

Maryland Bridge: The Last Hope

Casey Bravo

Patient Information

- Thomas
- 70 year old male
- Retired, lives in SF with partner
- First presented to UoP clinic in 2014
- Non smoker, non drinker



Chief Concern

“My lower tooth broke off and I am embarrassed with how it looks”

HCC: Patient stated that the tooth broke off while eating dinner. No pain reported

Medical History

- HIV+ - Viral load undetectable, CD4 - 607, platelets - 253,000
- Born with Dextrocardia (heart on right), surgery in 1956 to correct, M valve repair 2007 (w/o prosthetic) - no prophylaxis needed per physician and patient
- 2015 car accident - lead to arrhythmias
 - Ablation 2016
- Stroke, TSA 2015 - no further complications
- Meniscus repair 4/2018 - no complications
- Glaucoma corrected 2015
- Kidney stones removed 12/2014, 1/2016 w/o complications
- Hospitalized 7/2018 due to uncontrolled bleeding after extraction of #26
- Hypertension, A fib, migraines, occasional vertigo
- INR 2.6. Range from 2.0 - 4.5

Abs CD 4 Helper	359 - 1,519 /uL	607
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Platelets	150 - 450 x10E3/uL	253
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Comment: HIV-1 RNA not detected

Dental-Medical Considerations

- UCSF anticoagulation department - consult for stopping Warfarin due to previous INR and hospitalization history
- Generally, patients should not pause their warfarin
- Patient cannot be supine for long periods of time due to vertigo and back pain
- Hx Orthostatic hypotension
- Hx of severe bleeding following extraction requiring hospitalization

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Family History and Allergies

- Diabetes - Grandparents and aunts
 - Hypertension - Grandparents and aunts
 - Stomach cancer - Father and Grandfather
 - Esophageal cancer - Father
-
- Penicillin - rash
 - Sulfa drugs - rash
 - Codeine - rash

Medications

Coumadin - Anticoagulant- 2.5 mg 1x day

Tivicay - Antiretroviral - 50 mg 1x day

Lovastatin - Hyperlipidemia - 40 mg 1x day

Descovy - Antiretroviral - 200 mg 1x day

Flecainide - Antiarrhythmic - 300 mg 2x day

Imipramine Hcl - Antidepressant - 6.25 mg 1x day

Clonazepam - anxiolytic - 1mg/day at night

Mirtazapine - Antidepressant - 30 mg 1x day

Cymbalta - Antidepressant - 60 mg 2x day

Carvedilol - Antihypertensive BB - 5.125 mg 2x day

Flomax - Prostate hyperplasia - .4 mg 1x day

Amlodipine - Antihypertensive - 2.5 mg 1x day

Drug Interactions

Serious - Use Alternative

- duloxetine and imipramine - both increase serotonin levels. Avoid or Use Alternate Drug.
- mirtazapine and flecainide both increase QT interval. Avoid or Use Alternate Drug.
- mirtazapine and imipramine both increase QT interval. Avoid or Use Alternate Drug.

Monitor Closely

- duloxetine, warfarin. Either increases effects of the other by pharmacodynamic synergism. Use Caution/Monitor. Serotonin release by platelets plays an important role in hemostasis. (SSRIs and SNRIs may increase anticoagulation effect of warfarin)
- duloxetine and mirtazapine both increase serotonin levels
- imipramine and mirtazapine both increase serotonin levels
- duloxetine will increase the level or effect of imipramine by affecting hepatic enzyme CYP2D6 metabolism

Drug Interactions Continued

- carvedilol and amlodipine both increase anti-hypertensive channel blocking. Modify Therapy/Monitor Closely
- imipramine and flecainide both increase QTc interval. Modify Therapy/Monitor Closely
- clonazepam and imipramine both increase sedation
- clonazepam and mirtazapine both increase sedation
- imipramine and mirtazapine both increase sedation
- duloxetine increases levels of tamsulosin by affecting hepatic enzyme CYP2D6 metabolism.

