

**A RARE CAUSE OF NASAL OBSTRUCTION AND HEADACHE:  
A GIANT BULLAE ETHMOIDALIS INSIDE THE CONCHA BULLOSA**

**Nazal obstrüksiyon ve başağrısının nadir bir nedeni; Konka büllozanın içine doğru uzanım gösteren büyük bir bulla etmoidalis.**

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**ABSTRACT**

The existence of a giant ethmoidal bullae and its invading into the concha bullosa is a rare situation. Two cases reported in literature up to date, this case will be the third.

Herein we report a case admitted due to the complaints of headache, facial pain and nasal obstruction. A giant ethmoidal bullae inside the concha bullosa was detected in preoperative CT scans. Surgical treatment approaches and literature review will be presented.

It is important to discover anatomical variations preoperatively in paranasal sinus surgery to avoid complications.

**Key words:** bullae ethmoidalis, giant, concha bullosa

**ÖZET**

Dev etmoid bulla ve bunun konka büllozanın içine doğru uzanım göstermesi nadir görülen bir durumdur. Literatürde iki vaka bildirilmiş olup bu üçüncü vakadır. Olgumuzda hasta başağrısı, yüz ağrısı ve nazal obstrüksiyon şikayetleri ile başvurdu. Preoperatif paranazal BT de büyük bir etmoid bullanın konka bülloza içine doğru uzanım yaptığı görülmektedir. Olgu cerrahi olarak tedavi edilmiş olup literatür eşliğinde değerlendirildi.

Paranasal sinüs cerrahisinde komplikasyonlardan kaçınmak için preoperatif anatomik varyasyonların değerlendirilmesi önemlidir.

**Anahtar Kelimeler:** Bulla etmoidalis, büyük, konka bülloza

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## INTRODUCTION

Turbinates are the anatomical structures that have important functions in the lateral wall of the nose. Moisturizing the nasal cavity, lubrication of the upper airways, air flow and heat regulation, olfaction and air filtration are among the functions of the turbinates (1). Generally, three turbinates are available in each nasal cavity, these are inferior, middle and superior conchae. Sometimes they are accompanied by the fourth turbinate is called the supreme concha. The middle turbinate in endoscopic sinus surgery is an important anatomical landmark for surgeons and build the medial wall of the ethmoid sinuses. Middle turbinate may be in a variety of shapes, these are paradoxical concha, pneumatized concha, concha with three branches, forked concha, secondary and accessory concha as previously described (2,3).

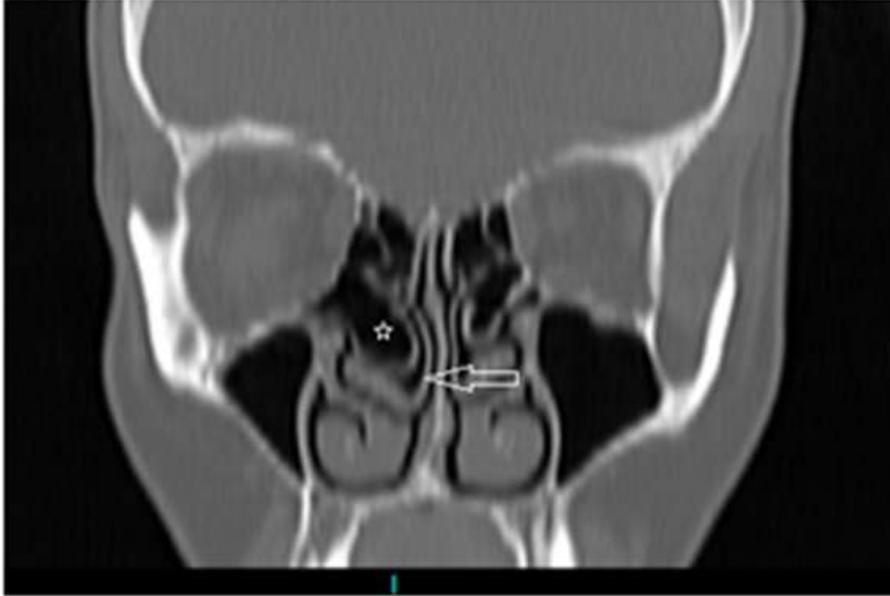
Concha bullosa is caused by pneumatized middle turbinate, one of the anatomic variations of paranasal region (4,5). For the first time in 1893, was described by Zuckerkandl (6). Although the incidence of concha bullosa in anatomical studies is between 5-20%, with the widespread use of Computed Tomography to be determined in the ratio of 33-36% (5). While there may be single or double-sided concha bullosa, often in conjunction with septum deviation is located on the opposite side. Ethmoid bullae is the foremost ethmoid cell and its drain region, shape and size varies from person to person.

In this article we presented a case of giant ethmoid bullae which extended into the concha bullosa, so it seems like a concha bullosa in another concha bullosa.

