

Management of Gingival Curettage on the Lower Anterior Teeth and Operculectomy on the Right Lower Third Molar

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Desi Sandra Sari
desi_sari.fkg@unej.ac.id**Abstract:**

Periodontitis is an advanced, destructive periodontal disease characterized by periodontal pocket formation and progressive loss of supporting tissues. Initial periodontal therapy typically involves nonsurgical approaches; however, surgical intervention may be required when clinical improvement is insufficient. This case report describes the comprehensive management of localized periodontitis stage II grade A associated with an operculum on the lower right third molar. A 35-year-old female patient presented with complaints of dental calculus on the lower anterior teeth and gingival tissue covering the lower right posterior tooth. Clinical and radiographic examinations revealed subgingival calculus, periodontal pockets measuring 3–4.5 mm, and horizontal bone resorption involving approximately one-third of the root length. Radiographic assessment also showed that the cusp of tooth 48 was positioned parallel to the occlusal line and the occlusal plane of the adjacent tooth. Initial periodontal therapy included supragingival and subgingival scaling and root planing. Operculectomy was subsequently performed on tooth 48 to remove the gingival tissue covering the crown and improve access for oral hygiene. Curettage was performed on teeth 41 and 42 to remove residual inflammatory tissue. Periodic evaluation demonstrated a reduction in gingival inflammation, with notable improvements in gingival color, consistency, and texture following curettage. Comprehensive periodontal management combining nonsurgical therapy with targeted surgical procedures such as curettage and operculectomy can effectively control inflammation and improve periodontal health. Operculectomy is particularly beneficial in cases where an operculum impedes proper cleaning of the third molar region, thereby helping to prevent recurrent inflammation and facilitate optimal periodontal maintenance.

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INTRODUCTION

Periodontal disease is a chronic inflammatory condition affecting the supporting structures of the teeth, including the gingiva, periodontal ligament, cementum, and alveolar bone (Salvi et al., 2023). The primary etiological factor is the accumulation of bacterial plaque and calculus on the tooth surface, which initiates and sustains the inflammatory response in periodontal tissues (Di Stefano et al., 2021). In the early stages, periodontal inflammation commonly manifests as gingival swelling, changes in gingival contour and consistency, and bleeding during brushing or probing (Heitz-Mayfield, 2024). If left untreated, this inflammatory process can progress and destroy the periodontal supporting structures (Bhuyan et al., 2022).

Periodontitis represents the advanced stage of periodontal disease and is characterized by irreversible damage to the periodontal ligament and alveolar bone caused by pathogenic microorganisms and the host immune response (Ray, 2023). Clinically, periodontitis is characterized by periodontal pockets, bleeding on probing (BOP), and clinical attachment loss (CAL) (Fidyawati et al., 2024). Periodontal pockets are a hallmark feature of the disease. They are defined by the pathological deepening of the gingival sulcus beyond normal limits, often exceeding 3 mm, accompanied by progressive destruction of the supporting tissues of the teeth (Kernitsky & McCausland, 2023).

Periodontal therapy is commonly structured into several phases: preliminary, nonsurgical, surgical, restorative, and maintenance (Vinel et al., 2022). The initial management of periodontitis typically focuses on the nonsurgical phase, which includes scaling and root planing, improved oral hygiene, and elimination of contributing factors such as occlusal trauma (Oliveira et al., 2024). These procedures aim to reduce bacterial load and control inflammation within the periodontal tissues (Bhandari et al., 2026). However, when nonsurgical therapy fails to achieve satisfactory clinical outcomes, surgical periodontal treatment may be required to eliminate inflammatory tissue further and facilitate periodontal healing (Chaudhry et al., 2022).

One surgical procedure frequently performed in periodontal therapy is gingival curettage. This procedure involves removing inflamed granulation tissue and diseased junctional epithelium from the lateral wall of the periodontal pocket (Herawati & Olivia, 2022). Gingival curettage aims to reduce inflammation, promote healing of the periodontal tissues, and support the formation of new connective tissue attachment (Rodríguez & Ruiz, 2022). The procedure is particularly indicated in areas with persistent inflammation and deep periodontal pockets that remain after initial nonsurgical therapy (Ayub et al., 2022).

