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Prosthetic Protection of a Healing Bone Defect Caused as a Result of Chronic Suppurative Osteomyelitis of the Mandible

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ABSTRACT

Osteomyelitis of the jaws in any of its forms is rarely encountered by a prosthodontist for rehabilitation. Though acute forms of osteomyelitis are considered as dental emergency, its chronic forms are usually associated with the destruction of the jawbone in either maxilla or the mandible. Prosthetic protection is required temporarily till the lesion heals, but dental rehabilitation is required due to tooth loss. This article is a case report of a patient who had undergone surgery and required a device to protect the area. The design of such a device is also discussed along with the anatomy of the defect.

Keywords- *trabeculae, medically compromised, suppuration, antibiotics*

INTRODUCTION

Though bone appears to be a very strong structure yet it is prone to decay due to infections that may range from bacteria to fungal or viral. The word “Osteomyelitis” originates from the ancient Greek word, osteon (bone) and muelinos (marrow) and means infection of the medullary portion of the

bone.^[1] It can be classified as acute, subacute or chronic, depending on the clinical presentation, but there are other ways of classifying the condition like symptoms, cause and presence or absence of suppuration. The decline in prevalence of this bone condition is due to increased availability of

antibiotics and progressively higher standards of oral and dental health. [2], [3]

Basically an inflammatory condition of the bone that begins as an infection of the medullary cavity, rapidly involves the haversian systems, and extends to involve the periosteum of the affected area. [4] Currently osteomyelitis usually presents as a sub-chronic condition and is more commonly associated with debilitated, immunosuppressed or medically compromised patients who have an existing infection in the area. [5], [6] In its acute form, the condition presents symptoms which force the patient to seek medical attention, but in its chronic form the condition called chronic suppurative osteomyelitis causes abscess and sequestration of the bone. [7] Medically compromised patients like those with underlying diabetes or malnutrition suffer delayed healing, especially when surgical intervention has been done. Surgery is indicated to remove the dead bone along with sequestra and leave normal healthy bone that is capable of healing. This clinical case report is of a similar patient and was advised prosthetic protection of the area that was surgically corrected.

CASE REPORT

An elderly male patient in his late forties was referred to the department of Prosthodontics by department of oral surgery for possible protective device in relation to surgery on the left side of the mandible due to chronic suppurative osteomyelitis. The aim and objective of surgeons were to protect the area from trauma, food collection, debris while at the same time provide a conducive environment to promote healing. The patient was diabetic and

had recently suffered from anemia, which was corrected before surgery. The patient also gave a history of smoking, alcohol and pan chewing. Clinical examination revealed a Kennedy class III situation in relation to left side of the mandible with second premolar, first and second molar missing. The edentulous area was trough like extending almost one and a half centimeters in length and 12 mm in width (Fig.1).



Figure 1: Intra oral view of the large defect left over after the surgery

The lingual cortical plate was higher than the buccal cortical plate and the tissues in the area were flabby and tender to touch. Palpation revealed collected food debris inside with the release of bad odor. The treatment plan for the patient included a protective splint that would cover the entire area, including the area within the trough and would be retained by a 19 gauge stainless steel Adams clasp.

Impressions were made for both maxillary and mandibular edentulous arches with irreversible hydrocolloid (CA 37; Cavex, Haarlem, Holland), following which retrieved casts were put on a dental

cast surveyor on which the relative soft and hard tissue undercuts were marked and blocked simultaneously. This was then followed by fabrication of an Adams clasp to act as mechanical form of retention. Auto polymerizing acrylic resin (Fortex; Lucite Intl, Durham) was then slowly added till it took the shape of a protective device that would engage the undercuts and interproximal embrasures of the teeth (Fig.2). The protective device was then tried in the patient and necessary corrections were made (Fig.3). The patient was demonstrated and taught the insertion and removal of the device and was put on a strict following up protocol of every 15 days. During the follow up visit the inner surface of the device in the area of healing was reduced by 1mm to accommodate the growing tissues under the device.

DISCUSSION

Chronic suppurative osteomyelitis (CSO), which is a bone infection with suppuration, abscess/fistula formation, and sequestration at some stage of the disease, is due to a defined, infectious etiology. Underlying systemic diseases like diabetes, anemia and malnutrition that cause concomitant alteration in host defenses profoundly influences the course of osteomyelitis.⁸ The jaws are unique from other bones of the body in that the presence of teeth creates a direct pathway for infectious and inflammatory agents to invade bone by means of caries and periodontal disease.⁹ Oral bone appears to be particularly resistant to infection despite exposure to oral flora.¹⁰



Figure 2: Protective device with no teeth on it

Surgical correction is the treatment of choice when underlying systemic diseases are present as it allows less time to heal. After surgery, the patient is required to keep the area clean and free from any sort of injury. Mandibular resected areas are not easy to maintain, and a protective device is a correct innovation as demanded by surgeons in this case. The critical part of the healing is during the first 3 to 5 weeks depending upon the extent of surgery. Forming an acrylic bulb that would overlay the trough allows complete protection. As the tissues heal, the bulb can be easily accommodated within the growing area by simple reduction.

CONCLUSION

Though chronic suppurative lesions of the mandible are less common in modern times, every clinician should be able to provide a conducive environment for healing in such cases. A simple device like one described is an excellent option in such cases.



Figure 3: Protective device in place

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