



Epidermoid Cyst of the Floor of the Mouth

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Abstract

Dermoid cysts are benign lesions that rarely occur in the floor of the mouth. They can be divided in epidermoid, dermoid and teratoid cysts. In this report the case is presented of a 17 year old female patient with a painful swelling in the left submandibular area. After extensive diagnostics, repeatedly performed cytologic puncture pointed towards a dermoid cyst. The diagnosis epidermoid cyst was made postoperatively, by histologic examination of the surgically removed lesion.

Although the final diagnosis of an epidermoid cyst is made by histologic examination, additional imaging is of great importance for preoperative knowledge of size, character, localization and relation to surrounding structures of the lesion.

Despite (epi) dermoid cysts being relatively uncommon in the head and neck region, this case as well as case reports in literature show that a swelling located in the neck can be caused by an (epi) dermoid cyst.

Keywords: Submandibular swelling; Dermoid cyst; Epidermoid cyst; Radiology diagnostics; Surgical approach

Introduction

Dermoid cysts are benign lesions that usually occur in areas of embryonic fusion. The content of the cyst lining determines the histologic categories of the cyst. They can be divided in epidermoid cyst [1], if no appendages are present Submandibular [2], 'true' dermoid cyst, containing skin appendages or teratoid cyst if tissues of all three germ layers [3], like muscle, bone, cartilage and teeth are present within the cyst.

Comparable and clinically similar cyst lesions can occur in the head and neck region, which makes the diagnosis difficult. In addition, there are different management protocols available to treat these different types of cystic lesions. Although (epi) dermoid cysts are relatively rare in the head and neck region, this diagnosis should always be considered.

In this case report, a case of an epidermoid cyst in the floor of the mouth will be presented in which difficulties with diagnosing were encountered. In addition, the value of investigations and management strategies will be discussed.

Case Presentation

A 17 year old female patient was referred to an ENT department to examine a painful swelling in the left submandibular area, first noticed four weeks before. There was no relationship between the discomfort and eating. The patient had no medical history, did not use any type of medication and did not smoke. Physical examination showed a solid submandibular mass with some fluctuation on the left side of the neck. Intraoral examination showed a mass at the location of the sublingual gland.

Ultrasound investigation showed a 6 cm × 3 cm × 4 cm well-circumscribed homogeneous mass extending from the left submandibular area across the midline. The diagnoses cervical ranula and enlarged submandibular gland were considered. Fine needle aspiration cytology of the lesion contained no material. An MRI scan was performed and showed a lesion with low intensity on T1-weighted imaging and high intensity on T2-weighted imaging. Within the lesion there were some low intensity structures on T2-weighted imaging. After Gasoline administration no enhancement of the lesion was seen. The lesion was located above the mylohyoid muscle. Based on physical examination, ultrasound and MRI-scan, ranula appeared to be the most likely diagnosis. Aspiration cytology was repeated to confirm diagnosis before planning surgical removal of the mass. This material appeared to consist predominantly of coreless squamous cells. Now considering a dermoid

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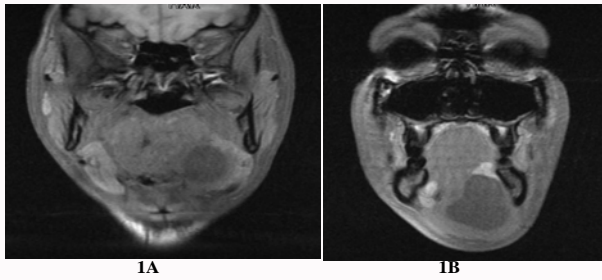


Figure 1: MRI scans (T1-weighted imaging): shows cystic lesion (Figure 1A) with low signal intensity above the mylohyoid muscle (Figure 1B) with a maximum diameter of 5.7 cm.

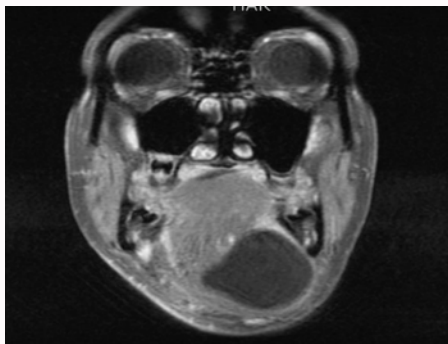


Figure 2: MRI scan (T1-weighted imaging after Gasoline administration): no enhancement was seen.

cyst rather than a cervical ranula, the mass was excised under general anesthesia. Following its considerable size, an extraoral approach was chosen, using a midline submental horizontal incision, whereupon the cyst was removed by dissecting it from the surrounding tissues. Histopathologic examination revealed an epidermoid cyst.

Discussion

Histologic classification of dermoid cysts in the floor of the mouth as proposed by Meyer [1] is most commonly used in recent literature. All dermoid cysts are epithelial-lined. The content of the cyst determines the histologic category of the cyst. If it does not contain skin appendages, the cyst is called epidermoid. In “true” dermoid cysts skin appendages, such as hair follicles, sebaceous glands and sweat glands are present. If tissue structures of all three germinal layers (ectoderm, mesoderm and endoderm) are present, the cyst is called teratoid. This tissue structures can be skin appendages, connective tissue derivatives such as fibers, bone, muscle and blood vessels and respiratory and gastrointestinal tissues [1]. Dermoid cysts in the floor of the mouth constitute only 1% to 2% of all dermoid cysts. A review of documented floor of the mouth cysts shows that 105 of the 144 (72.9%) histologically examined cysts were diagnosed as dermoid cysts, 32 (22.2%) cysts were epidermoids and 7 (4.9%) were teratomas [2].

