Mucoceles of the oral cavity in Indian pediatric patients: A retrospective study

N. B. Nagaveni, Meghna Bajaj, Siddhant Pathak, Arekal Suresh Shruthi, P. Poornima
Department of Pedodontics and Preventive Dentistry, College of Dental Sciences, Davangere, Karnataka, India

Abstract

Objectives: The objective was to present 13 mucoceles in 13 Indian children and describe their clinical characteristics, etiology, site of occurrence, and treatment given.

Methods: A retrospective study of 13 pediatric patients who reported the Department of Pedodontics and Preventive Dentistry, College of Dental Sciences, Davangere, India between 2012 and 2014 was carried out. The study included the clinical data like age and gender of the children, the history and chief complaints, etiology, the clinical appearance and location of mucoceles, and treatment given.

Results: A total of 13 mucoceles were found in 13 patients. There was a significant gender predilection (10 females, 3 males). 11 mucoceles were located in the lower lip and 2 on buccal mucosa. In majority cases, there was no definite cause for the occurrence.

In 3 patients, history of chronic trauma from either lip or cheek biting habit was recorded and in one patient obstruction from tooth was observed. In two patients, the mucoceles were of bluish red in color and remaining cases appeared pale red in color. In two patients, the treatment done was cryosurgery, in one patient it was micro-marsupialization and in remaining 10 patients, surgical excision was carried out.

Conclusions: Mucoceles when it occurs most commonly affects the lower lip with chronic trauma being the most common etiology. As various treatment modalities are available for the management of this lesion knowledge about this is highly essential for well-being of the child patient.

Keywords
Cryosurgery, lasers, marsupialization, mucocele, soft tissue lesion, surgical excision

Correspondence
Dr. N. B. Nagaveni, Department of Pedodontics and Preventive Dentistry, College of Dental Sciences, Davangere, Karnataka, India. Email: nagavenianurag@gmail.com

Received 27 March 2015; Accepted 30 April 2015

doi: 10.15713/ins.idmjar.13

Introduction

Mucocele is a soft tissue benign lesion of the minor salivary glands characterized by a cavity filled with mucous. These are the most common cystic lesions affecting the oral mucosa. Their prevalence in the oral cavity varies depending on its specific location and is seen in cheek, tongue or lip.\(^1,^2\) The lower lip is the most commonly affected site by mucoceles.\(^3,^4\) There is no gender predilection and can be seen in all age groups. However, children and young adults are more susceptible.\(^5,^6\) Two mechanisms for development of this lesion have been suggested like 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.\(^1,^2,^6\) Mucoceles developed by mucous retention phenomenon are also called as true mucoceles, most commonly encountered in older patients resulting from obstruction of the minor salivary or accessory gland ducts.\(^6,^9\) 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.\(^1,^2,^7,^9\) Literature shows small number of reported cases of mucoceles in Indian pediatric patients. The aim of this article is to present information regarding 13 mucoceles in 13 patients and to describe their clinical characteristics, associated etiology, and treatment rendered.

Materials and Methods

A retrospective study on prevalence of mucoceles occurring in oral cavity of pediatric patients was conducted between May 2012 to September 2014 in the Department of Pedodontics and Preventive Dentistry, College of Dental Sciences, Davangere, Karnataka, India using the clinical data. The detailed information pertaining to age, gender, clinical appearance, and location of the lesion, associated complications and treatment given for
mucocle was collected and recorded using previous case history records. Intra oral photographs were made in all patients. 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 between 2011 and 2014, a total of 13 mucocles were found in 13 Indian children. The detailed description of patients afflicted with mucocles is presented in Table 1. The age of the patients ranged from 4 to 11 years. There were 10 females and 3 males. There was a significant preference for the lower lip location (in 11 cases) [Figures 1-3]. The 2 cases occurred on buccal mucosa [Figure 4]. In majority cases, there was no known definite cause for the occurrence of mucocles. 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 mucocle 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 mucocles were of bluish red in color [Figure 4] and remaining cases appeared pale white or red in color [Figures 1-3]. On clinical examination, the size of the lesion varied from 4 mm to 2 cm in size. Almost in all cases the mucocles appeared soft and fluctuant swellings. In two patients, the treatment done was cryosurgery, in one patient it was micromarsupialization and in remaining 10 patients, surgical excision was carried out. In the patient where micro-marsupialization was done exhibited no regression in the lesion size rather recurrence of the lesion was observed, so ultimately surgical excision was done in this patient. There were no any associated complications with lesion except for the feeling of some growth in the oral cavity.

