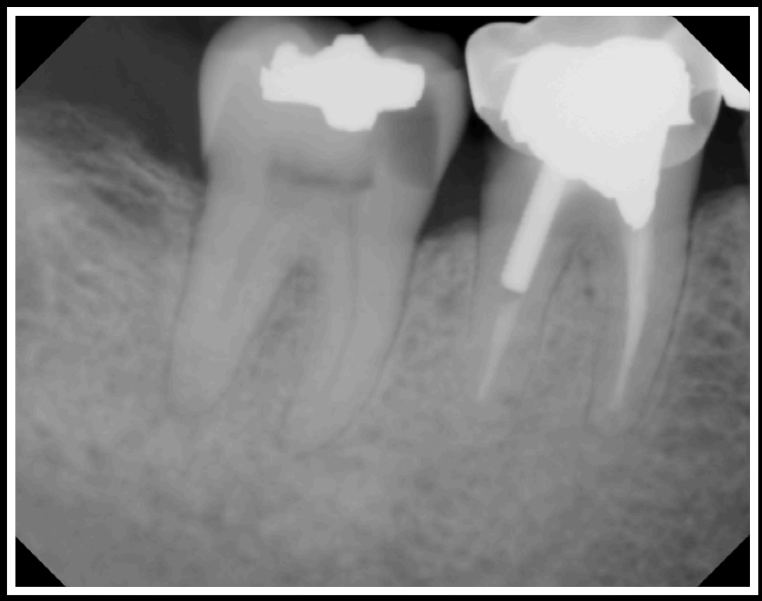
ROSS BURMAN D22412
EXCELLENCE DAY 2022

UNIVERSITY OF THE PACIFIC
Arthur A. Dugoni School of Dentistry

TIME TO TAKE THE ROOT CANALS BACK: A SYSTEMATIC APPROACH TO ENDODONTIC PAIN

CASE BACKGROUND

- 45 Year old Female
- **CC:** "I have a broken filling in the lower right that has been out for a while."
- **MDH:** Asthma, depression
- **Medications:** Qvar, Ventollin, Trintellix, Lamictol
- **Allergies:** Seasonal allergies, NKDA



DIRECT PULP CAP-05/05/2021

- Fractured restoration removed
- Upon removal, direct pulp exposure
  - 1mm x 1mm exposure
- Hemostasis achieved
- MTA placed over pulp exposure
- GI protective restoration placed

TREATMENT AND PROTOCOL FOR DIRECT PULP EXPOSURES

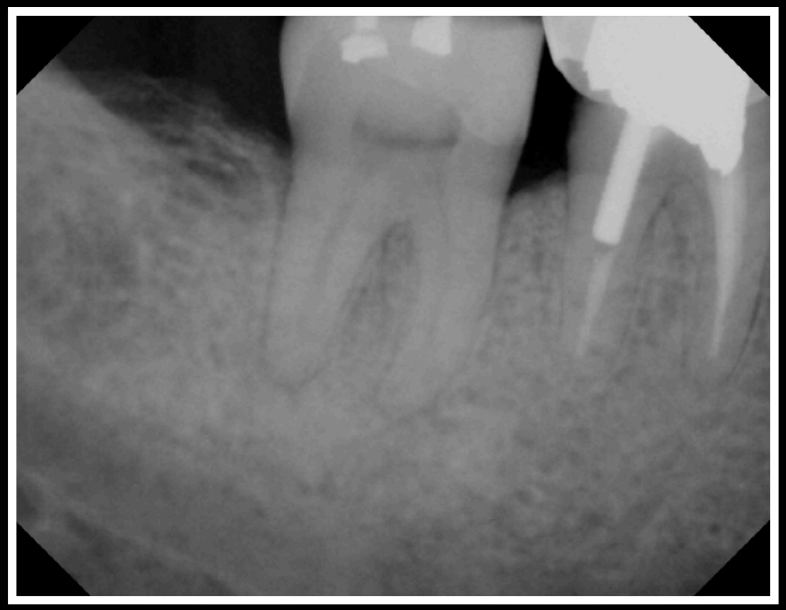
- **AAE protocol for Vital Pulp Therapy**
- Complete caries removal should occur to eliminate infected tissue and visualize pulp tissue condition
- The use of NaOCl aids in hemostasis, disinfection of dentin-pulp interface, and helps remove damaged tissue as a result of mechanical trauma
- After hemostasis is achieved, the use of a CSC such as MTA is placed over the exposed area
- It is recommended to complete a permanent restoration immediately. Studies show high success rate with long-term restorations

-AAE Position Statement on Vital Pulp Therapy. *J Endod.* 2021;47:1340-1344.
-Komabayashi T, Zhu Q. Innovative endodontic therapy for anti-inflammatory direct pulp capping of permanent teeth with a mature apex. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2010;109:75-81.

