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RARE CYST OF THE MAXILLARY SINUS FOLLOWING AN EVENTFUL TOOTH EXTRACTION: A CASE REPORT

Dental Science

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ABSTRACT

Surgical ciliated cyst is one of the rare sinus pathologies that have got multiple etiological factors. It was interesting to note that its major cause is iatrogenic injuries to the sinus lining. With the advent of atraumatic extraction techniques the sinus injuries were rare. This paper reports a case with of surgical ciliated cyst of right maxillary sinus, following surgical removal of endodontically treated fractured upper right first molar.

KEYWORDS

Surgical ciliated cyst, Postoperative cyst of maxillary sinus

INRTODUCTION

The hollow cavity filled with nothing other than air located inside the maxilla makes lots of trouble when it gets agitated. Even for the procedures like extraction of upper premolars and molars, the relationship between the teeth and the maxillary sinus invites more attention than anything else. Post surgical complications of sinus procedures are not rare. Cystic transformation of disturbed sinus lining is one of such complications. Kubo in 1927 reported a case with post surgical cystic growth in maxilla following a procedure for treating sinusitis[1]. This case was the first of its kind reported in the literature. In 1958 Gregory and Shafer proposed the term 'surgical ciliated cyst of maxilla' they experienced occurrence of the cyst after many Caldwell-Luc procedures[2]. This paper reports a case with of surgical ciliated cyst of right maxillary sinus, following surgical removal of endodontically treated fractured upper right first molar.

CASE REPORT

Fourty five year old male presented with a painless swelling in the right upper vestibule since three months. History reveals extraction of fractured upper right first molar tooth which was endodontically treated. He remembers that the procedure was traumatic and was done four years before. He was having type 2 diabetes mellitus and was controlled by hypoglycemic drugs.

Clinically it appeared as an ill-defined swelling in the right upper vestibule having a size of 3.0 cm mesio-distally and 1.5 cm bucco-palatally (**Fig.1**). It extended from the vestibule of premolar to the third molar region. Medially it was extended to the alveolar region of missing upper first molar and second premolar. It was non-tender fluctuant and non-indurated.

Orthopantamogram revealed slightly radiolucent dome shaped mass present on the residual site of extracted first molar and second premolar. Superiorly it was seen up to the level of first premolar and second molar (**Fig 2**). For knowing its extend Cone Beam CT was made. This revealed the superior extension of the lesion is adjacent to the floor of the orbit. Medial extension towards the lateral wall of the nose was also noticed (**Fig 3**). Extensive bone resorption was seen on the alveolus. The lesion was enucleated under G.A (**Fig.4**) and was sent for histopathological examination.

The specimen was lined with pseudo stratified ciliated columnar epithelium with large amounts of goblet cells (**Fig.5**). Scattered areas of squamous epithelium was also noticed. Connective tissue showed inflammatory infiltrate. The clinical, radiographic and histopatholo gical findings defined the diagnosis as a surgical ciliated cyst of the maxilla.

DISCUSSION

Early Schuknecht and Lindsay observed two types of maxillary sinus and classified them as non- secreting and secreting cysts. Gardner modified this classification into non secreting cysts, secreting cysts and mucocele. In 2006 Meer and Altini revised the classification into mucocele, pseudocyst, retention cyst and post-operative maxillary cyst[3].

Occurrence of post-operative cyst of maxillary sinus varies from 0.1% to 19.5% [6] among the jaw cysts. Most of the cases are reported in Japanese population during the time of First World War. The improper antibiotic therapy after sinus procedures was said to be the reason behind the peak incidence during that time [2]. Now the cases reported from Japan are diminishing that shows the decline of the condition over years. Surgical ciliated cyst has been reported in the Japanese literature in patients in the 3rd and 5th decade (mean 41 years). Slight male predilection was present in the studies done by and Nishioka et al[4]. Other studies shows that the cyst is equally distributed among both genders.

More than 68% of the cases had the history of antral surgeries. Other causes are maxillary osteotomies (5.5%), odontologic events (9%), fracture, angiofibromas and trauma. The causative factor in our case was trauma to the sinus lining, which happened in an extraction procedure. More than 47% of the cases had history of sinusitis. Most of the cases are developed 10 to 49 years after the sinus surgeries [4].

