

# Inferior concha bullosa – a radiological and clinical rarity\*

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## SUMMARY

*Two cases of inferior concha bullosa (ICB) are reported. The condition was bilateral in one patient and unilateral in the other. Unilateral ICB was associated with marked septal deviation. The diagnosis was made in patients being investigated for chronic rhinosinusitis. ICB is diagnosed by computed tomography (CT) of the sinuses in the coronal plane. It may also be seen in axial views.*

*Key words: inferior turbinate, concha bullosa*

## INTRODUCTION

Lang credits Zuckerkandl with the first description of a concha bullosa. [Zuckerkandl in 1893 found a bony vesicle 23 mms long and 13 mms wide in the anterior end of the middle concha. He therefore called it "bullous concha"]. Anon et al., (1996) define concha bullosa as "aeration of the turbinate". They add that any turbinate may be pneumatized, but this is most common in the middle turbinate, less common in the superior turbinate and least in the inferior turbinate. Concha bullosa is not pathological, although it may obstruct meatuses or ostia. When unilateral, concha bullosa may be associated with a deviated nasal septum. These specialized texts on anatomy of the nose, and paranasal sinuses report nothing specific on inferior concha bullosa. Inferior concha bullosa (ICB) is an air containing structure in the body of the inferior turbinate, which may communicate with the maxillary sinus. Contrary to the more common concha bullosa of the middle turbinate, ICB is very rare. A computerized Medline search found only 2 cases of ICB. Zinreich et al (1988) reported a unilateral ICB communicating with the maxillary sinus in one of 320 patients evaluated for sinus disease with CT. Namon (1995) reported a case of inferior turbinate mucocoele, and hypothesized a possible mode of formation. Apart from these 2 reports nothing else was found about ICB in the world literature. This paper reports ICB in 2 females, diagnosed radiologically while they were being investigated for chronic rhinosinusitis. ICB was bilateral in 1 patient and unilateral in the other.

## CASE REPORTS

### *First patient:*

A 51-year-old female, an asthmatic for 25 years, presented in November 1994 with facial pain, nasal obstruction, nasal and

postnasal discharge and deterioration of her bronchial asthma. She had undergone 2 nasal operations during the previous 12 months, described as septal surgery and nasal polypectomy. Examination showed loss of columellar support, and a septal perforation. Fibreoptic endoscopy showed roomy nasal fossae with rudimentary middle turbinates, thick muco-purulent discharge in the middle meatuses and streaking down from the sphenoid sinuses. She was put on antibiotic and alkaline nasal douche. In April 1995 she came with blood-stained nasal and postnasal discharge. Computed Tomography (CT) showed sinusitis, a septal perforation and bilateral ICB (Figure 1). She

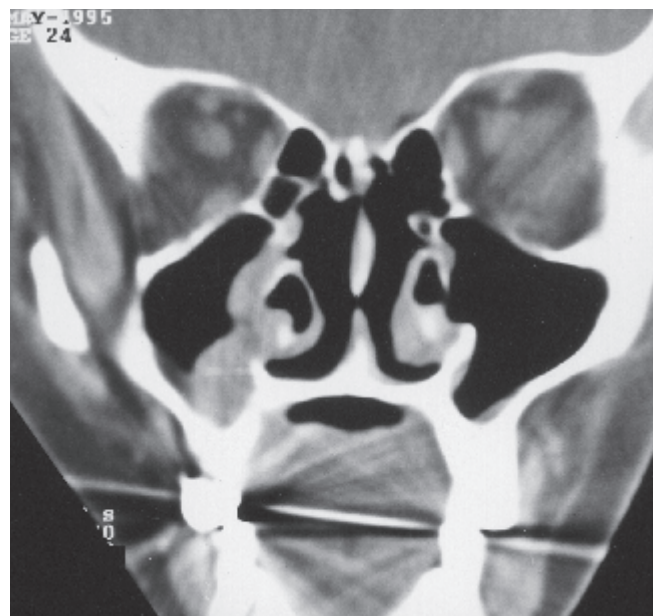


Figure 1. Coronal CT of patient 1. Showing bilateral inferior concha bullosa, septal perforation and maxillary sinusitis on the left.

responded to conservative management and now comes for regular follow up.

