

The Management of Transalveolar Surgery Teeth with Pulpal Polyps Condition

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Online submission : 14 Juli 2020

Accept Submission : 14 Juli 2020

ABSTRACT

Background: The failure of intra-alveolar tooth extraction in cases of tooth extraction with complications is generally resolved by performing transalveolar tooth extraction. The open method of tooth extraction involves surgery by cutting the tooth or bone. Flap creation and partial removal of alveolar bone, refinement of alveolar bone, curettage, and suturing are the principles of this extraction method. The planning of the stages of the transalveolar extraction method must be made as carefully as possible to avoid complications of tooth extraction. Tooth extraction treatment in dental practice can be carried out due to various causes, including caries. Pulp polyps or also known as chronic hyperplastic pulpitis is another form of irreversible pulpitis in the chronically inflamed pulp so that the pulp tissue appears to the occlusal surface. Treatment in cases of pulp polyps varies widely depending on the remaining tooth crown wall. The usual treatments for polyps pulp patients are root canal treatment (RCT), pulpotomy to extraction. The transalveolar extraction method is performed by first taking a portion of the bone supporting the tooth. **Objective:** Knowing the treatment management of polyp pulp extraction with transalveolar surgery methods, indications and contraindications for transalveolar surgery and knowing the correct medical selection in cases of transalveolar surgical extraction of teeth with polyp pulp. **Discussion:** Chronic hyperplastic pulpitis or pulp polyp is a pathological condition that attacks vital pulp tissue so that it experiences a chronic inflammation as a defense response from the body to the pulp tissue against bacterial infection. The term use of the term chronic hyperplastic pulpitis occurs due to granulation of the pulp tissue covered with epithelial tissue due to chronic infection. The management of cases of pulp polyps for which restoration is no longer possible is to remove them. Extraction is the last step that can be done if restoration measures do not eliminate the source of infection. The transalveolar extraction procedure of the teeth located in the mandible is preceded by asepsis and anesthesia and removal of the polypoid tissue. **Conclusion:** In several cases of brittle teeth, extraction by intraalveolar method often failed so that it needs to be extracted by transalveolar method. Management of extraction with polyp pulp includes removal of the polypoid tissue first before extraction. The administration of medical therapy with the antibiotic amoxicillin 500 mg for 5 days, paracetamol for 5 days and dexamethasone for 3 days can control the patient's pain and help the healing process quickly.

Keywords: pulp polyps, transalveolar, pulpitis, teeth surgery

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INTRODUCTION

Tooth extraction treatment in dental practice can be carried out due to various causes, including caries. Caries is a hard tissue disease of teeth that can be started from damage to the tooth surface tissue (pit, fissure and interproximal) which extends to the dentin and pulp. Infection of the tooth nerve tissue can cause pulpitis or inflammation of the pulp tissue. Pulp tissue infection can extend to the periapical area through the apical foramen and cause lesions in the periapical area. Untreated caries can result in loss of tooth structure such as crowns, leaving a residual root which is often referred to as the retained dental root. The dental radicals are usually asymptomatic but in some cases can cause acute exacerbations due to secondary infection resulting in pain. Some of the periapical lesions that often occur include, periapical granuloma, radicular cysts and pulp polyps.¹ Pulp polyps or also known as chronic hyperplastic pulpitis is another form of irreversible pulpitis in chronically inflamed pulp so that the pulp tissue appears to the occlusal surface. Pulp polyps are granulation tissue consisting of many fibers and connective tissue. A person with pulp polyps usually presents with clinical signs such as spontaneous pain and persistent pain on thermal stimuli. This sensitive condition to thermal stimuli is due to the condition of the polyp pulp is still vital and there are many nerve fibers and blood vessels so that the pulp still responds well to the stimulus.²

Treatment in cases of pulp polyps varies widely depending on the remaining tooth crown wall. The usual treatments for root polyps pulp patients are canal treatment (RCT), pulpotomy to extraction. Various treatments can be performed in cases of pulp polyps, but they are carried out based on the operator / dentist's consideration in determining the prognosis of the case. RCT therapy can be performed in cases of pulp polyps either with periapical lesions or without periapical lesions. In addition, RCT therapy can be performed if the remaining wall is still strong to hold the restorative material.

