

Rebuilding confidence through a smile: Implant and Veneer Rehabilitation



Max Kazantcev

DDS Candidate, Class of 2023

University of the Pacific, Arthur A. Dugoni School of Dentistry



Patient Overview



Male	70 years old	CC: “want to have teeth in order to chew and smile again”
MH	Hypertension	Does not monitor his BP regularly. Takes Lisinopril and Hydrochlorothiazide daily
	Hypothyroidism	Takes Levothyroxine daily
	Intermittent Mild Asthma	Has Albuterol inhaler, hasn’t used it in years.
	Neuropathies	Takes Cyclobenzaprine (Flexeril) 10 mg as needed
	Glaucoma	Prostaglandin eye drops (Latanoprost), 1 x day
Allergies	- Animals, -Seasonal Allergies, - Erythromycin, - Metronidazole	
SH	Retired, used to own a dental supply company, used to be a smoker for 20 + years	



Considerations for patients based on their attitude towards treatment

Original M.M. House classification :

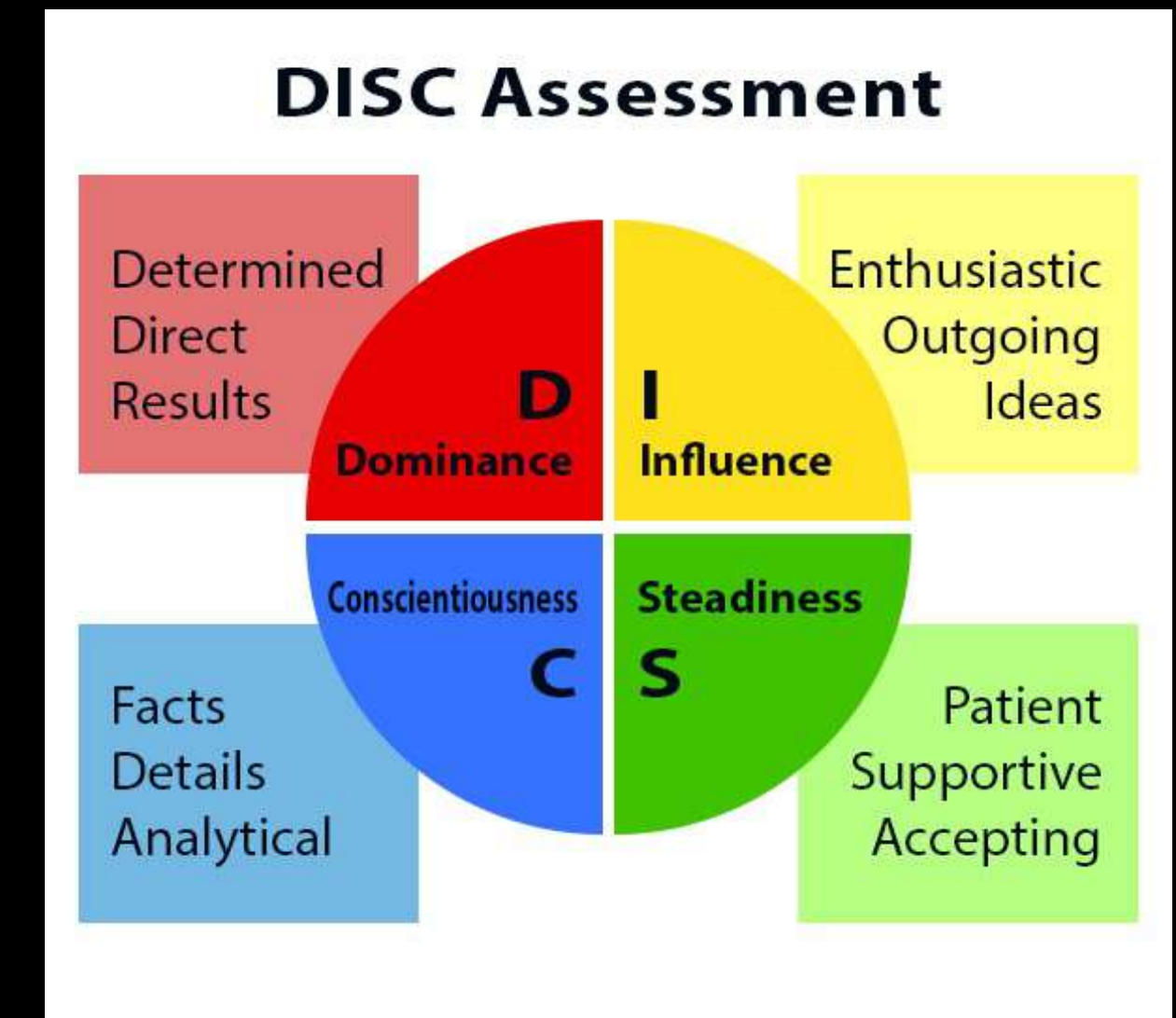
- 1) Philosophical Mind 2) **Exacting Mind** 3) Hysterical Mind 4) Indifferent Mind

Simon Gamer et al. classification :

- patient engagement level to dentist and treatment from totally engaged (+++++) to disengaged (+)
- patient's willingness to trust a dentist (+++++) to intense reluctance to any recommendations from a dentist (+)

DISC system :

D (“dominant”), **I** (“influencing”), **S** (“steady”), **C** (“cautious”)



De Van stated that we should meet the mind of patient before we meet the mouth of patient. This statement emphasizes the importance of understanding patient's mental attitude due to its effect to treatment procedure and the result.^{1,2}

ORIGINAL RESEARCH
Journal of Dentomaxillofacial Science (J Dentomaxillofac Sci) August 2020, Volume 5, Number 2: 69-73
P-ISSN.2503-0817, E-ISSN.2503-0825

Patient mental attitude: a systematic review

Eri H. Jubhari^{1*}, Kezia Rachellea^{2*}

1) Choudhary et al., Correlation of patient's mental attitude with age,sex, and educational level. European Journal of Dentistry, March 2016,10(1): 23-28
2) Mark Scarbecz, Using DISC system to motivate patients, Journal of American Dental Association, March 2007, Revised 2020, 138(3): 381-5.

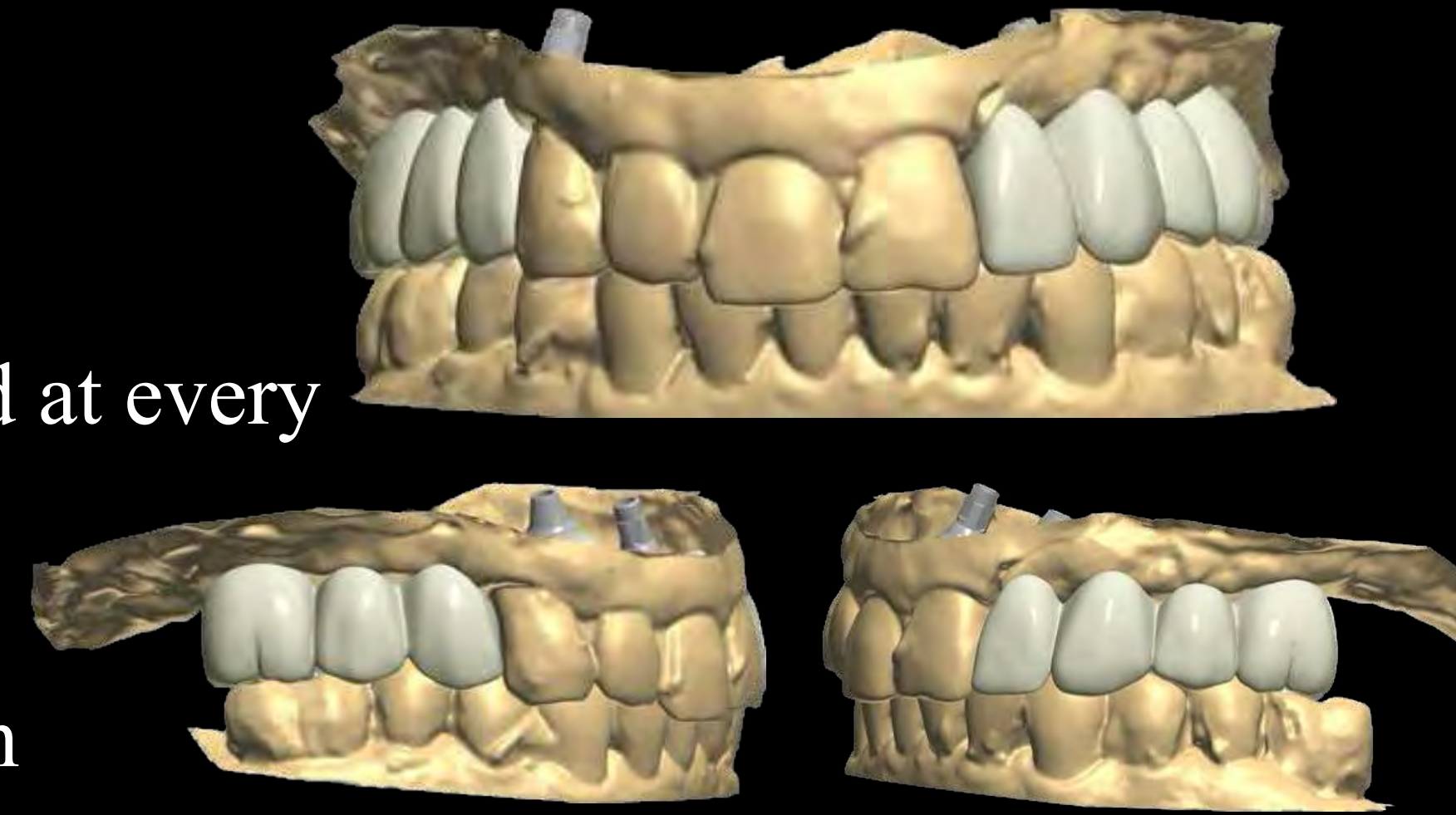
Patient Specific Considerations



Exacting patients want a guarantee of the treatment, demand more with no additional fees, hard to satisfy



- Provide patients with specific timeframe and treatment to be rendered at every appointment
- Setting realistic expectations
- Pretreatment confirmation letter, wax up, digital smile design
- Transition patients into co-partners
- Build relationship based on trust and clear communication
- Deliver the highest quality of care possible
- Detailed treatment planning needed to define a functional and esthetic prosthetic rehabilitation *1



Once a patient is satisfied with the treatment, they can be clinician's greatest supporter

1) Miranda et al., Esthetic Challenges in Rehabilitating the Anterior Maxilla, Operative Dentistry J, Feb 2016, 41(1): 2-7

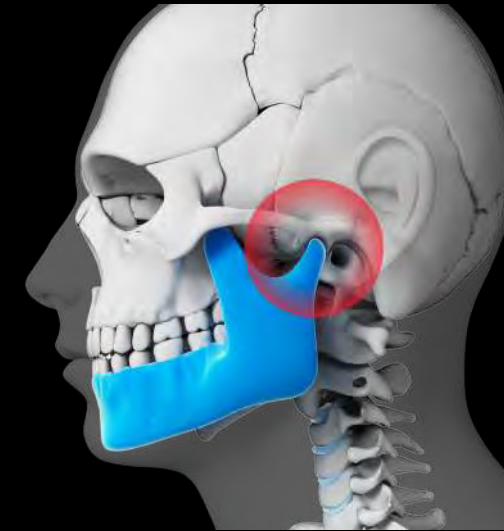
ODTP



EOE



Seborrheic keratosis, otherwise negative lymphadenopathy, no asymmetry, no masses



