

Anasia Chrisanty Sahertian anasiachrisanty@gmail.com

Fwd: Article Decision on Special Care Dentistry Symposium Publications

To: nanik-z@fkg.unair.ac.id

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Dari: **Symposium FKG Universitas Airlangga** <symposium@fkg.unair.ac.id>

Date: Sen, 27 Mei 2019 pukul 13.41

Subject: Article Decision on Special Care Dentistry Symposium Publications

To: <anasiachrisanty@gmail.com>

Kepada Anasia Chrisanty Sahertian
Peserta Presentasi Poster
Joint Scientific Meeting in Special Care Dentistry
Fakultas Kedokteran Gigi - Universitas Airlangga
2019

Terima kasih atas partisipasinya dalam kegiatan "Joint Scientific Meeting in Special Care Dentistry". Kami menginformasikan bahwa naskah anda yang berjudul "*Endodontic Treatment of First Mandibular Molar in Patient Underwent Heart Bypass Surgery: A Case Report*" dipertimbangkan untuk proses Publikasi Special Issue Symposium pada jurnal Acta Medica Philipina dengan beberapa syarat yang harus dipenuhi:

1. Format Full-text yang dikirimkan sesuai dengan format Guide for Author Acta Medica Philipina. Template terlampir pada e-mail ini.
2. Revisi format Full-text diterima oleh panitia paling lambat hari **Jumat, 31 Mei 2019 Pukul 23:59 WIB.**
3. Menuliskan referensi menggunakan reference manajer (ex : Mendeley)
4. Gambar harap di attachmentkan juga dengan dimensi 800 x 600 dpi
5. Referensi harap dirapikan dan berasal dari literatur 10 tahun terakhir
6. Naskah yang dikirimkan **melebihi tenggat waktu** yang diberikan tidak diikutsertakan dalam publikasi Special Issue Symposium Acta Medica Philipina.

Atas perhatiannya kami ucapkan terima kasih.

Hormat Kami.

Panitia Scientific Article

Joint Scientific Meeting in Special Care Dentistry

Anasia Chrisanty Sahertian anasiachrisanty@gmail.com

Fwd: revisi 2

To: nanik-z@fkg.unair.ac.id

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Dari: **Symposium FKG Universitas Airlangga** <symposium@fkg.unair.ac.id>

Date: Min, 29 Sep 2019 pukul 23.07

Subject: revisi 2

To: <anasiachrisanty@gmail.com>

Yth. Penulis,

Bersama ini kami kirimkan hasil review oleh peer reviewer kami:

Mohon merevisi naskah sesuai masukan dari reviewer kami dengan menggunakan **track changes** pada naskah dan dengan **mengisi form reply** yang kami lampirkan.

Dan mohon melengkapi "**author declaration form**" yang telah ditandatangani oleh seluruh penulis sebagai persyaratan publikasi naskah ini.

Harap **revisi naskah, form reply** dan **author declaration form** dikirimkan kembali kepada kami, selambat-lambatnya tanggal 4 Oktober 2019.

Terima kasih.

Hormat Kami,
Panitia

Anasia Chrisanty Sahertian anasiachrisanty@gmail.com

Fwd: revisi 2

To: nanik-z@fkg.unair.ac.id

----- Forwarded message -----

Dari: **Anasia Chrisanty** <anasiachrisanty@gmail.com>

Date: Jum, 4 Okt 2019 pukul 10.41

Subject: Re: revisi 2

To: Symposium FKG Universitas Airlangga <symposium@fkg.unair.ac.id>

Selamat pagi, berikut saya kirimkan **revisi naskah, form reply** dan **author declaration form**.

Terimakasih.

Pada tanggal Min, 29 Sep 2019 pukul 23.07 Symposium FKG Universitas Airlangga <symposium@fkg.unair.ac.id> menulis:

Yth. Penulis,

Bersama ini kami kirimkan hasil review oleh peer reviewer kami:

Mohon merevisi naskah sesuai masukan dari reviewer kami dengan menggunakan **track changes** pada naskah dan dengan **mengisi form reply** yang kami lampirkan.

Dan mohon melengkapi "**author declaration form**" yang telah ditandatangani oleh seluruh penulis sebagai persyaratan publikasi naskah ini.

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Terima kasih.

Hormat Kami,
Panitia

**JOINT SCIENTIFIC MEETINGS in SPECIAL CARE DENTISTRY 2019
FACULTY OF DENTAL MEDICINE, UNIVERSITAS AIRLANGGA
SCIENTIFIC ARTICLE COMMITTEE**

Reply to the reviewers' comments

Title:

Author:

Reviewer Number (1/2)	Original comments of the reviewer	Reply by the author(s)	Changes done on page number and line number
	<u>Abstract</u>		
2	State the purpose of this case	Due to amount of words limitation, I've already modified all the abstract and also inserted the purpose of the case	Page 1 line 3
	<u>Introduction</u>		
1	what is the important of this case, please explain in brief paragraph	The important of this case is how to manage and take endodontic assessment to patient with cardiovascular disease, especially in elderly patient (geriatric). This case is one of the major challenges in providing both endodontic and restorative treatment for elderly people. It is already mentioned in the introduction that in Indonesia, cardiovascular disease (heart disease and stroke) is common among Indonesian adults. The risk about an unadequate endodontic treatment in patient with heart disease has already been mentioned in introduction.	Page 1 paragraph 1 and paragraph 3

2	<p>What is the challenge endodontic treatment in this patient condition, explain that as the highlight of this case.</p> <p>Please suitable with the content of your case. Introduction should be contain the novelty of this case and made it in narration paragraph</p>	<p>It's already mentioned in the introduction and also discussion. Here is the explanation from discussion (Paragraph 1 and 2).</p> <p>“One of the challenges faced by dental specialists today is in the assessment and management of patients with increasingly complex medical conditions. It is an information gathering process for assessing a patient’s health status, comprises a systematic review of the patient’s chief or primary complaint, a detailed history related to this complaint, information about past and present medical conditions, and family histories.⁴ Patient with cardiovascular diseases are more susceptible to physical and emotional stress. Therefore, endodontic treatment should include low-stress protocols and shorter appointments.⁴ The patient may feel tired quickly, anxiety, shortness of breath and unable to open her mouth for a long time.”</p>	discussion (Paragraph 1 and 2)
	<u>Case Report</u>		
1	mentioned the inform consent from the patient	It is already mentioned in last sentence in case report	paragraph 1 line 12
1	Is the diagnostic of heart diseases already established? By whom? And what about the treatment of this condition that received by the patients?	By the cardiologist, patient still have routine examination and take the medication regularly.	
	<u>Discussion</u>		

1	emphasize why the case is important in dentistry?	I've mentioned it in introduction. (Page 1 paragraph 1 and 3)	introduction. (Page 1 paragraph 1 and 3)
1	Explain the other treatment choices for this patient and why the operator choose this treatment.	<p>It can be treated with one visit root canal treatment, the advantage of this treatment is completing root canal treatment in one visit, but the disadvantage is need long time to treat patient in one visit.</p> <p>Patient with cardiovascular diseases are more susceptible to physical and emotional stress. The patient may feel tired quickly, anxiety, shortness of breath and unable to open her mouth for a long time. Consequently, single visit endodontic and long treatment time should not be performed to this patient. (Discussion paragraph 2 line 2)</p> <p>All the complete reasons of procedure hve been explained in Discussion paragraph 4, 5 and 6</p>	paragraph 2 line 2
1	What is the excellence this treatment than the other?	<ol style="list-style-type: none"> 1. Patient is 65 years old Elderly patient typically are challenging to treat. Dental conditions associated with aging may change. Old patients are more likely to need more demands and difficulties caring for oral health because their reduction in mobility and cognitive ability. 	

