



## GRAVES' DISEASE

### Most patients with Graves' disease treated with antithyroid drugs eventually require additional therapies

#### BACKGROUND

Graves' disease is the most common cause of hyperthyroidism (overactive thyroid). It usually affects people between 30-60 years of age and is much more common in women than men. Patients with Graves' disease, often have enlarged thyroids (goiter) and bulging eyes (exophthalmos). There are three main options to treat Graves' disease: antithyroid drugs (ATDs), radioactive iodine therapy and surgery.

The most common ATDs in use are methimazole and PTU. ATDs work by decreasing the production of thyroid hormones. When ATDs are stopped, about half of the patients' thyroid levels remain normal and are then considered to be on remission. Many eventually return to their hyperthyroid state (relapse) and require further treatment. Some patients become hypothyroid (underactive thyroid), known as "burnt-out Graves", and require lifelong thyroid replacement therapy.

Surgery and radioactive iodine almost always resolve the hyperthyroidism. With surgery, all or nearly all thyroid tissue is removed and thyroid levels go down immediately. With radioactive iodine therapy, permanent damage to the thyroid cells occurs more gradually over several months. After both treatments, the majority of patients become hypothyroid and therefore will require lifelong thyroid replacement therapy.

This study examined the long-term effects of the three treatments (ATDs, radioactive iodine therapy and surgery) in Swedish patients diagnosed with Graves' disease.

#### THE FULL ARTICLE TITLE

Sjölin G et al 2019 The long-term compared outcomes of treatment for Graves' hyperthyroidism. *Thyroid* 29:1545-1557

#### SUMMARY OF THE STUDY

This study examined the long-term effects of the three treatments (ATDs, radioactive iodine therapy and surgery)

in Swedish patients diagnosed with Graves' disease between 2003 and 2005. The study included nearly 1200 patients who were asked questions about their symptoms and satisfaction with their treatment choice. In addition, and the medical records, with follow up for up to ten years, were reviewed. The patients' average age was 47 years and 82% were women.

The majority (65%) of the patients were initially treated with ATDs, while 27% were initially treated with radioactive iodine therapy and 4% were initially treated with surgery. Of the patients initially treated with ATDs, 23% did not complete this treatment and subsequently received radioactive iodine therapy or surgery. Of the remaining 77% who did complete the ATD treatment, approximately 59% remained on remission after 6-10 years and 41% relapsed. Of the patients who relapsed, 49% had a second course of ATDs and of those, 29% achieved remission. Of all patients treated with ATDs who remained in remission, 23% eventually became hypothyroid and required hormone replacement therapy. The hyperthyroidism was resolved in 82% of the patients who received radioactive iodine therapy and 96% of the patients who had surgery.

Unfortunately, around 25% of all patients reported that they did not feel fully recovered after their treatment, mostly due to persistent fatigue and eye symptoms. The proportion of patients who felt fully recovered was similar between the three treatment groups.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors conclude that patients who were first treated with ATDs for Graves' disease have around a 50% chance of remission with the medication alone. However, only 40% of these patients will end up with normal thyroid function; the rest of the patients will develop hypothyroidism and require thyroid hormone replacement. Surgery and radioactive iodine therapy are definitive treatments for the majority of patients, but almost all of these





## GRAVES' DISEASE, continued

patients became permanently hypothyroid and require thyroid hormone replacement for life. Regardless of the treatment chosen, some patients have persistent symptoms of fatigue, particularly those who became hypothyroid, even though they were treated with thyroid hormone.

This study informs patients with Graves's disease about the chances of resolution of the hyperthyroidism associated with different treatment options.

— Susana Ebner MD

### ATA THYROID BROCHURE LINKS

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

Radioactive Iodine Therapy: <https://www.thyroid.org/radioactive-iodine/>

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

### 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.

**Methimazole:** an antithyroid medication that blocks the thyroid from making thyroid hormone. Methimazole is used to treat hyperthyroidism, especially when it is caused by Graves' disease.

**Propylthiouracil (PTU):** an antithyroid medication that blocks the thyroid from making thyroid hormone. Propylthiouracil is used to treat hyperthyroidism, especially in women during pregnancy.

**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*.

**Radioactive iodine (RAI):** this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. *I-131* is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid.