

### 53. Common Incidental Findings

Incidental findings within the paranasal sinuses are commonly seen on head and neck MR performed for other reasons. Mucous retention cysts most often occur in the maxillary sinuses and are usually asymptomatic. The typical appearance is illustrated in Figure 53.1 where bilateral lesions exhibit high and low SI on (A) axial T2 and (B) CE T1WI, respectively. A large retention cyst could potentially be confused with an air-fluid level, leading to an incorrect diagnosis of sinusitis. The non-dependent position (with respect to patient position and gravity) of the retention cysts in Figure 53.1 aids in this distinction, but dependent mucous retention cysts are more problematic. A convex border with surrounding air is consistent with a retention cyst, whereas dependent fluid with a flat or slightly concave upward border is consistent with an air fluid level. Evaluation of the lesion in multiple planes aids in differentiation. Mild mucosal thickening, when an isolated finding, is reported as such, being typically of little clinical concern.

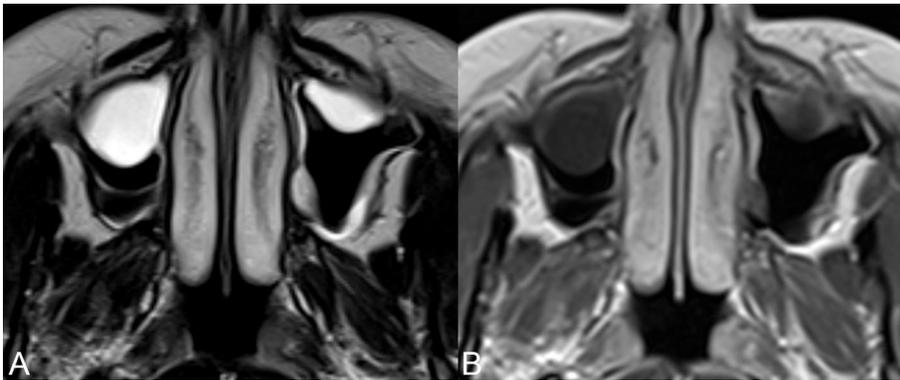


Fig. 53.1

Figure 53.2 presents axial (A) T1 and (B) T2WI from a patient with a history of chronic left maxillary sinusitis. Note that the left maxillary sinus is smaller than the right, has a thickened wall (the thin rim of low signal intensity seen surrounding the sinus, the correlate to a thickened sclerotic wall on CT), together with a lining of mild mucosal thickening. These imaging findings are typical of chronic sinusitis. They are not uncommon in older individuals and - although they should be described in a clinical report - are usually of little clinical concern (and do not correlate with active disease).

The nasal turbinates on one side are often observed on MR to be swollen, with high signal intensity on T2WI. This is simply part of the normal nasal cycle, with alternating partial congestion and decongestion of the turbinates on the order of a few hours when a human is awake.

