ROLE OF TRANSSPHENOIDAL APPROACH IN THE MANAGEMENT OF PITUITARY ADENOMAS WITH AND WITHOUT SUPRASELLAR EXTENSION

A Thesis

Submitted for partial fulfillment of M.D. Degree in
Neurosurgery

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2011

دور جراحة أورام الغدة النخامية عن طريق عظمة سفينويد في علاج الأورام الممتدة فوق السرج التركى والغير ممتدة

بحث توطئة للحصول على درجة الدكتوراه فى جراحة المخ والأعصاب

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كلية الطب – جامعة عين شمس

2011

Acknowledgement

First of all thanks to Allah, the most beneficent and most merciful, to him all my deeds belong.

I would like to express my sincere appreciations to **Prof. Dr. Alaa El-Deen Abd El-Hay** Professor of Neurosurgery, Faculty of Medicine, Ain Shams University, for his great support and guidance that make this work possible.

I wish to express my utmost gratitude and deep appreciation to **Prof. Dr. Fathy El-Noss** Professor of Neurosurgery, Faculty of Medicine, Benha University for his support to get my scholarship in the USA and for his follow up my progress which was a real encouragement.

I am deeply grateful to **Prof. Dr. Mohammed Ashraf Ghobashy** Professor of Neurosurgery, Faculty of Medicine, Ain Shams University, for being with me in times of need, for the effort he paid and for his kind guidance.

I am greatly Honored to express my endless gratitude to **Prof. Dr. Khaled El-Bahy** Professor of Neurosurgery, Faculty of Medicine, Ain Shams University, for his sincere support, for the time he spent with me, for the effort he paid and for his kind guidance in every step and meticulous revision until this work saw the light.

I will never forget the sincere help and support I found during my scholarship in the USA, from **Prof Dr. Khaled Aziz** Assistant Professor of Neurological Surgery and the director of the center for complex intracranial surgery in Allegheny general Hospital Pittsburgh, PA.

I am greatly honored to say that part of this work was done at the Jho Institute for minimally invasive neurosurgery by the world wide innovative surgeon **Hae- Dong Jho**. It was really great chance to work with him and to gain knowledge and experience from him.

Last but not least, I am very grateful to all my Professors in the Dept. of Neurosurgery at Ain Shams University, **Prof. Dr. Adel Hakeem, Prof. Dr. Hossam El-Hussieny and Prof. Dr. Ali Kotb**. Throughout the past 5 years I learned a lot from them not only the scientific knowledge and experience but also the good manners and behaviors.

Mohammed Hammad

Aim of the work

The aim of this study is to evaluate the role of the transsphenoidal surgery using the different techniques, microscopic and endoscopic, in the management of pituitary adenomas with sellar and with suprasellar extension. Also to compare between the classic microscopic and endoscopic transsphenoidal approach for treatment of pituitary adenomas, regarding the extent of the tumor removal, clinical improvement after surgery, development of complications, and the convenience related to both techniques.

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Introduction

Since transsphenoidal approaches were developed in the early 1900s, the basic surgical techniques have not changed much in transsphenoidal pituitary surgery besides adoption of the operating microscope in the 1960s by Hardy.

A transseptal approach via submucosal dissection along the nasal septum via a sublabial or transfixional incision guides a surgeon to the sphenoidal sinus. Through a narrow surgical tunnel created with a transsphenoidal speculum retractor placed through a transseptal route, surgical removal of the pituitary tumor is carried out under the operating microscope. After tumor removal, the nasal cavity has to be packed in order to approximate the dissected nasal mucosa together.

Pituitary microsurgeons have demonstrated good surgical outcomes and low risks associated with microscopic transsphenoidal pituitary surgery for years. Thus, the microscopic transsphenoidal pituitary surgery has been a gold standard surgical method when patients with pituitary adenomas require surgical treatment. Nevertheless, this relatively benign transsphenoidal surgery can still be improved further as rhinologic sinus operations have changed in time.

With an advance in endoscopic optics and video-images, an endoscope enables the surgeon to examine the nasal cavity as well as to perform surgical procedures without conventional skin incisions. This endoscopic surgical concept in sinus surgery has been adopted in transsphenoidal pituitary surgery.

Contrary to narrow microscopic views, endoscopic views are panoramic. In addition, an endoscope enables a surgeon to inspect the tumor resection cavity directly by the direct placement of an endoscope into the sella, to inspect the suprasellar region directly with application

of angled lens endoscopes, and to approach the skull base at the anterior cranial fossa and clivus readily.

With an addition of endoscopy to the relatively benign nature of transsphenoidal surgery, endoscopic endonasal pituitary surgery has provided minimal postoperative discomfort, short hospital stay and quick postoperative recovery.

In this work we will discuss in details the classic microscopic and endoscopic transsphenoidal approaches with main focus on:The history and development of the transsphenoidal surgery with emphasis on the effect of technology on improving this minimally invasive surgery.

Also we will review the relevant microscopic and endoscopic anatomy related to the approach, the physiology of the adenohypophysis and neurohypophysis, the pathology of pituitary adenomas, the evaluation and management of pituitary adenomas and the perioperative management of patients with pituitary adenomas undergoing pituitary surgery.

The different techniques of performing microscopic and endoscopic transsphenoidal pituitary surgery will be discussed in full details.

We will study the results of transsphenoidal pituitary surgery on tumors with sellar and suprasellar extension as well as the tumors with parasellar extension using the different techniques.

Then we will compare between the classic microscopic and endoscopic transsphenoidal approach for treatment of pituitary adenomas, regarding the extent of the tumor removal, clinical improvement after surgery, development of complications, the follow up and the further treatment needed, and the convenience related to both techniques.

All the patients will be evaluated before surgery by clinical examination, hormonal assay, visual assessment and radiological investigations. Then all of them will be reassessed again using the same preoperative parameters after surgery in a follow up period will be determined accordingly.