Concha bullosa (CB) are frequently encountered anatomic variants of the middle turbinate that have the potential to occlude the middle meatus. The prevalence of CB is estimated to be 34% in the adult population of patients presenting with sinusitis. Several surgical techniques have been described to treat CB during sinonasal surgery. These techniques include resection, either partial or complete, and crushing. Crushing is felt to be more conservative. One of the concerns with crushing CB is the potential for reformation.

Balloon sinuplasty has been recently introduced as a minimally invasive sinus surgery technique that is for the treatment of frontal, maxillary and sphenoid rhinosinusitis. In the frontal sinus region, it is based on the premise of crushing the agger nasi air cells and the other air cells in the frontal recess, thus opening the outflow tract of the frontal sinus. A factor in determining the long term outcome of sinuplasty surgery is whether these crushed aircells may reform over time.

The objective of this paper is to describe several instances of repneumatization of previously crushed CB and discuss the implication for balloon sinuplasty surgery.

This is a retrospective case series of 10 adult patients who represented with CB as a component of their nasal obstructive symptoms despite previously undergoing crushing of their CB. Data analyzed included parasal sinus CTs and operative reports. The results of this study may extrapolate that agger nasi and frontal recess air cells may reform following balloon sinuplasty leading to recurrent obstruction of the frontal sinus outflow tract. CB can reform following crushing technique. One may extrapolate that agger nasi and frontal recess air cells may reform following balloon sinuplasty leading to recurrent obstruction of the frontal sinus outflow tract.

The analyzed data included parasal sinus CTs and operative reports. Due to the time intervals between the most recent presentations and the previous surgeries, not all patients had the initial CT available for review. However, the patients were included for the study if their clinical notes, initial scan reports and operative notes indicated the presence of CB at the initial presentation or within the year prior to the initial presentation.

There were 4 males and 6 females within the study population. These 10 patients presented with chronic rhinosinusitis (3 patients), nasal obstruction (4 patients), or nasal obstruction with chronic rhinosinusitis (3 patients).

All the patients had previously undergone septoplasty surgery with crushing of the CB and were noted to have reformed the CB on their most recent sinus CT. The previous surgeries were performed from 2-15 years prior to their representation, with a mean of 10 years.

Figure 1 illustrates a greenstick fracture within the bony wall of the CB that is still apparent in the secondary CT obtained 10 years after the initial surgery.

Figure 2 illustrates a completely opacified partially reformed CB with ipsilateral frontal sinus disease. On the contralateral side the CB has fully repneumatized without opacification.

See Table 1 for demographic and clinical data.

**REFERENCES**


**CONCLUSIONS**

CB can reform following crushing technique. One may extrapolate that agger nasi and frontal recess air cells may reform following balloon sinuplasty leading to recurrent obstruction of the frontal sinus outflow tract. Patients should be appropriately counseled.