Pulpotomy treatment in cases of pulp polyps is usually performed on the teeth of children in cases where the seeds of the adult replacement teeth are still growing. Pulpotomy is the most commonly used pulp treatment technique for the treatment of extensive caries but without pathological conditions in the radicular area of primary teeth. Pulpotomy consists of removing the coronal pulp and repairing the radicular pulp with medicaments.³ Extraction treatment is the final therapy that can be done if the tooth is untenable. Tooth extraction is one of the therapies in dentistry that helps to remove the source of infection. However, improper extraction management can lead to failure so that it can become a secondary infection, causing alveolar bone damage and psychological trauma. In some cases, especially the extraction by the intra alveolar method, it often fails so that it needs to be extracted by the transalveolar method. The transalveolar extraction method is performed by first taking a portion of the bone supporting the tooth. Apart from teeth with polypous pulp with brittle crown walls, this method is also used in cases such as: teeth that have hypercementosis or ankylosis, teeth that are germinated or brittle teeth that cannot be held with forceps or removed with a bein, especially the remains. roots associated with sinus maxillaris.⁴

Oral lesions can be a cause of systemic disease. However, the resulting infection can also be caused by local factors such as trauma. There are many traumas that can cause ulcers, namely mechanical trauma such as tooth malposition that causes traumatic ulcers, overhanging restoration, or biting of mucosal tissue due to sharp tooth fragments. Tooth extraction is one of the treatments in oral surgery in the field of dentistry which involves the extraction of teeth in the tooth socket in the alveolar bone. Tooth extraction should remove all parts of the tooth either the crown or the root of the tooth with minimal trauma and pain. All tooth extraction must be preceded by local anesthesia, so that it can make the patient feel comfortable during the extraction process. Tooth

extraction is indicated as the preferred measure to prevent more widespread pathological conditions.⁵ Indications for tooth extraction include caries that leave roots, pulp necrosis that is impossible for root canal treatment, periodontal disease that causes loose teeth, extraction to support successful orthodontic treatment, malposition of the teeth resulting in lesion in table below :

Table 1. Difference between gingival polyp and pulp polyp.¹²

Gingival polyp	Pulpa polyp
The color same with the other tissue	The color is lighter than the surrounding tissue because it contains blood capillaries
Flat surface	Uneven surface
On vital teeth (proximal sides) or non vital teeth (on furcation).	On vital teeth
Derived from the gingiva and cavity of class 1 or 2 GV Black	Derived from the cavity pulp and Cavity Class 1 or GV Black

The tools used in transalveolar surgical extraction include mouth glasses, dental tweezers, sonde, cotton sticks, disposable injection syringes, gloves, masks, lower crown pliers, lower radix pliers, high speed, fissure burs, alveolar bur, bein and crayer. The materials used for transalveolar surgical extraction of teeth are anaesthetic agents, syringes, tampons, antiseptic solutions (10% povidone iodine solution) and alcohol. The management of cases of pulp polyps for which restoration is no longer possible is to remove them. Extraction is the last step that can be done if restoration measures do not eliminate the source of infection. The transalveolar extraction procedure of the teeth located in the mandible is preceded by asepsis and anesthesia and removal of the polypoid tissue. Asepsis is performed using new povidone iodine followed

by anesthesia using Fisher's block technique because it is more effective and has a long duration so that the operator is more comfortable working. The work areas anesthetized in the use of Fisher's block technique are the mandibular half quadrant, buccal mucoperiosteum and mucous membranes at the injection site, the anterior two thirds of the tongue and floor of the mouth, lingual soft tissue and periosteum, mandibular body and the underside of the ramus and the skin over the zygoma, the posterior cheek and the temporal region. The initial phase in the treatment of transalveolar extraction with pulp polyps is to perform asepsis and anesthesia first on the work area using Fisher's block anesthesia technique and intrapulpal anesthesia technique. After the pulp does not respond to stimulation, removal of the polypoid tissue can begin. The removal of the polypoid tissue is intended so that the tooth extraction process is not hampered by the tissue that has pulp polyps. Tissue retrieval can be performed using surgical scissors, periodontal curette and excavator. Bleeding in the polyp can be controlled by compression using a tampon soaked in epinephrine. Epinephrine has a vasoconstrictor effect so that it can cause narrowing of peripheral blood vessels and control the rate of seepage in the blood. Making an incision in the maxilla is easier to apply because there is less risk of damage this is because in the maxilla there are no large blood vessels or nerves passing through one tooth. The standard incision procedure should be modified according to cases where fistulas, incision wounds, damage to mucous membranes, scar tissue and incisions for unoperated teeth should be considered.¹²

