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CASE REPORT

Midline Neck Swelling – Diagnostic Dilemma and a Case Report

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ABSTRACT

Neck masses are commonly encountered and present at all ages. The midline cysts can be classified according to its relationship to muscles of floor of mouth as sublingual and submental cysts. Histologically, three different types of midline cysts are seen; epidermoid, dermoid and teratoid. Diagnosis of midline neck swellings maygive a myriad of options, ranging from ranula, thyroglossal duct cyst, cystic hygroma,cystic lymphangioma, epidermoid, dermoid and teratoid cysts to benign or malignant neoplasms of the mucosa. Careful history and examination have to be complemented with other diagnostic aids such as conventional radiography, ultrasonography, aspiration cytology and computed tomography to arrive at a correct diagnosis. This is a case report presenting submental swelling which was diagnosed as a dermoid cyst provisionally; upon excision, came out to be benign infected cyst.

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INTRODUCTION

Neck masses are commonly encountered and present at all ages. The differential diagnosis of a neck mass is extensive [1]. Most neck masses of specific cause occur in rather predictable locations within typical age groups. The patient`s age should be a prime consideration in the diagnosis. The location of the neck mass is the second variable that is particularly important in the differential diagnosis [2]. These can be separated into three main categories: inflammatory, neoplastic and congenital, the most common being inflammatory [3].

Diagnosis of midline neck swellings may give a myriad of options, ranging from ranula, thyroglossal duct cyst, cystic hygroma, cystic lymphangioma, epidermoid, dermoid and teratoid cysts to benign or malignant neoplasms of the mucosa or salivary glands and also rare skin appendage tumours like pilomatricoma. Careful history and examination have to be complemented with other diagnostic aids such as conventional radiography, ultrasonography, aspiration cytology and computed tomography to arrive at a correct diagnosis [4].

Dermoid cysts in the head and neck are relatively uncommon, present in the midline either above or below the mylohyoid muscle thus differentiating it into sublingual and submental dermoids and can grow to a massive size before presenting symptoms if it breaches the mylohyoid muscle. They are most often diagnosed in the second or third decade of life. It is distinguished from epidermoid cysts by the presence of an epidermoid lining [4].

Here we present a case of a submental swelling which was diagnosed as a dermoid cyst provisionally; upon excision, came out to be benign infected cyst.

CASE REPORT

A 32 year old female patient reported to the Department of Oral and Maxillofacial Surgery with the chief complaint of swelling in the neck. It was 2 years since the patient first noticed a soft tissue swelling below the chin that was painless and gradually increased since then [Figure 1]. There was no difficulty in swallowing or breathing. Congenital, familial, personal and past medical history were clear. Upon examination, a soft, painless roughly round swelling was present in the midline of theneck at the submental region which extended vertically from symphysis of the mandible to two finger

breadth above thyroid cartilage and horizontally was confined to inferior border of body of mandible bilaterally. The swelling was normal in colour and temperature with no movement seen with respiration or deglutition, although there was slight movement with protrusion of tongue. None of the lymph nodes in the neck were palpable or tender. Upon intraoral examination, the floor of the mouth was slightly raised anteriorly, no surface changes present and no restriction seen in tongue movements [Figure 2]. Both fluctuation and transillumination tests were negative. Thorough blood workup was done and all routine serological tests were observed within the normal range. FNAC findings revealed squamous epithelial cells and inflamed cystic lining suggestive of thyroglossal duct cyst (?). Patient was then taken up for MRI neck and face for further evaluation. In the T2 weighted MRI, a 5.5cm x 3.5cm dumbbell shaped hyper-intense cystic lesion was seen traversing the mylohyoid muscle of left side crossing the midline upto the subcutaneous plane [Figure 3,4]. An initial diagnosis of dermoid cyst was formulated provisionally based on clinical and radiological findings.

Figure 1 – Represents Extra-oral picture of midline neck swelling.

Figure 2 – Represents Intra-oral examination revealing slightly raised floor of mouth.

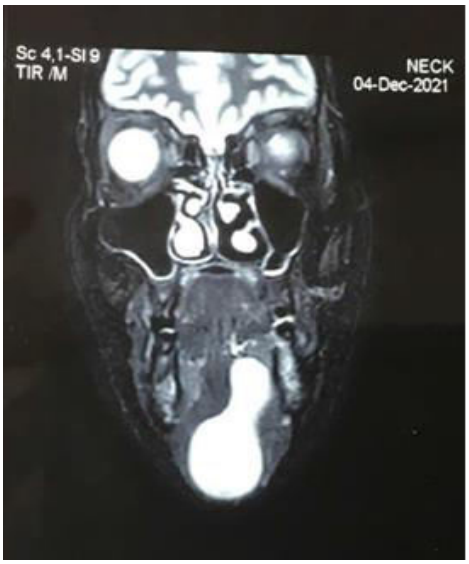

Figure 3 – Represents T2-weighted MRI coronal section showing dumb-bell shaped hyperintense cystic lesion.

