Original Article

Dermoid Cysts of the Oral Cavity as Seen in a Nigerian Tertiary Institution

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ABSTRACT

Introduction: Dermoid cysts are rare congenital lesions derived from pluripotential cells. They represent less than 0.01% of all oral cavity cysts and are also called non-odontogenic cysts. Dermoid cysts are frequently found in sites where embryonic parts fuse together. The majority of reported cases are in the midline of the body, as well as in the ovaries and in the testicles

Patients and Methods: A retrospective analysis study that spanned the period of 2000-2012 was carried out at the Oral and Maxillofacial Surgery clinic of the Ahmadu Bello University Teaching Hospital, Zaria. The parameters studied included age, sex, duration of swelling, site, co-morbidity, complications and treatment.

Results: Of the 16 patients, 10 (62.5%) were males and 6(37.5%) females in a ratio of 1.67:1, the age ranged between 2 months and 49 years. Of all the cysts, 11 were sublingual, 3 in the cheek, 1 sublingual-submental and1 lingual; 6 (37.5%) patients had co-morbid symptoms and the most common was Upper respiratory tract infection (100%) followed by anemia (2 patients) and measles one patient.

Conclusion: Dermoid cysts can be congenital or acquired. Their early presentation were associated with both feeding and respiratory symptoms.

Key words: Cyst, dermoid, oral cavity

How to cite this article: Fomete B, Saheeb BD, Onyebuchi EP, Ogbeifun JO. Dermoid cysts of the oral cavity as seen in a Nigerian Tertiary Institution. Niger J Surg Res 2013;15:3-6.

INTRODUCTION

Dermoid cysts are rare congenital lesions derived from pluripotential cells.[1]. They represent less than 0.01% of all oral cavity cysts[2,3] and are also called non-odontogenic cysts.[1] Their etiology is unknown. Embryologically, the most reliable theory is that trapped pluripotential cells are a result of the inclusion error, during the early weeks of the intrauterine life, and they subsequently develop into one or all three germ layer–ectoderm, mesoderm and endoderm tissues. The differentiation of these germ layers can produce skin adnexa (such as hair, sudoriparous and sebaceous glands), muscle, bone, cartilage, teeth, and mucous membranes.[1,4] They may occur because of trauma, infection, or spontaneous autonomous new growth.[1]

Dermoid cysts are frequently found in sites where embryonic parts fuse together. The majority of reported cases are in the midline of the body as well as in the ovaries and testicles. In the oral cavity, they are also classified as non-odontogenic cystic lesions; the most frequent sites are the midline of the floor of the mouth (sublingual or submental) and hard palate. Rare cases are reported in the tongue, the cheek, and the parotid gland, and very rare cases in the maxilla and mandible.[1] There is no sex predilection. They appear around the second or third decade of life as slowly enlarging masses.[1-3,5] They are asymptomatic but their slow enlargement can cause obstruction with consequent dysphagia, dysphonia, and eventually dyspnea.[1] The size of dermioid cysts is extremely variable (up to 10 cm in diameter) and it depends on their first clinical manifestation.[1]

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Access this article online	
Quick Response Code:	Website: www.njsrjournal.org
	DOI: 10.4103/1595-1103.141381

Histologically, all dermoids are lined by epidermis. The contents of the cyst lining determine the histological category of the cyst: Epidermoid, if epidermis is lining the cyst; dermoid, if skin adnexa are present; or teratoid, if other tissues such as muscle, cartilage, and bone are present.[1,2] In the current literature, the term "dermoid cyst" often refers to all types of these lesions.[1]

The treatment is surgical removal. The approach may be either intraoral or extraoral, depending on the localization and size of the mass.[1,3] Few cases of dermoid cysts were reported in our environment.[6]

This paper presents 16 cases of dermoid cysts and their management and the challenges involved.

PATIENTS AND METHODS

A retrospective analysis study that spanned the period of 2000-2012 was carried out at the Oral and Maxillofacial Surgery clinic of the Ahmadu Bello University Teaching Hospital, Zaria. The parameters studied included age, sex, duration of swelling, site, co-morbidity, complications, and treatment. All patients with suspected dermoid cysts were included in the study. As the lesions were not fluctuant and did not transilluminate, we made a provisional diagnosis of dermoid cyst based on the appearance of the aspirate. This was confirmed by the histopathological result after the cysts were excised under general anesthesia and sent to the histopathology laboratory. In addition, all patients had routine ancillary laboratory investigations such as hematological and chemical pathology. The approach used here was intraoral under general anesthesia with nasotracheal intubation.

