

(FNA) cytology of these nodules has been variable. Few studies have reported higher false negative rates suggesting surgery as reasonable option whereas other studies reported low false negative rates with no significant difference between small and large nodules. The goal of our study was to evaluate the reliability of FNA cytology in excluding malignancy in thyroid nodules 4 cm or larger in our patient population and to investigate the association between malignancy and any patient specific risk factors or ultrasound features. **Methods:** We conducted a retrospective review of 380 patients with thyroid nodules who underwent thyroid surgery between 2014 and 2021 at our institution. Patient demographics such as age, gender and ethnicity, number and size of thyroid nodules, TSH level, FNA cytology, type of surgery and final surgical pathology results were recorded for patients with nodules 4 cm or larger and nodules between 2-4 cm. False negative rate of FNA cytology was compared between these two groups. Accessible ultrasound images for nodules 4 cm or larger were reviewed. Patient specific and nodule characteristics were compared between malignant and benign nodules. Fisher exact tests and multivariate logistic regression were used for data analysis. **Results:** A total of 81 patients with thyroid nodules 4 cm or larger were studied, of which 22 patients (27.1%) had thyroid cancer. Mean age in patients with malignant nodules was 48.1 +/- 18.3 years versus 51.7 +/- 14.5 years in patients with benign nodules. The adjusted odds of malignancy for males was 20 times (95% CI: 3.3-125; p=0.001) the odds for females. The adjusted odds of malignancy for nodules with both peripheral and internal vascularity on doppler ultrasound was 9.9 times (95% CI: 1.36-71.70; p=0.024) that of nodules with only peripheral vascularity. Other nodule characteristics like composition, echogenicity, margins, halo, echogenic foci and taller than wide shape were not significantly different between malignant and benign nodules. False negative rate of FNA cytology for nodules 4 cm or larger was 8.7% (4/46 patients) as compared to 10% (4/40 patients) for nodules between 2-4 cm. This was not statistically significant (p=1.0). **Conclusion:** In our study, the false negative rate of FNA cytology in thyroid nodules 4 cm or larger was similar to that of nodules between 2-4 cm. This indicates that patients with thyroid nodules 4 cm or larger and benign cytology can be managed conservatively with appropriate clinical follow up. Male gender and nodules with peripheral and internal vascularity on doppler ultrasound were associated with thyroid malignancy in our review.

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## Thyroid

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### *A Single-center Retrospective Study of Thyroid Nodules 4 cm or Larger*

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**Background:** There is conflicting data and no clear consensus regarding the management of thyroid nodules 4 cm or larger. Diagnostic accuracy of fine needle aspiration