Use Caution/Monitor

- imipramine increases levels of tamsulosin by affecting hepatic enzyme CYP2D6 metabolism
- lovastatin increases effects of warfarin by anticoagulation. Dosage adjustment of anticoagulant based in INR and clinical response may be needed

<https://reference.medscape.com/drug-interactionchecker>

SDOH

- Economic Stability - fairly reliant on CARE program
- Did not proceed with ortho 8 years ago due to finances
- Educated with high health care IQ
- Dental IQ is moderate
- Drives to or dropped off at the school by partner

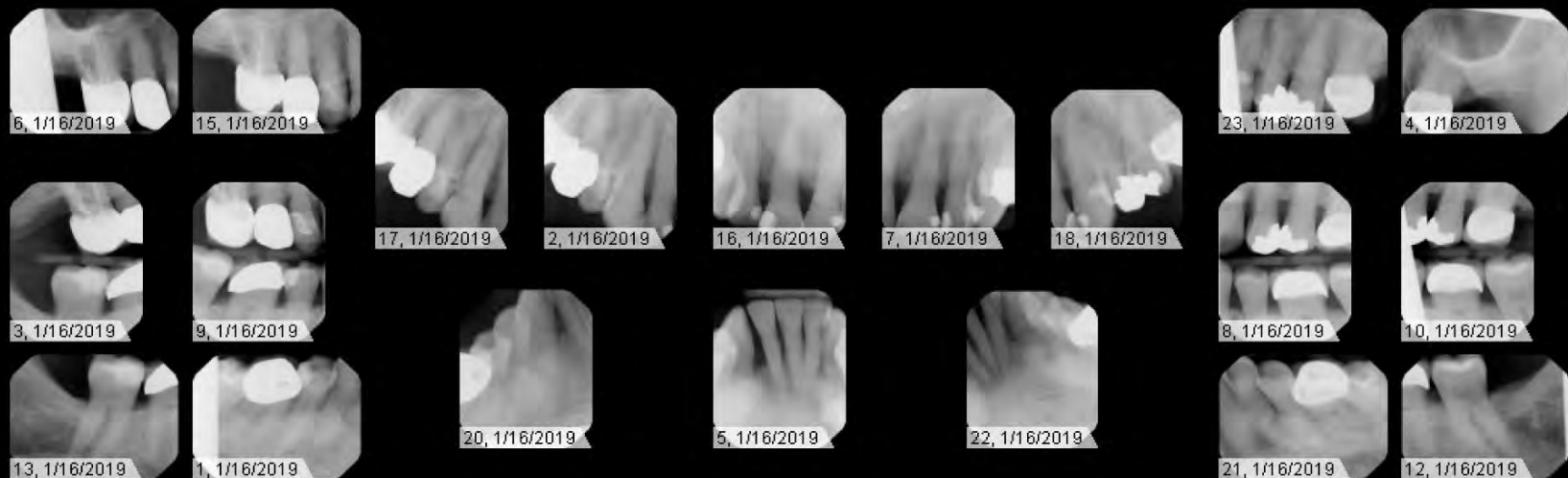
Dental History

- Heavily restored
- Never started ortho due to finances
- Regularly comes for recalls

Vitals, IOE, EOE, TMJ

- BP at last appt 5/25/2022 125/85, Pulse 55, 146 lbs
- ASA III
- CLAD, trismus, masses, pain on palpation all negative
- TMJ unremarkable
- FOM, Tongue, Palate, Mucosa all unremarkable
- Bilateral buccal exostoses #22, #26
- Bilateral lingual Tori

