CASE REPORT

LARGE DOUBLY SEPTATED CONCHA BULLOSA: AN UNUSUAL ANATOMIC VARIATION

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Summary: Partial or total pneumatization of the middle turbinate is called concha bullosa. It’s one of the most common anatomic variations of the lateral nasal wall. The exact reason of such pneumatization is not known. It can originate from the frontal recess, middle meatus, sinus lateralis or, less frequently, from the posterior ethmoid cells. Concha bullosa remains usually asymptomatic. However, an extensively pneumatized middle turbinate may constitute space-occupying mass, and thus, it may cause nasal obstruction. We report an extremely rare case of a patient with a large, doubly septated concha bullosa with four different sources of aeration.

Key words: Concha bullosa; Septated; Middle turbinate; Nasal obstruction

Introduction

The development of computed tomography (CT) technique results in the advance in visualisation of the anatomic structures of the lateral nasal wall. It allows the anatomic variations of this region to be identified precisely. Concha bullosa (CB) is pneumatized middle turbinate and it’s the most commonly seen anatomic variant of the lateral nasal wall. The detailed anatomy of the CB has first been described by Zuckerkandl (15). In anatomical studies, CB has been noted in 5–20 % of the nasal specimens (5). However, it was found in 34 % of patients having CT for the evaluation of symptomatic sinus disease (14).

Different types of anatomic variations of the middle turbinate have been described in the literature as pneumatized, lateralized, hypoplastic and hypertrophic, paradoxically curved, secondary and accessory, bifurcate and trifurcate middle turbinate (2, 6, 8, 9, 11). Septated CB has been rarely seen in the rhinological practice. To our knowledge, we present the second case of a patient with doubly septated CB. The first one was described by Yanagisawa et al. (13).

Case report

A 26-year-old male came to our clinic with severe nasal obstruction and intermittent mid-facial pressure. Anterior rhinoscopy and endoscopic examination revealed hypertrophy of the left middle turbinate and septal deviation (spur) to the right side (Fig. 1). The nasal mucosa seemed healthy. A coronal plane CT demonstrated an extensive pneumatization of the left middle concha with a lateral ostium communicating with the middle nasal meatus and a superior-lateral ostium communicating with the sinus lateralis (Fig. 2a). The large CB superiorly attached directly to the skull base and laterally to the lamina papyracea. Next CT cross-section showed that CB was septated. The floor of the left orbit presented with an orbitoethmoid (Haller) cell (Fig. 2b). What is more interesting, axial CT scan showed anterior and posterior thin bony septum inside the CB, so CB cavity was divided into the anterior, intermedial and posterior cell. The anterior CB septum was very thin, so it seemed to be incomplete (Fig. 2c). The right maxillary sinus was incompletely septated whereas in the left one, we could...
see a retentinal cyst on the antral floor. Reduced total intranasal airflow was confirmed by anterior active rhinomanometry (AAR).

The patient underwent transnasal endoscopic surgery following septoplasty under general anaesthesia. A vertical incision was made on the anterior CB wall and the lateral lamella was resected. Finally, the bony septa were removed from the CB cavity. Mucosa of the uncinate process and the CB cavity seemed healthy (Fig. 3). The patient’s nasal breathing improved immediately after surgery, which was showed by AAR as better nasal airflow. He was free of nasal blockage and feelings of pressure during 12-month follow-up.

**Discussion**

The middle turbinate is an important landmark of the lateral nasal wall, which forms the medial wall of the ethmoid sinus. It is associated with many functions of the nasal cavity, including olfaction, humidification, lubrication of the upper airways, regulation of airflow and temperature and filtration (10). The middle concha is formed by the medial part of the ethmoid bone. As it elongates in the nasal cavity, anterior-superior stabilisation is provided by the cribiform plate and posterior and lateral stabilisation is provided by the lamina papyracea (7, 10). The bony structure that allows attachment to the lamina papyracea is called the
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