

# Comparison of Thermal Ablation and Thyroidectomy for Thyroid Nodules

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## Background

Thyroid nodules are one of the most common thyroid disorders. The choice of treatment for nodules with complications such as voice changes, difficulty swallowing, treatment resistant hypothyroidism or hyperthyroidism, and those that have concerns for malignancy or evidence of malignancy is a thyroidectomy. However, there are more minimally invasive nonsurgical modalities of treatment.

## Purpose

The purpose of this study is to compare the efficacy, safety, cost, and time of thermal ablation versus a thyroidectomy for thyroid nodules. Also, to identify the indications for thermal ablation in benign and malignant nodules. Finally, to compare the efficacy of the different thermal ablation techniques.

## PICOT

In patients with thyroid nodules, does thermal ablation result in better or similar outcomes compared to a thyroidectomy?

## Design & Methods

- **Keywords:** benign thyroid nodules, malignant thyroid nodules, thyroid nodule treatment, thyroidectomy, endoscopic thyroidectomy, ablation techniques, and radiofrequency ablation.
- **Inclusion:** Only studies conducted from 2019 and older, studies with individuals >18 years old, and nodule pathology confirmed by pathology were included.
- **Exclusion:** Small sample size and research that was inconsistent with preestablished guidelines

## Synthesis of Evidence

Types of studies include meta-analyses, retrospective studies, systemic reviews, and cohort studies. There were 5 retrospective studies, 2 case presentations, 5 meta-analyses, and 1 prospective randomized study.

Type	Meta-analyses/Systemic Reviews	Randomized studies	Retrospective studies	Case Presentations
Total	5	1	5	3

Database	Yielded	Reviewed	Included in Analysis
PubMed	297	20	12
EBSCO Host	379	5	1
ATA	15	2	1
NYU LH	5	2	1
Total:	696	29	15

## Results

For benign nodules, radiofrequency ablation is shown to have advantages over a thyroidectomy due to it being effective, minimally invasive, safe, economical, and cosmetically appealing. For malignant nodules, RFA is seen to be effective for low-risk papillary thyroid cancer only. Regarding the type of ablation technique, radiofrequency ablation (RFA) is considered superior due to greater efficacy and less reoccurrence.

## Discussion

This review investigated the effectiveness, safety, cost, and time of thermal ablation versus a thyroidectomy. The nodule reduction rate of ablation therapy ranges from 80-90% after 1 year. Regarding safety, thermal ablation techniques saw less complications after the procedure in voice changes, hoarseness, hypothyroidism, pain, scarring, and complication rate. The time it takes to complete thermal ablation vs a thyroidectomy is also important to consider. The average time across all studies for radiofrequency ablation was 15.87- 32.6 minutes with the average time for a thyroidectomy being 65- 70 minutes. The average length of hospital stay was 0-3 days for radiofrequency ablation and 5-10 days for the thyroidectomy. Finally, the back to work time averages 1-2 days for radiofrequency ablation and 10-13 days for a thyroidectomy. The average total costs were \$16,000 for radiofrequency ablation and \$20,000 for a lobectomy.

## Limitations/Further Study

There were various weaknesses to the studies used which include lack of specification of ablation technique, type of thyroidectomy, and follow up frequency.

Future research should be geared towards radiofrequency ablation in all types of malignant nodules. The only research observed was in low-risk papillary thyroid cancer.

## Conclusion

Radiofrequency ablation is an effective, safe, and low-cost alternative to a thyroidectomy for benign nodules and low risk papillary thyroid cancer. This research was able to identify a more convenient, nonsurgical option for those experiencing symptoms.

## References

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