In addition to pathological conditions, periodontal surgical procedures may be indicated for partially erupted third molars (De Abreu et al., 2024). In such cases, a fold of gingival tissue known as an operculum may partially cover the crown of the tooth (Landi, 2023). Although a healthy operculum may not initially produce symptoms, it can create a niche for the accumulation of food debris and bacteria, increasing the risk of inflammation and infection (Gonal et al., 2025). Operculectomy, a minor surgical procedure that removes the operculum, is often performed to improve access for oral hygiene, prevent food impaction, and reduce the risk of recurrent inflammation (Rolek & Pławewski, 2024). This procedure is generally indicated when sufficient space exists for third molar eruption, the tooth has a favorable angulation, maintains an acceptable occlusal relationship with the opposing tooth, or when the patient prefers to preserve the tooth rather than undergo extraction (Aldowish et al., 2024).

STUDY DESIGN

This study was designed as a single-patient case report describing the comprehensive management of localized periodontitis associated with an operculum on the mandibular third molar. A 35-year-old female patient presented with complaints of dental calculus on the lower anterior teeth and gingival tissue covering the lower right posterior tooth. Clinical examination revealed subgingival calculus and periodontal pockets measuring 3–4.5 mm, while radiographic evaluation demonstrated horizontal alveolar bone resorption extending to approximately one-third of the root length. Radiographic findings also showed that the cusp of tooth 48 was positioned parallel to the occlusal line and the occlusal plane of the adjacent tooth, indicating adequate eruption space.

The treatment plan consisted of nonsurgical and minor surgical periodontal procedures. Initial therapy included supragingival and subgingival scaling and root planing to remove plaque and

calculus deposits. This was followed by operculectomy on tooth 48 to remove the gingival operculum covering the partially erupted third molar, and gingival curettage in the mandibular anterior region (teeth 41 and 42) to eliminate inflamed granulation tissue within the periodontal pocket.

The clinical procedure was performed using standard periodontal surgical protocols. Materials prepared included povidone-iodine antiseptic solution, sterile table covers, chest drapes, 2% pehacaine local anesthetic solution, sterile gauze, normal saline solution, suction, and periodontal dressing. The instruments used consisted of a set of diagnostic instruments, a UNC periodontal probe, a periodontal mirror and forceps (PMF), a scalpel handle with blades No. 12 and 15, a needle holder, tissue forceps, a universal curette, and surgical scissors. Following the procedure, the patient was scheduled for a follow-up visit one week later to evaluate wound healing and periodontal tissue response.

This study was conducted in accordance with ethical principles for clinical research and received ethical approval from the Ethics Committee of the Faculty of Dentistry, University of Jember. Informed consent was obtained from the patient prior to the procedure and the publication of this case report.



Figure 1. Preparation of Instruments and Materials on a Dental Clinical Procedure Tray

PATIENT INFORMATION

A 35-year-old female patient presented to the Dental and Oral Health Education Hospital, Faculty of Dentistry, Universitas Jember (RSGMP FKG UNEJ), with complaints of gingival problems in the lower anterior region and significant tartar accumulation over the past 2 years. The patient reported frequent gingival bleeding during tooth brushing. She also complained of gingival tissue covering the lower right posterior tooth, which had been present for approximately two years and prompted her to seek treatment. Approximately one year prior to presentation, the patient experienced swelling and discomfort in the same area while chewing; however, at the time of examination, the condition was no longer painful. The patient had never previously received professional dental or oral treatment. She reported brushing her teeth twice daily, in the morning and evening, using horizontal brushing movements on the posterior teeth and vertical strokes on the anterior teeth. Based on the medical history, the patient had no known systemic diseases, allergies, or harmful habits. In addition, there was no reported family history of systemic disease.

CLINICAL FINDINGS

Vital sign assessment indicated that the patient was in good general condition, with a blood pressure of 125/82 mmHg, body temperature of 36.2 °C, pulse rate of 82 beats per minute, height

of 163 cm, and body weight of 62 kg. Extraoral examination revealed no abnormalities. Intraoral examination demonstrated poor oral hygiene, reflected by an Oral Hygiene Index–Simplified (OHI-S) score of 3.5, consisting of a Calculus Index–Simplified (CI-S) score of 1.5 and a Debris Index–Simplified (DI-S) score of 2. Plaque accumulation and subgingival calculus deposits were observed on most teeth, particularly in the mandibular anterior region and the posterior regions of both the maxilla and mandible. The gingival tissues appeared erythematous and edematous, with a tendency to bleed upon probing (Figure 2), indicating active gingival inflammation.



