SELECTING SUCCESSFUL RPD ABUTMENTS: CROWN TO ROOT RATIO

7B-5

NOVEMBER 18TH, 2020

ROUNDS TEAM

- Group Leader: Dr. Rossi
- Specialty Leader: Dr. Chien
- Project Team Leader: Maggie Mueller
- Project Team Participants: Elbethel Defare, Kelsi Salzwedel, Jessica Wertz

PATIENT: REZIQ

- 57 year old male
- CC:"I like my partial."

MEDICAL HISTORY

Significant for:

- Type II Diabetes
- Kidney stone removal

MEDICAL HISTORY

Medications:

- Metformin
- Glipizide
- Aspirin (81 mg)
- Vitamin D
- Potassium

DENTAL HISTORY

- Partial maxillary dentition (#12 missing)
- Partial mandibular dentition (#'s 19, 30, 31 missing)
- Previous History of Tx:
 - Restorative
 - Endo (#12, #20, #18 done before patient came to Marquette)
 - Fixed Pros
 - Bridge #11-13
 - Crowns (#18, #20)
 - Extractions (#1, 12, 16, 17, 19, 30, 31)
- Removable Partial Denture
 - Class III Mod I

FMX



BW OF LOWER RIGHT



PA OF LOWER RIGHT



RADIOGRAPHIC FINDINGS

- Primary caries Mesial of #29
- Recurrent caries Distal of #28
- Non-carious cervical lesions #'s 3, 4, 8, 21, 22, 29
- Overhanging margins Distal of #15
- Partially obturated #18
- Moderate generalized bone loss

CLINICAL FINDINGS

- Primary caries Mesial #29
- Recurrent caries Distal #28
- Defective restoration Distal #28
- Perio findings
 - CAL up to 9 mm on #3, 7 mm on #14, 7 mm on #29

UPDATED ODONTOGRAM



PERIODONTAL CHARTING

| | | | | | | | | | | | | | | | | MOBILITY |
|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|-----|-----|----|----------|
| | | | | | | | | | | | | | | | | FURCA |
| | Ρ.Ρ | Ρ.Ρ | Ρ.Ρ | PPP | | PPP | PPP | PPP | | PLAQUE |
| | | | | | | | | | | | | | | | | BOP |
| | 444 | 403 | 333 | 333 | 333 | 444 | 333 | 333 | 444 | 212 | | 323 | 323 | 444 | | MGJ |
| | 232 | 594 | 342 | 342 | 332 | 222 | 333 | 332 | 122 | 443 | | 344 | 474 | 523 | | CAL |
| | 333 | 333 | 322 | 323 | 322 | 323 | 323 | 322 | 223 | 423 | | 323 | 324 | 523 | | P.D. |
| | -10-1 | 261 | 020 | 0 2 -1 | 010 | -10-1 | 010 | 010 | -10-1 | 020 | | 021 | 150 | 000 | | FGM |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | |
| | -10-1 | -10-1 | -1-1-1 | -1-1-1 | -1-1-1 | -1-1-1 | -1-1-1 | -1-1-1 | -1-1-1 | -1-1-1 | | -1-1-1 | 000 | 010 | | FGM |
| | 324 | 523 | 424 | 423 | 423 | 223 | 323 | 422 | 223 | 324 | | 324 | 324 | 322 | | P.D. |
| | 223 | 422 | 313 | 312 | 312 | 112 | 212 | 311 | 112 | 213 | | 213 | 324 | 332 | | CAL |
| | | | | | | | | | | | | | | | | MGJ |
| | | | | | | | | | | | | | | | | BOP |
| | PPP | PPP | PPP | PPP | PPP | PPP | PPP | PPP | PPP | PPP | | PPP | PPP | PPP | | PLAQUE |
| | | | | | | | | | | | | | | | | FURCA |
| | | | | | | | | | | | Ī | | | | | PROGNOSI |
| | | | | | | | | | | | | | | | | FURCA |
| PPP | | | PPP | PPP | PPP | | PPP | | PLAQUE |
| | | | | | | | | | | | | | | | | BOP |
| 333 | | | 444 | 333 | 333 | 222 | 222 | 222 | 222 | 222 | 333 | 222 | | 333 | | MGJ |
| 111 | | | 534 | 422 | 223 | 322 | 223 | 223 | 313 | 321 | 123 | 322 | | 444 | | CAL |
| 323 | | | 214 | 422 | 223 | 312 | 213 | 213 | 313 | 322 | 224 | 322 | 1 | 334 | | P.D. |
| -2-1-2 | | | 320 | 000 | 000 | 010 | 010 | 010 | 000 | 00-1 | -10-1 | 000 | | 110 | | FGM |
| 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | |
| -1-1-2 | | | 451 | 22-1 | -10-1 | 010 | 020 | 030 | 020 | -130 | -130 | 110 | | 110 | | FGM |
| 333 | | | 223 | 323 | 223 | 323 | 212 | 213 | 323 | 323 | 322 | 222 | | 224 | | P.D. |
| 221 | | | 674 | 542 | 122 | 333 | 232 | 243 | 343 | 253 | 252 | 332 | | 334 | | CAL |
| 222 | | | 100 | 222 | 222 | 333 | 333 | 222 | 222 | 111 | 222 | 333 | | 333 | | MGJ |
| | | | | | | | | | | | | | | | | BOP |
| PPP | | | PPP | PPP | PPP | | PPP | | PLAQUE |
| | | | | | | | | | | | | | | | | FURCA |
| | | | | | | | | | | | | | | | | MOBILITY |