TMJ

No pain, popping, clicking, or deviation

IOE



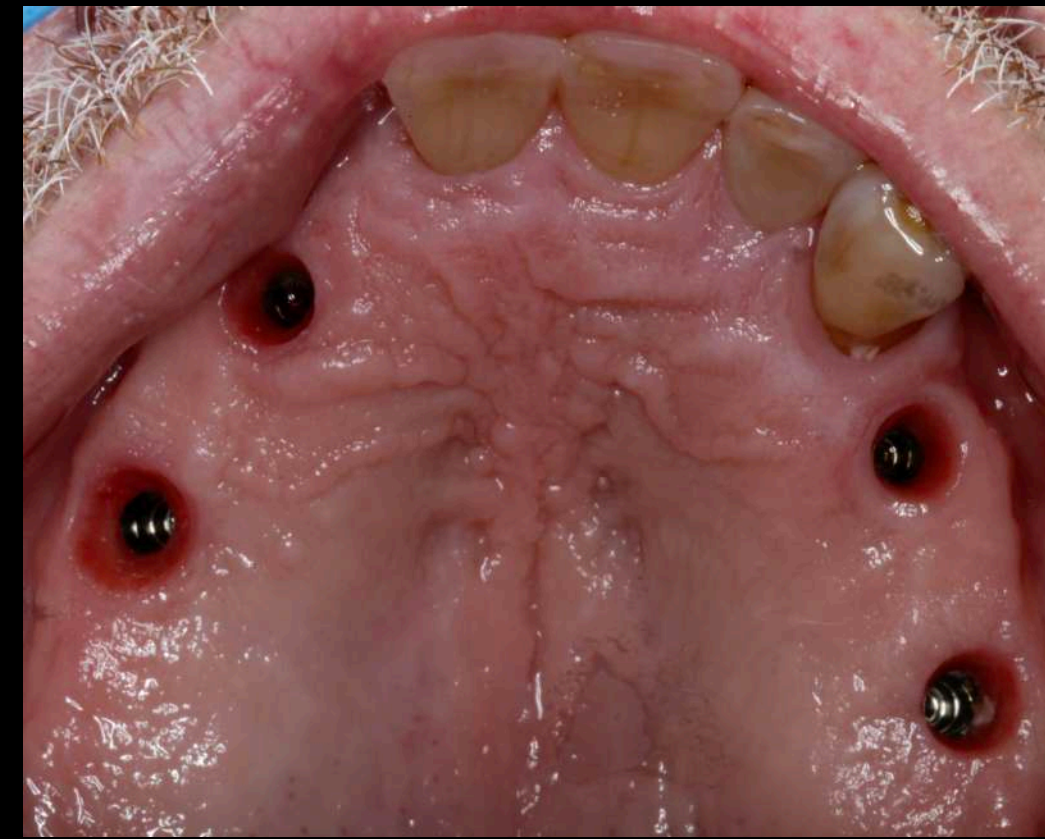
Tongue, floor of the mouth, palate, mucosa otherwise non-remarkable



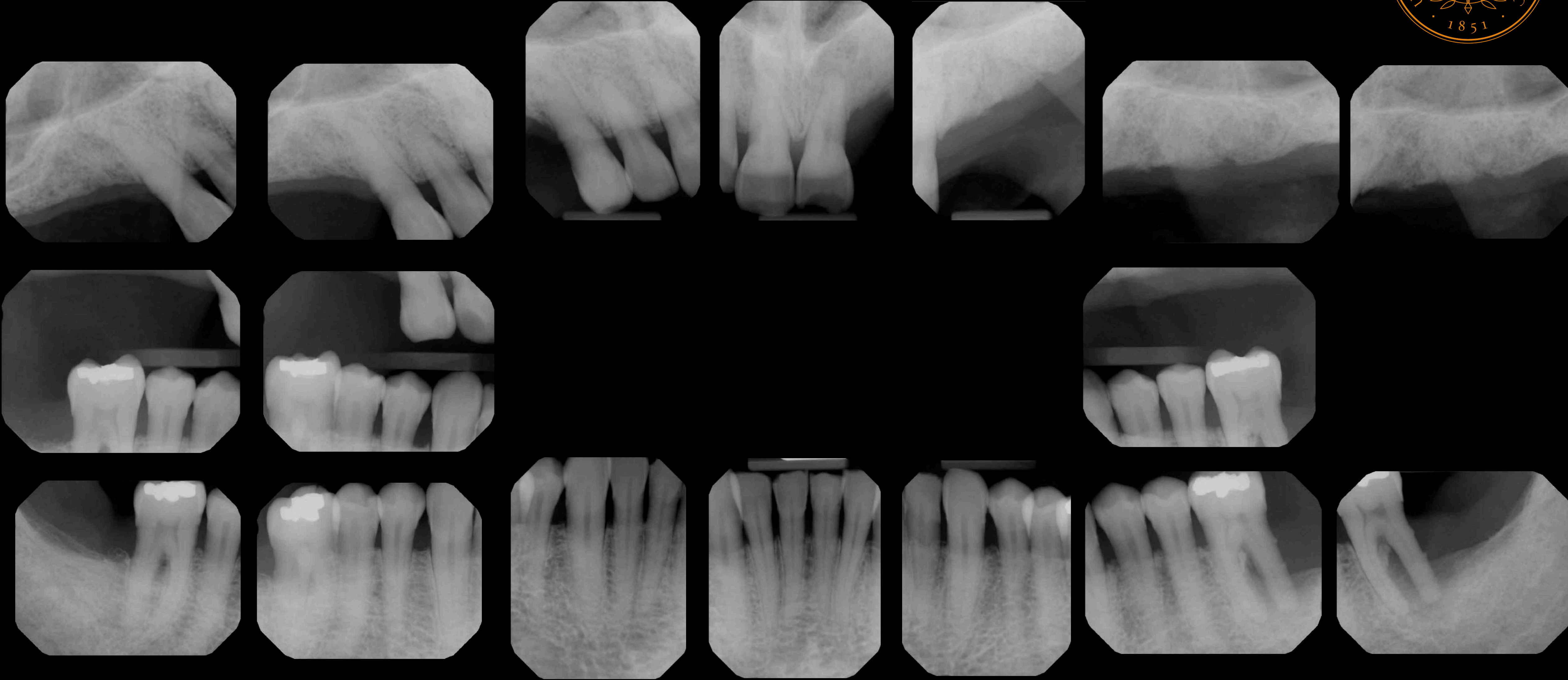
Gingiva

Erythematous around #19, #30, slight generalized BOP

Pre-Op Photos



FMX - 8/2021



Pano - 4/2022



Periodontal Findings

Diag																
Calc																
MG Inv																
Furcation			2											2		
Attach			3 3 3	3 2 3	3 2 3	2 1 2	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	3 1 2	1 1 1	1 1 1	4 4 4	
FreeGM			0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	-1 -1 -1	-1 -1 -1	-1 -1 -1	-1 0 0	1 0 1	1 0 1	1 0 1	-1 -1 -1	
Bleed																
PD			3 3 3	3 2 3	3 2 3	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	3 3 3	
Lingual																
	M	M													M	M
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Facial																
	M	M													M	M
Mobil			0	0	0	0	0	0	0	0	0	0	0	0		
Calc																
MG Inv																
Furcation			2											3		
Attach			9 11 6	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	4 3 4	3 3 3	6 6 10		
FreeGM			-3 -3 -3	-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 -1 -1	-1 -1 -1	-3 -3 -3	
Bleed																
PD			6 8 3	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	2 1 2	3 2 3	2 2 2	3 3 7		

Periodontal Findings



Assessment

- Generalized moderate chronic periodontitis with localized severe
- Probing depths 2-4 mm overall and PD 5-8 mm on #19,30
- CAL 2-3 mm overall, localized 4-5 mm
- Plaque Index 1 (fair)
- Mobility class I #19, #30, Furcation class III #19, class II #30

Periodontal Prognosis

- Overall good with strict periodontal maintenance
- Poor prognosis for #19,30 due to significant alveolar bone loss, mobility, furcation involvement and PD in the range 5-8 mm

Etiology

- Bacterial plaque
- Calculus
- Smoking for > 20 years *1
- Inconsistent oral hygiene
- Genetic factor

Diagnosis

- Stage 3, Grade B, Molar pattern

*1 [Review](#) > [Clin Oral Implants Res.](#) 2015 Sep;26 Suppl 11:15-44. doi: 10.1111/clr.12636.

Risk indicators for peri-implantitis. A narrative review

[Stefan Renvert](#)^{1 2 3}, [Marc Quirynen](#)⁴

Affiliations + expand

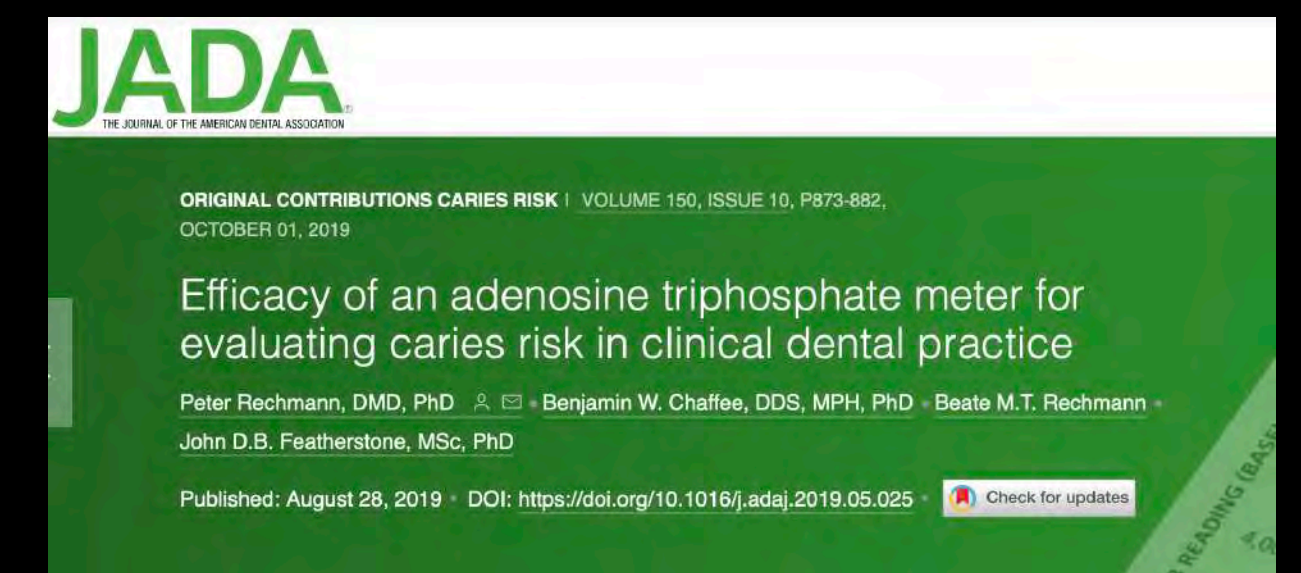
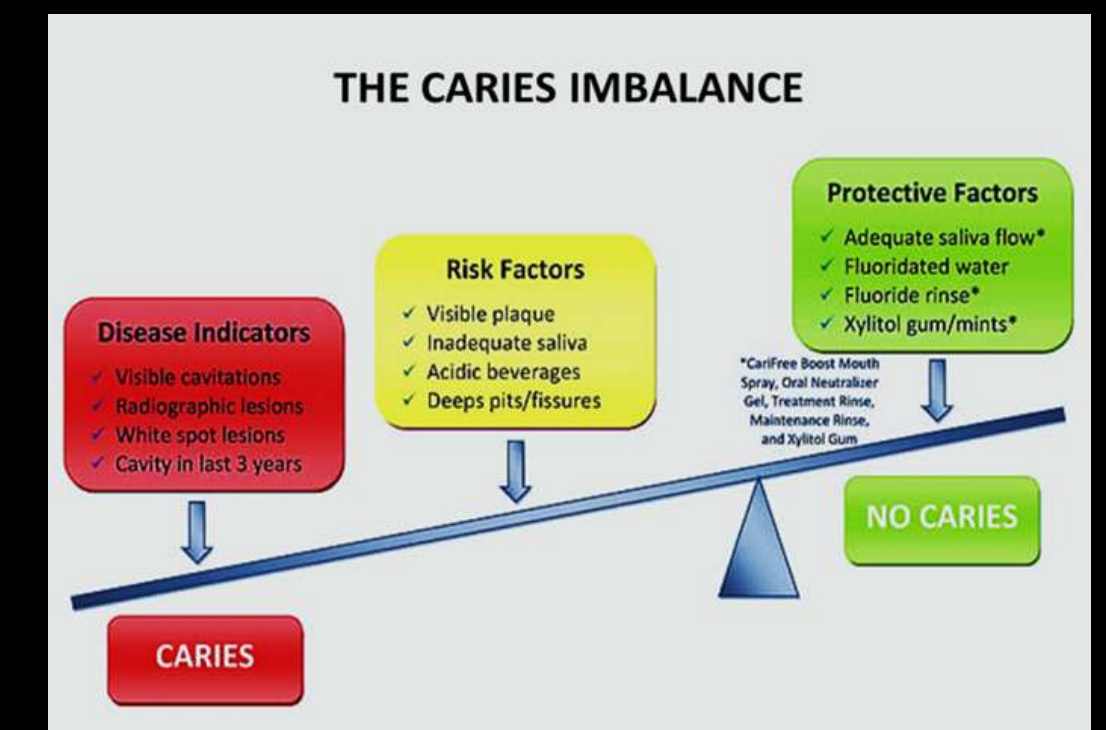
PMID: 26385619 DOI: [10.1111/clr.12636](#)



