

MUCOCELES OF THE ORAL CAVITY: A RETROSPECTIVE STUDY

Pedodontics

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Abstract:

Aims: The objective was to study cases of mucocele diagnosed in 10 children reported at the Department of Pedodontics & Preventive Dentistry, Buddha Institute of Dental Sciences & Hospital, Patna and to describe their clinical characteristics, etiology, site of occurrence and treatment given.

Methods: A retrospective study of 10 children diagnosed with mucocele at the outpatient department of Pedodontics & Preventive Dentistry, Buddha Institute of Dental sciences & Hospital, Patna, India between 2014 and 2015 was carried out. The study comprises of obtaining clinical data of the children including age, gender, the history and chief complaints, etiology, the clinical appearance and location of mucoceles, and treatment given.

Results: During the period from August 2014 to September 2015, 10 cases of mucoceles were found with a significant gender predilection (7 females, 3 males), in which the most frequent site being the lower lip. In majority of cases, there was no definite cause for occurrence was seen. In two patients, the mucoceles were of bluish red in color and remaining cases appeared pale red. In 2 patients micro-marsupialization was done, in 2 cases cryosurgery was performed and in remaining 6 cases, surgical excision was done.

Conclusions: Mucoceles are known to occur more commonly on the lower lip with lip biting habits and chronic trauma being the cause of the lesions. Management of these lesions can be performed through various treatment modalities and knowledge of the dental surgeons about this is highly essential for well-being of the child patient.

Keywords: Mucoceles, Oral Cavity, Children.

Introduction

Mucoceles, represents the most common benign lesions of the oral cavity, disease of the minor salivary glands which is characterized by a cavity filled with mucus (muco means mucus and coele means cavity). When this lesion is located on the floor of the mouth are named as ranulas because the inflammation resembles the cheek of a frog.¹ The common most site

for occurrence of mucocele is the lower lip, there is no sex predilection, and children & young adults are more susceptible. There are two mechanisms suggested for development of this lesion: mucous extravasation and mucous retention. Most mucoceles are of the extravasation type, caused by trauma to the salivary glands, biting the lip tongue or cheek. As a result, they have a tendency to occur in younger patients.² Clinically, mucocele are

characterized by a single, well defined round or oval shape, a sessile nodular lesion varying from few millimeters to approximately 1 cm in diameter.^{3,4,5} Literature regarding small number of reported cases of mucoceles in pediatric population in India is very few. The purpose of this article is to present concise information regarding 10 mucoceles in 10 pediatric patients and to describe their clinical features, associated etiology and treatment given.

was done and in remaining 6 patients, surgical excision was carried out. In the patient where micro-marsupialization was done no recurrence of the lesion was seen. There were no any associated complications with lesion except for the feeling of some growth in the oral cavity.

Materials & Methods

A retrospective study based on clinical data on prevalence of mucoceles occurring in oral cavity of pediatric patients was conducted between August 2014 to September 2015 in the Department of Pedodontics and Preventive Dentistry, Buddha Institute of Dental Sciences & Hospital, Patna, India. The detailed information related to age, sex, clinical appearance, and location of the lesion, associated complications and treatment given for mucoceles was collected and recorded. The variables were analyzed for sexual dimorphism, different locations for occurrence and single or multiple occurrences, different clinical features, associated etiology, and treatment given.

Results

During the period from August 2014 to September 2015, a total of 10 mucoceles were found in 10 pediatric patients. The detailed description of patients afflicted with mucoceles is shown in Table 1. The age of the patients ranges between 4 to 12 years in which 7 were females and 3 were males. Regarding the location of the mucoceles, 9 cases were seen on lower lip (Fig 1 & 3) and in 1 case it was seen on buccal mucosa. In majority of cases, there was no known definite cause for the occurrence of mucoceles. In 3 patients, history of chronic trauma from either lip or cheek biting habit was recorded and in one patient obstruction from tooth (proclined upper anteriors) was observed. In one patient, rupture of the mucocele followed later by recurrence of the lesion was noticed. One more interesting finding was observed in one patient showing 3 times recurrence of the lesion following surgical treatment. In two patients, the mucoceles were of bluish red in color and remaining cases appeared pale white or red in color. The size of the lesion varied from 2 mm to 2 cm in size. Almost in all cases the mucoceles appeared soft and fluctuant swellings. In two patients, the treatment done was by cryosurgery and in 2 cases micromarsupialization

