PERNICIOUS PERI-IMPLANTITIS

EVIDENCE BASED DENTISTRY ROUNDS
PERIODONTICS

GROUP 5A-1

ASHLEY CHEN, PARKER JOHNSON,
INDRE GENEVICIUTE, WILL DUMMER

11/11/20

Rounds Team

- Group Leader: Dr. Dix
- Specialty Leader: Dr. Kassab
- Project Team Leader: Ashley Chen
- Project Team Participants: Will Dummer; Indre Geneviciute; Parker Johnson

Patient

- 70 year-old
- Female
- Caucasian
- “I want to finish my implant treatment.”
- [Additional pertinent information]

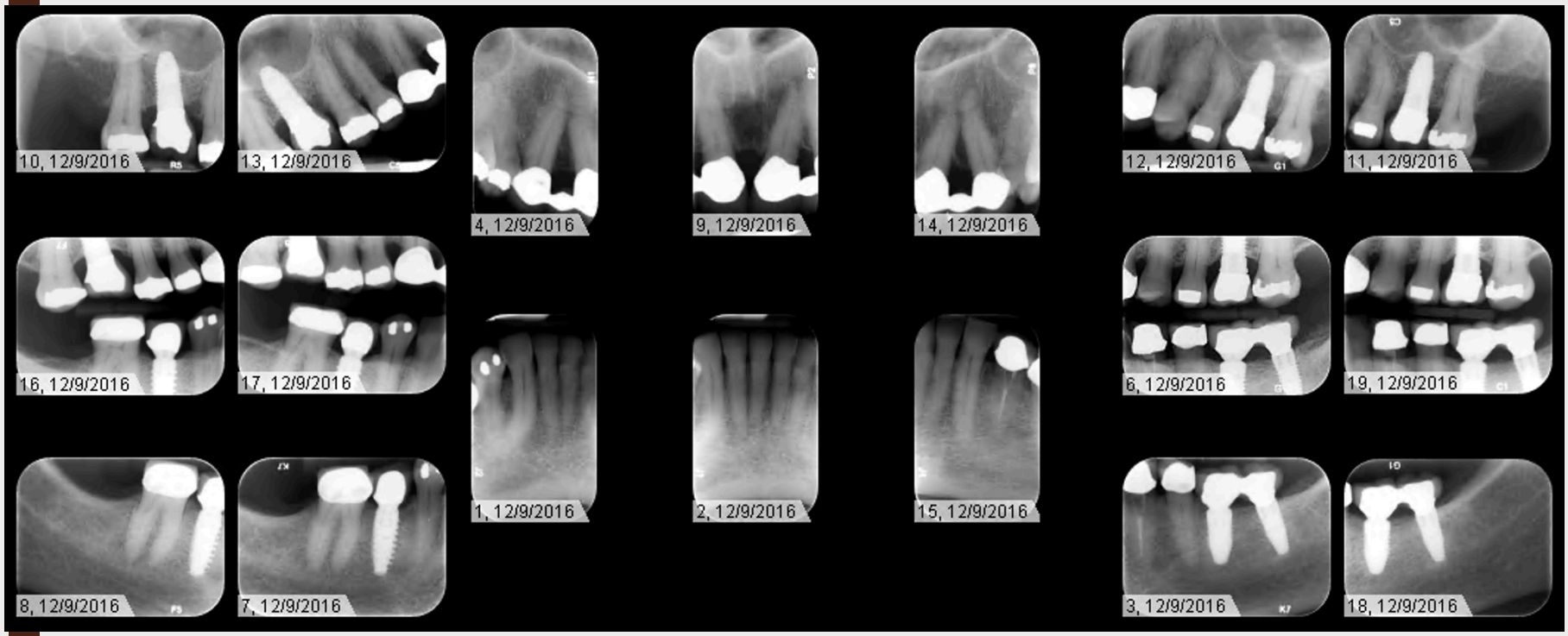
Medical History

- Current & past:
  - *Conditions: Asthma, hypothyroidism, hypercholesteremia, osteoarthritis,*
  - *Medications: Zyrtec (Cetirizine), Singulair (Montelukast), Levothyroxine, Lipitor (atorvastatin), Acetaminophen-Codeine, Clonazepam*
  - *Past smoker (over 10 years ago)*