Figure 2. Clinical appearance before scaling and root planing

An operculum was observed on the distal aspect of tooth 48. Additionally, teeth 41 and 42 exhibited gingival recession, with periodontal pocket depths of 4–5 mm. Periapical radiographic examination of teeth 41, 42, 31, and 32 revealed horizontal alveolar bone resorptions extending to approximately one-third of the root length. The lamina dura in the apical region appeared indistinct and discontinuous in teeth 32, 31, 41, and 42, indicating destruction of the periodontal supporting tissues associated with plaque and calculus accumulation. Radiographic evaluation of tooth 48 showed that the cusp of the tooth was aligned parallel to the occlusal line and the occlusal plane of the adjacent tooth. Furthermore, adequate eruption space was observed for tooth 48, suggesting a favorable eruption position (Figure 3).



Figure 3. Periapical radiographs of teeth 32, 31, 41, 42, and 48

Based on the patient's medical history, clinical findings, and radiographic examination, the diagnosis was localized stage I grade A periodontitis, with healthy gingival tissue and an operculum on tooth 48. The overall prognosis was considered favorable due to sufficient remaining alveolar bone support, the absence of systemic risk factors, and the patient's cooperative attitude toward treatment. The proposed treatment plan was explained in detail to the patient. It included scaling and root planing as initial periodontal therapy, an operculectomy to remove the operculum covering tooth 48, and curettage in the mandibular anterior region. The patient provided informed consent for all planned procedures and expressed willingness to comply with regular follow-up and maintenance visits.

THERAPEUTIC INTERVENTION

During the first visit on 11 December 2025, subjective, objective, and supporting examinations were conducted to establish the diagnosis. During the anamnesis, the patient reported never having visited a dentist and having no systemic diseases or allergies. Vital signs examination showed that the patient was in good general condition, with blood pressure of 125/82 mmHg, body temperature of 36.2°C, pulse of 82 beats per minute, height of 163 cm, and weight of 62 kg. Extraoral examination showed no anatomical abnormalities or facial asymmetry. Intraoral examination revealed poor oral hygiene, with an OHI-S score of 3.5 (CI-S = 1.5 and DI-S = 2). Plaque and subgingival calculus were visible on almost all teeth, especially in the anterior mandibular region, as well as red, edematous gingiva that bled easily on probing. The gums covered the distal side of the buccal and lingual surfaces of tooth 48. The patient was educated about the etiology of calculus, the etiology of periodontitis, the risks of untreated periodontitis, and the importance of maintaining oral hygiene. The patient began treatment with scaling and root planing to eliminate calculus and plaque on both supragingival and subgingival surfaces.

Ultrasonic scaling and root planing were continued at the second visit on 12 October 2025. The tooth surfaces were cleaned until they felt smooth when examined with an explorer. This was followed by desensitization treatment on tooth 41 to eliminate sensitivity. The patient was also instructed to brush their teeth at least twice a day after meals and before bedtime and advised using dental floss. After this initial phase of therapy, the gingival tissue showed a clinical reduction in inflammation (Figure 4).

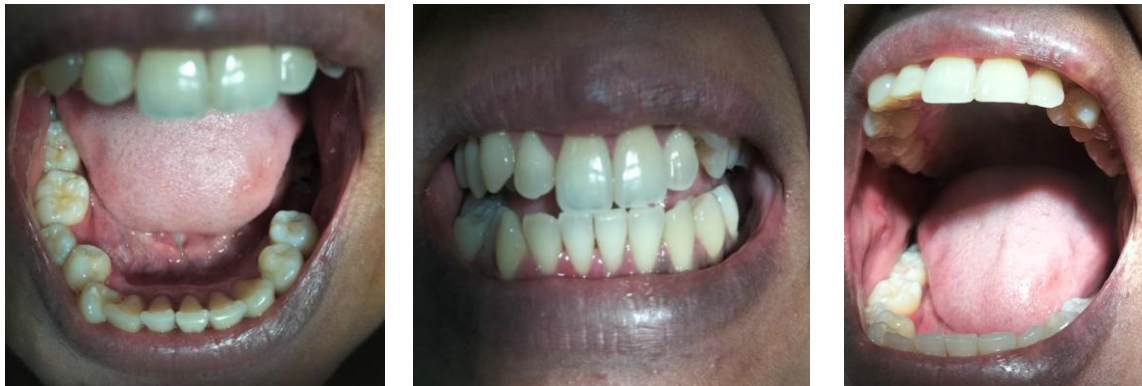


Figure 4. Clinical appearance following post-scaling and root planing evaluation

On the third visit, on 16 December 2025, an operculectomy was performed on distal tooth 48. The procedure began with the operator checking the patient's vital signs (blood pressure, pulse, and respiration), followed by the operator explaining the informed consent regarding the purpose, complications, risks, and consequences of not performing the operculectomy. Afterward, the patient signed the informed consent form. Next, the operator prepared the instruments and materials, adjusted the patient's position, and set up the lighting.