In literature, the pathogenesis of dermoid cysts is divided into congenital or acquired cysts [2]. The congenital cyst originates from entrapped embryonic cells in the midline during fusing in the third and fourth week in utero of the mandibular (first) and hyoid (second) branchial arches [2,3]. Acquired cysts may be due to the implantation of epithelial cells subsequent to traumatic implantation, by either surgery or an accident [3]. A review of dermoid cysts located in the floor of the mouth revealed that 14.9% of the patients were newborns.

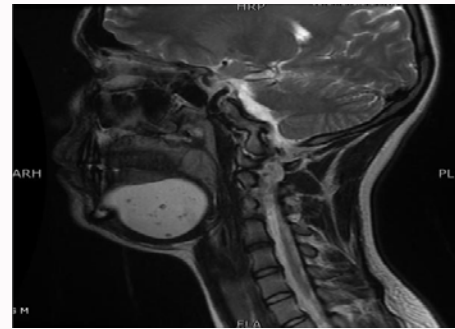


Figure 3: MRI scan (T2-weighted imaging) shows cystic lesion with high signal intensity. Within the lesion there are some low intensity structures, maximum diameter 5.7 cm x 4.4 cm.

In this review the average age of the patient at the time of surgery was 20 years [2]. Literature shows slightly more men than women presenting themselves with a dermoid cyst [2,4].

Anatomically, dermoid cysts can be described by the anatomic relationship between the cyst and the muscles of the floor of the mouth [5]. Some studies state that dermoid cysts always appear above the mylohyoid muscle, but can be found on either side of the musculature of the tongue [2,6]. Other studies question the existence of these lateral cysts and state that lateral cysts in fact are central cysts which have undergone displacement [2,3].

Dermoid cysts of the floor of the mouth generally are slow growing and painless [2,3,6]. When symptoms are present they may be caused by pressure on surrounding structures. Clinical presentation of the cysts depends on the size of the cyst and the positional relationship of the cyst to the mylohyoid muscles. Mass lesions above the mylohyoid muscle manifest as a swelling in the sublingual area. Because dermoid cysts can displace the tongue symptoms as dysphagia, dysphonia and dyspnea can occur. Lesions below the mylohyoid muscle manifest as a swelling in the submental area, causing a double chin appearance. Large lesions may, however, cover more than one anatomical area, as was the case in the presently reported patient [2-4,6]. During physical examination the mass is usually felt as a dough-like mass without associated lymphadenopathy [2].

The present case was, after anamnesis and physical examination, thought to be a cervical ranula. The differential diagnosis of a swelling located in the neck includes ranula, thyroglossal duct cyst, cystic hygroma, cystic lymphangioma, dermoid cyst, and blockage of the submandibular gland duct, neoplasm of the sublingual or minor salivary glands, malignant lymphoma, ectopic thyroid tissue and acute infection [2-4].

Although the definitive diagnosis of an epidermoid cyst is made by histologic examination [7], additional tests are of great importance for making a preoperative diagnosis. They provide the surgeon important preoperative information on size and localization of the lesion. In this case, it was necessary to use ultrasonography, Magnetic Resonance Imaging (MRI) and repeated cytologic examination by (fine) needle aspiration biopsy. Ultrasonography represents the first choice of imaging technique because it is reliable, economical and it does not contain x-ray exposure. Ultrasound examination may help to differentiate between solid, vascular and cystic lesions [4,6,7]. MRI supplies important information on the content of the lesion, the extension and the relationship between the lesion and the surrounding tissues [5]. In addition, a sublingual gland showing a

tail sign towards a cyst-like lesion can point to the diagnosis cervical ranula [8].

In our case fine needle aspiration of the lesion contained no material. MRI showed a lesion with low intensity on T1-weighted imaging and high intensity on T2-weighted imaging. Some low intensity structures were seen within the lesion on T2-weighted imaging. After Gasoline administration, no enhancement of the lesion was seen.

In literature, the diagnostic value of fine needle aspiration cytology in diagnosing dermoid cysts varies [2,4,9]. A high signal on T2-weighted imaging can be used to verify the cystic character of a lesion seen by ultrasound. After Gasoline administration, contrast-enhanced MRI images provide information on the thickness and vascularization of the cyst wall. A T1-weighted image provides particularly important information on the lesion and the surrounding tissues [5].

Based on physical examination, ultrasound and MRI, a diagnosis of ranula was made, despite no amylase was obtained from the lesion. The characterizing tough yellow secretion containing proteins, histiocytes and high levels of amylase is not always obtained when a ranula is diagnosed [8]. To confirm this diagnosis, cytologic function was repeated by large needle aspiration using ultrasound. The obtained material contained epithelial cells, which excluded the diagnosis of ranula.

The treatment of choice for a dermoid cyst of the floor of the mouth is surgical excision. The cyst can be surgically removed either by intraoral approach or extra oral approach [2,4]. Based on literature, the location of the cyst and its relationship to the muscles of the floor of the mouth mostly determines the surgical approach [2].

Most authors prefer the intraoral approach for sublingual cyst above the geniohyoid muscle and the extraoral approach for submental or submandibular cyst below the geniohyoid muscle. The extraoral approach is also mostly preferred in very large sublingual cysts [2,4,6].

Conclusion

Despite (epi) dermoid cysts being relatively uncommon in the head and neck region, this case and case reports in literature show that a swelling located in the neck can be caused by an (epi) dermoid cyst. The differential diagnosis is extensive and without histological examination a final diagnosis cannot be made. Additional imaging is not always sufficient in making a diagnosis, but is essential for surgical removal of the lesion. If the diagnosis (epi) dermoid cyst is found most likely, the cyst can be removed surgically either by an intraoral or an extraoral approach. To decide which approach is going to be used, size, localization, relation between the cyst and surrounding tissue as well as the cosmetic results are of importance.

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