# A RETROSPECTIVE STUDY CORRELATING SONOGRAPHIC FEATURES OF THYROID NODULES WITH FNA CYTOLOGY IN A SOUTH AFRICAN SETTING

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**Declaration**

I, Mark Nicolaou, declare that this research report is my own work. It is being submitted for the degree of Masters of Medicine in the branch of Diagnostic Radiology at the University of the Witwatersrand. It has not been submitted before for any degree or examination at this or any other University.

Signed:

Dr. Mark Nicolaou

On this 1st day of June 2020.

**Publications and Presentations:**

This research was published in the South African Journal of Radiology on the 26th of June 2019. Vol. 23, No. 1 (2019).

It was also presented as a poster at two congresses:

- Most recently at the RSSA/BISSA Congress held in Cape Town in August 2019 and was awarded 1st prize for the best poster presentation.

- In 2018 it was presented at the International Congress of Endocrinology held in the Cape Town International Convention Center.

**Abstract**

**Introduction:**

Thyroid nodules are prevalent worldwide in the general population. Detection rates are increasing due to the use of ultrasonography. Ultrasound has become the first choice imaging modality in evaluating nodules. The decision to perform an US guided FNA is based on a nodule's sonographic features. Thus, it is essential to accurately risk stratify thyroid nodules so that they are appropriately referred for fine needle aspiration

**Aim:**

To correlate sonar imaging features of thyroid nodules with FNA cytology and surgical histopathology results.

To risk stratify using the ATA classification for each imaging characteristic with the likelihood of the nodule being malignant

**Method:**

Retrospective analysis of a thyroid sonar database at the Endocrine Clinic at CHBAH, Johannesburg, SA over the period 2015-2017.

**Results:**

113 nodules underwent FNA at the clinic of which 104 FNA were diagnostic. The top three ultrasound features that pose a higher risk for malignancy are absent halo, presence of microcalcifications and a hypoechoic appearance. No single nodule feature is an absolute indicator for malignancy. There is a high agreement between ATA classification and cytopathology/histology when nodule features are grouped into clusters. Agreement between the ATA classification and cytopathology/histology was 86.7% with a Kappa of 0.714. The agreement between the cytopathology FNA results and lobectomy histopathology was 98.8% with a Kappa of 0.973.

**Conclusion:**

The study significantly contributes to the paucity of data available for Sub-Saharan Africa and provides reassurance that our results are consistent with numerous international studies. The findings of this study confirm that the usage of a thyroid nodule classification system improves characterisation and increases accuracy in detecting thyroid malignancies. Thus, sparing many patients the morbidity of an unnecessary thyroid surgery.

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*“To strive, to seek, to find, and not to yield.”*

Alfred Lord Tennyson - 1833