		<p>2. Medically compromised patient.</p> <p>In this case patient with cardiovascular disease. Patients suffering from cardiovascular disease are vulnerable to physical and emotional stress. It's already explained the root canal treatment procedure in case management and discussion</p> <p>The patient was successfully treated and restored. There are no signs of any complications from the heart disease. The patient was found to be asymptomatic and satisfied after 3 months recall.</p>	
1	Is this treatment have any side effect?	<p>Endodontic surgical and non-surgical instrumentation of root canals can produce a transient bacterimia. It may also occur due to direct spread of endodontic bacteria into the bloodstream. However, it is known that in patients with heart disease, a transient bacterimia may lead to infective endocarditis and myocardial infection. (Introduction paragraph 3 line 6)</p>	Introduction paragraph 3 line 6
1	Compare your case with the other literaure. Highlight the	Compare with other case report in patient with systemic complication this	

	<p>novelty of your case in paragraph.</p>	<p>case can't be done in one visit, to minimize patient's anxiety and fear that can influence patient's physical and emotional stress. And also, if compare with other case in young/adult patient, elderly patient need special care.</p> <p>For restoration, Zirconia is a great alternative posterior restoration because of the high fracture toughness, resistance to wear compare the other crown.</p> <p>Fiber post has similar physical properties like modulus of elasticity, compressive strength, and flexural strength as dentin compare to other case used metal post.</p>	
<p>2</p>	<p>This part there are many literatures explain about heart disease, but too general. Author must highlight below points with comparison to review and presented case.</p> <ol style="list-style-type: none"> 1. What is actually want to highlight in case? 2. What is novelty of case? 3. What final outcomes based, the diagnosis is concluded? 4. Had any role of treatment or other mode of therapy in such cases? 5. As so many literatures were there, so what is new in such case? <p>Please mention of your case scenario and compare with review.</p>	<ol style="list-style-type: none"> 1. Endodontic treatment in patient underwent by pass surgery, and also how to minimize physical and emotional stress of elderly patient during treatment 2. Mangement elderly patient with cardiovascular problem (in this case heart disease) who needs special care in root canal treatment to reduce potential risk. 3. The diagnosis for patient is coronary heart disease. The 	

		<p>diagnosis of the tooth is pulp necrosis</p> <p>4. No, the only minimal invasive treatment for this kind of case is endodontic treatment in patient underwent heart bypass surgery (all procedures and specific reasons are explained in case report and discussion)</p> <p>5. Physical and Emotional stress in patient with cardiovascular disease is very important to manage during root canal treatment.</p>	
	<u>References</u>		
1	Please, added references from Dental Journal (Majalah Kedokteran Gigi)	I didn't find a similar topic about my case in Dental Journal Unair (Majalah Kedokteran Gigi Unair)	
2	Please, added references from Dental Journal (Majalah Kedokteran Gigi)	I didn't find a similar topic about my case in Dental Journal Unair (Majalah Kedokteran Gigi Unair)	

Anasia Chrisanty Sahertian <anasiachrisanty@gmail.com>

Fwd: revisi 2

To: nanik-z@fkg.unair.ac.id

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Dari: **Symposium FKG Universitas Airlangga** <symposium@fkg.unair.ac.id>

Date: Min, 6 Okt 2019 pukul 13.45

Subject: Re: revisi 2

To: Anasia Chrisanty <anasiachrisanty@gmail.com>

mohon melengkapi cover letter berikut dengan tanda tangan coresponding author dan paling lambat dikirimkan ke kami kembali tanggal 8 Oktober 2019.
terima kasih

Pada tanggal Jum, 4 Okt 2019 pukul 10.41 Anasia Chrisanty <anasiachrisanty@gmail.com> menulis:
Selamat pagi, berikut saya kirimkan **revisi naskah, form reply** dan **author declaration form**.
Terimakasih.

Pada tanggal Min, 29 Sep 2019 pukul 23.07 Symposium FKG Universitas Airlangga <symposium@fkg.unair.ac.id> menulis:
Yth. Penulis,

Bersama ini kami kirimkan hasil review oleh peer reviewer kami:
Mohon merevisi naskah sesuai masukan dari reviewer kami dengan menggunakan **track changes** pada naskah dan dengan **mengisi form reply** yang kami lampirkan.
Dan mohon melengkapi "**author declaration form**" yang telah ditandatangani oleh seluruh penulis sebagai persyaratan publikasi naskah ini.

Harap **revisi naskah, form reply** dan **author declaration form** dikirimkan kembali kepada kami, selambat-lambatnya tanggal 4 Oktober 2019.

Terima kasih.

Hormat Kami,
Panitia

**ACTA MEDICA PHILIPPINA
AUTHOR DECLARATION**

I/We have been sufficiently involved in this work to take public responsibility for its validity and final presentation as original publication.

I/We declare that this manuscript has not been published and is not under simultaneous consideration for publication elsewhere.

I/We declare that this manuscript has been subjected to ethics review by
CASE REPORT (name of ethics board or committee, date) and has
been endorsed favourably by the said board or committee.

I/We declare that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

I/We declare that the manuscript has been read and approved by all authors and that the order of authors listed in the manuscript has been approved by all of us.

I/We confer all copyright ownership to Acta Medica Philippina in the event that this manuscript is published in this journal.

I/We understand that the Corresponding Author is responsible for communicating with the other authors about the status of submitted manuscripts, submission of revisions and final approval of proofs.

Signed by all authors as follows:

ANASTIA CHRISANTY SAHERTIAN



NANIK ZUBAIDAH, A.B., M.KES., Sp.KG(K)



Email Tanggal : 26 Nov 2019

Acta Medica Philippina UP Manila <actamedicaphilippina.upm@up.edu.ph>

galley proof "Endodontic Treatment of First Mandibular Molar

To: nanik-z@fkg.unair.ac.id, symposium@fkg.unair.ac.id

Email Tanggal :26 Nov 2019

Kepada drg Nanik Zubaidah

Berikut kami lampirkan proofread dan layout article, mohon **merevisi (menggabungkan tabel) sesuai permintaan dari Editor** dan mohon **koreksi akhir dari penulis** dan ACC.
Untuk selanjutnya kami terbitkan.

