Sublingual Dermoid Cyst

By Tabassum K. Belim, MD [2] and S. L. Chudasama, MD [3]

An 18-year-old boy with complaints of swelling in floor of mouth since childhood and difficulty with movement of tongue. On physical examination, sublingual large swelling was noted. Overlying surface was reddish, however no signs for active inflammation seen. Ultrasound, contrast enhanced CT scan and MRI were done.

**Case History:** An 18-year-old boy with complaints of swelling in floor of mouth since childhood and difficulty with movement of tongue. On physical examination, sublingual large swelling was noted. Overlying surface was reddish, however no signs for active inflammation seen. Ultrasound, contrast enhanced CT scan and MRI were done.

On imaging, sublingual dermoid cyst with classical “Sack of Marbles” appearance on MRI was diagnosed.
Figure 1: Transverse grey-scale ultrasound image shows a well-defined, lobulated cystic lesion with internal echoes (arrows) in the submental region in midline.
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Figures 2a and b: Axial (2a) and sagittal (2b) CT images show a well-defined, homogenous, hypo-attenuating mass of approximate size (30 x 60 x 42) mm located in midline between two genioglossus muscle. It lies above the mylohyoid muscle, demarcating the location in floor of mouth and not sub mental space. Also noted is bilateral obstructed opening of wharton’s ducts and resultant dilatation.

Figures 3a, b and c: T1W axial (3a), T2W axial (3b) and T2W sagittal (3c) MRI scans show a well circumscribed mass lesion sharply circumscribed cystic mass lesion in floor of mouth, displacing mylohyoid muscle inferiorly, which appear hypointense on T1W and hyperintense on T2W images. T2-weighted MRI image shows the characteristic appearances of a midline dermoid cyst in the floor of mouth with a “sack of marbles” appearance due to presence of fat globules (arrowheads) within the dermoid cyst.)
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**Figures 4a and b:** Per-operative (4a) and specimen (4b) images followed by histopathological study confirmed the diagnosis.

**Findings:** Ultrasound findings show a well defined hypo echoic lesion in sublingual space with internal echoes and few twinkling artifacts. CT scan findings show a well defined nonenhancing low attenuation unilocular cystic lesion in midline of sublingual space. The lesion displaces both midline genioglossus muscles laterally and mylohyoid muscle inferiorly. No evidence of any internal fat density or calcified foci was noted. The cystic lesion obstructs opening of Wharton’s duct bilaterally with resultant proximal dilatation. MRI findings include a well defined cystic mass in the floor of the mouth having smooth margins, which follow intermediate T1-weighted and high T2-weighted signal intensity. The mass lies above the mylohyoid muscle.

**Discussion:** Dermoid benign teratoma is a developmental pathology. The occurrence of dermoid cyst in head and neck region varies between 7 percent and 10 percent. The floor of mouth (sublingual, sub mental and sub mandibular regions) is second most common site after orbit. The most popular theory regarding the origin of these lesions suggests that they are derived from epithelial rests which become enclosed during midline closure of the first and second branchial arches. Dermoid cyst is generally a painless slow growing swelling. They can manifest between five and 50 years of age with younger population affected predominantly. The male to female ratio is 3:1.

On CT, dermoid cysts commonly appear as low-attenuation, well-circumscribed, unilocular masses, hypo dense than muscle, that with or without presence of fat. The density of internal fatty content vary between (-10 to -100 HU).The wall of the cyst usually enhances following contrast administration.

MRI is an accurate, radiation-free, non-invasive modality for the diagnosis and helps in follow-up evaluation for lingual dermoid cyst. It has the advantage to delineate the cyst and precise its possible extension through the floor of the mouth. On MR imaging, Dermoid lesions have variable appearance, depending upon their fat content, being either hypointense or hyperintense to muscle on T1W images and typically hyperintense on T2W sequences. The characteristic appearances of a midline dermoid cyst in the floor of mouth is a “sack of marbles” appearance due to presence of fat globules on T2W images. A very close differential of dermoid cyst is an epidermoid cyst, which can be differentiated on MRI. Epidermoid cyst typically shows restricted diffusion on diffusion weighted images because of internal thick keratinaceous material.

The relationship between cyst and mylohyoid muscle is of great surgical importance. As intra-oral approach avoids cosmetic scar, preserves mylohyoid muscle function with a faster recovery. However, lesions that lie inferior to the mylohyoid muscle (submental and submandibular cysts) must usually be removed via an external approach. Multiplanar imaging in axial, coronal and sagittal planes are useful in this regard. In our case, as the cyst lies above the mylohyoid muscle, surgical removal was done by an intraoral approach.

**Differential diagnosis:** Epidermoid cyst, Ranula
References:

Dr. Tabassum K. Belim, Dr. N.U. Bahri, Dr. S. L. Chudasama
Department of Radiodiagnosis, M. P. Shah Medical College, Jamnagar, Gujarat, India

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