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Case Report

Comparison Between Conventional and Electrocautery Approach in The Treatment of Pericoronitis

[1]Feby Monika, [2]Sri Pramestri Lastianny, [3]Vincensia Maria Karina

[1]Periodontology Specialty Study Program, Faculty of Dentistry, Universitas Gadjah Mada, Yogyakarta Indonesia
[2,3]Department of Periodontics, Faculty of Dentistry, Universitas Gadjah Mada, Yogyakarta Indonesia

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KEYWORDS

Electrocautery, surgical blade, operculectomy, pericoronitis.

ABSTRACT

Introduction: Pericoronitis refers to an intraoral inflammation caused by an infection affecting the gum tissue surrounding a tooth that is either erupting or partially erupted. The gum tissue is known as operculum which entrapped food debris and hard to clean, causing inflammation. It frequently occurred in lower third molars although it can be happened with any erupting teeth. This case report was to discuss the comparison result of removing operculum between using conventional technique with scalpel and electrocautery.
Case: A 22-year-old female patient visiting RSGM Prof Soedomo, Yogyakarta with a chief complaint of pain in the lower left and right back tooth for the past five months, interfering with her meals and causing discomfort. Extraoral examination showed no abnormalities and intraoral examination showed operculum covering the distal occlusal of tooth 38 and 48.
Case Treatment: Operculectomy was performed at region 38 using scalpel and blade while at region 48 using electrocautery to eliminate pericoronitis.
Discussion: The bleeding while excision in operculectomy with scalpel and blade was quite excessive and need an effort to control. In the other hand, bleeding was mild in operculectomy with electrocautery. There was no swelling in electrocautery surgery while mild swelling was found in conventional approach
Conclusion and Suggestions: Therefore, the treatment results demonstrate that both technique showing good healing and removing any discomfort but electrocautery approach was painless compared with scalpel and blade approach. Operators should have to know the associated risk and management of post operative complications.

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Corresponding Author:
Feby Monika
Periodontology Specialty Study Program, Faculty of Dentistry
Universitas Gadjah Mada, Yogyakarta Indonesia
Email: febymonika@mail.ugm.ac.id

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INTRODUCTION

Pericoronitis is one of a periodontal disease which inflamed around the occlusal surface of a partially or completely erupted tooth, such as mandibular third molar. The soft tissue obscuring an erupted tooth is called operculum.[1,2] Once the tooth has partially emerged, the dental follicle's protective barrier is compromised, allowing oral microorganisms to inhabit the area between the tooth and the follicle. This enclosed space, resembling a pocket, presents challenges in maintaining cleanliness, leading to the build-up of bacterial plaque and debris beneath the soft tissue covering.[3] This condition creates a good environment to bacteria growth, leading to an inflammation and infection in the surrounding area of operculum.[1,2]

Classification of pericoronitis divided by the tooth relation process is transient which is occurs during the tooth eruption and non-transient which is occurs after the tooth eruption. Classification of pericoronitis based on the relation of development is acute and chronic.[3] Acute pericoronitis is identified by various degrees of inflammatory involvement of the pericoronal flap and adjacent structures and by systemic complications. The inflammatory fluid and cellular exudate increase the bulk of the flap, which can interfere with complete closure of the jaws. The clinical signs of pericoronitis includes a lesion that appears red, swollen, and sometimes suppuration, which is tender and accompanied by mild pain radiating to the ear, throat, and floor of the mouth.[2] Pericoronitis symptoms generally can be persisted for several days or weeks. This pathological condition which occur repeatedly more than once within a year which is called chronic pericoronitis.[4] The mechanical trauma caused by oppose teeth can be the other factor to worsen the symptoms. Chronic pericoronitis is characterized by dull pain, which can last for a few days or months, ulceration and an awful taste.[1]

The initial therapy of acute symptoms aims to removing underlying debris with gently flushing the area and swabbing with antiseptic inside the operculum. It is important to evaluating the occlusion whether an opposing teeth is contacting the operculum which is irritating the gum. It may be necessary to reduce the inflammation pericoronal flap surgically.[1,2,5] Operculectomy is a minimally invasive surgery approach by removing the operculum over a partially tooth to prevents plaque formation and inflammation.[6]

Operculitis as a result of unerupted tooth requires a multidisciplinary approach, such as surgical approach only, orthodontic approach only, or combination of surgical and orthodontic approach. Surgically, operculum can be removed with surgical scalpel, electrosurgery, or laser. Traditional surgical approach using scalpel and blade is believed to be a simple, minimally invasive, and reliable method in any eruption teeth cases.[7] Electrosurgery allows for a simple tissue incision with a great hemostatic result. Any contact with cementum or bone has to be avoided because of its irreversible damage. During removal tissue, electrode should be moving short and brief shaving motion. The advantages of using electrosurgery is the need for suturing is eliminated so can reduce the risk of post-operative infection. Patient with cardiac pacemaker is not allowed to get surgery with electrosurgery.[6,8] This case report aims to discuss the comparison result of removing operculum between using conventional technique with scalpel and electrocautery as seen in the surgery time, bleeding, pain, swelling, and satisfaction between two operculectomy technique in the same patients.