Terima kasih,
Salam

Dental Journal (Majalah Kedokteran Gigi)

<http://e-journal.unair.ac.id/MKG>

Faculty of Dental Medicine, Universitas Airlangga
Jl. Mayjend. Prof. Dr. Moestopo 47 Surabaya 60132
Another Email: dental_journal@yahoo.com
Phone/Fax: +6231 5039478

Nov. 26, 2019

Nanik Zubaidah
Department of Conservative Dentistry
Faculty of Dental Medicine
Universitas Airlangga

Dear Dr. Zubaidah,

Attached is the galley proof of your manuscript "Endodontic Treatment of First Mandibular Molar in Patient who Underwent Heart Bypass Surgery: A Case Report". If you have corrections, kindly email us as soon as possible (our new email address actamedicaphilippina.upm@up.edu.ph).

Thank you very much!

Sincerely,

Dr. Abigail C. Pascual-Domingo

Endodontic Treatment of First Mandibular Molar in Patient who Underwent Heart Bypass Surgery: A Case Report

Anasia Chrisanty Sahertian and Nanik Zubaidah

Department of Conservative Dentistry, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Cardiovascular disease has become increasingly common. This must serve as a motivation for dentists on awareness of the modifications of treatment and precautions in patients suffering from cardiovascular disorders. The purpose of this case is to describe endodontic treatment on the right mandibular first molar in a 65-year-old woman followed with fiber post and zirconia-based crown with a medical history of cardiovascular disease and heart bypass surgery one year prior to dental treatment.

Key Words: endodontics, cardiovascular diseases, heart bypass surgery, geriatric

INTRODUCTION

Cardiovascular diseases comprise a group of diseases of the heart and vascular system, affecting the majority of individuals worldwide.¹ Cardiovascular diseases make up the most prevalent category of systemic disease in Indonesia and many other countries, and its prevalence increases along with age. In Indonesia, coronary heart disease and stroke are estimated to cause more than 470,000 deaths annually. High cardiovascular risk is common among Indonesian adults ≥ 40 years old. Hypertension, ischemic heart disease, coronary heart disease, and dysrhythmias are some of the cardiovascular conditions that are commonly observed among the population.²

Heart bypass surgery or coronary artery bypass surgery is a procedure to replace damaged arteries that supply blood to the heart muscles. The surgery is required when the coronary arteries are blocked or damaged. Blocked arteries restrict blood flow, and it disrupts the heart function.³

Treating patients with co-existing cardiovascular disease (heart problem) often raise concern over potential problems during dental treatment. The high prevalence of heart problems in the population makes it the most commonly medically compromised problem seen in dental practices. The important goal for the patient with cardiovascular disease during dental therapy is to deal with all the identified risk factors involved. Endodontic surgical and non-surgical instrumentation of root canals can produce a transient bacteraemia. It may also occur due to the direct spread of endodontic bacteria into the bloodstream. However, in patients with heart disease, a transient bacteraemia may lead to infective endocarditis and myocardial infection.¹

Paper presented at the Joint Scientific Meeting in Special Care Dentistry, July 5, 2019, Amerta Room, 4th Floor, main campus of Universitas Airlangga, Surabaya, Indonesia.

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ABSTRACT

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INTRODUCTION

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Paper presented at the Joint Scientific Meeting in Special Care Dentistry, July 5, 2019, Amerta Room, 4th Floor, main campus of Universitas Airlangga, Surabaya, Indonesia.

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Department of Conservative Dentistry
Faculty of Dental Medicine
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Jl. Mayjen. Prof. Dr. Moestopo No. 47 Surabaya 60132 – Indonesia
Email: nanik-z@fkg.unair.ac.id

The purpose of this case report is to describe the comprehensive endodontic management for cardiovascular compromised geriatric patient who has undergone heart bypass surgery.

CASE REPORT

A 65-year-old woman reported to the Conservative Dentistry and Endodontics Department Dental Hospital of Universitas Airlangga with chief complaints of discomfort and pain on her right mandibular first molar. Her medical record indicated the patient to be suffering from heart disease, and she underwent heart bypass surgery a year ago. The extraoral examination was within normal limits. During the intraoral examination, the right mandibular first molar was found to have secondary caries under composite restoration. The examination resulted in negativity in cold thermal test and K-file test, and positive to percussion and palpation test. Periodontal evaluation showed no abnormality.



Figure 1. Preoperative intraoral periapical radiograph.

Radiographic examination revealed deep carious lesions under the composite closely approximating the dental pulp with a slight widening of the apical periodontal ligament (Figure 1). A diagnosis of necrotic pulp and symptomatic apical periodontitis was established. Informed consent was obtained.

CASE MANAGEMENT

After conducting a clinical and radiographic analysis, it was decided that endodontic treatment should be performed. Local anesthesia without adrenaline was administered, and isolation was achieved through rubber dam (Sanctuary, Dental Dam) placement.

The access cavity was achieved using a round diamond bur and size 2 Endo Access bur (Dentsply Maillefer, Ballaigues, Switzerland). Mesio Buccal, mesiolingual, and distal canals were located (Figure 2A). Refinement of the access cavity was achieved using the Endo Z bur (Dentsply Maillefer, Ballaigues, Switzerland) to have straight access. Three canal orifices were identified with endodontic probes (Osung, DG-16 Double End Endodontic Explorer). Working lengths were determined using an apex locator (Propex Pixi, Dentsply-Maillefer, Ballaigues, Switzerland) with K-files (Dentsply Maillefer, Ballaigues, Switzerland) and confirmed radiographically (Figure 2B, C).

Glide paths were created with K-files up to size #15 and Proglider (Dentsply Maillefer, Ballaigues, Switzerland). Biomechanical preparation was performed using ProTaper Next Rotary system (Dentsply-Maillefer, Switzerland). A 5.25% solution of sodium hypochlorite, 17% ethylenediaminetetraacetic acid, and saline were used alternatively as irrigant at every change of instrument, and final irrigation was performed with 2% chlorhexidine digluconate. A 30-gauge needle with side vented was used for all irrigants and accompanied by the use of endoactivator (Dentsply-Maillefer, Switzerland). The suggested sequential