THE FOLLOWING DAY - 05/06/2021

- Testing for #31
- Cold: WNL
- Palpation: +
- Percussion: WNL

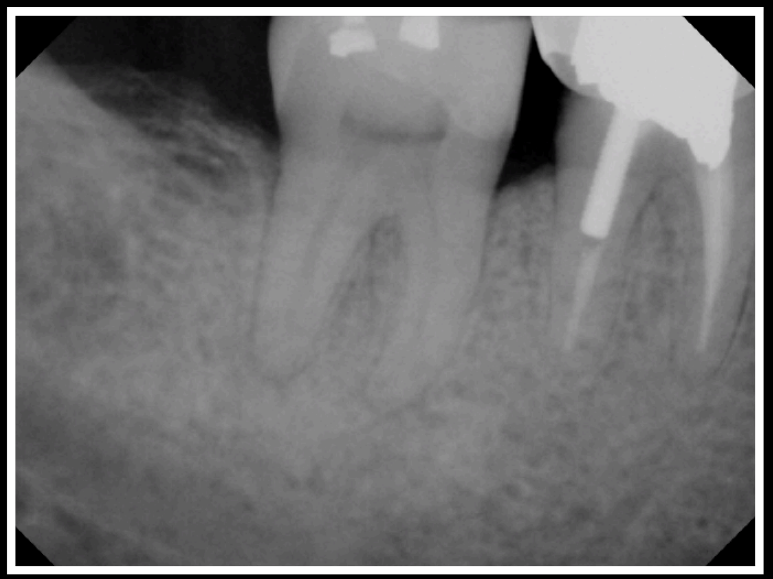
Diagnosis: Reversible pulpitis with Normal periapical tissue



2.5 MONTHS AFTER PULP EXPOSURE

- 7/28/2021
- No spontaneous or lingering pain
- Sensitivity to air that goes away immediately
- Slight widening of PDL on #31 noted
- Upon evaluation, the occlusion was found to be high
  - Bite was adjusted
  - Patient was once again asymptomatic following adjustment

Diagnosis: Reversible pulpitis with Normal periapical tissue



	COLD	PERCUSSIO	PALPATIO
31	WNL	++	+
30	-	+	WNL
29	WNL	WNL	WNL
2	WNL	WNL	WNL
18	WNL	WNL	WNL

09/15/2021

- Faculty Supervising- Dr. Stephens (Restorative), Dr. Gluskin (Endo)
- Pt reports having pain in lower right back tooth for 1 week
- Dull and lingering pain
- Pain with cold and chewing
- Pain keeps patient up at night
- Pain spontaneously comes and goes

	COLD	PERCUSSION	PALPATION	EPT
31	+ (EXTREME DELAY)	++	++	80
30	-	+	WNL	80
29	WNL	WNL	WNL	27
2	WNL	WNL	WNL	35
18	WNL	WNL	WNL	42

DIAGNOSIS

- **Pulpal Diagnosis: Pulpal Necrosis**
- **Periapical Diagnosis: Symptomatic Apical Periodontitis**

- RCT initiated at this time, debridement of canals completed

INITIATION OF RCT

- Proper pain management is crucial for high quality endodontic treatment. If this is unable to be achieved, patient comfort will suffer and a negative experience will occur.