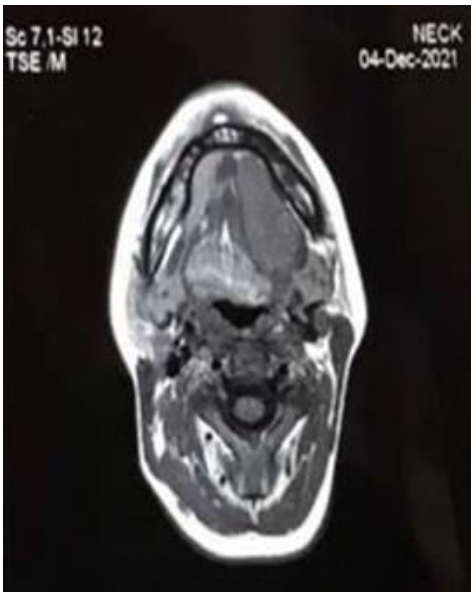

Figure 4 – Represents axial MRI section.

Management

The patient was then planned for surgical excision under general anaesthesia. Under strict aseptic protocol the patient was painted with 10% povidine iodine solution. A submental incision, 4cm in length was given approximately 2 finger breadth below the inferior border of mandible. A subplatysmal flap was raised, after which fine dissection was done around it's margins to raise the superficial layer of deep cervical fascia. The anterior bellies of both digastric muscles were reflected and the cystic lesion was freed from adjacent anatomic structures using blunt finger dissection [Figure 5]. Thorough check was kept so as not to lacerate the mylohyoid muscle. The lesion was excised in toto and sent for histopathological evaluation [Figure 6].

Figure 5 – Represents surgical excision of the cystic lesion using extra-oralapproach.

Figure 6 – Represents surgically excised cystic lesion en toto.

Histopathology

Upon gross examination the cyst was 5.5 x 3.5 x 1 cm in size, irregular in shape and presented grey yellow to brown colour. On cut section, thick white coloured fluid oozed out and the inner surface shows focal areas of haemorrhage. Under microscopic examination, a cyst wall lined by stratified squamous epithelium was seen. The cystic wall was ulcerated at places, replaced by granulation tissue and infiltrated by lymphocytes, plasma cells, macrophages and histiocytes. After clinical, radiological and histopathological correlation the final diagnosis was made of benign infected cyst [Figure 7].

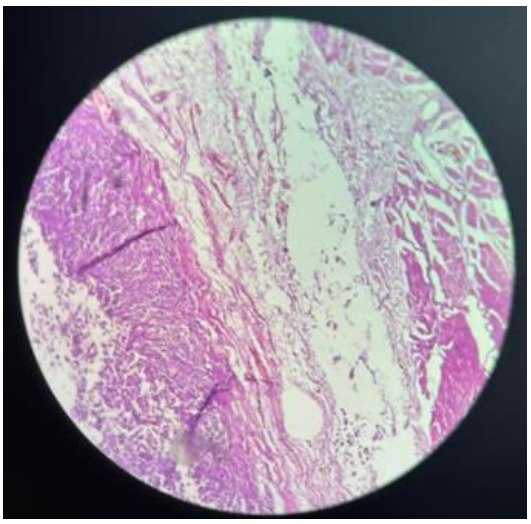

Figure 7 – Represents histopathological slide of the excised cystic lesion showing a cyst wall lined by stratified squamous epithelium and infiltration of lymphocytes, plasma cells, macrophages and histiocytes.

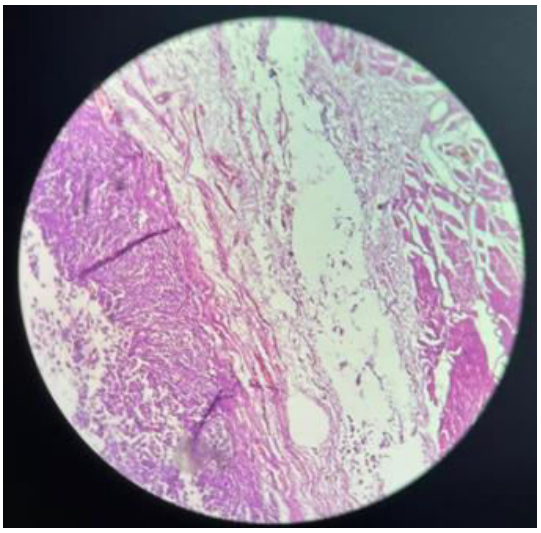

Figure 7 – Represents histopathological slide of the excised cystic lesion showing a cyst wall lined by stratified squamous epithelium and infiltration of lymphocytes, plasma cells, macrophages and histiocytes.