Table 1: Clinical characteristics of Mucoceles

Case number	Age & Gender	Location	Etiological factor	Chief Complaint	Clinical Features	Treatment
1.	4, Female	Lower lip (left side)	Lip biting	Since 15 days	Smooth surface, sessile, 1.5 cm×1.5 cm. pinkish red color. Soft consistency	Surgical excision
2.	6, Male	Lower lip (left side)	Unknown	Since 1 month	Smooth, shiny surface, 2 mm × 2 mm, soft and Fluctuant, pinkish red	Micromarsupialization
3.	5, Female	Lower lip (right side)	Unknown	Rupture & Recurrence of the lesions	Smooth, shiny surface, 3mm×3 mm, soft and fluctuant, bluish red color	Surgical excision
4.	4, Male	Lower lip (left side)	Unknown	Since 20 days	Smooth surface, pale red in color, 3 mm×3 mm in size	Surgical excision
5.	7, Female	Buccal mucosa	History of cheek biting during chewing of food	Present since 1 month	Smooth surface, sessile, 5 mm×5 mm, firm consistency	Surgical excision
6.	8, Female	Lower lip (right side)	Unknown	Present since 10 days	Smooth, shiny surface, 3mm×3mm, soft and fluctuant, pale white in color	Micromarsupialization
7.	11, Female	Centre of lower lip	No history of lip biting, only proclined anteriors	Since 1 month	Smooth surface, pale red in color, 2 mm×2 mm in size	cryosurgery
8.	6, Female	Lower lip (left side)	Unknown	Since 20 days	Smooth surface, sessile, 1.5 cm×1.5 cm. pinkish red color. Soft consistency	Surgical excision
9.	12, Male	Lower lip (right side)	Unknown	Since 2 months	Smooth, shiny surface, 4 mm×4mm, soft & fluctuant, bluish red color	cryosurgery
10.	10, Female	Lower lip (left side)	History of lip biting	Present since 1 month, got punctured and fluid drainage by local dentist again recurred	Smooth surface, sessile, fibrous, 2 cm×2 cm in size	Surgical excision



Fig 1: Mucocele in the left lower aspect



Fig 2: surgical excision is done



Fig 3: Mucocele in the left lateral aspect



Fig 4: Micro-marsupialization done

Discussion

Mucoceles can be defined as cavities filled with mucus and lined by epithelium or covered by granulation tissue (muco means mucous and cele means cavity).²Mucus is the exclusive secretory product of the minor salivary glands and the more prominent product of the sublingual salivary gland.

Etiopathogenesis

The exact mechanism behind formation of the mucocele is not known. Yamasoba et al.⁶ highlighted two etiological factors in mucoceles as follows: (I) trauma, (II) obstruction of salivary gland duct.

Physical trauma mainly causes a discharge of salivary secretion into surrounding submucosal tissue. Later inflammation may become obvious due to stagnant mucous. Habit of lip biting and tongue thrusting are also one of the aggravating factors.⁷

The extravasation type will undergo three evolutionary phases.⁸

(I) In the first phase there will be spillage of mucus from salivary duct into the surrounding tissue in which some leucocytes and histiocytes are seen.

(II) In second phase, granulomas will appear due to the presence of histiocytes, macrophages, and giant multinucleated cells associated with foreign body reaction.

This second phase is called as resorption phase.

(III) Later in the third phase there will be a formation of pseudocapsule without epithelium around the mucosa due to connective cells.

The retention type of mucocele is commonly seen in major salivary glands. It occurs due to the dilatation of duct due to block caused by a sialolith or dense mucosa.⁸

In this report, majority of mucoceles occurred in the lateral part (either right or left) of the lower lip which is the more traumaprone site. This finding supports the role of chronic trauma as an etiologic factor either in the form of sharp tooth cusp, or proclined anterior teeth or biting habit for the

formation of mucoceles. This fact was in accordance with findings of other studies done so far.^{3,5} In 6 patients, the definite cause for occurrence of mucocele was not evoked which might indicate that other factors may play a role in their pathogenesis apart from trauma.

