

SURGERY OF THE PTERYGOPALATINE FOSSA

Essay

Submitted in Partial Fulfilment for
the Master Degree in OTO-RHINO-LARYNGOLOGY

By

GALAL SAYED AHMED MOHAMED

(M.B., B.Ch.)

Supervised by

Prof. Dr. ADEL YOUSEF

Professor of Oto-Rhino-Laryngology

Faculty of Medicine, Ain Shams University

Dr. NABIL ABDELRAZIK RABIE

Assistant Professor of Oto-Rhino-Laryngology

Faculty of Medicine, Ain Shams University

Dr. MOHAMED MAHGOUB KHAIRY

Lecturer of Oto-Rhino-Laryngology

, Military Medical Academy

FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

1988

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"أَوَ لَيْسَ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ بِقَدِيرٍ
عَلَى أَنْ يَخْلُقَ مِثْلَهُمْ بَلَىٰ وَهُوَ الْخَلَّاقُ
الْعَلِيمُ. إِنَّمَا أَمْرُهُ إِذَا أَرَادَ شَيْئًا أَنْ يَقُولَ لَهُ
كُنْ فَيَكُونُ. فَسُبْحَانَ الَّذِي بِيَدِهِ مَلَكُوتُ
كُلِّ شَيْءٍ وَإِلَيْهِ تُرْجَعُونَ".

صدق الله العظيم

يس (الآيات ٨١، ٨٢، ٨٣)



CONTENTS

<u>The subject</u>	<u>Page No.</u>
- INTRODUCTION.....	1
- AIM OF THE ESSAY.....	3
- SURGICAL AND RADIOLOGICAL ANATOMY.....	4
- REVIEW OF LITERATURE.....	24
. Maxillary artery ligation.....	32
. Vidian neurectomy.....	46
. Sphenopalatine ganglion resection.....	63
. Maxillary nerve resection.....	67
. Surgery of the swellings of the pterygopalatine fossa	71
. Drainage of the pterygopalatine fossa.....	81
- ENGLISH SUMMARY.....	84
- REFERENCES.....	88
- ARABIC SUMMARY.....	

ACKNOWLEDGEMENT.

First and foremost, I thank God, the Beneficent and the Merciful.

It gives me great pleasure to express my sincerest gratitude to Professor Dr. ADEL YOUSEF, Professor of Oto-Rhino-Laryngology, Ain Shams University, for giving me the utmost honour to work under his supervision, with his creative mind, eminent guidance and constant support.

I should express my deep gratitude to Dr. Nabil Abdel Razik Rabie, Assistant Professor of Oto-Rhino-Laryngology, Ain Shams University, for his kind advice and constructive remarks.

I should also like to thank Dr. Mohamed Mahgoub Khairy, Lecturer of Oto-Rhino-Laryngology, Military Medical Academy, for his sincere help and invaluable suggestions, spending quite a previous time for the proper achievement of this work.

Lastly, I am indebted to all my colleagues and staff of Oto-Rhino-Laryngology, Ain Shams University and the Military Medical Academy for their outstanding assistance.

Galal Sayed Ahmed.

TO MY FAMILY..

Introduction

INTRODUCTION

The pterygopalatine fossa is a narrow indentation in the shape of an inverted pyramid situated posterior to the maxillary sinus in its superior medial angle. Its shape, diameters and dimensions vary enormously not only from one person to another but even from one side to the other in the same person (Bagatella, 1986).

The pterygopalatine fossa acquires its importance from its central location within the head and the service it provides as a distribution centre for important vital nerves and vessels to the face, nose and palate (Golding-Wood, 1981).

In the past decade, surgery of the pterygopalatine space has become familiar to a generation of otolaryngologists trained in the use of the operating microscope. The space is a readily accessible area within which a variety of useful procedures can be accomplished (Friedman, 1985). Ligation of the terminal branches of the maxillary artery is considered the most common and urgent indication for surgical access to this space (Wang and Vogel, 1981). Also, a number of various

techniques have been proposed for vidian neurectomy including the CO2 laser, recently used by Williams in 1983.

Also, surgeons with increased familiarity with the pterygopalatine fossa assist the neurosurgeons or the ophthalmologists because of their close association with middle cranial fossa and orbit and their relationship to contiguous and neoplastic diseases of these areas (Friedman, 1985).

Aim of the Essay

AIM OF THE ESSAY

This essay aims to present a comprehensive review of the literature on surgery of the pterygopalatine fossa and to highlight the various approaches of this fossa, the indications, the standard and recent techniques, as well as the preoperative evaluation for the pterygopalatine fossa lesions.

Surgical & Radiological Anatomy

SURGICAL ANATOMY OF THE PTERYGOPALATINE FOSSA

The pterygopalatine fossa has been referred to by various authors as pterygomaxillary or sphenopalatine space (Paonessa and Goldstein, 1976).

It is a small blind cavity in the shape of an inverted pyramid. The medial wall of the pterygopalatine fossa is formed by the perpendicular plate of the palatine bone. The sphenopalatine notch at the upper end of the plate is converted into a foramen by the overlying body of the sphenoid bone. The anterior wall of the fossa is formed by the posterior surface of the maxilla. The posterior wall of fossa is formed by the pterygoid process of the sphenoid bone (fig. 1) (Mc Minn et al., 1981). The dimensions of the fossa vary from 1.2 to 3 cm. width, 0.8 to 1.8 cm. height and 0.5 to 1.3 cm. depth (Bagatella, 1986).

