

Middle turbinate pneumatization in the paediatric population

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Objective: Bullous middle turbinate is a common anatomical variation in adults, however not much is known of its incidence and significance in children. Our aim was to determine the incidence of bullous middle turbinate in children and to assess whether it is associated with nasal septum deviation and some other anatomical variations such as pneumatization of superior turbinate, uncinata process, crista galli, sphenoid and frontal sinus.

Materials and methods: Paranasal sinus CT scans of 87 paediatric patients (mean age 5.6 years) were retrospectively reviewed. The presence of the concha bullosa, septal deviation and other anatomical variants were determined using tomography images. All data from patients were assessed by both an otolaryngologist and a radiologist. The patients were divided in two groups: group 1 were those with bullous middle turbinate and group 2 were those with normal middle turbinate.

Results: In the overall group, bullous middle turbinate was present in 29.5% of patients, bullous superior turbinate in 9.09%, deviated septum in 28.73%, pneumatized frontal sinus in 17.24%, pneumatized uncinata process in 3.4% and pneumatized crista galli in 26.4% of patients. The patients in group 1 were older (mean age 9.2 vs 3.9 years, $p < 0.001$), 50% had a deviated septum vs 19.67% in group 2 ($p = 0.04$). Bullous superior turbinate was present in 26.92% of patients in group 1 and 3.28% in group 2 ($p < 0.001$). In group 1, the conchal type of sphenoid pneumatization was present in 34.61%, presellar in 15.3%, sellar in 50%, vs 83.6%, 9.83%, and 6.5%, respectively ($p = 0.001$).

Conclusion: Our results showed that bullous middle turbinate is a frequent anatomical finding in older children and is associated with a deviated septum, bullous upper turbinate and sellar type of sphenoid pneumatization. This suggests that turbinate pneumatization is congenital and a continuing development process of the nose throughout childhood and adolescence, which is in concordance with some previous studies.

Keywords: turbinate pneumatization, septal deviation, computed tomography