Evidence Based Dentistry Rounds

Oral Surgery

Group 2B-4

10/21/2020

Rounds Team

- Group Leader: Dr. Pelz
- Specialty Leader: Dr. Camejo
- Project Team Leader: D4 Hector Meza-Lopez
- Project Team Participants: D1 Jacob Scholz, D2 Jacob Des Jardins, D3 Danielle Nghiem

Patient: Steven

- Age: 65
- Gender: Male
- Ethnicity: African American
- Chief Complaint: “Lost my denture and partial a month ago and need a new one”

Medical History

Current:

- Conditions: Glaucoma, Artery Disease, Smoker
- Medications: Prednisone eye drops, Combigan, Cilastozol,

Past:

- Diagnosed: Hepatitis C, Artery stents in his right leg in 2017

Dental History

- Pt had Max. extractions due to advance perio disease with a non-restorable diagnosis
- Full Max. denture and Partial Mand. Denture fabricated 9yrs ago

Radiographs

Radiographs

Radiographic Findings

- Impacted #22
- DO #21, #28
- Gross Decay #29

Clinical Findings

- Non restorable
  - #21, #23, #29
- Bilateral mandibular tori

Specific Findings

- Edentulous Maxillary
- Partial Dentition on Mandible
- Impacted Canine #22

Periodontal Charting: Maxillary

																MOBILITY
																FURCA
																PLAQUE
																BOP
																MGJ
																CAL
																P.D.
																FGM
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																FGM
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Periodontal Charting: Mandibular

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				2 3	3 2 3	4 2 3	3 2 3	3 2 3	3 2 3		4 3 4					P.D.
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32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	
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				3 2 3	4 2 4	5 2 3	3 3 3	4 3 4	3 2 3		4 2 2					P.D.
				4 4 4	4 2 4	5 3 3	3 3 3	5 4 5	4 3 4		5 4 3					CAL
				3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	4 4 4		3 3 3					MGJ
																BOP
																PLAQUE
																FURCA
																MOBILITY

Periodontal Diagnosis

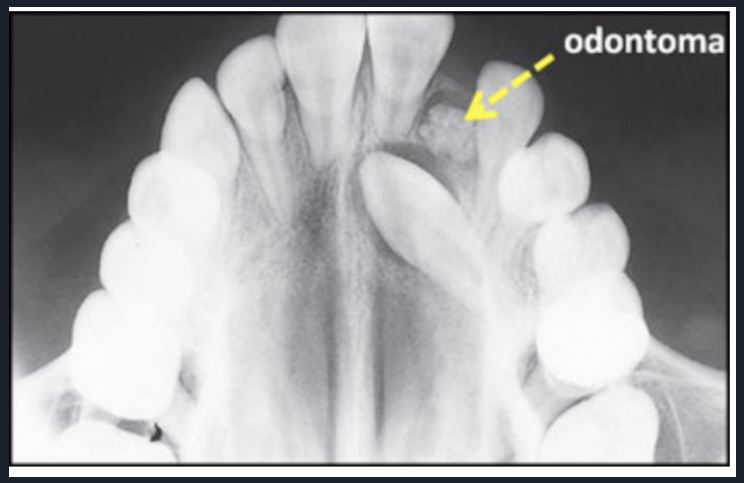
- Advanced Chronic Periodontitis

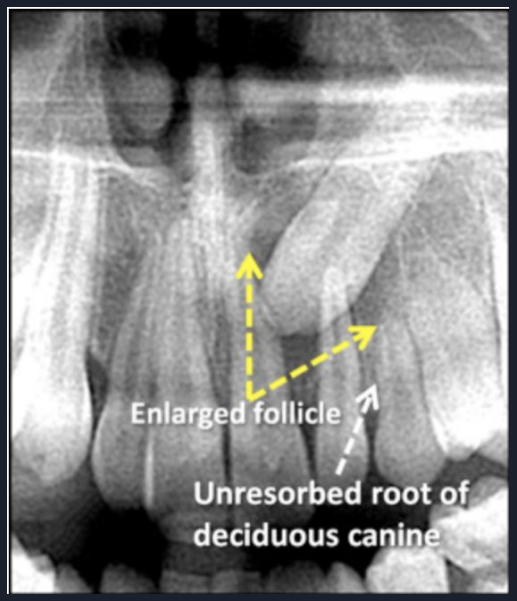
Problem List

- Gross Caries
- Missing Teeth
- Perio Disease

D1 Science Question - What can cause an impacted tooth?

- Hard tissue obstruction:
  - supernumerary teeth
  - odontoma
  - non resorption of deciduous teeth/roots
- Anomalies of neighboring teeth
- Soft tissue lesions





D1-Resources

- Becker, A. & Chaushu, S. (2015). Etiology of maxillary canine impaction: A review. *American Journal of Orthodontics and Dentofacial Orthopedics, 148*(4), 557-567. Retrieved from https://0-www-sciencedirect-com.libus.csd.mu.edu/science/article/pii/S0889540615008422?via%3Dihub

D2 Pathology - What pathologies are involved with tooth buds?

