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Clinical Thyroidology® for the Public

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

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Editor's Comments

Welcome to another issue of *Clinical Thyroidology for the Public*! In this journal, we will bring to you the most up-to-date, cutting edge thyroid research.We also provide even faster updates of late-breaking thyroid news through X (previously known as Twitter) at @thyroidfriends and on Facebook. Our goal is to provide patients with the tools to be the most informed thyroid patient in the waiting room. Also check out our friends in the **Alliance for Thyroid Patient Education**. The **Alliance** member groups consist of: the *American Thyroid Association®, Bite Me Cancer, the Graves' Disease and Thyroid Foundation, the Light of Life Foundation, MCT8 – AHDS Foundation, ThyCa: Thyroid Cancer Survivors' Association, Thyroid Cancer Alliance* and *Thyroid Federation International*.

We invite all of you to join our **Friends of the ATA** community. It is for you that the American Thyroid Association® (ATA®) is dedicated to carrying out our mission of providing reliable thyroid information and resources, clinical practice guidelines for thyroid detection and treatments, resources for connecting you with other patients affected by thyroid conditions, and cutting edge thyroid research as we search for better diagnoses and treatment outcomes for thyroid disease and thyroid cancer. We thank all of the *Friends of the ATA* who support our mission and work throughout the year to support us. We invite you to help keep the ATA® mission strong by choosing to make a donation that suits you — it takes just one moment to give online at: www.thyroid.org/donate and all donations are put to good work. The ATA® is a 501(c)3 nonprofit organization and your gift is tax deductible.

May is International Awareness Month.

In this issue, the studies ask the following questions:

- Does T4/T3 combination therapy affect thyroid status and/or quality of life in hypothyroid patients?
- Is decreasing TSH receptor antibodies and effective treatment for Graves' disease and thyroid eye disease?
- Is there an association between thyroid cancer and autoimmune thyroid disease?
- What are the predictors for cancer progression during active surveillance?
- Is removal of thyroid tissue through incisions made in the mouth safe and effective for treating thyroid cancer?
- Can radiofrequency ablation be used for treatment of papillary thyroid cancer?

We welcome your feedback and suggestions. Let us know what you want to see in this publication. I hope you find these summaries interesting and informative.

— Alan P. Farwell, MD

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HYPOTHYROIDISM

A randomized trial of combination T4 and T3 treatment and effect on tissue markers of thyroid status and quality of life in hypothyroid patients

BACKGROUND

Hypothyroidism, or underactive thyroid, is common and is caused by the inability of the thyroid to produce and secrete thyroxine, the main thyroid hormone. Hypothyroidism is usually treated by replacing the thyroxine that the thyroid no longer makes with levothyroxine (LT4) the synthetic form of thyroxine. While most patients feel fine with most, if not all, symptoms of hypothyroidism resolved by levothyroxine, some patients still experience hypothyroid symptoms, especially fatigue and a decrease in in thinking often referred to as "brain fog" function despite treatment restoring FT4 and TSH levels to the normal range.

While thyroxine is the main hormone produced by the thyroid, it is converted outside the thyroid to triiodothyronine, the main active hormone that is responsible for the actions of thyroid hormone on the body. Triiodothyronine is also available in pill form, known as liothyronine (LT3). Because of this, some advocate for treatment with both LT4 and LT3 for patients with persistent symptoms on L-T4 alone. Though controversial, there is data that suggests the combination LT4 and L-T3 can improve symptoms and quality of life (QoL) of patients with hypothyroidism. The authors in this trial, aimed to show the effects of combination therapy with LT4+LT3 on peripheral tissue, changes in other tissue markers and QoL in patients who underwent thyroid surgery.

THE FULL ARTICLE TITLE

Brigante G, et al. Randomized double-blind placebo-controlled trial on levothyroxine and liothyronine combination therapy in totally thyroidectomized subjects: the LEVOLIO study. Eur J Endocrinol 2024;190(1):12-22; doi: 10.1093/ejendo/lvad172. PMID: 38124252.

SUMMARY OF THE STUDY

This clinical trial enrolled 160 adults who underwent thyroid surgery removal for either benign thyroid disease or thyroid cancer and were on LT4 replacement. All patients had been on a stable dose of LT4 for at least 3 months. Patients were randomly selected to one of two groups, LT4+LT3 or LT4+placebo. The study included visits for screening, baseline measurements and at 6, 12 and 24 weeks from baseline. TSH was measured at all time points and medications were adjusted if needed to keep the TSH stable in the normal range and keep the T4/T3 ratio between 13:1 and 20:1. Weight, height, BMI, and heart rate and blood pressure were measured at all time points as well as blood samples collected for free T3 (FT3), thyroid peroxidase antibodies (TPO) and for a variety of labs that are known to respond to thyroid hormone, including total cholesterol, HDL cholesterol, triglycerides, sex hormone binding globulin (SHBG) and the bone markers osteocalcin, type I collagen and bone-specific alkaline phosphatase. In addition, patients completed a thyroid-specific quality of life questionnaire (ThyPRO QoL) at all visits and adherence to the therapy was confirmed at each visit. The primary outcome of the study was SHBG variation after 6 months of treatment, while the secondary outcomes included, change in BMI, TSH, FT4 and FT3 and the above noted labs and the results of ThyPRO QoL.

The while TSH levels were higher in the L-T4+placebo group, there were no cases of overt hypothyroidism in any group. The FT3/FT4 ratio persisted in the low range in the LT4+placebo group at the end of treatment, while the ratio increased to the normal range in the LT4+LT3 group. There were no significant differences in primary and secondary outcomes of both groups by the end of treatment time. There was also no significant difference in the ThyPRO score between the two groups.

HYPOTHYROIDISM, continued

Both groups were adherent to the allocated therapies, and no major adverse events were noted. Most patients had no preference between the 2 treatments, with only 11% of patients in the LT4+LT3 group preferring the combination treatment and a similar proportion preferring the L-T4+ placebo group.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study showed no significant difference between those treated with LT4 alone or LT4+LT3 regarding peripheral tissue markers of thyroid function, quality of life, and BMI. However, this study showed that LT4 therapy alone did not normalize the FT3/FT4 ratio in more than 70% of patients with hypothyroidism after thyroidectomy while a more normal ratio was seen with the LT4+LT3 combination treatment. Despite this, most patients had no preference between the 2 groups.

— Joanna Miragaya, MD

ATA RESOURCES

Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/

Thyroid Function Tests: https://www.thyroid.org/thyroid-function-tests/

Thyroid Hormone Treatment: https://www.thyroid.org/thyroid-hormone-treatment/

ABBREVIATIONS & DEFINITIONS

Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a *total thyroidectomy*. When less is removed, such as in removal of a lobe, it is termed a *partial thyroidectomy*.

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

Thyroid hormone therapy: patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. *Replacement therapy* means the goal is a TSH in the normal range and is the usual therapy. *Suppressive therapy* means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

Thyroxine (T4): the major hormone produced by the thyroid gland. T4 gets converted to the active hormone T3 in various tissues in the body.

Triiodothyronine (T3): the active thyroid hormone, usually produced from thyroxine.

Triiodothyronine (T3): the active thyroid hormone, usually produced from thyroxine, available in pill form as Cytomel™.

TSH: thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

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GRAVES' DISEASE

Targeting thyroid receptor antibodies to treat Graves' hyperthyroidism and Graves eye disease

BACKGROUND

Graves' disease is an autoimmune condition in which the body produces antibodies that bind to the TSH receptor on thyroid cells and turn it on (thyroid hormone receptor antibodies, TRAb). Some of these TRAbs stimulate the thyroid gland to grow excessively and to make too much thyroid hormone. Additionally, TRAbs can cause swelling of the muscles behind the eyes, a condition known as thyroid eye disease (TED), which can result in the eyes bulging out. TED affects appearance and vision. Severe cases can lead to permanent vision loss. Currently, treatments for Graves' disease focus on reducing thyroid hormone production using medications called anti-thyroidal drugs or by surgery or radioactive iodine therapy to remove or destroy the thyroid gland. Considering the impact that TRAbs have on both hyperthyroidism and TED in Graves' disease, therapies aimed at lowering these antibody levels could present a new treatment strategy.

A new drug called Batoclimab works by blocking a receptor called FcRn (neonatal fragment crystallizable receptor), which is found on many cells in the body. By blocking FcRn, Batoclimab decreases levels of antibodies, particularly IgG antibodies, in the body. Since TRAb is an IgG antibody, Batoclimab may be effective in treating Graves' disease. This article summarizes the initial two studies investigating the use of Batoclimab in treating both Graves' hyperthyroidism and Graves' eye disease.

