MEDICINSKI FAKULTET NOVI SAD

NASTAVNO-NAUČNOM VEĆU

MOLBA

Molim Nastavno-naučno veće da pokrene postupak izbora u istraživačko zvanje istraživač-saradnik za Katarinu Otašević.

Predlog Komisije za pisanje izveštaja:

1. Doc. dr Bojana Ramić
2. Naučni saradnik assist. dr sci Milica Cvjetićanin
3. Prof. dr Milan Drobac

U prilogu ove molbe dostavljam dokumentaciju potrebnu za izbor u istrazivacko zvanje.

S postovanjem,

Katarina Otašević

11:48 4G

< PREGLED PODATAKA

BROJ RAČUNA PLATIOCA
170-10361971000-24

IME PRIMAOCA
Medicinski fakultet Novi Sad

BROJ RAČUNA PRIMAOCA
840-1633666-55

IZNOS
30.000,00 RSD

ŠIFRA PLAĆANJA
289

SVRHA PLAĆANJA
Za izbor u istraživača- saradnika

DATUM IZVRŠENJA
05 maj 2022

METOD KNJIŽENJA
Standardno

SAČUVAJ KAO ŠABLON

Универзитет у Новом Саду
Медицински факултет
Хајдук Вељкова 3
21112 Нови Сад
Република Србија
(021) 420-677, 420-678; факс: (021) 6624-153
dekan@mf.uns.ac.rs www.mf.uns.ac.rs

Д.Бр.03-01/793 Индекс: 1301/18
Датум: 04.05.2022. године

На основу члана 29. Закона о општем управном поступку ("Службени гласник Републике Србије", бр.18/2016 и 95/2018-аутентично тумачење) и службене евиденције издаје се

УВЕРЕЊЕ О СТУДИРАЊУ

Оташевић (Синиша) Катарина, бр. индекса 1301/18, рођена 25.12.1993. године у месту Нови Сад, Република Србија, уписана је у 3. годину студија 2. пут школске 2021/2022. године, у статусу: самофинансирање; редован студент; тип студија: докторске академске студије трећег степена; студијски програм: Клиничка истраживања са научним називом ДОКТОР МЕДИЦИНСКИХ НАУКА.

Према Статуту факултета студије трају (број година): три године - шест семестара.
Рок за завршетак студија: у двоструком трајању студија.,
Студент је дужан да одбрани докторску дисертацију најкасније до престанка статуса студента у складу са чл. 109 Закона о високом образовању (Сл. гласник РС 88/2017).

Ово се уверење може употребити за регулисање војне обавезе, издавање визе, права на дечији додатак, породичне пензије, инвалидског додатка, добијања здравствене књижице, легитимације за повлашћену вожњу, добијање абонентске карте, за смештај у студетнском дому, регулисање боравка у Републици Србији, за добијање кредита, за смештај деце у вртићима, приказ институцијама у иностранству, стипендије и Напомена: Именована је предала пријаву теме докторске дисертације Служби за докторске студије, дана 4.5.2022. године.

РЕПУБЛИКА СРБИЈА

УНИВЕРЗИТЕТ У НОВОМ САДУ

МЕДИЦИНСКИ ФАКУЛТЕТ НОВИ САД,

НОВИ САД

Оснивач: Република Србија
Аутономна Покрајина Војводина

Дозволу за рад број 106-022-00396/2009-03 од 10. децембра 2009. године је издала Аутономна Покрајина Војводина, Покрајински секретаријат за образовање

ДИПЛОМА

Катарина (Синиша) Оташевић

рођена 25. 12. 1993. године у Новом Саду, општина Нови Сад, Република Србија, уписана школске 2012/2013. године, а дана 06. 10. 2017. године завршила је интегрисане основне и мастер академске студије првог и другог степена на студијском програму ИНТЕГРИСАНЕ АКАДЕМСКЕ СТУДИЈЕ СТОМАТОЛОГИЈЕ обима 300 (три стотине) бодова ЕСПБ са просечном оценом 9,16 (девет и 16/100).

