyroidectomy while weakening the recommendation.

However, in Recommendation 15 of the 2025 revision, total thyroidectomy, in which the primary tumor is removed completely, and lymph node dissection are recommended as part of initial treatment for T3–T4 tumors (regardless of lymph node metastasis) if there are no contraindications related to the surgery. (Strong recommendation, Moderate-certainty evidence) This implies that lymph node dissection (prophylactic or therapeutic) is routinely recommended for all patients. Therefore, Recommendation 15C and Recommendation 19B are not fully aligned regarding prophylactic central neck dissection.

For patients with lateral neck metastases but no central compartment involvement, central neck dissection was defined as prophylactic in the 2015 revision. In contrast, the 2025 revision recommends ipsilateral central neck dissection in lateral metastasis regardless of central compartment involvement, defining it as therapeutic central neck dissection.

For clinically involved central neck nodes, the recommendation for therapeutic central neck dissection in addition to total thyroidectomy remains similar in both revisions. The most notable difference is the definition of the central compartment: Level VI in 2015, and Levels VI and VII in 2025.

Regarding therapeutic lateral neck dissection, the 2015 revision recommended it for patients with biopsy-proven metastatic lateral cervical lymphadenopathy. The 2025 revision expands this recommendation to include pa-

tients with clinically apparent metastatic lateral compartment cervical lymphadenopathy and emphasizes that this should be part of the initial surgical treatment. The extent of dissection is specified as typically including Levels IIa, III, IV, and Vb.

Completion Thyroidectomy

In the 2015 revision, Recommendation 38, Part A states that completion thyroidectomy should be performed in patients who, if diagnosed prior to the first operation, would have been offered a total thyroidectomy. When lymph nodes are clinically involved, a therapeutic central neck dissection should also be performed. For low-risk papillary and follicular thyroid carcinomas, a lobectomy alone may provide adequate treatment. (Strong recommendation, Moderate-quality evidence)

In Part B of the same recommendation, routine use of RAI ablation instead of completion thyroidectomy is not recommended; but, in certain cases, RAI may be used for the ablation of the remaining lobe. (Weak recommendation, Low-quality evidence).[4]

In the 2025 revision, the recommendation for completion of thyroidectomy is provided in Recommendation 16. Although specific indications are described, the strength of the recommendation is weaker compared to previous guidelines.

In Part A, completion thyroidectomy may be offered after an initial lobectomy to refer persistent primary malignancy, allow for RAI therapy, and/or improve follow-up based on a greater estimated risk of recurrence detected postoperatively, while taking recurrent laryngeal nerve function into account. (Conditional recommendation, Low–Moderate certainty evidence)

Part B stated that, similar to other histologic types of differentiated thyroid carcinoma (DTC), completion thyroidectomy may be considered for the remaining lobe (OTC) based on appropriate indications. (Conditional recommendation, Very low-certainty evidence).[5]

Surgical approach in thyroglossal duct carcinoma

Thyroglossal duct cysts are the most common congenital neck lesions, and malignancy can arise from the tissue of a thyroglossal duct cyst. The reported incidence of malignancy ranges from 1% to 7% in clinical series, with over 95% of cases originating from thyroid tissue.[14-16]

The management of carcinomas arising from thyroglossal duct tissue remains controversial. In the 2025 revision, recommendations regarding the surgical approach for thyroid cancers originating from thyroglossal duct tissue are provided in Recommendations 17 and 18.

