E-QUID: ANSWER / ENT

Dermoid cyst in the floor of the mouth. Answer to the e-quid ‘‘Dysphagia and snoring without odynophagia’’☆

A. Iannessi*, P.-Y. Marcy, G. Poissonnet, E. Giordana

Département de radiodiagnostic et radiologie interventionnelle oncologique, centre de lutte contre le cancer Antoine-Lacassagne, 33, avenue de Valombrose, 06186 Nice, France

Case report

A 66-year-old man consulted for dysphagia and ronchopathy (snoring) without odynophagia. The questioning only revealed moderate smoking (2 packages a week) without the consumption of alcoholic beverages. The physical examination detected arching of the floor of the mouth with retreat of the tongue as well as ulceration of the posterior floor.

The first intention sonography detected a lesion of the floor of the mouth (Fig. 1), an orthotopic thyroid and the absence of adenopathies. An injected scan (Fig. 2) and a cervicofacial MRI (Fig. 3) were then carried out.

Figure 1. Coronal sonograph section of site Ia.

DOI of original article: http://dx.doi.org/10.1016/j.diii.2012.09.007.
☆ This is the answer to the case ‘‘Dysphagia and snoring without odynophagia’’. As a reminder we publish again the entire case followed by the answer.
* Corresponding author.
E-mail addresses: antoine.iannessi@nice.fnclcc.fr, antoineiannessi@gmail.com (A. Iannessi).
Figure 2. CT scan centred on the floor of the mouth after injection of contrast agent with multiplanar reconstruction in the coronal plane: a: sagittal section; b: coronal section; c: axial section passing by the dotted line.

Figure 3. MRI of the floor of the mouth: a: axial T2 weighted image at the mandibular level; b: axial T2 weighted image at the submandibular level; c: coronal section in sequence on T1 after injection of gadolinium.
What is your diagnosis?

After reading the case report, what diagnosis would you choose from the following proposals:
- plunging ranula;
- lingual carcinoma;
- dermoid cyst;
- second branchial cyst;
- lingual haematoma.

Diagnosis

Dermoid sublingual cyst extended at the base of the symptomatic tongue. Diagnostic certainty carried out after surgical removal and objectifying the absence of thyroid cells.

Comments

The imaging identifies an anterior and medical lesion of the floor of the mouth. The content is pseudosolid thick in the sonogram (Fig. 4). The MRI signal is homogenous, of liquid type, in distinct hypersignal on T2 and intermediate signal on T1 (Figs. 5 and 6). The formation is found above the mylohyoid muscles and divides the intermuscular space of the genioglosses to enter the base of the tongue, as shown in the front sections (Figs. 4, 5b, 6c). There is neither pairing with the hyoid bone or extension to the submaxillary space (Figs. 5a, 6b). After injection, the walls are fine and not enhanced (Figs. 5, 6c). In short, it consists of a median digastic cyst of the sublingual space and extending to the base of the tongue. Without inflammatory enhancement and cervical adenomegaly, a dermoid cyst without fusion of the median raphe is considered. It was not possible to formally eliminate the diagnosis of cyst of the thyroglossal tract before the histological examination.

Discussion

The aetiological diagnosis of cervical masses falls into three major nosographic categories: inflammatory, neoplastic and congenital [1].

The clinical diagnosis often helps with the diagnosis. Since an inflammatory mass is always painful, abscesses are easy to recognise. In case of blood dyscrasia or posttraumatic context, it is necessary to consider the possibility of a superficial or intramuscular haematoma. The factors of a risk of cancer of the upper aerodigestive tract such as smoking and the consumption of alcohol should systematically be investigated since, after the age of 40, neoplastic causes account for 80% of all cervical masses. However, congenital causes predominate in the young adult. The specific imaging of the liquid or solid structure and the topography thereby help direct the diagnosis. When a cervical mass is cystic, the aetiological range is restricted (Table 1) [2].

