

***Prediction and management of hypo parathyroidism
after thyrodictomy for toxic goiter***

Protocol of Thesis

Submitted for partial fulfillment of M.D Degree in General
surgery

By

Feisal Mahmoud Goda.

M.B.B.CH , M SC General Surgery
Faculty of Medicine Ain Shams University

Under Supervision of

Prof. Dr / Hassan Sayed Tantawy

Professor of General Surgery
Faculty of Medicine Ain Shams University

Prof. Dr / Fared Adly Fared Ghaly

Professor of Clinical Pathology
Faculty of Medicine Ain Shams University

Dr: Amr Ahmed Abed Aal

Assistant Professor of General Surgery
Faculty of Medicine Ain Shams University

Dr/ Amr Kamal El Feky

Lecturer of General Surgery
Faculty of Medicine Ain Shams University

Faculty of Medicine
Ain Shams University
Cairo 2008.

Introduction

The normal thyroid gland is impalpable. The term goiter (from the latin gutter =the throat) is used to describe generalized enlargement of the thyroid gland. It includes simple goiter (euthyroid), toxic goiter ,neoplastic, inflammatory causes.

(*Witte J, et al., 2004*).

Toxic goiter is a syndrome characterized by symptoms and signs of hyper metabolism and increased sympathetic nervous system activity that result from excessive thyroid hormone production. The most common cause of thyrotoxicosis is Gravis' disease which account for 60% to 90% of all cases of thyrotoxicosis.

(*Mittendorf and Mchenry, 2001*)

Classic thyrotoxic symptoms include ; fatigue, weight loss, palpitations, and heat intolerance. The most common physical findings associated with hyperthyroidism are tachycardia and tremors.

(*Chromate et al, 1998*).

Hyperthyroidism is easily confirmed by the presence of elevated serum levels of thyroxin (T4) or triiodothyronine (T3) and suppressed serum levels of thyroid stimulating hormone or antimicrosomal antithyroglobulin and antiperioxidase antibodies are often encountered. The 24 hours radioiodine (RAI) uptake is often elevated.

(*Monzani et al., 1997*).

Treatment options for thyrotoxicosis include anti thyroid medications, radioactive iodine therapy, and thyroidectomy. Although most hyperthyroid patients (especially those with Graves' disease) are treated medically, thyroidectomy has several distinct advantages including; rapid resolution, relative safety, high success rate, simultaneous tissue diagnosis, cosmetic improvement with goiter removal, ability to salvage medical failures, acceptable alternative for non-compliant patients and less risk of exacerbating ophthalmopathy. (*Tallsted et al., 2000*).

The extent of thyroidectomy depends on several factors. A total thyroidectomy is indicated in patients with a coexisting malignancy of the thyroid or parathyroid cancer, multiple endocrine neoplasia, severe ophthalmopathy, or in patients unwilling to undergo reoperation or radioactive iodine therapy. A near- total thyroidectomy results when a total resection is intended , but the whole gland cannot be safely dissected from the surrounding nerves, so that a minute portion of thyroid is left near the nerve. Subtotal thyroidectomy is useful for the majority of patients. Factors associated with hypothyroidism after subtotal thyroidectomy are remnant size and autoimmune activity. If an euthyroid patient is the goal, some functioning thyroid tissue must be preserved a 4 to 7-gram remnant is the most appropriate size.

(*Witte J, et al., 2004*).

Hypoparathyroidism after surgery may be temporary or permanent. It is most frequent with total thyroidectomy. Symptoms include peri-oral tingling and numbness, followed by similar sensations in the digits and a positive chvostek's sign, and may progress to carpopedal spasm. Hypocalcemia increases anxiety frequently, respiratory alkalosis, hyperventilation, and tetany may occur . The incidence of permanent hypoparathyroidism after thyroid surgery is less than 2%. Transient postoperative hypocalcemia occurs in up 50% of cases after thyroidectomy. (*pattot et al., 1999*).

Although serial calcium levels correlate with development of symptomatic hypocalcemia, they may not be judged until 36 to 72 hours postoperatively.

(Lo CY et al., 2002).