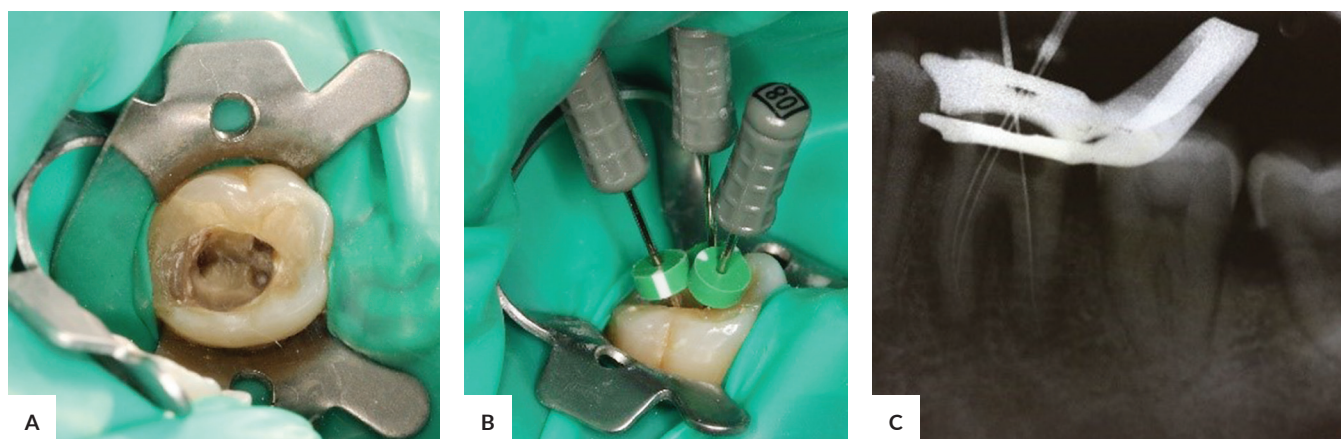


Figure 2. (A) Tooth isolation with a rubber dam and access opening. (B) Determination of working length. (C) Radiographic confirmation of the working length.

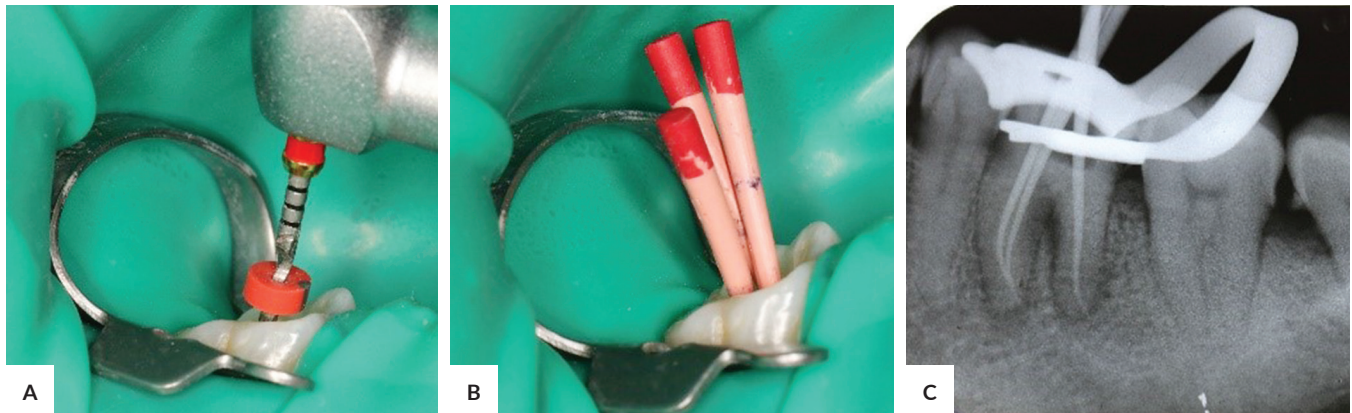


Figure 3. (A) Final preparation with ProTaper Next X2. (B,C) Clinical and Radiographic photograph of trial gutta percha ProTaper Next X2.

method of preparation for ProTaper Next was done in all canals, where all of them were negotiated initially with ProGlider freely in the canal. The ProTaper Next X1 was introduced into the canals, and then with the feather touch brushing motions and preparations were completed till the apex of the canals. After copious irrigation, ProTaper Next X2 was introduced, and the preparation was completed until the root apex (Figure 3A).

Calcium hydroxide dressing was used as an intracanal medicament for seven days. At the next visit, calcium hydroxide dressing was removed using K-file and under irrigation with sodium hypochlorite and saline and was dried with absorbent paper points. After the main root canals had been cleaned and shaped, trial guttap was performed by gutta-percha ProTaper Next X2 (Figure 3B,C). The single cone obturation was performed using AH Plus sealer (*Dentsply, Maillefer, Ballaigues, Switzerland*) (Figure 4A,B).

The permanent restoration was done with the fiber post, and zirconia-based crown and the patient recalled after three months for evaluation (Figure 5A,B). The patient was found to be asymptomatic and satisfied by the esthetic of the zirconia posterior crown (Figure 5C, D).

DISCUSSION

One of the challenges faced by dental specialists today is in the assessment and management of patients with increasingly complex medical conditions. It is an information-gathering process for assessing the patient's health status, comprises a systematic review of the patient's chief or primary complaint, a detailed history related to this complaint, information about past and present medical conditions, and family histories.⁴ During dental treatment, especially endodontic treatment, the endodontist must know how to deal with healthy and compromised patients and how to complete root canal procedures successfully and without complications.

This reports an endodontic treatment of a 65-year-old and cardiovascular compromised patient. Patient with cardiovascular diseases is more susceptible to physical and emotional stress. Therefore, endodontic treatment should include low-stress protocols and shorter appointments.⁴ The patient may feel tired quickly, anxious, shortness of breath, and unable to open her mouth for a long time. Consequently, single-visit endodontic and long treatment time should not be performed to this patient.

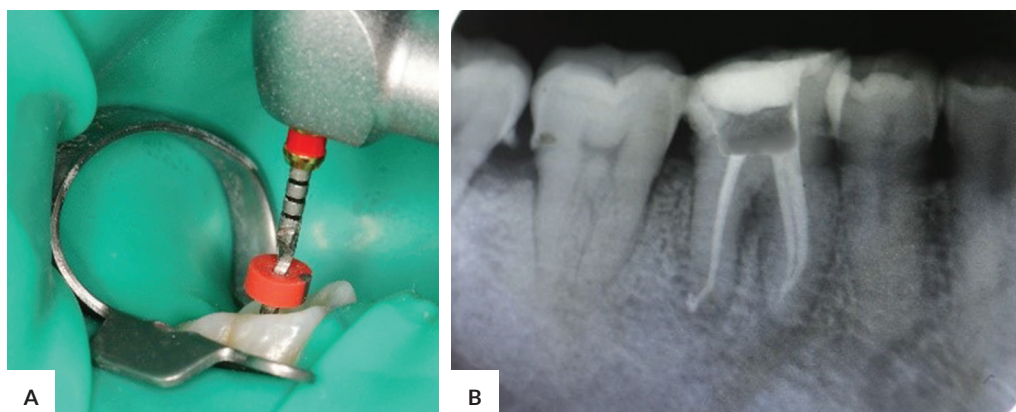


Figure 4. (A,B) Clinical and Radiographic photograph of final obturation.

