

Deleterious Habit Leading to Sequestrum in an Adolescent- A Case Report

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ABSTRACT

Sequestrum - a bone that gets separated during the process of necrosis from normal or sound bone. It is a complication of osteomyelitis. Clinical symptoms of sequestrum include, Pain, swelling or infection of the gums or jaw, Gums that do not heal, Loose teeth, Numbness or heaviness in the jaw, Drainage of jaw abscesses (pus) and Exposed bone showing through missing gum tissue. Sequestrum formation can lead to disruption of the blood supply to that part of piece of detached bone causing tiny breaks that can lead to total bone collapse and significant damage, including tooth loss. Clinical implications of sequestrum have also included oral ulceration of mucosa, lingual shelf and mylohyoid ridge of mandible. Less commonly it has resulted in tori and exostoses.

KEYWORDS: Sequestrum, Adolescence, Abscess

INTRODUCTION

Sequestrum is a sequela of osteomyelitis. More frequently encountered in mandible than in the maxilla and is often with suppuration and pain. It can lead to pus formation as a consequence of the osseous spaces being filled with pus.¹ Chronic osteomyelitis can be the result of a non-treated acute mild inflammation or emerge without a precursor.²

Risk factors of sequestrum include:

- Head and neck radiation therapy
- Chemotherapy
- Steroid therapy eg: cortisone.
- Other blood-related disorders eg: Anemia,
- Tooth extractions
- Alcohol abuse and cigarette smoking,
- Osteoporosis,
- Paget's disease.³

The following case report describes the case of sequestrum in an adolescent patient and its treatment.

CASE REPORT

A 14 year old male patient reported to Dept of Pedodontics and Preventive Dentistry Maratha Mandal's Nathajirao G. Halgekar Institute of Dental Sciences Belgaum, with the chief complaint of continuous dull pain in upper right back tooth region since 30 days. His medical history was non contributory.

On extra oral assessment there was no gross asymmetry or any evident swelling (Figure 1). Examination of TMJ revealed no abnormalities. Intraoral clinical examination showed that the patient had permanent dentition with 28



Figure 1: Extra oral image

teeth and there was stainless steel crown placed with respect to first molar in the fourth quadrant. The examination also revealed that upper right first maxillary molar was carious and was the source of pain and discomfort for the patient. Interdental bone between first and second molars had calculus like deposit. Also the oral hygiene of the patient was poor with evidence of plaque and calculus deposits. Oral hygiene index [OHI-S] was carried for this patient, which gave scores of debris and calculus as 2.2 and 3.3 respectively indicating a poor oral hygiene.

Radiographic examination of upper right first maxillary molar showed radiolucency involving the enamel, dentin and pulp and inter-dental bone loss indicating the requirement of root canal treatment.

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Clinical procedure:

- Oral prophylaxis was carried out for the patient.
- It was observed that any attempt to remove the calculus like deposit resulted in the movement of the entire deposit along with the tooth.
- Access opening was made, root canals were debrided and thoroughly irrigated with sodium hypochlorite and saline.
- Zinc oxide eugenol closed dressing was placed and patient was recalled after 3 days.
- Patient did not report as per the appointment and reported almost 2 months later
- There was no pain but on clinical examination we found a portion of detached cortical bone on the buccal aspect of tooth (Figure 2) which was initially mistaken for calculus.



Figure 2: Arrow indicating sequestrated bone

A dressing of calcium hydroxide was placed after irrigation with saline and follow up was done after 15 days, the same process was repeated at the subsequent visit in order to give the bone a chance to heal by itself. When the patient reported as per the appointment we found that there was no progress and the bone had not healed. It was decided to extract the tooth along with the piece of dead bone and replace the tooth with a prosthesis. Accordingly the tooth was extracted under local anesthesia, bleeding was induced carefully. Antibiotics and analgesics were prescribed and patient was asked to report after 7 days. When the patient reported after 7 days impression of maxillary and mandibular arches were made and casts were poured for fabrication of removable prosthesis. Patient was asked to report back after 4 days during which the prosthesis were fabricated and delivered to patient along with instructions of usage on the 4th day. The removable prosthesis is an interim treatment for a permanent fixed prosthesis which can be fabricated later after the patient completes his growth spurts and growth of jaws and face is completed. After delivery of prosthesis the patient has been under regular follow up for past 3 months and has been asymptomatic so far.