- Individuals with a history of periodontitis and smoking have increased risk of developing periodontitis.
- Implant survival rate (96%/5yrs.) with **STRICT** maintenance care and lower risk of developing peri-implantitis

Caries Risk Assessment

CRA	<ul style="list-style-type: none"> ATP 1250 *1
Etiology	<ul style="list-style-type: none"> Inconsistent OH Diet high in processed carbohydrates Medication related xerostomia
Diagnosis	<ul style="list-style-type: none"> Low to moderate Caries Risk
Prognosis	<ul style="list-style-type: none"> Overall good with appropriate recall maitanance



1) Peter Rechmann, DMD, PhD et al. "Efficacy of an adenosine triphosphate meter for evaluating caries risk in clinical dental practice" August 28, 2019, [https://jada.ada.org/article/S0002-8177\(19\)30407-6/fulltext](https://jada.ada.org/article/S0002-8177(19)30407-6/fulltext)

Hard Tissue Findings



Findings

Maxilla:

- #1, 2 - Missing
- #3 - BLT, 4.1 mm RC, 8 mm Straumann implant
- #4- Missing
- #5 - BLT, 4.1 mm RC, 8 mm Straumann implant
- #6 - Discolored, L erosive tooth wear, Score 1 (BEWE *1)
- #7 - L erosive tooth wear, Score 1 (BEWE)
- #8 - L erosive tooth wear, Score 1 (BEWE)
- #9 - I chip, L erosive tooth wear, Score 1 (BEWE)
- #10 - Missing
- #11 - BLT, 4.1 mm RC, 8 mm Straumann implant
- #12 - Missing
- #13 -BLT, 4.1 mm RC, 8 mm Straumann implant
- #14,15,16 - Missing

Mandible:

- #17, 18 - Missing
- #19 - O amalgam
- #20,21,22 - NSF
- #23,24,25,26 - I chip
- #27,28,29 - NSF
- #30 - O amalgam
- #31,32 - Missing



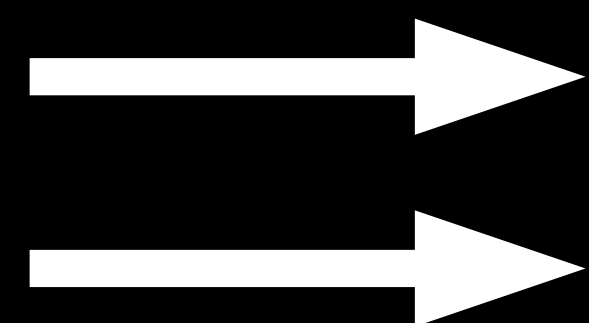
1) Bartlett et al., Basic Erosive Wear Examination (BEWE): a new scoring system for scientific and clinical needs, Clin Oral Investing J, March 2008, pp.65-68

Ideal Treatment Plan



2	Disease Control	<ul style="list-style-type: none"> ● Limited SRP, ITE in 4-6 weeks; ● OHI, CTX 3 maintenance rinse ● EXT #19,30 ● GBR #19,30 (bone graft, non-resorbable membranes)
3	Reconstructive	<ul style="list-style-type: none"> ● Implant FDPs #3-5, #10-13 ● Implant placement #19,30 ● Implant crowns #19,30 ● Direct composite restorations #23,24,25,26 ● Indirect ceramic restoration #6,7,8,9 ● Whitening of lower teeth
4	Maintenance	<ul style="list-style-type: none"> ● SPT every 4 month and CAMBRA products PRN ● Occlusal Guard

It is mandatory to obtain **informed consent** prior to every invasive and irreversible procedures. All dental providers have an obligation to adequately inform their patients before providing dental care.*¹



Cost \$21,492 + \$6,012 (Completed prior) = \$ 27,504

Estimated duration of Tx: 8 month

[J Family Med Prim Care](#), 2014 Jan-Mar; 3(1): 68-71.
doi: [10.4103/2249-4863.130284](#)

PMCID: PMC4005206
PMID: [24791241](#)

Informed Consent: Corner Stone in Ethical Medical and Dental Practice

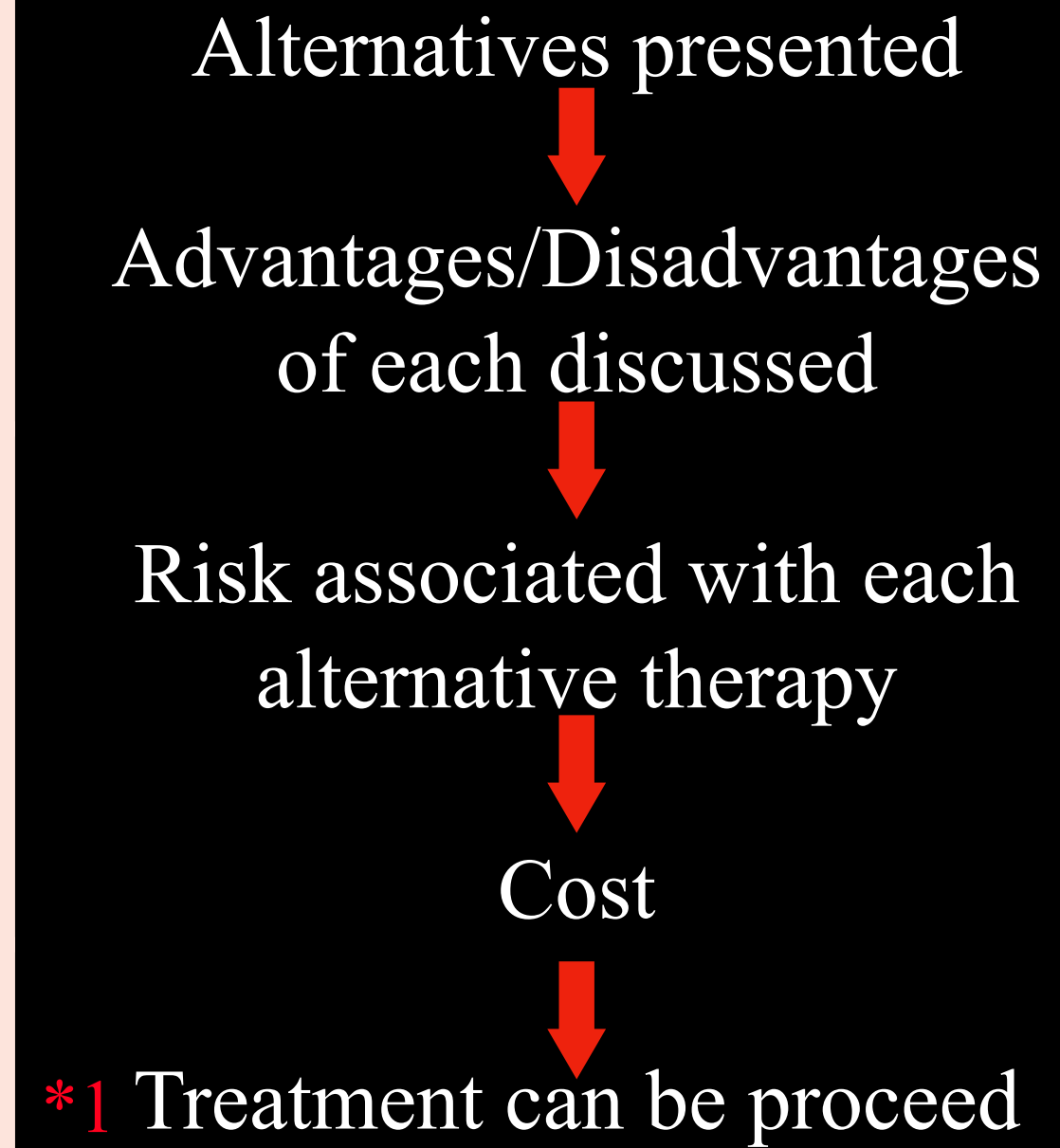
[Heena Kakar](#), [Ramandeep Singh Gambhir](#),¹ [Simarpreet Singh](#),¹ [Amarinder Kaur](#),² and [Tarun Nanda](#)³

*¹ Kakar et al., Informed consent: Corner Stone in Ethical Medical and Dental Practice, J Family Med Prim Care, Jan 2014, 3 (1), pp.68-71

Alternative Treatment Plan



2	Disease Control	<ul style="list-style-type: none"> ● Limited SRP, ITE in 4-6 weeks; ● OHI, CTX 3 maintenance rinse ● EXT #19,30 ● GBR #30
3	Reconstructive	<ul style="list-style-type: none"> ● Implant FDPs #3-5, #10-13 ● Implant placement #30 ● Implant crowns #30 ● Direct composite restorations #23,24,25,26
4	Maintenance	<ul style="list-style-type: none"> ● SPT every 4 month and CAMBRA products PRN ● Occlusal Guard



⇒ Cost \$14,062 + \$6,012 (Completed prior) = \$ 20,074

⇒ Estimated duration of Tx: 6 month

J Pharm Bioallied Sci. 2012 Aug; 4(Suppl 2): S406-S409.
 doi: [10.4103/0975-7406.100305](https://doi.org/10.4103/0975-7406.100305) PMID: [23066299](https://pubmed.ncbi.nlm.nih.gov/23066299/) PMCID: PMC3467905

Treatment planning in conservative dentistry

Andamuthu Sivakumar, Vinod Thangaswamy,¹ and Vaiyapuri Ravi

▶ Author information ▶ Article notes ▶ Copyright and License information ▶ Disclaimer

*1 Sivakumar et al., Treatment Planning in Conservative Dentistry, J Pharm Bioallied Sci, Aug 2012, 4 (2), pp.406-409

Multidisciplinary Care

Disciplines Involved: 6



Implants:

Implant Placement (6),
4 and 3 unit implant FDP delivery,
single unit implant crown delivery (2)

Oral Surgery:

Simple extraction and Bone grafting (2),
Membrane Placement (2)

Dental Laboratory:

CAD/CAM design for implant FDP,
Veneers Fabrication

Periodontics:

Scaling Root planning, OHI, Reevaluation

Restorative:

