"Case Report"

Periodontal Abscess Occurrence Post Wire Splint Therapy on Mobile Teeth: Case Report

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Abstract

Introduction: Tooth mobility is one of the cases of periodontal disease caused by the destruction of the bone that supports the teeth. Stabilization of loose teeth using splinting wire can be one of the treatment options. The use of splinting wire may increase plaque accumulation and is sometimes difficult to clean. Plaque accumulation will cause bacterial invasion into the surrounding tissues of the periodontal pockets which will eventually develop into an inflammatory process. As time goes by, connective tissue destruction and pus formation will occur which eventually leads to a periodontal abscess. Periodontal abscess is a localized accumulation of pus in the gingival wall of a periodontal socket with periodontal tissue destruction. Objective: The purpose of this case report is to report the incidence of periodontal abscess after wire splinting application in a case of tooth unsteadiness. Case Report: A 76-year-old female patient came to RSGM with complaints of feeling uncomfortable because some of her teeth were loose. The complaint has been felt approximately 1 year ago. The complaint was accompanied by pain when used to eat and toothbrushing. Objective examination showed reddish gingiva, rounded interdentials, soft consistency, and unstippling texture on the labial and lingual side of teeth 33, 32, 31, 41, 42 and 43 with BOP (+) at all points. The patient's Oral Hygiene Index (OHI) was 2.16 and PI was 18.67%. Probing depth average was 3 mm, recession was 3 mm, and tooth decay was grade 2. Supportive examination showed horizontal bone destruction in the anterior region of the mandible. The first visit was carried out wire splinting on the lingual part of the loose tooth, at the time of control there was a periodontal abscess on the labial side so the splinting was moved to the labial side. Discussion: The increase in socket depth and the appearance of periodontal abscesses are caused by plaque accumulation which eventually makes bacteria invade the periodontal tissue. Conclusion: Periodontal therapy really needs to pay attention to the patient's OHI, therefore plaque control and removal of bacterial deposits must be carried out by scaling and root planning regularly and carrying out other periodontal therapies such as curettage if tissue destruction is severe enough.

Keywords: tooth mobility; wire splint; periodontal abscess

INTRODUCTION

Periodontitis is defined as an inflammatory disease of the tooth-supporting tissues caused by certain microorganisms.¹ Bacteria often found in periodontitis include gram-negative bacteria such as Porphyromonas gingivalis, Prevotella intermedia, and Aggregatibacter actinomycetemcomitans. These bacteria cause progressive destruction of the periodontal ligament and alveolar bone with the formation of periodontal pockets, gingival recession, or both.²

The severity of periodontitis is proportional to the tissue damage caused by host response, environmental or genetic risk factors. Periodontitis that is not treated promptly, there will be an increase in socket depth and alveolar bone destruction that can lead to tooth loss, tooth mobility, tooth migration, and impaired masticatory function.³

Inflammatory changes in periodontal tissues related to the adaptive capacity to withstand occlusal forces can be compromised and lead to traumatic occlusion defined as occlusal forces that result in injury to the teeth and/or periodontal attachment.⁴ In addition to increased tooth loosening and migration, signs of traumatic occlusal forces consist of fremitus (vibration seen on palpation when the teeth touch), occlusal discrepancy, wear aspects, tooth fracture, thermal sensitivity, discomfort or pain when chewing, and/or radiographic indicators such as widened periodontal ligament spaces and root resorption.⁵

Treatment of tooth mobility with splint has the primary goal of reducing the
increased mobility of pathological teeth. The mobility resulting from periodontal inflammation may often be treated with occlusal adjustment and adequate antimicrobial therapy. However, in cases of severe alveolar bone loss it is likely to be irreversible. Splinting of mobile teeth is an option to improve patient comfort and provide better control of the patient's occlusion.6

Splinting has the disadvantage that it can increase the accumulation of plaque bacteria, so it is necessary to maintain good oral hygiene.7 The accumulation of bacteria may lead to the possibility of bacterial invasion of the soft tissue around the periodontal pockets which will eventually cause an inflammatory process. This process will trigger an excessive release of cytokines that cause connective tissue damage, encapsulation of bacterial infection, and pus production, so that a periodontal abscess can form.8 The characteristics of a periodontal abscess are localized pus accumulation usually on the lateral gingival wall of the periodontal socket, reddish swollen gingiva, increased depth of the socket when probing, teeth tend to be sensitive when probed and allow for tooth loosening and faster loss of periodontal attachment.9

The purpose of this case report is to report the incidence of periodontal abscess after wire splinting application in a case of tooth mobility.

CASE REPORT

A 76-year-old female patient came to the RSGM UMY complaining of discomfort caused by the looseness of her lower front teeth. The complaint has been felt approximately 1 year ago. The complaint interferes the patient's activities like eating because of pain sensation. The patient never bleeds when brushing teeth or spontaneous bleeding. The patient had previously consulted to the dentist 1 month ago and scaling was performed on the area. The patient brushes her teeth twice a day, in the morning when he wakes up and at night before going to bed, sometimes brushing his teeth after eating. Currently, the patient does not brush her teeth in the area complained of due to pain. The patient has never been hospitalized in the last 1 year. The patient has a history of high cholesterol level in the last 2 years ago, the last control was 3 months ago with a cholesterol check result of 290. The patient takes simvastatin once a day before bedtime. The patient has no allergies to drugs or food. Patients often consume fruits and vegetables every day, patients consume about 1.5 liters of water per day and the patient's daily physical activity is only cleaning the house.