На основу тога издаје се ова диплома о стеченом високом образовању и академском називу

ДОКТОР СТОМАТОЛОГИЈЕ

Број дипломе: 2368/1437, 20. 12. 2018. године
У Новом Саду

ДЕКАН
Проф. др Снежана Бркић

РЕКТОР
Проф. др Дејан Јакшић

Република Србија
ЈАВНИ БЕЛЕЖНИК
Ненад Солдат
Нови Сад
Булевар ослобођења 66а

УОП - IV:535-2022
Страна 1 (један)

Потврђује се да је ова копија истоветна са копираном исправом која је написана на компјутерском штампачу и која се састоји од 1 (једној) стране/а.----------
Накнада за оверу 1 (један) примерка наплаћена је у укупном износу од 360,00 (триста шездесет динара) са урачунатим ПДВ-ом на основу члана 21 тарифног броја 10 Јавнобележничке тарифе.----------

ЈАВНИ БЕЛЕЖНИК
Ненад Солдат
Нови Сад
Булевар ослобођења 66а

За јавног бележника
Јавнобележнички приправник
Драгана Брњица
број решења: 1259-3-IV-6/2021
од 23.04.2021 год.

УОП - IV:535-2022
Дана 05.05.2022. (петог маја две хиљаде двадесетдруге) године, у 11:28 (једанаест часова и двадесет осам минута), у Новом Саду, оверено у 1 (један) примерак/ка за потребе странке.

(потпис) (печат)

БИБЛИОГРАФИЈА

Научни часописи:

1. **Otašević K**, Tadić A, Drobac M. Root canal retreatment and repair of iatrogenic perforation – A case report. 2021; LXXIV (9-10), 320-323. **M51**
2. Ramić, B. D., Stojanac, I. L., Drobac, M. R., Kantardžić, I. R., Maletin, A. Z., Cvjetićanin, M. T., **Otašević, K. S.**, Petrović, Lj. M. Application of Scanning Electron Microscopy in the observation of dentin-adhesive interface. Microsc Res Tech. 2020; 84(4), 602–607. **M21**
3. Drobac, M., **Otasevic K.**, Ramic, B., Cvjeticanin, M., Stojanac, I., & Petrovic, L. Antibiotic prescribing practices in endodontic infections: A survey of dentists in Serbia. Antibiotics. 2021; *10*(1), 67. **M21**

Индекс компетенције

категорија	M51	M21
број публикација	1	2
број бодова	1x2=2	2x8=16

Укупно бодова=18

МЕНТОР

Проф. др Милан Дробац

Проф. др Милан Дробац
специјалиста болести зуба
ендодонције

Катарина Оташевић

Лични подаци и контакт:

Име и презиме: **Катарина Оташевић**
Датум рођења: **25.12.1993.**
Адреса: **Светојованска 2/13, 21000 Нови Сад, Република Србија**
Број телефона: **+381638946660**
Е-маил: *katarina.otasevic@mf.uns.ac.rs*, *kaca93.otasevic@gmail.com*

Образовање:

2018 Медицински факултет универзитета у Новом Саду
Уписане докторске студије
Смер: клиничка истраживања

2012-2017 Медицински факултет Универзитета у Новом Саду
Смер: стоматологија
Звање: доктор стоматологије
Просек: 9.16

2008-2012 Гимназија „Светозар Марковић“
Смер: општи

2000-2008 Основна школа „Ђорђе Натошевић“

2002-2008 Основна музичка школа „Исидор Бајић“
Смер: клавир

Радно искуство:

2018-2019 Клиника за стоматологију Војводине
др стоматологије- волонтер

2019 Медицински факултет Универзитета у Новом Саду
Научноистраживачки рад
Истраживач-приправник

2019 Алмашка зубна ординација
доктор стоматологије

Додатне активности:

2022 *Tomorrow tooth* и др стом. Стеван Копања
Диплома курса: Ресто класа II првокласно

2018 *Denti Gold Dental i dr Uwe Radmacher*
ProTaper Next – Hands-on Wrokshop
Диплома курса за машинску обраду канала у ендодонцији

2018 *iTop Introductory Switzerland*
Диплома курса о контроли денталног биофилма и мотивације пацијента за Одржавање оралне хигијене

2017-2018 Ортодонтско удружење Србије и *Charles H. Tweed* – Међународна фондација за ортодонтска истраживања и образовање
Диплома почетног и типодонт курса у извијању ортодонтских лукова *„Tweed“* техником

.....

Успеси и способности:

- Стипендиста Министарства образовања Републике Србије
- Носилац дипломе „Вук Караџић“ у средњој школи
- Енглески језик *C1*
- Шпански језик *A1*
- Возачка дозвола *B* категорија
- *Microsoft Office (Word, Excell, Power Point)*

2018 *iTop Introductory Switzerland*

.....

University of Novi Sad, Faculty of Medicine Novi Sad
Department of Dental Medicine[1]
Dental Clinic of Vojvodina, Novi Sad[2]

Case report
Prikaz slučaja
UDK 616.314.16-001-08
https://doi.org/10.2298/MPNS2110320O

ROOT CANAL RETREATMENT AND REPAIR OF IATROGENIC PERFORATION – A CASE REPORT

ENDODONTSKI RETRETMAN I SANACIJA JATROGENE PERFORACIJE KANALA KORENA ZUBA – PRIKAZ SLUČAJA

Katarina OTAŠEVIĆ[1], Ana TADIĆ[1, 2] and Milan DROBAC[1, 2]

Summary

Introduction. Root perforations may occur following endodontic treatment, thus compromising the root integrity and treatment outcome. **Case Report.** A patient presented with a root canal perforation following an earlier treatment of the upper left lateral incisor (tooth 22). Once the diagnosis of a symptomatic periapical periodontitis was established, a decision was made to retreat the root canal using mineral trioxide aggregate and perform apicoectomy. The procedure was performed in three sessions and two follow-up visits, after 12 and 18 months, respectively. At the last follow-up, bone neoformation was observed in the periapical region of the treated tooth. **Conclusion.** Successful outcome in this case depended on appropriate diagnosis, root canal and surgical site disinfection, as well as sealing of the root canal perforation to prevent recontamination.

Key words: Root Canal Therapy; Retreatment; Endodontics; Apicoectomy; Iatrogenic Disease; Root Canal Filling Materials; Treatment Outcome

Sažetak

Uvod. U toku endodontskog tretmana može doći do perforacije kanala korena, a samim tim i negativnog uticaja na integritet korena i ishod lečenja. **Prikaz slučaja.** Pacijent je upućen radi sanacije perforacije kanala korena gorenjeg levog lateralnog sekutića (zuba 22), koja je nastala prilikom prethodnog tretmana. Kada je postavljena dijagnoza simptomatskog apikalnog parodontitisa, doneta je odluka o endodontskom retretmanu, nakon kog će uslediti apikotomija uz zaptivanje perforacije mineral-trioksid agregatom. Celokupan tretman je obavljen u tri posete i kontrolisan dva puta (nakon 12 i 18 meseci). Na poslednjoj kontroli uočeno je ponovno formiranje kosti u periapikalnoj regiji tretiranog zuba. **Zaključak.** Postignut uspeh u ovom slučaju zavisio je od adekvatno postavljene dijagnoze, dezinfekcije kanala korena i hirurškog mesta kao i zaptivanja perforacije kanala korena radi sprečavanja rekontaminacije.