Discussion

Definition

Mucocles can be defined as cavities filled with mucus and lined by epithelium or covered by granulation tissue (mucous means mucus and cele means cavity). Mucus 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 mucocle is still not clearly known. However, it has been suggested that mucocles result from mechanical trauma to the excretory duct of the salivary glands, leading to duct transaction or rupture with consequent extravasation of mucin to the connective tissue stroma (mucous extravasation phenomenon). Sometimes, mucus might be retained in the duct or acinus as a result of duct obstruction leading to mucus retention phenomenon. Chaudhry et al. suggested that escape of mucus into the surrounding tissue after severing the excretory salivary ducts lead to the formation of the mucocle. In this report, majority of mucocles occurred in the lateral part (either right or left) of the lower lip which is the more trauma-prone 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 mucocles. This fact was in accordance with findings of other studies reported so far. In 9 patients, the definite cause for occurrence of mucocle was not elicited which might indicate that the 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 mucocles. However, there are reports showing rare occurrence of mucocles affecting the upper lip, soft palate, retromolar region, lingual frenum, and dorsum of the tongue. de Camargo Moraes et al. documented cases of mucocle of the gland of Blandin-Nuhn (ventral surface of tongue), and this type of mucocle was the second most frequent in their case series published. In the present study, lower lip was affected in 11 patients with 2 cases on buccal mucosa. This finding was in agreement with the other studies like Jani et al. (94.44%), Re Ceccon et al., Hayashida et al., Jornet and Harrison.

Clinical appearance

Clinically, all mucocles present as smooth, soft painless swellings, rang-ning from deep blue to the pale pink of normal color of the oral mucosa. It is thought that the blue color results from tissue cyanosis and vascular congestion associated with the stretched overlying tissue and the translucent character of the accumulated fluid beneath. In this report, 11 cases exhibited normal pale red color of the normal mucosal color, which supported findings of other reports. Only two patients exhibited deep blue color.

Reports show that most mucocles occurred in the second and third decade of life. Few cases have been reported in newborns. However, Jones and Franklin investigated 4406 children ranging from 0 to 16 years over a period of 30 years found 735 (16.68%) cases of mucocles. In the current study, the age of children ranged from 4 years to 11 years coinciding with results of other studies. In 24 year Brazilian study, 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 mucocles were found in females (10 out of 13) which is in agreement with studies exhibiting almost 70% prevalence of mucocles in women. Mathew et al. studied the prevalence of mucocles in 0.16% of the population and the lesion was found only in males. In contrast, Cataldo and Mosadomi found no gender predilection in their 594 cases examined. Pertaining to race, the lesion was more common in white people as reported by de Camargo Moraes et al.
Table 1: Clinical characteristics of mucoceles found in Indian children

