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Mucocele of the hard palate in children☆

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ABSTRACT

Objective: Mucus retention cyst of the hard palate may result from obstruction of the ducts of the minor salivary glands, and it was defined as a mucocele. Although, the disease is not common in the hard palate, it was previously reported by many authors in the soft palate. The aim of our study was to present pediatric patients who were diagnosed to have mucocele of the hard palate, and to evaluate the outcome of the surgical excision of this lesion.
Methods: This is a case series study included 8 pediatric patients who presented with cystic lesions on the hard palate which were removed surgically, and were diagnosed as mucoceles. Preoperative data, surgical procedures, and postoperative outcome were presented. Follow up of patients was performed for at least one year.
Results: The swelling was detected as a single isolated lesion, on the side of the hard palate, covered with healthy mucosa, not tender, oval or round in shape, and measuring 0.4 to 1.7 cm in its greatest dimension. Computed tomography showed a well defined cavity which was not invading the bone, and not disrupting the muscles of the palate. Histopathological examination confirmed that the lesion was a cavity that is lined with an epithelial layer with pseudoepitheliomatous hyperplasia. No patients developed intraoperative or postoperative complications, and no recurrence was detected in any patient.
Conclusions: Oral mucoceles can develop on the hard palate of the children, the lesions are mucus retention cysts. Complete surgical removal of the lesions with their cystic wall is a good treatment options, it carries no risk of recurrence.

1. Introduction

Hundreds of minor salivary glands are distributed in the oral mucosa, they secrete mucus into the oral cavity through their minor ducts. Obstruction of these ducts can lead to retention of mucus with a cystic lesion lined by salivary duct epithelium, which is termed as mucus retention cyst, however, it is very rare to find an epithelial lining for these lesions [1,2]. Rupture of ducts may lead to extravasations of mucus through the connective tissues under the mucosa, the accumulated mucus may induce inflammatory reaction with granulation tissue formation around it, and the lesion may enlarge gradually. Mucus extravasation phenomenon or mucus escape reaction is a more accepted theory for the development of those cystic swellings of the oral cavity [1,3,4].

Oral mucocele is a clinical term that is applied for both mucus retention cyst and mucus extravasation phenomenon. It is probably the most common disorder of the minor salivary glands, and it can develop in the lips, buccal mucosa, tongue, palate, and floor of mouth [4]. Those lesions are unlike the nasopalatine cysts which usually develop at the site of the incisive fossa anteriorly in the hard palate, they are developmental cysts derived from proliferation of embryonic epithelial remnants of the nasopalatine duct [5].

Superficial mucocele of the oral cavity have been previously reported, it is a small, translucent, tense, subepithelial vesicle affecting the oral mucosa. The lesion could be either single or multiple. Occasionally, it is persistently recurrent, with a pattern of rupturing, causing slight discomfort to the patient and healing may occur within a few days. Superficial mucocele is often misdiagnosed as pemphigoid, bullous lichen planus, or herpes [6–8]. The aim of our study was to present pediatric patients who were

☆ The study was carried out in the Departments of Otolaryngology of Cairo University, Beni Suef University and Aswan University, Egypt.

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diagnosed to have mucocele of the hard palate, and to evaluate the outcome of the surgical excision of this lesion.

2. Methods

This is a case series study included 8 pediatric patients who presented with cystic lesions on the hard palate which were removed surgically, and were diagnosed as mucoceles. The study was conducted on the Departments of Otolaryngology of Cairo University, Beni Suef University and Aswan University, in the period from June 2006 to January 2015. The age of the patients ranged from 2 to 9 years (with a mean of 4 years and 6 months) at the time of diagnosis, 5 girls and 3 boys. Patients who underwentprevious palatal surgery, who presented with craniofacial anomalies, and who presented with nasopalatine duct cysts were excluded. Informed consents were obtained from the parents of the patients and the principles outlined in the Declaration of Helsinki were followed.

All patients were subjected to the following.

2.1. Preoperative examination

- Thorough history taking and clinical examination to exclude swellings in other parts of the body. Examination of the swelling (Fig. 1) for site, size, shape, consistency, tenderness, and overlying mucosa were performed.
- Computed tomography (CT) on the palate.

2.2. Operative procedure

Under general anesthesia with oral endotracheal intubation, the patient is placed in the supine position with the head extended by small pillow below the shoulders. Injection of mucosa around the swelling with 2% lignocaine with 1:200,000 adrenaline was done. An elliptical mucosal flap was elevated (Fig. 2), meticulous sharp dissection was performed with care to avoid rupture of the swelling. After complete exposure of the swelling, it was removed completely, and homeostasis was achieved with bipolar diathermy. The mucosal flap was returned to its place and sutured to the surrounding mucosa using vicryl 4-0 sutures.