DIAGNOSIS

- Dental caries: #28, 29
- Perio diagnosis: Stage III, Grade B localized periodontitis
 - Mucogingival insufficiencies on #3, 14, 20, and 29
 - Clinical attachment loss via generalized recession but particularly on #3, 4, 5, 13, and 14.
 - Treatment plan of connective tissue graft for #3 with a coronally positioned flap at #4 and #5, connective tissue grafts for #14, 21, 22, 24, and a free gingival graft for #29.

PROBLEM LIST

Caries

- Defective restoration
- Missing teeth
- Perio disease
- Home care

DI BASIC SCIENCE: WHAT IS THE ANATOMY OF A TOOTH?

- Anatomical crown
- Clinical crown
- Anatomical root
- Clinical root
- Root apex
- Apical foramen
- Enamel
- Dentin
- Cementum



DI BASIC SCIENCE: WHAT IS THE ANATOMY OF A TOOTH?

- Alveolar process
- Alveolar bone
- Gingiva
- Periodontal ligament



- Mesial surface
- Distal surface
- Labial/Buccal surface
- Lingual surface





- Marginal ridges
- Triangular ridges
- Transverse ridges
- Oblique ridge
- Primary grooves
- Secondary grooves

D2 PATHOLOGY: WHAT DIRECTIONAL FORCES ARE DESTRUCTIVE TO AN RPD ABUTMENT?

- An RPD undergoes multiple stress types during function
- Cantilever forces are destructive to the abutment tooth
- A cantilever is a structure that is supported on one end and extends horizontally = distal extension of an RPD





Kreyer, R. (2015, October). Biomechanics of Removable Partial Dentures. Retrieved November 10, 2020, from https://idt.cdeworld.com/courses/4965-biomechanics-of-removable-partial-dentures Photos from: https://www.slideshare.net/AmalKaddah/02-forces-acting-on-rpd-134384074

D2 PATHOLOGY: WHAT DIRECTIONAL FORCES ARE DESTRUCTIVE TO AN RPD ABUTMENT?

- Support from the teeth and the edentulous ridge are not equal under occlusal loading (Hussain
- Problem: class I lever forces = extraction forces on abutment
 - Goal: class III lever forces
 - Achieved by: using a stress releasing clasp
- Problem: B/L forces = orthodontic-like movement
 - Goal: apically directed forces
 - Achieved by: a positive rest seat to direct forces apically

Hussain, K., Azzeghaibi, S., Tarakji, B., Rajan, S., Sirajuddin, S., & Prabhu, S. (2015, June 26). latrogenic Damage to the Periodontium Caused by Removable Prosthodontic Treatment Procedures: An Overview. Retrieved November 10, 2020, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4541304/ Photo from: https://www.slideshare.net/DentistSaidFada/05-rests-rest-seats





Clinical Question:

PICO FORMAT

P: I: C: O:

PICO FORMATTED QUESTION

CLINICAL BOTTOM LINE

SEARCH BACKGROUND



CHOICE OF ARTICLE I



Otto, Sven, et al. "Tooth Extraction in Patients Receiving Oral or Intravenous Bisphosphonate Administration: A Trigger for BRONJ Development?" *Journal of Cranio-Maxillofacial Surgery*, vol. 43, no. 6, 30 Mar. 2015, pp. 847–854., doi:10.1016/j.jcms.2015.03.039.



CHOICE OF ARTICLE2



*Strength of recommendation arising from the levels of evidence subject to the scope and quality of the article/research/methodology.

Saia, Giorgia, et al. "Occurrence of bisphosphonate-related osteonecrosis of the jaw after surgical tooth extraction." *Journal of Oral and Maxillofacial Surgery* 68.4 (2010): 797-804.



Choice of Article 3



Yarom, Noam, et al. "Medication-related osteonecrosis of the jaw: MASCC/ISOO/ASCO clinical practice guideline." Journal of Clinical Oncology (2019): JCO-19.

Summary of Research

☑ 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

RECOMMENDATION LEVEL

Strength of Recommendation Taxonomy (SORT) For Guidelines and Systematic Reviews See article J Evid Base Dent Pract 2007;147-150

- □ 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

BOTTOM LINE

QUESTIONS ?