



Management of Tooth Extraction in Patients with Anticoagulant Therapy: Case Report

Hasna Nabila Khairunisa¹, Rr Pipiet Okti Kusumastiwi^{2*}

¹Student, Faculty of Dentistry, Universitas Muhammadiyah Yogyakarta, Indonesia

²Lecturer, Faculty of Dentistry, Universitas Muhammadiyah Yogyakarta, Indonesia

Correspondence email: pipietokti@umy.ac.id

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ABSTRACT

Introduction: Consumption of anticoagulant drugs such as warfarin is the main therapy in patients with heart valve disease. Prophylactic antibiotics are recommended for patients with heart disease prior to tooth extraction.

Objective: To describe the comprehensive dental management of a patient with a history of heart disease and chronic anticoagulant therapy undergoing multiple tooth extractions.

Case: A 67-year-old female patient came to UMY Dental Hospital complaining of discomfort when chewing food because of remaining roots in several of her upper right posterior teeth. This started with a tooth that had cavities and was not treated, causing the crown of the tooth to break little by little on its own. The tooth had hurt about 2 months prior, and she had taken painkillers (Paracetamol). Currently, there are no complaints of pain or other accompanying symptoms. The patient has a history of heart disease since childhood and is currently taking anticoagulant medication (Notisil®). Objective examination showed root residue in teeth 15 and 16, percussion (-), palpation (-), and bitetest (-).

Outcome: The patient was given prophylactic antibiotics 60 minutes before tooth extraction and discontinued warfarin 5 days prior to the tooth extraction (as advised by a cardiologist). The extraction was performed smoothly and without complications. The open socket was packed with Spongostan® and sutured using a figure-of-eight technique. On the 14th day post-extraction, the wounds were nearly fully covered, indicating that healing was predominantly in the proliferative phase.

Conclusion: Tooth extraction in patients undergoing anticoagulant therapy requires a multidisciplinary approach, involving both the management of anticoagulant medication and clinical strategies such as the administration of prophylactic antibiotics and the application of hemostatic agents like Spongostan® following the extraction.

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INTRODUCTION

Dental caries is a complex, multifactorial disease affecting both primary and permanent teeth, characterized by the demineralization of the hard dental tissues, namely enamel, dentin, and cementum.¹ Four essential components are required for the development of dental caries: bacterial biofilm (plaque), fermentable carbohydrates, tooth structure, and time.² Dental caries is a preventable and curable condition when managed appropriately; however, if left untreated, the lesion can progress into the dentin and reach the dental pulp, which contains blood vessels and nerves. This may lead to pulp necrosis and gradual destruction of the crown, eventually resulting in retained roots.³

Chronically retained roots serve as a reservoir for bacterial growth, which can damage the surrounding tissues and trigger local inflammation.⁴ These bacteria can enter the bloodstream, particularly during episodes of trauma or when the immune system is compromised, resulting in bacteremia. Persistent bacteremia can lead to endocardial infection, or infective endocarditis, caused by bacterial adherence to damaged or abnormal heart valves.⁵

Valvular heart disease refers to abnormalities of the pulmonary, tricuspid, aortic, or mitral valves, which may result in either regurgitation (leakage) or stenosis (narrowing) of the valve.⁶ Maintaining oral hygiene is essential in preventing infective endocarditis in patients with valvular heart disease. Dentists play a crucial role in managing these patients by reducing the risk of complications, such as infective endocarditis, which can be life-threatening.⁷ One such preventive measure includes the extraction of retained roots, which may serve as a portal for systemic infection.

Patients with valvular heart disease are commonly prescribed anticoagulant therapy, such as warfarin, as the mainstay treatment. Strict monitoring of the International Normalized Ratio (INR) is necessary to optimize therapeutic outcomes and minimize the risk of bleeding.⁸ In 1995, the The American Heart Association (AHA) recommended the use of prophylactic antibiotics for patients with certain heart conditions prior to undergoing dental extractions.⁹

The objective of this case report is to describe the management of tooth extraction in a patient undergoing anticoagulant therapy.

