

MAXILLARY SINUS AND THE ORAL SURGEON

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INTRODUCTION

PARANASAL SINUSES are cavities lined with respiratory mucosa and communicate through tiny apertures with the nasal cavity. The maxillary sinuses which are bilateral and situated within the body of the maxillae are in very close relationship with the maxillary posterior teeth and as a result of its position becomes the focus of attention in oral surgery. The bicuspid teeth and the first maxillary molar lie beneath the floor of even a small maxillary sinus while the remaining molar teeth may have a layer of bony tissue separating the roots from the lining (Figs. 1 & 2). In some patients it can be noted that the apex of the root is in contact with the mucosa of the antrum. In oral surgery it is not unusual to see patients with involvement of maxillary sinuses in conditions like extension of dental infections, complications of extraction of teeth, spread of tumors and in cases of trauma where middle third of the facial skeleton is fractured. In this article, by presenting some types of dental pathology involving maxillary sinuses an attempt is made to emphasize the close co-operation that exists among specialists of various disciplines of medicine like otolaryngologists, dental, oral surgeons and general surgeons.

PROBLEMS IN DIAGNOSIS

Patients with infections of maxillary sinus often present for the first time at the dental clinic. This can be appreciated when one realises that toothache is a very common symptom of an infected sinus. This is a result of the intimate relationship between the nerves supplying the maxillary teeth and the lining of the maxillary sinus. The superior alveolar

nerves supplying sensory fibres to the dental tissues run in the walls of the sinus and in the younger age



Fig. 1 Periapical radiograph showing antrum extending to premolar region.

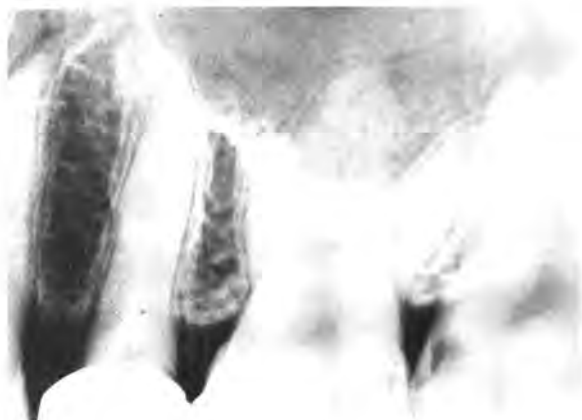


Fig. 2 Periapical radiograph showing close relationship between palatal root of 1st molar and sinus.

group are separated from the sinus by a thin plate of bone. With increase of age the inner walls of the canals resorb resulting in the separation of the sinus lining and the nerves by their connective tissue. During inflammation of this area, nerves supplying the dental tissues will be affected and the end result will be pain which resembles pulpitis. On clinical examination, it will be found that all teeth in the affected area are hypersensitive without pathology. In differential diagnosis of pain in the maxillary molar region one must consider conditions like trigeminal neuralgia too. Both acute and chronic form of sinusitis can appear as a result of dental infection. Normally a dental surgeon during clinical examination will be able to trace the cause of the infection to a diseased tooth or some surgical procedure connected with a tooth. In some studies it is observed that the dental causes of sinus infection were as high as 40%. Factors like state of health of the accessory sinuses should be considered in arriving at a diagnosis.

DENTAL SURGICAL COMPLICATIONS

Extraction of maxillary posterior teeth can in some patients give rise to complications such as creation of an oro-antral fistula or displacement of the whole tooth or root into the maxillary antrum (Figs. 3 & 4). This is usually a result of either the presence of a large air sinus or the absence of a correct technique for the removal of the tooth or root. History of previous antral involvement during surgery, or removal of isolated molar in relation to the sinus are indications for careful pre-operative evaluation and careful surgical removal of the tooth. Fracture of maxillary tuberosity during extraction is often due to the invasion of the tuberosity by the antrum and this can result in the creation of an oro-

antral fistula. A newly created oro-antral fistula is repaired by an oral surgeon by encouraging healing by organisation of blood clot. Usually this is achieved by providing a support in the way of immobilising a soft tissue flap and thereby preventing the entry of organisms into the sinus. At all times attempt is made to cover the defect with a mucoperiosteal flap. Additional support can be given by covering the area with an acrylic resin extension to a denture or other base plate. Patient is discharged with instruction not to blow the nose which may disturb the clot. Decongestant nasal drops and inhalations are of additional help to these patients.



Fig. 3 Radiograph showing tooth in maxillary sinus.



Fig. 4 Periapical x-ray showing fractured portion of root in the sinus.

