

General Information

- Keep the order of slides the same as this template.
- Limit the number of slides to about 35.
- Add graphics to illustrate concepts.
- Cite references, illustrations on slides.
- Avoid crowding the slide with too much text.
- Best font size: 32.
- Font size smaller than 24 will be difficult to read.

General Information:

Slide Design

- Choose an esthetic design that enhances, and does not detract from, the presentation.
- Text should be easily readable, not crowded.
- The easiest typeface to read are **sans serif** fonts, that is, without serifs.
 - For example, Times New Roman is a **serif** typeface while Arial, Corbel and Lucida Sans are **sans serif** typefaces.

General Information

Presentations

- D₄ Case presentation: 10 minutes
 - D₁ Basic Science presentation: 5 minutes
 - D₂ Pathology presentation: 5 minutes
 - D₃ PICO CAT presentation: 10 minutes
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- 30 minutes of student presentation will be followed by 10 minutes of discussion.

Important:

- All patient information must be de-identified
 - Radiographs
 - Images
 - Charts and odontograms
 - No names

Template Slides: #5-38
Delete Slides #1-4 from presentation

Quarantine Crowns

Evidence Based Dentistry Rounds Specialty

2a-5

09/30/2020

Rounds Team

- **Group Leader: Dr. Pelz**
- **Specialty Leader: Dr. Chien**
- **Project Team Leader: Conner Belnap**
- **Project Team Participants: Haley Maurer, Allison Dreyer, and Ahmed Al-Sallami**

Patient

- 75 years old
- Male
- Caucasian
- “I need a bridge or crown”
- Retired

Medical History

- Patient is diagnosed with high blood pressure, type 2 diabetes, sleep apnea, and acid reflux.
- Patient has a heart attack 12/18 and had triple bypass surgery on 12/31/18.
- Pt had a stroke in 2001
- Pt has NKDA