Objective examination showed reddish gingiva, rounded interdentals, soft consistency, and unstippling texture in tooth regions 33, 32, 31, 41, 42 and 43. BOP + in all regions, with OHI 2.16 and PI 18.7%. PD averaged 2 mm, recession averaged 3 mm, CAL averaged 5 mm, mobility grade 1 in teeth 32 and 43, grade 2 in teeth 41 and 42, and grade 3 in tooth 31 according to miller classification. Periapical x-rays examination in the area of the lower anterior teeth showed horizontal bone destruction to the tip of the root.
Based on the results of subjective, objective, and supporting examinations, the diagnosis in this case is generalized chronic periodontitis with grade 1 luxation in teeth 32 and 43, grade 2 in teeth 41 and 42, and grade 3 in tooth 31. The treatment plan in this case is DHE, scaling and root planning, splinting, curettage, and control.

**CASE MANAGEMENT**

The first visit after scaling and root planning, splinting was carried out using wire and composite resin on the lingual side of teeth 33 to 43. First, the working length was measured using dental floss measured 2x the working length. After that, the wire that will be used is cut according to the working length and twisted. After that, isolation is carried out using a cotton roll and the application of etching and then rinsed. After that, apply bonding and light cure for 20 seconds. Adapt the wire to the shape of the dental arch and then apply composite resin so that the wire does not come loose. Check the traumatic occlusion with articulating paper and reduce the thick printed area using a finishing bur and then polished.

The next visit, patient complained of pain and swelling in her gums. The patient said that it was difficult to clean the teeth with the wires, so sometimes they were not cleaned at all. It is currently painful and increasingly uncomfortable to brush the teeth in that area. Based on objective examination, there was swelling of the labial gingiva in the area of tooth 31 with palpation (+) VAS 2. There was a periodontal pocket with a depth of 5 mm at tooth 31 and 6 mm at tooth 41, so at this visit scaling and root planning and curettage were carried out in the hope that a new attachment would arise. After that, the patient was counseled again and instructed to come for control 2 weeks later.

The next visit, patient came without any complaints with healthy gums. The patient also said that until now there were no more swollen gums.

**DISCUSSION**

Periodontitis is a disease of the supporting tissues of the teeth involving the gingiva, periodontal ligament, cementum, and alveolar bone due to an inflammatory process.¹ Untreated periodontitis disease
will lead to attachment loss characterized by increased socket depth and alveolar bone loss as seen from radiographs. Clinical signs and symptoms of disease progression include tooth loss, increased tooth mobility, tooth migration and impaired masticatory function.2,10

Tooth splinting treatment is indicated for teeth that have increased in mobility and performed before, during or after the active phase of periodontal treatment.6,11 Splinting therapy is a non-surgical periodontal therapy that can be combined with open-flap debridement therapy and additional antibiotics.11

Splinting was applied to the lingual side of the tooth and occlusal adjustment was performed. A few days after insertion, the patient complained of swollen and sore gums, soft consistency and fluctuation (+). The diagnosis was periodontal abscess. Periodontal abscess is defined as a localized accumulation of pus located within the gingival wall of a periodontal socket, with expressed periodontal destruction occurring over a limited period of time, and with easily detectable clinical symptoms.12

The development of a periodontal abscess occurs due to bacterial invasion of the soft tissues surrounding the periodontal pockets, which will develop into an inflammatory process through chemotactic factors re-released by the bacteria that attract polymorphonuclear leukocytes (PMN) and other cells. This will trigger an intensive release of cytokines; causing connective tissue damage; encapsulation of bacterial infection and pus production. Once an abscess is formed, the extent of damage within the abscess will depend on the growth of the bacteria depending on its virulence and the local pH (an acidic environment will favor lysosomal enzyme activity).8

Abscess formation after splinting in this patient may be due to indirect subgingival cleaning. Patients with periodontitis without subgingival debris removal can lead to periodontal abscess formation due to bacterial overgrowth. In addition, detached calculus fragments can be pushed into the tissue, or inadequate scaling may allow calculus to remain in the deep socket area, while the coronal part will block normal drainage.12

The next management of this patient was to move the splinting from lingual to labial side because the patient had poor OHI and could not clean his mouth properly, so if the material was moved to the labial, it was hoped that the patient could be better at cleaning his teeth. An important thing to note in the treatment of periodontal disease is to maintain the patient's oral hygiene at home.13 Due to the infectious nature of the disease, the use of antibiotic therapy is recommended to reduce or eliminate bacteria in deeper periodontal pockets because these areas cannot be reached by mechanical instruments either hand-instrument or power-driven.14

After moving the splinting to the labial, gingival curettage was performed as a procedure to remove the etiologic factors of periodontitis. This treatment involves scraping the periodontal pocket wall to remove chronic inflammatory tissue.15 This tissue contains granulation components (e.g. fibroblastic and angioblastic proliferation), invisible pieces of calculus and bacterial colonies. These bacterial colonies cause the pathological condition of the tissue and inhibit healing.14

Curettage is performed as a non-definitive procedure to reduce inflammation when aggressive surgical techniques are indicated due to age, systemic problems, psychological or other factors. In addition, curettage is also performed at recall visits as a maintenance method in deep pockets.15

CONCLUSION
Periodontal therapy really needs to pay attention to the patient’s OHI, therefore plaque control and removal of bacterial deposits by scaling and root planning should be carried out regularly and other periodontal therapies such as curettage if tissue destruction is severe enough.
REFERENCE


Controlled Trial. PJMHS. 31 Agustus 2022;16(8):504–7.
