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Thyroid

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Radiofrequency Ablation for Thyroid Nodules: The First Ecuadorian Prospective Cohort

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Introduction: Radiofrequency ablation (RFA) is a promising, non-surgical method, used for the treatment of benign and malignant thyroid nodules (TN). While this minimally invasive technique has been studied extensively in Europe and Asia, it has been recently adopted in Latin America. The aim of our study is to describe the clinical outcomes following the first cohort of TN subjected to ablative radiofrequency in Ecuador.

Methods: This single-center, prospective study, carried out at ITECC (Instituto de la Tiroides y Enfermedades de Cabeza y Cuello) in Ecuador, included adults who underwent RFA for benign and malignant thyroid nodules (TN), between September 2020 and January 2022. The trans-isthmic approach and moving shot technique using the RF Medical equipment with an 18G needle and 5 or 7 mm tip were applied. Nodule size and volume, thyroid function, and complications were evaluated before and after RFA. Initial volume and change in TN volume were calculated with the ATA calculator and the independent-samples T-test.

Results: A total of 26 patients with 28 TNs were included. 25 TNs were benign (Bethesda II) and 3 were micro-papillary thyroid cancer (MPTC) (Bethesda VI). In the benign lesions group, most were female (82.6%), <55 years of age (73.9%), euthyroid (62.5%), and symptomatic (95.6%); had a mean maximum diameter of 3.3 ± 1.3 (range: 0.8–5.5) cm and a mean initial volume of 13.1 ± 11.6 ml; and had predominantly solid component (36.4%). A substantial volume reduction was observed since the first month after RFA (1 month: mean volume 8.6 ± 4.2 ml, $p=0.01$; 6 months: mean volume 4.5 ± 3.9 ml, $p=0.04$; and 12 months: mean

volume 4.9 ± 6.9 ml, $p=0.25$; vs. baseline). All patients were asymptomatic at the last follow-up. In the MPTC group, two patients were males (66.7%); all were <55 years of age (100.0%) and euthyroid (100.0%); most were asymptomatic diagnosed by routine US (66.7%); had a mean maximum diameter of 0.6 ± 0.1 (range: 0.5–0.8) cm and a mean initial volume of 0.056 ± 0.001 ml. At 1-month follow-up after RFA all TN were fibrosed and no lymph node or distant metastases were found. Finally, in both groups, no major complications were found and only one patient reported ecchymosis at the puncture site. Thyroid function was not affected.

Conclusions: To the best of our knowledge, we are the pioneers in Ecuador and the third country, after Brazil and Colombia, in Latin America that implemented RFA in the management of TN. In our first experience, RFA was a safe and effective technique. RFA induced a substantial volume reduction, improved symptoms, avoided cosmetic concerns, and did not affect normal thyroid function. Our results are consistent with other series. Data on a longer follow-up are needed to confirm long-term efficacy.

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