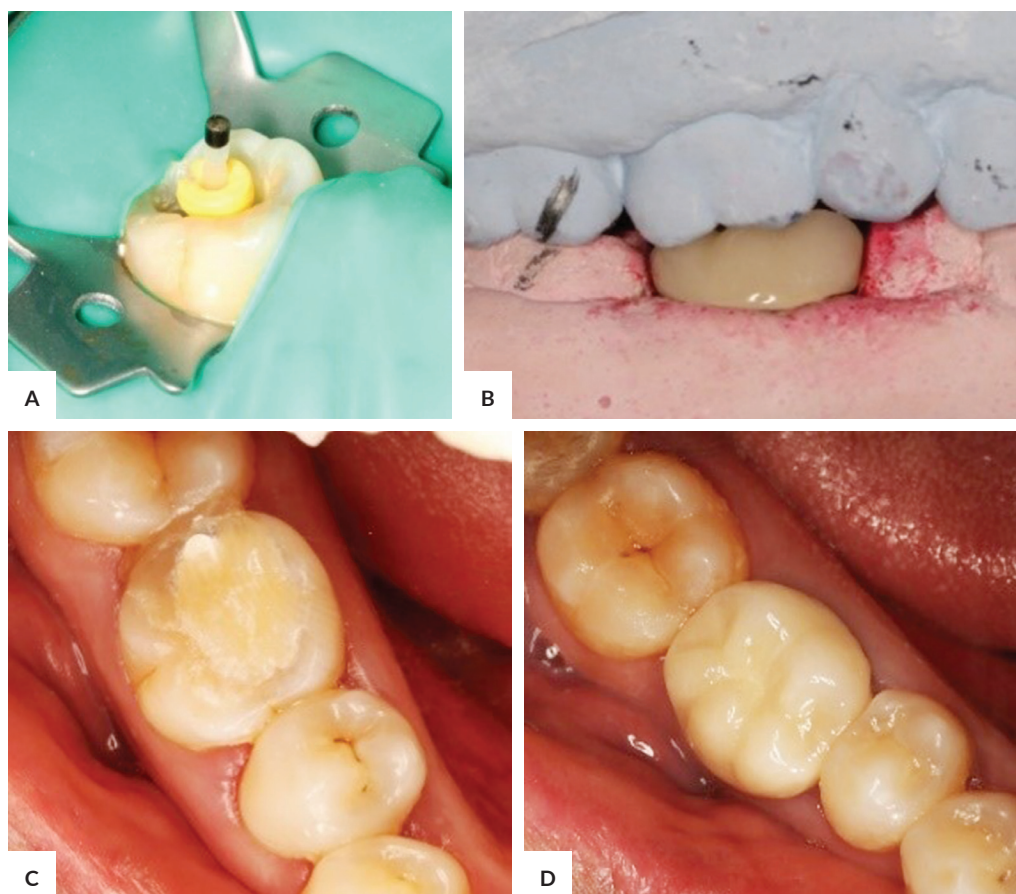


Figure 5. (A) Insertion of fiber post. (B) Zirconia based crown was made. (C) Preoperative intraoral photograph. (D) Postoperative intraoral photograph.

Patient with cardiovascular diseases requires special considerations in relation to endodontic treatment. Not only due to the conditions inherent to the disease, but also the side effects and characteristics of the treatments they receive. Coronary heart disease is very common in the general population, and it is therefore more likely for a dentist to meet with such patient in clinical practice.⁵ Once the dentist discovers that the patient is hypertensive or has other cardiovascular problems, the risk associated with the proposed dental treatment should be weighed with regard to the medical conditions and/or current medications that will demand a modification in the manner in which dental care will be provided.⁶

The primary management goal for the patient with cardiovascular disease during dental therapy is minimizing any hemodynamic alteration during treatment (that is, by maintaining the patient's optimum blood pressure, heart rate, heart rhythm). Psychological and physiological stress during dental treatment has the potential to significantly alter hemodynamic stability.⁷ Dental treatment has the potential to induce stress. The body responds to the stress by the increase of catecholamines (epinephrine and norepinephrine) from the adrenal medulla into the cardiovascular system

and can increase the workload on the heart in patients with hypertension or coronary heart disease.⁸ There are some steps that can minimize physical or emotional stress during dental treatment: shorter appointments, preferably in the morning when the patient is well-rested and has a greater physical reserve.⁹ Geriatric patients will also require greater patience and management considerations during endodontic procedures. Patients should be seated comfortably (semi-supine) in the dental chair; intermittent rest should be provided to the patient for reducing fatigue; they will have less mobility in and out of the dental chair. The use of a pillow to support the patient's neck will improve patient comfort.¹⁰ The use of local anesthesia to minimize discomfort, and it should be provided without a vasoconstrictor. A medically compromised patient should not undergo long appointments and excellent postoperative analgesia.⁶ Vasoconstrictors should not be administered to patients with unstable angina, uncontrolled hypertension, or people with recent myocardial infarction and coronary bypass graft.¹¹

Biomechanical preparation of ProTaper Next system was used in the treatment. The ProTaper Next rotary instruments have noted advantages such as increased flexibility, higher strength, and wear resistance over the conventional rotary

endodontic systems.¹² The use of rotary instrumentation may offer a reduction in number of visits or duration of the working sessions and can offer significant help in many demanding geriatric cases.¹³ The root canal irrigants used in the cleaning phase are divided into those with decalcifying action and those with antibacterial activity. Sodium hypochlorite (NaOCl) is the most widely used irrigant. It dissolves pulp tissue and is a potent anti-microbial agent. Sodium hypochlorite does not remove the smear layer. The combination of NaOCl and EDTA has been recommended for smear layer removal. Chlorhexidine digluconate has antimicrobial activity but no tissue dissolving capability.¹⁴

Endodontic treatment and restorative care are essential parts of maintaining the health and well-being of any geriatric patients. In this case report, fiber post and zirconia crown were combined for a durable and restorative treatment. Fiber post has similar physical properties like modulus of elasticity, compressive strength, and flexural strength as dentin.¹⁵ Zirconia is a great alternative posterior restoration due to high fracture toughness and resistance to wear.^{16,17}

CONCLUSION

A comprehensive multidisciplinary approach while treating medically compromised dental patients is mandatory to reduce complications and to improve the prognosis. The clinician must be mindful of aged patients' emotional and physical needs to ensure proper and comfortable treatment. Today's endodontists are better equipped with applicable knowledge of the systemic disease, and they can deliver highly standardized endodontic treatment and simultaneously minimize the potential problem related to the general health of the patient.

Statement of Authorship

All authors participated in data collection and analysis, and approved the final version submitted.

Author Disclosure

All authors declared no conflict of interest.

Funding Source

None.

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1. Chaudhry S, Jaiswal R, Sachdeva S. Dental considerations in cardiovascular patients: A practical perspective. *Indian Heart J.* 2016; 68(4):572–5.
2. Shi A, Tao Z, Wei P, Zhao J. Epidemiological aspects of heart diseases (Review). *Exp Ther Med.* 2016; 12(3):1645–50.
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Dear Acta Medica Philippina

Thank you for the galley proof of “Endodontic Treatment of First Mandibular Molar in Patient who Underwent Heart Bypass Surgery: A Case Report”.