FMX - 2019

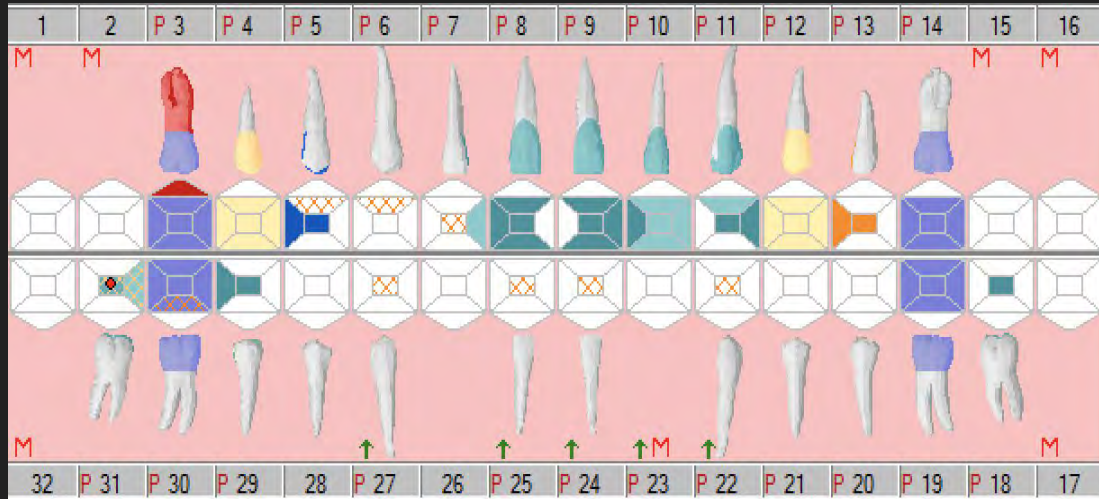


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Hard Tissue Findings

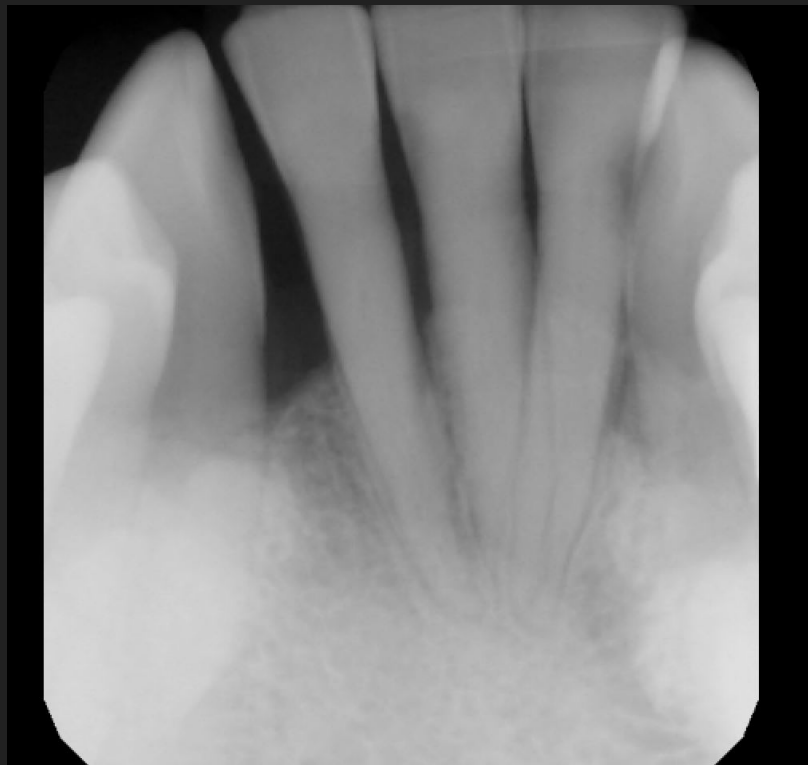
- Unrestorable #23 due to large decay



HTE:

- 1 missing
- 2 missing
- 3 ret, pfm margins sound
- 4 emax margins sound abfraction
- 5 DOc margins sound,
- 6
- 7 Mc margins sound, abfraction
- 8 DIFLc margins sound
- 9 DIFLc margins sound
- 10 MIDFLc margins sound
- 11 DILc margins sound
- 12 gold inlay— decay under gingival margin—>, porcelain onlay or crown
- 13 Gold inlay, watch margins
- 14 pfm margins sound
- 15 missing
- 16 missing
- 17 Oc margins sound
- 18 pfm margins sound
- 19
- 20
- 21
- 22
- 23 unrestorable due to large decay
- 24
- 25
- 26
- 27
- 28
- 29 DOc margins sound
- 30 pfm margins sound
- 31 MOc margins sound
- 32 missing

PAs of Lower Anteriors 2019 and 2021



Photos



Perio

- Generalized Moderate Chronic Periodontitis with Localized Severe Chronic Periodontitis of lower anteriors
- Stage 3 Grade B
- 4 month recall spt
- Etiology - bacterial plaque, calculus, traumatic occlusion
- Prognosis - poor for lower anteriors, all other teeth are guarded to fair

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CRA

- Xerostomic, ATP - 6750, Exposed roots, Moderate-Heavy plaque, Salivary pH of 5.5-6
- Extreme Caries Risk