Second patient:

A 25-year-old female was seen in February 1995 with a 10-year history of sneezing, rhinorrhoea and nasal obstruction, and a 10-day history of persistent headache and anosmia. She had used many different local and systemic treatments. Examination showed pale hypertrophied turbinates with mucoid discharge bilaterally and septal deviation to the right. Four weeks later she came with total left nasal obstruction and subtotal right obstruction. Mucoid discharge was sucked from both nasal fossae without benefit. CT scans were ordered. These were made 3 weeks later when her nasal obstruction had improved with treatment. They showed a deviated nasal septum to the right, right maxillary and ethmoid sinusitis and left inferior concha bullosa (Figure 2). She improved with medical treatment and was listed for septoplasty and turbinate reduction. Her surgery was postponed when she became pregnant.



Figure 2. Coronal CT of patient 2. showing a septal spur, sinusitis of the antrum on the right and inferior concha bullosa on the left.

## DISCUSSION

The paucity of information and literature on the subject of ICB was a major problem in this study. Trying to identify a condition that is practically unknown is an onerous undertaking. Inferior Concha Bullosa is clinically indistinguishable from turbinate hypertrophy due to other causes, except on CT scan. In the patients reported it is difficult to assess the contribution of ICB to the patients symptoms of chronic rhinosinusitis, due to the co-existence of other pathology in both cases. The recognition of ICB however attains clinical significance when surgical reduction of the inferior turbinate is being considered. Operating on a turbinate with ICB unknown to the surgeon may leave the patient at best no better and possibly worse off after surgery. Partial turbinectomy in the presence of ICB will leave a

lambda shaped ? turbinate that looks like a capsized canoe. Submucous turbinoplasty is nearly impossible to perform without prior knowledge of the existence of ICB, as the medial flap would be impossible to develop unless the ICB is opened. Surgical reduction of the inferior turbinate is undertaken in cases of hypertrophy not responding to medical treatment. It is performed differently by different workers. Saunders' (1982) review of Surgery of the Inferior Nasal Turbinates reiterates the basic surgical principle that every operation must be tailored to treat the observed pathology and not the other way round, i.e. no single procedure can be suitable in every case of turbinate hypertrophy. Pollock and Rohrich (1984) used 4 different techniques separately and in various combinations in 408 septoplasty and septorhinoplasty patients. Since 1992 the author has performed submucous turbinoplasty as described by Hilberg et al (1990) with satisfactory results. A difficult turbinoplasty in June 1994 complicated by a tear in the medial flap prompted a closer look at the inferior turbinate bone and a search for anatomical variations prior to surgery. The patient in question had curling U-shaped turbinate bones, which made it difficult to develop the medial flap with the resultant tear. Coronal CT scans were scrutinized for anatomical variations in the shape of the inferior turbinate bone prior to any turbinate surgery. Pollock and Rohrichs (1984) illustration of the anatomy of the inferior turbinate bone in the anterior, middle and posterior nasal cavity was a useful guide. This resulted in identifying ICB in the two patients reported. The unilateral ICB was associated with marked septal deviation to the contralateral side. Both patients have used decongestant nose drops for variable periods and both showed clinical and radiological evidence of sinusitis.

## CONCLUSIONS

Two cases of ICB are reported. ICB was discovered while investigating patients for chronic rhinosinusitis. Unilateral ICB was associated with marked septal deviation. A closer look at coronal CT scans prior to nasal surgery will alert otolaryngologists to the anatomical variations of the inferior turbinate bone. It is hoped that reports from other workers will help establish the incidence and clinical significance of ICB. Namon's comprehensive list of the causes of hypertrophy of the inferior turbinate would now be incomplete without the inclusion of ICB as a cause of inferior turbinate hypertrophy.

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