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## Paranasal sinuses

### Remit

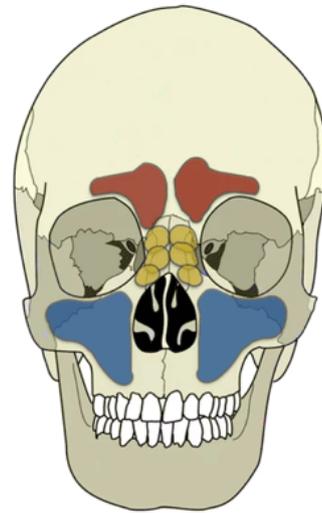
In this tutorial you will learn the basic anatomy of the paranasal sinuses and nasolacrimal apparatus. Use it in conjunction with your lectures and anatomy sessions.

### What is a sinus?

Sinuses are air-filled cavities in the skull that connect with the nasal airway, lined with mucus-producing epithelium.

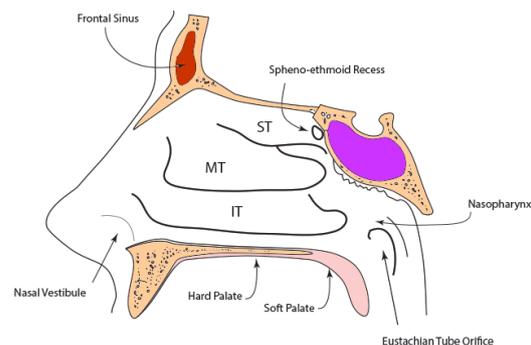
There are 4 paranasal sinuses in the human skull:

- Frontal (**red**)
- Ethmoidal (anterior, middle, post) (**yellow**)
- Maxillary (**blue**)
- Sphenoidal (**purple**) in the diagram below.



Their function is obscure and debated. The following are some ideas:

- Resonance to the voice
- Shape to the face
- Some degree of warmth and humidification to inspired air
- Act as "Shock absorbers" / crumple zones to the face and brain
- Reduce overall weight of the head
- To produce nitric oxide for inhalation



### Drainage of Nasolacrimal ducts & sinuses

The sinuses and nasolacrimal duct all drain into the nasal cavity, and it is important to have an understanding of this drainage in order to understand pathology which can affect it.

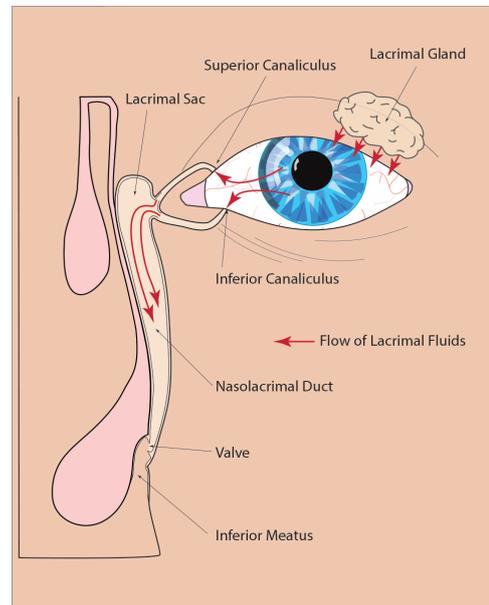
## Nasolacrimal duct

The lacrimal gland produces tears, which form a lubricating film over the cornea of the eye. When we blink excess tears are siphoned into the lacrimal punctum and pumped into the nasolacrimal duct. This duct passes medially draining beneath the anterior, inferior aspect of the inferior concha.

This explains why when we cry our nose runs.

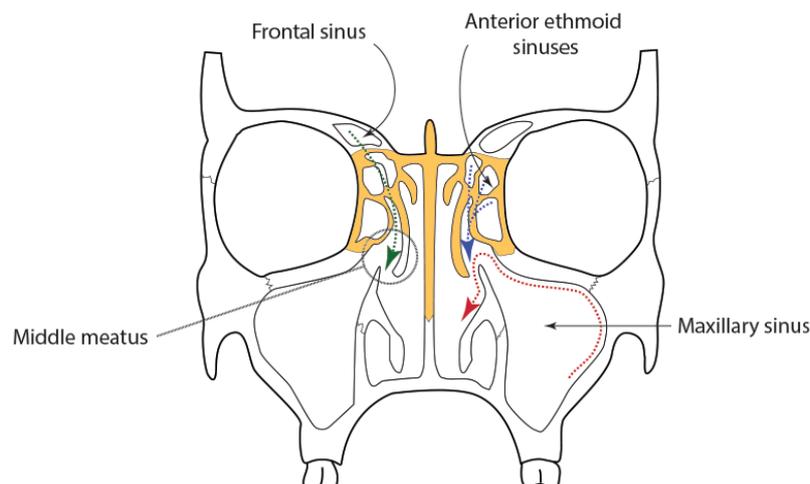
Consider now pathology in this area. It is easy to imagine that if for some reason the nasolacrimal apparatus were damaged or altered by pathology, this would result in a runny eye (known as epiphora).

When this pathology is secondary to damage to the duct or blockage of the nasal cavity a dacryocystorhinostomy procedure can be performed to reopen drainage.



## Sinuses

Reviewing the anatomy of the paranasal sinuses we note that these also drain into the nasal cavity. The frontal, maxillary and anterior ethmoidal sinuses drain into a structure called the hiatus semilunaris, which is situated in the middle meatus under the middle turbinate.



Posterior ethmoidal sinuses drain into the superior meatus under the superior turbinate. The sphenoid sinus drains into the sphenoethmoidal recess.

These areas exist as surgical targets when conducting a FESS operation when medical treatment of sinus problems fails.