The pterygopalatine fossa communicates above with the orbit through the medial-or posterior-part of the inferior orbital fissure. It is closed inferiorly where the lower part of the lateral surface of the perpendicular plate of the palatine bone meets the posterior-inferior part of the medial surface of the maxilla. It is bounded behind by the root of the pterygoid process and the

The formation of the right pterygopalatine fossa

A & B The right maxilla and the palatine and sphenoid bones, from the right, separated and articulated

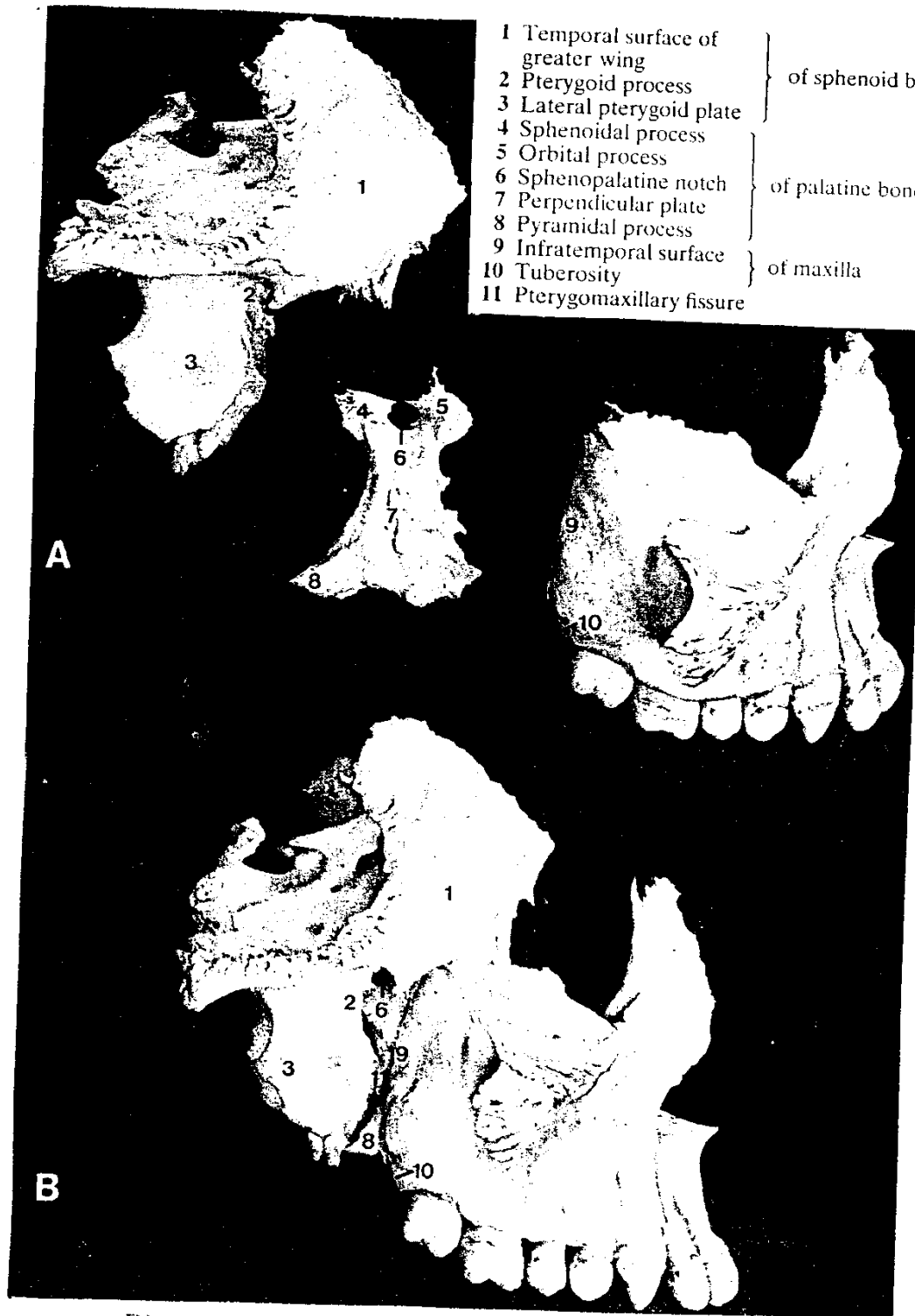


Fig. 1: Quoted from Mc Minn et al., 1981.

adjoining part of the anterior surface of the greater wing of the sphenoid, medially, by the upper part of the perpendicular plate of the palatine bone with its orbital and sphenoidal processes, in front by the medial portion of the upper part of the posterior surface of the maxilla, laterally it communicates with the infratemporal fossa through the pterygomaxillary fissure.

A- OPENINGS AND CANALS OF THE PTERYGOPALATINE FOSSA

- 1- Pterygoid (vidian) canal.
- 2- Foramen rotundum.
- 3- Sphenopalatine foramen.
- 4- The pterygopalatine (greater palatine) canal.
- 5- The pterygomaxillary fissure.
- 6- The palatovaginal canal.

1- The pterygoid (vidian) canal:

It transmits the nerve and artery of the same name from the lower part of the anterior wall of the foramen lacerum to the pterygopalatine ganglion (Fig. 2).

The pterygoid canal runs along the inferolateral aspect of the sphenoidal sinus. In this position the canal can be opened via the transpal-