شبكة المعلومات الجامعية

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بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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HANAA ALY

Transsphenoidal Endoscopic versus Microscopic Approach in Treatment of Pituitary Adenomas: CSF Leak and GTR

Systematic review

*Submitted for Partial Fulfilment of Master Degree in **Neurosurgery***

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List of Abbreviations

Abb.	Full term
ACTH	*Adreno Cortico Tropic Hormone*
ADH	*Antiduretic hormone*
CSF	*Cerebro Spinal Fluid*
CT	*Computed tomography*
DI	*Diabetes insipidus*
EOR	*Extent of Resection*
ETS	*Endoscopic Transsphenoidal Surgery*
FPA	*Functioning Pituitary Adenoma*
FSH	*Follicle Stimulatig Hormone*
GH	*Growth Hormone*
GTR	*Gross Total Resection*
LH	*Leutinizing Hormon*
MRT	*Megnetic resonance Imaging*
MTS	*Microscopic Trassphenoidal surgery*
NFPA	*Non Functioning Pituitary Adenoma*
NS	*Not Significant*
PRL	*Prolactin*
PRT	*Prospective Randomized Trial*
R OS	*Retrospective Observational study*
SIADH	*Syndrome of inappropriate Antiduretic hormone secretion*
SRS	*Stereotactic radiosurgery*
TSH	*Thyroid Stimulating Hormone*

INTRODUCTION

The pituitary gland is a ductless neuroendocrine structure located at the base of the brain. The term *hypophysis* cerebri (from the Greek for "lying under") — another name for the pituitary—refers to the gland's position on the underside of the brain. Due to its crucial role in controlling other endocrine glands including the adrenal, thyroid, and reproductive glands (e.g., ovaries and testes) and in some cases have direct regulatory effects in major tissues, such as those of the musculoskeletal system and also water content of the body, it is called "the master gland". The pituitary gland has a dual embryologic origin and hence is made up of anatomically and functionally distinct lobes called the anterior lobe (adenohypophysis), posterior lobe (neurohypophysis), and intermediate lobe which is redumentary in humans.[1]

Pituitary adenomas (PAs) are the second most common primary brain tumors, and the prevalence is approximately 10% to 20% of all primary brain tumors. They are generally classified as either "functioning" or "nonfunctioning," with functioning adenomas representing approximately 70% of all pituitary tumors[2]

PAs can be manifested as hormonal disturbances or mass effects such as headaches, visual deterioration, diplopia, or of apoplexy[3].

Treatment options for pituitary adenomas include medical therapy, radiotherapy, and surgery. The overall goal of treatment for these lesions is to reverse hormone imbalance, preserve normally-functioning gland, and to reduce tumor mass. Surgery is usually indicated when medical therapy fails to control symptoms, or if there is evidence of local mass effect. Surgical approaches to the sellar region presented a challenge to the surgeon for many years either transcranial or transsphenoidal. Recently, the transsphenoidal approaches to the sellar region are the first-line of treatment of pituitary adenomas (PA), either microscopic transsphenoidal (MTS) or endoscopic transsphenoidal (ETS) approach. The former has long been taken as a standard procedure to manage PA, since Hardy first adopted the microscope to visualize sellar lesions during transsphenoidal procedures in the 1960s. This approach has been challenged by the popular of endoscopic approach. Which was developed in the 1990s. Endoscopy - as a minimally invasive and maximally effective procedure- provides a superior and larger field of vision through angled scopes, thus improving lighting and visualization of the critical anatomy for the tumor interface to assess the extra sellar extension and was accepted widely and today is being used in many centers. [4-7]

In this Review, we are aiming at analyse the collective outcomes from studies comparing MTS and ETS approaches in managing pituiary adenomas regarding gross total resection and post operative cerebrospinal fluid (CSF) leak.

AIM OF THE WORK

In this Review, we are aiming at the analysis of the collective outcomes from studies comparing the microscopic transsphenoidal approach with the endoscopic transsphenoidal one.

Primary objective is to evaluate and compare gross total resection (GTR) and Post-operative CSF leak between these two modalities.

Chapter 1

SURGICAL ANATOMY OF THE PITUITARY GLAND

Embryology:

The pituitary gland has a dual ectodermal origin. The oral ectoderm gives origin to the adenohypophysis, and the neural ectoderm gives origin to the neurohypophysis.

The organogenesis begins around the 4th week of the intrauterine development of the fetus. A hypophyseal placode forms at the oral ectoderm and gives origin to the Rathke's pouch; this develops as an upward evagination of the oral ectoderm towards the neural ectoderm to form the anterior lobe. Around 6 to 8 weeks, a constriction forms at the base of the Rathke's pouch and closes completely, thus separating it from the oral epithelium. The hypothalamus communicates with the adenohypophysis through a vascular link called the hypothalamohypophyseal portal system.

The ventral diencephalon extends downward to form the posterior lobe which is smaller and derives from the outpouching of the third ventricle neural primordia. Thus it is an extension of the central nervous system.[8-9] Fig. 1