- Protective Factors
 - Water w/ fluoride
 - Brushes with 5000 ppm toothpaste 2x day
 - Flosses a few times a week

Assessment

- ASA III
- Perio Diagnosis: Generalized Moderate Chronic Periodontitis with Localized Severe Chronic Periodontitis of lower anteriors: Stage 3 Grade B
- Caries Diagnosis: Extreme risk
- Restorative: Unrestorable #23, restorable #12
 - #23 cannot be replaced alone due to restorative difficulties
- Occlusal Diagnosis: Severe deep bite, traumatic occlusion

Ideal Tx Plan

Urgent

Disease Control

1. Perio maintenance
2. 5000 ppm toothpaste
3. CTX 4
4. Boost Spray
5. Extraction #23

Reconstructive

1. CBCT
2. Ortho - uprighting of canines and incisors
3. Veneers/Composite veneers #24, #25

Maintenance

1. 4 month Perio maintenance
2. 5000 ppm toothpaste
3. CTX 3, Boost Spray
4. Xylitol Gum

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Alternative Tx Plan 1

Urgent

Disease Control

1. Perio maintenance
2. 5000 ppm toothpaste
3. CTX 4
4. Boost spray
5. Extraction #23,#24,#25

Reconstructive

1. CBCT
2. Ortho - uprighting of canines
3. 3-4 Unit Bridge Canine - Canine

Maintenance

1. 4 month Perio maintenance
2. 5000 ppm toothpaste
3. CTX 3, Boost spray
4. Xylitol Gum

- Abdelkarim A. (2019). Cone-Beam Computed Tomography in Orthodontics. *Dentistry journal*, 7(3), 89. <https://doi.org/10.3390/dj7030089>
- Malament, K. A., Natto, Z. S., Thompson, V., Rekow, D., Eckert, S., & Weber, H. P. (2019). Ten-year survival of pressed, acid-etched e.max lithium disilicate monolithic and bilayered complete-coverage restorations: Performance and outcomes as a function of tooth position and age. *The Journal of prosthetic dentistry*, 121(5), 782–790. <https://doi.org/10.1016/j.prosdent.2018.11.024>
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Alternative Tx Plan 2

Urgent

Disease Control

1. Perio maintenance
2. 5000 ppm toothpaste
3. CTX 4
4. Boost spray
5. Extraction #23,#24,#25

Reconstructive

1. Resin or Cast Metal RPD

Maintenance

1. 4 month Perio maintenance
2. 5000 ppm toothpaste
3. CTX 3, Boost spray
4. Xylitol Gum

- Malament, K. A., Natto, Z. S., Thompson, V., Rekow, D., Eckert, S., & Weber, H. P. (2019). Ten-year survival of pressed, acid-etched e.max lithium disilicate monolithic and bilayered complete-coverage restorations: Performance and outcomes as a function of tooth position and age. *The Journal of prosthetic dentistry*, 121(5), 782–790. <https://doi.org/10.1016/j.prosdent.2018.11.024>
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Alternative Tx Plan 3

Urgent

Disease Control

1. Perio maintenance
2. 5000 ppm toothpaste
3. CTX 4
4. Boost spray
5. Extraction #23

Reconstructive

1. Implant #23

Maintenance

1. 4 month Perio maintenance
2. 5000 ppm toothpaste
3. CTX 3, Boost spray
4. Xylitol Gum

- Malament, K. A., Natto, Z. S., Thompson, V., Rekow, D., Eckert, S., & Weber, H. P. (2019). Ten-year survival of pressed, acid-etched e.max lithium disilicate monolithic and bilayered complete-coverage restorations: Performance and outcomes as a function of tooth position and age. *The Journal of prosthetic dentistry*, 121(5), 782–790. <https://doi.org/10.1016/j.prosdent.2018.11.024>
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Alternative Tx Plan 4

Urgent

Disease Control

1. Perio maintenance
2. 5000 ppm toothpaste
3. CTX 4
4. Boost spray
5. Extraction #23

Reconstructive

1. Maryland Bridge #22-#23

Maintenance

1. 4 month Perio maintenance
2. 5000 ppm toothpaste
3. CTX 3, Boost spray
4. Xylitol Gum

