

Correlation Between Inferior Turbinate Hypertrophy and Eustachian Tube Dysfunction.

Thesis
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قَالَ اللَّهُ لَا إِلَهَ إِلَّا أَنَا الْعَزِيزُ الْحَكِيمُ

سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

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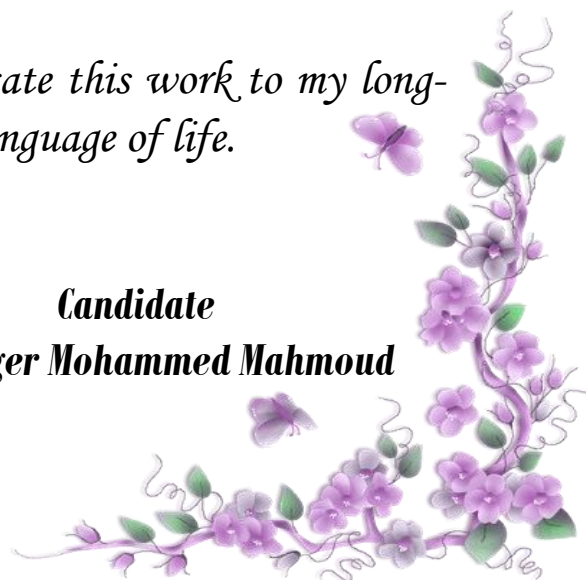
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Candidate
Hager Mohammed Mahmoud



ABSTRACT

Background: Chronic nasal obstruction is a common symptom of nasal disease. Enlargement of the inferior turbinates is one of the most frequent underlying mechanisms. Turbinate enlargement can be bilateral or unilateral.

Purpose: To study the relation between inferior turbinate hypertrophy mainly the posterior end and Eustachian tube function.

Patients and Methods: This study was conducted prospectively during the period from January 2018 till September 2018 on twenty five patients with inferior turbinate hypertrophy attended to ENT department Ghamra military Hospital. All these patients gave informed consent to participate in this study.

Results: Comparative study between pre and post-operative symptoms of Eustachian tube dysfunction revealed **highly-significant improvement** regarding Autophony and fullness ($P < 0.01$), **significant improvement** regarding tinnitus and hearing loss ($P < 0.05$) and **non-significant improvement** regarding pain ($P > 0.05$).

Comparative study between pre and post-operative signs of Eustachian tube dysfunction revealed **highly-significant improvement** regarding tympanic membrane signs, Valsalva test and Toynbee test ($P < 0.01$) and **non-significant improvement** regarding tympanometry ($P > 0.05$).

Conclusion: Inferior turbinate hypertrophy causing nasal obstruction has impact on eustachian tube function and middle ear aeration causing eustachian tube dysfunction.

Key words: Inferior turbinate hypertrophy- Eustachian tube dysfunction- Tympanometry.

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List of Abbreviations

Abbreviation	Full term
CRD	Carbohydrate recognition domain.
CT	Computed tomography.
ET	Eustachian tube.
ETD	Eustachian tube dysfunction.
ETF	Eustachian tube function.
H1	Histamine receptor grade I.
H2	Histamine receptor grade II.
IgA	Immunoglobulin A.
KTP	Potassium titanyl phosphate.
MFT	Multiple frequencies tympanometry.
MRI	Magnetic resonance imaging.
OME	Otitis media with effusion.
RMM	Rhinomanometry.
SD	Standard deviation.

SP-A	Surfactant protein-A.
SP-D	Surfactant protein-D.
TM	Tympanic membrane.
TPP	Tympanogram peak pressure.
TTAG	Tubo-tympano-aerodynamic-graphy.
VIP	Vasoactive intestinal peptide.

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Introduction



Introduction

The inferior nasal turbinates are comprised of the turbinate bone with the mucoperiosteum above, a sub mucous cavernous plexus and the respiratory mucosa (**Maran and Lund, 1990**) (**Dingman and Natvig, 1997**).

The inferior turbinate bone has its origin on the inferior portion of the lateral nasal wall (**Saulescu and Sarafoleanu, 2015**). They are the largest turbinates and are responsible for the majority of airflow direction, humidification, heating, and filtering of air inhaled from nose (**Kumar et al, 2013**). Turbinate enlargement could be caused by vascular engorgement of venous sinuses, tissue hyperplasia or tissue hypertrophy (**Eccles, 2007**).

The Eustachian tube is an osteo-cartilaginous canal that communicates the middle ear with the nasopharynx (**Poe, 2007**). Maintaining the physiological pressure in the middle ear depends on the gaseous balance between air intake through the Eustachian tube and gas diffusion from the middle ear to the systemic circulation. The adequacy of ventilation through the tube has a central role in preserving pressure equilibrium. When the tube opens during swallowing, air reaches the middle ear, equalizing the pressure between the external and internal surfaces of the tympanic membrane (**Salvinelli et al., 2005**).

The potential interactions between middle ear mucosa, Eustachian tube, pharynx and nasal cavities have been studied by several authors. Most inflammatory disorders of the middle ear are thought to be related to inadequate ventilation through the Eustachian tube. The tube is frequently involved in the pathological processes of the nasal, para nasal and rhino-pharynx cavities **(Salvinelli et al., 2005)**.

Nasal septal deviation with hypertrophy of inferior turbinate disturbs the auditory tube function and hence the middle ear pressure. It has also been shown that nasal obstruction can disrupt the functions of the Eustachian tube and change the middle ear pressure **(Salaheldin, 2012)**.



Aim of the Work



Aim of the Work

Our objective is to study the relation between inferior turbinate hypertrophy mainly the posterior end and Eustachian tube function and its impact on middle ear pressure as regard its incidence and clinical significance.