In Recommendation 17, Part A, it is suggested that the first surgical treatment for thyroid cancer originating from a thyroglossal duct cyst (TGDCa) should involve the total excision of the tumor or cyst and the central part of the hyoid bone (Sistrunk procedure). *(Conditional recommendation, Low-certainty evidence)*

In Part B, for TGDCa with significant or suspicious thyroid nodularity, Sistrunk procedure along with thyroidectomy may be offered to achieve a total removal of potential multicentric disease, facilitate RAI therapy for larger tumors—particularly in older patients—and/or improve follow-up. *(Conditional recommendation, Low-certainty evidence)*

In Part C, for TGDCa patients who have signs of more advanced disease (such as widespread local invasion, involvement of lymph nodes, or distant metastasis), Sistrunk procedure combined with total thyroidectomy is recommended. *(Strong recommendation, Moderate-certainty evidence)*.[5]

In the 2025 revision, Recommendation 18 provides guidance on when completion thyroidectomy should be performed following a Sistrunk procedure.

In Part A of this recommendation, it is suggested that completion (total) thyroidectomy may be performed in patients who have shown metastases to Delphian/prelaryngeal lymph node(s) or after resection of a TGDCa with higher-risk features (much like a completion thyroidectomy following lobectomy). *(Conditional recommendation, Moderate-certainty evidence)*

In Part B, completion thyroidectomy may be offered after removal of TGDCa with lower risk factors in the presence of significant or suspicious thyroid nodularity to guarantee total removal of potential multicentric disease, facilitate RAI therapy—especially in older patients or those with larger tumors—and/or improve follow-up. *(Conditional recommendation, Low-certainty evidence)*.[5]

The recommendations on preoperative management are similar in both guidelines: Recommendation 39 in the 2015 revision and Recommendation 21 in the 2025 revision.

These state that, prior to surgery, the surgeon should review surgical risks with the patient through the informed consent process, including the possibility of nerve injury and parathyroid damage. In addition, the surgeon should communicate any significant findings from the preoperative evaluation with relevant colleagues, including anaesthesiologists. *(Good Practice Statement)*.[5]

Preoperative voice or laryngeal examination

The recommendations for preoperative voice and laryngeal assessment are nearly identical in the two revisions. In the 2015 revision, these were presented as Recommendations 40 and 41, whereas in the 2025 revision they are consolidated into Recommendation 22.

In the updated guideline, Part A states that all patients undergoing thyroid surgery should have their voice evaluated as part of the routine preoperative physical examination. Both the patient's own description of any voice changes and the physician's clinical evaluation should be included in this assessment. *(Strong recommendation, Moderate-certainty evidence)*

Part B of the 2025 recommendation specifies that preoperative laryngeal examination is required in certain following situations:

a. Presence of preoperative dysphonia (note: in the 2025 revision, the term "voice disorder" was replaced with "dysphonia"). *(Strong recommendation, Moderate-certainty evidence)*

b. Those with a history of cervical or upper thoracic surgery that could have endangered the recurrent laryngeal nerve or vagus nerve. *(Strong recommendation, Moderate-certainty evidence)*

c. Patients with thyroid cancer demonstrating extensive central compartment involvement or posterior extrathyroidal extension or metastases to jugular chain lymph nodes (in the 2025 revision, lateral metastasis has been added to this criterion). *(Strong recommendation, Low-certainty evidence)*.[5]

Intraoperative assessment of the laryngeal nerves

In the 2015 revision, Recommendation 42 emphasized two key points. First, the recurrent laryngeal nerve (RLN) should be visually identified in all cases during dissection. In addition, specific care should be taken to preserve the external branch of the superior laryngeal nerve (EBSLN) during upper pole dissection of the thyroid gland. *(Strong recommendation, Moderate quality evidence)*

Part B stated that intraoperative nerve stimulation, with or without formal monitoring, may be used to aid in identifying the nerve and verifying its functional integrity. *(Weak recommendation, Low quality evidence)*.[4]

In the 2025 revision, the evaluation of the laryngeal nerves is addressed in Recommendation 23, with greater detail than in 2015. In section A, the 2015 statement is expanded to specify that during thyroidectomy and/or paratracheal lymph node dissection (the latter newly added), the recurrent laryngeal nerve (RLN) should be visually detected to maintain its integrity and function. *(Good Practice Statement)*