Dermoid cyst accounts for about 15% of all congenital tumours. It consists of a superficial, painless, mobile mass with respect to the deep levels. It is median since it embryologically corresponds to an inclusion of ectodermic cells by non-fusion of the median raphe [3]. It is classically found in the digastic region. The sublingual form with endobuccal development located above the mylohyoid muscle between the genien muscles is distinguished from the superficial submental form under the mylohyoid muscle [3,4]. Less often in the suprasternal region, they are not mobile while swallowing and remain superficial, thereby differing from a thyroid disease [2]. More rarely in the ad hyoid position, the differential diagnosis with a cyst of the thyroglossal tract may be difficult. Clinically, the dermoid cyst is more mobile with respect to the deep level and non-ascended during swallowing. The sonogram finds median tumefaction independent of the hyoid bone whose content is often pseudosolid homogenous (cell content) or mixed heterogeneous (presence of fats, teeth, etc.). The scanner or MRI may reveal a fat/liquid level or floating fatty lobules with a characteristic marble appearance [2,3]. More rarely, it consists of a cyst with a simple appearance. The imaging in sections is also useful for the deep extension of the lesions when a preoperation assessment is required. The treatment is surgical and wide involving the body of the hyoid bone for the ad hyoid forms.

Cysts of the thyroglossal tract are the most common congenital tumours in the adult. Their embryological origin is in the craniocaudal migration of thyroid cells on the thyroglossal tract from the basilignale foramen caecum [5]. It consists of a median or paramedian tumefaction fixed at the deep level, adhering to the hyoid bone (most often just below) and therefore ascended with protraction of the tongue and swallowing. Upon questioning, episodes of painful inflammatory outbreaks are found. The sonogram provides the positive diagnosis by finding a homogenous echo-free median mass with even walls. In case of inflammation or internal haemorrhage, it may be hypoechogenic with internal debris. The MRI reveals an invariable T2 hyper-signal but the signal on T1 may be hypo- or hypersignal in case of protein content. In this case, the sonogram reveals a thick pseudosolid content. The preoperation assessment should take into account the associated risk of cancer (1% thyroid carcinoma). This is why a cytopuncture is required if the content is not purely cystic and that removal is not
Figure 5. CT scan centred on the floor of the mouth after injection of contrast agent with multiplanar reconstruction in the coronal plane: 
a: sagittal section; b: coronal section; c: axial section passing by the dotted line. Homogenous liquid formation without fatty density centred in the floor of the mouth only above the mylohyoid muscles (full arrow). The mass is responsible for the separation of the genioglossal muscles (arrow head).

Figure 6. MRI of the floor of the mouth: a: axial T2 weighted image at the mandibular level; b: axial T2 weighted at the submandibular level; c: coronal section on T1 after injection of gadolinium. Homogenous median liquid lesion with thin wall on hypersignal T2 and intermediate signal on non enhanced T1. Supramylohyoid lesion (full arrow) extending to the base of the tongue through the genioglossal muscles (head of the arrow). Nothing specific is observed in the submaxillary chamber (empty arrow).
planned [2,6]. Moreover, it is necessary to make sure that the normal thyroid tissue is healthy and in place. The differential diagnosis of ectopic thyroid by lack of migration is generally carried out at birth when confronted with congenital hypothyroidism. Finally, since an incomplete exeresis favours recurrence, the treatment consists of wide exeresis according to Sistrunk’s protocol, that is, the resection of the cyst associated with the body of the hyoid bone and a basilopalatine muscular cone. In order to plan for the act, it is possible to carry out a cysto-fistulography in order to check the path to the foramen caecum and its unique or multiple nature.

The thymic cyst is a rare lesion, most often discovered by chance [7]. It is related to the sequestration of remnants from the thymopharyngeal tract during the embryonic thymic migration. For this reason, it may be found from the angle of the mandible to the superior mediastinum. The sonograph reveals a simple well-defined cystic lesion, most often located under the thyroid and in contact with the carotid. The appearance in the sonograph and MRI indicate a cyst with mucoid content (10 to 25 UH and hypersignal on T2 and intermediate signal on T1).