- Malament, K. A., Natto, Z. S., Thompson, V., Rekow, D., Eckert, S., & Weber, H. P. (2019). Ten-year survival of pressed, acid-etched e.max lithium disilicate monolithic and bilayered complete-coverage restorations: Performance and outcomes as a function of tooth position and age. *The Journal of prosthetic dentistry*, 121(5), 782–790. <https://doi.org/10.1016/j.prosdent.2018.11.024>
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Modifications for SDOH

- Extremely detailed discussions with patient on risks, benefits, and alternatives for tx plan
- Less expensive options from ideal treatment plan
- Payment plan with ortho if viable option
- Enquired about adjustment on behalf of the patient due to missed decay in 2019 (denied on 5/27/22)

Fractured #23



Extraction #23

- Root tip extracted in main clinic with permission of OS faculty
- Routine delivery
- Patient was not taken off Coumadin due to timing of fracture
- Post op instructions including use of tea bags to control persistent bleeding

- Deng, L., Qi, Y., Liu, Z., Xi, Y., & Xue, W. (2019). Effect of tannic acid on blood components and functions. *Colloids and surfaces. B, Biointerfaces*, 184, 110505. <https://doi.org/10.1016/j.colsurfb.2019.110505>
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CBCT Images



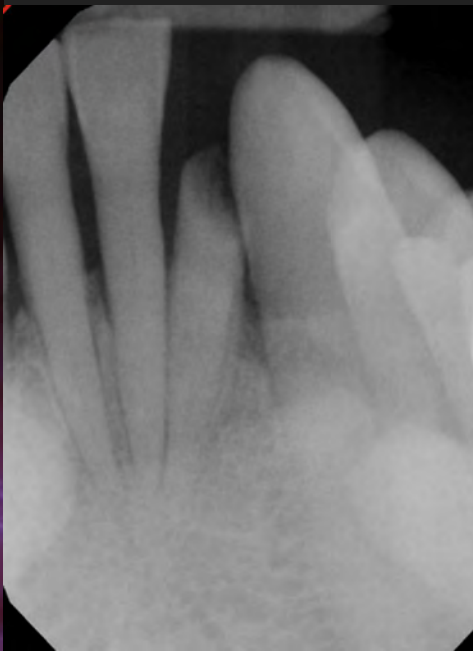
Ortho and Implant Evaluation

- CBCT shows severe periodontitis of lower anteriors and generalized moderate periodontitis of dentition
 - Extreme deep bite
 - Shows thin ridge at site #23
 - Ortho concern is bone width where canines will be moved
 - Limiting space between #22 and #24
-
- Bayome, M., Park, J. H., Han, S. H., Baek, S. H., Sameshima, G. T., & Kook, Y. A. (2013). Evaluation of dental and basal arch forms using cone-beam CT and 3D virtual models of normal occlusion. *Australian orthodontic journal*, 29(1), 43–51.
 - Hicks, D., Melkers, M., Barna, J., Isett, K. R., & Gilbert, G. H. (2019). Comparison of the accuracy of CBCT effective radiation dose information in peer-reviewed journals and dental media. *General dentistry*, 67(3), 38–46.
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The Last Hope

- Maryland Bridge determined to be the only viable option
- Patient given RBAs and accepted tx plan