What was presented as section B in 2015 has now been elaborated into three separate parts (B, C, and D). Section B advises that intraoperative neurophysiological monitoring of the RLN may be used during thyroidectomy for malignancy, especially in total or repeat procedures, as a means of lowering the risk of nerve injury. *(Conditional recommendation, Low to moderate certainty evidence)*

Section C notes that during thyroidectomy for malignancy, intraoperative detection and neurophysiological monitoring of the external branch of the superior laryngeal nerve (EBSLN) may be used to ensure the accurate recognition of the nerve and optimize voice outcomes. *(Conditional recommendation, Moderate to high certainty evidence)*

Finally, section D recommends that, in order to prevent potential bilateral nerve injury, the integrity and function of the RLN should be assessed following the first lobectomy—before proceeding with contralateral resection—through intraoperative stimulation of the vagus nerve or proximal RLN, either with monitoring or via laryngeal palpation. *(Good Practice Statement)*[5]

Intraoperative and perioperative management of the parathyroid glands

In the 2015 revision, intraoperative management of the parathyroid glands is addressed in Recommendation 43. This recommendation states that in the course of thyroid surgery, the parathyroid glands and their blood supply should be secured. *(Strong recommendation, Moderate-quality evidence)*.[4]

In the 2025 revision, Recommendation 24 provides detailed guidance on both intraoperative and postoperative management of the parathyroid glands.

In Part A, to reduce the risk of hypoparathyroidism during thyroid surgery, the parathyroid glands and their blood supply should be preserved. If a parathyroid gland becomes devascularized or is inadvertently removed, it should be auto-transplanted into adjacent muscle tissue after frozen section confirmation of benign parathyroid tissue (even partial). *(Good Practice Statement)*

In Part B, following total thyroidectomy, central lymph node dissection, or unilateral procedures after prior contralateral thyroid surgery, calcium and vitamin D supplementation (either routine or selective) should be administered, directed by parathyroid hormone levels. This approach decreases the incidence of hypocalcemia and shortens hospital stay compared with relying solely on serial calcium measurements. *(Strong recommendation, Moderate-certainty evidence)*.[5]

Should the thyroidectomy bed be drained?

In the 2025 revision, Recommendation 25 introduces guidance on drainage, stating that routine drainage of the thyroidectomy bed is generally not recommended, since it is linked to longer hospital stays, may increase infection risk, and does not decrease the likelihood of hematoma. *(Conditional recommendation, High-certainty evidence)*.[5]

How should the surgeon manage postoperative voice changes and symptoms?

In the 2015 revision, this was presented in two recommendations (44 and 45), while in the 2025 revision, it is presented as Recommendation 26 in three parts. Parts A and B of Recommendation 26 are the same as in the 2015 revision, and a new Part C has been added in this update. In Part A of Recommendation 26, patients' voices should be evaluated postoperatively. If the voice is abnormal, a formal laryngeal examination is recommended. *(Good Practice Statement)*

In Part B, it is recommended that significant findings during surgery and details of postoperative care be communicated by the surgeon to the patient and to other physicians involved in the patient's postoperative management. *(Good Practice Statement)*

Part C, newly added section in this revision, advises that patients with a documented recurrent laryngeal nerve injury resulting from surgery be promptly referred to a speech-language pathologist and a voice specialist. *(Good Practice Statement)*.[5]

Disclosures

Ethics Committee Approval: The authors declared that they do not have necessary for this manuscript.

Informed Consent: The authors declared that they do not have necessary for this manuscript.

Conflict of Interest: The authors declared no conflicts of interest.

Financial Support: The authors declared that no financial support was received for this study.

Use of AI for Writing Assistance: The authors declared that no artificial intelligence tool was used in the preparation of this manuscript.