Immediately post-operative parathyroid assay result, available within 15 to 20 minutes postoperatively, may predict parathyroid dysfunction after thyroid surgery. It has the potential to reduce mortality and morbidity from hypocalcemia, to reduce reoperation rate, and to allow early discharge by avoiding the need for serial calcium levels in patients found to be at low risk. When used intra-operatively, it assists in identification of patients requiring autotransplantation for questionably viable glands. *(Linblom et al., 2002).*

Aim Of The Work

This work aims at prediction, diagnosis and treatment of hyperparathyroidism after thyroidectomy in cases of toxic goiter and also the role of Parathyroid hormone assay in prediction of this problem.

Contents

1- Introduction

2- Aim of the work

3- Review of literature

- Anatomy of thyroid gland and parathyroid gland.
- Physiology of the thyroid gland and calcium metabolism.
- Pathology of throtocosis.
- Diagnosis of throtocosis.
- Management of throtocosis.
- Complication of thyroidectomy.

4 - Material and methods.

5- Results.

6- Discussion.

7- Summary and conclusion.

8- References

9- Arabic summary

Patients and Methods

This study will be conducted at the department of surgery at El Demerdash Hospital and Shebin El kom Teaching Hospital on thirty patients with toxic goiter.

All patients will be prepared for surgery.

Patients will be prepared for surgery by anti thyroid drugs (carbimazole) and B-blocking drugs , Iodine may be given with anti thyroid drugs or B-blocking drugs for 10 days before surgery , this may reduce vascularity of the gland.

Inclusion criteria :

- * patient with toxic goiter based on symptoms and signs.
- * Age group between 20 and 50 years old patients.
- * Patients with no other problems which can affect serum calcium.

Exclusion criteria :

- * solitary thyroid nodule.
- * Disturbed parathyroid hormone level.
- * Disturbed calcium level in the blood.

Upon admission :

- * ***Consent will be taken for surgery and sharing in the research .***
- * History taking.
- * Routine laboratory investigations.
- * Pre-operative serum calcium level.
- * Pre-operative parathyroid hormone assay.

All patients will be screened for parathyroid hormone level and serum calcium level pre-operative, immediately post-operative, one and four weeks post-operative.

In case of presence low PTH which predict presence of hypocalcaemia treatment should be started by calcium substitution.

All patients will be asked about presence of symptoms and signs of hypocalcemia in the form of peri-oral tingling and numbness, followed by similar sensations in the digits and a positive chvostek's sign, and may progress to carpopedal spasm.

The results of total and subtotal will be compared for presence of post-operative hypo parathyroidism.

The results will be evaluated statistically.

References

Chiovato L, Fiore E, Vitti P, Roechi R, Rago T, and Dokie D., (1980): outcome of thyroid function in Graves's patients treated with radioiodine. Role of thyroid-stimulating and thyrotropine-blocking antibodies and of radioiodine induced thyroid damage. *Journal of clinical Endocrinology and Metabolism*; 83:40-46.

Linblom P, Westerdahi J, and Bergenfelz A, (2002): Low parathyroid hormones levels after thyroid surgery: a feasible predictor of hypocalcaemia. *Surgery*; 131: 515-520.

Lo CY, Luck JM, Sidney CT, (2002): Applicability of intra-operative parathyroid hormone assay during thyroietomy. *Ann Surgery*. 236(5): 564-569.

Mittendrof EA, and MchenryCR., (2001): thyriodectomy for selected patients with thyrotoxicosis. *Arch. Otolaryngology, Head and neck Surgery*; 127: 61-65.

Monzani F, Del Guerra P, Caraccio N, Casolaro A, Lippolis PV, and Goletti O., (1997): Appearance of Grave's disease after percutaneous ethanol injection for the treatment of hyperfunctioning thyroid adenoma. *Journal of Endocrinological Investigation*; 20:294-298.

Pattou F, Combemale F, Fabre S, and Carnail B, (1998):
Hypocalcaemia following thyroid surgery; incidence and prediction of outcome.
World Journal of Surgery ; 22:718-724.

Tallsted L, Lundell G, Topping O, Wallin G, Ljunggren JG, and Blomgren H, (2000): Occurrence of ophthalmopathy after treatment Grave's hyperthyroidism. New England Journal of Medicine; 326:1733-1738.

Witte J, Goretzki PE, Dozenrath C, Simon D, FelisP, Neubauer M,2000: Surgery For Graves' disease: total versus subtotal thyroidectomy : results of a prospective randomized trial. World J Surg ; 24:1303-11.