Ključne reči: terapija kanala korena zuba; retretman; endodoncija; apikotomija; jatrogena oboljenja; materijali za punjenje kanala korena zuba; ishod lečenja

Introduction

According to the findings of cross-sectional studies conducted in different countries, more than 30% of all root-filled teeth are associated with apical periodontitis (AP) or "postoperative disease," indicating a great need for retreatment of the affected teeth [1]. Accidental root perforations, which may have serious adverse implications, occur in approximately 2 – 12% of endodontically treated teeth. Root perforation is an artificial communication between the root canal system and the supporting tissues of the tooth or oral cavity that decreases the likelihood of successful endodontic treatment outcome, and often leads to tooth loss [2]. Perforations may occur due to pathological processes, such as root resorption and dental caries, or they are iatrogenic complications found during or after root canal therapy [3]. Root perforations are commonly treated by sealing them with a wide range of materials, such as amalgam, composite, zinc oxide eugenol, biodentine (tricalcium silicate cement), or mineral trioxide aggregate (MTA). At present, biodentine and MTA are most commonly used, since they provide the best results for perforation repair [4].

Biodentine, like MTA, belongs to the group of calcium silicate-based cements with high biocompatibility and bioactivity, as well as improved mechanical properties and shorter setting time compared to calcium silicate. As a result, this material has a wide range of applications, including closure of iatrogenic perforations, direct pulp capping, endodontic therapy of teeth with incomplete root growth, and retrofilling after apicoectomy [5]. The MTA is a calcium silicate-based cement, originally designed for retrofilling of root canals, as well as for direct pulp capping and iatrogenic perforation closure. In many extant studies, oral tissue reacted positively to cement bridges placed directly above the filling, exhibiting cementogenesis properties [6]. Available evidence indicates that, when in direct contact with fibroblasts, cementoblasts, periosteal ligament, and osteoblasts, MTA is more biocompatible and less toxic than other materials.

Corresponding Author: Dr Katarina Otašević, Univerzitet u Novom Sadu, Medicinski fakultet, Klinika za stomatologiju Vojvodine,, 21000 Novi Sad, Hajduk Veljkova 12, E-mail: katarina.otasevic@mf.uns.ac.rs

Abbreviations
MTA – mineral trioxide aggregate
AP – apical periodontitis
CBCT – cone beam computed tomography

However, its main drawbacks, such as relatively long setting time, poor handling, and tooth discoloration potential, have attracted criticism [7]. These negative aspects notwithstanding, the aim of this follow-up case report is to present a successful use of MTA in the treatment of iatrogenic perforation.

Case Report

A 22-year-old female patient presented at the Department of Dental Medicine of the Faculty of Medicine, University of Novi Sad, Serbia, complaining of pain in the maxillary left lateral incisor (tooth 22). The patient's medical history revealed that she was in good health and had no systemic diseases. However, she reported having a surgical procedure on the affected tooth four years before. Subsequent clinical examination confirmed a positive response to percussion and digital palpation in the periapical region of tooth 22 with no sinus tract. Periapical radiographic examination revealed a radiolucent lesion around the periapical region of tooth 22, presenting features of AP. Since there were signs of root perforation due to previous treatment, cone beam computed tomography (CBCT) was performed to make an accurate diagnosis of the lesion and its relationship with the adjacent teeth, and to confirm the presence of root canal perforation on the cervical third of the root. The final diagnosis was symptomatic AP, necessitating root canal retreatment, followed by endodontic surgery (root-end resection) and perforation sealing. Prior to commencing the treatment, the patient was instructed to take antibiotics for three days (amoxicillin caps. 500 mg, three times a day).

