Unit 30: Nose, Nasal Cavity and Paranasal Sinuses

Dissection Instructions:

Attempt to look through the two nasal cavities and determine which one has the greater space between the nasal septum and conchae. On the side with the narrowest cavity, clean the alar and lateral cartilages (Plates 36; 7.67). On the side with the largest cavity, cut the soft palate, soft parts of the nose and upper lip in line with the cavity. Using your hand saw, cut through the skull in a sagittal plane which passes through the larger of the two cavities. Start the saw cut at the sphenoid bone, which is softer bone. Cut through the roof of the mouth (floor of the nasal cavity), but do not bisect the tongue or cut the mandible at this time.

Inspect the mucosa lining the nasal cavity on the nasal septum and on the lateral wall (Plates 37; 7.59-7.62). Identify the inferior, middle and superior conchae/turbinates and meatuses, and the sphenethmoidal recess postero-superior to the superior concha (Plates 36, 37; 7.61, 7.62). The anterior part of the nasal cavity which has vibrissae (hairs) is called the vestibule. Look for blood vessels and nerves which might be seen through the mucous membrane (Plates 40-43; 759, 7.60). If the blood vessels and nerves cannot be seen through the mucous membrane, carefully reflect the entire mucosa from the nasal septum. Reflecting it from its cut edges posterior to the posterior border of the vomer, leaving it attached at that point. Now, carefully inspect its deep surface for the nerves and blood vessels. The olfactory nerves should appear in the nasal mucosa immediately below the cribriform plate. Anterior and posterior to the cribriform plate, the anterior and posterior ethmoidal nerves and vessels should appear to supply the nasal mucosa on the lateral wall immediately below the cribriform plate and on the nasal septum. Posterior to the posterior ethmoidal nerves and vessels, locate the nasopalatine nerve and accompanying posterior septal vessels. In the vicinity of the incisive foramen, look for branches of the greater palatine vessels communicating with the septal branches.

The nasal mucosa has lymph vessels which drain in several directions. Some vessels drain posteriorly into retropharyngeal nodes, laterally into nodes in the infratemporal fossa and some drain inferiorly into submandibular nodes. There may be some communication between nasal lymphatics and subarachnoid space through the cribriform plate.

Note the parts of the skeleton of the nasal septum, the anterior cartilaginous and the bony posterior part (Plates 39; 7.58B). Attempt to identify the nasal crest.

Locate the sphenoidal sinus and its opening into the sphenethmoidal recess (Plates 37, 38; 7.62, 7.63). Elevate the superior concha and look for the openings for the posterior ethmoidal sinuses. Carefully elevate the middle concha and identify the ethmoidal bulla and the hiatus semilunaris. Note that the mucous membrane covering the anterior inferior border of the hiatus semilunaris covers the uncinate process of the ethmoid bone. Locate the openings on the ethmoidal bulla which are from the middle ethmoidal sinuses and the openings into the hiatus semilunaris: frontal sinus, anterior ethmoidal sinuses and the maxillary sinus (Plates 37, 38, 45, 47-50, 45; 7.62, 7.63). Follow with a probe antero-superiorly the ethmoidal infundibulum.
which is a narrow passage that drains the frontal sinus. Attempt to probe the opening/ostium of the maxillary sinus. Sometimes the frontal and maxillary sinuses have separate openings in the middle meatus outside the hiatus semilunaris. Note that the mucous membrane covering the anterior inferior border of the hiatus semilunaris covers the uncinate process of the ethmoid bone. Locate the openings on the ethmoidal bulla which are from the middle ethmoidal sinuses and the openings in the middle meatus outside the hiatus semilunaris. In the inferior meatus, locate the opening of the nasolacrimal duct (Plates 37; 7.62A, 7.63A). Explore the frontal, ethmoidal, maxillary and sphenoidal sinuses (Plates 48-50; 7.68, 7.69, 7.71, 7.64 -7.66).

Study the pterygopalatine fossa on a prosected specimen (Plates 2, 41-45; 7.66 - 7.67A-F).
The following structures of the pterygopalatine fossa should be identified on the prosection:

maxillary nerve  
zygomatic nerve  
infraorbital nerve & artery  
pterygopalatine ganglion  
pterygopalatine nerves  
greater palatine nerve  
lesser palatine nerve  
posterior inferior nasal nerve  
nasopalatine nerve  
nerve of pterygoid canal  
pharyngeal nerve  
maxillary artery  
descending palatine artery  
greater and lesser palatine arteries  
artery of pterygoid canal  
pharyngeal artery  
sphenopalatine artery

Be sure to identify all of the following in this unit:

nasal septum  
inferior, middle & superior conchae  
inferior, middle & superior meatuses  
sphenoethmoidal recess  
vestibule  
anterior ethmoidal artery  
posterior ethmoidal artery  
nasopalatine nerve  
posterior septal vessels  
greater palatine vessels  
septal cartilage  
perpendicular plate of ethmoid  
vomer frenulum  
sphenoidal sinus  
ethmoidal bulla  
hiatus semilunaris  
uncinate process  
frontal sinus  
anterior ethmoidal sinuses