Authorship Contributions: Concept – M.U., N.A.; Design – M.U., N.A.; Supervision – M.U., N.A.; Materials – M.T.U., O.C., I.C.; Data collection &/or processing – M.T.U., O.C., I.C; Analysis and/or interpretation – M.T.U., O.C., I.C.; Literature search – M.U., N.A.; Writing – M.U., N.A., M.T.U., O.C.; Critical review – M.U., N.A.

References

1. Singer PA, Cooper DS, Daniels GH, Ladenson PW, Greenspan FS, Levy EG, et al. Treatment guidelines for patients with thyroid nodules and well-differentiated thyroid cancer. Arch Intern Med 1996;156:2165–72. [Crossref]
2. Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, et al. Management Guidelines for Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Taskforce. Thyroid 2006;16:109–42. [Crossref]
3. Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, et al. Revised American Thyroid Association Management Guidelines for Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association (ATA) Guidelines Taskforce on Thyroid Nodules and Differentiated Thyroid Cancer. Thyroid 2009;19:1167–214. [Crossref]
4. Haugen BR, Alexander EK, Bible KC, Doherty GM, Mandel SJ, Nikiforov YE, et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer. Thyroid 2016;26:1–133. [Crossref]
5. Ringel MD, Sosa JA, Baloch Z, Bischoff L, Bloom G, Brent GA, et al. 2025 American Thyroid Association Management Guidelines for Adult Patients with Differentiated Thyroid Cancer. Thyroid 2025;35:841–985.
6. Chou R, Dana T, Haymart M, Leung AM, Tufano RP, Sosa JA, et al. Active surveillance versus thyroid surgery for differentiated thyroid cancer: a systematic review. Thyroid 2022;32:351–67. [Crossref]
7. Chou R, Dana T, Brent GA, Goldner W, Haymart M, Leung AM, et al. Serum thyroglobulin measurement following surgery without radioactive iodine for differentiated thyroid cancer: a systematic review. Thyroid 2022;32:613–39. [Crossref]
8. Qaseem A, Kansagara D, Lin JS, Mustafa RA, Wilt TJ; Clinical Guidelines Committee of the American College of Physicians; Forciea MA, Crandall CJ, Fitterman N, Hicks LA, Horwitch CA, Maroto M, McLean RM, Roa JH, Tufte JE, Vijan S. The Development of Clinical Guidelines and Guidance Statements by the Clinical Guidelines Committee of the American College of Physicians: Update of Methods. Ann Intern Med 2019;170:863–70. [Crossref]
9. Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow CD, Teutsch SM, et al. Current methods of the US Preventive Services Task Force: a review of the process. American journal of preventive medicine. 2001;20:21–35. [Crossref]
10. Green S, Higgins J. Assessing risk of bias in a randomized trial. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page JM, Welch VA, editors. Cochrane handbook for systematic reviews of interventions. 2st ed. Hoboken:Wiley; 2019. p.205–28. [Crossref]
11. Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. Bmj 2008;336:924–6. [Crossref]
12. Dewidar O, Lotfi T, Langendam MW, Parmelli E, Parkinson ZS, Solo K, et al. Good or best practice statements: proposal for the operationalisation and implementation of GRADE guidance. BMJ Evid Based Med 2023;28:189–96. [Crossref]
13. Lori A, Erickson AJG, de Krijger RR, Papotti M. Endocrine and neuroendocrine tumors. Lyon (France): International Agency for Research on Cancer; 2022.
14. Thompson LD, Herrera HB, Lau SK. A clinicopathologic series of 685 thyroglossal duct remnant cysts. Head Neck Pathol 2016;10:465–74. [Crossref]
15. de Tristan J, Zenk J, Künzel J, Psychogios G, Iro H. Thyroglossal duct cysts: 20 years' experience (1992–2011). Eur Arch Otorhinolaryngol 2015;272:2513–9. [Crossref]
16. Wei S, LiVolsi VA, Baloch ZW. Pathology of thyroglossal duct: an institutional experience. Endocrine pathology. 2015 Mar;26:75–9. [Crossref]