There are few revisions that we would like to suggest :

Case report:

- Picture 3C should be horizontally flipped
- Picture 3C should be horizontally flipped
- Picture 4A is wrong. It should be clinical photograph of final obturation from the occlusal

Thank you for your kind attention and assistance.

Best regards,

Nanik Zubaidah
Department of Conservative Dentistry
Universitas Airlangga

Jl. Mayjen. Proff. Dr. Moestopo No. 47 Surabaya, Indonesia
60132
Email : nanik-z@fkg.unair.ac.id

Email tgl 28-11-2019

Nanik Zubaidah nanik-z@fkg.unair.ac.id

JSMID REVISI DRG NANIK ZUBAIDAH DAN ANASIA CH.S

To: actamedicaphilippina@yahoo.com Cc: Symposium FKG Universitas Airlangga
symposium@fkg.unair.ac.id

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Email : nanik-z@fkg.unair.ac.id

Joven Jeremius Tanchuco <actamedicaphilippina@yahoo.com>

Re: JSMID REVISI DRG NANIK ZUBAIDAH DAN ANASIA CH.S
To: Nanik Zubaidah <nanik-z@fkg.unair.ac.id>

Dear Dr. Zubaidah,

Corrections noted.

Thank you very much.

Sincerely,

Dr. Abbey P. Domingo

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| Acta Medica Philippina | UP Manila
(632) 353-0990 | actamedicaphilippina@yahoo.com | actamedicaphilippina.org

On Thursday, 28 November 2019, 11:44:17 AM GMT+8, Nanik Zubaidah <nanik-z@fkg.unair.ac.id> wrote:

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Endodontic Treatment of First Mandibular Molar in Patient who Underwent Heart Bypass Surgery: A Case Report

Anasia Chrisanty Sahertian and Nanik Zubaidah

Department of Conservative Dentistry, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Cardiovascular disease has become increasingly common. This must serve as a motivation for dentists on awareness of the modifications of treatment and precautions in patients suffering from cardiovascular disorders. The purpose of this case is to describe endodontic treatment on the right mandibular first molar in a 65-year-old woman followed with fiber post and zirconia-based crown with a medical history of cardiovascular disease and heart bypass surgery one year prior to dental treatment.

Key Words: endodontics, cardiovascular diseases, heart bypass surgery, geriatric

INTRODUCTION

Cardiovascular diseases comprise a group of diseases of the heart and vascular system, affecting the majority of individuals worldwide.¹ Cardiovascular diseases make up the most prevalent category of systemic disease in Indonesia and many other countries, and its prevalence increases along with age. In Indonesia, coronary heart disease and stroke are estimated to cause more than 470,000 deaths annually. High cardiovascular risk is common among Indonesian adults ≥ 40 years old. Hypertension, ischemic heart disease, coronary heart disease, and dysrhythmias are some of the cardiovascular conditions that are commonly observed among the population.²

Heart bypass surgery or coronary artery bypass surgery is a procedure to replace damaged arteries that supply blood to the heart muscles. The surgery is required when the coronary arteries are blocked or damaged. Blocked arteries restrict blood flow, and it disrupts the heart function.³

Treating patients with co-existing cardiovascular disease (heart problem) often raise concern over potential problems during dental treatment. The high prevalence of heart problems in the population makes it the most commonly medically compromised problem seen in dental practices. The important goal for the patient with cardiovascular disease during dental therapy is to deal with all the identified risk factors involved. Endodontic surgical and non-surgical instrumentation of root canals can produce a transient bacteraemia. It may also occur due to the direct spread of endodontic bacteria into the bloodstream. However, in patients with heart disease, a transient bacteraemia may lead to infective endocarditis and myocardial infection.¹

Paper presented at the Joint Scientific Meeting in Special Care Dentistry, July 5, 2019, Amerta Room, 4th Floor, main campus of Universitas Airlangga, Surabaya, Indonesia.

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The purpose of this case report is to describe the comprehensive endodontic management for cardiovascular compromised geriatric patient who has undergone heart bypass surgery.

CASE REPORT

A 65-year-old woman reported to the Conservative Dentistry and Endodontics Department Dental Hospital of Universitas Airlangga with chief complaints of discomfort and pain on her right mandibular first molar. Her medical record indicated the patient to be suffering from heart disease, and she underwent heart bypass surgery a year ago. The extraoral examination was within normal limits. During the intraoral examination, the right mandibular first molar was found to have secondary caries under composite restoration. The examination resulted in negativity in cold thermal test and K-file test, and positive to percussion and palpation test. Periodontal evaluation showed no abnormality.



Figure 1. Preoperative intraoral periapical radiograph.

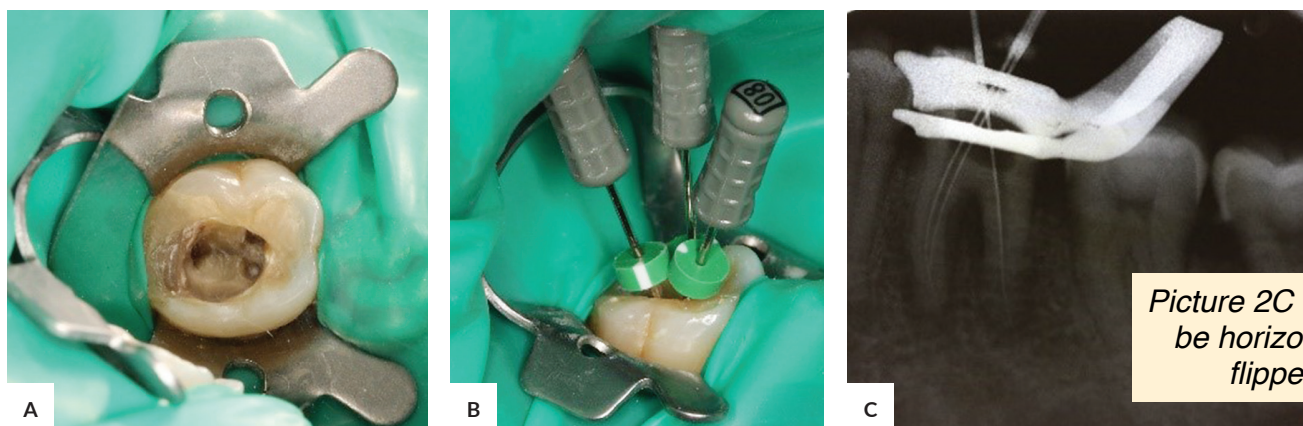
Radiographic examination revealed deep carious lesions under the composite closely approximating the dental pulp with a slight widening of the apical periodontal ligament (Figure 1). A diagnosis of necrotic pulp and symptomatic apical periodontitis was established. Informed consent was obtained.

