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Case Report

Mucopyocele of the maxillary sinus

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ABSTRACT

Mucoceles are defined as chronic, cystic lesions in the paranasal sinuses. When the mucocele content becomes infected, the lesion is defined as mucopyocele. Most mucoceles are located in the frontal and anterior ethmoid sinuses and normally they involve the frontal-ethmoid complex, expanding to the superior-medial region of the orbit, leading to ocular disorders; maxillary sinus presentation is rare. In the present article, the authors described a rare case of mucopyocele in the maxillary sinus.

Key Words: Mucocele, mucopyocele, paranasal sinus

INTRODUCTION

Mucocele is defined as mucus filled cavity that can occur in the oral cavity, appendix, gallbladder, paranasal sinuses or lacrimal sac.[1] A mucocele that gets secondarily infected is termed as a mucopyocele and it has been reported to occur in the paranasal sinuses and appendix.[2] The incidence of mucoceles in the general population is 0.4-0.8%.[3]

CASE REPORT

A 26-year-old male patient reported with a chief complaint of swelling in the left buccal vestibule distal to 28 since last 2 months associated with mild pain when the buccal mucosa is stretched while eating. There was no history of paresthesia or numbness present in the region of chief complaint and no aggravating or relieving factors. No relevant past medical history except the patient gave a history of recurrent sinusitis since last 8 months.

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On extra-oral examination, slight tenderness was present below the left zygomatic buttress region without any evidence of swelling [Figure 1].

Intra-oral examination revealed a solitary soft fluctuant swelling in the buccal vestibule in the region of 27, 28 causing slight obliteration of left buccal vestibule in the same region. Borders of the swelling were not well-defined. Overlying mucosa was found to be normal and the temperature of the swelling was not raised [Figures 2 and 3]. The swelling was slightly tender on palpation. Interesting findings was firm digital pressure on the intraoral swelling resulted in greenish yellow pus discharge from the nose associated with fetid odor. There was no draining sinus in the region of swelling and 27, 28 were slight tender on percussion with distal periodontal pocket with 28. On the basis of case history and clinical findings, a provisional diagnosis of chronic periodontal abscess in relation with 27, 28 were made. Chronic infected sinusitis of the left maxillary sinus and infected cyst of the left maxillary sinus were considered as differential diagnosis.

Intra-oral periapical radiograph of 27, 28 region, topographic occlusal view of maxilla (left side) and orthopentamogram(OPG) shows periodontal ligament(PDL) space widening with 27 in the apical 1/3rd, loss of lamina dura in apical 1/3rd of 28 mesially and complete loss of lamina dura distally and also shows rarefaction in adjacent alveolar bone

Figure 1: Extraoral photograph showing bilaterally symmetrical face

Figure 2: Intraoral photograph showing slight obliteration of the left buccal vestibule in 27,28 region

Figure 3: Intraoral photograph showing no evidence of palatal swelling

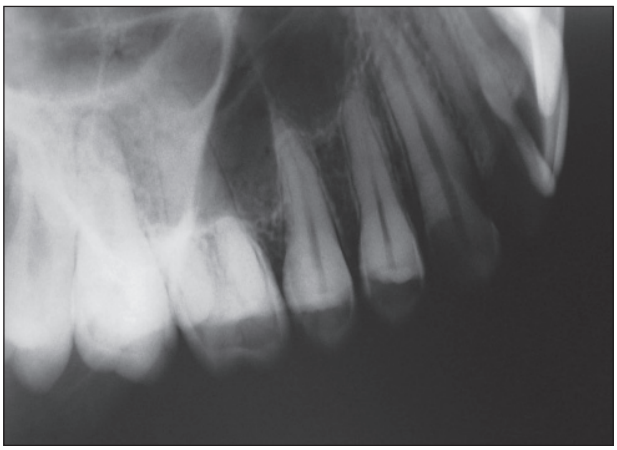

Figure 4: Topographic occlusal view of maxilla (left) showing widening of PDL space with 27

[Figure 4-6]. Postero-anterior(PA) waters view shows complete opacification of the left maxillary sinus [Figure 7]. OPG and PA water's view were less informative to give proper diagnosis and to judge the extent of the pathology thus computer tomography (CT) scan was advised.

