Check for updates

Paradoxical giant inferior concha

Barış Naiboğlu, MD; Atılay Yaylacı, MD; Çağatay Oysu, MD

Abstract

Anatomic variations of the middle and superior conchae are common, but inferior concha anomalies are rare. These anomalies have included pneumatization, agenesis, and duplication. We describe what we believe is the first reported case of a paradoxical curvature of the bony part of the inferior concha. The patient was a 13-year-old girl. The development of a huge inferior concha blocked the left nasal cavity and deviated the nasal septum to the contralateral side, resulting in bilateral obstruction. The patient was successfully treated with surgery.

Introduction

Variations in the anatomy of the paranasal sinuses, middle concha, and superior concha are well known to otorhinolaryngologists, but inferior concha anomalies are rare. Such irregularities have included pneumatization,[1-3] agenesis,[4] and bifidity.[5] Inferior concha hypertrophy is a common disorder; bony hypertrophy is usually caused by a broad inferolateral turn. However, to the best of our knowledge, no case of a paradoxical curvature of the bony part of the inferior concha has been previously reported in the literature. We describe what we believe is the first such case.

Case report

A 13-year-old girl from a rural area of Turkey was referred to the outpatient clinic at Siirt State Hospital for evaluation of nasal obstruction and headache of 3 years' duration. Anterior rhinoscopic examination revealed a huge right-sided inferior concha that had completely obstructed the ipsilateral nasal passage; the anomaly had also partially obstructed the left nasal passage by deviating the nasal septum. Paranasal sinus computed tomography (CT) demonstrated a giant inferior concha with a paradoxical curvature of the bony part, which compressed the nasal septum (figure).

From the ENT Clinic, Haydarpaşa Numune Education and Research Hospital, Istanbul, Turkey (Dr. Naiboğlu and Dr. Oysu); and the ENT Clinic, Siirt State Hospital, Siirt, Turkey (Dr. Yaylacı).

Corresponding author: Bariş Naiboğlu, MD, Acibadem Yaprak Sokak, Altintürk, Apt. No. 39/8, Uskudar, İstanbul, Turkey. Email: drbnaib@yahoo.com

Submucosal resection was performed on the bony part of the concha. An incision was made posteriorly from the most anteroinferior point. The bony part was reached by dissecting the submucosal soft tissue with an elevator. The curvature of the bony part was resected, and the remaining portion was lateralized. The hypertrophied soft tissue was then resected enough to achieve a patent nasal passage.

In view of the huge size of the concha, the excised specimen was sent for pathologic examination to rule out a neoplasm. No neoplasia was identified. At follow-up 1 year later, the patient had no complaint and no evidence of recurrence.

Discussion

Embryologically, the intrauterine development of the lateral nasal wall starts at 8 weeks' gestation. A cartilaginous nasal capsule surrounds the nasal cavity, which is continuous with the nasal septal cartilage. The uncinate process originates in the medial wall of this capsule. The primordial ethmoid infundibulum develops as a space lateral to the uncinate process. The maxillary sinus develops by ingrowing from the capsule. Posterior protrusions from the ethmoid infundibulum enlarge to form the ethmoid cells. A ridge of bone originating in the hard palate advances posteriorly to replace the capsule and form the posterolateral wall.

By 16 weeks, conchae are easily identifiable. Primary ossification of the cartilaginous precursor of the inferior concha occurs at the point where the inferior concha budded from the cartilaginous lateral capsule. The superior and middle conchae develop and ossify from the ethmoid bone. The inferior concha originates in both the maxilla and lateral cartilaginous capsule.[6] The inferior concha is an independent, thin bone that articulates with the nasal surface of the maxilla and the perpendicular plate of the ethmoid bone. It develops via endochondral ossification of the components of the mesethmoid and ectethmoid. The chondral framework of the inferior concha consists of a double lamella and two separate ossification centers that develop between the fifth and seventh months of fetal life. The separate

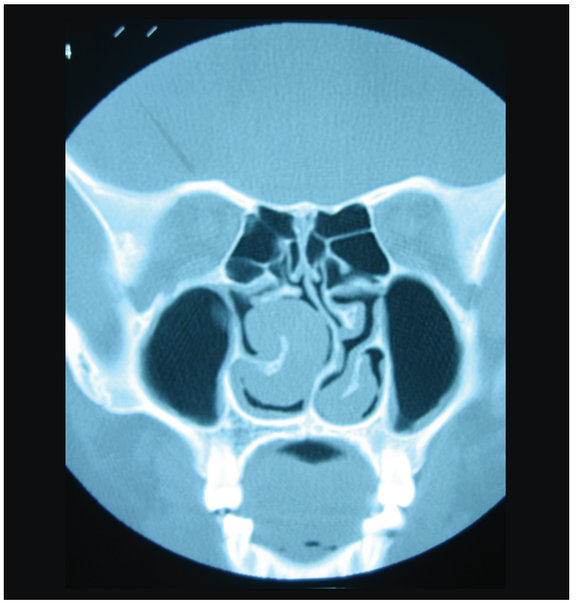


Figure. Paranasal sinus CT shows the giant inferior concha and the paradoxical curvature of the bony part, along with the resultant nasal obstruction and compression of the cartilaginous nasal septum.

ossification centers meet by the eighth fetal month. During ossification, the inferior turbinate detaches from the ectethmoid and becomes an independent bony structure.[7] During this time, any alteration of the ongoing process may lead to this variation.

The higher prevalence of superior and middle turbinate anomalies may be attributable to the complex nature and embryogenesis of the ethmoid bone. The middle and superior conchae belong to the complex ethmoid bone, but the inferior concha is a unique bone unto itself. This embryologic difference may explain why middle and superior concha variations are so much more common than inferior concha anomalies.

References

1. Kiroglu AF, Cankaya H, Yuca K, et al. Isolated turbinitis and pneumatization of the concha inferior in a child. Am J Otolaryngol 2007;28(1):67-8.
2. Göçmen H, Oğuz H, Ceylan K, Samim E. Infected inferior turbinate pneumatization. Eur Arch Otolaryngol 2005;262(12):979-81.
3. Aydin O, Ustündağ E, Ciftci E, Keskin IG. Pneumatization of the inferior turbinate. Auris Nasus Larynx 2001;28(4):361-3.
4. Gümüşalan Y. Coincidence of bilateral hypogenesis and unilateral agenesis of the turbinates (conchae nasales) in man. J Otolaryngol 1997;26(6):392-5.
5. Selcuk A, Ozcan KM, Ozcan I, Dere H. Bifid inferior turbinate: A case report. J Laryngol Otol 2008;122(6):647-9.
6. Bingham B, Wang RG, Hawke M, Kwok P. The embryonic development of the lateral nasal wall from 8 to 24 weeks. Laryngoscope 1991;101(9):992-7.
7. Warwick R, Williams PL, eds. Gray's Anatomy. 35th ed, Philadelphia: W.B. Saunders; 1973.