DISCUSSION

Cystic masses in the head and neck region are common presentations. Only 7% of all the epidermoid and dermoid cysts are found to occur in the head and neck area, 1.6% in the oral cavity, and constitutes only 0.01% of all the oral cysts [5].

The cysts in the midline are hypothesized to be caused due to one of the following:

1. Entrapment of ectodermal tissues of first (mandibular) and second (Hyoid) branchial arches, which is called dysdontogenic hypothesis.
2. Traumatic implantation of epithelial cells into deeper tissues which suggests traumatic cause [4].

The cysts of the midline can be classified according to its relationship to muscles of floor of mouth.

Sublingual cysts present as swelling in the floor of mouth and situated above the mylohyoid and genioglossus muscle whereas submental cysts are present below the chin and situated between mylohyoid and geniohyoid muscle. Histologically, three different types of midline cysts are seen; epidermoid (simple), dermoid (compound) and teratoid (complex). Epidermoid cysts are always lined by stratified squamous epithelium without dermal appendages, whereas dermoid cyst, in addition contains dermal appendages like hair follicles, hairs, sebaceous and sweat glands. The teratoid or complex cysts exhibit lining and wall with tissue structures derived from all three germ layers; ectoderm, endoderm and mesoderm [4]. Epidermoid cysts are categorized into congenital and acquired type depending on its development [6].

The benign congenital/acquired cystic lesions show delayed presentation, mostly during 15-35 years of age. Mass lesion above the mylohyoid pushes the tongue above causing mechanical obstruction, while that below it causes its protrusion into the chin, in front of the neck. Surgical excision is the treatment of choice and grossly, depending upon its position with respect to the muscle plane in the floor of the mouth, it may be removed either perorally (small sublingual lesions, above the geniohyoid) or externally (cervical approach; large lesions extending to the neck in the submandibular or submental region, or large sublingual lesion, when below the geniohyoid) [5].

The differential diagnosis of submental and sublingual benign lesions are plunging ranula, thyroglossal cyst, lymphatic malformation (cystic hygroma), mucocele, branchial cleft cyst, haemangioma, enlarged lymph nodes, and infective lesions. Bimanual palpation and conventional radiography cannot differentiate the lesions. Ultrasound, magnetic resonance imaging (MRI), and fine-needle aspiration cytology (FNAC) are the preferred modality for the preoperative diagnosis [6].

Plunging ranula most commonly presents as a painless, soft, fluctuant and balottable neck mass. It most frequently occurs in patients under the age of 30 years. When the neck mass was squeezed, a swelling ballooned up in the floor of mouth. On release, it returned to normal which was not seen in our case [7].

Thyroglossal duct usually atrophies around 10^{th} week of gestation. Incomplete obliteration of the duct gives rise to thyroglossal duct cysts (TGDCs), which are the most common congenital neck mass, with a 7% population prevalence. The cyst usually presents as a painless, asymptomatic soft mass which are prone to infection and can also cause dysphagia [8]. Because of its relationship to both the hyoid bone and foramen caecum, the cyst typically moves cranially with swallowing and protrusion of the tongue [9].

Cystic hygroma presents mostly at birth, it is a congenital malformation of the lymphatic system. Most of these tumors are identified by the time the patient reaches the age of 3 to 5 years. The most common site is the posterior triangle of the neck. Although the embryologic origin is not clear, it occurs due to failure of primary lymph spaces to join the central lymphatic system (thoracic duct and right lymphatic duct) and the venous system. It manifests as a large, deep, diffuse swelling which vary from a painless, enlarging mass to respiratory compromise, dysphagia and difficulty in feeding. On palpation, it is often doughy and usually transilluminant [10].

Lipoma is a soft cystic mass which has a characteristic `Slip Sign` whereas Haemangioma/AV malformation may present with some discoloration, pulsatile swelling or bruit heard on palpation.

Surgical excision with complete capsule removal is the treatment of choice for submental benign cystic lesion. The lesions above the mylohyoid muscle are approached intraorally and lesions below the mylohyoid muscles are removed by extraoral approach. In our case, extra-oral approach was used for excision. Histopathological examination confirms the lesion as benign infected cyst.

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