The removal of the polyp pulp should be thorough in one visit. Management of teeth with root residual conditions must pay attention to the possibility of periapical abnormalities that occur in the teeth. The buried root will be easier to extract by reducing the bone so that it can minimize the occurrence of trauma. The transalveolar technique extraction of the buried roots minimizes the occurrence of fracture of the teeth, more severe damage to the alveolar bone

and gingiva.¹³ Multiple transalveolar surgery requires the flap method. The flap is divided into 2 according to its thickness, namely the partial thickness flap and full thickness methods. The full thickness flap consists of the gingival, mucosa, submucosa, and periosteum. This flap is made by separating the soft tissue from the bone with a blunt cut. The flap opening technique can be performed by making an internal bevel incision, from near the edge of the gingiva to the top of the alveolar bone, keeping the gingiva keratinized as much as possible. No.11, 12b, 15 or 15c blades are commonly used to make this initial incision. No.11 or 15c blades with modified shafts can be well used to make incisions in the lingual or palatal area. This initial incision should be extended around the neck of the tooth and the interproximal area to maintain the height of the interdental papilla tissue for suturing, after which the tissue is separated from the bone by a periosteal elevator (rasparatorium) or chisel (blunt dissection), so that the flap can be opened and easy to move, and provides adequate access to the underlying structures, such as the crest of the bone, bone defect area, necrotic cementum.¹⁴

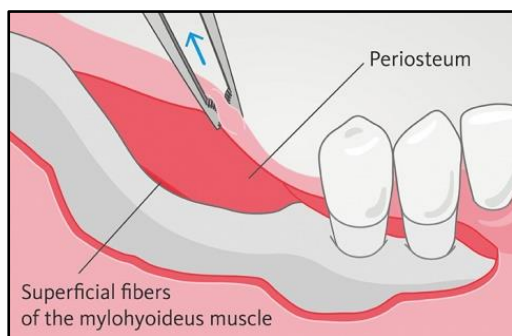


Figure 1. Mukoperiosteal.¹⁴

Bone reduction was performed using a tapered bur using water. Water can help cool the affected bone. In addition, bone removal is not done with a high speed bur because it can cause excessive heat, which can lead to hard tissue necrosis. The next step is to remove the bone that covers the dental crown and the distal part, then the bone in the buccal part of the tooth crown is also removed to the cervical part, remove the bone that covers the tooth crown and the distal part, then the bone in the buccal part

of the tooth crown is also removed to the cervical part. The tooth was cut vertically using a tapered bur, separating the crown to the bifurcation. After the tooth has been separated into mesial and distal sections, make a bur notch in the cervical region of the distal tooth, then using a cryer to lift the distal tooth out of the socket.¹³ The next step is to debridement the work area with physiological solutions and and povidone iodine. suturing the buccal flap area. The technique is performed by suturing using simple interrupted methods. After the procedure, the patient was given analgesic medication in the form of paracetamol 500 mg for 3 days and amoxicillin 500 mg for 5 days and dexamethasone 0.5 mg 3 days 2 times a day and paracetamol 500 mg for 5 days 3 times a day. Further control patients 1 week later if needed.¹⁴

CASE REPORT

A 31-year-old female patient came to want to remove the left lower back tooth with a large cavity and visible tissue that protruded above it, and did not feel pain. Clinically, it was seen that tooth 37 was left apical 1/3 crown and there was a polyp pulp in the occlusal part. Percussion (-), palpation (-), vitality (+), mobility degree 1. Blood pressure 120/80 mmHg, respiration 20x / minute, pulse 60x / minute and temperature 36 degrees Celsius. The results of periapical radiographs appear radiolucent in the crown area, it appears that the bicurcation has not been separated so that the assessment in this case is chronic hyperplastic necrosis (K04.0) with a planned extraction treatment with transalveolar surgery.



Figure 2. Clinical Case

The case in this report was diagnosed as chronic hyperplastic pulpitis (K04.0). The differential diagnosis in this case is the gingival polyp that can be pushed aside because it refers to the difference between the polyp and gingival polyp in Table 1. A treatment plan is needed to determine what stages must be done for hard tissue surgery. Preoperative examination of the patient's medical condition and social history will help ensure that there are no contraindications for extraction. Intra oral radiographs with periapical techniques can be performed to see the condition of the roots and the direction of the roots. Patients need to sign informed consent or action consent to protect patients from arbitrary actions and protect doctors from post-treatment demands. Medical therapy ibuprofen 400 mg and 1000 mg paracetamol given to patients before the procedure. If there were signs of infection prior to the extraction procedure, 500mg of amoxicillin was also used before starting the extraction procedure.

Asepsis action on the work area is absolutely necessary before administering local anesthesia. Administration of anesthetic agents to the buccal and lingual aspects of the teeth using Fisher's block anesthesia technique by anesthetizing the mandibular buccal and lingual areas, if necessary intra-pulpal anesthesia for removal of the polyp tissue using tissue scissors. Control bleeding by using cotton swabs soaked in adrenaline solution. Making a flap to get a good field of view. In this case, the full thickness method was used with a triangular flap model so that the bone was seen properly and could control the bleeding maximally.