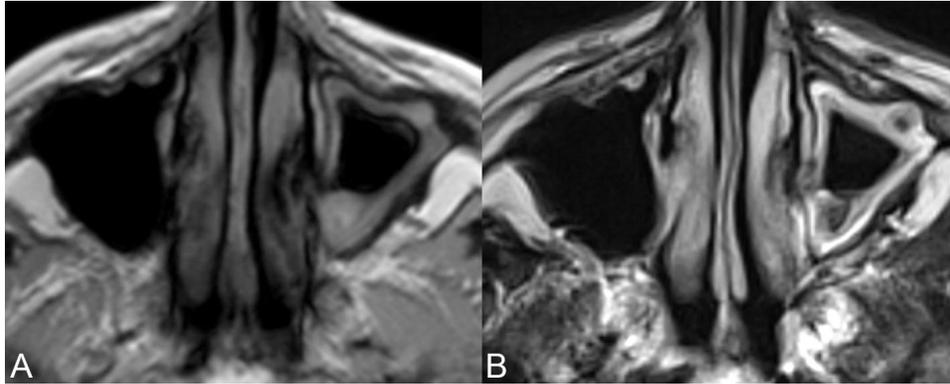


Fig. 53.2

Inspissation (thickening or drying) increases the protein content of fluid (such as that in a retention cyst), leading to a change in MR SI. An increase in fluid protein concentration can cause high SI on T1WI (due to a decrease in T1). This appearance is illustrated in Figure 53.3 in a patient who had undergone resection of a pituitary macroadenoma, with fat placed during surgery within the sphenoid sinus. On the (A) T1WI, mild high SI material (white arrow) predominates posteriorly within the left sphenoid retention cyst, correlating with increased protein concentration. Hypointensity remains on the left more anteriorly, correlating with lower protein content. With increasing protein concentration, the SI of sinusoidal secretions on T2WI initially remains high. However, inspissated secretions will have low SI on T2WI, as seen in Figure 53.3 B, with the surrounding low protein content fluid exhibiting the expected hyperintensity. An additional, similar appearing, inspissated secretion containing, retention cyst (white arrow, B) is also present on the patient's right within the sphenoid sinus. The protein concentration in the periphery of this smaller lesion is actually low enough to not alter significantly the T1 of this fluid, allowing partial SI suppression by the inversion recovery pulse utilized to obtain (C) FS FLAIR images. This is not the case with the peripheral fluid within the larger lesion which remains hyperintense. Protein concentrations greater than 25% result in macromolecular crosslinking, the resulting rigid structure inhibiting T1 relaxation with resulting hypointensity on both T1 and T2WI—an appearance that can mimic that of a normally aerated sinus.

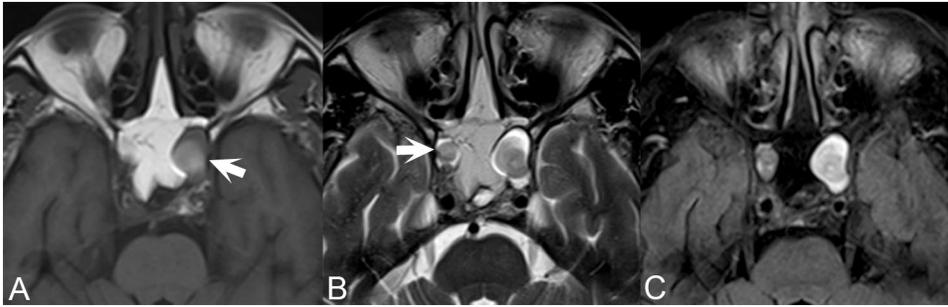


Fig. 53.3

Tornwaldt cysts, arising from a notochordal remnant in the posterior nasopharynx along the midline, are common incidental findings. As in Figure 53.4 these lesions tend to exhibit homogeneous high signal intensity on T2WI (A – axial FSE, B – sagittal FLAIR). Intermediate to high SI can be seen on T1WI, depending on protein content.

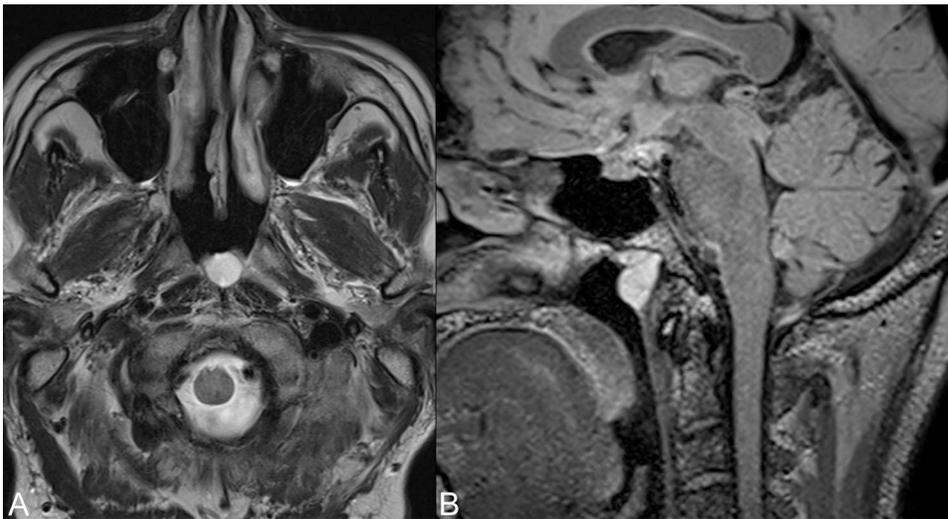


Fig. 53.4