"Case Report"
Stage III Grade A Mandibular Anterior Tooth Periodontitis Treatment
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Abstract

Chronic periodontitis is inflammation caused by periodontopathogenic microorganisms characterized by alveolar bone resorption, loss of attachment and apical migration of junctional epithelium. Non-surgical and surgical periodontitis treatments including curettage are performed to reduce inflammation and form new attachments before flap surgery. The purpose of this writing is to treat periodontitis before flap surgical treatment is carried out. Case report: Female, 39 years old, came to RSGM UMY with complaints of loose lower front teeth and gums that bleed easily when brushing her teeth. The patient had no history of systemic disease. Intra-oral examination at the first visit revealed that the gingiva of the mandibular anterior teeth was reddish, unstippling and loose texture grade 2, OHI 7.3 (poor), PD 8 mm, PI score 30%, CAL 8 mm, and 3 tooth loss due to periodontitis. X-ray results showed resorption of the alveolar bone horizontally in the apical 1/3. DHE treatment plan, scaling and root planning, occlusal adjustment, splinting, curettage, flap surgery. Results: Control 2 weeks after curettage, gingiva was coral pink and PD was reduced. Conclusion: Curettage treatment in periodontitis cases reduces the depth of periodontal pockets and there are changes in clinical attachment levels (CAL) in mandibular anterior teeth. Surgical flap treatment is required in this case after curettage.

Keywords: curettage; splinting; stage III periodontitis

INTRODUCTION

Periodontitis is inflammation of the periodontal tissue caused by a certain group of microorganisms which is characterized by loss of alveolar bone, loss of attachment, the presence of periodontal pockets, apical migration of the junctional epithelium. Pathogenic bacteria in dental plaque can cause periodontal pockets2. Periodontal pockets are a condition where the depth of the sulcus increases pathologically and damage to the tissue supporting the tooth occurs. Periodontal pockets consist of 2 types, namely suprabony pockets and infrabony pockets. Suprabony pockets are periodontal pockets which have the base of the pocket located more coronally than the alveolar bone, while infrabony pockets are periodontal pockets which have the base of the pocket located apical to the alveolar bone1. Alveolar bone damage and loss of attachment in periodontitis cause tooth mobility21. Increased tooth mobility has an impact on comfort when chewing, aesthetics and if left unchecked will cause tooth loss22,23.

According to the 2017 AAP, the classification of periodontitis is divided using staging and grade, staging to assess the severity and extent of the disease and specific factors that may cause complexity in long-term case management is divided into staging 1-4. The grade category indicates the level of progression of periodontitis, response to standard therapy and potential impact on systemic health and is divided into grades A, B, C. Stage 3 periodontitis is characterized by loss of attachment ≥5 mm, there is bone loss reaching the apical 1/3 area, there is loss of 1-4 teeth due to periodontitis and probing depth ≥6 mm. Grade A, namely RBL for 5 years does not show any reduction in bone, does not have diabetes or smoking habits3. Non-surgical treatments such as scaling and root planning, occlusal adjustments, and splinting aim to eliminate factors that cause inflammation in the tissues supporting the teeth5. Splinting is a non-surgical treatment performed on teeth that are luxating to stabilize the teeth and distribute chewing pressure20.
Curettage is a procedure to eliminate inflamed granulation tissue on the lateral wall of a periodontal pocket. Curettage can reduce pocket depth by forming new attachments and reducing inflammation. Several studies also show that gingival curettage can be performed as initial treatment and preparation before performing a periodontal flap.

CASE REPORT
A 39-year-old female patient came to RSGM UMY with complaints that her lower front teeth were loose and the gums in that area bled easily when brushing her teeth. Complaints have been felt since about 1 year ago. The front lower jaw teeth are less comfortable when biting food. The area complained of was never painful or swollen. The patient last went to the dentist 1 week ago to have his teeth cleaned. The patient did not have a history of internal medicine or did not take routine medication. The patient's parents were not suspected of having a history of internal medicine.

