

Case Report

ANATOMICAL OVERVIEW OF SUPRAORBITAL EXTENSION OF ETHMOID AIR CELLS - A CASE REPORT

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ABSTRACT

The development of paranasal sinuses is an intricate process that begins in intrauterine life and terminates in early adulthood. Among paranasal sinuses, the ethmoid cells or labyrinth are probably the most complex structures, being associated with the highest number of normal variants. Variations in the pattern of pneumatization of the ethmoid cells can be divided into intra and extramural cells. In the present case report the authors describe the extramural supraorbital cells as an anatomical variant of the ethmoid labyrinth and their relationship with adjacent structures.

Key Words: Paranasal sinuses, ethmoid sinuse and air cells, anatomical variants.

INTRODUCTION:

The ethmoid, sphenoid, frontal and maxillary bones together with the hard palate are the major osseous structures related to the nose. Pneumatization of these bones results in a complex set of air cells, the paranasal sinuses, which originate as evaginations from the nose in the fifth month of fetal life¹ and are fully developed by eighteenth year of age. Ethmoid sinuses is considered as key stone of sinuses system². Ethmoid complex is one in which bulk of ethmoid bones consists of two labyrinths with a highly variable internal arrangement of air cells into three clusters (anterior, middle and posterior) Fig.01,a,b. Cells that extend within the ethmoid complex to the frontal recess are intramural. Extensions to the agger nasi, supraorbital ridges, middle and inferior turbinate, orbital plate of the maxilla and posteriorly into the sphenoid bones are Extramural cells^{3,4}. Out of this the extramural supraorbital cells consisting of superior ethmoid air cells usually of the anterior group can extend independently into the orbital roof.

CASE REPORT:

During the routine dissection of cadaver, in the dissection hall of Anatomy Department of Muzaffarnagar Medical College, when the orbital plate of frontal bone was broken we observed the bilateral

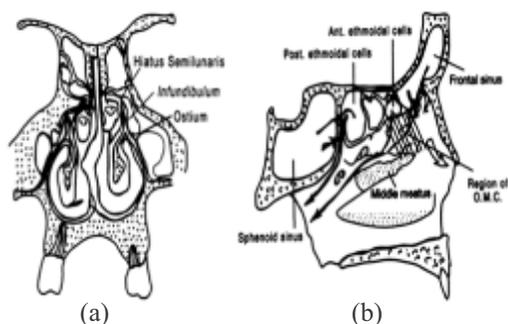


Fig.01 (a) Drawing of a coronal section at the level of the ostiomeatal unit depicts normal anatomy. (b) Drawing of a sagittal section of the nasal cavity depicts the posteroinferior pathways for the flow of secretions and the key position of the ostiomeatal complex (OMC).

extension of ethmoid air cells between the periorbita and orbital plate of frontal bone both on right and left side (Fig. 02). The superior ethmoid air cells of anterior group (extramural supraorbital cells) were seen extending independently into the orbital plate bilaterally. These cells were larger in size and extended lateral to the frontal sinuses and also above the posterior extensions of the frontal sinuses. The adjoining structures in the orbital cavity appeared normal on observation.

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Fig. 02 showing bilateral extension of ethmoid air cells over the periorbita
EAC:- Ethmoid air cells, PO:- Periorbita,

DISCUSSION:

The supraorbital ethmoid cells are anterior ethmoid cells that arise immediately behind the frontal recess and extend over the orbit through pneumatization of the orbital plate of frontal bone⁵. The ethmoid air cells during development tend to expand to occupy all available space, a phenomenon which is called “the struggle for a space of the ethmoid”⁶. Supraorbital ethmoid cells may simulate multiple frontal sinuses, type III frontal cells, suprabulbar cells, frontal bulla cells or interfrontal sinuses septal cells on coronal CT images⁷.

The presence of supraorbital extensions of anterior ethmoid air cells bilaterally into roof of orbit have been previously described by Som⁸ and Vau Adayea⁹ and were present in 7% of case which coincides with our case report. Earwaker. J¹⁰. reported the superior ethmoid cells extension into the orbital roof in 8% of cases out of which 7% were bilateral. The expansion of ethmoid sinuses into the adjacent orbit has been reported in chronic allergic rhinitis where the ethmoid sinuses may be filled with polypoid tissue causing destruction of the delicate ethmoid septa¹¹. Shruti Dhingra¹² reported pneumatization of orbital plate of frontal bone in 6.6% cases. The present case report the supraorbital extension between the orbital roof and the periorbita of which much literature is not available.

CONCLUSION:

The importance of anatomic variations as a predisposing cause for sinus disease particularly in

relations to ethmoidal complex, has been stressed by several authors. Recognition of anatomical variants of paranasal sinuses is of utmost importance to the physicians as well as surgeons in the management of patients with sinopathies.

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