CASE MANAGEMENT

After conducting a clinical and radiographic analysis, it was decided that endodontic treatment should be performed. Local anesthesia without adrenaline was administered, and isolation was achieved through rubber dam (Sanctuary, Dental Dam) placement.

The access cavity was achieved using a round diamond bur and size 2 Endo Access bur (Dentsply Maillefer, Ballaigues, Switzerland). Mesio Buccal, mesiolingual, and distal canals were located (Figure 2A). Refinement of the access cavity was achieved using the Endo Z bur (Dentsply Maillefer, Ballaigues, Switzerland) to have straight access. Three canal orifices were identified with endodontic probes (Osung, DG-16 Double End Endodontic Explorer). Working lengths were determined using an apex locator (Propex Pixi, Dentsply-Maillefer, Ballaigues, Switzerland) with K-files (Dentsply Maillefer, Ballaigues, Switzerland) and confirmed radiographically (Figure 2B, C).

Glide paths were created with K-files up to size #15 and Proglider (Dentsply Maillefer, Ballaigues, Switzerland). Biomechanical preparation was performed using ProTaper Next Rotary system (Dentsply-Maillefer, Switzerland). A 5.25% solution of sodium hypochlorite, 17% ethylenediaminetetraacetic acid, and saline were used alternatively as irrigant at every change of instrument, and final irrigation was performed with 2% chlorhexidine digluconate. A 30-gauge needle with side vented was used for all irrigants and accompanied by the use of endoactivator (Dentsply-Maillefer, Switzerland). The suggested sequential



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Figure 2. (A) Tooth isolation with a rubber dam and access opening. (B) Determination of working length. (C) Radiographic confirmation of the working length.

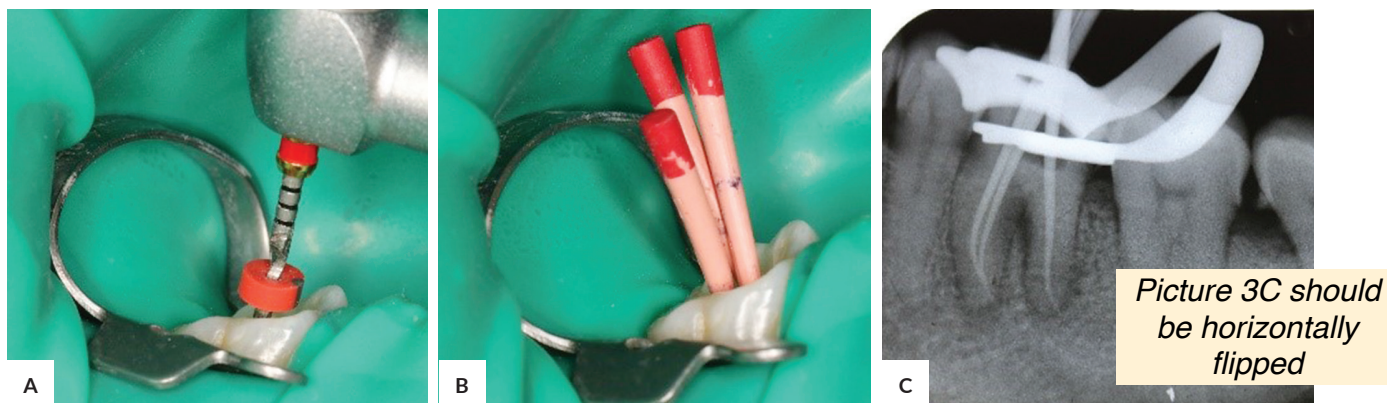


Figure 3. (A) Final preparation with ProTaper Next X2. (B,C) Clinical and Radiographic photograph of trial gutta percha ProTaper Next X2.

method of preparation for ProTaper Next was done in all canals, where all of them were negotiated initially with ProGlider freely in the canal. The ProTaper Next X1 was introduced into the canals, and then with the feather touch brushing motions and preparations were completed till the apex of the canals. After copious irrigation, ProTaper Next X2 was introduced, and the preparation was completed until the root apex (Figure 3A).

Calcium hydroxide dressing was used as an intracanal medicament for seven days. At the next visit, calcium hydroxide dressing was removed using K-file and under irrigation with sodium hypochlorite and saline and was dried with absorbent paper points. After the main root canals had been cleaned and shaped, trial guttaper was performed by gutta-percha ProTaper Next X2 (Figure 3B,C). The single cone obturation was performed using AH Plus sealer (Dentsply, Maillefer, Ballaigues, Switzerland) (Figure 4A,B).

The permanent restoration was done with the fiber post, and zirconia-based crown and the patient recalled after three months for evaluation (Figure 5A,B). The patient was found to be asymptomatic and satisfied by the esthetic of the zirconia posterior crown (Figure 5C, D).

DISCUSSION

One of the challenges faced by dental specialists today is in the assessment and management of patients with increasingly complex medical conditions. It is an information-gathering process for assessing the patient's health status, comprises a systematic review of the patient's chief or primary complaint, a detailed history related to this complaint, information about past and present medical conditions, and family histories.⁴ During dental treatment, especially endodontic treatment, the endodontist must know how to deal with healthy and compromised patients and how to complete root canal procedures successfully and without complications.

This reports an endodontic treatment of a 65-year-old and cardiovascular compromised patient. Patient with cardiovascular diseases is more susceptible to physical and emotional stress. Therefore, endodontic treatment should include low-stress protocols and shorter appointments.⁴ The patient may feel tired quickly, anxious, shortness of breath, and unable to open her mouth for a long time. Consequently, single-visit endodontic and long treatment time should not be performed to this patient.

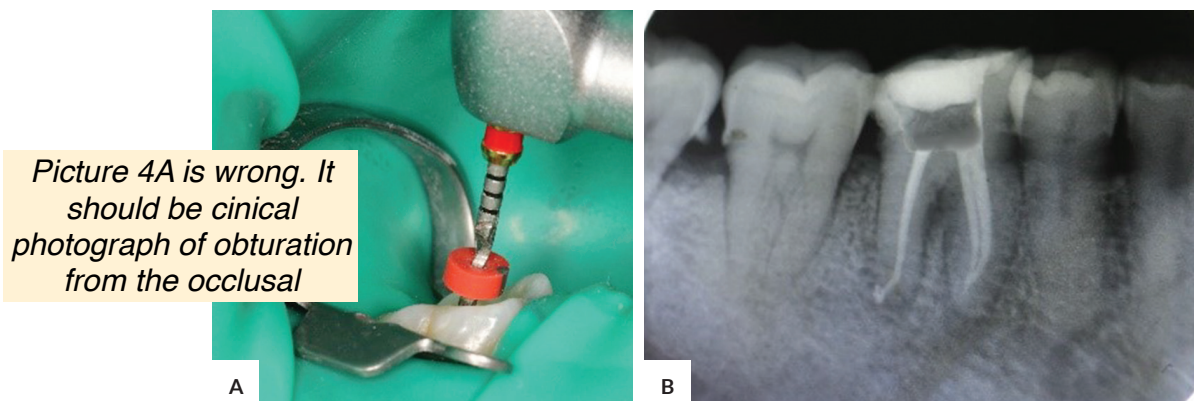


Figure 4. (A,B) Clinical and Radiographic photograph of final obturation.

