

Implant Placement in a Patient with Thyromegaly Associated with Graves Disease



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KEYWORDS

- Graves disease • Endocrine disease • Oral health care providers • Hyperthyroidism • Goiter

KEY POINTS

- Oral health care providers should obtain comprehensive medical records from patients with hyperthyroidism before dental treatments.
- Graves disease is the most common cause of hyperthyroidism.
- Untreated hyperthyroidism can lead to dangerous adverse effects, such as coma or death.
- Recognizing early signs and symptoms of hyperthyroidism is crucial in reducing complications.

MEDICAL SCENARIO

A 33-year-old Caucasian man presented to our dental office for implant placement in the edentulous alveolar ridge of missing left mandibular first and second molars, #18 and 19. In the past 3 years, he has lost multiple teeth due to extensive caries. In addition, he reports increased hunger, a 6 to 8 lbs weight loss, palpitations, insomnia, frequent bowel movements, and heat intolerance. He had similar symptoms when he was diagnosed with hyperthyroidism about 2 years ago and took methimazole for 1 year. He went to the emergency department 1 week ago.

The Laboratory Values in the Emergency Department

Thyroid-stimulating hormone (TSH): <0.008 mIU/L (normal range: 0.550–4.780 mIU/L).
Free T4: 5.7 ng/dL (normal range: 0.89–1.70 ng/dL).

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Since the emergency department visit, he has been taking propranolol, 10 mg, every 8 hours and methimazole, 20 mg, daily with some improvement in his symptoms. On physical examination, he has thyromegaly with a thyroid bruit, mild proptosis, tremors on extension of the hands, and mild hyperreflexia.

Vital Signs

Blood pressure: 163/94 mm Hg.

Heart rate: 103 beats per/min.

Respiratory rate: 18 breaths per/min.

DENTAL MANAGEMENT DECISION AND JUSTIFICATION

Thyroid disease is a common endocrine condition. Hyperthyroidism is caused by an overactive thyroid gland, resulting in the overproduction of circulating thyroxine (T4) and triiodothyronine (T3).¹ Graves disease (diffuse toxic goiter) is the most common cause of hyperthyroidism.² It is an autoimmune disorder in which the thyrotropin receptor antibodies activate the TSH receptor, resulting in increased thyroid hormone synthesis and secretion.³ Graves disease is more common in women and younger patients.² Exophthalmos can be associated with Graves disease.³

Well-controlled patients with hyperthyroidism require no special precautions.² However, if an undiagnosed case of Graves disease is suspected, the oral health care provider (OHCP) should obtain medical consultation from a physician before any elective dental procedures.⁴ OHCPs should be vigilant regarding the signs and symptoms of hyperthyroidism. Untreated hyperthyroidism can lead to an acute life-threatening thyroid crisis, also known as a “thyroid storm,” which can result in death or coma. Minimizing stress during dental procedures is important to reduce the risk of a thyroid storm.² Thyrotoxic crisis can follow dental surgical procedures; therefore, OHCPs need to recognize the signs and symptoms associated with a “thyroid storm” (Table 1).³

Abnormal signs and symptoms from head and neck examinations, such as dysphagia, or tongue swelling, can be valuable clues for thyroid diseases.^{2,3} OHCPs should palpate the lower anterior neck region and feel for any goiter (thyroid gland enlargement) as part of their comprehensive oral examination at every dental visit. Goiter in Graves disease may feel softer than a normal gland would.³ One of the most serious complications of Graves disease is cardiac issues.⁴ OHCPs should use epinephrine in local anesthetics with caution due to the increased risk of tachycardia and dyspnea in patients with poorly controlled hyperthyroidism.² Patients with atrial fibrillation might be placed on anticoagulant therapy; therefore, prolonging the prothrombin time could cause excess bleeding or risk of hemorrhage during dental surgical procedures and should be taken seriously.³ Agranulocytosis is a potential

Table 1

Thyrotoxic crisis symptoms³

Thyrotoxic crisis symptoms³

Tachycardia or arrhythmia
Pulmonary edema
Sweating
Nausea and vomiting
Fever
Delirium, stupor
Abdominal pain
Seizure



Fig. 1. Recurrent bacterial sialadenitis in a patient with a history of radioactive iodine (I-131) therapy. (Courtesy of Sahar Mirfarsi, DDS.)

side effect of antithyroid agents, which can increase the risk of postoperative infections.³

Elevated blood pressure and arteriolar pressure may increase the risk of bleeding from invasive dental procedures; therefore, extended local pressure might be necessary to stop the bleeding.² OHCPs should be cautious when prescribing analgesics containing acetylsalicylic acid or nonsteroidal antiinflammatory drugs (NSAIDs) due to interferences with T₄ and T₃ protein binding and elevation in circulating T₄, causing thyrotoxicosis.⁴ Patients on nonselective β -blockers for cardiovascular disease comorbidity can experience reduced effects of β -blockers while taking NSAIDs.⁵ OHCP should be cautious in using epinephrine in local anesthetic or retraction cords in patients with hyperthyroidism and those taking nonselective β -blockers such as propranolol.⁵

Graves disease is often managed by radioactive iodine (RAI) therapy, thyroidectomy, or antithyroid medications such as methimazole.¹ RAI therapy can severely damage the salivary glands, especially parotid glands, resulting in chronic sialadenitis (inflammation of the salivary glands) and/or recurrent bacterial sialadenitis¹ (Fig. 1). Hyposalivation (Fig. 2) and dysgeusia can also develop in patients with a history of post-RAI therapies.³



Fig. 2. Depapillated and dry dorsum of the tongue in a patient with hyposalivation after radioactive iodine therapy for managing hyperthyroidism. (Courtesy of Sahar Mirfarsi, DDS.)

CLINICS CARE POINTS

- Obtain medical records in patients with hyperthyroidism.
- Monitor vital signs before and during dental procedures to avoid complication.
- Most patients undergoing minor dental procedures with local anesthetic will not require corticosteroid supplementation.
- OHCPs should be aware of the adverse effects of radioactive iodine on the salivary glands, such as hyposalivation.
- Be cautious using epinephrine in local anesthetic or retraction cords in patients with hyperthyroidism.
- Take extreme caution administering epinephrine in local anesthetic to patients taking nonselective β -blockers.

DISCLOSURE

The authors have nothing to disclose.

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