THE FULL ARTICLE TITLE

Kahaly GJ, Dolman PJ, Wolf J, et al. Proof-of-concept and randomized, placebo-controlled trials of an FcRn inhibitor, batoclimab, for thyroid eye disease. J Clin Endocrinol Metab 2023;108(12):3122-3134

SUMMARY OF THE STUDY

The article discusses two studies. The first was a trial to test the safety, tolerance, and effects of Batoclimab. A total of 7 participants aged 18 years or older with Graves's disease and moderate to severe TED were given 680 mg of Batoclimab for 2 weeks, followed by a weekly 340 mg injection under the skin for 4 weeks. The researchers observed that levels of TRAb decreased by about 60% after 3 weeks but began to increase back toward their original levels after the last injection. Additionally, three patients showed signs of improvement in their eye condition. Notably, no severe adverse events were reported during the trial.

The second study was a double-blind clinical trial, meaning that neither the patient nor the researcher know which patients got the drug vs a placebo. A total of 65 patients were randomized to receive weekly subcutaneous injections of batoclimab (680mg, 340mg, or 255 mg) or a placebo. In addition to measuring antibody and thyroid hormone levels, the participants also underwent CT scan of their eyes to assess for improvement in TED. Similar to the first study, this one also found a decrease in TRAb levels, especially with the highest dose. Some patients who received the highest doses of batoclimab saw improvements in their TED symptoms, but overall, there wasn't a clear difference in TED improvement between those who took batoclimab and those who took the placebo by the time the researchers finished analyzing the data after 12 weeks.

Although this study didn't specifically focus on thyroid hormone levels, they did notice that the levels decreased in the groups that received batoclimab. However, the trial had to be stopped early because patients who received batoclimab experienced a significant increase in their LDL cholesterol levels, often referred to as "bad cholesterol". Fortunately, LDL levels returned to normal after the patients stopped taking the drug.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

These are the first trials evaluating an innovative treatment for Graves' disease. Blocking the body's FcRn receptors reduces TRAb levels among patients with

GRAVES' DISEASE, continued

Graves disease. While the findings are preliminary and do not permit definitive conclusions, they suggest that using the Batoclimab to inhibit the FcRn receptor may improve TED and hyperthyroidism. However, due to the premature stopping of the study, numerous uncertainties remain, particularly regarding the effects of the drug on LDL cholesterol levels. Further studies focusing on TED and Graves' hyperthyroidism are currently underway and will hopefully answer many of these outstanding questions.

— Philip Segal, MD

ATA RESOURCES

Hyperthyroidism (Overactive): https://www.thyroid.org/hyperthyroidism/

Graves' Disease: https://www.thyroid.org/graves-disease/

ABBREVIATIONS & DEFINITIONS

Graves' disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

Thyroid eye disease (TED): also known as Graves ophthalmopathy. TED is most often seen in patients with Graves' disease but also can be seen with Hashimoto's thyroiditis. TED includes inflammation of the eyes, eye muscles and the surrounding tissues. Symptoms include dry eyes, red eyes, bulging of the eyes and double vision.

TSH receptor: A molecule (protein) located on the thyroid cell surface that binds TSH and stimulates the production of the thyroid hormones within the thyroid cell.

TRAb: antibodies often present in the serum of patients with Graves disease that are directed against the TSH receptor, often causing stimulation of this receptor with resulting hyperthyroidism.

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THYROID CANCER

Thyroid cancer and autoimmune thyroid disease.

BACKGROUND

Autoimmune thyroid disease refers to a group of disorders in which a person makes antibodies that target the thyroid gland. Some people make stimulating antibodies (TSI) that turn on the thyroid and cause an overactive thyroid gland (Graves' disease). More commonly, some people make destructive antibodies (TPO or anti-TG) that can destroy the thyroid and cause an underactive thyroid gland (Hashimoto's thyroiditis). Research has suggested that there may be an association between autoimmune thyroid disease and thyroid cancers. Some studies have shown perhaps an increased risk of thyroid cancer in people with autoimmune thyroid disease but potentially better overall outcomes (less aggressive cancer). This has been a controversial topic in the thyroid research literature.