Dental History

- Has been a patient at MUSoD for 4 years.
- #4 implant placement +Vertical sinus lift (2017)
- Four additional implants placed previously
- Gingival flap and bone graft #9 (2019)
- Two 3-unit bridges
- Several crowns
- SRP in UL (2019)

Radiographs

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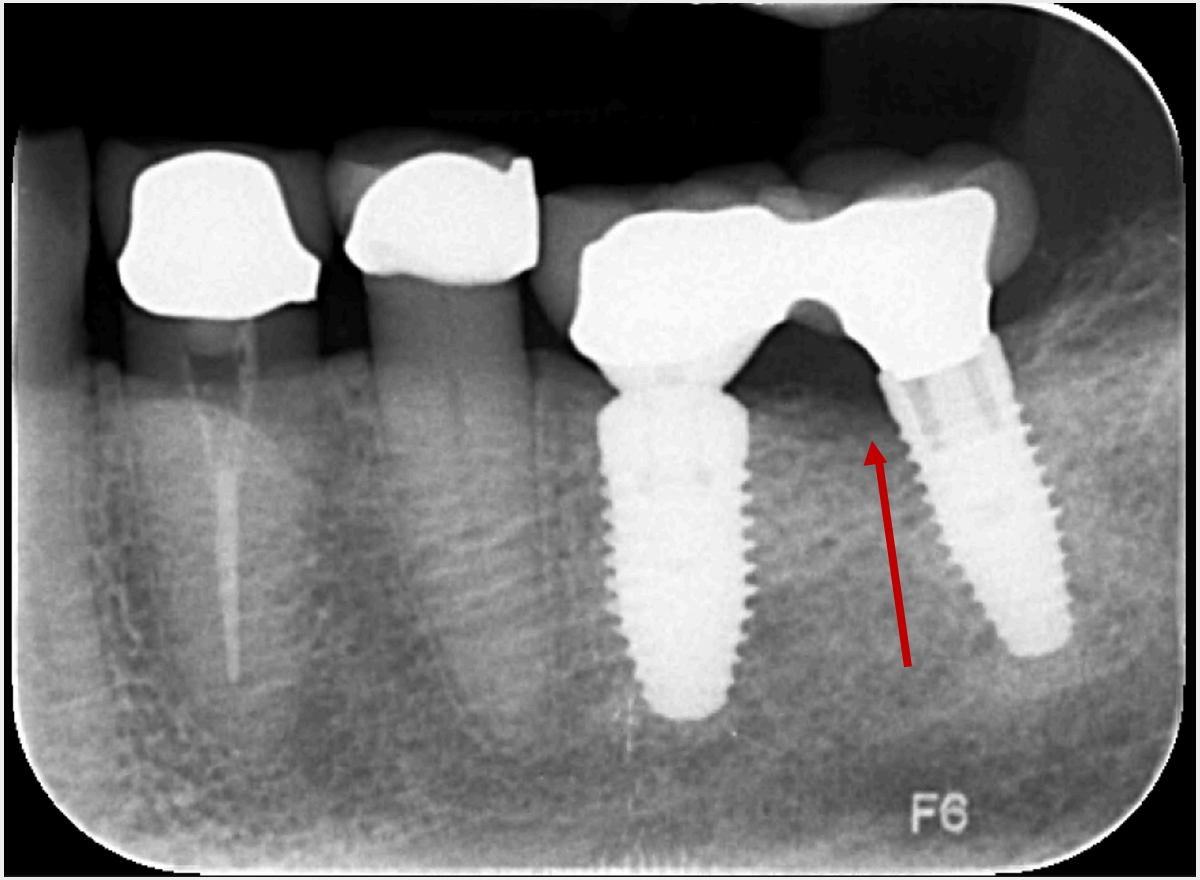
1, 9/1/2020 10:19:45 AM
4, 9/1/2020 10:19:25 AM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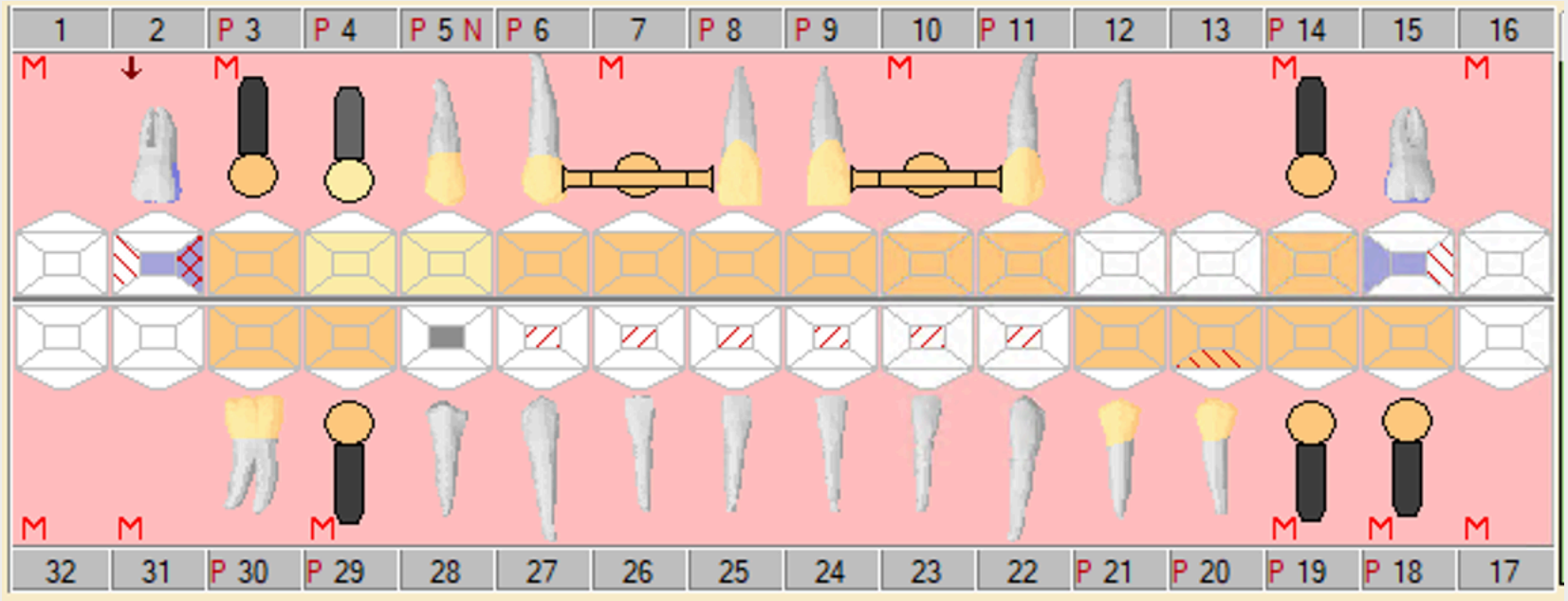
Radiographic Findings