CASE

A 67-year-old female patient presented to UMY Dental Hospital complaining of discomfort while chewing food due to retained root fragments in several upper right posterior teeth. The condition initially started with untreated dental caries, which led to gradual fracturing of the tooth crowns. The affected teeth had previously caused pain approximately two months

ago, which was managed with the analgesic Paracetamol. At the time of examination, the patient reported no pain or other associated symptoms. She brushes her teeth three times a day—during morning and evening showers, and before bedtime. The patient's last dental visit was approximately 13 years ago, during which an upper left tooth was extracted. Over the past year, the patient has not been hospitalized.

The patient has a known history of heart disease (valvular heart defect) since childhood and also presents with thyroid gland enlargement. She is currently taking routine medications including Furosemide, Digoxin, Spironolactone, Propranolol, and an anticoagulant, Notisil®. The patient reports an allergy to the drug Trisulfa. There is no known systemic disease history in the patient's parents, but her younger sibling has a history of heart disease. The patient last ate at 8:00 AM and slept for approximately six hours the previous night.

Vital sign assessment prior to extraction showed normal values: blood pressure 117/73 mmHg, pulse rate 83 per minute, body temperature 36°C, and respiratory rate 20 breaths per minute. Objective clinical examination revealed retained 15 and 16 radices, with negative findings on percussion, palpation, and bite tests. The diagnosis was 15 and 16 radices. The treatment plan involved serial tooth extraction using infiltration anesthesia technique.



Figure 1. before extraction

First Visit

During the initial visit, a comprehensive examination of the patient's oral cavity was performed, including both intraoral and extraoral assessments. The patient was then referred to a cardiologist and pulmonologist (Sp.JP) for consultation regarding her medical condition. Based on the cardiologist's recommendation, the patient was permitted to undergo extraction of the symptomatic teeth, with the condition that she discontinue the anticoagulant medication Notisil® five days prior to the procedure. A hemostasis laboratory test was conducted, and the patient's International Normalized Ratio (INR) was recorded at 1.17.

Second Visit

On the second visit, serial extractions of the retained roots of teeth 15 and 16 were performed under local infiltration anesthesia following a five-day discontinuation of anticoagulant therapy. The procedure commenced with the administration of prophylactic antibiotics: the patient was given two tablets of Amoxicillin 500 mg to be taken one hour prior to the extraction.

The operator proceeded with preparation, including patient preparation, setup of instruments and materials, and obtaining signed informed consent for the extraction. The procedure began by identifying the insertion points for infiltration anesthesia on the buccal and palatal aspects of 15 and 16. Asepsis of the working area was performed using povidone iodine applied with a cotton ball. Topical anesthetic (Benzocaine®) was then applied to the injection sites using a cotton ball and allowed to take effect for 2 minutes.

Infiltration anesthesia was administered using a Citoject syringe with Articaine® + Epinephrine 1:100,000 (Orabloc®) at the mucobuccal fold of 15 and 16. The needle was inserted with the bevel facing the bone, the anesthetic solution was deposited, and the needle was slowly withdrawn followed by gentle massaging of the mucosa. The same procedure was repeated for the palatal area at the apical level of 15 and 16.

Anesthesia was evaluated by gently pressing tissue forceps on the mucosa of the working area to assess numbness. Once effective anesthesia was confirmed, serial extraction of the retained roots of 15 and 16 was initiated.

Soft tissue separation was performed using an excavator, followed by tooth luxation using a straight elevator (bein) to detach the periodontal ligament. Extraction was then carried out using maxillary posterior root forceps with buccopalatal movement. Following the extraction of the root fragments, socket curettage was performed to remove granulation tissue, and a bone file was used to smooth any sharp bone edges around the socket.

