

Pharynx and Larynx

The digestive and respiratory systems merge briefly in the pharynx, which is subdivided into nasal, oral, and laryngeal parts. The pharyngeal walls basically consist of three strata: a mucosa, a muscularis, and an adventitia.

The most superior part, the nasopharynx, is directly continuous with the nasal cavities and is lined by the same respiratory passage epithelium - that is, ciliated pseudostratified columnar epithelium with goblet cells. In areas subject to abrasion, a nonkeratinizing stratified squamous epithelium may occur, such as on the edge of the soft palate and posterior wall of the pharynx, where these surfaces make contact during swallowing. The underlying connective tissue contains mucous, serous, and mixed mucoserous glands and abundant lymphatic tissue. The lymphatic tissue is irregularly scattered throughout the connective tissue and also forms tonsillar structures: the pharyngeal tonsils in the posterior wall of the nasopharynx, the tubal tonsils around the openings of the eustachian tubes into the nasopharynx, and the palatine and lingual tonsils at the junctions of the oral cavity and oropharynx. This lymphatic tissue forms part of the mucosa-associated lymphoid tissue (MALT) and constitutes Waldeyer's ring. Occasional, scattered accumulations of lymphoid tissue are found scattered in the connective tissue underlying the epithelium of the trachea and bronchi to the level of true bronchioles. Lymphoid tissue within the bronchi is referred to as bronchus-associated lymphoid tissue (BALT).

The oral cavity continues posteriorly into the oropharynx, which extends from the base of the skull to the level of the cricoid cartilage, where it is continuous with the esophagus. The oropharynx is lined by a nonkeratinized stratified squamous epithelium supported by a dense, fibroelastic lamina propria. Immediately beneath the lamina propria is a well-developed layer of elastic fibers that is continuous with the muscularis mucosae of the esophagus. Proximally, the elastic layer blends with the connective tissue between the muscle bundles of the pharyngeal wall. A submucosa is present only where the pharynx is continuous with the esophagus and in the lateral walls of the nasopharynx. The muscularis of the pharyngeal wall consists of the skeletal muscle of the three pharyngeal constrictor muscles (superior, middle and inferior), which, in turn, are covered by connective tissue of the adventitia.

The larynx connects the laryngopharynx and trachea. Its framework consists of several cartilages, of which the thyroid, cricoid, and arytenoid are hyaline, while the epiglottis, corniculate, and tips of the arytenoid are elastic. This scaffold of cartilages is held together and to the hyoid bone by sheets of dense fibrous connective tissue that form the cricothyroid and thyroid membranes. The lining epithelium varies with location. The anterior surface and about half the posterior surface of the epiglottis are covered by nonkeratinized stratified squamous epithelium that may contain a few taste buds. The vocal cords also are covered by a wet stratified squamous epithelium, but elsewhere the larynx is lined by the respiratory passage type of epithelium. The lamina propria of the larynx is thick and contains mucous and some serous or mucoserous glands.