



ANATOMICAL VARIATIONS OF NASAL STRUCTURES IN CHRONIC RHINOSINUSITIS AS DETECTED BY COMPUTED TOMOGRAPHY SCAN

Thesis

Submitted for Partial Fulfillment of Master degree
In Otorhinolaryngology

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2017

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سَبَّحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدقة الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgements

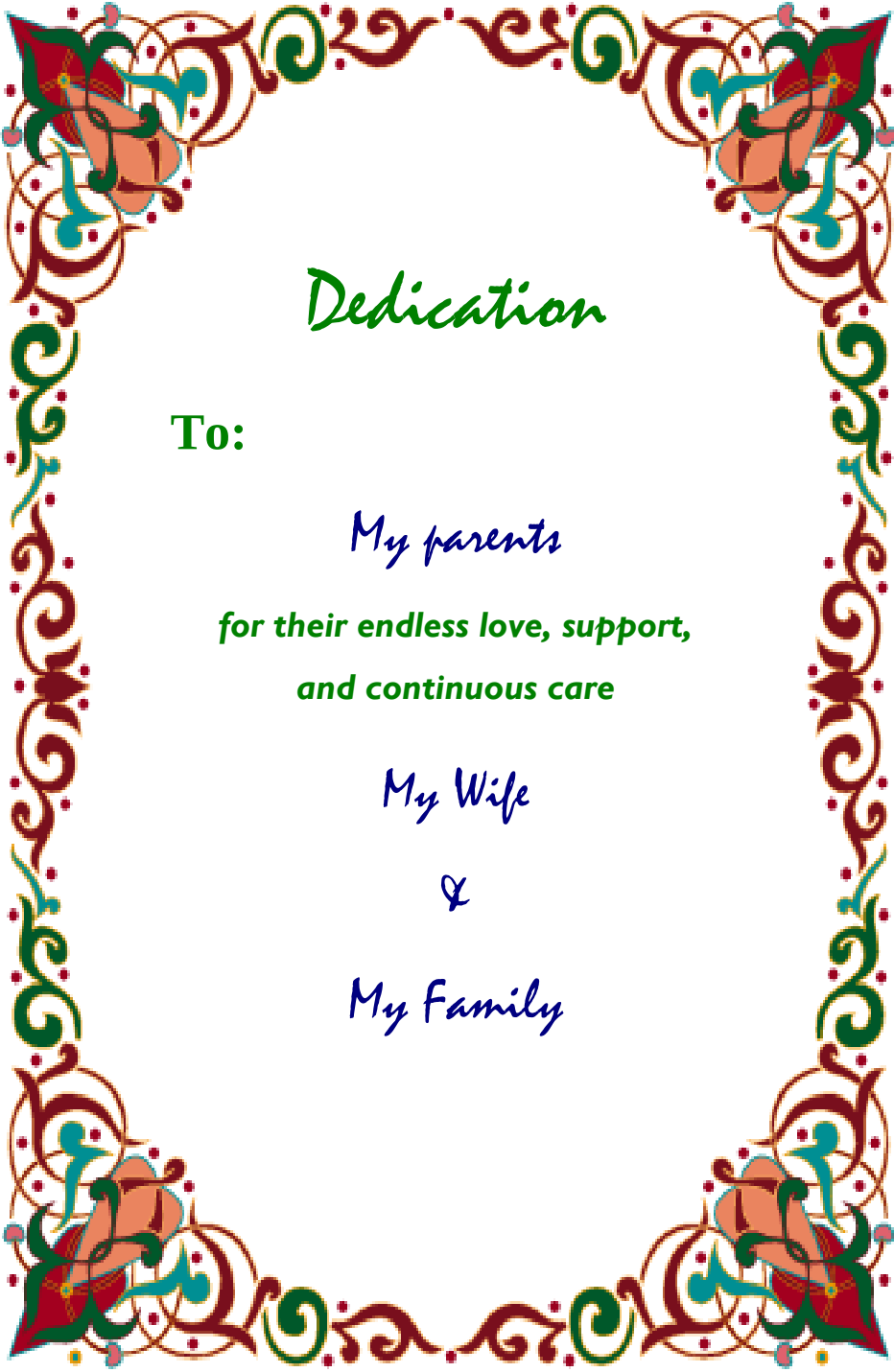
*First and foremost, I feel always indebted to Allah
the Most Beneficent and Merciful.*

*I wish to express my deepest thanks, gratitude and
appreciation to **Prof. Dr. Mohamed Amir
Hassan**, Professor of Otorhinolaryngology, Faculty of
Medicine, Ain Shams University, for his meticulous
supervision, kind guidance, valuable instructions and
generous help.*

*Special thanks are due to **Prof. Dr. Ehab
Kamal Fawzy**, Professor of Otorhinolaryngology,
Faculty of Medicine, Ain Shams University, for his
sincere efforts, fruitful encouragement.*