Composite Restorations (4), Whitening

Fixed Restorative:

Veneers Delivery (4)

**Interdisciplinary
Care**

Keys to Success:

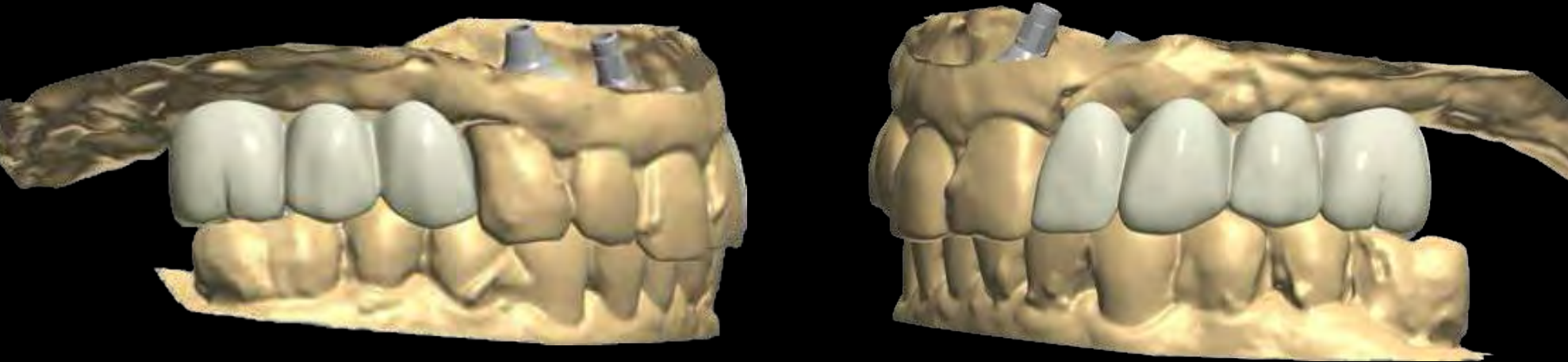
- Efficient **COMMUNICATION** between each specialty and a lab
- Consistent **FOLLOW-UP**

Considerations related to this particular case:



- Implant FDP vs Single Implant Crowns
- Implant Occlusion
- Digital Pathway
- Material Choices
- Orthotic Appliances
- Communication with the Laboratory

Implant Fixed Dental Prosthesis vs. Single Implant Crowns

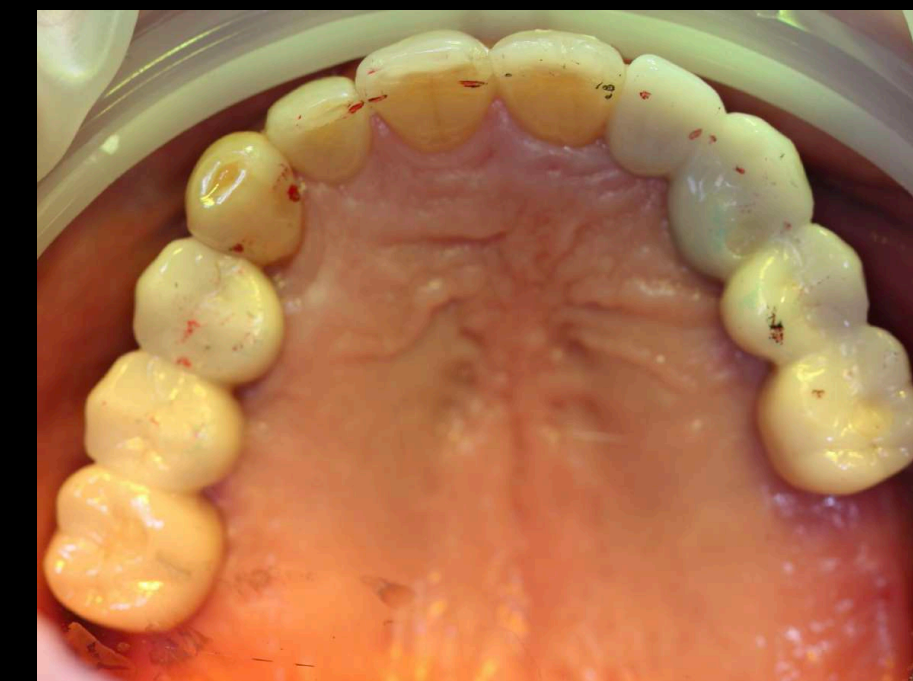
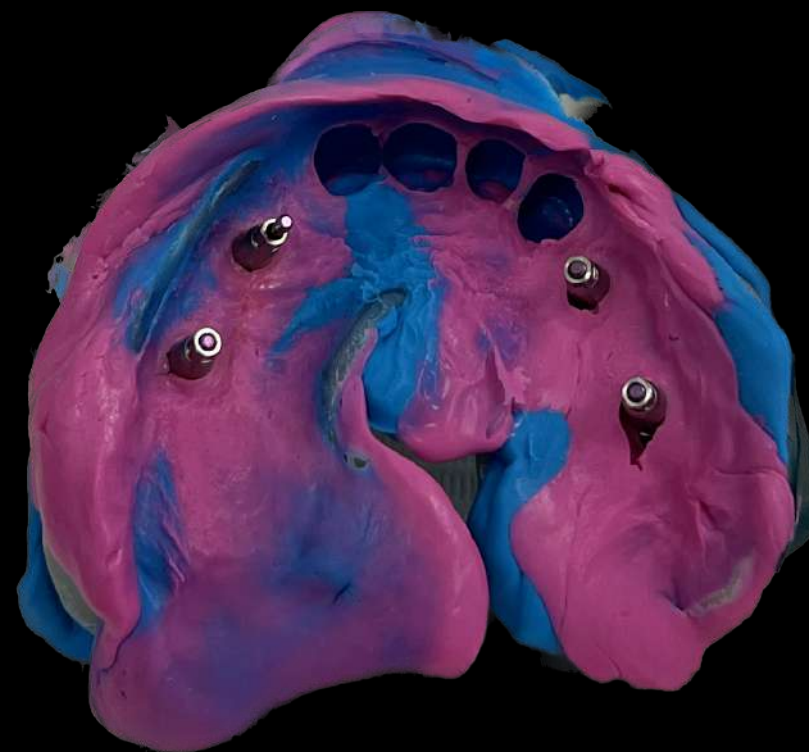
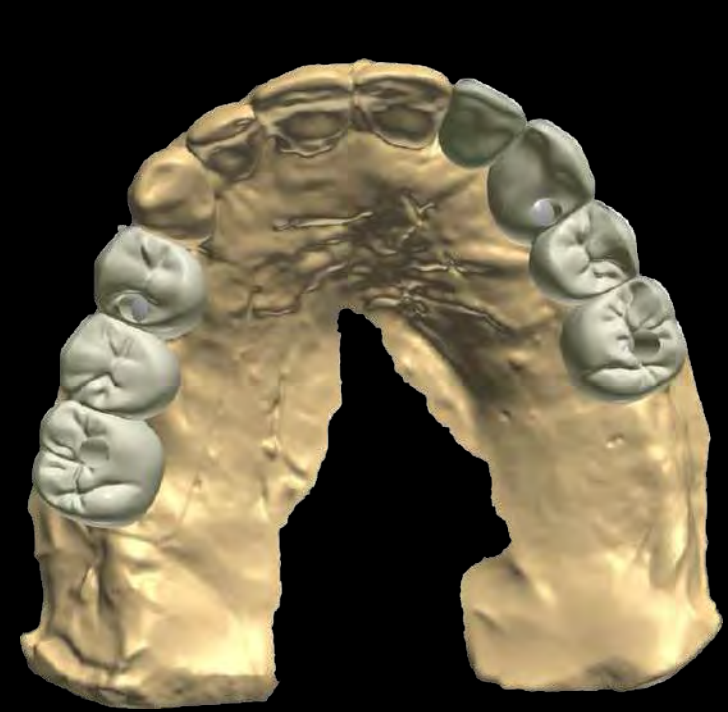


Review > Int J Oral Maxillofac Implants. 2014;29 Suppl:308-24.
doi: 10.11607/jomi.2014suppl.g5.2.

Improvements in implant dentistry over the last decade: comparison of survival and complication rates in older and newer publications

Bjarni E Pjetursson, Asgeir G Asgeirsson, Marcel Zwahlen, Irena Sailer

PMID: 24660206 DOI: 10.11607/jomi.2014suppl.g5.2



- 5 year prosthetic survival rate: **Implant FDP 96.4%**, **Single implant crown 97.2%*1**
- Probability of filling embrasure space with papilla is increased with IFDP, varying from **56.5%** to **100%** of the cases.
Two adjacent implant crowns papilla fill ranges from **21%** to **88.5%**. ***2**
- Cost Reduction
- Space Appropriation

Review > Clin Oral Implants Res. 2018 Mar;29 Suppl 15:14-17. doi: 10.1111/clr.13113.

Evidence-based knowledge on the aesthetics and maintenance of peri-implant soft tissues: Osteology Foundation Consensus Report Part 3-Aesthetics of peri-implant soft tissues

Ronald E Jung¹, Lisa Heitz-Mayfield², Frank Schwarz^{3,4},
Groups of the 2nd Osteology Foundation Consensus Meeting

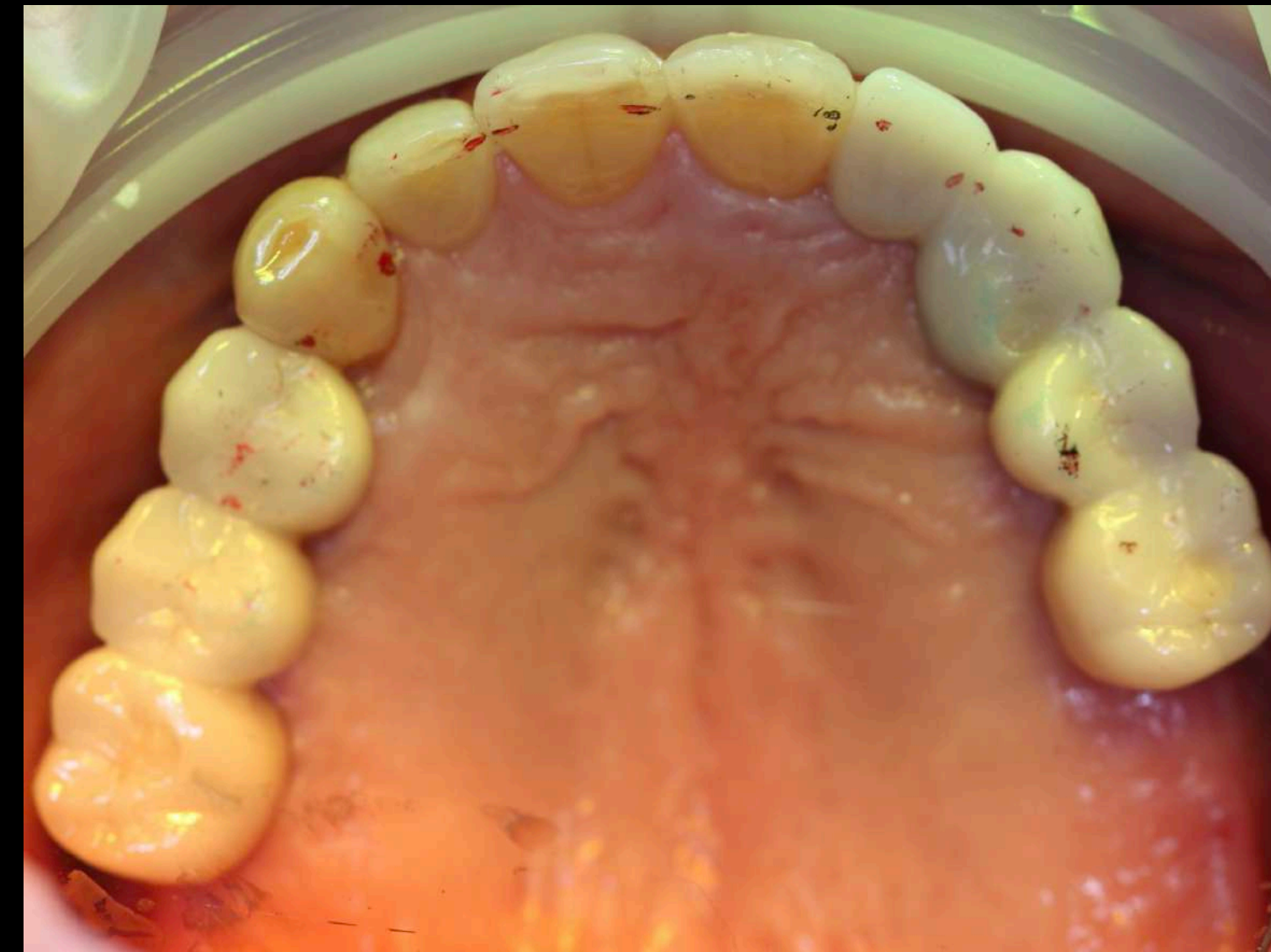
*1 Pjetursson et al., Improvements in implant Dentistry over the Last Decade, Int J Oral Maxillofac Implants, 2014, pp. 308-324

