شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

HANAA ALY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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

Total thyroidectomy versus Total thyroidectomy with prophylactic central compartment neck dissection in early papillary thyroid cancer

Thesis
Submitted for partial fulfillment of the Master Degree In
General Surgery

By
Mahmoud Ibrahim Sedik Ali
M.B. B.Ch (Faculty of Medicine, Assuit University)

Under Supervision of :

Prof. Dr . Ayman A.Allah Abd-rabhou

Professor of General Surgery**,** General Surgery Department
Faculty of Medicine – Ain Shams University

Prof. Dr. Hesham M. Ali Omran

Assistant professor of General Surgery, General Surgery Department
Faculty of Medicine – Ain Shams University

Dr. Hossam Sobhy Abdelraheem

Lecturer of General Surgery, General Surgery Department
Faculty of Medicine – Ain Shams University

Faculty of Medicine
Ain Shams University
2021

*First, thanks are all due to **Allah** for Blessing this work until it has reached its end, as a part of his generous help throughout our life.*

*My profound thanks and deep appreciation to **Prof. Dr . Ayman A.Allah Abd-rabhou**, Professor of General Surgery, General Surgery Department, Faculty of Medicine – Ain Shams University for his great support and advice, his valuable remarks that gave me the confidence and encouragement to fulfill this work.*

*I am deeply grateful to **Prof. Dr. Hesham M. Ali Omran**, Assistant professor of General Surgery, General Surgery Department, Faculty of Medicine – Ain Shams University for adding a lot to this work by his experience and for his keen supervision.*

*I am also thankful to **Dr. Hossam Sobhy Abdelraheem**, Lecturer of General Surgery, General Surgery Department, Faculty of Medicine – Ain Shams University for his valuable supervision, co-operation and direction that extended throughout this work.*

*I am extremely sincere to **my family** who stood beside me throughout this work giving me their support.*

*Words fail to express my love, respect and appreciation to **my wife** for her unlimited help and support.*

Mahmoud Ibrahim Sedik Ali

List of Contents

List of Abbreviations

AJCC	:	The American joint committee on cancer
ALK	:	Anaplastic lymphoma kinase
AMES	:	Age, metastases, extent and size
ATA	:	The American Thyroid Association
BMI	:	Body mass index
BTDs	:	Benign thyroid diseases
CSS	:	Cause-specific survival
DFS	:	Disease-free survival
DIT	:	Diiodotyrosine
DNA	:	Deoxyribonucleic acid
EBRT	:	External beam radiation therapy
FNA	:	Fine- needle aspiration
FNAC	:	Fine needle aspiration and cytology
GD	:	Grave's disease
HT	:	Hashimoto's thyroiditis
LI	:	Labeling index
LT	:	Lymphocytic thyroiditis
MACIS	:	Metastasis, age, invasion, completeness, and size
MIT	:	Monoiodotyrosine
NCCN	:	National Comprehensive Cancer Network
PCCND	:	Prophylactic central compartment neck dissection
PCND	:	Prophylactic central-compartment nodal dissection
PTC	:	Papillary thyroid carcinoma
PTH	:	Parathyroid hormone

RAI	:	Radioactive iodine
rhTSH	:	Recombinant human TSH
RLN	:	Recurrent laryngeal nerve
SEER	:	Surveillance Epidemiology and End Results
SPSS	:	Statistical Package for Social Science
T_4	:	Thyroxine
Tg	:	Thyroglobulin
TgAb	:	Thyroglobulin antibody
TgAbs	:	Tg autoantibodies
Tg-DT	:	Tg-doubling time
TNM	:	Tumor, nodal disease and distant metastasis
TR	:	Triiodothyronine
TRH	:	Thyrotropin Releasing hormone
TSH	:	Thyroid-Stimulating Hormone
TT	:	Total thyroidectomy
UICC	:	Union for International Cancer Control
US	:	Ultrasound
WBS	:	Whole-body scan
XIAP	:	X-linked inhibitor of apoptosis protein

List of Figures

List of Tables

Introduction

Thyroid cancer has the highest increase in incidence rate among all cancers, and this is largely but not full attributed to the increased detection of subclinical papillary carcinomas **(Morris and Myssiorek. 2010).**

As a result, the surgical strategy undertaken in the management of these tumors has been gaining increasing popularity among endocrinologists and endocrine surgeons. Papillary thyroid carcinomas (PTC) are considered favorable prognosis cancers. Most patients have a 5-year overall survival rate well above 90% **(Gyorki et al., 2013).**

Therefore, disease-free survival has replaced overall survival as the main outcome of interest when effective initial management of these tumors is evaluated.