Axial section (soft-tissue window) of CT [Figure 8] shows complete obliteration of the left maxillary sinus with soft-tissue density mass which is protruding posteriorly and causing complete destruction of the postero-lateral wall of the maxillary sinus, obliteration of pterygomaxillary fissure and intact anterior and medial wall [Figure 9]. The soft-tissue expansile mass, which is protruding from the sinus, is well-defined roughly round having smooth borders without cortication. There is a slight obliteration of left nasal cavity. Coronal section of C.T. [Figure 10 and 11] shows complete opacification of the left maxillary sinus with destruction of the floor of the sinus laterally, causing the protrusion of the mass laterally. CT scan diagnosis was suggestive of benign expansile and destructive lesion of left maxillary sinus.

The patient underwent an incisional biopsy of the lesion under local anesthesia, which was approached by a mucosal incision in the upper buccal vestibule. The incised lesion was submitted for histopathological examination. Histopathological report suggestive of infected mucocele of maxillary sinus (mucopyocele).

Surgical excisions of the entire lesion were carried out under local anesthesia. Patient recovery was uneventful and was kept under follow-up for next 6 months and no fresh complaints were observed.

DISCUSSION

Mucocele of the oral cavity is a clinical term which is classified as extravasation or retention types based on histopathology. The extravasation type consists of

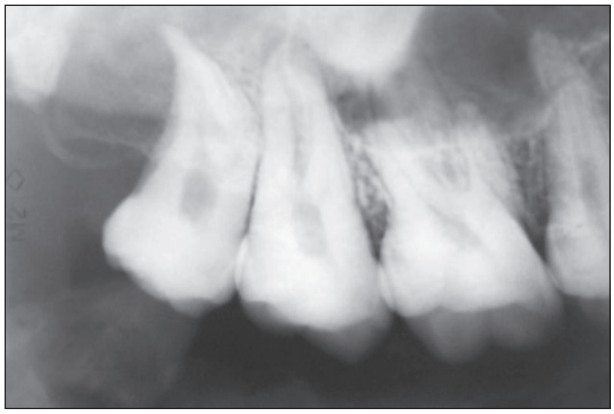

Figure 5: Intraoral periapical radiograph showing loss of lamina dura in apical region of 28 mesially and complete loss of lamina dura distally

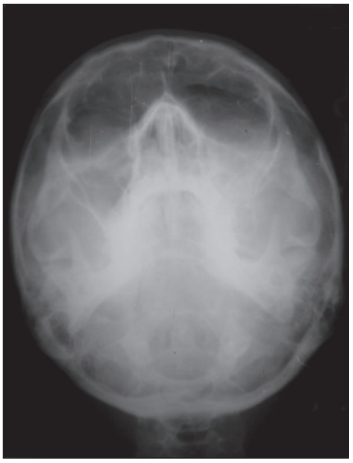

Figure 7: PA water's view shows complete opacification of the left maxillary sinus

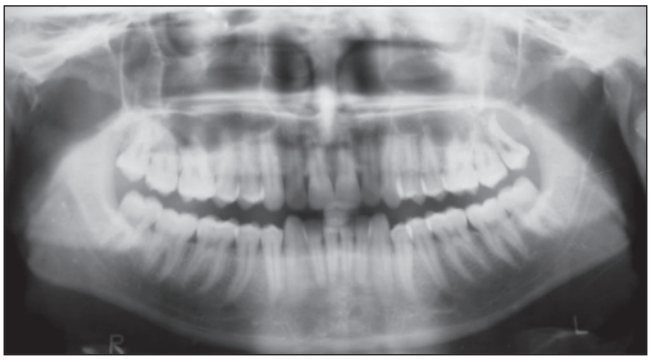

Figure 6: OPG showing the area of osteolysis distal to 28

Figure 8: Computer tomography scan (axial section-soft tissue window) showing complete obliteration of the left maxillary sinus with soft-tissue density mass, which is protruding posteriorly outside the maxillary sinus