CASE

A 22 year old female reported in RSGM Prof. Soedomo, Universitas Gadjah Mada, Yogyakarta with a chief complaint of pain in the lower left and right back tooth for the past five months. The patient reported a history of dull aching pain, interfering with her meals and causing discomfort. The patient showed good general health with the absence of any relevant medical history. As far as she knew, the other family members or any relatives never had this experience. The patient had been using braces for 5 years and frequently got scaling from her dentist. The extraoral examination showed no abnormalities and the intraoral examination showed

operculum covering the distal occlusal of tooth 38 and 48 (Figure 1A&B). The partially erupted tooth 38 and 48 showed pink color, firm, resilient, and covering distal cusp of the molar tooth operculum. As seen on panoramic photo showed that 38 and partially erupted in a vertical position and showed spaces between tooth and mandible ramus (Figure 2).

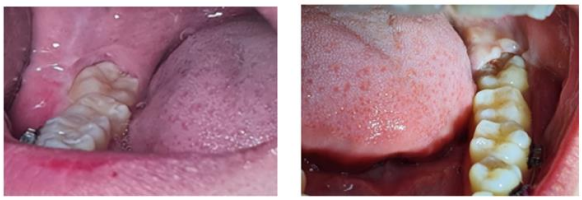

Figure 1. A) Clinically showing the soft tissue covering occlussal tooth 48; B) Clinically showing the soft tissue covering occlussal tooth 38

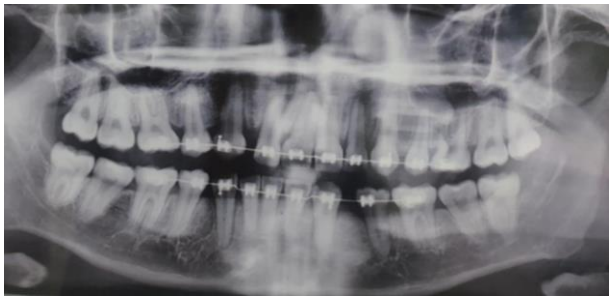

Figure 2. Radiographic imaging showing vertically full erupted tooth 48 and 38.

CASE MANAGEMENT

The partially erupted tooth 38 was more uncomfortable because of the enlargement operculum over the distal tooth, therefore surgical approach with conventional technique using surgical scalpel. After scaling and dental health education for initial phase, operculectomy was carried for surgical phase. Bleeding points were made on the operculum using a pocket marker with previous infiltration anesthesia using *articain hydrochloride* 4% and *epinephrine* 1:100.000. Operculectomy was done using blade no 15 for excision where the bleeding point were made, ensuring the whole operculum was removed. Debridement using scaler and curettage, and saline as the irrigation, were performed to ensure the area was clean. The flap was sutured by 5.0 nylon thread and given periodontal pack to protect the surgical area (Figure 3). The patient was given an antibiotic (amoxicillin 500mg), analgesic (mefenamic acid 500mg), and 0,12% chlorhexidine gluconate. The post operative instruction was instructed to keep maintain oral hygiene. One week post-operative was scheduled to remove the suturing, patient did not complain of excessive pain, the visual analog scale (VAS) which was given by the patient was 3 but well taken care by analgesic (Figure 4). The next day after surgery, mild swelling was shown on the left cheek, but reducing after three days.

Figure 3. Post Operculectomy with conventional approach on tooth 38 sutured with nylon thread

Figure 4. One Week Post Operculectomy with conventional approach on tooth 38 showing the sutures still intact. Neither extraoral nor intraoral swelling detected.

About a month after the first operculectomy, patient did not complain of any pain and discomfort. Therefore, the operculectomy of the partial eruption of tooth 48 was scheduled. Operculectomy was done using electrocautery with previous infiltration anesthesia using *articain hydrochloride* 4% and *epinephrine* 1 :100.000. A needle electrode was used to remove the tissue, and diamond shaped electrodes was used to shaping with a brief shaving motion, while ball electrode was utilized to achieve hemostasis (Figure 5). The patient was given an antibiotic (amoxicillin 500mg), analgesic (mefenamic acid 500mg), 0,12% chlorhexidine gluconate, and post-

surgery instruction. After a week of treatment, patient did not complain of any pain even after surgery (Figure 6). The visual analog scale (VAS) which was given by the patient was 0 and no sign of swelling.

Figure 5. Post Operculectomy with electrosurgery approach on tooth 48. No suturing needed

Figure 6. Post Operculectomy with electrosurgery approach on tooth 48**,** neither extraoral nor intraoral swelling detected.