Figure1. Radiograph Interpretation
Teeth 32, 31:
- Alveolar crest: There is a horizontal decrease in the alveolar crest on the mesial and distal sides
- Periapical: There is bone loss up to the apical third

Objective examination at the first visit revealed reddish gingiva, rounded interdental papillae, soft consistency, unstippling texture on the mandibular anterior teeth (teeth 33-43) and grade 2 mobility on the mandibular anterior teeth (teeth 32-42). The OHI examination showed a result of 7.3 (bad) and a PI score of 30%. The diagnosis in this case is chronic periodontitis stage III and grade A. The treatment plan that will be carried out on the patient is DHE, scaling and root planning, splinting, curettage, flap surgery, control, and evaluation.

CASE MANAGEMENT
1st visit
The first visit involves scaling and root planning which aims to remove supra and subgingival plaque and calculus. This visit provides dental health education (DHE) regarding information on the disease the patient is experiencing, the treatment plan that will be carried out and provides education on always maintaining oral hygiene by brushing your teeth at least twice a day in the morning after breakfast and at night before bed.

2nd visit
At the second visit, OHI control was carried out and continued with splinting using composite wire on teeth 33-43. Objective examination: there are reddish gingival margins on teeth 32, 31, 41, and 42, rounded interdental, soft consistency with periodontal pockets > 3mm deep and there is loss of attachment accompanied by gingival recession on the lingual side. OHI: 2 PI: 19.3%

3rd visit
At this visit the operator begins to carry out curettage treatment on teeth 33-43 which is included in the surgical phase. After examining the oral hygiene index (OHI), plaque index (PI), probing pocket depth (PPD), bleeding on probing (BOP), gingival recession, and clinical attachment loss (CAL). OHI: 2 PI: 19%

Procedures
Operators prepare tools and materials, wash their hands
according to WHO's 6 steps and wear PPE. Take OHI, PI, PD, CAL measurements. Asepsis of the work area with povidone iodine. Infiltration anesthesia in the mucobuccal fold and lingual area to be curettaged using Citoject. Perform scaling and root planning. Perform curettage (with a modified pen grasp for the technique of holding the tool) using a Gracey curette number #1-2, #3-4 for anterior teeth, the tool is inserted into the pocket in the direction of the tooth axis until it is at the bottom of the pocket, the finger rest is on the adjacent tooth. The other hand is used to hold the outer gingiva. Horizontal stroke movement on the lateral walls of the pocket. Do this repeatedly to remove the inflamed granulation tissue. Irrigation with saline and povidone iodine solution. Apply liquid metronidazole. Control bleeding. Post-curettage patient education: patients are instructed to maintain oral hygiene, patients are not allowed to eat or drink for one hour after the treatment is carried out, do not eat foods that can stimulate bleeding such as hot food for 24 hours, the post-curettage area should not be played with tongue and hands.

**4th visit**
The fourth visit carried out control after 2 weeks of curettage treatment. At this visit, the patient still complained of bleeding gums as before. There are reddish gingival margins on teeth 32, 31, 41, and 42, rounded interdental, soft consistency and unstippling. Examination of oral hygiene index (OHI), plaque index (PI), probing pocket depth (PPD), bleeding on probing (BOP), gingival recession, and clinical attachment loss (CAL). The first control results showed only a slight decrease in probing depth, then the operator planned a repeat curettage at the next visit.

**5th visit**
The fifth visit carried out repeated curettage of the lower anterior teeth. Objective examination: there are reddish gingival margins on teeth 32, 31, 41, and 42, rounded interdental, soft consistency and unstippling. Examination of oral hygiene index (OHI), plaque index (PI), probing pocket depth (PPD), bleeding on probing (BOP), gingival recession, and clinical attachment loss (CAL). The curettage procedure is the same, only the irrigation material is replaced using H₂O₂.

**6th visit**
The sixth visit carried out control 1 month after curettage treatment. At this visit, the patient no longer complained of gums bleeding easily as before. Objective examination: the gingival margins on teeth 32, 31, 41, and 42 are starting to be coral pink with rounded interdental, soft consistency and the unstippling is starting to decrease. An oral hygiene index (OHI), plaque index (PI), probing pocket depth examination was carried out (PPD), bleeding on probing (BOP), gingival recession, and clinical attachment loss (CAL). The results of the second control showed that there was a decrease in probing depth and inflammation had begun to appear reduced. Further treatment requires surgical flap treatment in this case after curettage.

