



THYROID NODULES

Radiofrequency and laser ablation of benign thyroid nodules are similarly effective at 6 months in a prospective, randomized trial

BACKGROUND

Thyroid nodules are common and occur in up to 50% of individuals. Most are benign (non-cancerous) and only require monitoring. However, sometimes even benign nodules become large enough to either cause pressure symptoms in the neck or be otherwise bothersome to the patient. Surgery is then an option, but leaves a scar, and, depending upon the extent of surgery needed, can result in hypothyroidism and rarely problems with the parathyroid glands that control calcium in the blood.

When nodules are cystic, ethanol infusion can be used to decrease the size. However, with solid nodules, other methods, such as radiofrequency ablation (RFA) and laser ablation (LA), have been used. Both have been shown to be effective in many studies including a recent meta-analysis with volume reduction rates at 6 months, 1 year, and 2 years were 68%, 75%, and 87% for RFA and 48%, 52%, and 45% for LA. However the two techniques have not been compared head to head.

This study was done to directly compare RFA and LA in their ability to decrease the size and symptoms of benign, solid thyroid nodules.

THE FULL ARTICLE TITLE

Cesareo R et al 2020 Laser ablation versus radiofrequency ablation for benign non-functioning thyroid nodules: Six-month results of a randomized, parallel, open-label, trial (LARA trial). *Thyroid* 2020 30: 847-856; PMID: 32056501.

SUMMARY OF THE STUDY

The authors selected adult patients who had a solid thyroid nodule with a volume >5 and either was symptomatic to the patient (compression symptoms

or cosmetic concern) or had grown more than 20% in follow up over the previous year. Patients could only be included if all labs related to the thyroid were normal and the nodule had a benign core needle biopsy result. A total of 60 patients were then randomized to treatment with either RFA or LA. Patients were then followed for 6 mo with repeat ultrasound. Six months after the procedure, thyroid nodule volume was reduced by 64% after RFA and by 53% after LA. Greater than 50% volume reduction was achieved in 87% of patients after RFA and in 67% after LA. The procedure time was slightly longer for LA vs RFA (23 vs 16 minutes), but this was not significant. Compressive symptoms were improved by 2 points on a 10-point scale, and cosmetic concerns improved by 2 points on a 4-point scale in both groups. Side effects included 1 patient in each group who had voice changes during the procedure, bruising in 3 and 2 patients, local pain in 6 and 5 patients and a short episode of thyroid over-activity in 1 and 2 patients after RFA and LA respectively.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors concluded that either RFA or LA were effective and safe, leading to similar decrease in compressive symptoms and cosmetic concerns. Nodules treated with RFA showed a somewhat greater decrease in size. This study is important because it directly compares two non-surgical treatment options for larger, symptomatic thyroid nodules and offers patients a viable alternative to thyroid surgery. It is important to note that this study was performed in an institution with extensive experience using these two techniques and results may not be same in other locations.

— Marjorie Safran, MD



THYROID NODULES, continued

ATA THYROID BROCHURE LINKS

Thyroid Nodules: <https://www.thyroid.org/thyroid-nodules/>

ABBREVIATIONS & DEFINITIONS

Thyroid nodule: an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

Thyroid Ultrasound: a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

Thyroid fine needle aspiration biopsy (FNAB): a simple procedure that is done in the doctor's office to determine if a thyroid nodule is benign (non-cancerous) or cancer.

The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

Radiofrequency ablation (RFA): is a minimally invasive procedure that uses electrical energy and heat to destroy cells. The radiologist uses imaging tests to guide a thin needle through the skin or through an incision and into the tissue. High-frequency energy passes through the needle and causes the surrounding tissue to heat up, killing the nearby cells.

Laser ablation (LA): surgery is a treatment using light to heat and destroy unwanted cells.

