Endoscopic Endonasal Approach for Surgical Management of Nonfunctioning Pituitary Macroadenoma

Thesis

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Khaled Mohammed Elshazly

Dedication

To:

My parents

My Wife, My Daughter (Mariam)
and my Family

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List of Abbreviations

Abb.	Full term
ACA	Anterior cerebral artery
ACTH	Adrenocorticotropic hormone
CCD	Charge coupled device
CO	Choana
CS	Cavernous sinus
CSF	Cerebrospinal fluid
CT	Computed tomography
DI	Diabetes insipidus
DVT	Deep venous thrombosis
EEA	Endoscopic endonasal approach
EVD	External ventricular drain
FSH	Follicle stimulating hormone
FSRT	Fractionated stereotactic radiotherapy
GH	Growth hormone
GKRS	Gamma knife radiosurgery
GTR	Gross total resection
H&E	Hematoxylin and Eosin
ICA	Internal carotid artery
ICU	Intensive care unit
IGF-1	Insulin growth factor-1
IT	Inferior turbinate
LH	Leutinizing hormone
LOCR	Lateral opticocarotid recess
MOCR	Medial opticocarotid recess
MRI	Magnetic resonance imaging
MT	Middle turbinate
NFPA	Nonfunctioning pituitary adenoma

List of Abbreviations cont…

Abb.	Full term
NS	Nasal septum
NSF	Nasoseptal flap
NTR	Near total resection
OC	Optic canal
ON	Optic nerve
PE	Pulmonary embolism
POMC	Pre-opiomelanocortin
PRL	Prolactin
PT	Pituitary gland
SER	Sphenoethmoidal recess
SIADH	Syndrome of in appropriate antidiuretic hormone
SO	Sphenoid osteum
SOF	Superior orbital fissure
ST	Superior turbinate
STR	Subtotal resection
TS	Tuberculum sellae
TSH	Thyroid stimulating hormone
WHO	World health organization

Abstract:

The results of the pure endoscopic endonasal approach for tumor resection and clinical outcome in nonfunctioning pituitary macroadenomas have been reported in the literature in the last decade. We present our results of EEA as the primary treatment option for nonfunctioning pituitary macroadenomas in regards to the surgical technique, reconstruction methods, resection rate and clinical outcome.

Methods:

We prospectively observed the imaging studies and the medical records of 45 patients with nonfunctioning pituitary macroadenomas in which we used the purely endoscopic endonasal approach (EEA) for tumor resection as the primary management from the time period of May 2014 to January 2017. The factors affecting the extent of resection and clinical outcomes were evaluated.

Conclusion:

Endoscopic endonasal approach was found in our study to be an effective and safe approach for management of non-functioning pituitary macroadenomas in regards to resection rate, clinical outcome and postoperative complications.

Key words:

Endoscopy, Nonfunctioning adenoma, Transsphenoidal approach, Vision, Pituitary.

INTRODUCTION

The development of the endonasal endoscopic approach for the resection of pituitary adenomas has been one of the most important advances for the treatment of pituitary tumors in the last decades. Since 1997, after the initial reports of large series of endoscopic pituitary surgery by Jho and Carrau[1] and Cappabianca et al.[2], the technique has spreaded worldwide and represents, nowadays, the main surgical approach for sellar lesions in different neurosurgical centers.

A panoramic vision inside the surgical area, a superior close up of the anatomy and an improved working angle represent some of the advantages brought by the use of the endoscope to the pituitary surgery. Nevertheless, less nasal cavity injuries, without the use of nasal speculum or fluoroscopy and patients fast recovering also are benefits reported in the literature. Comparing it to the sub-labial incision, there is an important reduction in morbidity, mainly related to the reduction of upper lip and nasal complications[3, 4].

The combination of endoscopic technique with extended transsphenoidal approaches allowed more effective resection of the large and giant pituitary adenomas extending into the suprasellar and parasellar regions that was previously considered to be done using a transcranial approach or only for surgical debulking using the transsphenoidal approach[5, 6].

The results of the pure endoscopic endonasal approach for tumor resection and clinical outcome in nonfunctioning pituitary macroadenomas have been reported extensively in the literature in the last decade[7, 8]. It has been also extensively compared to the results obtained by microsurgery[9, 10]. However, no conclusive evidence of different results has been demonstrated. Until the moment, no large randomized study has compared the results of these techniques.