*2 Jung et al., Evidence-based knowledge on the esthetics and maintenance of peri-implant soft tissues, Clin Oral Implants Res, Mar 2018, pp.14-17

Implant Occlusion



- With no PDL, **proprioception is missing**. Compensatory type of occlusal feedback (mechanical stimulations to peri-oral muscles, ligaments, TMJ)
- Occlusal scheme is mostly **empirical**. Impact of occlusal overload remains unknown. ***1**
- Fractures of implants **<1%** over 5 years ***2**
- Abutment and screw loosening: high cumulative incidence of **8.8%** over 5 years ***3**



***4**

Shimstock hold	First light closure	Firm closure
Tooth to tooth	Hold	Hold
Implant to tooth	Just pull through	Hold
Implant to implant	Pull through easily	Hold

***1** Steven Sadowsky, Occlusal Overload with Dental Implants: a Review, July 2019, Int J of Implant Dentistry,29

***2** Isidor, Technical and Biological complications related to occlusal loading, Forum Implantologicum, 2007, 3(2), pp.120-125

***3** Jung et al., Systemic Review of the Survival Rate and Incidence of Biologic, Technical, and Aesthetic complications, Clin Oral Implants Res, 2012, 6 (2), p2-21

***4** International Team for Implantology



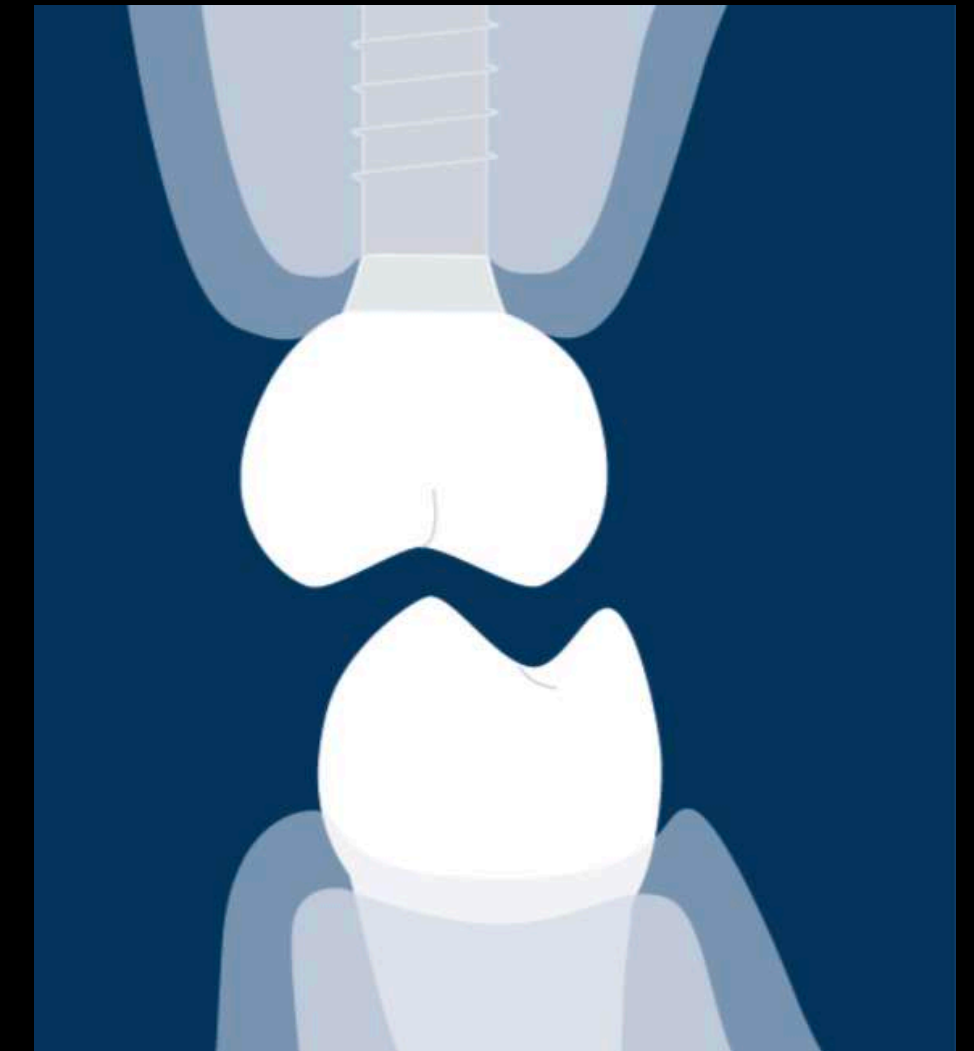
Implant Occlusion



Recommendations for occlusal design:

- Flatter cusps
- Wider occlusal fossae
- Goal is to increase horizontal freedom, reduce stress from lateral forces *1

A KEY to SUCCESS : Continuing monitoring and maintenance!!!



Review > [J Oral Rehabil.](#) 2012 Jul;39(7):522-37. doi: 10.1111/j.1365-2842.2012.02305.x.

Epub 2012 Apr 17.

Occlusion on implants – is there a problem?

I J Klineberg ¹, M Trulsson, G M Murray

Affiliations + expand

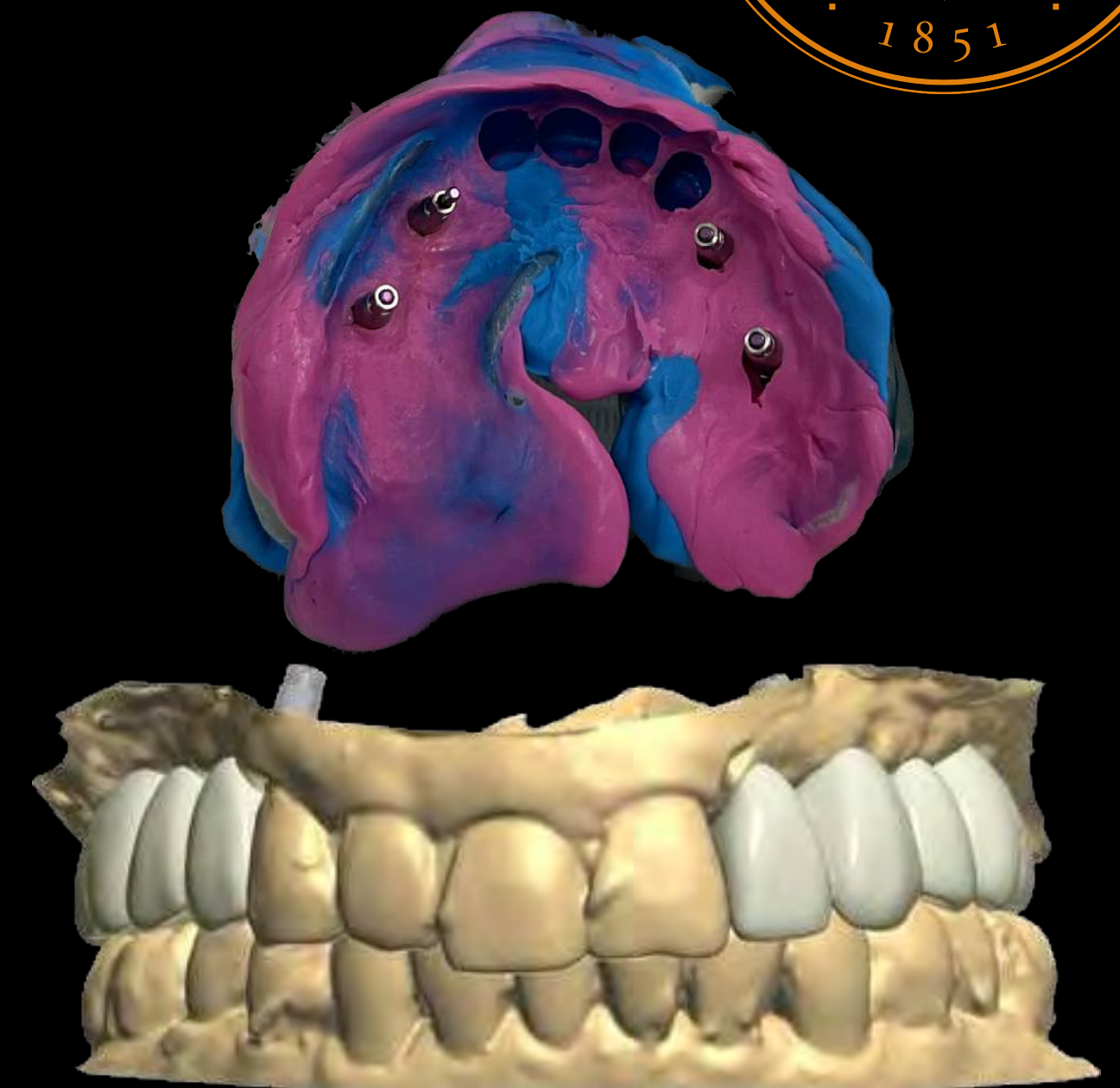
PMID: 22506541 DOI: [10.1111/j.1365-2842.2012.02305.x](#)

*1 Klineberg et al., Occlusion on Implants - Is There a Problem? J Oral Rehab 2012, 39, pp. 522-537

Digital Pathway

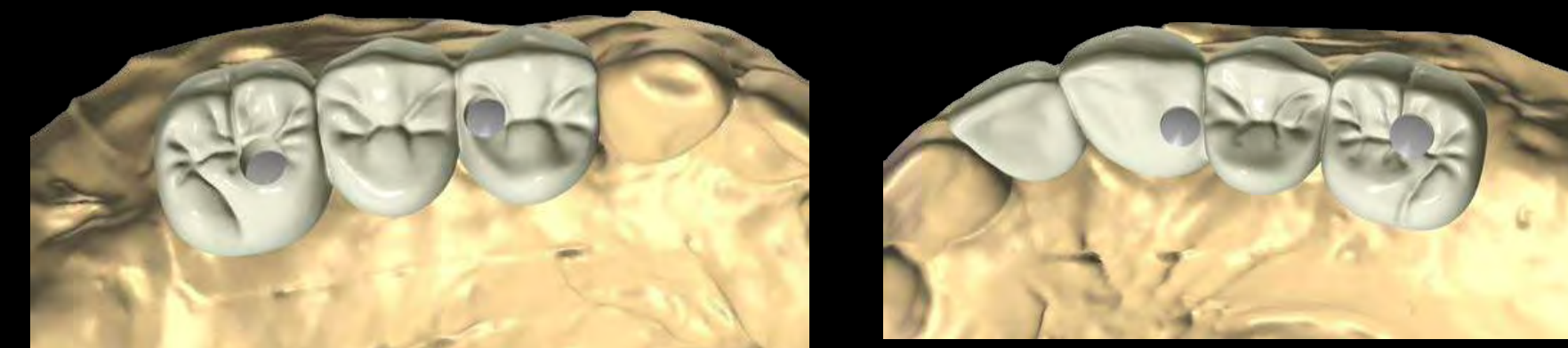


- In my case I used mixed workflow with analog impression and digital design/milling of the implant prosthesis. Still a “Standard”.
- Precision of intraoral scans decreases with increase in edentulous distance *1
- Ti - base design with M engaging and D non-engaging abutments. However, no significant difference is found in screw preload between a semi-engaging and full non-engaging 3-unit FDP*2
- ≥ 1 mm overjet to prevent cheek biting
- #10 cantilever. Presense of cantilever ≤ 8 mm does NOT compromise bone loss or survival of FDP in non-bruxers *3



*4 CAD-CAM production offers the opportunity to easily collaborate with laboratory. This prosthetic production gives better and demonstrated clinical results for the patient.