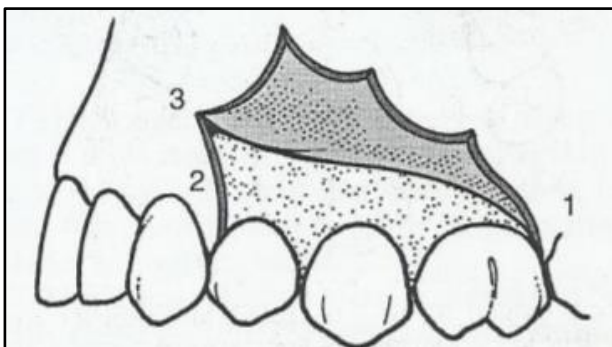


Figure 3. Triangular flap⁵

Drilling the bones using a bone bur until the root of the tooth is visible. Cutting teeth using a large bur or elevator to cut the tooth into 2 parts in the bifurcation area. Separation of the periodontal ligament using a periotome device that surrounds the root of the tooth, if there is no periotome, you can use an excavator to separate the periodontal ligament. Remove each separate root with a luxator. Root pliers may be used to remove each root from the socket. Debridement of the work area with physiological solutions and povidone iodine then suturing the buccal flap area. The suturing technique uses simple interrupted methods. Prescribing analgesics and antibiotics amoxicillin 500 mg for 5 days and dexamethasone 0.5 mg 3 days 2 times a day and paracetamol 500 mg for 5 days 3 times a day. Further control patients 1 week later if needed.

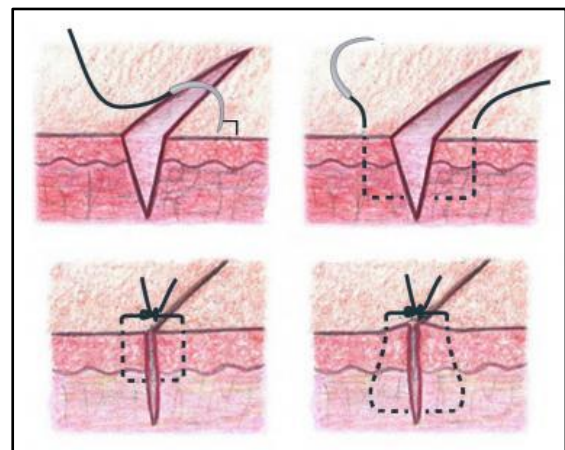


Figure 5. Simple interrupted suture.¹⁶

The treatment for this case is surgery with a transalveolar technique with removal of the polypoid tissue in the pulp polyp lesion. Polypoid tissue removal was initiated using sterile tissue scissors under local and intra pulpal anesthesia. Local anesthesia uses Fisher's block technique to anesthetize the inferior alveolaris, N. Buccalis longus and N. Lingualis, while the intra pulpal technique is used to anesthetize the pulp tissue so that the patient is more comfortable in the procedure. The removal of polypoid tissue is prone to bleeding because the polyp tissue lesion is rich in blood vessels, so that the action of stopping bleeding in the

wound by pressing the open part with gauze soaked with epinephrine to control the bleeding is absolutely necessary. The transalveolar technique with the separation method was chosen with consideration of the hard tissue that was already brittle and prone to fractures. To avoid this, an open flap was performed using the triangular flap technique to open bone tissue to visually widen the work area. Medical administration after surgery using antibiotics, analgesics and corticosteroids for swelling control.¹³ Chronic hyperplastic pulpitis or pulp polyps is a pathological condition that attacks vital pulp tissue so that it experiences a chronic inflammation as a defense response from the body to the pulp tissue against bacterial infection. The infected pulp forms granulation tissue where this tissue is only in young infected pulp with large cavities. The condition of good pulp vascularity makes the granulation process more developed than pulps with poor vascularity. The term use of the term chronic hyperplastic pulpitis occurs due to granulation of the pulp tissue covered with epithelial tissue due to chronic infection. Pulp polyps usually occur in patients who are still adolescents, this is because the pulp in adolescent patients has good blood vessels. Perforation in the roof of the pulp causes the opening of the pulp tissue and the entry of bacteria which can cause chronic inflammation.²