- **Tooth Agenesis**
- Hypodontia/Oligodontia/Anodontia- missing developing tooth buds resulting in fewer/no teeth
- Supernumerary teeth - presence of additional developing tooth buds/teeth

Missing laterals - Hypodontia

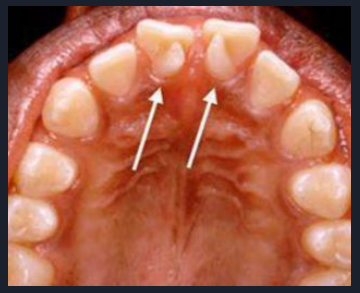
Mesiodens - Supernumeary tooth

D2 Pathology - What pathologies are involved with tooth buds?

- Morphological Abnormalities
- Fusion/Geminiation - “Double Tooth”
  - Fusion - Two tooth germs w/two root canals = Reduced # teeth
  - Geminiation - Two tooth buds from one germ w/one root canal
- Micro/Macrodontia - Size Pathology
  - Occur because of disturbances in morphodifferentiation
- Occlusal/Incisal Pathologies -
  - Dens in Dente
  - Dens Evaginatus
  - Talon Cusp
  - Cusp of Carabelli

Fusion vs. Gemination

Peg Lateral



D2 - Resources

- Klein, Ophir D, et al. “Developmental Disorders of the Dentition: an Update.” *American Journal of Medical Genetics. Part C, Seminars in Medical Genetics*, U.S. National Library of Medicine, 4 Oct. 2013, www.ncbi.nlm.nih.gov/pmc/articles/PMC3844689/.
- Alsaleh, Majd DDS, MS. “Enamel Development.” Marquette University School of Dentistry, 6 January 2020, Marquette University School of Dentistry, Milwaukee. Class lecture.

D3 PICO

- **Clinical Question:**
- **Are prophylactic extractions indicated for impacted teeth?**

PICO Format

P: patients with impacted teeth

I: Extraction of impacted tooth/teeth

C: No treatment

O: Decreased effects on adjacent teeth and periodontia

PICO Formatted Question

- Would prophylactic extractions reduce the negative effects on adjacent teeth and periodontia for patients with an impacted tooth compared to no treatment?

Clinical Bottom Line

- Although more evidence is needed, prophylactic extractions are generally indicated to prevent damage to adjacent teeth and periodontal health. If the impacted tooth is retained, careful monitoring using CBCT scans should be planned.

Search Background

- **Date(s) of Search: 10/9/2020**
- **Database(s) Used: PubMed**
- **Search Strategy/Keywords:** impacted tooth, root resorption, extraction

Search Background

- **MESH terms used:**

- **tooth eruption**
- **ectopic**
- **tooth, impacted**
- **root resorption**

Article 1 Citation, Introduction

- Citation: Bertl MH, Frey C, Bertl K, Giannis K, Gahleitner A, Strbac GD. **Impacted and transmigrated mandibular canines: an analysis of 3D radiographic imaging data**. Clinic Oral Investig. 2018 July 22: 2389-2399
- Study Design: Retrospective cross-sectional study
- Study Need / Purpose: To determine outcome of retained impacted teeth

Article 1 Synopsis

- **Method:** CBCT scans of 99 patients totalling 94 impacted mandibular canines were studied for their location, morphology, neighboring structures, anomalies, and influence on transmigration
- **Results:** 40.4% of impacted mandibular canines led to transmigration, where the canines were apically located and more horizontally angulared. There was a 7.3% incidence of root resorptions of adjacent teeth, although the incidence % was higher for lingually impacted canines.
- **Conclusions:** root resorption of adjacent teeth and transmigration are associated with impacted mandibular canines
- **Limitations:** small sample size, only studied mandibular canines, and limited to retrospective study

Article 1 Selection

- Although the article was a retrospective study with a relatively small sample size, the patient in question has an impacted mandibular canine, which the study focused on. I picked this article because it shows the implications of having an impacted mandibular canine, which include transmigration of the canine and root resorption of adjacent teeth.