MALIGNANT DISEASE

It is possible that patients with malignant disease of maxilla may present at the dental clinic in the first instance particularly in rural hospitals. On clinical examination they may be seen to have signs and symptoms for which no obvious dental cause can be found. Common suspicious symptoms include pain in the upper jaw, bleeding from nose and in some patients there can be loosening of the maxillary teeth in relation to the sinus for which no local cause is demonstrable. Other useful hints include excessive bleeding after dental extractions and difficulty in healing of sockets following extraction with proliferation of soft tissue in some cases (Fig. 5). Detailed clinical examination together with x-ray investigation usually helps one to arrive at a definitive diagnosis and the chief responsibility of the dental/oral surgeon lies in promptly referring the patient to the E.N.T. (Otolaryngologist) specialist for management.

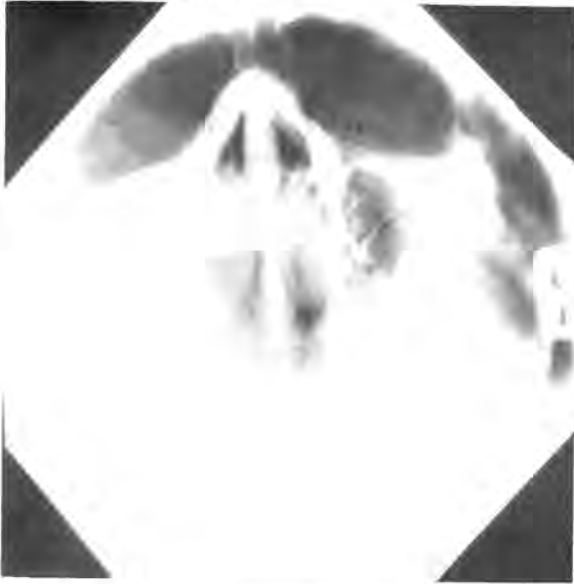


Fig. 5 Radiograph showing carcinoma of maxillary sinus.

DENTAL CYSTS AND FRACTURES

Cysts may be seen in the maxilla in relation to the maxillary sinus and the commoner types include the dental and dentigerous variety. Cysts may also arise from the mucosa of the sinus. Cysts in the maxilla and the maxillary sinus may present very similar radiographic appearances and differentiation can be difficult at times. Comparison of similar radiographs of identical areas of the opposite sides of the skull will help in differentiation. Presence of vascular channels as radiolucent areas in x-ray of

the normal antrum together with the presence of Y sign of Ennis in the bicuspid region are helpful aids in definitive diagnosis. For further confirmation it is advisable to carry out procedures like aspiration of the contents of the lesion. Fractures of the middle third of facial skeleton often present with malocclusion, ophthalmic disturbances etc. as a result of comminution and displacement of the walls of the maxillary sinus (Fig. 6). It may become necessary for the surgeon to carry out open reduction in some cases of transverse facial fractures. In these cases very often it becomes necessary to remove haematoma and pieces of bone in the antrum via surgical exposure of the sinus. Correct reduction should be carried out to eliminate any displacement or step formation in the infra orbital ridge. A Caldwell-Luc procedure is the accepted technique for entry to the maxillary sinus if it becomes a necessity. It is also essential to carry out antrostomy in all infected cases to establish drainage.

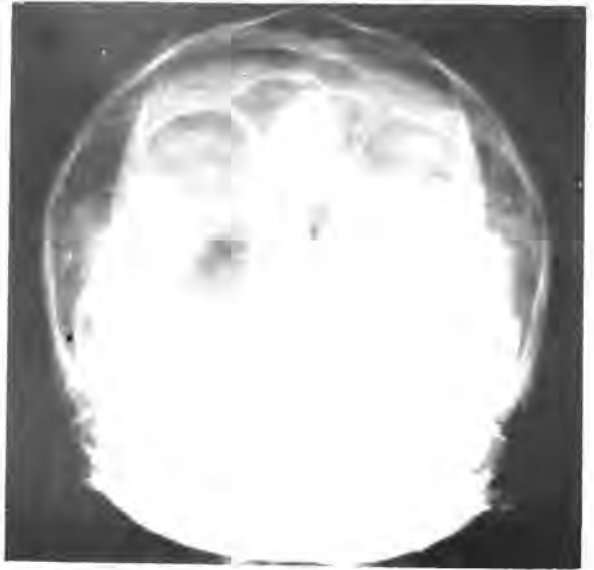


Fig. 6 Radiograph showing fracture of facial skeleton involving the sinus.

CONCLUSION

Diseases of maxillary sinuses often present for the first time at various clinics in government hospitals and can be seen by variety of specialists like E.N.T. surgeons, dental, oral and general surgeons. Problems in diagnosis can arise in these patients by virtue of the fact that the dental tissues and the antrum are very closely related anatomically. By presenting some cases seen in oral surgery clinic an attempt is made to stress the need for increasing consultation among specialists in various disciplines of medicine and surgery.