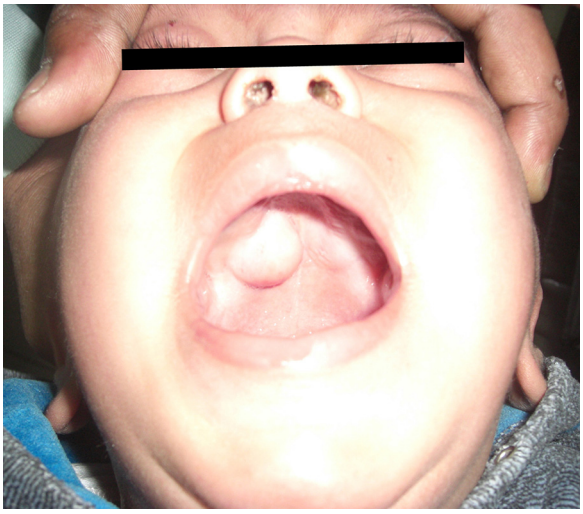

Fig. 1. A child with a cystic lesion on the right side of the hard palate.

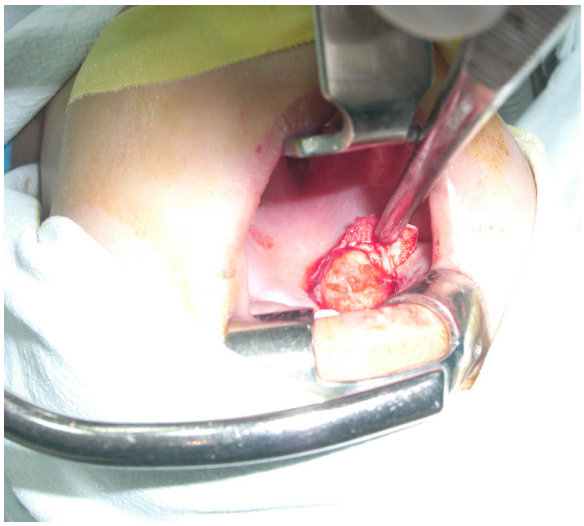

Fig. 2. An elliptical mucosal flap is elevated, and the cyst is appeared.

2.3. Postoperative follow up

Patients were discharged on the 2nd postoperative day after being fully conscious with stabilization of vital signs, and oral antibiotics were prescribed for 1 week. All removed specimens were sent to the pathology unit to roll out the nature of the lesions. Patients were directed to return weekly for 3 weeks, then monthly for at least one year.

3. Results

Eight children were included in this study; all were diagnosed to have mucocele of the hard palate. No patients gave history of oral trauma, the swelling was detected as a single isolated lesion without similar diseases in the body. The swelling was located on the side of the hard palate in all patients, it was on the left in 6 and on the right in 2, with 2 of them presented near the junction between hard and soft palate. The lesion was cystic, covered with healthy mucosa, and not tender in all patients, its shape was oval in 5 patients and rounded in 3 patients. Its size was ranged between 0.4 and 1.7 cm in its greatest dimension with a mean of 0.9 cm (Table 1).

Computed tomography showed a well defined superficial cavity which was not invading the bone of the hard palate and not disrupting the muscles of the soft palate (Fig. 3). It was filled with fluid and surrounded with thin membrane.

The lesion was removed completely (Fig. 4) with intact surrounding membrane in all patients. Histopathological examination confirmed that the lesion was a cavity that is lined with an

Table 1
Demographic and clinical characteristics of the patients.

No.	Age (years)	Sex	Size of the lesion (cm)	Follow up period (years)
1	4	Female	0.5	5
2	5	Male	0.8	7
3	2	Female	0.4	6
4	7	Female	0.9	4
5	2.5	Female	1.0	5
6	9	Male	1.2	3
7	3	Female	1.7	1.5
8	3.5	Male	0.7	1

The size of the lesion was measured at its greatest dimension.

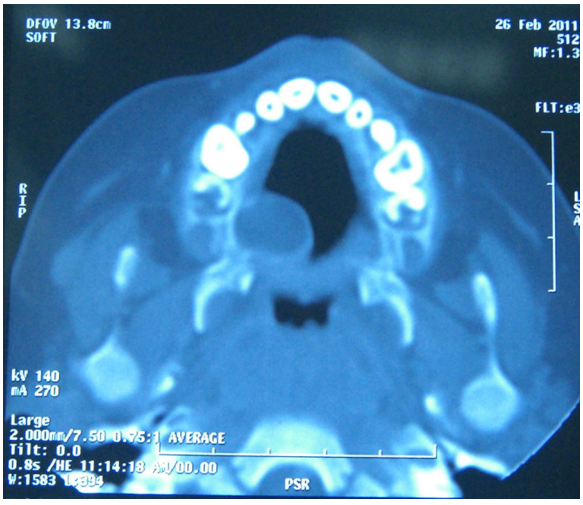

Fig. 3. An axial computed tomography for the palate shows a well-defined cystic lesion on the hard palate.

epithelial layer with pseudoepitheliomatous hyperplasia overlying the loosely arranged connective tissue stroma, and it was filled with mucus material.

