

Case Report

Bilateral Concha Bullosa Within Concha Bullosa: Unique Middle Concha Variation

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The middle nasal turbinate is an important anatomical formation located on the lateral nasal wall. Concha bullosa can be defined as the presence of an air gap inside the turbinate. It is the most common middle nasal turbinate variation. It is often asymptomatic, but can sometimes cause nasal obstruction. In this study, an asymptomatic patient with concha bullosa within concha bullosa in both middle turbinates, which has not been reported before in the literature, is presented.

Key Words: concha bullosa, endoscopic nasal surgery, middle turbinate, nasal concha, paranasal sinuses.

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INTRODUCTION

The middle nasal turbinate is an important anatomic formation located on the lateral nasal wall. It forms the medial wall of the ethmoid cavity.¹ It is used as an essential landmark in endoscopic sinus surgery. Knowing the anatomical variations in the middle nasal turbinate before surgery is vital to avoid possible complications during surgery. Many variations in the middle nasal turbinate have been described in various studies. Paradoxical, pneumatized, hypertrophic, hypoplastic, lateralized, and double middle turbinate are some of these conditions.^{2,3} Concha bullosa is the most common of these variations.² Concha bullosa can be defined as the presence of an air gap inside the turbinate.¹ It was first described by Zuckerkandl in 1882.² While the incidence is thought to be 5%–20% as a result of anatomical dissections, this rate is thought to be 33%–36% in studies performed after endoscopy and CT.²

In this study, an asymptomatic patient with concha bullosa within the concha bullosa in both middle turbinates, which has not been previously reported in the literature, is presented.

CASE REPORT

A 72-year-old female patient who presented at the neurosurgery clinic with complaints of vision loss and seizures. Following the examination and imaging methods performed here, it was thought that the patient had a pituitary mass. A joint surgical decision was made for the patient, who was referred to our department regarding endonasal endoscopic transsphenoidal pituitary surgery. The patient had no upper respiratory tract obstructive complaints in her preoperative history. On endoscopic examination, bilateral middle nasal turbinates were observed to be prominent (Fig. 1). On paranasal sinus computed tomography, concha bullosa within the concha bullosa was observed within the bilateral middle nasal turbinate. Both outer concha bullosa were connected directly to the skull base, and the inner concha bullosa was connected to the lamina papyracea (Fig. 2). During surgery, after decongestion, a vertical incision was made in the external concha bullosa, and the internal concha bullosa was accessed (Fig. 3). The lamellae of the outer concha bullosa surrounding the inner concha bullosa were quite thin and easily excised. The inner concha bullosa was gently incised and easily excised from its attachment points (Fig. 4). Other structures were observed to be normal.

DISCUSSION

Conchal structures begin to be observed at 8–10 weeks during the embryological development process.^{1,4} First, 6 ridges called “ethmoturbinal” ridges appear on the lateral nasal wall.¹ Some of these 6 ridges develop and form permanent structures, while others regress and disappear. The uncinate process develops in the ascending part of the first ridge, and the agger nasi region develops in the descending part.¹ Ethmoid bulla develops from the second ridge.¹ The middle and superior

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nasal turbinates develop from the third and fourth ridges, respectively.¹ The inferior turbinate develops from another embryological structure.^{2,4}

The accessory middle turbinate was defined as a medially bent, anteriorly folded uncinate process giving

the impression of having two middle turbinates.^{3,5} Due to this variation originating from the uncinate process, a normal-looking uncinate process is not expected. We



Fig. 1. Endoscopic view of the right middle nasal turbinate.