Medications

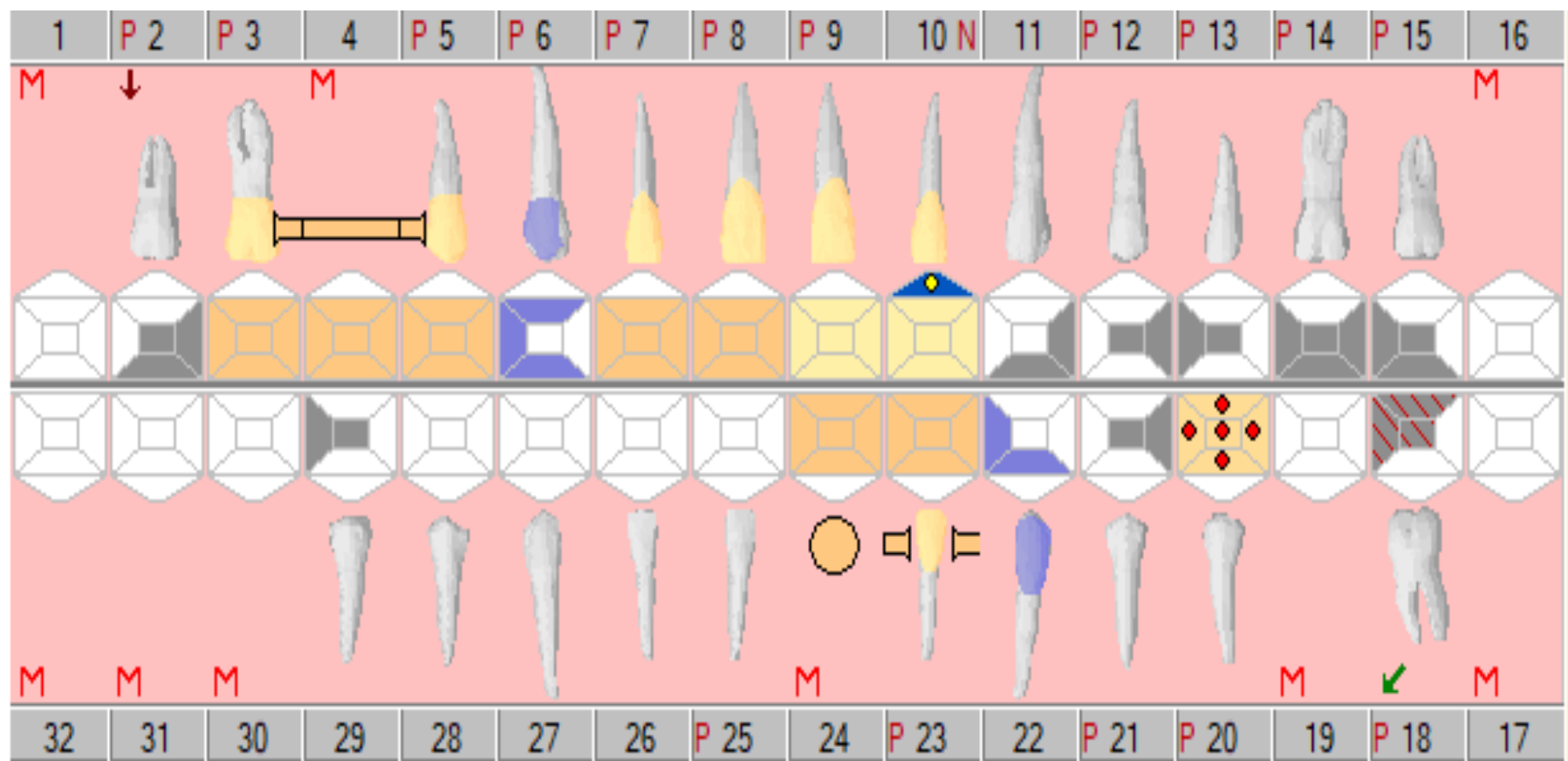
nitroglycerin	0.4 mg
nifedipine	90 mg
metformin	1,000 mg
Acid Gone Antacid E.Strength(aluminum hydrox-magnesi...	160-105 mg
insulin glargine	100 unit/mL
insulin aspart U-100	100 unit/mL
clopidogrel	75 mg
atorvastatin	80 mg
Aspirin Low Dose(aspirin)	81 mg
amiodarone	200 mg

Medical History

- Medical consult was obtained on 02/10/2020 from patient's cardiologist. Patient was cleared for routine dental care including extractions.

Dental History

- Has had crown and bridge work completed in the past.
- Multiple amalgam restorations
- Several missing teeth
- Oral hygiene: poor
- Non-smoker
- Soft tissue: WNL



Radiographs



Radiographs of #9 and #10



Radiographic Findings

- Multiple amalgam fillings
- $\frac{3}{4}$ cast crowns
- Maryland bridge
- Calcified root canals

Clinical Findings

- 1 slide describing all clinical findings
- Clinical photos 1-2 slides
 - Relevant extraoral &/or intra-oral views
- Photos of casts 1-2 slides
 - Mounted on articulator
 - Same views as intraoral photos
 - Occlusal maxilla, mandible
 - Open, closed
 - Anterior, lateral
 - In occlusion, excursions
 - Show excursions from posterior to molar view

Clinical findings

- Attrition on all teeth. Especially mandibular anterior incisors.
- Fractured lingual cusp on #20
- Generalized calculus deposits
- Fractured porcelain on #9 PFM.

Specific Findings

- List findings specific to the Rounds discussion, 1 slide
- To enhance viewing, include close-ups of clinical photos, cast photos, radiographs, add slides as needed

Periodontal Charting

Diagnosis

- Diagnosis pertaining to Rounds discussion,
1 slide

Problem List

- Fractured core build-up of #10
- Fractured lingual cusp of #20
- Fractured porcelain on PFM of #9
- Poor oral hygiene
- Anterior attrition

What Causes Tooth Wear?