It occurs in posterior maxilla, presenting as an expansile swelling of the cheek obliterating the buccal sulcus. Similar appearance was seen in our case. It is usually confined to the sulcus and the alveolus but Shakib et al described a variety that occupied the palate till midline [5]. Another rare variety of surgical ciliated cyst known as implantation cyst is usually seen in mandible. The characteristics of the mandibular implantation cyst are similar to the maxillary counterparts. It occurs when the respiratory epithelium from a surgical procedure involving the maxillary sinus may have contaminated the blade or the autograft material which is then implanted into the mandible during subsequent surgical procedure[6]. Pain and pus discharge were noted if secondarily infected, which was absent in our case. Infiltration of the cyst into the adjacent alveolar soft tissues was noted in our case which was not evident in many cases.

The cyst was developed by proliferation of the entrapped sinus, lining inside the after closure of the Caldwell- Luc incisions. Another hypothesis was that the contents entrapped in the cavity of the sinus after closure will not be able to drain through the ostium which promotes the development of the cyst. Another hypothesis states that cyst might be developed from the regenerating mucosa within the sinus

which is originated from the nasal cavity. Hasegawa predicted the racial predisposition for the cyst. Some other theories are; Traumatic theory that states, the traumatic injury to the sinus lining initiates the cyst formation and the inflammatory theory that states, the continuous inflammatory process inside the congested non aerated sinus after surgery can lead to cyst formation[7].

Early lesions on radiograph shows, well circumscribed, radiolucent or fairly radiopaque structures in the antrum, separate from the unaffected part of the sinus. Later they completely occupy the sinus. In our case the lesion was seen not in the confinement of the sinus, it showed an extended out growth after the erosion of the sinus wall. Usually they are unilocular and rarely multilocular varieties are reported. Bilateral surgical ciliated cyst developed after maxillary osteotomy was reported by Jung et al in 2014 which was identified in the post-operative orthopantamogram[8].

Identifying the limits of the cyst is difficult using an orthopanta mogram, especially for massive lesions. Many authors suggest CT as a necessary investigation for the cyst. Chindasombatjaroen et al did a comparative study on diagnosing the surgical cyst with CT and MRI. They found that the detection rate was more on MRI. But the bone expansions were detected only on CT images[9]. Cone Beam CT images of our case showed the exact boundaries and size of the cyst.

Microscopically these cysts are usually lined by pseudo stratified ciliated columnar epithelium with squamous metaplasia. A mixture of ciliated, cuboidal, and squamous epithelium with multiple number of layers may be seen. The underlying connective can be cellular or rich fibrotic[5]. The cystic fluid is straw yellow to brownish mucinous and in which anucleated and nucleated epithelial cells along with inflammatory cells predominantly lymphocytes, few eosinophils, plasma cells, macrophages and red blood cells can be seen. Studies done by using electrophoresis of the glycosaminoglycans in cystic fluid showed a different pattern of hyaluronic acid and heparin sulphate with lesser amounts of chondritin-4-sulphate when compared to odontogenic cysts[10].

Enucleating the cyst through an appropriate approach was the treatment plan proposed by Sugar et al. But larger lesions with ill defined margins needed marsupialization[9]. Traditionally, surgical cyst of maxilla is removed using a sublabial approach which showed complications such as facial and dental paresthesia, swelling, hematoma, infection, apical injury to the tooth and oroantral communications. Now transnasal endoscopic marsupialization has replaced the conventional approaches and has become a standard method for managing post operative maxillary cyst. Transnasal endoscopic marsupialization can be performed via middle meatal antrostomy or an inferiomeatal antrostomy. Comparative studies were done between the two approaches and found that middle meatal antrostomy is difficult to perform in conditions like decreased cavity volume, expansion of the lesion beyond the boundaries of the sinus and thickened sinus wall. Inferior meatal antrostomy is easier to perform and shown higher success rate. The recurrence rate is now reduced to 4.7% after the introduction of transnasal endoscopic procedures[11].

CONCLUSION

Surgical ciliated cyst is one of the rare sinus pathologies that have got multiple etiological factors. Iatrogenic trauma to the sinus lining is one of the reasons for its occurrence, which was happened in our case. It is better to avoid the iatrogenic injuries to the sinus as its delicate membrane is highly reactive.

FIGURES

Fig. 1: swelling in the right maxillary region

Fig.2 Panoramic radiograph showing radiolucent cystic lesion in relation to right maxillary sinus.