The socket was irrigated with saline and povidone iodine using an irrigation syringe. Hemostasis was achieved by applying pressure to the socket with a cotton ball moistened with povidone iodine. An open socket was packed with Spongostan® and sutured using a figure-of-eight technique. The patient was prescribed 15 tablets of Amoxicillin 500 mg (antibiotic) and 10 tablets of Paracetamol 500 mg (analgesic), along with detailed post-operative care instructions.



Figure 2. After Extraction

Third Visit

The third visit consisted of suture removal and post-extraction follow-up. The extraction of the retained roots of teeth 15 and 16 had been performed approximately two weeks prior. The patient did not report any pain or associated symptoms. The prescribed antibiotics had been completed by the fifth day post-extraction, and the analgesic was only taken on the day of extraction; the patient did not continue taking the pain medication because no further pain was experienced.

Intraoral examination revealed healing extraction sites at 15 and 16, with no signs of inflammation. The post-extraction wounds were nearly fully covered, indicating that healing was predominantly in the proliferative phase.



Figure 3. 14th Day Post Extraction

DISCUSSION

Tooth extraction is defined as the procedure of removing a tooth from the alveolus, or its socket, due to the tooth no longer being viable.¹⁰ Non-vital root tissue, commonly referred to as gangrenous radix, can serve as a breeding ground for bacterial proliferation, potentially affecting the surrounding tissues and leading to infection, which may spread to other organs, such as the kidneys and heart, thus resulting in serious complications.³

The administration of anticoagulant medications in cardiovascular patients is essential to reduce the risk of thromboembolic events. Anticoagulants work by inhibiting the blood coagulation process. Warfarin is one of the most commonly prescribed anticoagulants for cardiovascular conditions.⁸ In this case, the patient had a history of valvular heart disease and was taking Notisil®, a medication containing warfarin, on a regular basis. Although often referred to as a “blood thinner,” warfarin does not actually alter the viscosity of blood.¹¹ Anticoagulant therapy is monitored using prothrombin time and is expressed as the International Normalized Ratio (INR).¹² The recommended therapeutic INR range for patients on warfarin is typically between 2 and 3.¹¹

In this case, the patient was advised by a cardiologist to discontinue warfarin 5 days prior to the tooth extraction. Discontinuation of warfarin for 4–5 days can reduce the INR to below 1.5, a safer threshold for dental or surgical procedures. Upon resuming warfarin, it typically takes approximately 3 days to return to a therapeutic INR level of 2, before the risk of thromboembolism increases.¹³ The patient's hemostasis lab results two weeks prior to extraction indicated an INR of 1.17, meaning the blood was relatively more coagulable than the therapeutic target. While this may increase the risk of clot formation, a lower INR reduces the risk of bleeding during the dental procedure.¹⁴

Retained roots must be extracted to eliminate the risk of becoming a source of infection that could lead to infective endocarditis, one of the main bacterial causes of which is *Streptococcus viridans*.¹⁵ Prophylactic antibiotics can help reduce the risk of developing infective endocarditis.¹⁶ In this case, the patient received 1000 mg of amoxicillin 60 minutes prior to the dental procedure, in accordance with guidelines from Habib G. (2015), as cited in Irmawati (2021), on the use of prophylactic antibiotics during invasive dental procedures in high-risk patients.¹⁵

The tooth extraction was conducted according to clinical protocols for patients on long-term anticoagulant therapy. The patient received appropriate local hemostatic management, including manual pressure with gauze or a cotton ball and the use of topical hemostatic agents.¹⁷ Postoperative pain was managed with 500 mg of paracetamol administered every 8 hours for a minimum of 3 days, as needed. Bleeding status was monitored regularly on the morning of days 2 and 7 following the extraction.

CONCLUSION

Extraction of retained tooth roots in patients with valvular heart disease undergoing anticoagulant therapy can be performed safely and effectively through careful planning that

includes medical consultation, temporary discontinuation of anticoagulants with INR monitoring, administration of prophylactic antibiotics, and the application of adequate hemostatic techniques. This approach plays a crucial role in preventing bleeding complications and reducing the risk of systemic infections, including infective endocarditis.