After administration of local anesthesia (2% lidocaine with epinephrine 1:100 000) (Galenika a.d., Belgrade, R. Serbia), the tooth was isolated with a rubber dam, the restorative material was removed and the access cavity was prepared. The cement, along with gutta-percha, was removed from the canal. The instrumentation was continued using hand files and applying the step-back technique, whereby 1% sodium hypochlorite (NaOCl), 17% ethylenediaminetetraacetic acid (i-EDTA Solution) (i-dental, Šiauliai, Lithuania), saline solution and 2% chlorhexidine digluconate (GLUCO-CHeX) (CERKAMED, Stalowa Wola, Poland) were used as irrigants, in this particular order. Due to persistent apical leakage, a mixture of calcium hydroxide and 2% chlorhexidine was placed into the canal, and the tooth was temporarily restored with i-PRO N (i-dental, Šiauliai, Lithuania). On the next visit 10 days later, the tooth was isolated, the temporary restoration was removed, and the canal was thoroughly irrigated with saline solution, 1% NaOCl, 17% i-EDTA Solution, saline solution and 2% GLUCO-CHeX. The canal was gently dried with paper points and obturated with gutta-percha (DiaDent, Seoul, South Korea) and AH Plus sealer (Denstply DeTrey, Konstanz, Germany) using lateral compaction method.

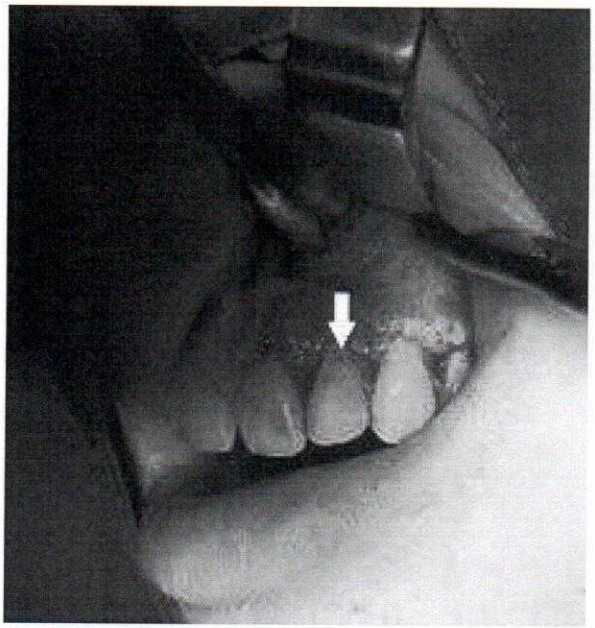

Figure 1. Visible perforation site
Slika 1. *Vidljivo mesto perforacije*

Two days later, apicoectomy was performed under local anesthesia (2% lidocaine with epinephrine 1:100,000) whereby intraoral access to the lesion was achieved via intrasulcular incision of the buccal region from tooth 11 to tooth 24. After flap detachment, the perforation was clearly visible **(Figure 1)** and a minimum osteotomy was performed to obtain a surgery window using a surgical steel drill no. 06 (Kom-

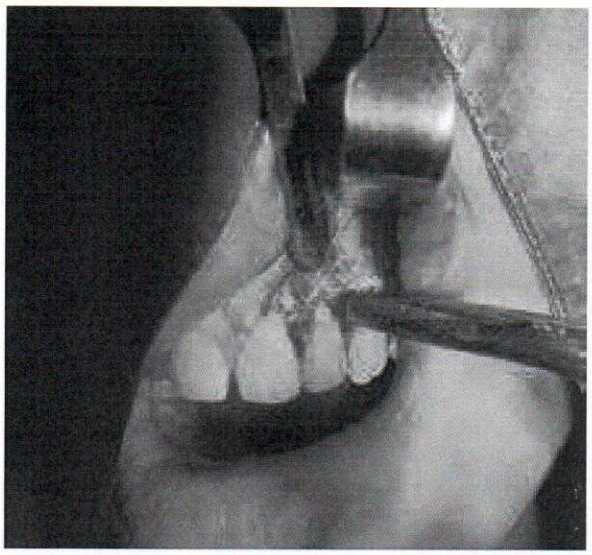

Figure 2. Perforation site sealed with MTA
Slika 2. *Zatvaranje perforacije sa mineral-trioksid agregatom*