- Bone loss noted around implant sites #3, #18
- Bilateral mandibular tori
- Recurrent caries #2

Odontogram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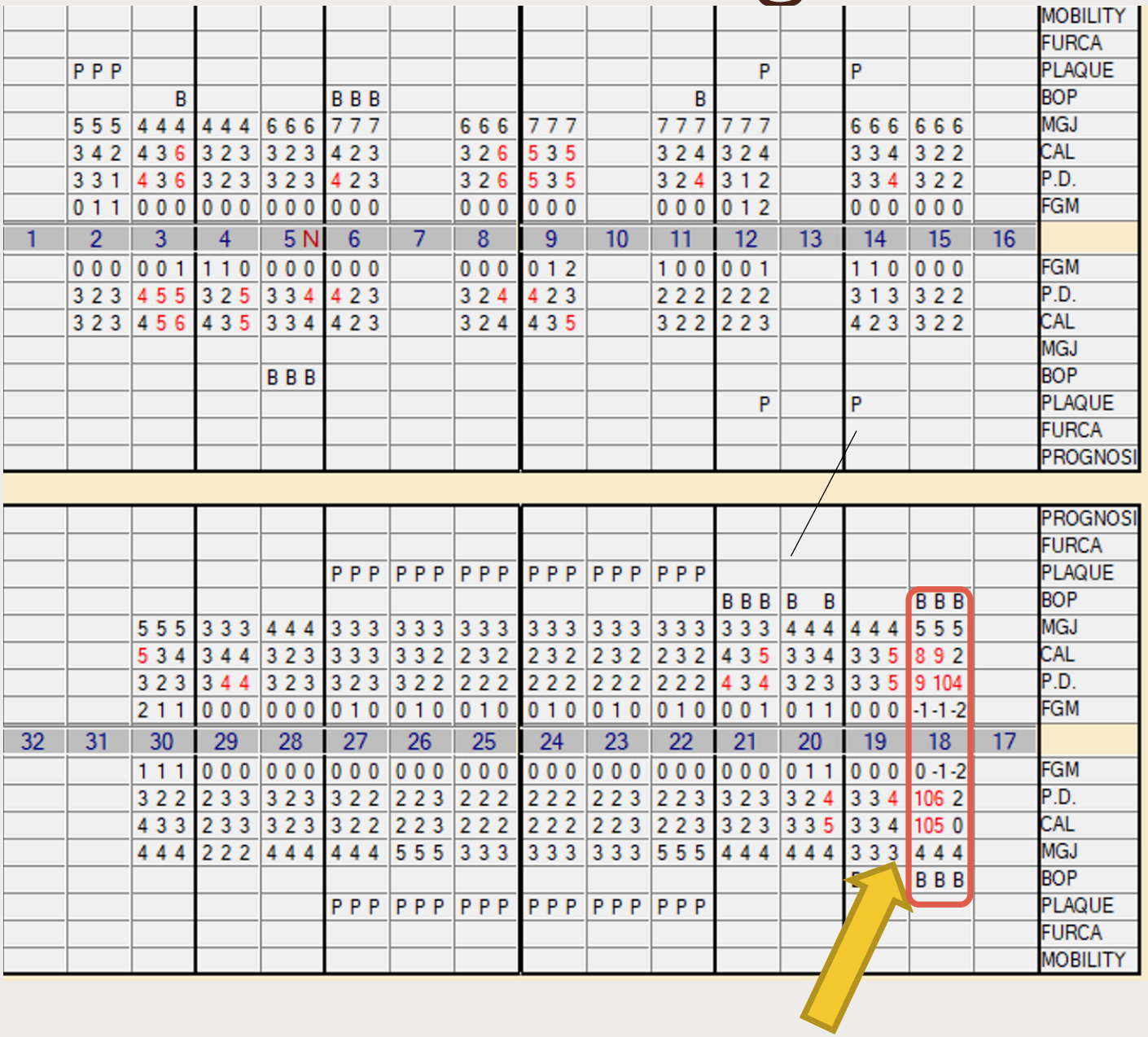
Clinical Findings

- Blunted papilla around implant sites
- Slight supragingival and subgingival calculus
- Maxillary tori and bilateral mandibular tori
- ADA Designation: Moderate Chronic Periodontitis

Specific Findings

- Exudate present around site #18
- BOP around site #18
- Splinted crowns on #18 and #19

Periodontal Charting



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Diagnosis

- Peri-implantitis site #18

Problem List

- Swelling lower left
- Missing teeth
- Periodontal disease

D1 Basic Science
What is the difference between regular prophylaxis, scaling and root planing

- *Non-Surgical Periodontal Therapies*

- *Decision to use one therapy over another is dependent upon a number of characteristics*
  - *Presence/Progression of Gingivitis or Periodontitis*
  - *Best plan to allow for gingival healing*

  - *Prophylaxis*
    - *Preventative measure*
    - *Controlling local irritation factors*
    - *Generally for patients of good health*
      - *Exception is when patient may need antibiotic prophylaxis prior to surgery*

