

Nose

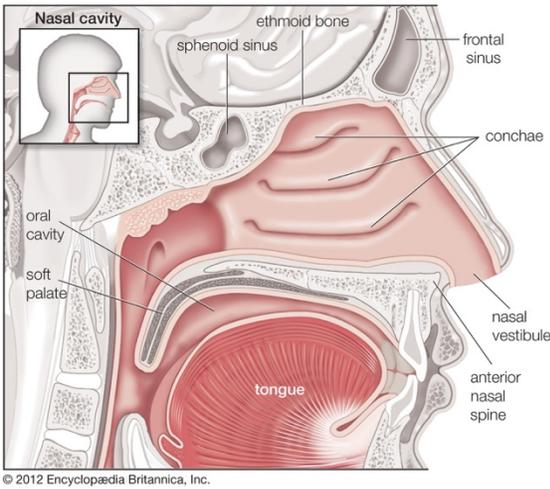


Figure 1: Sagittal view of the human nasal cavity.

Introduction

It was in part the development of internal nostrils in ancient fishes that paved the way for our evolutionary ancestors' migration from sea to land millions of years ago. Nostrils provide a means of air intake for lung-breathing animals and have developed into structures that exist today in great variety in the animal kingdom.

They range from little more than holes, as in the nostrils of frogs and whales, to variously shaped snouts and muzzles of most land mammals, to the great,

multipurpose trunks of the elephants. In humans this structure is called a nose, and it has two main functions. It is part of the breathing apparatus, or respiratory tract, and it holds the olfactory nerve endings that detect smells.

Structure

The nose has two cavities and is symmetrical around the nasal septum, the wall of cartilage that separates the cavities and extends from the nostril openings, or nares, to the nasal part of the pharynx, or nasopharynx. At the tip the nose is flexible cartilage; close to the skull it is lined with bone. Cartilage on each side of the nose bone gives the nose its shape.

In general, the lower part of the nasal cavity is called the respiratory area and the upper, the olfactory region. As part of its respiratory function the nose filters, warms, and moistens incoming air on its way to the lungs. From the olfactory areas the olfactory nerve endings lead to the undersurface of the brain. Inhaled air passes up and across these nerve endings, but exhaled air passes through the respiratory area only. Thus a person can smell incoming air but cannot detect an odor in his own exhaled breath.

Just inside the nostrils, or nares, grow short, coarse hairs. These filter large dust particles from the incoming air. The remainder of each nasal cavity and the sinuses around the nose are lined with mucous membrane, a special kind of tissue that secretes the sticky mucus that traps fine dust particles. Minute hairlike structures

called cilia grow from the surface and are in constant motion. They push the dust-laden mucus so that it moves toward and drains into the throat. The mucus also kills some germs and stops the growth of others. In the olfactory area the nerve endings grow through the mucous membrane.

Each cavity is divided into three passages to increase the surface area within the nose for more efficient respiration and to protect the olfactory region at the top of the nose. These passages are separated by three bones—the conchae. Their work is to radiate heat, warming the incoming air so that it arrives in the lungs at the proper temperature. The passages between the conchae are called meatuses. Warm fluids from various glands, including the tear glands, evaporate in the meatuses and humidify the air. Incoming air is warmed and moistened in the meatuses and then passes to the lungs.

Sinuses

The paranasal air sinuses are cavities in the bones of the skull that have openings into the nasal cavities. There are four sets of sinuses: the frontal, in the lower forehead just above the eyes; the maxillary, in the cheekbones; the ethmoidal, between the nasal cavities and the eye sockets; and the sphenoidal, behind the ethmoids near the center of the head.

The sinuses are filled with air and act as sounding chambers that add resonance to the voice. It has been suggested that their hollow construction makes the skull lighter without sacrificing structural strength and that they may aid in conservation of heat from the upper nasal cavity, but evidence is lacking.

Sinusitis, or inflammation of the sinuses, may arise from colds, allergies, irritation, or tooth infections. Sinusitis often results in headaches, a great increase in the secretion of mucus, and swelling of the mucous membranes.

Citation (MLA)

"Nose." *Britannica School*, Encyclopædia Britannica, 8 Apr. 2019.
school.eb.com/levels/middle/article/nose/276127. Accessed 2 Jul. 2019.

Citation (APA)

Nose. (2019). In *Encyclopædia Britannica*. Retrieved from <https://school.eb.com/levels/middle/article/nose/276127>