CAD-CAM production is a very important instrument for prosthetic team. This work-flow compared with traditional methods is faster, precise and predictable.



*1 Rotar et al., Scanning Distance Influence on the Intraoral Scanning Accuracy, Materials, May 2022, 15 (9)

*2 Alzoubi, Sadowsky, et al., Preload Evaluation of 2 Implant-Supported Fixed Partial Denture Abutment Designs, J of Prosthetic Dentistry, Nov 2022, 128 (5)

*3 Storelli et al., Systematic Review of the Survival Rate and Complications of FDP with Cantileveres, C Oral Implant, Oct 2022, 23 (6)

*4 Guzzo et al., CAD/CAM Procedure and Implant-Prosthetic Rehabilitation, Oral Implant, Jan 2016, 9 (1)

Material Choices

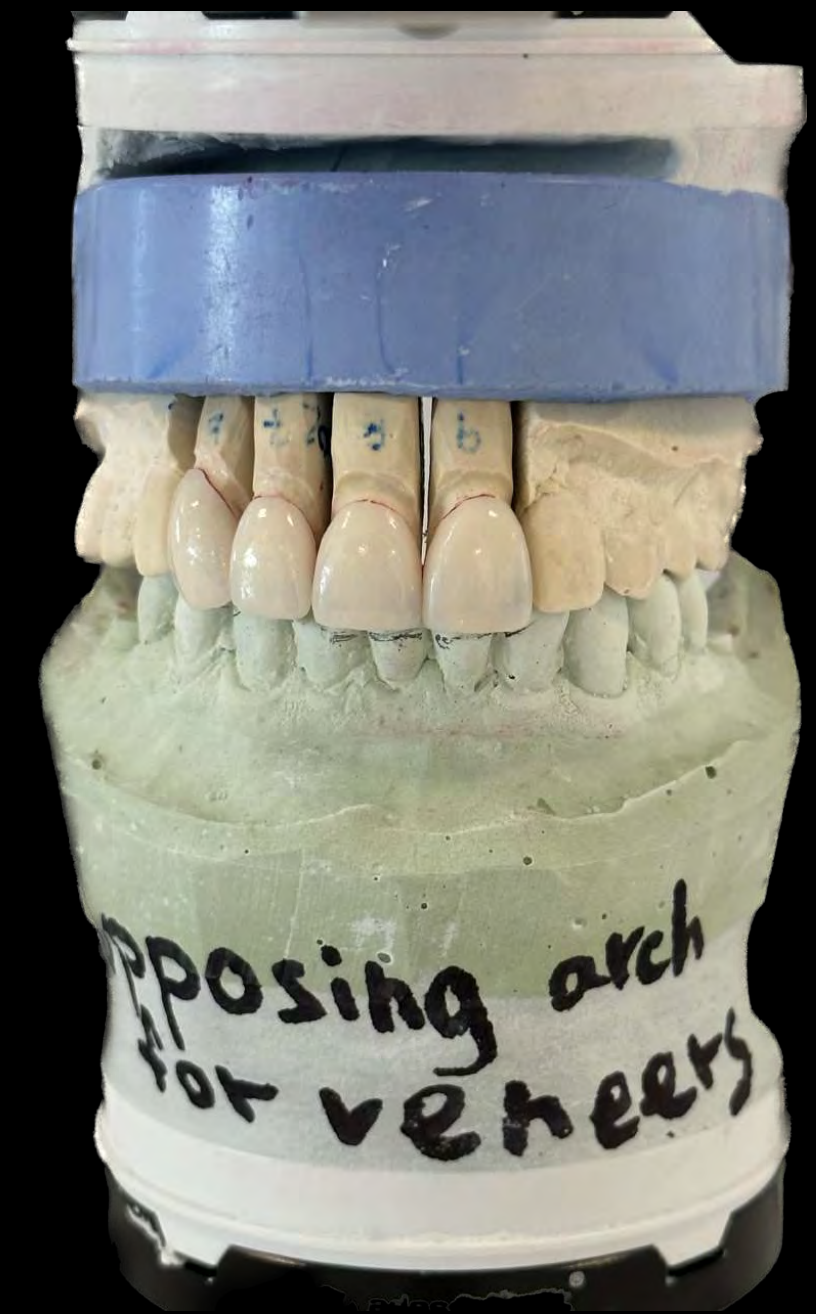


WHY MONOLITHIC Zr FOR IFDPS AND SINGLE IMPLANT CROWNS?

- A study by Tang et al., Monolithic Zirconia crowns show **high biocompatibility**, **minimal antagonist tooth wear**, and **success rate** of anterior and posterior restorations are **high** *1
- Monolithic Zr restorations have **low fracture rates**. Mechanical properties are superior to all-ceramic restorative materials. Fracture rates: **Anterior** - 3.26%, **Posterior** - 2.42% *2

WHY E.Max LITHIUM DISILICATE FOR ANTERIOR VENEERS?

- Superior **aesthetics**
- Ability to **bond** to enamel
- Superior **marginal adaptation**
- Customized **characterization**
- Still successful over 10.4 years according to Malament longitudinal study *3



> [J Prosthet Dent](#). 2016 Sep;116(3):436-9. doi: 10.1016/j.prosdent.2016.01.033. Epub 2016 May 11.

Fracture rate of monolithic zirconia restorations up to 5 years: A dental laboratory survey

Taiseer A Sulaiman ¹, Aous A Abdulmajeed ², Terence E Donovan ³, Lyndon F Cooper ⁴, Ricardo Walter ⁵

Affiliations + expand

PMID: 27178771 DOI: [10.1016/j.prosdent.2016.01.033](#)

*1 Tang et al., Clinical evaluation of Monolithic Zr crowns for posterior teeth restorations, Baltimore Medicine, Oct 2019, 98 (40)

*2 Sulaiman et al., Fracture rate of Monolithic Zirconia restorations up to 5 years, J Prosth Dent, Sep 2016, 116(3)

*3 Malament et al., Ten-year survival of pressed, acid-etched EMax LDC restorations, J Prosth Dent, May 2019, 121(5)

Orthotic Appliances



- Literature demonstrates a statistically significant ($p < 0.05$) correction between implant failure and bruxism.
- **Not wearing occlusal guard:**
 - **x7** increase fold of porcelain chipping in **patients with bruxism**
 - **x2** increase fold in patient **without bruxism***1
- There is no conscious, protective feedback during sleep even from natural teeth. **Nightguard** is necessary *2
- To gain maximum benefits:
 - education
 - careful adjustment at the delivery
 - periodic adjustments *3



*1 Kinsel et al., Restrospective analysis of ceramic failures of crowns supported by 729 implants, J Prosth Dent, Jun 2009, 101(6)

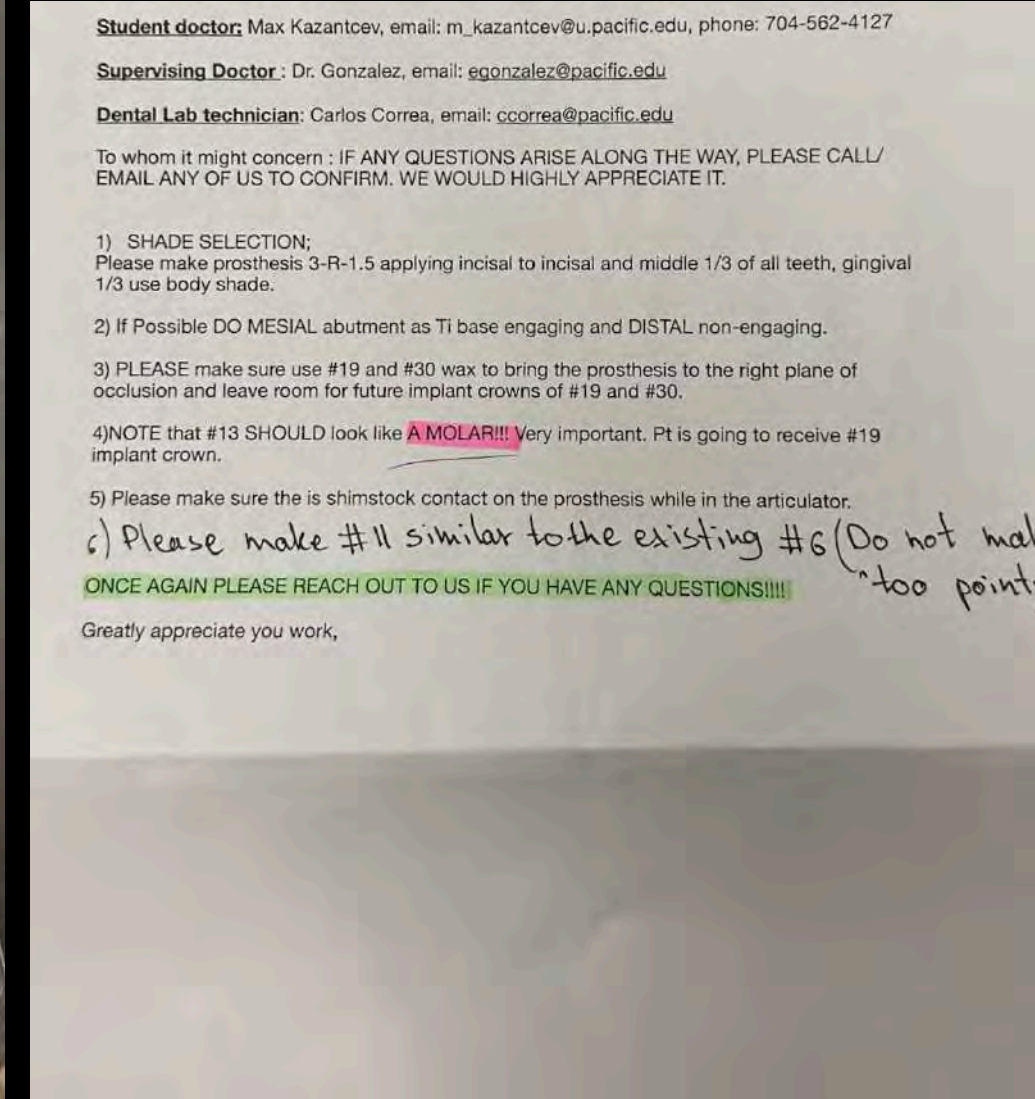
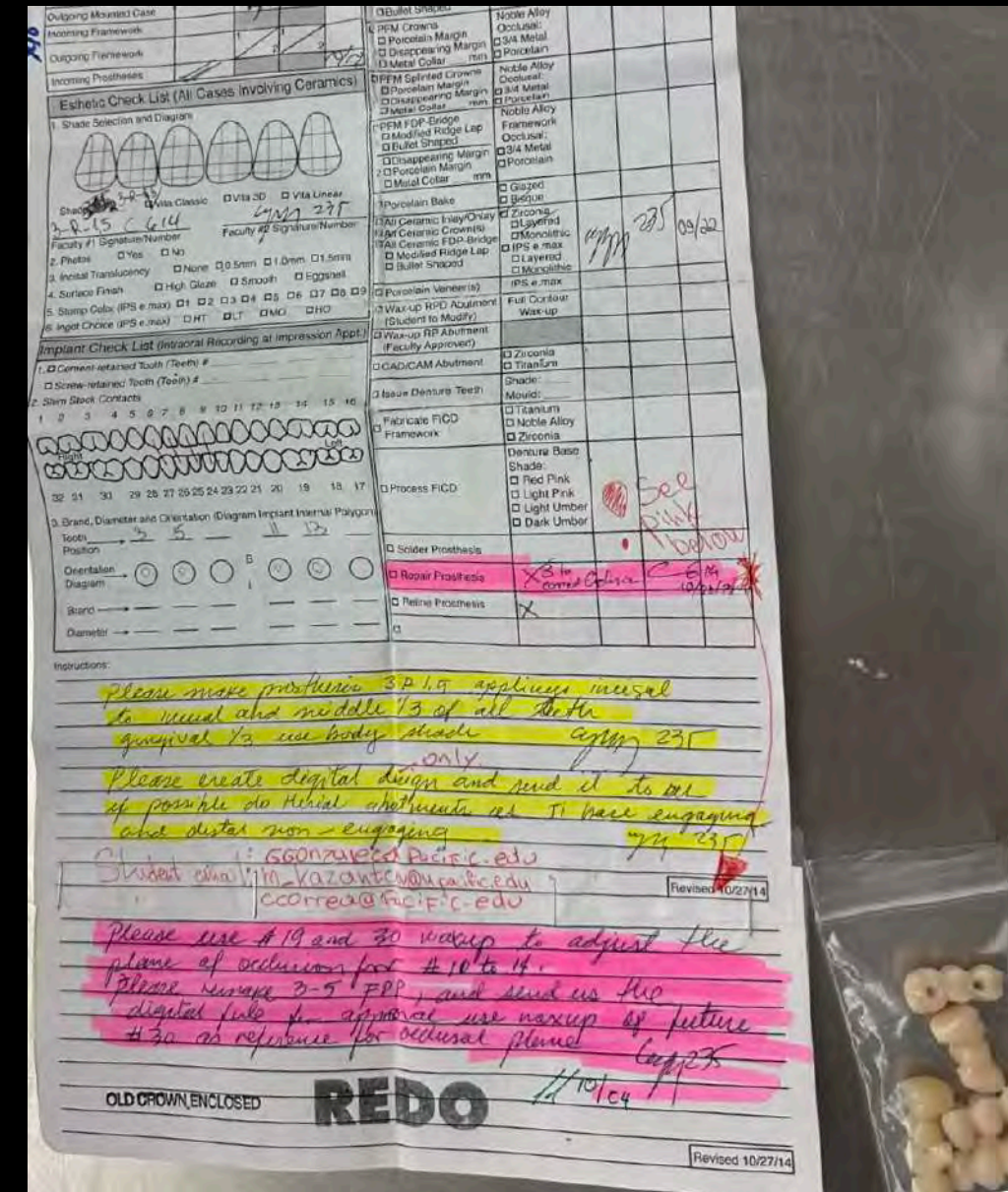
*2 Nishigawa et al., Quantitative Study of Bite Force during sleep, J Oral Rehabil, 2001, 28 (5), pp. 485-491