Najeeb, S., Zafar, M. S., Khurshid, Z., Zohaib, S., Madathil, S. A., Mali, M., & Almas, K. (2018). Efficacy of metformin in the management of periodontitis: A systematic review and meta-analysis. *Saudi pharmaceutical journal : SPJ : the official publication of the Saudi Pharmaceutical Society*, *26*(5), 634–642. https://doi.org/10.1016/j.jsps.2018.02.029

Singh GD A, Morrissey H, Rahman A. A Systematic Review and Meta-Analysis Evaluating Antibiotic Prophylaxis in Dental Implants and Extraction Procedures. *Medicina (Kaunas)*. 2018;54(6):95. Published 2018 D 1. doi:10.3390/medicina54060095

Rabbani GM, Ash MM Jr, Caffesse RG. The effectiveness of subgingival scaling and root planing in calculus removal. J Periodontol. 1981 Mar;52(3):119-23. doi: 10.1902/jop.1981.52.3.119. PMID: 7014822.

D1 Basic Science

What is the difference between regular prophylaxis, scaling and root planing

- *Scaling*
  - *Therapeutic*
  - *Used to remove plaque, calculus and other debris supragingvally and subgingivally*
- *Root Planing*
  - *Therapeutic*
  - *Used to remove plaque, calculus, toxins and other bacteria subgingivally*
  - *Subsequently smoothing out cementum*
    - *Goal: reduce inflammation, decrease probe depth and improve hygiene*

Najeeb, S., Zafar, M. S., Khurshid, Z., Zohaib, S., Madathil, S. A., Mali, M., & Almas, K. (2018). Efficacy of metformin in the management of periodontitis: A systematic review and meta-analysis. *Saudi pharmaceutical journal : SPJ : the official publication of the Saudi Pharmaceutical Society*, *26*(5), 634–642. https://doi.org/10.1016/j.jsps.2018.02.029

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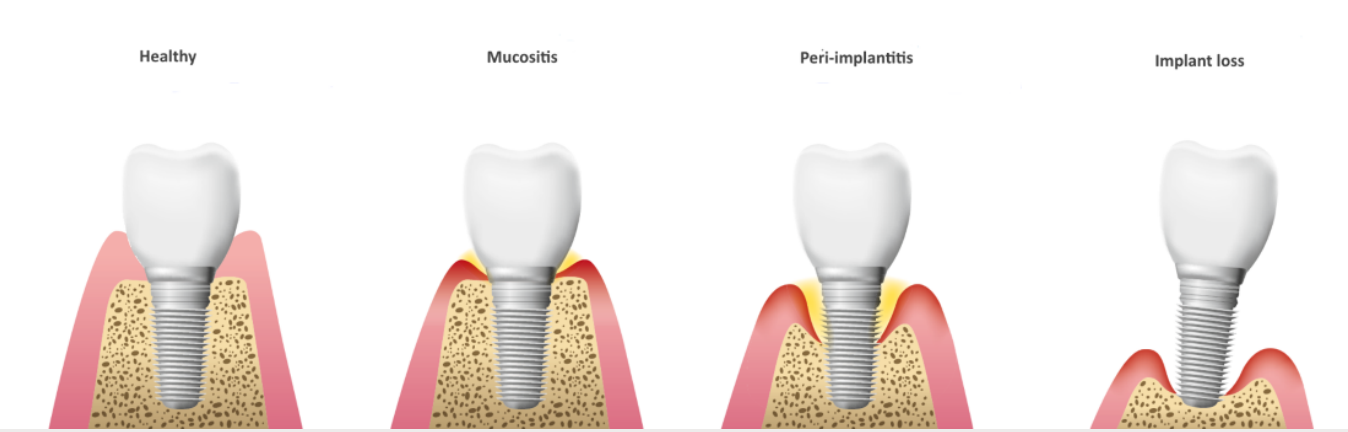
What is peri-implantitis?

