



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكرو فيلم

# بسم الله الرحمن الرحيم



**HANAA ALY**



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# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**HANAA ALY**



# **Safety and Effectiveness of Total versus Subtotal Thyroidectomy in Management of Simple Multinodular Goiter**

Thesis

*Submitted for Partial Fulfillment of Master Degree in  
General Surgery*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# قَالَ

سَبِّحْكَ لَا إِلَهَ إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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*Mohamed Taher*

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# List of Abbreviations

Abb.	Full term
Anti-Tg .....	Anti-thyroglobulin
BST .....	Bilateral subtotal thyroidectomy
CT .....	Computed Tomography
FNA .....	Fine Needle Aspiration
FNAB.....	Fine Needle Aspiration Biopsy
ID .....	Iodine Deficiency
MNG .....	Multinodular Goitre
NG .....	Nodular Goitre
RLN .....	Recurrent Laryngeal nerve
RLNP .....	Recurrent Laryngeal Nerve Palsy
SLN.....	Superior Laryngeal nerve
TC .....	Technetium
TMNG.....	Toxic Multinodular Goitre
TSH.....	Thyroid Stimulating Hormone
TT .....	Total thyroidectomy
US.....	Ultrasonography

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## INTRODUCTION

The thyroid is a highly vascular, brownish-red gland located anteriorly in the lower neck, extending from the level of the fifth cervical vertebra down to the first thoracic. The gland varies from an H to a U shape and is formed by 2 elongated lateral lobes with superior and inferior poles connected by a median isthmus, with an average height of 12-15 mm, overlying the second to fourth tracheal ring (*Dominique et al., 2017*).

Disorders of the thyroid gland constitute the second most common endocrine disease following diabetes mellitus. The prevalence of nodular goiter and thyroid autonomy is increased in regions with chronic Iodine Deficiency (ID). It has been documented that the thyroid gland adjusts to ID in the early stages by diffuse hyperplasia, while chronic exposure to ID results in nodular hyperplasia, increased colloid content and increased height of the follicular cells (*Karamanakis et al., 2010*).

Multinodular goiter is a common clinical problem that usually develops during the late stage of goiter. Although it is usually benign and asymptomatic in nature, multinodular goiter may predispose the patient to compressive symptoms, develops autonomous functioning nodules, or form suspicious nodules. The clinical treatment of goiter depends on the extent of enlargement, signs and symptoms, and potential underlying causes (*Yang et al., 2009*).

Thyroidectomy is one of the most frequent operations performed in iodine-deficient regions. In the early 20<sup>th</sup> century, thyroidectomy was associated with increased morbidity and even mortality. However, today the improvements in anesthesia and antisepsis as well as better surgical instruments and improvement in the surgical technique have rendered thyroidectomy an efficacious and safe treatment modality with acceptable morbidity and even unrecorded mortality (*Sorensen, 2018*).

Thyroidectomy methods range from nodulectomy to total thyroidectomy (TT) in benign thyroid disorders. TT and bilateral subtotal thyroidectomy (BST) are the most commonly preferred methods by surgeons for MNG. The selected surgical method for thyroid disease should aim to eradicate the disease as well as to minimize postoperative complications (*Ciftci et al., 2015*). The main postoperative complications of thyroidectomy are Recurrent Laryngeal Nerve Palsy (RLNP) and hypoparathyroidism (*Lifante et al., 2017*).

Many areas of surgery continually try to balance the benefits of extensive resection in terms of palliation and cure and the increased potential for complications associated with more radical procedures (*Citgez et al., 2013*).

The incidence of thyroid carcinoma varies from 7.5 to 13% in multinodular goiter. The presence of multiple nodules decreases the diagnostic value of fine-needle aspiration biopsy, and thyroid carcinoma is frequently an incidental postoperative histologic finding in MNG (*Tezelman et al., 2009*).

## AIM OF THE WORK

To compare between total and subtotal thyroidectomy in management of Multinodular Goiter as regard safety and effectiveness and post-operative complications like:

- Hypocalcaemia.
- Recurrent laryngeal nerve injury.
- Hypoparathyroidism.

## Chapter 1

# ANATOMY OF THE THYROID GLAND

### **Anatomy of the thyroid gland (figure 1):**

**T**he thyroid gland is a butterfly-shaped organ located anteriorly to the trachea at the level of the second and third tracheal rings. It consists of two lobes connected by the isthmus in the midline. Anteriorly, its surface is convex; posteriorly, it is concave. The weight of the thyroid of the normal non-goitrous adult is 15–25 g depending on the body size and iodine supply. From upper pole to base, the thyroid lobes usually measure 4 cm. Their width is 15–20 mm, and their thickness is 20–39 mm. The isthmus is 12–15 mm high, lies across the trachea anteriorly just below the level of the cricoid cartilage, and connects the two lobes (*Guidoccio et al., 2019*).

A pyramidal lobe may extend superiorly from the isthmus or from the medial portions of the left or right lobes. The thyroid extends from the level of the fifth cervical vertebra to the first thoracic vertebra. The thyroid is surrounded by a sleeve of pretracheal fascia. Posteriorly, a thickening of this fascia attaches the gland to the cricoid cartilage. This fascia is the lateral ligament of the thyroid (ligament of Berry). The anterior surface of the thyroid is related to the deep surface of the sternothyroid, sternohyoid, and omohyoid muscles. Laterally, the gland is related to the carotid sheath. Medially, the superior part of the thyroid is related to the larynx and