# Surgical Approaches to the Nasal Cavity and Sinuses

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**KEYWORDS**

• Nasal cavity • Sinuses • Turbinates • CT scan • Rhinotomy • Mucoperiosteum • Neoplasia

**KEY POINTS**

- CT scan of the head is the best diagnostic for initial evaluation of nasal cavity diseases.
- Most nasal cavity tumors in dogs are locally invasive and late to metastasize.
- Nasal cavity tumors are largely treated with radiation; however, adjunctive surgery is beneficial in some patients.
- The ventral approach to the nasal cavity provides an excellent avenue to the nasal cavity and nasopharygeal lesions.

The nasal cavity is the first portion of the respiratory tract and begins with the external nares and ends with the nasal conchae. The nasopharynx extends from the conchae to the intrapharyngeal ostium, which is just cranial to the larynx.

The paranasal or frontal sinuses extend very far caudally on the head of most canine breeds. The exception lies in canine breeds classified as brachycephalics, such as Boston terrier, Bulldogs, Pugs, Shih Tzus, Boxers, and Pekinese, which have very compact frontal sinuses and do not extend far caudally on the head (**Fig. 1**). There are three compartments of the frontal sinuses: (1) the large caudal, (2) smaller rostral, and (3) medial compartments. The latter drain via an ostia into the caudodorsal nasal cavity. The floor of the frontal sinuses extends over the olfactory and rostral part of the frontal lobes of the brain. For this important reason one must avoid penetration of this portion of the sinuses with curettes, drills, and other instruments.

Maxillary sinuses are small and consequential when abscessation of caudal maxillary premolar teeth is present. The maxillary sinus or recess is a lateral diverticulum of the nasal cavity and has its opening at the level of the rostral roots of the fourth upper premolar tooth (**Fig. 2**).

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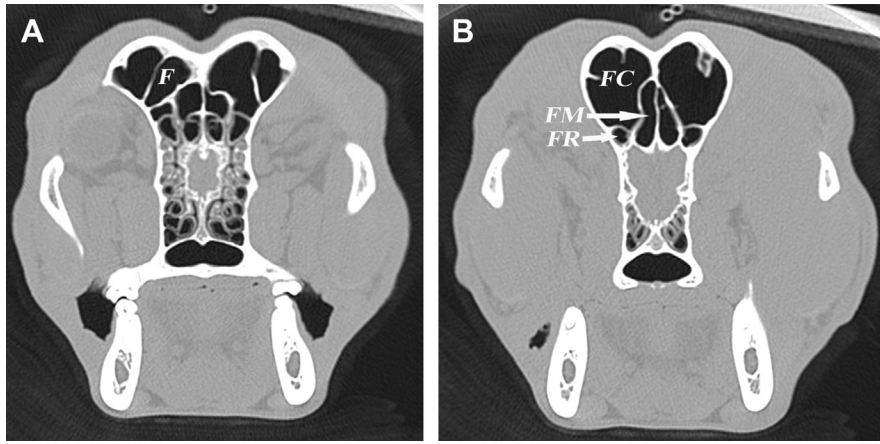


**Fig. 1.** Rottweiler, 3-year-old female spayed. (*A*) Transverse plane computed tomography (CT) images of normal frontal sinus anatomy. The frontal sinus region is denoted by the letter F. (*B*) The frontal sinus region is denoted by FC, FR, and FM, which refer to the caudal, rostral, and medial compartments. Fig. 1A is more rostral compared with Fig. 1B.

The nasal cavity is separated along the midline sagittal plane by a membranous, osseous, and cartilaginous nasal septum. The conchae, also known as turbinates, are scrolled bones of the nasal cavity that purify and humidify inspired air (Fig 3). The dorsal, ventral, and ethmoidal conchae fill most of the nasal cavity. The dorsal and ventral conchae attach on the ethmoid, nasal, and maxillary bones. The ethmoidal

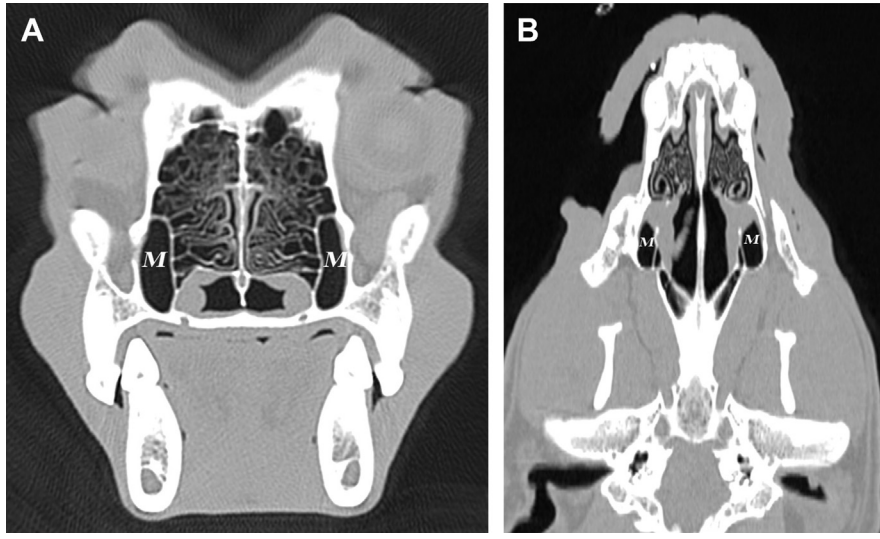


**Fig. 2.** Rottweiler, 3-year-old female spayed. (*A*) Transverse plane computed tomography (CT) image of normal canine maxillary sinus anatomy. (*B*) Dorsal coronal plane CT image of normal canine maxillary sinus anatomy. The maxillary sinus region is denoted by the letter M.