The aim of this study was to investigate the relationship between the presence of autoimmune thyroid disease and thyroid cancer patient outcomes at 1 year after treatment.

THE FULL ARTICLE TITLE:

De Leo S, et al. A prospective multicenter study examining the relationship between thyroid cancer treatment outcomes and the presence of autoimmune thyroiditis. Thyroid. 2023;33(11):1318-1326; doi: 10.1089/thy.2023.0052. PMID: 37725571

SUMMARY OF THE STUDY:

This is a study examining outcomes at 1 year following treatment for papillary or follicular thyroid cancer in patients with or without autoimmune thyroid disease. They included data from 4233 cancer patients who enrolled in the Italian Thyroid Cancer Observatory database and divided them into patients with or without autoimmune thyroid disease to compare outcomes at 1 year. Patients were considered to have autoimmune thyroid disease if they had an elevated TPO or TG antibody level and characteristics of autoimmunity on ultrasound or surgical pathology. All patients were classified at diagnosis as having an estimated risk of thyroid cancer persistence as low, intermediate, or high based on the American Thyroid Association guidelines. Thyroid cancer status was evaluated at 1 year post initial treatment (which varied by patient risk). Patients were grouped into 4 categories: 1) no evidence of thyroid cancer 2) biochemical persistence (abnormal thyroglobulin tumor marker) 3) structural disease (imaging consistent with persistent or new evidence of cancer) and 4) Indeterminate status. Outcomes at 1 year were compared in thyroid cancer patients with and without autoimmune thyroid disease.

Thyroid cancer patients with autoimmune thyroid disease were younger than those without autoimmune thyroid disease. Further, they had smaller cancers that were more likely to be classified as low or intermediate risk categories at baseline. Overall, higher risk patients were less likely to have autoimmune thyroid disease. Thyroid cancer patients with autoimmune disease were more likely to have evidence of persistent biochemical disease (abnormal thyroglobulin) but were not at increased risk of persistent disease on imaging at 1 year.

WHAT ARE THE IMPLICATIONS OF THE STUDY?

Overall, patients with thyroid cancer show an excellent response to treatment. Thyroid cancer patients without autoimmune thyroid disease were more likely to have higher risk cancers than patients with autoimmune thyroid disease. However, thyroid cancer patients with autoimmune thyroid disease may be at increased risk of persistent biochemical disease (positive thyroglobulin cancer marker) but are lower risk of having structurally persistent thyroid cancer at one year post treatment. As expected, patients with higher risk thyroid cancer at the time of diagnosis are more likely to have persistent disease at one year.

— Whitney W. Woodmansee MD

THYROID CANCER, continued

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/
Hashimoto's Thyroiditis: https://www.thyroid.org/hashimotos-thyroiditis/

ABBREVIATIONS & DEFINITIONS: FROM ACTIVE LIST

Autoimmune thyroid disease: a group of disorders that are caused by antibodies that get confused and attack the thyroid. These antibodies can either turn on the thyroid (Graves' disease, hyperthyroidism) or turn it off (Hashimoto's thyroiditis, hypothyroidism).

Hashimoto's thyroiditis: the most common cause of hypothyroidism in the United States. It is caused by antibodies that attack the thyroid and destroy it.

Graves' disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

Thyroid stimulating immunoglobulin/TSI: antibodies often present in the serum of patients with Graves' disease that are directed against the TSH receptor, that cause stimulation of this receptor resulting in increased levels of thyroid hormones in the blood and hyperthyroidism

TPO antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.

Thyroglobulin antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.

Thyroglobulin: a protein made only by thyroid cells, both normal and cancerous. When all normal thyroid tissue is destroyed after radioactive iodine therapy in patients with thyroid cancer, thyroglobulin can be used as a thyroid cancer marker in patients that do not have thyroglobulin antibodies.

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THYROID CANCER

Underlying thyroid disease and blood flow can predict progression of small thyroid cancer during active surveillance.

BACKGROUND

Thyroid cancer has been one of the fastest rising cancers until the number of cases started to level off in the past few years. A big part in the increased number of cancers has been the identification of small (<1 cm) cancers. The management of these small cancers is controversial, as many of them may never grow or spread outside the neck. Because of this, it has become increasingly common to follow these small cancers with ultrasound monitoring and hold off on surgery until the cancer starts to grow. This is called active surveillance and is currently accepted as an alternative to surgery for patients with these small thyroid cancers.