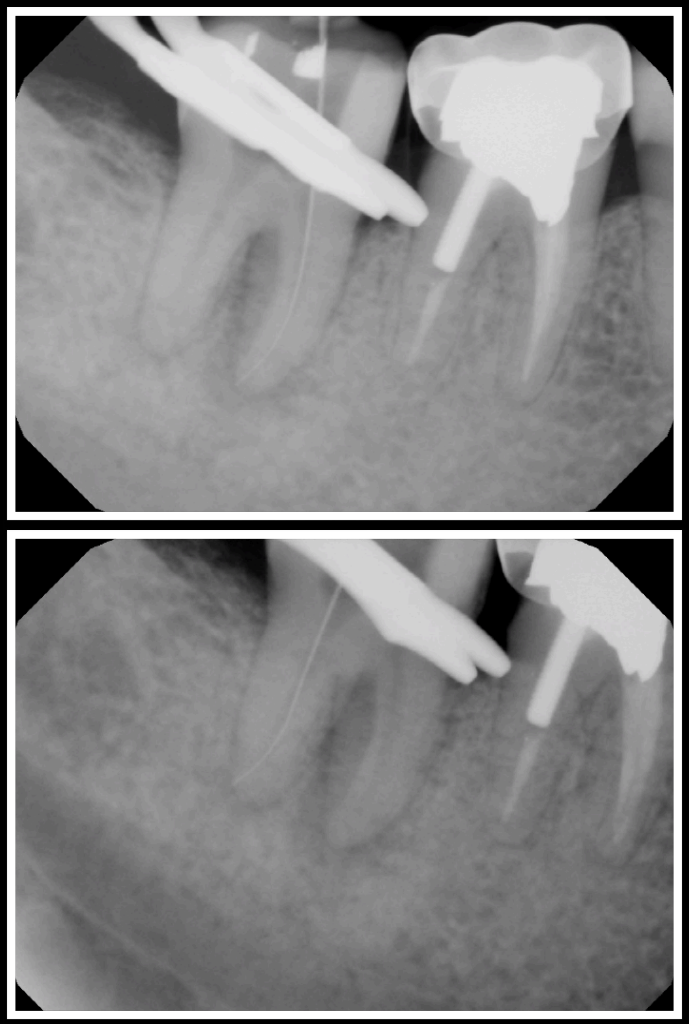
- At the time of RCT initiation, the patient was in a significant amount of pain. An IANB with Lingual block was used. 2 carpules of 2% Lidocaine with 1:100k epi were used.

- 1 carpule of 4% Septocaine with 1:100k epi was used for a supplemental infiltration injection on the buccal and lingual aspects of tooth #31.

-Matthews R, Drum M, Reader A, Nusstein J, Beck M. Articaine for supplemental buccal mandibular infiltration anesthesia in patients with irreversible pulpitis when the inferior alveolar nerve block fails. *J Endod.* 2009;35:343-346.
-Nagendrababu V, Abbott PV, Pulikkotil SJ, Veettil SK, Dummer PMH. Comparing the anaesthetic efficacy of 1.8 mL and 3.6 mL of anaesthetic solution for inferior alveolar nerve blocks for teeth with irreversible pulpitis: a systematic review and meta-analysis with trial sequential analysis. *Int Endod J.* 2021;54:331-342.
-Robertson D, Nusstein J, Reader A, Beck M, McCartney M. The anesthetic efficacy of articaine in buccal infiltration of mandibular posterior teeth. *J Am Dent Assoc.* 2007;138:1104-1112.

WORKING LENGTH

- ML: 17mm
  - Reference point: ML cusp tip
- MB: 16.5mm
  - Reference point: MB cusp tip
- D: 17mm
  - Reference point: DB cusp tip
- All canals cleaned and shaped with WaveOne 25/.07 using a crown down method to working length

