جامعة عين شمس
كليـــــــة الطـــــب
قسم جراحة المخ والأعصاب

التدخل الجراحي عبر الجيب الاسفيني في علاج اورام الغده النخاميه

رسالة مقدمة لكلية الطب - جامعة عين شمس
ايفاء جزئيا لشروط الحصول على درجة الماجستير
فى جراحه المخ والاعصاب

مقدمة من

الطبيب/ مصطفي ابراهيم محمد عزيز المازني
بكالوريوس الطب والجراحة
كلية الطب- جامعة طنطا

المشـرفون

أ.د/ محمد اشرف غباشي
أستاذ جراحة المخ والأعصاب
كلية الطب- جامعة عين شمس

أ.م.د/ خالد محمد فتحي سعود
أستاذ مساعد جراحة المخ والأعصاب
كلية الطب- جامعة عين شمس

د/ هشام انور عبد الرحيم
مدرس جراحه المخ و الاعصاب
كلية الطب- جامعة عين شمس

كلية الطب
جامعة عين شمس
٢٠١٢

Ain Shams University
Faculty of Medicine
Neurosurgery Department

Transsphenoidal Surgery for Pituitary Adenoma Removal

Thesis Submitted
For Partial Fulfillment of master Degree
In Neurosurgery

BY

Mostafa Ibrahim Mohamed Aziz EL-Mazny
M.B.B.CH.

Supervisors

Professor Dr.
Mohamed Ashraf Ghobashy
Professor of Neurosurgery
Faculty of Medicine
Ain Shams University

Ass. Prof. Dr
Khaled Mohamed Fathy Saoud
Assistant Professor of Neurosurgery
Faculty of Medicine
Ain Shams University

Dr.
Hisham Anwar Abdel Rahiem
Lecturer of neurosurgery
Faculty of Medicine
Ain Shams University

Ain Shams University
Faculty of Medicine
2012

Acknowledgement

First and foremost, thanks to **GOD**

the most beneficent and most merciful.

I wish to express my sincere appreciation and deepest gratitude to **Prof. Dr. Mohamed Ashraf Ghobashy** Professor of Neurosurgery Faculty of Medicine Ain Shams University. He devoted his time, effort and experience most generously throughout this work.

I would like to express my gratitude and deep appreciation to **Ass. Prof. Dr. Khaled Mohamed Saoud** Assistant Professor of Neurosurgery, Faculty of Medicine Ain Shams University, for his kind help, great interest, continuous supervision and constructive encouragement.

I am deeply grateful to **Dr. Hisham Anwar Abdel Rahiem** lecturer of neurosurgery Faculty of Medicine Ain Shams University, to whom, I owe a very special debt. Without his wisdom, close and continuous supervision, creative thoughts, constructive criticism, relentless support and patience I would not have achieved any of what I have achieved today.

Last, but not least, I am very grateful to **My Mother** & **My Sisters** who supported me to finish this work.

Contents

List of Figures

List of Tables

List of Abbreviations

ACTH	AdrenoCortico Tropic Hormone
ADH	Anti Diuretic Hormone
Ca	Calcium
CBC	Complete Blood Count
CRH	Corticotropin Releasing Hormone
CS	Cushing Syndrome
CSF	Cerebro Spinal Fluid
CT	Computerized Tomography
DDAVP	1-deamino-8-D-arginine vasopressin (desmopressin)
DI	Diabetes Insipidus
DM	Diabetes Mellitus
DMZ	Dexamethasone Suppression Test
EETS	Endoscopic Endonasal Transsphenoidal
F	Female
Fig	Figure
FSH	Follicular Stimulating Hormone
GH	Growth Hormone
GH-sec MA	Growth Hormone secreting Macro Adenoma
H&E	Hematoxylin And Eosin
HT	Hypothalamus