The medical community is eager to establish criteria that are predictive of either cancer stability or progression to determine the best candidates for active surveillance. Some predictors of progression are an age <30, elevated TSH, male sex and cancer size more or equal to 0.6 cm. This study was performed to determine if additional characteristics noted on ultrasound may predict progression of small thyroid cancers that would lead to surgery.

THE FULL ARTICLE TITLE

Lee JY et al. US predictors of papillary thyroid microcarcinoma progression at active surveillance. Radiology 2023;309(1):e230006; doi: 10.1148/radiol.230006. PMID: 37906009.

SUMMARY OF THE STUDY

This was a Multicenter study performed at three large hospitals in Korea of 699 participants with Small Thyroid Cancer (≤1 cm). The average age of participants was 50 years and 76% were female. Ultrasounds were performed every 6 months for 2 years, subsequently yearly thereafter for an additional 3 years. The images were evaluated to determine the presence of diffuse thyroid disease (alternatively described as thyroiditis or the appearance of generalized inflammation of the gland), cancer size/location, brightness, borders, internal blood flow and other characteristics.

Cancer progression was seen in 68 of 699 (~10%) participants, of which 56 (82%) developed cancer enlargement, 3 (4%) developed extension of the cancer outside of the thyroid and 8 (12%) developed spread to the lymph nodes in the neck. No one developed spread of the cancer outside of the neck or died during active surveillance. Patients with diffuse thyroid disease were more than twice as likely to have cancer progression and those with blood flow within the cancer were >1.5 times more likely to progress. The 5-year estimated progression rate was 10.7% if neither diffuse thyroid disease nor blood flow was present, 19.4% if blood flow only was present, 21.7% if diffuse thyroid disease was present, and 23.5% if both diffuse thyroid disease and blood flow was present. The average time to progression was 27.8 months if neither diffuse thyroid disease nor blood flow was present, 20.4 months if blood flow was present, 21.6 months if diffuse thyroid disease was present was present, and 16.4 months if both diffuse thyroid disease and blood flow was present.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that active surveillance of small (<1 cm) thyroid cancers is safe, as no patient developed spread of the cancer outside of the neck or death during the monitoring period. This study also shows that ultrasound features can be identified to indicate probability of cancer progression and this may important to aid in decision making regarding active surveillance vs surgery for small thyroid cancers <1 cm. However, the majority of patients (around 80%) of patients who had these findings (diffuse thyroid disease or increased cancer blood flow), did not progress, so these cannot be used as the ultimate factors to decide whether surgery is needed or not. It is possible that a longer follow up would clarify the role of these ultrasound characteristics.

— Maria Brito, MD, ECNU

THYROID CANCER, continued

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/

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

Thyroid Surgery: https://www.thyroid.org/thyroid-surgery/

ABBREVIATIONS & DEFINITIONS

Autoimmune thyroid disease: a group of disorders that are caused by antibodies that get confused and attack the thyroid. These antibodies can either turn on the thyroid (Graves' disease, hyperthyroidism) or turn it off (Hashimoto's thyroiditis, hypothyroidism).

Thyroiditis: inflammation of the thyroid, most commonly cause by antibodies that attack the thyroid as seen in Hashimoto's thyroiditis and post-partum thyroiditis. It can also result from an infection in the thyroid.

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.

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Papillary microcarcinoma: a papillary thyroid cancer smaller than 1 cm in diameter.

TSH: thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

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THYROID CANCER

Is removal of thyroid tissue through incisions made in the mouth safe and effective for treating thyroid cancer?

BACKGROUND

The development of cancer in the thyroid gland, a butterfly-shaped organ in the front part of the neck that produces thyroid hormone, will be diagnosed in approximately 44,000 Americans in 2024. Treatment of thyroid cancer usually requires surgery to remove part, or all, of the thyroid gland and, in general, long term survival rates after surgery are excellent for most kinds of thyroid cancer – the vast majority of people treated for thyroid cancer do not die of this disease. The traditional way of performing thyroid surgery involves making a small cut (incision) in the front part of the neck, through which the thyroid is removed (transcervical thyroid surgery). This method is known to be both safe and effective in treating thyroid cancer, but does leave a small scar on the front part of the neck where the incision to remove thyroid tissue was made.

