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**What are (benign) thyroid nodules?**

Thyroid nodules are an abnormal overgrowth of tissue in the thyroid gland. These nodules can be solid or fluid-filled. Most nodules are non0cancerous (95%) however even benign nodules can cause issues, including swelling of the neck, swallowing difficulties, voice hoarseness, cough, breathing difficulties, pain and pressure.

Benign nodules are typically treated with observation alone (if small and not causing symptoms) or surgery. Surgery may involve partial or complete thyroid gland removal. This can result in the need for lifelong hormone therapy.

**What is radiofrequency ablation (RFA)?**

RFA is a minimally invasive medical procedure that treats thyroid nodules using a thin electrode inserted through the skin. This electrode is moved around the nodule under ultrasound guidance and delivers radiofrequency energy to different areas within the nodule. This procedure is carefully controlled such that no adjacent normal thyroid tissue is damaged. The radiofrequency thermal heat causes the nodule to degenerate and shrink over months following the procedure.

**Benefits of RFA over Surgery**

* Preserves healthy thyroid tissue
* Allows the thyroid to function normally without the need for a lifetime of medication
* Minimally invasive outpatient procedure performed under local anesthesia
* Shorter recovery times
* No scarring
* Sustained volume reduction
* Low complication rates
* Worldwide use
* Excellent post-procedure quality of life

**Risks of Thyroid RFA**

* Serious complications are rare. The main risks are: bleeding, hoarse voice due to nerve bruising, skin burns and infection. Infection can be a delayed problem and present with swelling, pain and redness.
* Rare serious complications can include: damage to the food pipe (esophagus), wind pipe (trachea) and nerves to the voice box (vocal cords). The risk of permanent injury to the voice box nerve leading to alteration in the voice is less than 1% (less than 1 in 100).
* Larger nodules could require more than one treatment for effective nodule shrinkage. Your doctor will discuss the likelihood of needing additional treatments with you during your initial assessment.

**How do I prepare for RFA?**

* If you are taking blood thinners, Dr Sinclair will advise you how long you need to cease them prior to the procedure. Other medications can be continued and taken on the morning of the procedure.

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**What happens during the RFA procedure?**

* Initially you will lie down on an examination table with your neck slightly extended
* Dr Sinclair will clean and prepare the skin and administer local anesthesia in the area surrounding your thyroid. Two grounding pads will be attached to your thighs. To ensure that you are handling the procedure well, Dr Sinclair may ask you how you are doing and whether or not you can feel any pain.
* After your neck tissues are sufficiently numb, a thin electrode will be inserted directly into the nodule and Dr Sinclair will allow a carefully controlled amount of energy to flow into the tissue to ablate the nodule.
* You will be able to breathe, swallow and speak normally during the entire procedure.
* The ablation changes to the nodule caused by the treatment can be seen in real time on the ultrasound screen by Dr Sinclair.
* When the procedure is complete, a small bandage will be placed on the treatment site and your neck will be cooled with ice packs.

**Will it hurt?**

* Because local anesthesia is administered before the procedure, very few patients experience any pain at all. Following your treatment, you will be given ice packs and pain medication, if needed.

**What happens afterwards?**

* You will be monitored for a short period of time, and then discharged. You will be able to return to most of your day-to-day activities immediately with the exception of no heavy lifting or straining in the first 24 hours after the procedure.
* Dr Sinclair will advise you on follow-up arrangement. Typically an ultrasound is done 1 month, 6 months and 12 months after the procedure.

**How successful is Thyroid RFA?**

* In the first week following your RFA, the thyroid cells treated by the RFA are removed by the body’s immune system. Most patients notice a reduction in nodule size in just 2-3 weeks, with solid nodules taking longer than cystic nodules.
* Symptoms often resolve after 1-2 months
* Part or all of the affected thyroid nodule may be permanently destroyed during the procedure. Immune cells of the body break down the affected tissue, shrinking the nodules.
* The amount of reduction depends on the original size and nature of the nodules. The average is 40-60% reduction after 3 months and approximately a 60-90% reduction after one year.
* In the years following the procedure, all that remains in the treated area is scar tissue. While some of the nodule around the scar may remain, this area is significantly smaller after treatment. The surrounding healthy thyroid gland is preserved and can continue to produce thyroid hormone.
* Symptoms like difficulty swallowing, pressure or tightness in the throat, or a bulky appearance of the nodule are typically eliminated or significantly reduced.