Given the high incidence of occult nodal metastasis in PTC, advocating prophylactic central compartment neck dissection (pCCND) for the initial management of these tumors is, in theory, the ideal thing to do. Nevertheless, the role of pCCND in the management of PTC remains controversial regarding its benefits and risks **(Bardet et al., 2015).**

Prophylactic neck dissection is defined as neck dissection in the absence of clinical evidence of nodal involvement whether on preoperative examination and imaging studies or during intraoperative evaluation. It is synonymous with elective/routine dissection **(Hartl et al., 2013).**

Essential to any assessment of the role of pCCND is to verify its oncologic rationale and whether its benefit outweighs its potential morbidity. Proposed potential benefits of pCCND include: eliminating a potential source of recurrence subsequently avoiding potential morbidity of revision surgery, increasing the accuracy of disease staging for radioactive iodine (RAI) dosing and long-term follow up, and improved accuracy of thyroglobulin surveillance **(Barczyński et al., 2013).**

While occult node positivity is quite common in PTC (even in subcentimetric cancers), it rarely demonstrates prognostic parameters of recurrence and/or a possibly worse disease-specific survival. Occult metastases usually tend to be small in size and number, with no extranodal extension, and a median risk of recurrence of only 2% **(Randolphs et al., 2012).**

Moreover, the comparability in oncologic outcome between those who undergo pCCND and those who do not is a testimony to the indolent biologic behavior of subclinical nodal disease **(Viola et al., 2015).**

Further proof of the clinical stability of occult nodal disease, is the rare progression to loco-regional recurrence among untreated patients.

(Ywata de Carvalho et al., 2015) or those who did not receive RAI adjuvant therapy **(Liu et al., 2015).**

A recent meta-analysis demonstrated that the presence of occult central nodal metastasis was not a significant predictor of recurrence nor did pCCND improve local control **(Qu et al., 2015)**.

Reoperation for recurrent disease in the central neck, despite being uncommon, is challenging. However, in experienced hands the safety of CCND as a secondary operation was comparable to it as a primary one **(Shen et al., 2010)**.

One of the arguments for the use of pCCND is that it influences the usage of RAI through identifying the true nodal status of patients. Accordingly, patients may be stratified to receive higher doses of RAI or spared empiric postoperative RAI therapy **(Ruel et al., 2015)**.

The American joint committee on cancer (AJCC) tumor, nodal disease and distant metastasis (TNM) staging system considers nodal metastasis a prognostic factor for patients above the age of 45 years **(Edge and Compton, 2010).**

However, it does not differentiate between microscopic and macroscopic metastases that have different implications on outcome. Therefore, microscopic upstaging may lead to potentially unnecessary or additional treatments and re-evaluations that are not devoid of adverse consequences **(Clement et al., 2015).**

On the other hand, giving empiric postoperative RAI based on the assumption of node positivity does not seem to be appropriate especially that the clinical stability of occult metastases in untreated patients or those who did not receive postoperative RAI has been demonstrated **(Ito et al., 2010).**

Aim of the work

The aim of this study is to comparing total thyroidectomy with or without prophylactic central compartment neck dissection, focusing mainly on the rate of complications and the risk of recurrence of the disease.

Anatomy of Thyroid Gland

The thyroid gland is a butterfly-shaped organ composed of two lobes, left and right, connected by a narrow isthmus. It weighs 25 grams in adults, with each lobe being about 5 cm long, 3 cm wide, and 2 cm thick, and the isthmus about 1.25 cm in height and width. The gland is usually larger in women than in men, and increases in size during pregnancy **(Hall & John, 2011)**.

The thyroid is near the front of the neck, lying against and around the front of the larynx and trachea. The thyroid cartilage and cricoid cartilage lie just above the gland, below the Adam's apple. The isthmus extends from the second to third rings of the trachea, with the uppermost part of the lobes extending to the thyroid cartilage and the lowermost around the fourth to sixth tracheal rings(fig.1) **(Ort et al., 2007)**.

The infra-hyoid muscles lie in front of the gland and the sternocleidomastoid muscle to the side. Behind the outer wings of the thyroid lie the two carotid arteries. The trachea, larynx, lower pharynx and esophagus all lie behind the thyroid. In this region, the recurrent laryngeal nerve and the inferior thyroid artery pass next to or in the ligament. Typically, four parathyroid glands, two on each side, lie on each side between the two layers of the thyroid capsule, at the back of the thyroid lobes **(Page et al., 2009)**.

The thyroid gland is covered by a thin fibrous capsule, which has an inner and an outer layer. The inner layer