A small fraction of people who have transcervical thyroid surgery will find scarring like this unacceptable and, as a result, will experience a long-term decrease in their overall happiness/quality of life. For this reason, techniques to remove thyroid tissue without leaving a visible scar have been developed. The newest method for this involves making cuts in the mouth and then, using fine instruments and cameras, removing part or all of the thyroid through these mouth incisions (transoral thyroid surgery). Two common versions of this technique are called transoral endoscopic thyroidectomy transvestibular approach (TOETVA) and transoral robotic thyroidectomy (TORT).

Multiple studies evaluating these 'scarless' techniques have shown that they are safe and effective for removing some kinds of noncancerous thyroid growths. It remains unclear, however, if transoral thyroid surgery is as good as the well-established transcervical thyroid surgery approach for treating the most common kinds of thyroid cancer, in particular with regard to making sure that all cancerous tissue is removed during surgery and that the risk of a thyroid cancer coming back after surgery is as low as possible. For this reason, the authors of the research described here sought to study the effectiveness of transoral thyroid surgery in treating the most common kinds of thyroid cancer.

FULL ARTICLE TITLE

Chen YH et al. Transoral endoscopic and robotic thyroidectomy for thyroid cancer: the mid-term oncological outcome. Surg Endosc 2023;37(10):7829-7838. doi: 10.1007/s00464-023-10339-9. PMID: 37605012.

SUMMARY OF THE STUDY

The authors of this work reviewed the medical records for people who chose to undergo TOETVA or TORT thyroid surgery, performed by one surgeon at their institution between July 2017 and November 2021 (4 years, 4 months), for treatment of the most common forms of thyroid cancer. Overall, 78% of these people were women, 40% of thyroid cancers removed were very small (less than 1 cm in diameter) and, on average, almost 5 neck lymph nodes were removed per patient at the time of thyroid surgery (when thyroid cancer tries to spread out of the thyroid, it will first spread to the neck lymph nodes that sit next to the thyroid.). Of the lymph nodes removed, 43.9% were found to contain thyroid cancer. Complication rates from surgery were low, with one person having a permanent injury to a nerve that helps control the voice and one person developing permanent low body calcium levels after surgery. The authors found that only one of the 122 people who underwent transoral thyroid surgery had their thyroid cancer come back during the follow-up time period of the study. Although this study did not collect information about people who underwent traditional transcervical thyroid cancer surgery with the study surgeon, the results of transoral thyroid cancer surgery identified during this study are similar to those generally reported for transcervical thyroid cancer surgery.

THYROID CANCER, continued

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This work suggests that transoral thyroid surgery, when performed by an experienced thyroid surgeon, is similarly effective to transcervical thyroid surgery for treating the most common kinds of thyroid cancer, while leaving no visible scar after surgery. Thus, transoral thyroid surgery may be an appropriate option for thyroid cancer patients wishing to avoid a neck scar after surgery.

It is important to note, however, that thyroid cancers that come back following thyroid surgery may take many years to do so (many more years after surgery than this study reviews). For this reason, more studies are needed, looking at longer time-frames following transoral thyroid cancer surgery, to determine if the transoral approach for treatment of thyroid cancer is truly as good as the traditional transcervical approach.

— Jason D. Prescott, MD PhD

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/

Thyroid Surgery: https://www.thyroid.org/thyroid-surgery/

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Papillary microcarcinoma: a papillary thyroid cancer smaller than 1 cm in diameter.

Total thyroidectomy: surgery to remove the entire thyroid gland.

Lobectomy: surgery to remove one lobe of the thyroid.

Lymph node: bean-shaped organ that plays a role in removing what the body considers harmful, such as infections and cancer cells.

Cancer recurrence: this occurs when the cancer comes back after an initial treatment that was successful in destroying all detectable cancer at some point.

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THYROID CANCER

Can radiofrequency ablation be used for treatment of papillary thyroid cancer?

BACKGROUND

Surgery is primary treatment for thyroid cancer. Although the risk is low in hands of an experienced thyroid surgeon, complications such as hypoparathyroidism causing hypocalcemia (low calcium levels) and vocal cord dysfunction causing voice problems can occur. Some patients may not be good candidate for surgery due to other preexisting medical conditions.