HTN	Hypertension
ICA	Internal Carotid Artery
IGF	Insulin Like Growth Factor
IHA	Inferior Hypophyseal Artery
IM	Intramuscular
IV	Intravenous
LH	Luteinizing Hormone
Lt	Left
M	Male
MRA	Magnetic Resonance Angiogram
MRI	Magnetic Resonance Imaging
MRV	Magnetic Resonance Veinogram
PA	Prothrombin Activity
PRL	Prolactin
PRL-sec MA	Prolactin secreting Macro Adenoma
PT	Prothrombin Time
RBS	Random Blood Sugar
Rt	Right
SC	Subcutaneous
SHA	Superior Hypophyseal Artery
T3	Tri-iodo tyrosine
T4	Tetra- iodo tyrosine

TSH	Thyroid-stimulating hormone
TSS	Transsphenoidal surgery
WHO	World Health Organization

Abstract

Pituitary tumors account for 15% of all primary brain tumors, which can be approached through either transcranial or transsphenoidal routes.

This study will include patients who are admitted to the neurosurgery department at Nasr City Insurance Hospital, Ain Shams University Hospital and Tanta University Hospital, during the period from May/2011 to July/2012.

20 patients were operated using the microscopic transsphenoidal approach with mean follow up of 12 months. 9 were functioning adenomas and 11 were non-functioning with varying degree of extension to the cavernous sinus. The most common complication was CSF leak (10%), transient DI (5%) and epistaxis (15%).

The result of this study support the safety and the efficacy of this approach to treat pituitary adenoma; however long term follow up is needed.

Introduction

Historically, the first successful removal of a pituitary tumor was performed by Schloffer in 1907, using an extracranial transsphenoidal approach through a superolateral nasoethmoidal route. Although Hirsch from Vienna pioneered in 1909 an inferolateral endonasal approach, Harvey Cushing ingeniously introduced a new method that combined the advantages of previous technical modalities; he deserves the credit for having standardized an oronasal midline rhino septal transsphenoidal approach. He routinely used this method during a 20-year period for over 247 cases of pituitary tumor, remaining faithful to an early statement that "the important factor seems to me a direct extracranial midline approach by the shortest possible route. **(Hardy J, 1996)**

Pituitary tumors are common lesions believed to account for 10-15 % of all primary brain tumors. The pituitary tumors are the third most common primary intracranial tumors. **(Thapar K et al,. 1995)**

The pituitary gland consists of the adenohypophysis (anterior lobe) which constitutes the major portion (three fourths) of the pituitary gland and neurohypophysis (posterior lobe) which constitutes only (one fourth) of the gland. **(Gibo H et al,. 1993)**

The pituitary gland lies within a bony depression called the sella turcica within the sphenoid bone at the base of the brain. Access to the sella is limited from above by the optic nerves and chiasm and the circle of Willis, It is from the hypothalamus that hypothalamic tropic factors are released to descend down the pituitary stalk to the pituitary gland where they stimulate

the release of pituitary hormones. While the pituitary gland is known as the 'master' endocrine gland, both of the lobes are under the control of the hypothalamus; the anterior pituitary receives its signals from the parvocellular neurons and the posterior pituitary receives its signals from magnocellular neurons**. (Gibo H et al,. 1993)**

The pituitary adenomas arise from adenohypophysis may be microadenomas or macroadenomas. The former are less than 1 cm in diameter, and the latter are more than 1 cm in diameter. It may be functioning or non functioning. The former is manifested early than the later due to endocrinological manifestations. Pituitary tumors cause symptoms by secreting hormones (prolactin, PRL, responsible for amenorrhea-galactorrhea in women and decreased libido in men; growth hormone, GH, responsible for acromegaly; adrenocorticotropic hormone, ACTH, responsible for Cushing's syndrome; thyroid-stimulating hormone, TSH, responsible for hyperthyroidism), depressing the secretion of hormones (hypopituitarism), or by mass-related effects (headaches, visual field abnormalities...). **(Chanson P, et al,. 2004).**

Diagnosis of pituitary adenoma has been established on the basis of clinical examination, neuroimaging studies and endocrinological testing. MRI with Gadolinium is the most useful modality for imaging the pituitary gland, sellar and parasellar region and to assess the site of the tumor, exact location, extension into the cavernous sinus and the degree of edema. **(John T, et al,. 2008).**