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REFERENCES

1. B B, M O 'Sulliva. Management of the deep carious lesion: a literature review. *J Ir Dent Assoc.* 2021;67(1):36–42.
2. Warreth A. Dental Caries and Its Management. *Int J Dent.* 2023;2023:10-12. doi:10.1155/2023/9365845
3. Arsad. Muliana. nn. Formulation and Physical Quality of Temu Putih Extract (*Curcuma zedoaria*) as Herbal Toothpaste. *Mulawarman Pharm Conf.* 2021;13(2):46-53.
4. Trianziani S. View metadata, citation and similar papers at core.ac.uk. 2020;4(November):274-282.
5. Sumarta NPM, Danudiningrat CP, Kamadjaja DB. Pengaruh Infeksi Gigi Pada Kesehatan Umum.; 2021.
6. Paul S. Congestive heart failure. *Crit Care Nurs Clin North Am.* 2003;15(4):1969-1978. doi:10.1016/S0899-5885(03)00056-X
7. Laksono S, Effendi IK. Dental Management For Patients With Cardiovascular Disease: A Literature Review. *J Kesehat Gigi.* 2023;10(1):22-30. doi:10.31983/jkg.v10i1.9290
8. Octasari PM, Silvianingsih N, Mungunwijaya PK. Kesesuaian Nilai INR (International Normalized Ratio) Pasien Kardiovaskuler Dengan Terapi Warfarin Di Poli Spesialis Jantung RS Roemani Muhammadiyah This study aims to determine the suitability of the INR value in cardiovascular patients with warfarin. *Cendikia J Pharm.* 2022;6(1):46-54.
9. Gani A, Munawwarah M. Diagnosis dan Tatalaksana Endokarditis Infektif. *J Kedokt Nangroe Med.* 2024;7(3):36-45.
10. Dewi CD, Syamsudin E, Hadikrishna I. Karakteristik pasien dan diagnosis pencabutan gigi pada pasien di klinik eksodonasia RSGM Universitas Padjadjaran. *J Kedokt Gigi Univ Padjadjaran.* 2022;34(2):152. doi:10.24198/jkg.v34i2.37719
11. Nafisa S, Rohmah S, Nihan YA, Nurfadhila L, Utami R. Review: Analysis of Warfarin Drug Compounds in Blood Plasma with HPLC/KCKT Method. *J Pharm Sci.* 2023;6(2):479-494. <https://www.journal-jps.com>
12. Agustini DD, Amal AN. Evaluasi Penggunaan Tablet Warfarin Terhadap Nilai Hasil INR Pasien Poli Jantung Kronis di Apotek Salah Satu Rumah Sakit di Karawang. In: *Bakti Tunas Husada Conference Series.* Vol 4. ; 2024:72-76.
13. Lupi SM, Baena AR y. Patients Taking Direct Oral Anticoagulants (DOAC) undergoing oral surgery: a review of the literature and a proposal of a Peri-operative management protocol. In: *Healthcare.* Vol 8. MDPI; 2020:281.
14. Lubis LW, Rahmawati F, Pramantara IDP. Gambaran Tingkat Pengetahuan pada Pasien yang Mendapatkan Terapi Warfarin. *Maj Farm.* 18(4):427-436.
15. Irmawati AR, Sutarto AP. Prevention of infective endocarditis in dental procedures for tetralogy of fallot patients. *J Radiol Dentomaksilofasial Indones.* 2021;5(2):66. doi:10.32793/jrdi.v5i2.706
16. Permata RI, Fitriani Y, Nurwani PA. Gambaran Penggunaan Antibiotik Pada Penderita Faringitis Di Poli Anak Rumah Sakit Umum Ummi Bengkulu. Published online 2020.
17. Inokoshi M, Kubota K, Yamaga E, Ueda K, Minakuchi S. Postoperative bleeding after dental extraction among elderly patients under anticoagulant therapy. *Clin Oral Investig.* 2021;25(4):2363-2371. doi:10.1007/s00784-020-03559-z