*3 Nesbit et al., Treatment Planning in Dentistry, Second Edition, 2007

Communication with the Laboratory



- Should not be afraid of over-communication, **CAN NOT** have uncertainties
- Never overpromise and underdeliver!
- My take away points:
 - **“Triple check”** a product prior to an appointment
 - Schedule a patient for a **“Try-In”**, instead of **“Final Delivery”**
 - Establish **clear communication** with a lab. Let everyone know your expectations. Strive for excellence.
- A Study by Tulbah showed a lack of communication between dentists and dental laboratories. **Fewer than 25%** of dentists indicate pontic design.*1
- Switching towards online software for communication with a lab is highly recommended*2



Saudi Dent J. 2017 Jul; 29(3): 111–116. PMCID: PMC5502910
 Published online 2017 Jun 9. doi: 10.1016/j.sdentj.2017.05.002 PMID: 28725128

Quality of communication between dentists and dental laboratory technicians for fixed prosthodontics in Riyadh, Saudi Arabia

Huda Tulbah,^{a,*} Eman AlHamdan,^b Amal AlQahtani,^a Asma AlShahrani,^c and Mona AlShayeh^d

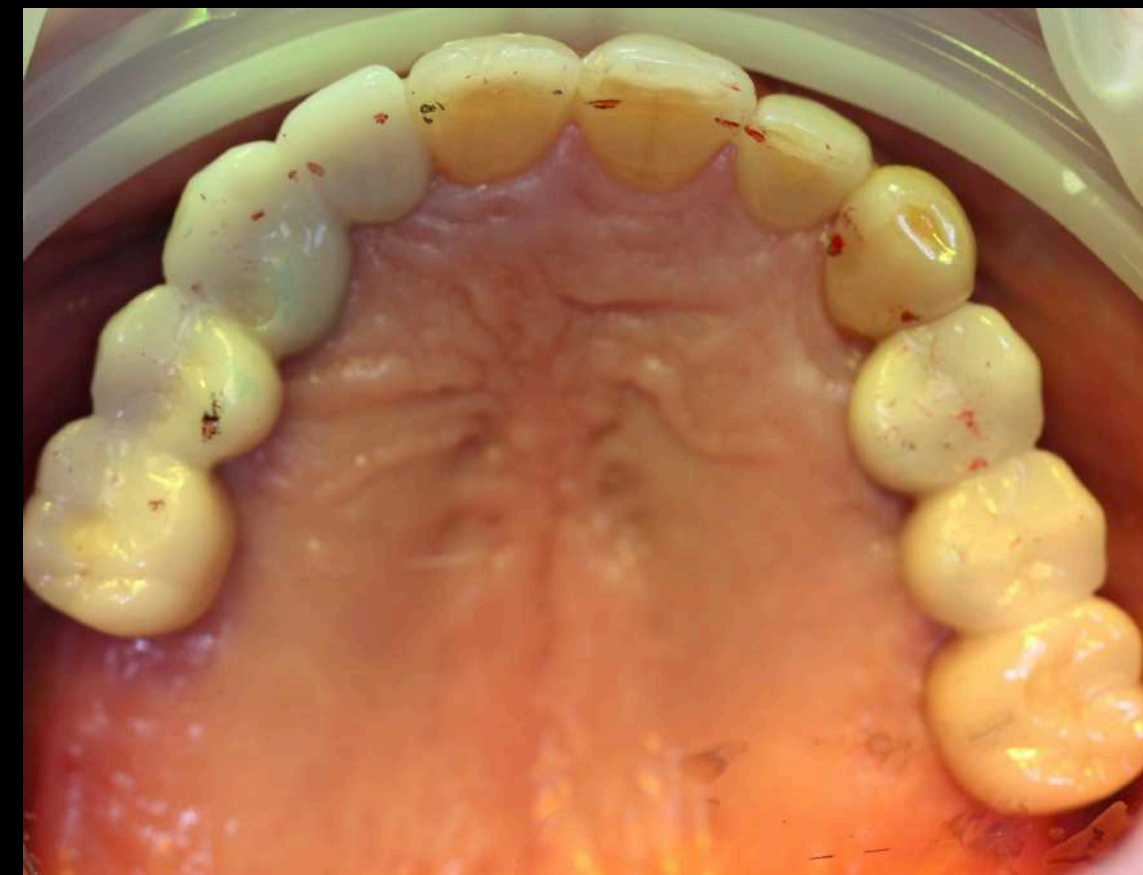
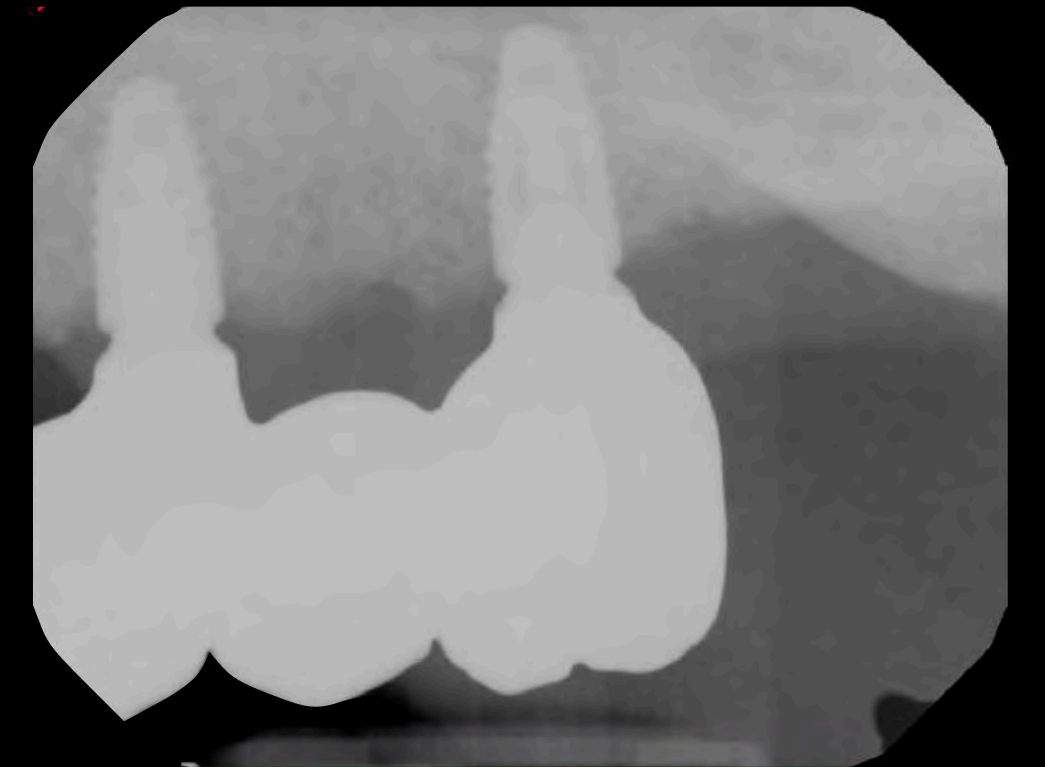
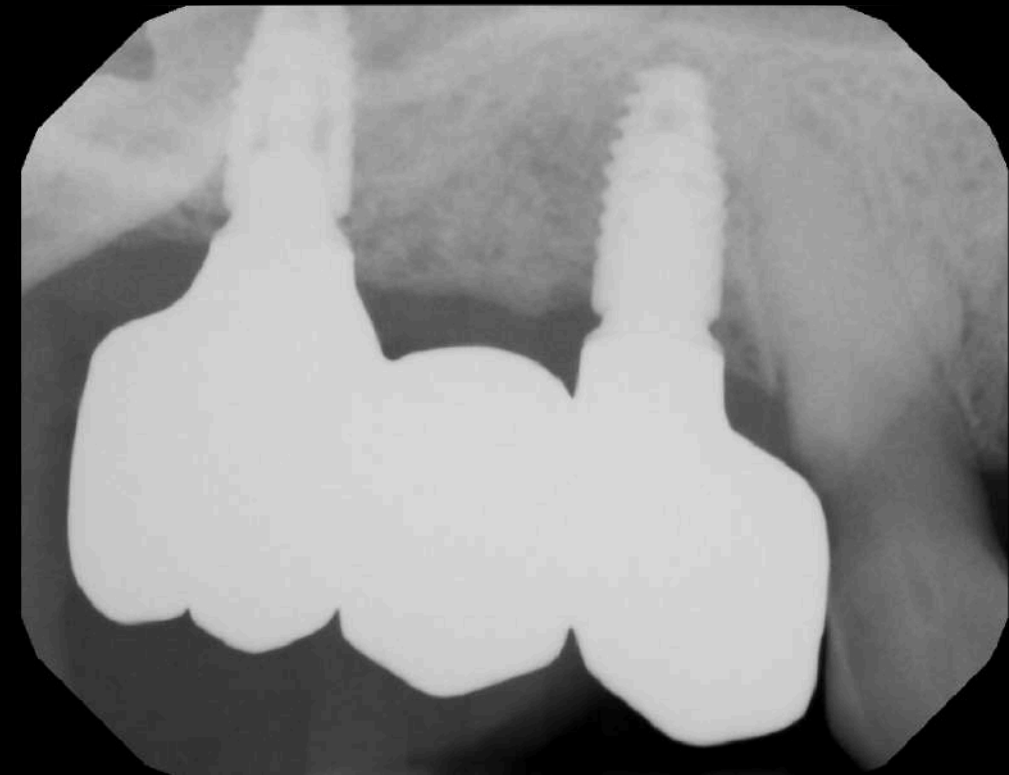
▶ Author information ▶ Article notes ▶ Copyright and License information ▶ Disclaimer

