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Non-Oncologic Imaging of the Oral Cavity and Jaws

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It is important to distinguish the oral cavity from surrounding spaces and the oropharynx, as the presence of specialized hard and soft tissue structures gives rise to different disease processes within the oral cavity than in the oropharynx. The oral cavity lies anterior to the oropharynx and is separated from the oropharynx by the soft palate, tonsillar pillars, and at the tongue, the circumvallate papillae. Thus the oral tongue lies within the oral cavity, while the tongue base lies within the oropharynx. The oral cavity contains the hard palate, alveolar processes of the maxilla and mandible, dentition, oral tongue, buccal vestibule, and lips. Within or bounding the oral cavity are three spaces formed by superficial layers of deep cervical fascia, mucosal surfaces, or muscle boundaries. These are the sublingual and submandibular spaces inferiorly and the buccal spaces laterally.

The sublingual space (SLS) is formed by the genioglossus and geniohyoid muscles medially and the mylohyoid muscle laterally and inferiorly (Fig. 1A,B). Anteriorly, the SLS is bounded by the lingual cortex of the mandible. On its posterior boundary, the SLS is contiguous with the submandibular space (SMS) and the parapharyngeal space. These anatomical relationships are critical to understanding the spread of infectious or neoplastic processes, in particular, because the SLS is one of the spaces in the head and neck not encapsulated by fascia. The SLS contains fat, the sublingual glands and ducts, the deep or uncinate portion of the submandibular gland and the submandibular duct (Wharton's duct), the anterior margin of the hyoglossus muscle, the sublingual artery, the lingual nerve and artery, and distal branches of the glossopharyngeal and hypoglossal nerves. It is further important to recognize that the SLS is a continuous space anteriorly, ventral to the frenulum, permitting access across the midline.

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The SMS (Fig. 1A–C) is a horseshoe-shaped space that lies laterally, inferiorly, and posteriorly to the SLS, inferior to the mylohyoid and superior to the hyoid bone. It is formed by superficial layers of deep cervical fascia that split to envelope the space with the superficial layer of fascia extending along the medial margin of the platysma muscle and the deep layer extending along the lateral margin of the mylohyoid. The SMS contains fat, the superficial portion of the submandibular gland and proximal portions of Wharton's duct, submental and submandibular lymph nodes (level 1A

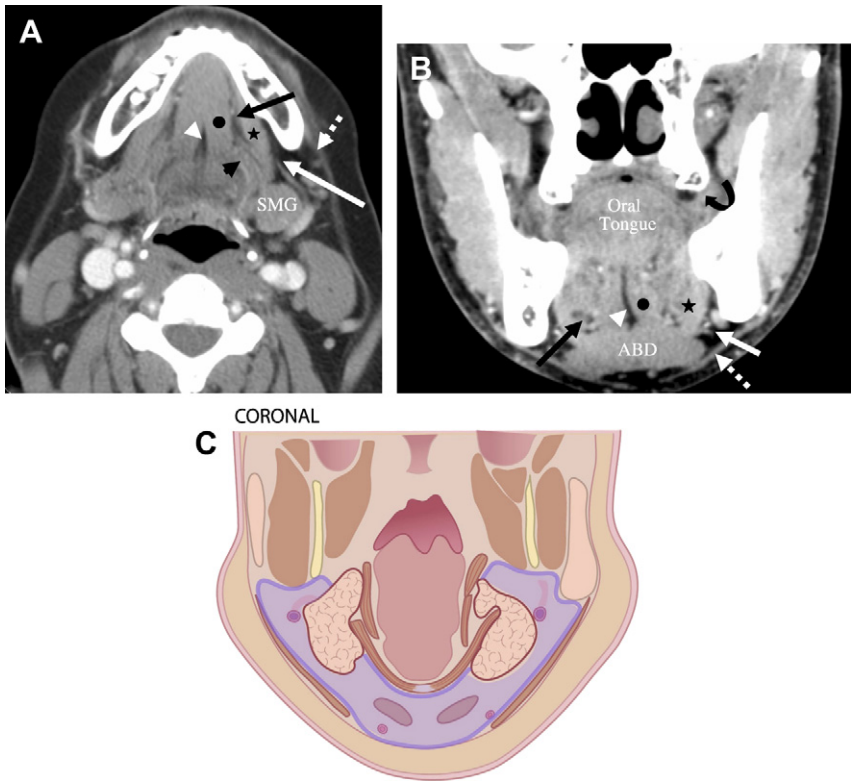

Fig. 1. (*A*) Axial CT view at the level of the oral cavity. Sublingual space (*long black arrow*), submandibular space (*long white arrow*), mylohyoid muscle (*star*), hyoglossus muscle (*black arrowhead*). The root of the tongue is identified by the genioglossus (*black circle*) and the lingual septum (*white arrowhead*). The lateral boundary of the submandibular space is formed by the fascial layers on the medial margin of the platysma muscle (*dashed white arrow*). (*B*) Coronal CT view at the level of the oral cavity. Sublingual space (*long black arrow*), submandibular space (*long white arrow*), mylohyoid muscle (*star*), genioglossus (black circle), and the lingual septum (*white arrowhead*), platysma muscle (*dashed white arrow*), buccinator muscle (*curved arrow*). (*C*) Inset: schematic of coronal plane through the oral cavity. The shaded purple area illustrates the horseshoe shaped configuration of the submandibular space and the bilateral continuity of the space ventral to the mylohyoid and anterior belly of the digastric muscles. (*Courtesy of* Indiana University School of Medicine Office of Visual Media, Indianapolis, IN; with permission.) *Abbreviations:* ABD, anterior belly of the digastric muscle; SMG, submandibular gland.