- Inflammatory process following insertion of a dental implant
- Affects soft and hard tissues
- Leads to failure/loss of implant



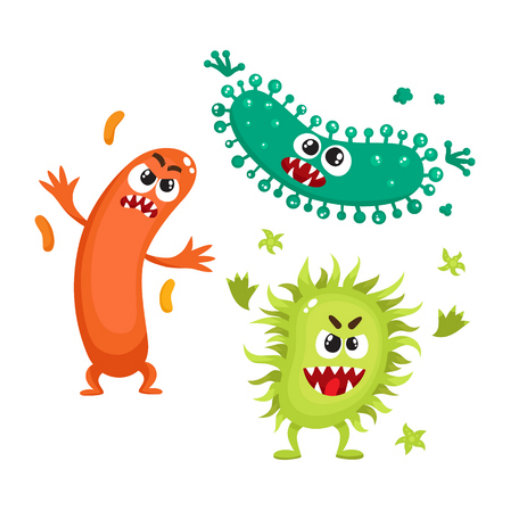
https://www.micro-ident.de/en/dentists/peri-implantitis/

Peri-implantitis Risk factors

- Smoking habits
- History of periodontitis
  - *Chronic vs. aggressive*
- Systemic diseases
  - *Diabetes Insipidus*
- Oral hygiene

Peri-implantitis pathology

- Polymicrobial anaerobic infection
- *Treponema forsythia*
- *Treponema denticola*
- *Porphyromonas gingivalis*
- *Campylobacter rectus*
- *Staphylococcus aureus*



D3 PICO

- **Clinical Question:** What is the preferred treatment for periimplantitis?

PICO Format

P: *Patients with periimplantitis*

I: *Surgical debridement with bone graft*

C: *Mechanical debridement*

O: *Higher success rates*

PICO Formatted Question

- In patients with periimplantitis, will surgical debridement with a bone graft compared to mechanical debridement alone yield higher success rates?

Clinical Bottom Line

- Currently, there is no reliable evidence to definitively state the best treatment modality for periimplantitis. Most, if not all, of the current literature calls for increased research into the treatment of periimplantitis
- Within the narrow range of reliable literature, it is suggested that surgical debridement with or without bone graft is superior to non-surgical debridement in the treatment of periimplantitis
- The evidence, at best, is mixed on whether non-surgical debridement is all that effective in the treatment of periimplantitis, but it does remain an effective treatment of periimplant mucositis

Search Background

- **Date(s) of Search:** 11/10/2020
- **Database(s) Used:** Pub Med
- **Search Strategy/Keywords:** Searched using MESH terms

Search Background

- **MESH terms used:**
  - *Dental Implants*
  - *Peri-implantitis / therapy*
  - *Debridement*

Article 1 Citation, Introduction

Romanos, Georgios E, and Daniel Weitz. “Therapy of peri-implant diseases. Where is the evidence?.” *The journal of evidence-based dental practice* vol. 12,3 Suppl (2012): 204-8. doi:10.1016/S1532-3382(12)70038-6

- Study Design: Narrative Review / Expert Opinion
- Study Need / Purpose: To examine the evidence concerning the management of peri-implant diseases

Article 1 Synopsis

- Method: Qualitative review of literature
- Results: Expert Opinion
- Conclusions: **No definitive treatment exists for periimplant diseases. The evidence suggests that periimplant mucositis responds to mechanical nonsurgical therapy, but periimplantitis does not. Although various surgical methods have shown success in the management of periimplantitis, no single method can be identified as superior based on the current evidence.**

- Limitations: Not enough studies in this area

Article 1 Selection

- Reason for selection: Provides baseline background information on the current status of treatments for peri implant diseases
- Applicability to your patient: Pt has periimplantitis in the site of #18
- Implications: Non-surgical debridement may not be the best option for treatment

Article 2 Citation, Introduction

Esposito, Marco et al. “Treatment of peri-implantitis: what interventions are effective? A Cochrane systematic review.” *European journal of oral implantology* vol. 5 Suppl (2012): S21-41.