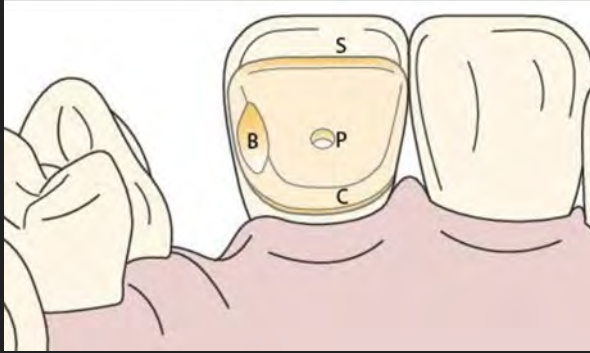
Pre EXT



Post EXT



Preparation



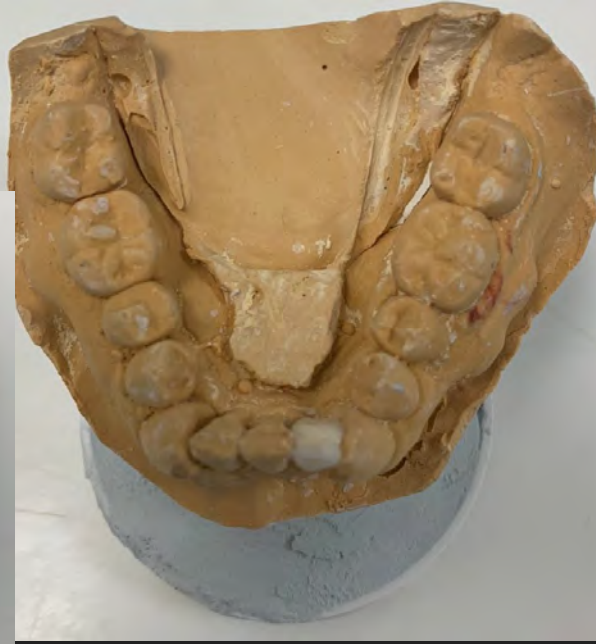
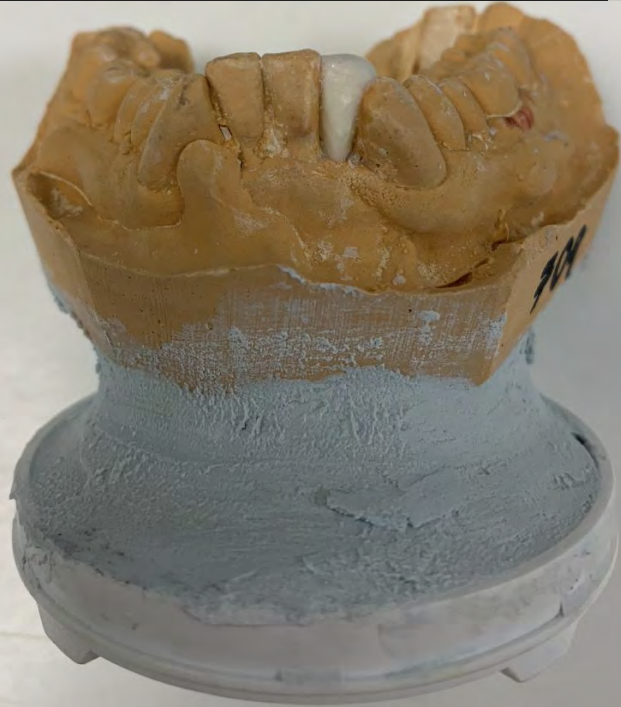
box of approximately $2 \times 2 \times 0.5$ mm on Mesial

.5mm Margins

Pin hole .5 mm



Wax Up #22-#23

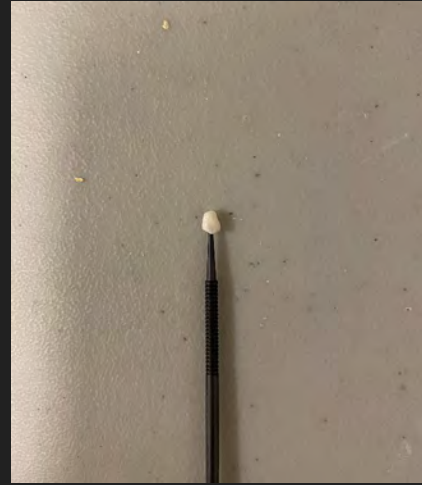


Master Cast



Delivery

Applicator made of a microbrush
and packable composite



Kerr NX3 Nexy – Dual Cure w/ prelude system

- sandblasted intaglio SilJet, cleaned with air
- Applied silane to internal surface of porcelain for 60 sec, air dried
- Prelude Adhesive (black) to restoration intaglio
- Cleaned tooth surface with pumice and water
- On tooth surface,
 - a. Selective etch enamel, Primer, Adhesive, Link

Delivery





5 Months post op Pt Report

“The procedure was a success as far as I can tell. No problems at all, still sturdy and no mobility. You did a great job, and looks nice too!”

Pt to be seen in May w/ second year student for maintenance

Conclusions

- Communication between specialties allows for best practice
- Creativity has to play a big role
- Patient trust must be established early
- Experience brings forth positive outcomes
- Confidence yields results

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