Radiofrequency ablation (RFA) is being used for treatment of large thyroid nodules in recent years as an alternative to surgery. RFA delivers high-energy heat via an electrical rod inserted to the thyroid nodule, causing destruction of the tissue and subsequent shrinkage of the nodule. RFA has shown promise as an alternative to surgery for treatment of low-risk papillary thyroid cancer in several studies. However, it is still not clear how to define treatment success and how to select an appropriate papillary thyroid cancer for RFA. This study evaluated long-term findings after RFA treatment of low-risk papillary thyroid cancer.

THE FULL ARTICLE TITLE

Li X et al. Sonographic evolution and pathologic findings of papillary thyroid cancer after radiofrequency ablation: a five-year retrospective cohort study. *Thyroid*. Epub 2023 Nov 20; doi: 10.1089/thy.2023.0415. PMID: 37885207.

SUMMARY OF THE STUDY

A total of 382 patients (297 females, 85 males, average age of 43 years) were included in this study done in a single hospital in China between May 2014 and August 2021. All patients had stage 1 papillary thyroid cancer, where cancer size was less than 2 cm and there was no metastasis (spread of cancer) to lymph nodes or to other parts of body (distant metastasis). The cancer size was <1cm in 341 patients and 1-2 cm in 41patients. Patients were treated with RFA by an experienced physician with ablation of at least 2 mm outside the original cancer border in an effort to destroy all cancer cells. Patients had biopsy of the area treated to assess for persistent cancer and were followed for an average of 68 months after RFA.

A total of 15 patients (10 patients (2.9%) with cancers <1 cm and 5 patients (12.2%) with cancers 1-2 cm) had persistent cancer after RFA. Among these patients with persistent cancer, 11 underwent repeat RFA with cure and 4 chose observation without repeat RFA and did not have further progression of cancer. One patient developed spread of the cancer to a neck lymph node 21 months after RFA, which was successfully treated with RFA of lymph node. No patients developed spread of the cancer outside the neck. Large cancer size and cancer location close to the thyroid gland border were associated with higher risk of persistent cancer after RFA. Male sex, age < 40 years, cancer <1 cm and higher energy used for RFA were associated with higher likelihood of cancer disappearance.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that RFA can be effective in treating low-risk papillary thyroid cancer, although persistent cancer is more common when the cancer size is >1cm. However, there are some practical limitations to make RFA for thyroid cancer a routine practice at this time, including provider expertise and availability of the RFA equipment and higher resolution US machines. Also, the findings of this study suggest that RFA would be a good option for treatment of low-risk papillary thyroid cancer that is smaller than 1cm. The current American Thyroid Association guidelines do not recommend routine biopsy of thyroid nodules less than 1cm to minimize potential impact of unnecessary surgery and subsequent need for surveillance and levothyroxine therapy. These guidelines may change as RFA becomes more widespread. Overall, this study is important to identify another option in the management of thyroid cancer. Larger studies are needed to determine how best to utilize RFA in treatment of low-risk papillary thyroid cancer.

— Sun Y. Lee, MD, MSc

THYROID CANCER, continued

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/

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.

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Radiofrequency ablation (RFA): A minimally invasive procedure that uses radio waves to create heat to destroy tissue. In treatment of thyroid nodule, a needle-like probe is inserted into the thyroid nodule and radiofrequency waves are sent out from the probe into the surrounding tissue. This procedure can be done in an office or outpatient setting and requires no general anesthesia.

Hypoparathyroidism: low calcium levels due to decreased secretion of parathyroid hormone (PTH) from the parathyroid glands next to the thyroid. This can occur as a result of damage to the glands during thyroid surgery and usually resolves. This may also occur as a result of autoimmune destruction of the glands, in which case it is usually permanent.

Hypocalcemia: low calcium levels in the blood, a complication from thyroid surgery that is usually short-term and relatively easily treated with calcium pills. If left untreated, low calcium may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems.

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

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Clinical Thyroidology® for the Public

ATA® Alliance for Thyroid Patient Education

GOAL The goal of our organizations is to provide accurate and reliable information for patients about the diagnosis, evaluation and treatment of thyroid diseases. We look forward to future collaborations and continuing to work together toward the improvement of thyroid education and resources for patients.

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