extravasated mucus in the connective tissue and the retention mucocele results from mucus retained in an epithelial-lined cavity, usually a dilated duct of minor salivary glands.[4] The more common extravasation type, usually results from local trauma such as biting and is found commonly in the lower lip and in younger age groups while retention mucocele occurs in the older age group as a result of dilatation of the duct due to blockage by a sialolith or a mucus plug and is usually found in the palate and floor of the mouth. The extravasated saliva elicits inflammatory reaction and results in formation of granulation tissue whereas the retention variety is enclosed in the dilated minor salivary gland duct and may be confused with true cysts.[5] Mucopyocele is a term used to describe a mucocele that gets secondarily infected by pyogenic bacteria and develops pus.[6] It is a relatively rare condition reported mainly in the frontal sinus followed by ethmoidal, maxillary, and sphenoidal sinuses among other rare locations in the human body. A microbiological study of 36 mucopyoceles (21 from the maxillary sinus, 8 from frontal sinus, Four from ethmoid sinus and 3 from sphenoid sinus) showed a polymicrobial aerobic and anaerobic bacteriology composed of predominant aerobic isolates of *Staphylococcus aureus* (six isolates), alpha-hemolytic streptococci (six isolates), *Hemophilus* spp. (five isolates), and Gram-negative bacilli (six isolates).[7] The predominant anaerobes were *Peptostreptococcus* sp. (22), *Prevotella* sp. (15), *Fusobacterium* sp. (5), and *Propionibacterium acnes* (5).[8] When the term is applied for paranasal sinuses mucoceles, it has a different understanding, because almost all mucoceles in this region are real mucous retention cysts with epithelial layer normally caused by obstruction. In the formation of mucoceles, there is true bone destruction owing to its expansive character that determines bone reabsorption. In previous studies, it has been demonstrated that mucocele tissues synthesize more prostaglandinE2(PGE2) than normal tissues. The increase in the capacity of inflammatory tissues to synthesize prostaglandin such as PGE2 is normally related with the

Figure 9: Paranasal sinuses computer tomography scan (axial section-bone window) showing the destruction of the postero-lateral wall of the maxillary sinus

Figure 10: Computer tomography scan (coronal section) showing complete opacification of left maxillary sinus causing protrusion of the soft density mass laterall

Figure 11: Computer tomography scan (coronal section) showing complete opacification of left maxillary sinus

level of inflammatory cytokines (interleukin E, tumor necrosis factor, vascular adhesion factor), produced as a result of the inflammation. Such cytokines may be responsible for the destruction associated with mucoceles, with consequent reabsorption, rarefaction and local bone expansion, facilitating their widening. This event may be the cause of the bone reabsorption and bone formation areas, observed on the bone walls that surround the mucocele, in which osteoblastic activity is followed by osteogenesis and sclerosis is alternated with areas of active bone destruction. Mucocele; thus, would grow by expanding outwards instead of expanding under the effect of the internal pressure, preserving the sinus mucosa.[9]

Microbial flora from the oral cavity into the developing mucocele can lead to the secondary infection of the mucocele and subsequent sinus formation. Due to chronic drainage of pus from the mucopyocele, the clinical presentation was compatible with that of a chronic painless recurrent swelling. CT scan and magnetic resonance imaging (MRI) support the diagnosis because they are high resolution exams, allowing differential diagnosis with cysts, expansile masses, erosive lesions, benign tumors (polyps, papillomas).[10] Our case had a clinical history of recurrent maxillary sinusitis and presence of swelling and pus discharge from the nose on clinical examination, which lead to the clinical diagnosis of chronic periodontal abscess and differential diagnosis of chronic infected sinusitis of the maxillary sinus and infected cyst of the maxillary sinus were considered.

Rhinoscopy, oroscopy can also be used as diagnostic tools, but paranasal sinuses CT scans are very important for the diagnosis and in some cases, MRI with gadolinium contrast is also recommended for better delineation of the lesion and to distinguish expansile processes of the nose, paranasal sinuses.

CONCLUSION

This case report with a history of chronic maxillary sinusitis and intraoral swelling at an unusual site and clinically area of chief complaint was difficult to access; all these factors misleaded the early diagnosis. However, proper clinical, radiographic and histopathological examination helped us to reach a definite diagnosis. Thus, a rare case of mucopyocele of maxillary sinus presented with characteristic clinical, radiological, and histopathological findings.

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