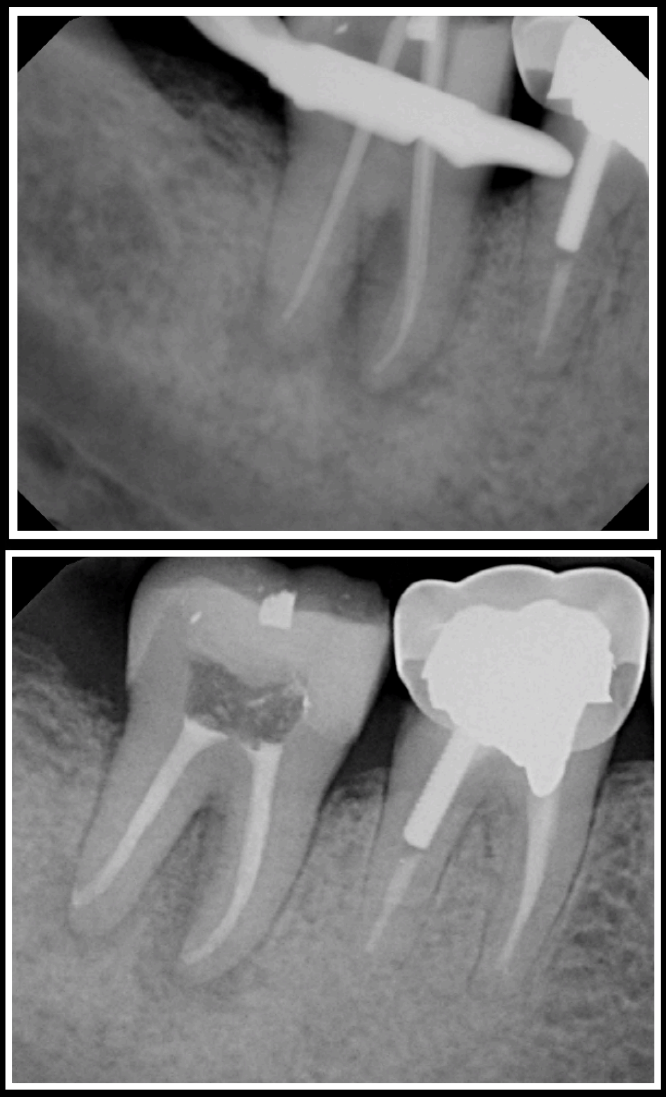


-Dunlap CA, Remeikis NA, BeGole EA, Rauschenberger CR. An in vivo evaluation of an electronic apex locator that uses the ratio method in vital and necrotic canals. *J Endod.* 1998;24:48-50.
-Sharma M, Arora V. Determination of working length of root canal. Med J Armed Forces India. 2010;66:231–4

OBTURATION

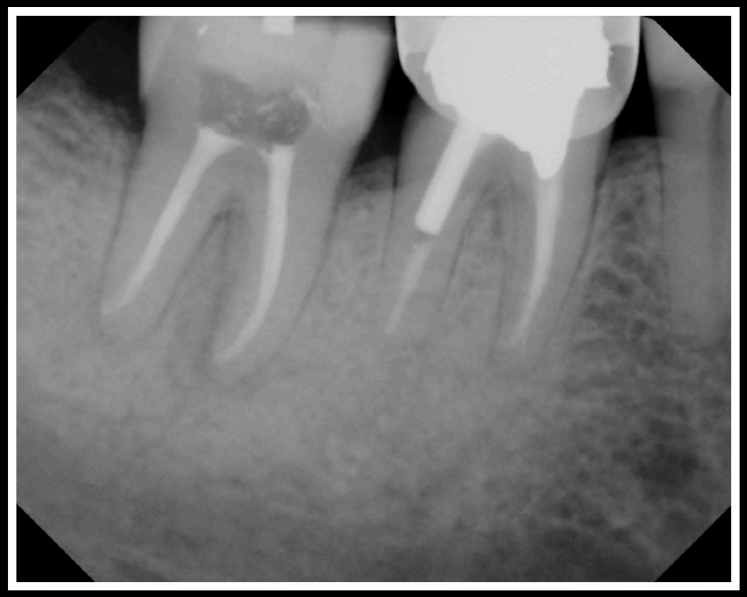
- 25 Red cones used for ML and MB canals
- 30 Blue cone used for D canal

- Obturation completed using Cold Lateral Condensation technique
- Gutta Percha seared at the orifice

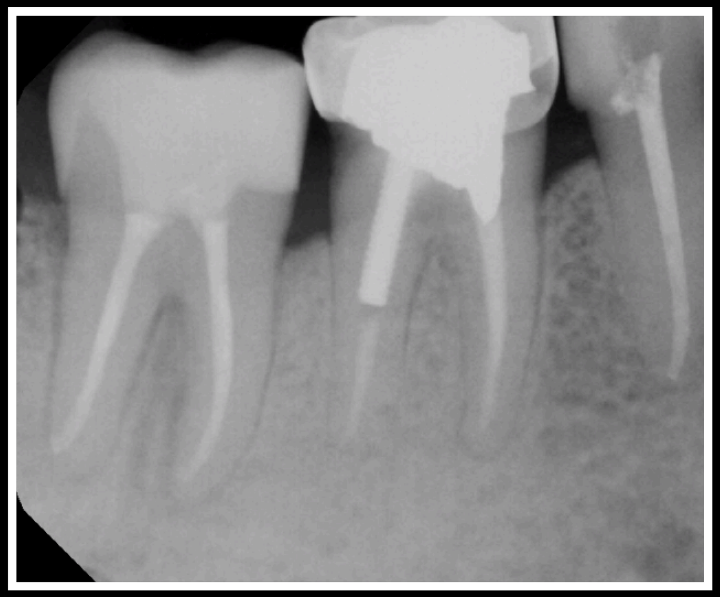


POST-OP IMAGES

Since completion of endodontic therapy, patient has been asymptomatic with no sensitivity to temperature, percussion or palpation. A build-up was placed in preparation of a crown