- Study Design: Systematic Review of RCTs
- Study Need / Purpose: To identify the most effective treatments for periimplantitis

Article 2 Synopsis

- Method: Searched and screened for RCTs regarding the treatment of periimplantitis. Nine studies were selected.
- Results: Compared results from studies with non-surgical interventions with and without adjunctive treatment, and from studies with surgical interventions with and without adjunctive treatment.
  - *Non surgical: mean PD improvement 0.59 mm*
  - *Surgical w/ bone graft: mean PD improvement 1.4*

Article 2 Selection

- Conclusions: No reliable evidence to suggest which could be the most effective treatment of periimplantitis
- Limitations: Limited studies, bias w/in studies
- Reason for selection: Systematic review, relevant to pt, current publication
- Applicability to your patient: Pt has periimplantitis
- Implications: Cannot definitively state best treatment for periimplantitis

Article 3 Citation, Introduction

Schwarz, Frank et al. “Efficacy of alternative or adjunctive measures to conventional treatment of peri-implant mucositis and peri-implantitis: a systematic review and meta-analysis.” *International journal of implant dentistry* vol. 1,1 (2015): 22. doi:10.1186/s40729-015-0023-1

- Study Design: Systematic Review of RCTs
- Study Need / Purpose: To determine the efficacy of adjunctive/alternative measures compared to just conventional (mechanical, ultrasonic) tx of periimplantitis

Article 3 Synopsis

- Method: Searched and screened for articles. A total of 40 were selected and used.
- Results:
  - *Non-surgical: favors alternative methods (glycine powder air polishing, Er:YAG laser, local antibiotics)*
  - *Surgical: Does not favor alternative methods for surface decontamination.*
  - *Surgical: Adjunctive methods show promise: Mean PD reduction of 2.20 mm when used in conjunction with bone grafting*

Article 3 Selection

- Conclusions:
  - *Adjunctive methods may improve the efficacy over conventional methods in nonsurgical debridement*
  - *Adjunctive methods, like bone grafting, are very promising when used in conjunction with surgical debridement.*
- Limitations: Limited literature
- Reason for selection: Relevant, recently published, high quality journal
- Applicability to your patient: Patient has periimplantitis
- Implications: Adjunctive methods may prove to be effective in surgical and non-surgical debridement

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

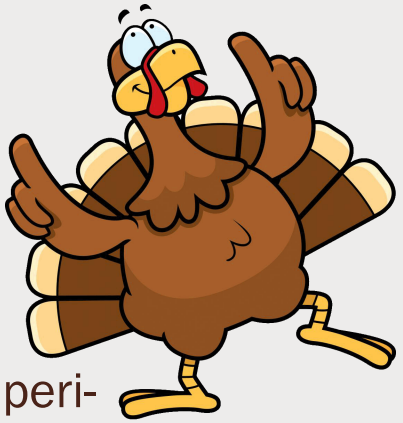
Strength of Recommendation Taxonomy (SORT)

□	**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?
  - *Patient has periimplantitis in the site of #18 and the evidence discusses the efficacy of various treatment modalities.*
- Based on the above considerations, how will you advise your D4?
  - *I would advise my D4 to try non-surgical debridement first, and then to plan on doing surgical debridement if the patient doesn't respond adequately to the first treatment. Augmenting the surgical treatment with a bone graft would be ideal.*

Conclusions: D4



Advise patient:

- Proper oral hygiene at home is the best prevention for peri-implant disease
- Use the provided proxy brushes to clean between sites #18, 19