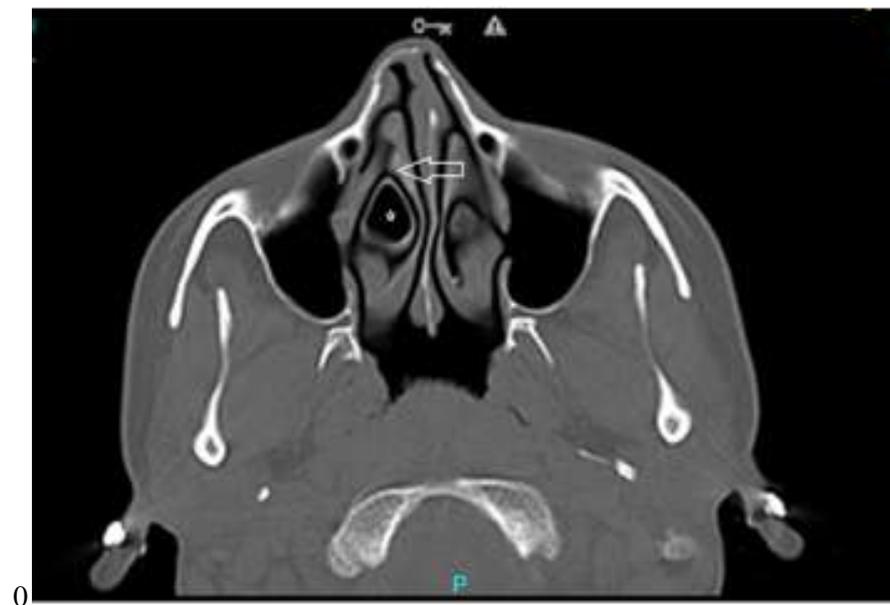
## CASE PRESENTATION

24-year-old female patient was admitted because of headache and nasal obstruction. The patient's headache was located in the right frontal and cheek for 4 years and she had no history of nasal trauma and did not have any other medical problem. Right middle turbinate was extremely large and nasal septum deviated to the left at the endoscopic nasal examination. A huge ethmoid bullae which extended into the concha bullosa, so it seemed like a concha bullosa in another concha bullosa was found in paranasal CT scan (Figure-1 and Figure 2). Endoscopic surgery and septoplasty were made under general anesthesia. First a vertical incision was made to the middle turbinate, and the lateral lamella was resect and reached to the ethmoid bullae. Thereby opened and all the walls of the ethmoid bulla was

excised. There wasn't any postoperative complication and patient's nasal congestion and headache complaints returned to normal shortly after surgery.



**Figure 1:** Paranasal CT, coronal image



**Figure 2:** Paranasal CT, axial image

## DISCUSSION

In the human embryo nasal turbinates are developing from ethmoturbinal and maksilloturbinal structures at the 8th to 10th weeks of fetal life (7). While inferior turbinates developed from maxilloturbinal structure, uncinat process and other turbinates are developed from ethmoturbinal structure. Pneumatization that occur in ethmoturbinal structure may lead to anatomic variations in the ethmoid complex (2).

Partial or total pneumatization of the middle turbinate referred to as concha bullosa. In 1893, for the first time described by Zuckerkandl (6). Bolger et al. divided them into three types according to the site of pneumatization; vertical lamellar pneumatization is the lamellar type, inferior segment pneumatization is the bullous type, and pneumatization containing both vertical lamella and inferior segment determined as the extensive type (5).

Directly proportional to the severity of symptoms and the degree of aeration of magnitude. While the extensive type is symptomatic, lamellar and bullous type is usually asymptomatic (5). In our case both the vertical and the inferior segment of the concha aerated and complying with the extensive type of concha bullosa. This giant concha bullosa has led to the narrowing of the right nasal cavity. Septal deviation was also available in the left nasal cavity and nasal airflow significantly reduced in all.

Ethmoid bone, anatomically no doubt has a complex structure. The ethmoid cells according to their drainage site is divided into anterior and posterior ethmoidal cells. The ethmoid bulla, the name given to the most anterior ethmoid cell. Scribano et al. reported that wide ethmoid bulla was seen in 5.4 % of cases (8). In a study on the ethmoid bulla Setliff et al determined the 214 ethmoid bullae with reference to its relations with other ethmoid cells are divided into 3 classes. These types are simple, complex and compound types (9). The simple type is seen at most in 47%. Any cell inside of the ethmoid bullae is referred to complex type. In our case a huge ethmoid bullae was existed and invaginated into the concha bullosa. This situation is a rare entity in the literature. Up till now Cukurova et al (10) and Ceylan et al (11) published two cases that the ethmoid bullae invaginated into the concha bullosa. Also clinically similar but radiologically different another two cases reported that a concha bullosa in another huge concha bullosa (12, 13).

Headache and facial pain occur in a large concha bullosa cause of contact area between lateral nasal wall and septum (14). Demonstrated that the elimination of the contact surfaces with a suitable surgical treatment has the potential to decrease pain (15). In our case huge concha

bullosa was contacting to both lateral nasal wall and ethmoid bullae widely. This situation explains the patient's facial pain.

Treatment of the concha bullosa in symptomatic patients is endoscopic surgical resection. We have also excised endoscopically the lateral lamella of concha bullosa and ethmoid bullae. Patient's symptoms improved within 2 weeks postoperatively.

In conclusion, with advances in endoscopic techniques the frequency of paranasal sinus surgeries are increased. Anatomic variations in this region because of the increased risk of surgical complications. For this reason surgeons should assess the computed tomography meticulously.

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