The pathophysiology of the pulp polyp is starting from the opening of the pulp chamber due to chronic and progressive caries which causes the tooth to become non-vital. The open pulp chamber results in tissue proliferation resulting in pulp cell activation which is protected by epithelial cells that grow to cover the surface and form inflamed lobes. Pulp polyps often occur in large open cavities, young, resistant pulp and chronic low-level stimuli, so mechanical irritation caused by chewing and bacterial infection are often the main causes of pulp polyps. Pulp polyps can be caused by mechanical irritation and invasion of bacteria into the pulp chamber, chronic caries, trauma to the tooth resulting in tooth fracture and secondary caries at the edge

of the restorative material. which is rich in blood vessels. This granulating blood vessel will be covered with epithelium. The distinctive red color of the polyp pulp is due to the proliferation of blood vessels. This causes the polyp to bleed easily. Polyps are generally asymptomatic but pain can arise due to the mastication process, heat and electrical stimulation.¹ Clinically, the pulp polyp is seen as a mass in the tooth cavity resembling pink to reddish gingiva, in the form of lobes, single and multiple lesions and protruding from the pulp chamber, including open cavities in posterior teeth that have long experienced deep and chronic caries.¹¹

DISCUSSION

The pulp polyps in this case report were caused by a chronic carious condition. The chronic condition makes the pulp tissue create a defense that is to form polypoid tissue. The choice of treatment for this patient includes removal of the polypoid tissue with tissue scissors. Control bleeding during the extraction process and so that the blood in the polyp is not too much and the patient is comfortable in the process of taking the polyp from. Pulp polyps bleed very easily and feel pain when exposed, so removal of polyp tissue before tooth extraction is highly recommended.¹¹ The condition of the teeth cannot be treated with root canals or direct or indirect restorations, so tooth extraction must be carried out. The absence of support from the hard tissue of the tooth which allows for retention of the restorative material is the main cause of extraction in patients with pulp polyps. Often the absence of a supporting wall on the hard tooth tissue becomes a problem in the extraction process. The process of extraction of posterior teeth without surgery relies on bifurcated tissue to be the support when the extraction process is carried out, but in the case of polyps, usually the hard tissue of the teeth is already brittle so that it is prone to fracture.¹⁷ Surgical extraction of teeth and making flaps has a function to broaden the operator's perspective in the operation process.¹⁷ Flap reflexology and



bone reduction can result in trauma to both soft and hard tissues leading to postoperative complications such as pain, swelling and trismus. Several clinical studies on treatments that can reduce complications after dental surgery have been conducted. Among them, Dexamethasone and Methylprednisolone are examples of corticosteroids that are often used in dentoalveolar surgery because they have a pure glucocorticoid effect (they do not have a mineralocorticoid effect). The ability of glucocorticoids to suppress the inflammatory response is well known.¹⁸

Glucocorticoids can increase the release of multinucleated leukocytes from the bone marrow, thereby increasing the number of leukocytes in the bloodstream. Glucocorticoids can also inhibit the accumulation of leukocytes at the site of inflammation causing substances involved in the inflammatory response such as prostaglandins to be released from leukocytes. Glucocorticoids can inhibit fibroblast proliferation, such as the production of collagen and fibronectin. This combination is responsible for the healing of difficult wounds, increased susceptibility to infection and the response to typical inflammation is reduced by excess.⁹ Use of oral antibiotics is indispensable to control post-extraction infection by surgery. The antibiotics most often used in dentistry are the penicillin class. Penicillin is still the gold standard in treating dental infections. Among the penicillin group, penicillin V, amoxicillin, and amoxicillin and clavulanic acid have been recommended to treat odontogenic infections and studies have shown that there are no differences in the clinical results of using the three types of antibiotics. the use of antibiotics should be stopped when the immune system has been able to control the infection.¹⁸ The use of antibiotics for 2-3 days has been recommended. Studies have shown that the patient's condition improves after 2-3 days of antibiotic use. The Center for Diseases Control and Prevention (CDC) recommends the shortest possible use of antibiotics, which is 1-3 days after clinical signs and symptoms disappear. Therefore, in general, antibiotic

doses are given in dentistry for a duration of five days. Prolonged use of antibiotics can cause damage to the body's normal flora. The use of antibiotics for more than 21 days is also suspected to cause antibiotic resistance.¹⁹

CONCLUSION

Tooth extraction with polypoid tissue can use transalveolar techniques to avoid complications of extraction. Extraction by the intraalveolar method often fails so that it needs to be extracted by the transalveolar method. Management of extraction with polyp pulp includes removal of the polypoid tissue first before extraction. So that patients are more comfortable in the process of removing hard tissue. Making a full thickness flap with a triangular model is absolutely necessary before the teeth are separated. The flap functions so that the bones are well visible and can control bleeding optimally.

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