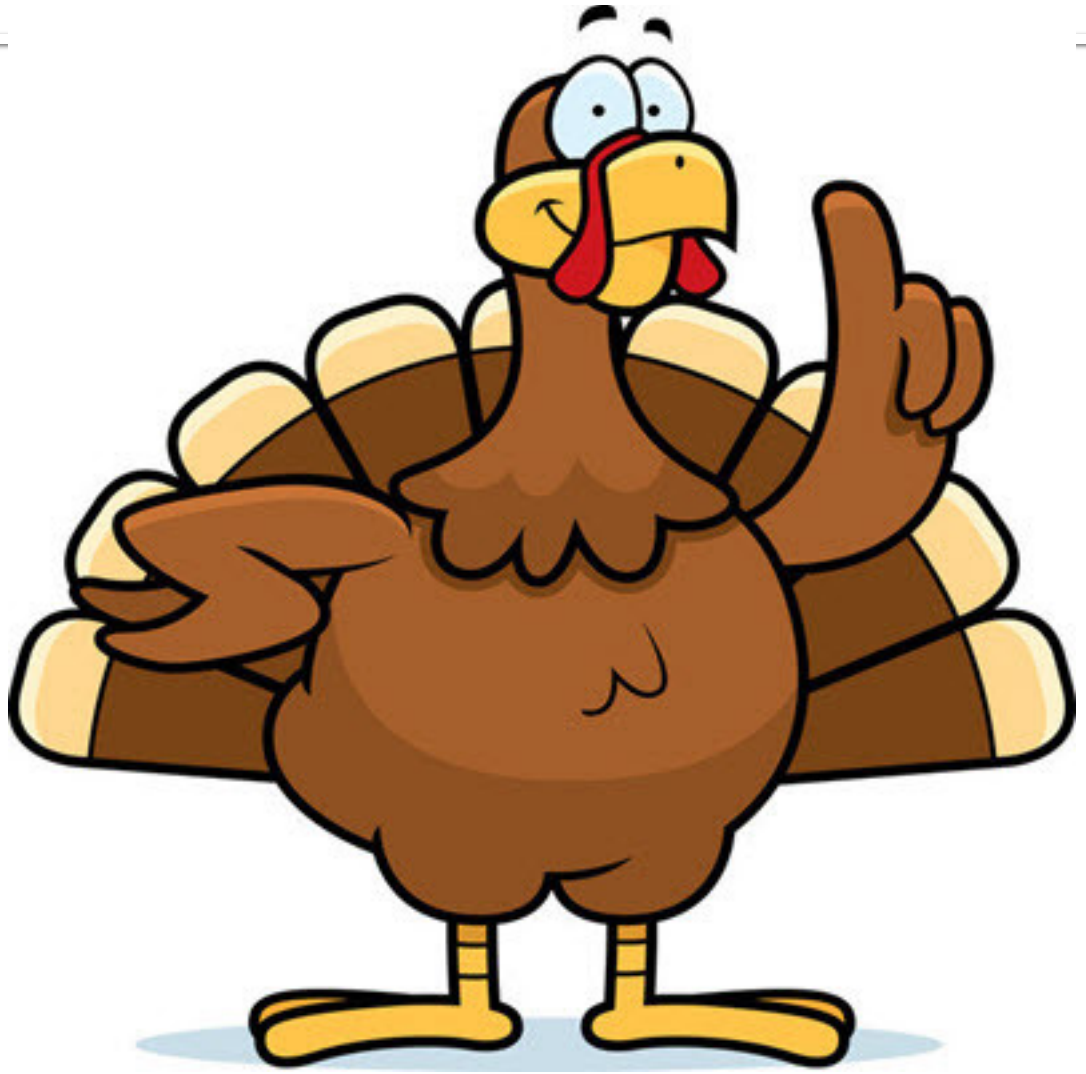
Help patient:

- Routine periodontal maintenance
- Remove splinted implant crowns and section extra-orally.
- Would ideally save #19 crown but warn pt that there is the potential to replace both crowns
- Once removed, cover screws should be placed over implants so soft tissue can heal over implant sites
  - *Will allow for more tissue to cover up eventual graft at implant site #18 for optimal healing*

Discussion Questions

- How is periimplantitis influenced by the implant materials used?
- Does probing a site with periimplantitis negatively affect the outcome?
- How often are cases of periimplantitis due to iatrogenic factors?
- Are certain implant materials more susceptible to periimplantitis?
- What are certain actions that can be taken by a patient to decrease their chances of getting periimplantitis?
- What are the best methods to diagnose periimplantitis?
- How does periimplantitis affect soft tissues in comparison to hard tissue?
- What is the relationship between periimplantitis and failure rate of dental implants?
- What is the most effective method to slow the progress of, or reverse, the effects of periimplantitis?
- Are certain patient populations more likely to develop periimplantitis?
- Is chlorhexidine rinse or irrigation useful in treating periimplantitis non-surgically?
- In cases where implants fail a second time due to periimplantitis, what is the best alternative treatment?

Questions?



THANK YOU