The operculectomy procedure begins with asepsis of the working area using povidone iodine. Local infiltration anesthesia is then administered with 0.5 cc of pehacain on the buccal and lingual sides of the operculum. Once the anesthesia has taken effect, an incision is made using a No. 12 blade from the coronal to the lingual side. Excision is performed using a No. 12 blade, sequentially from the lingual to the buccal side, then the area is pressed with gauze to control bleeding (Figure 5). After that, root planing is performed on tooth 48, followed by irrigation with saline and drying. The patient was instructed to bite on a tampon to control bleeding. After drying, a periodontal pack was applied to the surgical site (Figure 6). Following the operculectomy, the patient was prescribed antibiotics, analgesics, multivitamins, and mouthwash, and was instructed not to play with their tongue in the treated area and to avoid eating or drinking hot foods.

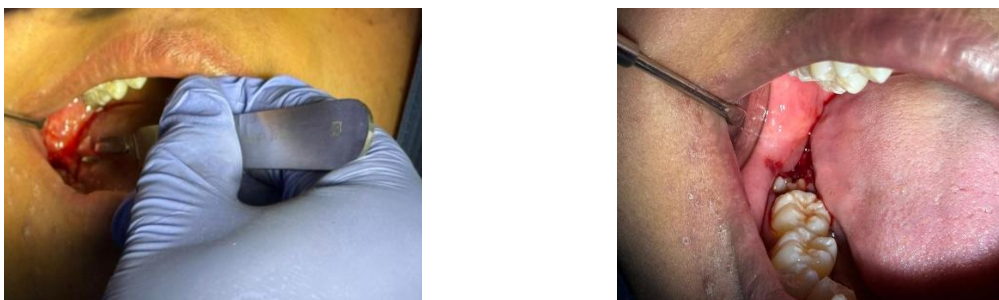


Figure 5. Incision and excision of the operculum and root planing with a curette



Figure 6. Application of periodontal pack

On the fourth visit on 18 December 2025, an evaluation and curettage were performed on teeth 41 and 42. In this patient, gingival curettage was performed without anaesthesia because the probing depth of the teeth was approximately 3.5-4 mm. Gingival curettage was performed on the indicated teeth using a Universal curette. The first step is root planing, which aims to smooth the tooth root by inserting the instrument at an angle of

Perform scraping technique on the lateral pocket wall (epithelial lining) with horizontal movements and the cutting edge facing the soft tissue as shown in Figure 6. Then continue with scoping movements on the junctional epithelium area with vertical movements from the apical junctional epithelium to the coronal area until fresh blood appears. After that, irrigate the working area again with 0.9% NaCl solution until clean. Clean and dry the working area with a tampon. Next, adapt the gingiva to the tooth surface by pressing the gingiva towards the tooth with your finger. Then apply a periodontal pack to the surgical site (Figure 7). The patient is prescribed mouthwash to maintain oral hygiene.



(1) (2) (3) (4)

Figure 6. Gingival curettage steps. 1. Root planing, 2. Scraping, 3. Scoping, 4. Periodontal pack

At the final visit, a postoperative check-up was conducted following the operculectomy and curettage on 23 December 2025. The patient reported no pain, bleeding, or swelling in the treated area. The periodontal pack, still in place in the treated area, was removed, followed by evaluation and irrigation with 0.9% NaCl solution and Betadine.



(1)



(2)

Figure 7. Follow-up condition: (1) post-operculectomy and (2) post-curettage

DISCUSSION

Periodontitis is a chronic inflammatory disease characterized by the progressive destruction of the supporting structures of the teeth, including the periodontal ligament and alveolar bone. This condition leads to clinical attachment loss and alveolar bone resorption, which are clinically manifested by periodontal pocket formation and gingival bleeding. In the present case, periodontal pockets measuring 4–5 mm were observed, accompanied by a pattern of horizontal alveolar bone resorption evident on radiographic examination. This pattern is consistent with suprabony periodontal pockets, in which the base of the pocket is located coronal to the alveolar bone crest. The progression of periodontitis is primarily associated with the accumulation of pathogenic subgingival biofilm composed predominantly of Gram-negative anaerobic bacteria, such as *Aggregatibacter actinomycetemcomitans*, *Treponema denticola*, and *Tannerella forsythia*. These microorganisms stimulate the host immune response, leading to the release of inflammatory mediators, including prostaglandins and cytokines, which contribute to the destruction of periodontal tissues (Ursu, 2022).

