

Management of maxillary sinusitis of endodontic origin



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A case report

ABSTRACT: Endodontic implications of the maxillary sinus include extension of periapical lesion into the sinus. Though the actual cause of sinusitis is difficult to determine accurately, majority of the cases occur through a dental cause. The purpose of this paper was to present the management of maxillary sinusitis of endodontic origin. A 48 year old generally healthy male patient reported to the dental clinic for the implant placement in the area of missing #26. During the procedure, the dental surgeon noticed a thick granulation tissue in the deep area with painful sensation. Further endodontic consultation revealed the tooth #25 was endodontically treated 9 years ago and CBCT showed periapical lesion perforated the maxillary sinus. Extraction and enucleation was done and the biopsy sent to the histopathological lab revealed periapical granuloma. After 2 months, patient was asymptomatic and ENT examination showed the floor of maxillary sinus with reduced hyperplasia. Symptoms of maxillary sinusitis can evoke pain of dental origin, and a careful differential diagnosis is important when dealing with pain in the maxillary posterior area.

Keywords: maxillary sinusitis, mucositis, odontogenic origin

Introduction

Endodontic implications of the maxillary sinus include extension of periapical lesion into the sinus. The literature mentions many cases of extension of periapical infection to the maxillary sinus¹⁻²⁻³⁻⁴. Stafne estimated that 15-75% of the sinusitis cases occur through a dental cause although the actual

cause is difficult to determine accurately ⁵. Sinusitis can be divided into acute, subacute and chronic types. Symptoms produced by acute or subacute maxillary sinusitis can be mistaken with those of pulpal origin ⁶. A comprehensive examination of the patient's medical and dental history will draw the attention of the clinician to endodontic implications of odontogenic origin.

The purpose of this paper was to present the management of maxillary sinusitis of endodontic origin.

Case report

A 48 year old generally healthy male reported to the dental clinic for the implant placement in the area of missing #26. During the procedure, the dental surgeon noticed a thick granulation tissue in the deep area and the patient started feeling painful sensation even with repeated anesthesia. The surgeon then put bone graft material and closed the flap for further consultation. Patient was then shifted from implant clinic to the diagnosis clinic for examination of tooth #25 that had periapical lesion (figure 1). It was revealed during the examination that the tooth #25 had undergone root canal treatment 9 years ago. The pre-operative radiograph had revealed a large periapical lesion with interrupted lamina dura around the tooth #25 with previous root canal filling material and filling on the crown (Figure 2). The periodontal probing was within normal limits for all teeth in the upper left region and the teeth #24 and #25 was restored with amalgam. (figure 3 and 4). The tooth showed no response to cold and electric pulp testing and it

was tender on percussion but not on palpation. The tooth was diagnosed as previously treated with symptomatic periapical periodontitis.

After the clinical examination, CBCT radiography was taken to check the maxillary sinus involvement. CBCT revealed a periapical lesion that perforated the maxillary sinus with thickening of the maxillary sinus floor (figure 5, 6 and 7). Patient then referred to ENT department for consultation. They advised (i) extraction of the involved tooth to remove the source of infection and the thickening of the floor will get resolved upon follow up, or (ii) to inoculate the lesion completely through endoscope under GA.

Patient presented to the endodontic clinic for treatment plan and decision making. The endodontist advised root canal re-treatment of #25 followed by surgical root end resection and retrograde filling along with enucleation of the lesion with precaution to the maxillary sinus perforation. But after consultation with prosthodontist, it was decided to extract the tooth #25 as it was questionable in restorability (figure 8 and 9).

So, the recommended treatment was extraction and the final diagnosis was maxillary sinusitis of endodontic origin. Patient referred to OMF department where extraction of tooth #25 and enucleation of the lesion was performed (figure 10, 11 and 12). The biopsy was sent to the histopathology lab. Post-surgical instructions were given to the patient and was prescribed cap. amoxicillin 500mg tid, tab. brufen 600mg, Rhinocort along with anti-histamines and decongestants. Biopsy report showed periapical granuloma which confirmed the diagnosis. On follow up after 2 months, patient was asymptomatic and PA radiograph revealed socket space (figure 13 and 14).

ENT examination showed the floor of maxillary sinus with reduced hyperplasia.

Discussion

Radiographic examination of the maxillary sinus includes periapical, occlusal, panoramic and facial views ⁷. Panoramic radiography provides a wide overview of the sinus floor and its anatomical relation with the tooth roots allows the determination of the size of periapical lesions. The symptom associated with maxillary sinusitis is dull pain, mostly unilateral and during mastication, or a feeling of 'fullness' around the upper posterior teeth. The patient may complain of pain exacerbated when lying down or bending due to increased intracranial pressure from blood flow and the affected sinus may be tender to palpation ⁸. The teeth in relation to affected sinuses will be moderately or extremely sensitive to palpation and/or percussion. Nasal discharge is considered to be important sign of sinus infection. The use of a topical nasal decongestant may help in differentiating pain from sinusitis or from dental origin. On the other hand, the pain of dental origin ranges from thermal sensitivities to continuous sharp pain which may be associated with localized swelling. Radiographic changes in sinusitis show thickened sinus mucosal membrane and air-fluid filled.

The first time that showed the direct extension of dental infection into the sinus was in a study by Bauer in 1943. His study was done on cadavers and revealed the pulp of involved teeth with histological evidence of extension of infection into the maxillary sinus. The local hyperplasia of dental origin in the mucosa of the maxillary sinus could be removed by conservative root canal

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therapy. Selden and August in 1970 also managed maxillary sinusitis after the treatment of a periodontal-endodontic lesion in first and second premolars. For the refractory cases after a conservative management, the surgical approach was recommended¹⁰. In this case the restorability of the tooth made the final decision.

At least 70% of bacterial contamination of sinusitis is caused by *Streptococcus pneumoniae* and *Haemophilus 37 influenzae*¹¹. Antibiotics are a significant part of management in acute suppurative sinusitis. Pinheiro *et al*/ recommended amoxicillin as a first-line of treatment aimed to cover both gram-positive and gram-negative organisms. Topical decongestants are beneficial for oxygenation and facilitate the sinus drainage of pus by decreasing the edema. Analgesics, such as paracetamol and nonsteroidal anti-inflammatory drugs are beneficial for the control of pain.

Conclusion

The close anatomical inter-relationship of the maxillary sinus and the roots of upper posterior teeth can lead to endodontic complications. Periapical inflammation can lead to maxillary sinusitis of dental origin with resultant inflammation and thickening of the mucosal lining of the sinus in areas adjacent to the corresponding teeth. In such cases, the conventional endodontic treatment or re-treatment is the treatment of choice with surgical intervention. But there are chance of refractory cases which requires extraction to remove the source of infection. An adequate diagnosis and appropriate treatment with antibiotics, decongestants and analgesics are indicated for the treatment of sinusitis.

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