![Figure 2 management documentation. a: before splinting, b: splinting performed, c: curettage treatment 1 (1 month after splinting), d: control 1 (1 month after curettage 1), e: curettage treatment 2 (1 month after curettage 1), f: control 2 (1 month after curettage 2)](image-url)
DISCUSSION

Periodontitis is a chronic, multifactorial disease characterized by host-mediated inflammation of the periodontal tissue associated with subgingival biofilm imbalance resulting in progressive damage to the tooth-supporting tissue and loss of epithelial attachment\(^7\).

Subgingival plaque biofilm will cause mast cells to release vasoactive amines and form TNF\(\alpha\) and cause the release of inflammatory mediators in periodontal tissue. Polymorphonuclear leukocytes will release lysosomal enzymes and matrix metalloproteinase which contribute to the degradation of periodontal tissue. Cytokines and prostaglandins influence the expression of RANKL and osteoprotegerin which causes osteoclast activation to resorb the alveolar bone crest resulting in bone destruction\(^8\).

Healing of the pocket epithelial layer after periodontal debridement and gingival curettage is estimated to take 5 to 12 days. If the area has not completely healed within 7 to 10 days, a healing disorder should be suspected. This is most often caused by local irritants, either calculus that has not been removed or plaque that has accumulated again\(^9\). The root planning procedure will eliminate bacteria on the root surface so that tissue healing will occur on its own without having to eliminate inflamed granulation tissue\(^10\). After 1 week, the gingival height appeared to decrease due to a shift in the position of the gingival margin towards the apical direction. The gingiva is also darker red than usual, but less so than in previous days. After 2 weeks and with good oral hygiene, normal color, consistency, surface texture, and gingival contour are achieved and the gingival margin adapts well to the tooth\(^1\).

\(\text{H}_2\text{O}_2\) or hydrogen peroxide is an irrigation fluid that can function as an effective antimicrobial agent with a broad spectrum to fight the activity of both gram-positive and gram-negative bacteria, fungi, viruses and spores\(^14\). \(\text{H}_2\text{O}_2\) is effective in reducing plaque caused by the physical effects of hydrogen peroxide and the bubbling of oxygen when released from the peroxide. The use of oral supragingival irrigation also causes changes in IL-1\(\beta\) and PGE\(2\) cytokine levels, which are associated with destructive changes in inflamed tissue, as well as bone resorption\(^15\). According to Wolff et al most of the inflammatory processes of the periodontium are caused by anaerobic periodontal pathogens. The oxidizing properties of \(\text{H}_2\text{O}_2\) result in the destruction of anaerobic periodontal pathogens and decrease inflammatory exudate. Reduced inflammatory exudate and increased adhesion may be responsible for the increase in probing depth. Changes in the level of attachment are the result of attachment formation, which is related to the amount of periodontal destruction\(^16\).

Metronidazole gel is a nitroimidazole antibiotic administered locally which has bactericidal properties capable of fighting anaerobic bacteria that cause periodontitis. the gel comes out easily from the pocket\(^18\). Metronidazole gel can interfere with bacterial deoxy ribonucleic acid (DNA) synthesis under conditions with low reduction potential\(^1\).

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Gengigel consists of proteoglycans, chondroitin sulfate hyaluronic acid, and glycoproteins, especially fibronectin. Hyaluronic acid is a polysaccharide found in vertebrate connective tissue, a polymer of glucuronic acid and N-acetylglucosylamine. Hyaluronic acid helps wound healing by inducing early granulation tissue formation, inhibiting inflammation, increasing epithelial turnover and connective tissue angiogenesis.

**CONCLUSION**

Treatment in cases of periodontitis reduces the depth of periodontal pockets and there are changes in the Clinical Attachment Level (CAL) and the level of mobility in the mandibular anterior teeth. Surgical flap treatment is required in this case after curettage.

**REFERENCE**