*I am deeply thankful to **Dr. Ahmed Mahmoud
Maarouf**, Lecturer of Otorhinolaryngology, Faculty of
Medicine, Ain Shams University, for his great help,
outstanding support, active participation and guidance.*

OMAR



Dedication

To:

My parents

*for their endless love, support,
and continuous care*

My Wife

&

My Family

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List of Abbreviations

Abb.	Full term
<i>C-ANCA</i>	<i>Cytoplasmic Anti-Neutrophils Cytoplasmic Antibodies</i>
<i>CB</i>	<i>Concha Bullosa</i>
<i>CRS</i>	<i>Chronic Rhinosinusitis</i>
<i>CRSsNP</i>	<i>Chronic Rhinosinusitis without polyp</i>
<i>CRSwNP</i>	<i>Chronic Rhinosinusitis with polyp</i>
<i>CSS</i>	<i>Chronic Sinusitis Survey</i>
<i>CT</i>	<i>Computerized tomography</i>
<i>EPOS</i>	<i>European Position Paper On rhinosinusitis & nasal polyps</i>
<i>ESR</i>	<i>Erythrocytes Sedimentation Rate</i>
<i>ESS</i>	<i>Endoscopic Sinus Surgery</i>
<i>IgE</i>	<i>Immunoglobulin E</i>
<i>INCS</i>	<i>Intranasal Corticosteroids</i>
<i>Non-RCT</i>	<i>Non- Randomized Control Trails</i>
<i>PNS</i>	<i>Paranasal Sinuses</i>
<i>PROMs</i>	<i>Patient Rated Outcome Measures</i>
<i>RAST</i>	<i>Radio Allergo Sorbent Test</i>
<i>RCT</i>	<i>Randomized Control Trails</i>
<i>RSOT</i>	<i>Rhinosinusitis Outcome Test</i>
<i>SNOT</i>	<i>Sinonasal Outcome Test</i>
<i>TB</i>	<i>Tuberculosis</i>
<i>VAS</i>	<i>Visual Analogue Scale</i>



Introduction



INTRODUCTION

There is a wide range of anatomical variations affecting the nose, paranasal sinuses (PNS) best diagnosed by Computed Tomography (CT), which is a non-invasive imaging modality with high image resolution and reconstruction capability. These variations may cause impairment of mucociliary drainage of the PNS resulting in sinusitis (*Dwivedi et al., 2010*) (*Zinreich et al., 2003*).

Many anatomical variations have been studied and the relation between them and sinusitis is not clear till now (*Azila et al., 2011*). Some studies showed statistically significant association between common anatomical variations and the presence of sinusitis (*Fadda et al., 2012*). While in other studies, no statistically significant relationship was found (*Kaygusuz et al., 2014*). With the increased use of endoscopy for the treatment of paranasal sinus diseases surgically, attention is now focused on the analysis of the lateral nasal wall and paranasal sinus anatomy (*Nitinavakarn et al., 2005*).

Chronic adult rhinosinusitis is rhinosinusitis lasting more than 12 weeks and the diagnosis is confirmed by the presence of major and minor clinical factors (*Lanza and Kennedy 1997*).

CT imaging has become a widely accepted tool for assessment of the PNS. It gives detailed anatomy of the lateral nasal wall; and considered necessary to endoscopic

sinus surgery (ESS). A pneumatized middle turbinate, also called concha bullosa is the most commonly detected anatomical variation of the lateral nasal wall. CT of the paranasal sinuses offers the gold standard in terms of imaging that shows the extension of inflammatory disease and the fine detailed anatomy and its variants (**Badia et al., 2005**).

The severity of chronic sinusitis on CT scan is scored according to Lund-Mackay scoring system (Radiologic grading of sinus systems proposed by Lund and Mackay) as: 0= no abnormality, 1= partial opacification and 2= total opacification. The sinus groups include the maxillary, frontal, sphenoidal, anterior ethmoidal and posterior ethmoidal sinuses. Osteomeatal complex is scored as: 0 (not obstructed) and 2 (obstructed). Thus a total score is from 0 to 24 (**Lund and Mackay 1993**).

Despite the fact that concha bullosa of the middle turbinate is usually asymptomatic, it has been involved in cases of inflammatory sinus disease and nasal obstruction (**Ozgursoy and Kucuk 2007**).

Few studies have examined the role of anatomical variations of osteomeatal complex such as concha bullosa, septal deviation, uncinate process variations, Agger nasi cells, Haller cells and paradoxically curved middle turbinate in the development of traditional chronic rhinosinusitis (**Dua et al., 2005**).

Theoretically these variants can shift and compress osteomeatal complex components, causing an obstruction to the mucus drainage of the paranasal sinuses and further predispose to sinusitis (**Azila et al., 2011**).



Aim of the Work