Management of periodontitis typically begins with initial periodontal therapy aimed at controlling the etiological factors responsible for the disease. In this case, treatment was initiated with dental health education (DHE) to improve the patient's awareness and oral hygiene practices. This was followed by scaling and root planing (SRP), which are essential procedures for removing supra- and subgingival plaque, calculus, and bacterial deposits from the tooth surface and root surfaces. The primary objective of SRP is to reduce bacterial load and inflammation within the periodontal tissues, thereby promoting periodontal healing. However, when residual periodontal pockets greater than 3 mm and persistent inflammation persist after initial therapy, additional periodontal interventions may be required to eliminate inflamed tissue further and improve periodontal stability (Mamaklıoğlu et al., 2022).

Gingival curettage was performed in areas where inflammation persisted following scaling and root planing, particularly in the mandibular anterior region. This procedure involves removing inflamed granulation tissue and diseased pocket epithelium from the periodontal pocket wall. Curettage aims to reduce chronic inflammation and facilitate the formation of new connective tissue attachment during the healing process. Evaluation one week after the procedure demonstrated clinical improvement, characterized by gingiva with a coral-pink color, firm and elastic consistency, and a stippled surface texture. In addition, no pain, swelling, or signs of persistent inflammation were observed. These findings indicate favorable tissue healing and suggest that the procedure successfully supported the recovery of periodontal tissue function and stability. Nevertheless, long-

term periodontal health remains highly dependent on effective plaque control and continuous maintenance therapy (Karina & Widhawati, 2022).

An operculum is a fold of gingival tissue that partially covers the crown of an erupting third molar. This condition commonly occurs during the eruption of mandibular third molars, typically between the ages of 17 and 23 years. When tooth eruption is incomplete or occurs in a limited space, the presence of an operculum can create a sheltered area that favors the accumulation of plaque and food debris. This environment may increase the risk of inflammation and infection of the surrounding soft tissues; a condition commonly associated with pericoronitis. Therefore, proper management of the operculum is important to prevent recurrent inflammation and maintain periodontal health in the affected area.

Operculectomy is a minor periodontal surgical procedure aimed at removing the operculum tissue covering a partially erupted tooth. This procedure is indicated when adequate eruption space is available, the third molar is favorably positioned within the dental arch, and the patient prefers to retain the tooth rather than undergo extraction. Prior to the procedure, comprehensive clinical and radiographic examinations are required to assess the tooth's position and the surrounding structures. Operculectomy can be performed using several techniques, including surgical blades, electrosurgery, or laser devices; however, the conventional surgical blade technique remains widely used because of its simplicity, accessibility, and cost-effectiveness. Following the procedure, wound healing generally progresses through the stages of inflammation, proliferation, and tissue maturation, culminating in the gingival tissues regaining normal morphology and function (Rolek & Pławecki, 2024).

The success of operculectomy and other periodontal procedures is strongly influenced by the patient's oral hygiene practices. Adequate plaque control is essential to prevent bacterial accumulation in the surgical area and to support optimal tissue healing. Therefore, postoperative instructions emphasizing proper toothbrushing techniques and plaque-control measures are necessary to maintain periodontal health. During postoperative follow-up visits, the surgical site typically demonstrates mild erythema associated with the normal healing process but should not present with pain, swelling, or signs of infection. Continuous monitoring and maintenance care are crucial for ensuring long-term treatment success and preventing the recurrence of periodontal inflammation (Wang & Wu, 2025).

CONCLUSION

This case report demonstrates that comprehensive periodontal management can effectively control inflammation and improve periodontal health in patients with localized periodontitis associated with biofilm accumulation. Initial nonsurgical therapy, including scaling and root planing, successfully reduced bacterial deposits and gingival inflammation. In contrast, gingival curettage in areas with persistent periodontal pockets further enhanced clinical outcomes, as indicated by improvements in gingival color, consistency, and texture. In addition, the presence of an operculum covering the mandibular third molar required surgical management through operculectomy to facilitate adequate plaque control and prevent recurrent inflammation. These findings highlight the importance of combining nonsurgical and minor surgical periodontal interventions with regular follow-up and maintenance care to achieve optimal periodontal stability and long-term oral health.

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CONFLICT OF INTEREST

There are no conflicts in this article.

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