DISCUSSION

This case report describes a case of sequestrum formation

in an adolescent, as a consequence of using unhygienic metallic pin to remove food debris from in between teeth. Sequestrum which is a consequence of osteomyelitis occurs as a result of infection or trauma to the oral structures.⁴ The clinical examination revealed the presence of a calculus like mass on the buccal aspect of maxillary right first permanent molar, whose movement resulted in the movement of the entire tooth, but was later diagnosed as sequestrum based on clinical, radiographic and histological findings. In this case upon asking the patient, he revealed that he was in the habit of removing the food debris with an unhygienic metallic pin from in between teeth since about 3 months, which caused a constant trauma to the bone and resulted in the buccal cortical bone getting separated from the normal bone and resulted in a sequestrum. Formation of sequestrum is an interplay of infection and constant trauma to the bone which results in disruption of blood supply to the bone leading to its detachment from healthy bone and forming a dead and denuded bone. General principles of management includes debridement and antimicrobial therapy. If sequestrum is inconspicuous it gradually exfoliates through mucosa. If large, surgical removal may be necessary since its removal by normal process of bone resorption would be extremely slow. An involucrum forms when sequestrum becomes surrounded by new living bone. Unless proper treatment is instituted sequestrum may proceed to development of periostitis, soft-tissue abscess or cellulitis.

Pathologic fracture occasionally occurs because of weakening of jaw by destructive process.⁹

In our treatment modality we performed thorough debridement of root canals and irrigation with saline and sodium hypochlorite and placed a dressing of calcium hydroxide, thereby giving the best possible chance to the bone and the involved tooth to heal on its own. When the treatment measures failed to give the required results it was decided to extract the tooth to prevent further progress of infection. The drawback being that the patient ended up losing a permanent tooth to infection. The histopathological features of sequestrum have been shown in Figure 3 and 4 respectively Treatment requires both antibiotic therapy and surgical debridement,

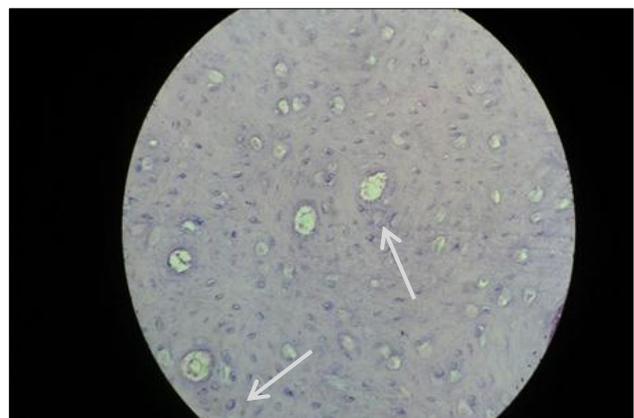


Figure 3: Arrows showing dead bone (20X)



Figure 3: Arrows showing dead bone (20X)

meaning the necrotic bone must be completely removed until the underlying bone starts bleeding.⁵

According to study by Scully G, Oral ulceration did occur leading to sequestrum formation in an adolescent in the habit of removing debris from tooth by using unhygienic tooth pick.⁵ Topazian R, Goldberg M stated that constant trauma and infection of a healthy bone in an adolescent leads to formation of a sequestrated bone.⁷ Thus the above case report is valid and the objective of case report is to describe the ill effects of using unhygienic foreign objects to remove food debris and prevent such untoward anomalies such as sequestrum described above.

CONCLUSION

It is essential to educate children about ill effects of using unhygienic objects to remove debris and maintain a good

oral hygiene and to educate the parents to guide them in their formative years thereby preventing such untoward incidences and anomalies like a sequestrum.

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