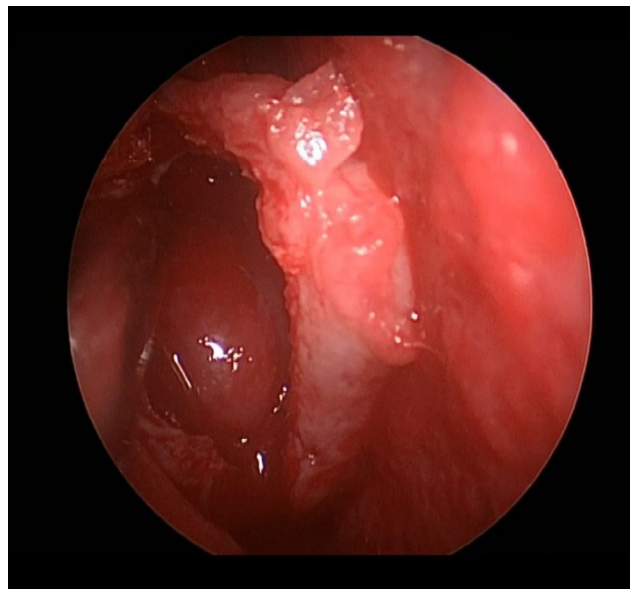


Fig. 3. Image of the inner concha bullosa exposed after an incision was made in the outer concha bullosa during surgery.

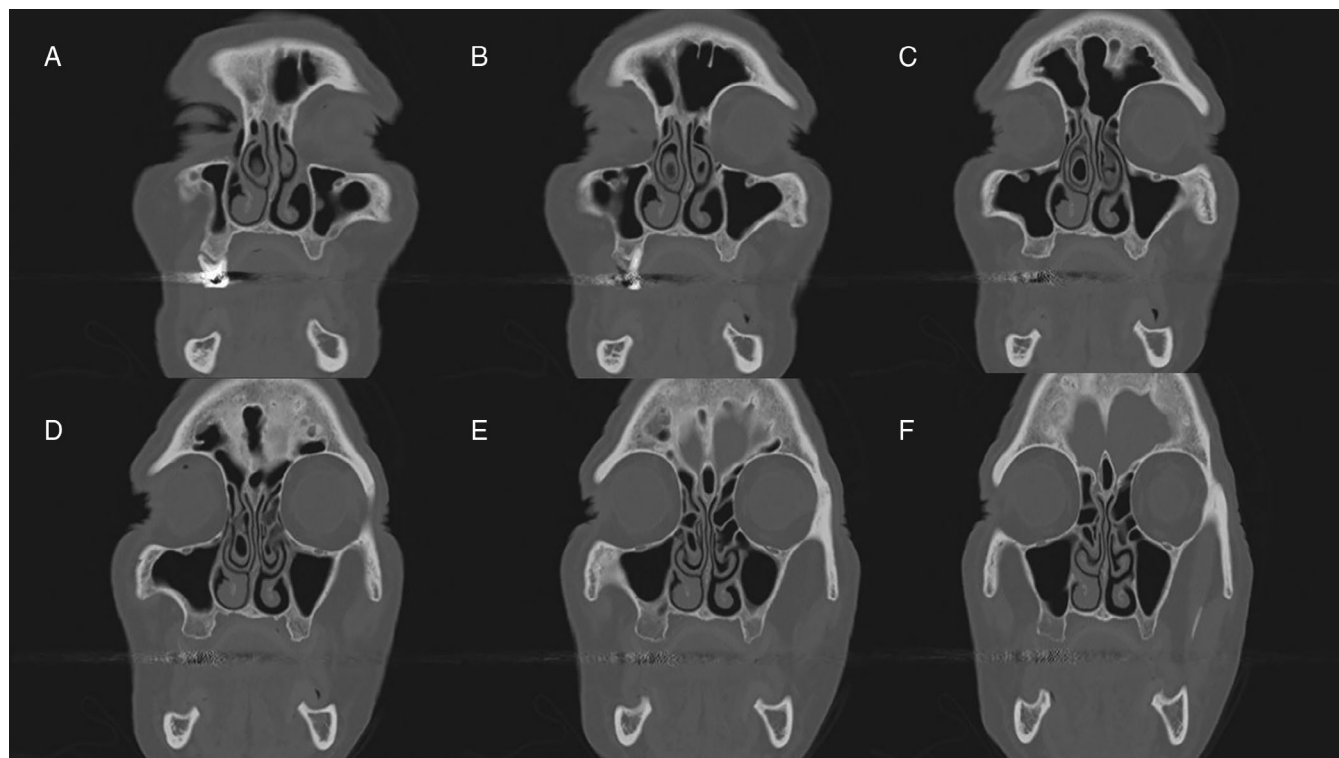


Fig. 2. CT scan sections demonstrating that both external and internal concha bullosa are connected directly to the skull base and lamina papyracea.