RESULTS

Of the 16 patients, 10 (62.5%) were males and 6 (37.5%) females in a ratio of 1.7:1. The age ranged between 2 months and 49 years, with a mean of 13.3 years. Of all the cysts, 11 (68.8%) were sublingual, 3 (18.8%) in the cheek, 1 (6.2%) sublingual–submental, and 1 (6.2%) was lingual. Six (37.5%) patients had co-morbid symptoms, and the most common was upper respiratory tract infection with all 6 infected, followed by anemia (2 patients) and measles one patient. Seven patients had their lesions aspirated several times, and the highest was 6 times on a male patient followed by another male with 4 aspirations. All 16 patients underwent cystectomy via intraoral approach.

DISCUSSION

Meyer classified cysts of the floor of the mouth into three groups namely, epidermoid, dermoid, and teratoid.[7,8] Histologically, midline cysts of the floor of the mouth are divided three types: Epidermoid cysts consisting of an epithelial-lined wall that may be partly keratinized, dermoid cysts showing evidence of skin appendages such as hair follicles, hair, and sweat and sebaceous glands, and teratomas containing mesodermal elements such as bone, muscle, respiratory and gastrointestinal tissues, and a fibrous capsule in addition to skin appendages. The latter type may have malignant potential.[3,7,8]

The origin of dermoid cysts is embryological. It has been suggested that dermoid cysts are derived from epithelial debris or nests that are trapped during the midline closure of the first and second branchial arches. Earlier authors attributed the non-epithelial structure found in the dermoid cysts to the entrapment of totipotent cells in the midline during the closure of the first and second arches–a view also shared by other authors who, however, differentiated dermoid cyst into congenital and acquired,[9-11] but they do not vary clinically or histologically.[12] The congenital type appeared during the developmental fusion in the body, while the acquired type resulted from some previous injury that drove epithelial cells into the dermis.[9,12] Congenital cysts are dysembryogenetic lesions that arise from ectodermal elements entrapped during midline fusion of first and second branchial arches between the third and fourth weeks of intrauterine life during the formation of the floor of the mouth.[3,8] In this study, about 62.5% (10) patients gave a history of swelling from birth, while 18.75% (3) gave a history of trauma. However, one patient gave a history of swelling being present for 25 years. The patient neither gave any history of trauma nor injury to the mouth. Possible explanation being that it was unnoticed initially.

Studies have suggested that human papilloma virus (HPV) and exposure to ultraviolet light (UV) may play a role in the formation of epidermoid cysts.[12] However, none of our patients was investigated for HPV, and no UV light exposure was recorded.

Dermoid cysts are generally diagnosed in the second and third decades of life but can be found at any age[1-3] without any sex predilection,[1,12] but their occurrence in infants is rare.[2] A few authors found a female predilection while others found male predominance.[12] However, in our study, we found a male preponderance (10 males and 6 females) in a ration of 1.7:1. The study also showed that 56.25% (9) were in the first decade of life while 25% (4) were in the fourth decade [Table 1], 12.5% (2) in the 3rd decade, and only 1 (7.69%) in the second decade. In addition, 62.5% (10) of our patients were males. The age range was between 2 months to 25 years. This is not in agreement with the findings of earlier authors but this, however, agrees with the findings of some authors who observed that the highest incidence was found between new born and 34 years, with the greatest frequency within the first decade,[6,12] and attributed lack of early detection as the reason behind the wide range.

Table 1: Age and sex distribution, clinical features

Age	Sex	Site	Duration	Symptoms	Co-morbidity	Histology type	Complications	No of aspiration
2/12	M	Sublingual midline	2/12	Respiratory obstruction	URTI	Epidermoid		2
5/12	M	Sublingual midline	5/12	Respiratory obstruction	Measles, anemia, URTI	Epidermoid		3
18/12	M	Sublingual midline	18/12			Epidermoid		
5 years	M	Sublingual right	5 years	Respiratory obstruction	URTI	Dermoid		6
14 years	F	Sublingual	14 years	Late respiratory symptom		Epidermoid		2
4/12	M	Sublingual midline	4/12	Respiratory obstruction	URTI, anemia	Epidermoid		3
7/12	M	Sublingual right	7/12	Respiratory obstruction	URTI	Epidermoid	Had masurpialization	4
4/12	F	Sublingual	4/12	Respiratory obstruction	URTI,	Epidermoid	Respiratory embarrassment	2
10 years	F	Lingual midline	10 years	Feeding difficulties		Epidermoid		
45 years	F	Sublingual, Submental	25 years	Respiratory obstruction, aesthetic, feeding difficulties		Epidermoid		
3	M	Sublingual	3 years			Epidermoid		
45	M	Cheek				Epidermoid		
49	M	Cheek				Epidermoid		
38	M	Cheek				Dermoid		
22	F	Sublingual				Epidermoid		
28	F	Sublingual						

