It Starts at Home - Caries Management of a Patient with History of Substance Abuse

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Patient History

M64

CC: “My teeth are breaking. I want to fix my smile”

HCC: Has not been to the dentist in 10 years

DH: Poor Oral Hygiene. Became a patient at UoP in Summer 2020

SH: Hx of cocaine/heroin use. Quit in 1990.

Medical Hx

- Cardiovascular Problems:
  - **Aortic/Mitral Valve Replacements** (1990)
  - **Hx of Endocarditis** (from IV Drug use, 1990)
  - Rheumatic Fever
  - Heart Murmur
  - Mitral Valve Prolapse
  - Heart Arrhythmia (Digoxin)
  - **HTN** (Lisinopril, Carvedilol)
- Respiratory Conditions:
  - **Asthma** (Singulair)
- Thyroidectomy due to malignant thyroid cancer 2014 (Levothyroxine)
- Hep C: No viral load detected for over 20 years
- Patient is on **Coumadin**
- All: Hayfever

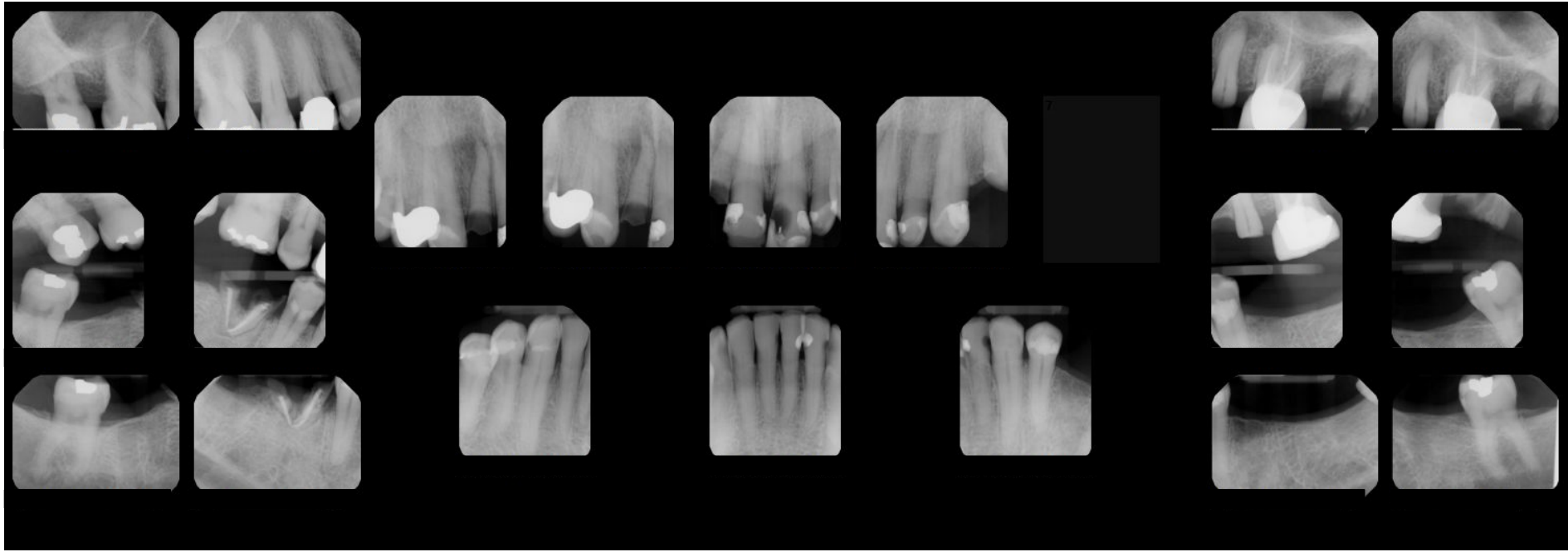
Effects of Patient's Medical History

- Anticoagulants
  - Medical Consult was on file prior to proceeding with EXT
  - Pacific Protocol: INR < 3.5 prior to EXT (For patients not taking anticoagulants, INR < 3.0)
- AHA Guidelines for Prophylaxis of patients at Highest Risk of Infective Endocarditis [1]
  - Prosthetic Heart Valves
  - Hx of Endocarditis
  - Heart Transplant with Valvulopathy
  - Congenital Heart Defects
    - Cyanotic Congenital Heart Defects
    - Congenital Heart Defects surgically repaired 6 months
    - Repaired congenital heart disease with residual defects close to prosthetic site
  - Patient takes 2000 mg amoxicillin 1 hour before invasive dental work

Pre-op Intraoral Pictures

Pre-Op Occlusal

Radiographs (FMX Early 2020)