Location

Based on several studies the lower lip is the region most affected by mucoceles.^{4,5} However, there are reports showing rare occurrence of mucoceles affecting the upper lip, soft palate, retromolar region, lingual frenum, and dorsum of the tongue.^{9,10} de Camargo Moraes et al.¹¹ documented cases of mucocele of the gland of Blandin-Nuhn (ventral surface of tongue), and this type of mucocele was the second most frequent in their case series published. In the present study, lower lip was affected in 9 patients with 1 case on buccal mucosa. This finding was in agreement with the other studies like Jani et al. (94.44%),⁴ Re Cecconi et al.,⁵ Hayashida et al.³

Clinical appearance:

Clinically they are characterized by single or multiple, spherical, fluctuant nodules, ranging from normal pink to deep blue in color, and are generally asymptomatic. The tissue cyanosis and vascular congestion associated with stretched overlying tissue and the translucency of the accumulated fluid beneath result in the deep blue color. At times it may rupture leaving slightly painful erosions that usually heal within few days.¹² In this report, 8 cases exhibit normal pale red color of the normal mucosal color, which supported findings of other reports.^{5,6} Only two patients exhibited deep blue color.

Reports show that most mucoceles occurred in the second and third decade of life.^{3,4,5} Few cases have been reported in newborns.³ However, Jones and Franklin¹³ investigated 4406 children ranging from 0 to 16 years over a period of 30 years found 735 (16.68%) cases of mucoceles. In the current study, the age of children ranged from 4 years to 11 years coinciding with results of other studies.^{3,4,5} In 24 year Brazilian study³ 75.85% of the cases were diagnosed during the first and second decades of life, 49.42% of them during the second decade of life. Two cases were diagnosed in newborns. In our reports, most mucoceles were found in females (10 out of 13) which is in agreement with

studies exhibiting almost 70% prevalence of mucoceles in women.^{3,4,5} Mathew et al.¹⁴ studied the prevalence of mucoceles in 0.16% of the population and the lesion was found only in males.

None of the patients showed any complications associated with the mucoceles except for the increase in the size of the lesion. A study of 36 cases showed associated pain in 13.89% of their cases.⁴

Treatment

Different treatment modalities have been suggested for mucoceles, like excision of the lesion, marsupialization, micromarsupialization (Fig 4), lasers (CO₂ or Erbium), steroid injection, gamma-linolenic acid, injection of sclerosing solution, and injecting an ultra flow rubber base impression material into the mucocele. However, each technique has its own certain disadvantages. The most frequently used treatment for mucoceles is the surgical excision.^{4,5} Literature shows 3 possible surgical dissection. Mucoceles can be completely excised (Fig 2) or treated with an unroofing procedure (Marsupialization) as excision damage the vital structures like a labial branch of the mental nerve.⁵ Marsupialization is a surgical technique that involves incising into a cyst and suturing the edges of the following slit to form a continuous surface from the exterior to the interior of the cyst. Micro-marsupialization is a minimally invasive technique carried out under topical anaesthesia, and the procedure is carried out by draining the accumulated saliva and creating a new epithelialized tract along the path of the sutures; however the required procedure time is approximately 5min with no tissue damage or inflammation. It is a treatment technique that involves placing a 3.0 or a 4.0 silk suture through the widest diameter of the lesion without including the underlying tissue. The suture is then tied off and is left in place for 7 days. This allows the saliva to be released from the duct. The recurrence rate with this approach has been reported to be about 14% in pediatric patients.

Carbon dioxide lasers are the recent treatment modality for treating mucoceles. The suggested advantages of this technique includes a bloodless operating field, precise incision, easy surgery, decreased post-operative swelling, and minimized scar tissue.¹⁵ No particular complications in the post-operative period and no hemorrhagic episodes have been reported. Other advantages are reduced edema and

postoperative pain. Yagüe-García et al. in 2009 compared the two treatment modalities done for the mucoceles like conventional surgery using scalpel and CO₂ laser. They concluded that CO₂ laser ablation is rapid and simple. They noticed postoperative complications and recurrence in the cases treated with conventional surgery. From an aesthetic and functional perspective, the results with CO₂ lasers showed satisfactory results.

Cryosurgery also known as cryotherapy is another effective, non-surgical therapeutic alternative proposed for treatment of mucoceles.¹⁶ This method involves application of extreme cold to cause lesion destruction. The resultant necrotic tissue is allowed to slough spontaneously. It has been associated with other advantages like simple application, painless procedure, and low chances of secondary infection and hemorrhage.

Conclusion

Development of mucoceles is a rare phenomenon in children and young adolescents. Chronic trauma from teeth or biting habit is the possible etiological factor for the pathogenesis of this clinical entity. As different treatment options are available for the management of this lesion, thorough clinical knowledge is very essential to provide the correct treatment and for overall well-being of the child. Management of these lesions is very challenging due to their high recurrence rate. Still many more longitudinal and prospective studies in the different ethnic group are required to know the prevalence of this soft tissue lesion.

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