Bilateral massive conchae bullosa mimicking intranasal tumors

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Abstract
We describe a case of bilateral massive conchae bullosa in a 76-year-old woman. She presented with a 2-year history of nasal obstruction and frontal headache. In light of these and other findings on anterior rhinoscopic and endoscopic examinations, we initially suspected nasal tumors. However, after a prebiopsy evaluation by computed tomography, we diagnosed bilateral massive conchae bullosa that did not impair sinus ventilation. Endoscopic surgery was performed, and the patient’s symptoms abated.

Introduction
Concha bullosa is the most common anatomic variation of the middle turbinate. The otolaryngologist must include concha bullosa in the differential diagnosis of obstructive intranasal lesions. As is the case with any intranasal mass, computed tomography (CT) evaluation prior to biopsy is useful in evaluating a concha bullosa. The goal of surgical management, regardless of technique, is to relieve symptoms without causing any significant surgical morbidity. In this article, we describe a very unusual case of bilateral massive conchae bullosa that did not compromise sinus drainage.

Case report
A 76-year-old woman presented with a 2-year history of nasal obstruction and frontal headache. The patient reported no recent episode of epistaxis or rhinorrhea. She had undergone medical therapy for rhinosinusitis 3 years earlier. Her medical history was also significant for diabetes mellitus.

Physical examination revealed that both nasal cavities had been occluded by firm, smooth, nontender masses. No orbital displacement, neurologic deficit, nasal deformity, or palatal protrusion was noted. Prior to evaluation by CT, we suspected nasal tumors. CT was performed before biopsy, and it revealed bilateral massive conchae bullosa with evidence of a pyocele on the left one (figure). The lower turbinates appeared to be atrophic anteriorly, and thin bony structures were present posteriorly as a result of pressure applied by the middle turbinate. The ostiomeatal complex was patent, and the sinus mucosa was free of disease. The nasal septum was not displaced. The patient was scheduled for surgery.

Following administration of topical anesthesia, 2 ml of 2% lidocaine solution was injected along the anterior aspects of the middle turbinate. Surgery was performed endoscopically. After a vertical incision was made along the anterior part of the left concha, the bullous cavity was entered. A very thick, yellow, viscous secretion was noted on the left side; the secretion was difficult to aspirate. The lateral lamella was split superiorly, then inferiorly, then posteriorly. Excision of the mass was completed without any damage to the superior attachment. The medial half of the concha was extremely large for a nasal airway. Eventually, the lower half of the medial lamella was excised. The same procedure was performed on the right side. The nasal airway was patent at the completion of the operation.

Postoperatively, the patient’s symptoms abated. Biopsy analysis revealed that the masses were made up of respiratory epithelium and bony fragments, findings that were consistent with chronic inflammation.

Discussion
Concha bullosa is the result of a pneumatization of the anterior half of the middle turbinate. It is the most common anatomic variation of the middle turbinate. The reported prevalence of concha bullosa ranges widely, from 4 to 53%. The prevalence of middle turbinate pneumatization also varies widely. Pneumatization of the middle turbinate occurs as a part of the normal pneumatization process in the ethmoid bone. The anterior and middle ethmoid cells begin as evaginations from the nasal cavity into the middle meatus at about the third month of fetal development. The cells continue to expand and elongate after birth.
Pneumatization of the middle and superior turbinates is relatively common compared with pneumatization of the inferior turbinate. Bolger et al found that pneumatization of the middle turbinate was detected in 53% of patients and that massive (“true”) concha bullosa was noted in 15.7% of patients.

Concha bullosa was initially described by Santorini in 1739. Anatomic variations of the nasal turbinates, such as concha bullosa, are being reported with greater frequency as a result of improvements in imaging techniques. CT is the best method of evaluating concha bullosa. In our patient, what had appeared clinically to be nasal tumors were identified as conchae bullosa on CT. Conchae bullosa can appear bilaterally and unilaterally.

According to Bolger et al, conchae bullosa arise as a result of three distinct processes:

- pneumatization of air cells into the vertical lamella of the turbinate
- pneumatization of air cells into the inferior or bulbous segment of the turbinate
- extensive pneumatization of the turbinate (true concha bullosa)

Our patient exhibited extensive pneumatization of the lamellar and bulbous portions of both middle turbinates. Conchae bullosa are usually asymptomatic, although larger masses may compromise sinus drainage. Conchae bullosa can also cause nasal obstruction and lead to chronic sinus disease. Several CT studies have shown that conchae bullosa are definitely correlated with an increased incidence of sinus disease. However, there is disagreement as to whether conchae bullosa are a significant factor in the etiology of rhinosinusitis. It has recently become apparent that anatomic variants are also evident on CT analysis of patients without clinical sinusitis. Our patient was 76 years old, and her history did not include any recent sinus disease.

On physical examination, a massive concha bullosa may mimic an intranasal tumor, so imaging prior to biopsy is essential. The presence of a bony margin on CT allows the surgeon to differentiate a concha bullosa from other nasal cavity masses. In our patient, findings on anterior rhinoscopic and endoscopic examinations led us to suspect nasal tumors. However, CT revealed the very unusual size and bilaterality of these lesions, as well as the absence of any impairment of sinus ventilation.

The management of a concha bullosa is surgical. The mass can be reduced by a number of methods, including simple excision, resection of the lateral lamella of the concha bullosa, and conchoplasty procedures. In our case, the operation was performed endoscopically without any complication.

References