

THE ROLE OF USG IN DIFFERENTIATING THYROID
TUMORS

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To evaluate the significance of ultrasonography in identifying and differentiating various types of thyroid tumors to facilitate early diagnosis and optimal patient management

ABSTRACT

Thyroid tumors are often asymptomatic, making early diagnosis difficult. Differentiating benign from malignant nodules is essential, but clinical examination alone is insufficient. Ultrasonography is crucial for early detection and accurate diagnosis [1,2]..

Materials and Methods. This retrospective observational study included a total of 85 patients who presented with thyroid nodules and underwent ultrasonographic evaluation between January 2024 and December 2025. The mean age of the study population was 42.35 ± 14.1 years (range 14–70 years), with 70 females (82.4%) and 15 males (17.6%) involved in the assessment. All participants underwent gray-scale ultrasonography of the thyroid gland using a high-resolution linear transducer. Each nodule was assessed for size (maximum diameter in mm), echogenicity, marginal characteristics, internal composition (solid or cystic), and the presence of calcifications or other suspicious features. The size range of nodules in this cohort was 11–117 mm, with a mean diameter of 30.2 ± 16.2 mm.

Results. A total of 85 patients who underwent thyroid ultrasonography were evaluated in this study. Among them, 15 patients (17.6%) were confirmed to have malignant nodules on histopathology, while 68 patients (80.0%) had benign nodules; 2 cases (2.4%) with indeterminate follicular neoplasm were excluded from further analysis. The mean nodule size for all participants was 30.2 ± 16.2 mm, and nodules classified as malignant had a significantly larger mean diameter compared to benign nodules ($p = 0.02$), indicating size as a statistically significant predictor of malignancy. Furthermore, nodules larger than 30 mm were more likely to be malignant than benign ($p = 0.03$). Ultrasonographic characteristics demonstrated clear differences between benign and malignant nodules. Solid echotexture was significantly more frequent in malignant nodules (77.3%) compared to benign ones (33.8%), suggesting that solid composition is associated with higher malignancy risk ($p = 0.005$) [3,4].

Conclusion. Ultrasonography is a valuable non-invasive method for early detection and differentiation of thyroid nodules. Key features such as size, solid structure, hypoechogenicity, irregular margins, and micro calcifications are strongly associated with malignancy. USG plays

an important role in guiding biopsy decisions and improving timely diagnosis and patient management [[1](#),[2](#),[3](#)].

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