4 major types:

1. Attrition
2. Abrasion
3. Abfraction
4. Erosion



<https://www.speareducation.com/spear-review/2019/12/intrinsic-dental-erosion-causes-and-diagnosis>

Attrition:

- Tooth to tooth contact causing tooth tissue loss
- Most common type of tooth wear
- Shiny facets/flat areas on occlusal and incisal surfaces



<https://www.pearlidentelclinic.co.uk/toothwear.html>

Abrasion:

- Due to external objects
- No hypersensitivity
- V-shaped defects on tooth surfaces



<https://www.juniordentist.com/abrasion-of-teeth.html>

Abfraction:

- Cause is not well known
- Thought to be a combination of multiple causes
- V-shaped or C-shaped damage
 - Many times occurs sub-gingivally

Erosion:

- Loss of tooth structure due to non-bacterial acids
- Varying degree of severity based on outside factors
- Starts with the softening of enamel, making it susceptible to damage, and moves apically
- Saliva acts as a pH buffer but does not work for extreme exposure



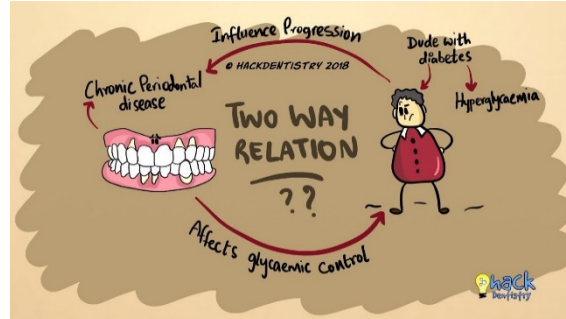
<https://wellingtonroaddentalcare.com.au/general-dental/teeth-grinding/>

D2 Pathology: *What is the relationship between diabetes and periodontal disease?*



- Individuals with diabetes and poor metabolic control can experience exaggerated immune-inflammatory response that can result in more rapid and severe periodontal tissue destruction.
 - *Formation of ACEs can lead to increased production of pro-inflammatory cytokines leading to periodontal tissue destruction*
- In periodontal disease, bacteremia of periodontal pathogens and metabolic products can result in increased pro-inflammatory cytokines which worsen insulin resistance and diabetic control
 - *Inflammatory mediators that are important in periodontal inflammation have also been shown to antagonize insulin action*

What is the relationship between diabetes and periodontal disease?



- Individuals with type 2 diabetes have been found to have significantly lower number of teeth present, increased number of probing depths, percent of pocket depths greater than 4 mm, plaque and bleeding on probe
- In individuals with periodontal disease and diabetes, non-surgical periodontal therapy has also been seen to improve glycemic control

D3 PICO

- **Clinical Question:**
 - In patients receiving a post and core, is a fiber post or a cast metal post a better choice for a lower failure rate?

PICO Format

P: Patients receiving post and core

I: Fiber Post

C: Cast Metal

O: Failure Rate

PICO Formatted Question

- In patients who need post and core, does using a fiber post compared to using a cast metal post have a higher failure rate?

Clinical Bottom Line

- The patient had enough ferrule, so using either fiber post or cast-metal post was possible. A fiber post was chosen.

Search Background

- Date(s) of search: 09/16/2020
- Database(s) used: Pubmed
- Search Strategy/Keywords: post and core, fiber post, cast metal post, endodontically treated teeth

Search Background

- ((“Dental Restoration” [Mesh] AND “Tooth Fracture” [Mesh]) AND “Tooth Root” [Mesh])

Article 1 Citation, Introduction

- Citation:
 - Figueiredo FE, Martins-Filho PR, Faria-E-Silva AL. Do metal post-retained restorations result in more root fractures than fiber post-retained restorations? A systematic review and meta-analysis. J Endod. 2015;41(3):309-316. doi:10.1016/j.joen.2014.10.006.
- Study Design: Systematic Review and Meta-Analysis
- Study Need / Purpose:
 - “To analyze clinical trials and cohort studies that evaluated the incidence rate of root fractures in post-retained restorations.”