Article 2 Citation, Introduction

- Citation: Sarica I, Derindag G, Kurtuldu E, Naralan ME, Caglayan F. **A retrospective study: Do all impacted teeth cause pathology?** Niger J Clin Pract. 2019 April 22: 527-533.
- Study Design: Retrospective cross-sectional study
- Study Need / Purpose: Analyzed the pathologic effects of impacted teeth and suggest how to plan for impacted teeth

Article 2 Synopsis

- Method: 608 CBCT images of patients were evaluated retrospectively. The impacted tooth entity was evaluated first, then relations of the tooth and anatomical structures and pathologies caused by the impacted tooth. They were examined by 3 observers who all had at least 3 years experience with CBCT scan, with any conflict in reviews resolved by a fourth observer with 10 years of experience with CBCT
- Results: 209 of the 608 patients had impacted teeth, for a total of 394 impacted teeth. 44.4% of the impacted teeth caused periodontal bone loss. 33.3% caused resorption in the adhacent teeth, 8.6% caused cysts or tumors, and 2.3% caused decay lesions in the adjacent teeth
- Conclusions: Impacted teeth are relatively prevalent and oftentimes cause pathology. The impacted teeth may be controlled if they do not cause pathology; CBCT can be used to assess suspected cases.
- Limitations: The sample size is generally small as a retrospective study, does not directly compare with extracted impacted teeth

Article 2 Selection

- I chose this article because it evaluated the comparison intervention of the PICO question of the complications that may arise from impacted teeth. The study recommended close monitoring and CBCT imaging to evaluate the impacted teeth and periodontal tissues if the impacted teeth are retained.

Article 3 Citation, Introduction

- Citation: Ghaeminia H, Perry J, Nienhujis ME, Toedtling V, Tummers M, Hoppenreijs TJ, Van der Sanden WJ, Mettes TG. S**urgical removal versus retention for the management of asymptomatic disease-free impacted wisdom teeth.** Cochrane Database Syst Rev. 2016 Aug 31.

- Study Design: Systematic review of RCT's

- Study Need / Purpose: Comparison of PICO treatments/interventions

Article 3 Synopsis

- Method: A systematic review was performed to evaluate studies comparing the removal versus retuntion of asymptomatic, disease-free impacted wisdom teeth in adolescents and adults. Eight review athors conducted the assessments independently.
- Results: two studies were included. Only low to low quality evidence was found in one study that suggested that no treatment may be associated with increased risk of periodontitis affecting the adjacent second molar in the long term. Another study had high risk of bias and suggested that extraction has a clinically significant effect on the dimensional changes in the dental arch,
- Conclusions: There was insufficient evidence to determine whether asymptomatic disease-free impacted wisdom teeth should be extracted. Some evidence suggested that retention is associated with increased risk of periodontitis long-term, but it was of low quality. High quality long term prospective cohort studyies may provide better evidence in the future. Patient values should be considered and clinical expertise used to guide shared decision making with patients. If the decision is no treatment, regular clinical assessment should be conducted
- Limitations: Just two studies were included, one which had low quality evidence and the other with a high risk of bias

Article 3 Selection

- I chose this article because it attempted to answer the PICO question, comparing extraction of impacted teeth to no extraction. It also offered recommendations for treatment planning for impacted teeth.

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

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

Conclusions: D3

- How does the evidence apply to this patient?
  - Based on the evidence found in the three articles, there was no indication that one treatment was better than the other. However, it can be inferred that extraction of impacted teeth would prevent or resolve pathologic effects such as root resorption and cysts/tumors. Therefore I would advise the patient to elect for prophylactic extraction of the impacted mandibular canine. If the patient does not elect to do so, then regular monitoring of the tooth and adjacent area should occur, and CBCT imaging should be done for suspicious cases.
  - Dr. Camejo recommended extraction of the mandibular impacted canine.

Conclusions: D4

- How will you ***advise*** your patient?
  - I will advise my pt to Extract the tooth.
  - I would also advise my pt that we could leave the tooth there to prevent a collapse of the alveolar ridge after anterior teeth extractions.

Discussion Questions

Lindholm, Drake	10/11/2020	Are there other treatment options for impacted teeth that are symptomatic besides extraction?
Miller, Margaret	10/11/2020	Are there any changes or pathology commonly seen in impacted teeth that would negatively affect the health of the teeth, periodontium, or make it urgent to extract it?
Wallock, Jacob	10/12/2020	Are impacted canines always indicated for extraction?
Vu, Theresa Kim	10/12/2020	Are impacted canines genetic?
Lovell, Mary	10/13/2020	Is it better to remove impacted teeth in mixed or permanent dentition?
Witzlib, Amanda	10/14/2020	What is the best method of treatment for an impacted canine?
Bostanche, Lauren	10/15/2020	What are likely causes for an impacted canine?
Krieger, Emily	10/16/2020	What is the ideal age to extract an impacted canine?
Olson, Troy	10/18/2020	What are the most commonly impacted teeth? Are any teeth more likely to cause problems when impacted?
Kosmalski, Gabriel	10/18/2020	Are there any known environmental influences that can contribute to tooth impaction?
Khan, Hamaad	10/18/2020	What issues can arrise from having an untreated impacted tooth?
Altfillisch, Andrew	10/18/2020	How common are impacted canines?
Fox, Sky	10/19/2020	If a patient has an impacted canine are they more likley for the other canines to be impacted as well?