Six months later, the review was completed to monitor the eruption of the lower right and left third molars. The patient did not have any complaint and discomfort. As we seen on Figure 7A & B, both the third molars had fully erupted and no longer had operculum.

(A) (B)

Figure 7: A) 6 months post operculectomy with electrocautery ; B) 6 months post operculectomy with surgical blade. Both show no reccurency of excess operculum.

DISCUSSION

Pericoronitis is an inflammation of the operculum related to erupting tooth which relevant in young adults, between 20-29 years.[5,9] Previous studies determined that anaerobic bacteria such as *Actinomyces*, *Prevotella*, *Eikenella corrodens, Eubacterium nodatum, Treponema denticola, Eubacterium saburreum, Streptococcus, Staphylococcus,* and *Fusobacterium sp* associated with pericoronitis.[3,10,11] The confined space between tooth and operculum makes poor cleansability lead to those bacterial colonization which makes an inflammation. Chronic pericoronitis is often caused by mechanical trauma as a result of operculum on the occlusal surface of tooth which is bitten by antagonistic tooth and can be happened repeatedly. The symptoms are trismus, fever, dull pain, discomfort of any activities inside the mouth, or awful taste for long term.[5,11] As shown in this case report, a young female in her 22 years old came with a chief complaint disturbing taste while eating, and sometimes dull pain, unexceptionally while bitting is diagnosed chronic pericoronitis.

Treatment options to manage pericoronitis is nonsurgical therapy and surgical therapy option. Early recognition and initiating treatment to remove the symptoms of pericoronitis can result a successful treatment.[10] Following the sequence of the periodontal treatment plan, the emergency phase, initial phase (Phase I), surgical phase (Phase II), restorative phase (Phase III), and maintenance phase (Phase IV) should be done.[12] The patient of this case report had chronic pericoronitis with frequent pain in the left and right lower third molars. For the treatment plan, scaling and dental health education was carried out then followed by surgical phase in the next visit.

Operculectomy is a minimally invasive surgery by removing the operculum on erupted teeth that aim to prevent plaque formation and inflammation.[7] This surgery can be carried out by conventional technique with scalpel and blade, laser, electrocautery, and caustic agent.[1,7,10] The conventional technique are cheaper and effective which is the benefit of using scalpel and blade. In the other hand, its operculum excision may lead excessive bleeding and may increase patient anxiety.[13,14] On electrocautery, the surgery is done by an electrode that capable of generate heat to apply high-frequency waveforms or currents through the body's tissue to control surgical effect. Its benefit include the coagulation

and plugging of micro-diameter blood vesssels, resulting minimal blood surgical area, and reduced post-operative swelling. No. suture need in this tecnique is also considered as an advantages.[15] The contraindicated of electrosurgery is for patient with pacemakers, bleeding disorders, and those who have undergone radiation therapy.[12] The used of electrocautery must be careful, over contact may lead to tissue necrosis.[16]

In this case reports, the surgery time, bleeding, pain, swelling, and satisfaction between two operculectomy technique in the same patients will be explained. The tooth 38 was operated by gold standard, scalpel and blade technique. The bleed was quite excessive and need to be controlled well. The time consumption was longer because of the need for suturing the flap. the tooth 48 was operated by electrocautery surgery. The bleed was easily controlled and relatively mild, and the time consumption was shorter, because the need for suturing was removed. Pain score that had been assesed for a week after surgery with visual analog scale (VAS) were higher in the conventional with scalpel and blade surgery side which is 3 and in the electrocautery surgery side is 0. This assesment depends on patient own feeling. There was swelling in the conventional with scalpel and blade surgery side, hence it was not severe and there was no swelling in the electrocautery surgery side.

The wound healing six months after operculectomy either with surgical blade or electrosurgery showed a good result. There were no sign of reccurency of overlaying gingiva and showed a healthy colour and form of gingiva around tooth 38 and 48. This lead patient satisfaction with no more discomfort during meal or pain. The success of operculectomy is not only after treatment but also depends on how the patient maintains the oral hygiene.[12]

CONCLUSION

Pericoronitis is an inflammation of the operculum related to erupting tooth which relevant in young adults. It can be an acute or chronic inflammation around the occlusal surface of a partially or completely erupted tooth. Management of pericoronitis following the sequence of periodontal treatment plan which reducing patient chief complaint. Followed by surgery phase, operculectomy can be done using variety technique such as conventional technique with scalpel and blade, electrocautery, laser, and caustic agent. Between conventional technique and electrocautery, electrocautery is more painless, reducing the risk of swelling, no suturing and comfort feel after surgery. Nevertheless both technique resulting a good wound healing and no sign of recurrency even after six months. Operators should have to know the associated risk and management of post operative complications.

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