Article 1 Synopsis

■ METHODS

- A search was made via MEDLINE for clinical studies on the incidence of root fractures of restorations retained with fiber posts or metal posts of endodontically treated teeth with a more than 5-year follow-up
- 7 cohort studies and seven randomized clinical trials were included.

Article 1 Synopsis

■ Results

- The pooled survival rate was 90% for cast metal posts and 83.9% for fiber posts.
- The overall incidence rate of major failures was similar between metal and fiber posts.
- Compared with cast metal posts and glass fiber posts, prefabricated metal posts and carbon fiber posts were twice as likely to fail.

Article 1 Synopsis

- **Conclusion**

- There were no significant differences for root fracture incidence between cast metal and fiber posts

Limitations:

- The studies included in this review had a high risk of bias.

Article 1 Selection

- Directly addresses the PICO question
- Recent publication

Article 2 Citation, Introduction

- Wang X, Shu X, Zhang Y, Yang B, Jian Y, Zhao K. Evaluation of fiber posts vs metal posts for restoring severely damaged endodontically treated teeth: a systematic review and meta-analysis. Quintessence Int. 2019;50(1):8-20. doi:10.3290/j.qi.a41499
- Study Design: Systematic Review and Meta-Analysis
- Study Need / Purpose: In cases of severely damaged tooth restoration, do cast metal or fiber posts demonstrate the best clinical performance?

Article 2 Synopsis

■ Methods

- Only randomized controlled trials with follow-up of at least 3 years were included.
- A meta-analysis compared survival, success, post debonding, and root fracture incidence of teeth restored with fiber and metal posts.
- Of 1,511 records, 14 full texts were obtained.

Article 2 Synopsis

- **Results**

- Fiber posts presented significantly higher survival rates than did metal posts (RR 0.57, 95% CI: 0.33 to 0.97, $P = .04$)

Article 2 Synopsis

■ Conclusion

- Fiber posts displayed higher overall survival rates for a term of 3 to 7 years than metal posts when used in the restoration of severely damaged endodontically treated teeth.

Limitations

- Only four trials with follow-up times of 3 to 7 years met the selection criteria.

Article 2 Selection

- Directly addresses the PICO question

Levels of Evidence

- ☒ **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)
 - ☐ **1b** – Individual RCT
 - ☐ **2a** – Systematic Review of Cohort Studies
 - ☐ **2b** – Individual Cohort Study
 - ☐ **3** – Cross-sectional Studies, Ecologic Studies, “Outcomes” Research
 - ☐ **4a** – Systematic Review of Case Control Studies
 - ☐ **4b** – Individual Case Control Study
 - ☐ **5** – Case Series, Case Reports
 - ☐ **6** – Expert Opinion without explicit critical appraisal, Narrative Review
 - ☐ **7** – Animal Research
 - ☐ **8** – In Vitro Research
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Strength of Recommendation Taxonomy (SORT)

☐	A – Consistent, good quality patient oriented evidence
☒	B – Inconsistent or limited quality patient oriented evidence
☐	C – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Double click table to activate check-boxes

Conclusions

- The first article showed no significant difference between failure rates in fiber posts versus cast metal posts, and the second article showed that there was a significant advantage of fiber posts over cast metal posts.
- In order to provide the highest quality and most predictable treatment, our patient should be informed about that advantages of using fiber posts over cast metal.

Conclusions: D4

Given that the patient has adequate ferrule, a fiber post can be placed into the prepared post space. Patient will be advised that there is a risk of periapical periodontitis since elective RCT couldn't be done. If patient develops symptoms, an apicoectomy can be performed.

Patient was explained benefits and risks of treatment options, including no treatment.

Discussion Questions

- 1-2 slides
- List posted discussion questions
- Questions may also be from Group Leader or Specialist

Discussion Questions

THANK YOU