Fistulae of the pharyngeal arches are superficial and resistant lateral cervical swellings whose cystic nature is indicated by the imaging. Embryologically, they are so abnormal that the second arch does not cover the third and fourth arches [3]. In 95% of the cases, it therefore consists of remnants of the second pharyngeal arch appearing like a cystic mass of the mandibular angle, most often in the child and young adult [8]. Since the cyst results from a blind fistula extending from its inferior-external orifice always located in front of the anterior edge of the sterno-cleido-mastoid muscle at its superior-internal tonsill orifice. The appearance on the CT and MRI imaging is that of a cyst in ambiguous position between the aforementioned muscle and the submandibular gland and always superficial to the jugulo-carotid axis. The simple or complex presentation depends on the inflammatory history (hyper on T2, variable signal on T1, debris or septa). The differential diagnosis of cystic adenopathy of a papillary carcinoma of the thyroid or epidermoid should be raised [9]. The existence of an internal pharyngeal fistula is suspected in imaging when faced with a spout-like medial cystic extension and verified by endoscopy. More rarely, it may involve a cyst of the first, third or fourth pharyngeal arch, located in front of the internal auditory meatus, at the mediocervical level and the basiocervical level, respectively [10].

The sublingual mucocele or ranula is a sialocele due to cystic mucous retention secondary to the obstruction of the sublingual gland or its canal (more rarely the accessory glands). There is a simple form and a plunging form [2]. The simple form is restricted to the sublingual gland and corresponds to a true cyst with an epithelial coating. The anatomic location is specified in the imaging: it is located in the floor of the mouth above the mylohyoid muscle and outside of the geniohyoid muscle. The plunging form corresponds to an extension in the submandibular space by the free edge of the mylohyoid muscle. Most often, an extension of the spout-shaped cyst is observed in the submandibular region. This form corresponds to a pseudocyst where the posterior epithelial wall is broken. It consists of a single-loculated cyst with some debris visible in the sonograph. The homogenous and very high MRI signal on T2 is constant. As a function of the protein content of the secretion, the signal on T1 is hypointense or intermediate [11].

In conclusion, cystic masses in the adult are mainly congenital even if a neoplastic cause has to be in principle eliminated after the age of 40. Imaging is the key to the diagnosis, best detecting the seat of these lesions.

### Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

### References


---

**Table 1 Different aetiologies of cystic cervical masses according to their location.**

<table>
<thead>
<tr>
<th>Region</th>
<th>Cyst Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>Dermoid cyst +++</td>
</tr>
<tr>
<td></td>
<td>Mucocele</td>
</tr>
<tr>
<td>Ad-hyoid</td>
<td>Cyst of the thyroglottal tract +++</td>
</tr>
<tr>
<td>Subhyoid</td>
<td>Submandibular cyst of the parotic</td>
</tr>
<tr>
<td></td>
<td>Cyst of the 2nd pharyngeal arch</td>
</tr>
<tr>
<td></td>
<td>Plunging mucocele</td>
</tr>
<tr>
<td></td>
<td>Cystic metastatic adenopathy of an epidermoid</td>
</tr>
<tr>
<td>Jugulo-carotid</td>
<td>Metastatic cystic adenopathy of an epidermoid</td>
</tr>
<tr>
<td></td>
<td>or thyroid</td>
</tr>
<tr>
<td></td>
<td>Cyst of the 2nd, 3rd or 4th pharyngeal arch</td>
</tr>
<tr>
<td>Spinal</td>
<td>Lymphangioma (paediatrics)</td>
</tr>
<tr>
<td></td>
<td>Metastatic adenopathy of an epidermoid</td>
</tr>
<tr>
<td></td>
<td>Necrotic tubercular adenopathy</td>
</tr>
<tr>
<td>All regions</td>
<td>Haematoma, Abscess</td>
</tr>
</tbody>
</table>

---