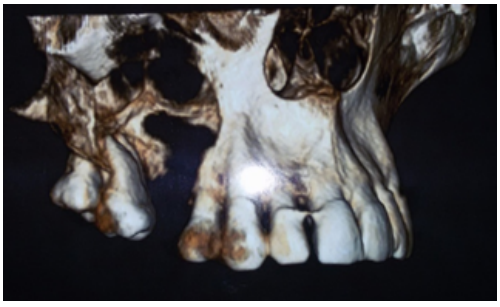

Fig. 3 CBCT image showing superior limit of the lesion.

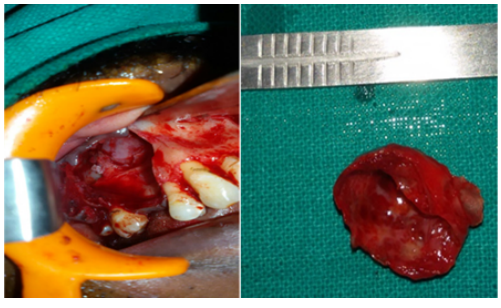

Fig. 4: Intra operative picture and the cystic lining

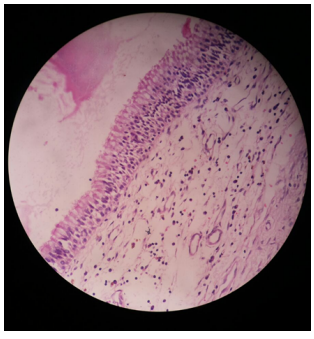

Fig. 5: Microscopic histopathological images showing ciliated columnar epithelial lining.

REFERENCES

1. Kubo, I. (1927). A buccal cyst occurred after the radical operation of the maxillary sinusitis. Dai Nippon Jibi, 33, 896-897.
2. Shear, M., & Speight, P. (2007). Cysts associated with the maxillary antrum. Cysts of the Oral and Maxillofacial Regions, Fourth Edition, 162-170.
3. Meer, S., & Altini, M. (2006). Cysts and pseudocysts of the maxillary antrum revisited. SADJ: journal of the South African Dental Association= tydskrif van die Suid-Afrikaanse Tandheelkundige Vereniging, 61(1), 10-13.
4. Nishioka, M., Pittella, F., Hamagaki, M., Okada, N., & Takagi, M. (2005). Prevalence of postoperative maxillary cyst significantly higher in Japan. Oral Medicine & Pathology, 10(1), 9-13.
5. Shakib, K., McCarthy, E., Walker, D. M., & Newman, L. (2009). Post operative maxillary cyst: report of an unusual presentation. British Journal of Oral and Maxillofacial Surgery, 47(5), 419-421.
6. Koutlas, I. G., Gillum, R. B., Harris, M. W., & Brown, B. A. (2002). Surgical (implantation) cyst of the mandible with ciliated respiratory epithelial lining: a case report. Journal of oral and maxillofacial surgery, 60(3), 324-325.
7. Hasegawa, M., & Kuroishikawa, Y. (1993). Protrusion of postoperative maxillary sinus

mucocele into the orbit. Ear, nose, & throat journal, 72(11), 752-754.
8. Lee, J. H., Huh, K. H., Yi, W. J., Heo, M. S., Lee, S. S., & Choi, S. C. (2014). Bilateral postoperative maxillary cysts after orthognathic surgery: a case report. Imaging science in dentistry, 44(4), 321-324.
9. Chindasombatjaroen, J., Uchiyama, Y., Kakimoto, N., Murakami, S., Furukawa, S., & Kishino, M. (2009). Postoperative maxillary cysts: magnetic resonance imaging compared with computerized tomography. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics, 107(5), e38-e44.
10. Smith, G., Smith, A. J., Basu, M. K., & Rippin, J. W. (1988). The analysis of fluid aspirate glycosaminoglycans in diagnosis of the postoperative maxillary cyst (surgical ciliated cyst). Oral surgery, oral medicine, oral pathology, 65(2), 222-224.
11. Huang, C. C., Chen, C. W., Lee, T. J., Chang, P. H., Chen, Y. W., Chen, Y. L., ... & Huang, C. C. (2011). Transnasal endoscopic marsupialization of postoperative maxillary mucoceles: middle meatal antrostomy versus inferior meatal antrostomy. European Archives of Oto-Rhino-Laryngology, 268(11), 1583-1587.