<table>
<thead>
<tr>
<th>Case number</th>
<th>Age (in years) and gender</th>
<th>Location</th>
<th>Etiology</th>
<th>Chief complaint</th>
<th>Clinical features</th>
<th>Treatment rendered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6, Female Lower lip (right side)</td>
<td>Unknown</td>
<td>Noticed swelling since 1 month</td>
<td>Smooth surface, pale red in color, 6 mm×6 mm in size</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5, Female Lower lip (left side)</td>
<td>Unknown</td>
<td>Since 1 month</td>
<td>Smooth, shiny surface, 2 cm, soft and fluctuant</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>11, Female Lower lip (right side)</td>
<td>Unknown</td>
<td>Present since 3 months, ruptured on its own while biting, again recurred</td>
<td>Smooth, shiny surface, 4 mm×4 mm, soft and fluctuant, bluish red color</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6, Male Lower lip (left side)</td>
<td>Unknown</td>
<td>Present before 2 months</td>
<td>Smooth, shiny surface, 5 mm×5 mm, soft and fluctuant, pale white in color</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>8, Female Lower lip (right side)</td>
<td>Unknown</td>
<td>Present since 15 days</td>
<td>Smooth surface, sessile, fibrous in consistency, 4 mm×4 mm in size, erythematous halo around lesion due to biting on lesion, tender on palpation</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>9, Male Lower lip (left side)</td>
<td>Unknown</td>
<td>Present since 1 month, got punctured and fluid drainage by local doctor again recurred</td>
<td>Smooth surface, sessile, fibrous in consistency, 2 cm×2 cm in size</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>11, Female Lower lip (right side)</td>
<td>History of lip biting</td>
<td>Recurrence of the lesion. Operated three times for the same lesion</td>
<td>Smooth surface, sessile, 1.5 cm×1.5 cm, pinkish red in color. Soft consistency</td>
<td>Micromarsupialization</td>
<td>Surgical excision</td>
</tr>
<tr>
<td>8</td>
<td>8, Female Buccal mucosa, opposite to primary mandibular first molar</td>
<td>History of soft tissue biting</td>
<td>Present since 1 month</td>
<td>Smooth surface, sessile, 7 mm×5 mm in diameter, slightly firm consistency</td>
<td>Cryosurgery</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10, Male Centre of the lower lip in the midline</td>
<td>No history of lip biting, proclined upper anterior teeth</td>
<td>Present since 15 days</td>
<td>0.5 cm×0.5 cm in diameter, smooth surface, pale in color, fibrous consistency</td>
<td>Cryosurgery</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>4, Male Centre of the lower lip</td>
<td>Unknown</td>
<td>Present since 7 days</td>
<td>Smooth surface, sessile, 6 mm×5 mm in diameter, slightly firm consistency</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>8, Female Centre of the lower lip (in the midline)</td>
<td>Unknown</td>
<td>Present since 7 days</td>
<td>Smooth, shiny surface, 7 mm×8 mm, soft and fluctuant, pale white in color</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4, Female Buccal mucosa, opposite to primary mandibular first molar</td>
<td>History of cheek biting</td>
<td>Present since 15 days</td>
<td>Smooth, shiny surface, 10 mm×8 mm, soft and fluctuant, bluish red color</td>
<td>Surgical excision</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>8, Female Right lateral aspect of lower lip</td>
<td>Unknown</td>
<td>Present since 20 days</td>
<td>Smooth, shiny surface, 9 mm×8 mm, soft and fluctuant, pale white in color</td>
<td>Surgical excision</td>
<td></td>
</tr>
</tbody>
</table>

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. In one patient, the lesion recurred thrice following the surgical treatment. This might be due to either incomplete removal of the tissue or because of the continuation in the biting habit. The same finding is observed in the Jani et al. study who found recurrence in 27.78% of the cases.

Treatment

Different treatment modalities have been suggested in the literature, like excision of the lesion, marsupialization, micro-marsupialization, lasers (CO2 or Erbium), steroid injection, gamma-linolenic acid, injection of sclerosing solution, and injecting an ultraflow 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. Literature shows 3 possible surgical
approaches to manage the mucoceles of the lips, cheeks, and palate. They are complete excision, marsupialization, and dissection. Mucoceles can be completely excised or treated with an unroofing procedure (marsupialization) as excision damage the vital structures like a labial branch of the mental nerve. However, following excision recurrences can happen and a new surgical intervention is necessary.

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. 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. 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. Toida et al. in 1993 treated 18 patients with mucoceles by direct application of liquid nitrogen with a cotton swab without local anesthesia. Each lesion was exposed to four or five cycles composed of freezings of 10-30 s and thawing of double the freezing times. Finally, they reported neither scarring nor recurrence following treatment after 6 months to 5 years follow-up. In this clinical report, two cases were treated with liquid nitrogen cryosurgery. In both cases recurrence happened and this could be due to insufficient application of liquid nitrogen.
Conclusions

Development of mucoceles is a rare phenomenon in children and when it occurs most frequently seen in the lower lip. 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. Still, many more longitudinal and prospective studies in the different ethnic groups are required to know the prevalence of this soft tissue lesion.

References