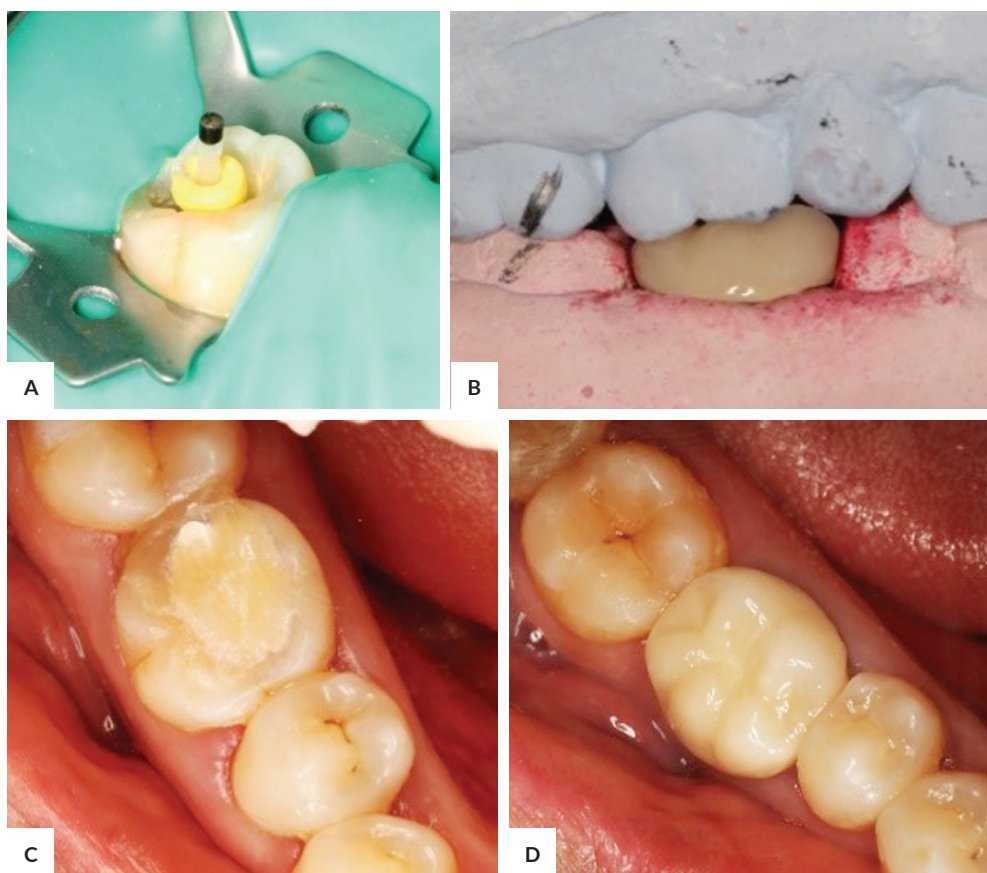


Figure 5. (A) Insertion of fiber post. (B) Zirconia based crown was made. (C) Preoperative intraoral photograph. (D) Postoperative intraoral photograph.

Patient with cardiovascular diseases requires special considerations in relation to endodontic treatment. Not only due to the conditions inherent to the disease, but also the side effects and characteristics of the treatments they receive. Coronary heart disease is very common in the general population, and it is therefore more likely for a dentist to meet with such patient in clinical practice.⁵ Once the dentist discovers that the patient is hypertensive or has other cardiovascular problems, the risk associated with the proposed dental treatment should be weighed with regard to the medical conditions and/or current medications that will demand a modification in the manner in which dental care will be provided.⁶

The primary management goal for the patient with cardiovascular disease during dental therapy is minimizing any hemodynamic alteration during treatment (that is, by maintaining the patient's optimum blood pressure, heart rate, heart rhythm). Psychological and physiological stress during dental treatment has the potential to significantly alter hemodynamic stability.⁷ Dental treatment has the potential to induce stress. The body responds to the stress by the increase of catecholamines (epinephrine and norepinephrine) from the adrenal medulla into the cardiovascular system

and can increase the workload on the heart in patients with hypertension or coronary heart disease.⁸ There are some steps that can minimize physical or emotional stress during dental treatment: shorter appointments, preferably in the morning when the patient is well-rested and has a greater physical reserve.⁹ Geriatric patients will also require greater patience and management considerations during endodontic procedures. Patients should be seated comfortably (semi-supine) in the dental chair; intermittent rest should be provided to the patient for reducing fatigue; they will have less mobility in and out of the dental chair. The use of a pillow to support the patient's neck will improve patient comfort.¹⁰ The use of local anesthesia to minimize discomfort, and it should be provided without a vasoconstrictor. A medically compromised patient should not undergo long appointments and excellent postoperative analgesia.⁶ Vasoconstrictors should not be administered to patients with unstable angina, uncontrolled hypertension, or people with recent myocardial infarction and coronary bypass graft.¹¹

Biomechanical preparation of ProTaper Next system was used in the treatment. The ProTaper Next rotary instruments have noted advantages such as increased flexibility, higher strength, and wear resistance over the conventional rotary

endodontic systems.¹² The use of rotary instrumentation may offer a reduction in number of visits or duration of the working sessions and can offer significant help in many demanding geriatric cases.¹³ The root canal irrigants used in the cleaning phase are divided into those with decalcifying action and those with antibacterial activity. Sodium hypochlorite (NaOCl) is the most widely used irrigant. It dissolves pulp tissue and is a potent anti-microbial agent. Sodium hypochlorite does not remove the smear layer. The combination of NaOCl and EDTA has been recommended for smear layer removal. Chlorhexidine digluconate has antimicrobial activity but no tissue dissolving capability.¹⁴

Endodontic treatment and restorative care are essential parts of maintaining the health and well-being of any geriatric patients. In this case report, fiber post and zirconia crown were combined for a durable and restorative treatment. Fiber post has similar physical properties like modulus of elasticity, compressive strength, and flexural strength as dentin.¹⁵ Zirconia is a great alternative posterior restoration due to high fracture toughness and resistance to wear.^{16,17}

CONCLUSION

A comprehensive multidisciplinary approach while treating medically compromised dental patients is mandatory to reduce complications and to improve the prognosis. The clinician must be mindful of aged patients' emotional and physical needs to ensure proper and comfortable treatment. Today's endodontists are better equipped with applicable knowledge of the systemic disease, and they can deliver highly standardized endodontic treatment and simultaneously minimize the potential problem related to the general health of the patient.

Statement of Authorship

All authors participated in data collection and analysis, and approved the final version submitted.

Author Disclosure

All authors declared no conflict of interest.

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None.

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