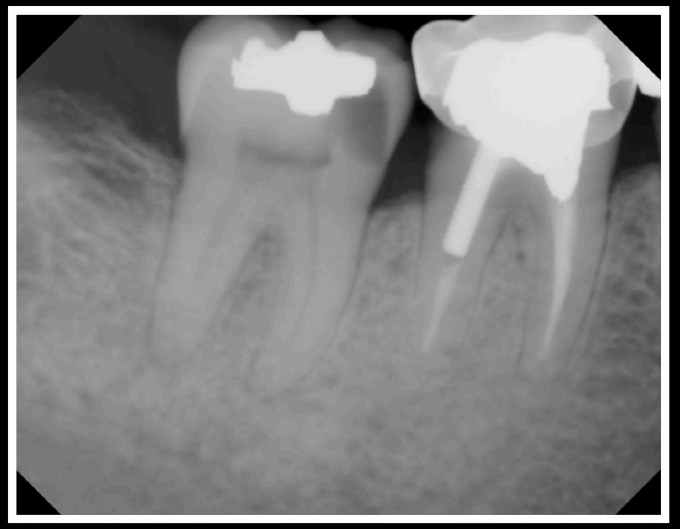
3 months

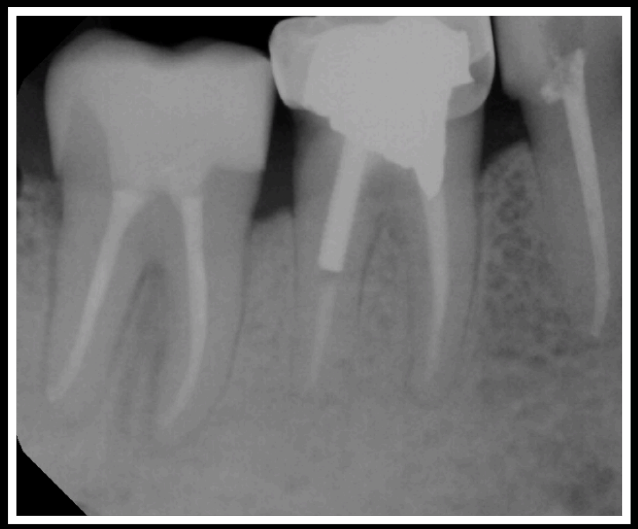


5 months

CONCLUSIONS

- Having the ability to get patients out of pain is a rewarding task. Even though endodontic therapy ended up being completed, the use of a pulp cap allowed for a “relatively pain-free” four months prior to initiating treatment. This case was challenging due to endodontic complexities alone, but as a result it also taught me more about vital pulp therapy, diagnosis and treatment planning and patient management.





SOURCES

- AAE Position Statement on Vital Pulp Therapy. *J Endod*. 2021;47:1340-1344.
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ACKNOWLEDGMENTS

- I’d like to acknowledge Dr. Alan Gluskin and Dr. Mark Stevenson who mentored me through this challenging endodontic case, as well as Dr. James Stephens and Dr. Sandy Ward who assisted in determining the approach for emergency care and restorative treatment.

OKU Sutro Excellence Day Project Cover Sheet

(ONE Cover Sheet per project)

Project Title: Time to take the root canals back: A systematic approach to endodontic pain

Award Category: DDS & IDS - Clinical: OKU Endodontics

List names of all contributors to this project:

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8. Enter your abstract text here (300 word max) :

As doctors, we are often presented with an issue and generally know how to treat it. In endodontics, taking the appropriate time to get to the right diagnosis is crucial. Depending upon the diagnosis, there will be either urgent treatment of the affected tooth or palliative care where the tooth will be watched and evaluated based upon the symptoms prior to any endodontic treatment.

A 45-year-old, female presented with a fractured amalgam restoration of the right mandibular second molar with no symptoms. The restorative team was consulted, and it was determined to remove and replace the filling. Upon removal, a pulp exposure was identified. A direct pulp cap and protective restoration were placed to see if any symptoms would develop. With time, a symptomatic tooth presented itself and required consultation with the endodontic faculty leading to a need for endodontic therapy. A build-up restoration and patient follow-up completed this complex case.

I'd like to acknowledge Dr. Alan Gluskin and Dr. Mark Stevenson who mentored me through this challenging endodontic case, as well as Dr. James Stephens and Dr. Sandy Ward who assisted in determining the approach for emergency care and restorative treatment.

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