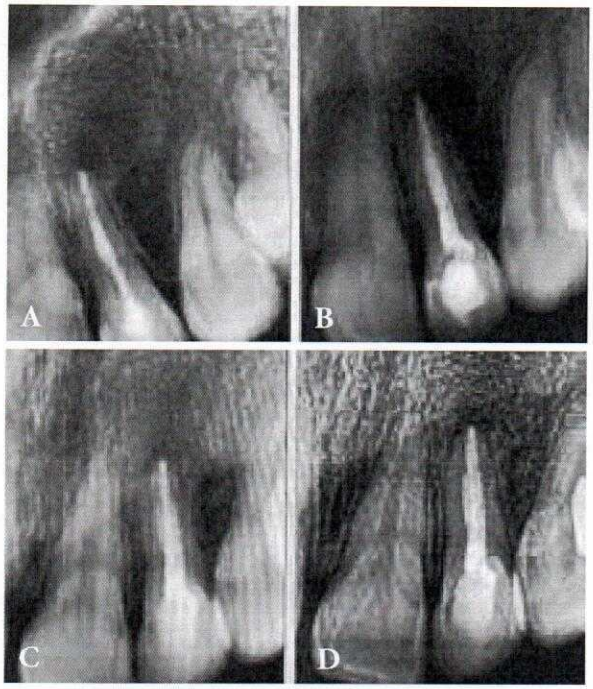

Figure 3. a: Initial periapical radiography; b: Postoperative periapical radiography; c: Follow-up periapical radiography after 12 months; d: Follow-up periapical radiography after 18 months

Slika 3. *a) Inicijalna periapikalna radiografija; b) Postoperativna periapikalna radiografija; c) Kontrolna periapikalna radiografija nakon 12 meseci; d) Kontrolna periapikalna radiografija nakon 18 meseci*

et Dental Gebr. Brasseler GmbH & Co., Lemgo, Germany) with intensive sterile saline solution irrigation. The apical third of the root was removed using fissure drill (NPOOO SISTEMA, Minsk, Belarus) and the perforation site was sealed with MTA (Tehnodent, Severnyi, Russia) (**Figure 2**). Once the flap was repositioned, the surgical site was closed by intrasulcular suturing with 3-0 silk thread (ETHICON, AgnTho's AB, Lidingö, Sweden). A postoperative radiograph was taken immediately after suturing. The suture was removed seven days later, and the patient progressed well postoperatively without any sequelae. Radiographic examination performed at the 12-month follow-up revealed further healing and the patient confirmed that the tooth had remained asymptomatic. Upon clinical examination, the tooth was pain-free and unresponsive to percussion and palpation. At the 18-month follow-up, adequate clinical function was confirmed and radiographic findings showed bone neoformation in the periapical region of tooth 22 (**Figure 3**).

Discussion

According to Lopes and Siqueira, the success of endodontic treatment is verified by the absence of a periapical lesion after an appropriate follow-up period [8]. Therefore, the prior treatment of our patient failed to achieve the expected result, as evidenced radiographically by the presence of a periapical lesion four years after the treatment and clinically by pain upon percussion and palpation [9]. In such cases, correct diagnosis has a direct impact on the treatment plan and outcome. In this case, a CBCT scan was indicated, as it provides a three-dimensional mapping of the lesion and its relationship with adjacent teeth and anatomical structures. The periapical and panoramic radiography is less accurate, and may not provide sufficient data for apicoectomy [10]. This case also met all the criteria for surgical intervention, and the need for periapical surgery was only confirmed after a detailed analysis of the patient's medical history and clinical and radiographic findings [11]. Whether teeth with root perforations can be successfully treated depends on the severity of the initial damage to the periodontal tissues, the size of the perforation, the location of the perforation in relation to the gingival sulcus, the time span between injury and repair, the adequacy of the perforation seal, the sterility of the perforation, and the biocompatibility of the material used to repair the perforation [12]. Authors of several studies in this field have concluded that MTA provides effective sealing of root perforations so it can be considered a suitable material for this purpose, as it improves the likelihood of successful outcomes in teeth with perforations that would otherwise be compromised [13–16].