No patients developed intraoperative complications, and complete healing of the wounds were achieved in 2–3 weeks. No recurrence was detected in any patient till the end of the follow up period.

4. Discussion

Mucoceles are probably the most common disorders of the minor salivary glands, they may be caused by accumulation of mucus secreted by these glands submucosally and cause swelling of the soft tissues [3]. They affect children and adults and can appear at any site of the oral mucosa containing minor salivary glands [9]. There are 2 theories for the occurrence of these lesions, they may result from either rupture of a salivary gland duct and extravasation of mucus into the surrounding soft tissues, or obstruction of the duct with retention of mucus in a cyst lined by salivary duct epithelium, and both types have been defined as oral mucoceles [1,10]. Indeed, most authors did not find an epithelial lining for these lesions, even some of them reported that mucoceles could be produced experimentally in mice or rats by severing and not essentially ligating the salivary ducts [1,11].

In our study, we investigated 8 children with cystic lesions of the palate, the lesions were located on the side of the hard palate.

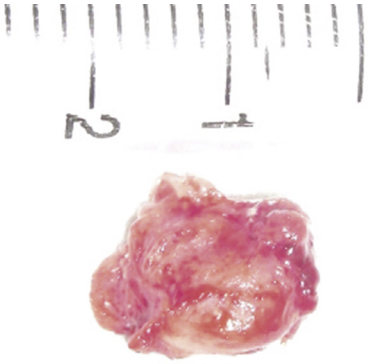

Fig. 4. An excised cyst with intact its wall.

Histopathological examination revealed that there was an epithelial wall for the lesion, denoting that the lesion was mucus retention cyst rather than mucus extravasation in the submucosal tissues. Bodner et al. [12] studied 56 children with oral mucocele, they reported that extravasation mucoceles are mainly found in the lower lip, whereas retention mucoceles are usually located in the cheek or palate, and they suggested that these two types are not related and possibly have a different pathogenesis. On the other hand, Mínguez-Martinez et al. [4] have investigated 89 children with oral mucoceles and they found all lesions of extravasation type even those of the palate. However, Misra et al. [13] have reported a case of mucus retention cyst on the anterior part of the hard palate of child. Xu et al. [3] stated that the 2 types of mucoceles cannot be distinguished clinically, and most mucoceles are of the extravasation type, in which a pooling of mucus occurs in the connective tissue, presumably arising from trauma to the ducts of the minor salivary glands. So, the commonest site for occurrence of oral mucocele is the lower lip which is usually more exposed to trauma than other parts of the oral cavity especially in children who have a habit of biting their lower lip [1,3,4]. None of our patients gave history of trauma, this could be explained by the hard palate is unlike the lips as it is covered with a deeply adherent muco-periosteum with difficult injury of the minor salivary ducts.

Multiple superficial mucoceles have been described by many authors, they are usually small painless nodules with a bluish or pinkish smooth surface, and they can rupture from external trauma with release of viscid salty mucus and temporary relief of symptoms. However, most patients may experience repeated rupture and swelling of the mucosal nodules, leaving white scars behind. They can appear in the lips, buccal mucosa, tongue, soft palate, and floor of mouth. Histopathological examination revealed that they are usually of extravasation type [3,7–9]. To our knowledge and after search on pubmed, multiple superficial mucoceles of the hard palate have not been mentioned in the English literature before.

Differential diagnosis of mucocele of the palate may include nasopalatine duct cyst, and epidermoid cyst. Nasopalatine duct cyst is usually located on the anterior part of the hard palate at the site of the incisive foramen, it has its characteristic histopathological picture as it is believed to arise from epithelial remnants of the nasopalatine duct in the incisive canal [5,14]. An epidermoid cyst may develop in the palate, it is usually yellowish white in color with smooth surface. The cyst may arise from sequestration of ectoderm during midline closure of the embryogenic fissure, it is formed of an epithelium-lined cavity that contains semisolid material [15].

Our patients were treated by surgical excision of their lesions, complete removal of the cysts were achieved, and no patients developed recurrence during the follow up period which was at least one year. Xu et al. [3] reported that surgical resection is the treatment of choice for oral mucoceles. Misra et al. [13] treated a child with a mucus retention cyst of the hard palate surgically, and the patient developed no recurrence. Mínguez-Martinez et al. [4] treated 50 children with oral mucoceles surgically; four of them developed recurrence, however, their lesions were of extravasation types which were devoid of true cystic wall. All presented mucoceles of our study were of mucus retention type with true cystic wall, so complete removal of the lesions was not difficult and consequently the recurrence was nil.

5. Conclusion

Oral mucoceles can develop on the hard palate of the children, the lesions are mucus retention cysts. Complete surgical removal of the lesions with their cystic wall is a good treatment options, it carries no risk of recurrence.

Financial disclosure

None.

Conflict of interest statement

None.

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