Perio Chart and CRA

Perio Dx: Generalized Moderate Chronic Periodontitis, Stage II Grade B

PD: Generalized 3-5 mm

Localized bleeding on molars

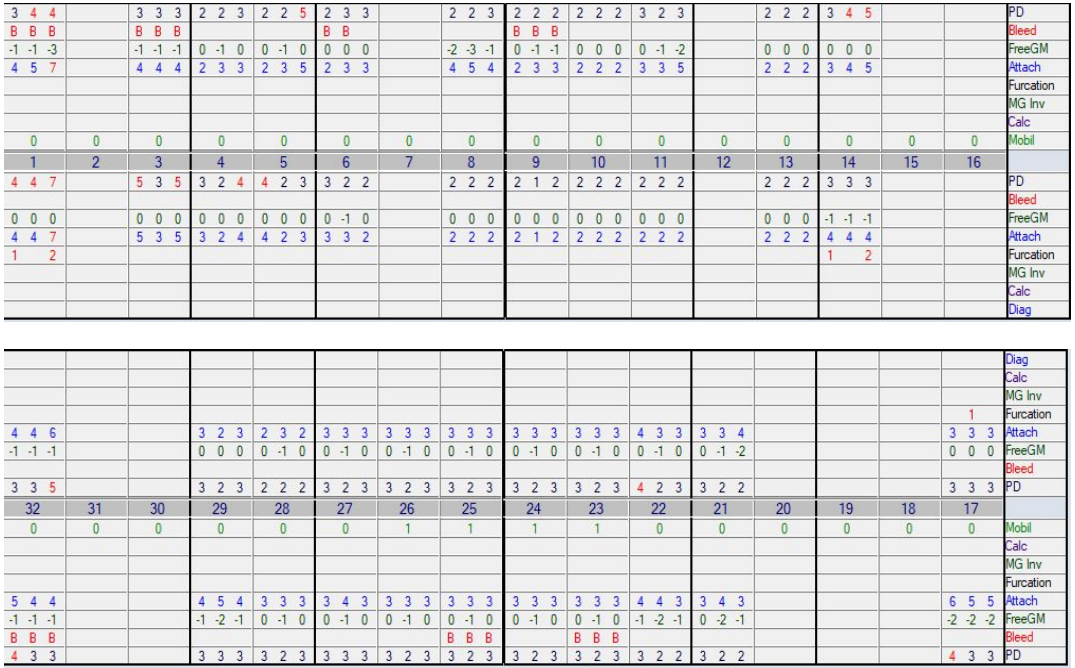
Plaque Index: 1.8 (poor)

CRA: High Caries Risk

- Visible Plaque
- ATP : 2840
- pH : ~ 7.0

Etiology:

- Bacterial plaque
- Poor OH: Pt only brushed 1x/day and doesn't floss
- Highly restored



Hard Tissue Exam

1-OBa, recurrent caries

2-missing

3-OLa, B cervical caries, D D2 lesion

4-M, D D2 lesion, B cervical caries

5-PFM, open distal margin

6- Fc, Open margin on distal of Lc

7- Root Tip

8- MLc, DLc, recurrent caries. Incisal Wear

9- Fractured into Pulp chamber

10- DLc, recurrent caries on MLc

11- recurrent caries on disto-lingual margin of DFLc

12- Missing

13- Root Tip, Parulis on Buccal

14- PFM, sealed margins

15-Missing

16- Root tips

17- M active brown spot lesion, open margin on Oa

18-20 missing

21-MBDc

22-F cervical caries

23-DFLc, cavitated lesion on DL

24- DFc, cavitated on MF

25- Cavitated on M

26- Attrition

27- F cervical caries

28- Bc

29- Open margin on Bc, DOB

30- Root tips

31- Missing

32- B cervical caries

Ideal Treatment Plan

Urgent:

- None

Disease Control:

- Limited SRP, OHI, CTX4
- EXT #1, 7, 9, 13, 16, 30

#3-Bc

#4-MOBc

#5-BU

#6-DLc

#8-BU

#10-MLc

#11-DFLc

#17-MOBc

#22-Fc

#23-DFLc

#24-MFc

#25-MLFc

#29-DOBc

#32-Bc

Restorative:

- **Implant #7, 9, 12, 13, 19, 20, 30**
- #5 - Zirconia crown
- **#8 - Emax crown**

Maintenance:

- 4 month perio maintenance
- CTX3
- CTX2

Alternative/Accepted Treatment Plan

Urgent:

- None

Disease Control:

- Limited SRP, OHI, CTX4
- EXT #1, 7, 9, 13, 16, 30

#3-Bc

#4-MOBc *

#5-BU *

#6-DLc

#8-MIDFLc

#10-MLc

#11-DFLc

#17-MOBc

#22-Fc

#23-DFLc

#24-MFc

#25-MLFc

#29-DOBc

#32-Bc

Restorative:

- **Upper and Lower RPD**
- #5 - Zirconia Crown *

Maintenance:

- 4 month perio maintenance
- CTX3
- CTX2

*Denotes tooth was determined non-restorable upon caries excavation and later extracted

How Did We Get Here

Initial Visit (2020)

Mid Treatment (2021)

A Refreshed Smile

Initial Visit (2020)

Denture Try-In (2021)

Where We’re Headed

Effects of Heroin Abuse on the Oral Environment

Brown et al. designed a cross-sectional study comparing dental disease prevalence between methamphetamine users and heroin users:

- Both groups of young adults had similar levels of dental disease [2]
  - Decayed-missing-filled surfaces (DMFS) average index exceeded 28
  - NHANES 1999-2004 reports a mean DMFS index of 13.4 in adults age 20-34 y.o.
- Heroin users also exhibited similar risk factors that contribute to rampant caries seen in “meth mouth” patients
  - Xerostomia
  - High consumption levels of refined carbohydrate diet
  - Poor oral hygiene habits

Clinical Significance: Patients who had history of illicit substance abuse may still be suffering the consequences of their past addiction. As oral healthcare professionals, we must understand the etiology of disease and prescribe modalities that help address the underlying issues.

Why FDPs are not the Solution

Retrospective cohort study by Schmidlin et al. looked at complication and failure rates of single unit crowns/implants in chronic perio patients (interproximal attachment loss of 5 mm in 30% of teeth):

- 168 single unit crowns/implants were followed for an average of 12 years [3]
  - Single crowns on vital teeth, endo-treated, endo post-core treated, and implants
  - After 10 years, chance of vital teeth (56) remain free of any failure or complication was 89.3% , 85.8% endo (34), 75.9% for post and core (39), and 66.2% (95% CI 45.1–80.7) for implants (39)

Clinical Significance: Implant restorations are not suitable for this patient who has not stabilized his caries balance and has chronic periodontitis. Implants in this patient will be more susceptible to peri-implantitis and other complications.

Case Management with Direct Restorations

5 year cohort study done by Frese et al. on recontouring anatomy and diastemas with composite

- 176 composite buildup restorations in 58 patients showed an 84.6% survival rate[4]
  - Survival is defined as retained restoration with defects (discoloration, margin discrepancy) that can be repaired

Demarco et al. conducted a systematic review that evaluated the survivability of anterior composite restorations across 41 studies (long term 3+ years follow-up)[5]:

- Across 1821 restorations (Class III, Class IV, Composite Veneers, Composite Buildups), annual failure rate varied from 0% to 4.1% and survival rates varied 53.4% to 100%
  - Overall anterior composite restorations demonstrate good clinical performance with class III having the lowest annual failure rate
  - Unlike posterior direct restoration failures which fail due to fracture or recurrent caries, anterior failures are due to esthetic demands, trauma fracture

Clinical Significance: Minimally invasive approach with esthetic composite buildups are a good alternative to fixed dental prostheses. Some maintenance may be needed, but composite repairs can even prolong restoration survival and, ultimately, the life of the tooth. A conservative approach can serve as good interim options for high caries risk patients while they continue to work on improving home care.

References

1. “Infective Endocarditis.” American Heart Association, www.heart.org/en/health-topics/infective-endocarditis.
2. Brown, Carolyn, et al. “Dental Disease Prevalence among Methamphetamine and Heroin Users in an Urban Setting.” *The Journal of the American Dental Association*, vol. 143, no. 9, 2012, pp. 992–1001., doi:10.14219/jada.archive.2012.0326.
3. Schmidlin K, Schnell N, Steiner S, Salvi GE, Pjetursson B, Matuliene G, Zwahlen M, Brägger U, Lang NP. Complication and failure rates in patients treated for chronic periodontitis and restored with single crowns on teeth and/or implants. *Clin. Oral Impl. Res*. 21, 2010; 550–557.
4. Frese C, Schiller P, Staehle HJ, Wolff D (2013) Recontouring teeth and closing diastemas with direct composite buildups: a 5-year follow-up. J Dent 41:979–985. https://doi.org/10.1016/j.jdent.2013.08.009
5. Demarco FF, Collares K, Coelho-de-Souza FH, Correa MB, Cenci MS, Moraes RR, Opdam NJ (2015) Anterior composite restorations: a systematic review on long-term survival and reasons for failure. Dent Mater 31:1214–1224. https://doi.org/10.1016/j.dental.2015.07.005

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