Conclusion

Mineral trioxide aggregate is a material with excellent properties that provides good marginal sealing and promotes osteoblast activity. A successful outcome in this case depended on appropriate diagnosis, root canal and surgical site disinfection, as well as sealing of the root canal perforation to prevent recontamination.

References

1. Farzaneh M, Abitbol S, Friedman S. Treatment outcome in endodontics: the Toronto study. Phases I and II: orthograde retreatment. J Endod. 2004;30(9):627-33.

2. Fuss Z, Trope M. Root perforations: classification and treatment choices based on prognostic factors. Endod Dent Traumatol. 1996;12(6):255-64.

3. Clauder T, Shin SJ. Repair of perforations with MTA: clinical applications and mechanisms of action. Endod Topics. 2006;15(1):32-55.

4. Övsay E, Kaptan RF, Şahin F. The repair of furcal perforations in different diameters with Biodentine, MTA, and IRM repair materials: a laboratory study using an E. faecalis leakage model. Biomed Res Int. 2018;2018:5478796.

5. Apostolska S, Eftimoska M, Rendzova V, Elencevski S, Janeva N, Popovac A. Biodentinetm as a furcal perforation repair material: a case series. Med Pregl. 2017;70(7-8):223-5.

6. Jovanović L. Biocompatibility and marginal adaptation of mineral trioxide aggregate, tricalcium silicate cement and

dental amalgam as a root end filling materials [dissertation]. Novi Sad: University of Novi Sad, Faculty of Medicine; 2019.

7. Cintra LTA, Benetti F, de Azevedo Queiroz ÍO, de Araújo Lopes JM, Penha de Oliveira SH, Sivieri Araújo G, et al. Cytotoxicity, biocompatibility, and biomineralization of the new high-plasticity MTA material. J Endod. 2017;43(5):774-8.

8. Lopes HP, Siqueira JF. Endodontia, biologia e técnica. 4th ed. Rio de Janeiro: Elsevier; 2015.

9. Primović S, Feher P, Marković D, Petrović L. Periapical surgery of the molars. Med Pregl. 2000;53(1-2):55-8.

10. Abu Hasna A, Pereira Santos D, Gavlik de Oliveira TR, Pinto ABA, Pucci CR, Lage-Marques JL. Apicoectomy of perforated root canal using bioceramic cement and photodynamic therapy. Int J Dent. 2020;2020:6677588.

11. Repic I, Repic G, Zaric D, Petrovic A. Clinical and radiographic outcomes of surgical management of chronic periapical lesions in multirooted teeth. Med Pregl. 2018;71(1-2):9-14.

12. Frank AL. Resorption, perforations, and fractures. Dent Clin North Am. 1974;18(2):465-87.

13. Torabinejad M, Higa RK, McKendry DJ, Pitt Ford TR. Dye leakage of four root end filling materials: effects of blood contamination. J Endod. 1994;20(4):159-63.

14. Hashem AA, Hassanien EE. ProRoot MTA, MTA-Angelus and IRM used to repair large furcation perforations: sealability study. J Endod. 2008;34(1):59-61.

15. Main C, Mirzayan N, Shabahang S, Torabinejad M. Repair of root perforations using mineral trioxide aggregate: a long-term study. J Endod. 2004;30(2):80-3.

16. Pitt Ford TR, Torabinejad M, McKendry DJ, Hong CU, Kariyawasam SP. Use of mineral trioxide aggregate for repair of furcal perforations. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995;79(6):756-63.

Rad je primljen 30. XI 2021.
Recenziran 16. XII 2021.
Prihvaćen za štampu 22. XII 2021.
BIBLID.0025-8105:(2021):LXIX:9-10:320-323.