URTI: Upper respiratory tract infection

Dermoid cysts such as some form of nasolabial cysts are slow growing starting usually from a small size and growing to an appreciably large symptomatic size in the first and second decade of life.[10,12,13] About 42.9% of our cases were as large as 2-4 cm in diameter at presentation and were present at birth causing obstruction and feeding symptoms. Hence, they were aspirated to relieve the above symptoms. The cysts can displace the tongue with patients usually presenting with dysphagia, dysphonia, and dyspnea; in the case of lower localization, they present with a characteristic double chin.[3] Our findings agree with these observations, as 68.8% (11) of patients had these symptoms and signs and one 45-year-old also presented with a characteristic double chin. Anatomically, three different types of dermoid cysts can be distinguished: Median genioglossal (sublingual), median geniohyoid (submental), and lateral, according to the anatomic relationship between the cyst and the muscles of the floor of the mouth.[3] The floor of the mouth is the second most common site for dermoid cysts in the head and neck region after the lateral eyebrow.[3] In the present study, we also found that 62.5% (10) of the cysts were in the floor of the mouth followed by the cheek. One female patient had the cyst in the substance of the tongue, which is very rare, while the other was located sublingually with submental extension, giving her a double chin.

Dermoid cysts can also co-exist with other congenital malformations condition.[13] Although in our cases, we found that 37.5% (6) had co-morbid conditions such as upper respiratory tract infection (URTI) 100%, followed by anemia (2 patients) patients, and measles (1 patient), we did not find any coexisting congenital malformations in any of the patients.

The differential diagnosis of dermoid cyst includes ranula, cystic hygroma, thyroglossal duct cyst, branchial cleft cyst and a detached bronchogenic cyst[2,3,7,9,10] hemangioma, lymphangioma, acute infection, neurofibroma, and neoplasm of sublingual and minor salivary gland.[7]

Epidermoid cysts have thin squamous lining because of lack of dermal appendages, which rarely contains calcifications. These cysts contain debris from the desquamation of the epithelial lining. The debris contains mainly keratin, a proteinaceous material and some cholesterol. These are often described as pearly tumors because of the shiny, smooth, and waxy nature of the “dry keratin” on gross inspection. Dermoid cysts are well-circumscribed lesions most commonly seen at the lateral canthus of the eye. They consist of skin appendages and are typically lined with squamous epithelium, but unlike epidermoid cyst, they have a thicker lining and may contain dystrophic calcification.[8]

The preoperative evaluation of lingual cystic masses in newborns includes palpation, high-resolution sonography, computed tomography (CT) or magnetic resonance imaging (MRI). High-resolution sonography has been found to be very useful in revealing the nature of the mass and in delineating its extension. CT and MRI allow a more accurate localization of the lesion in relationship to the geniohyoid and mylohyoid muscles,[2,3,7,11] and they enable the surgeon to choose the most appropriate surgical approach, especially in the case of very large lesions.[3] The main disadvantage of CT and MRI is the complication that may result from putting the patients under sedation.[2,7] Ultrasonographically, the solid and cystic structures within a heterogenous mass and calcifications are seen.[8] The use of plain

radiographs or orthopanthomogram may not be so useful unless a radiopaque medium is injected into the lesion.[7] In our cases, none of our patients had ultrasound, CT, or MRI taken because the patients could not afford to pay for these imaging techniques.

Surgical enucleation is the main effective treatment via intra- or extraoral approach. Surgical excision is normally achieved without major complications.[2-3,8] An intraoral approach is recommended by most authors for sublingual cysts of small or moderate dimensions (less than 6 cm) above the mylohyoid muscle, whereas an extraoral approach is preferred for larger sublingual cysts (more than 6 cm).[3] The use of CO_2 laser is said to offer surgical precision, superior hemostasis and wound healing, and minimal post-operative edema.[12] Recurrence is very rare with complete excision of the lesion, but a 5% rate of malignant transformation of oral dermoid cysts into the teratoid type has been reported in literature, although not in the floor of the mouth.[3,11,12] As is the norm in our environment, most patients were lost within the first years of review. Prior to this, none had presented with a recurrence. Chronic irritation or repetitive trauma to the epithelial lining of the cyst has been identified to play a role in malignant transformation.[12]

All our patients had a cystectomy via intraoral approach, including the oldest patient whose lesion was very big. Our younger patients had URTI, three of them had nutritional anemia, and one had both anemia and measles.

Should airway problems occur, decompressing a cyst through aspiration can be attempted. This allows routine intubation and eases the need for tracheostomy.[7] All our younger patients had extraoral aspiration to reduce the dyspenic state in which they were while being prepared for surgery and also during intubation processes.

CONCLUSION

Dermoid cysts can be congenital or acquired. Their early presentation was associated with both feeding and respiratory symptoms. There were also associated challenges building them up for surgery and intubation. Cystectomy was the main stay of treatment.

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Source of Support: Nil, **Conflict of Interest:** None declared.