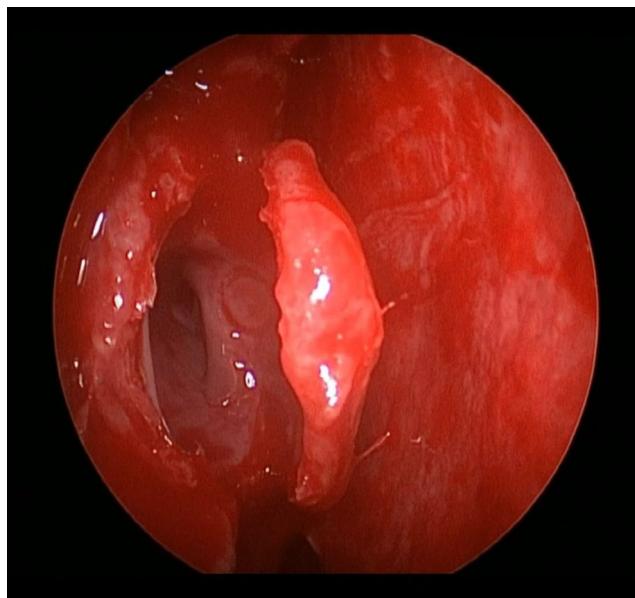


Fig. 4. Image of the incision made in the internal concha bullosa during surgery.

think that our case cannot be defined as an accessory middle turbinate due to the presence of normal uncinate processes in both nasal cavities.

The secondary middle nasal turbinate was defined as the bony structure surrounded by soft tissue originating from the lateral wall of the middle meatus.⁵ This variation, which was first described by Khanobthamchai in 1991, was defined by the author as a bone variation, and it was stated that the secondary middle nasal turbinate was the incomplete anterior wall of the ethmoid bulla.⁵ In their study by Aksungur et al., the secondary middle nasal turbinate was suggested to be an additional conchal structure embryologically originating from a part of the frontal ridge rather than from simple bone variation.³ In their case report, Ozgursoy and Kucuk reported the variation in the concha bullosa within the giant concha bullosa that they encountered in a patient who presented with severe nasal obstruction.² The case in this study appears to be the closest study to our case in the literature. However, this case was unilateral and the other side was completely normal. Ozgursoy and Kucuk stated that the case presented in their study cannot be defined as a secondary middle nasal turbinate because all secondary middle nasal turbinate cases in the literature were bilateral and because none of them were pneumatized.² No case of

pneumatized secondary middle turbinate has been reported in the current literature.

In our patient, the bilateral middle turbinates were pneumatized and there was a second pneumatized conchal structure within these turbinates, the connection point of which was the lamina papyracea. We doubted that the conchal structures in our patient could be defined as secondary middle turbinates. Although our case fits with Khanobthamchai's definition of "a bone structure originating from the lateral wall of the middle meatus and surrounded by soft tissue", we think that this cannot explain the conchal structure within the conchal structure. We believe that, in the study of Aksungur et al., the idea that the secondary middle nasal turbinate is an additional conchal structure embryologically originating from a part of the frontal ridge rather than a simple bone variation was supported by our case. Again, as Aksungur et al. stated, the frontal ridge evolves into anterior ethmoid cells.³ The more logical explanation seems to be that a conchal structure that develops and pneumatizes within the conchal structure does not form as a simple bone variation but rather as a variation of a structure that evolves into anterior ethmoid cells.

CONCLUSION

According to our current literature review, we present a unique, previously undescribed variant of the middle nasal turbinate, a bilateral, large but asymptomatic concha bullosa within a relatively less large concha bullosa. In our detailed literature review, we did not observe any studies with case reports or similar patient content that were exactly compatible with our case. We think that the definitions of lateral wall anatomical variations should be reconsidered, as variations that do not fully comply with any of the current classifications are reported, as in our case.

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