*1 Tulbah et al., Quality of Communication between dentist and dental laboratory technicians for fixed prosth, Saudi Dent J, Jul 2019, 29(3)
 *2 Alshiddi et al., Communication Between Dental Office and Dental Laboratory: From Paper -Based to Web-Based, J of Prosthodontics, Sept 2014, 38(2)

Work Flow



#3-5, 10-13 IFDP Delivery



Work Flow



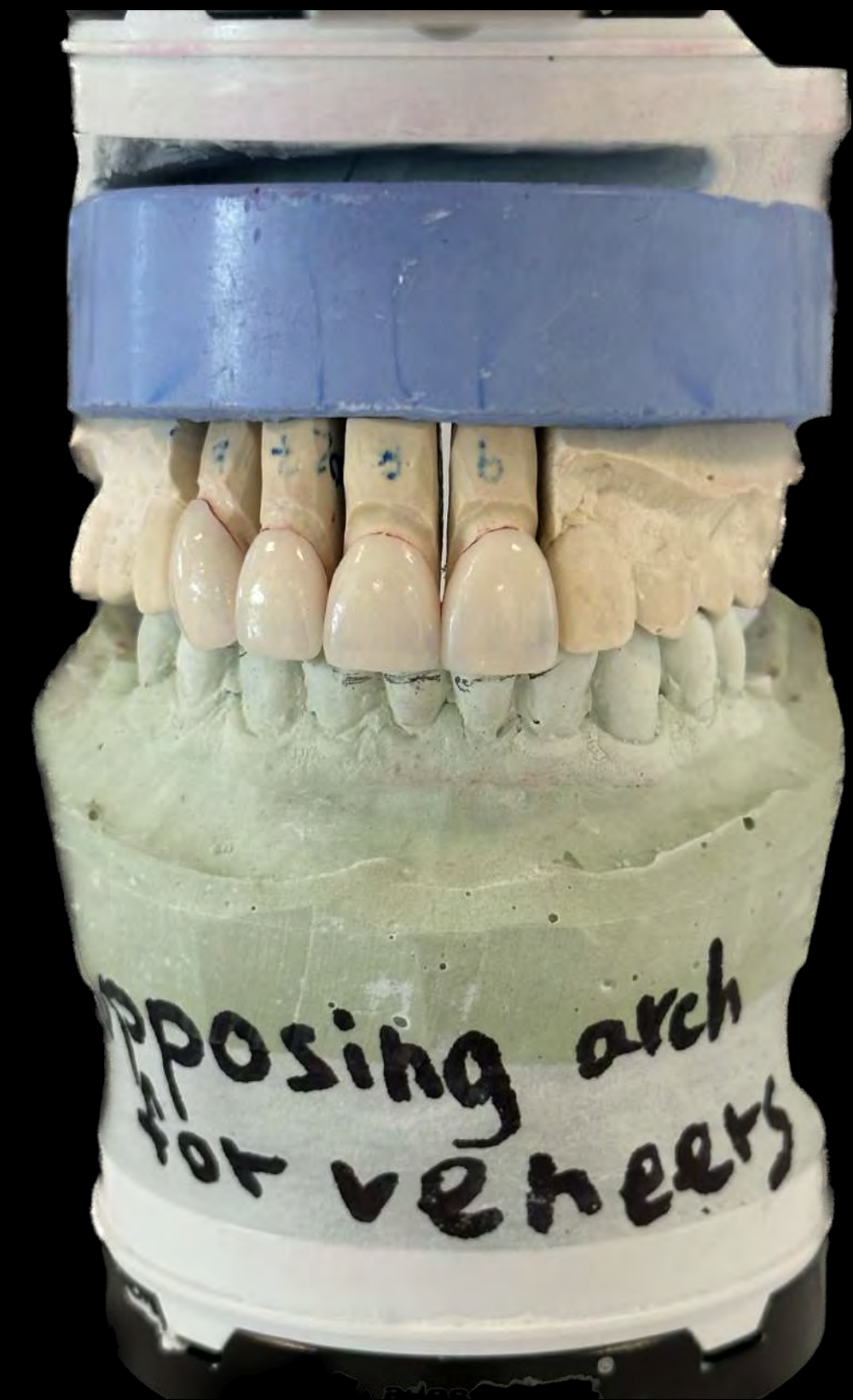
Composite Restorations #23,24,25,26



Work Flow



Veneers #6,7,8,9 Prep



Post-Op Photos



Before and After



Acknowledgements



Implant Faculty:

Dr. Steven Sadowsky
Dr. Eduardo Gonzalez
Dr. Chi Tran

Restorative Faculty:

Dr. Sandy McLaren
Dr. Rebecca Moazzez
Dr. Karen Schulze
Dr. Barnadette Fa

Periodontics:

Dr. John Huang

Laboratory:

Carlos Correa
Alfredo Riley
California Dental Arts (CDA)

Administrative Staff:

Lucy Wright
Marceyl Jones
Irene Vargas
Kamika Brown
Nancy Hang

IDS 2022:

Neda Dragisic

Honorable mentions:

Dr. Des Gallagher

THANK YOU for your guidance, encouragement, and support during this journey. This experience has been a life changing moment for my patient and an educational milestone in my professional development!

References



- Alshiddi et al., Communication Between Dental Office and Dental Laboratory : From Paper-based to Web-based, *Oral&Dental Journal*, Vol 34 (3), pp.555-559
- Alzoubi, Sadowsky, Preload evaluation of 2 implant-supported fixed partial denture abutment designs, *J of Prosthetic Dentistry*, November 2022, 128 (5), pubmed.ncbi.nlm.nih.gov/36460425/
- Bartlett et al., Basic Erosive Wear Examination (BEWE): a new scoring system for scientific and clinical needs, *Cain Oral Investing J*, March 2008, pp.65-68, www.ncbi.nlm.nih.gov/pmc/articles/PMC2238785/
- Choudhary et al., Correlation of patient's mental attitude with age, sex, and educational level: A survey, *European J of Dentistry*, March 2016, 10 (1), ncbi.nlm.nih.gov/pmc/articles/PMC4784149/
- Guzzo et al., Cad-cam procedure and implant-prosthetic rehaBilitation. Case report, *Oral Implantology J*, Rome, Jan 2016, 9(1), ncbi.nlm.nih.gov/pmc/articles/PMC5159934/
- International Team for Imlantology
- Isidor et al., Technical and Biological complications related to occlusal loading, *Forum Implantologicum*, 2007, 3(2), pp.120-125
- Jung et al., Evidence-based knowledge on the aesthetics and maintenance of peri-implant soft tissues: Osteology Foundation Consensus Report Part 3-Aesthetics of peri-implant soft tissues, *Clin Oral Implants Res*, March 2019, 29 (15), pubmed.ncbi.nlm.nih.gov/29498131/
- Jung et al., Systematic review of the survival rate and the incidence of biological, technical, and aesthetic complications of single crowns on implants reported in longitudinal studies with a mean follow-up of 5 years, *Coin Oral Implant Res*, Oct 2012, 23 (6), pubmed.ncbi.nlm.nih.gov/23062124/
- Kakar et al., Informed consent :Corner Stone in Ethical Medical and Dental Practice, *J Family Med Prim Care*, March 2014, 3(1), ncbi.nlm.nih.gov/pmc/articles/PMC4005206/
- Kinsel et al., Retrospective analysis of porcelain failures of metal ceramic crowns and fixed partial dentures supported by 729 implants in 152 patients: patient-specific and implant-specific predictors of ceramic failure, *J Prsoth Dent*, Jun 2009, 101 (6), pubmed.ncbi.nlm.nih.gov/19463666/
- Klineberg et al., Occlusion on implants - is there a problem? *J Oral Rehab*, Jul 2012, 39 (7), pubmed.ncbi.nlm.nih.gov/22506541/
- Malament et al., 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, *J Prostate Dent*, May 2019, 121 (5), <https://pubmed.ncbi.nlm.nih.gov/30955942/>
- Miranda et al., Esthetic Challenges in Rehabilitating the Anterior Maxilla: A Case Report, *J of Operative Dentistry*, Jan 2016, 41 (1), pubmed.ncbi.nlm.nih.gov/26244265/
- Nesbit et al., *Treatment Planning in Dentistry*, Second Edition, 2007, pp.76-81
- Nishigawa et al., Quantitative Study of Bite force during sleep associated bruxism, May 2001, *J Oral Rehab*, 28 (5), pubmed.ncbi.nlm.nih.gov/11380790/
- Pjetursson et al., Improvements in implant dentistry over the last decade: comparison of survival and complication rates in older and newer publications, *Int J Oral Maxillofac Implants*, 2014, 29, pubmed.ncbi.nlm.nih.gov/24660206/
- Rechmann, Efficacy of Adenosine triphosphate meter for evaluating caries risk in clinical dental practice, *J American Dent Assoc*, Oct 2019, 150 (10), pubmed.ncbi.nlm.nih.gov/31472759/
- Renvert et al., Risk indicators for peri-implant mucositis: a systematic literature review, *Clin Oral Implants Res*, Sep 2015, 26(11). pubmed.ncbi.nlm.nih.gov/25496066/
- Rotar et al., Scanning Distance Influence on the Intraoral Scanning Accuracy-An In Vitro Study, Apr 2022, *Material, Basel*, 15 (9), pubmed.ncbi.nlm.nih.gov/35591397/
- Sadowsky Steven, Occlusal overload with dental implants: a review, *Int j Implant Dentistry*, Jul 2019, 5 (1), pubmed.ncbi.nlm.nih.gov/31332553/
- Scarbecz et al., Using the DISC system to motivate dental patients, *J of American Dental Association*, March 2007, 138 (3), pubmed.ncbi.nlm.nih.gov/17332044/
- Sivakumar et al., *Treatment Planning in Conservative Dentistry*, *J Pharm Bioallied Sci*, Aug 2012, 4 (2), ncbi.nlm.nih.gov/pmc/articles/PMC3467905/
- Storelli et al., Systematic review of the survival rate and the biological, technical, and aesthetic complications of fixed dental prostheses with cantilevers on implants reported in longitudinal studies with a mean of 5 years follow-up, *Clin Oral Implants Res*, Oct 2012, 23 (6), pubmed.ncbi.nlm.nih.gov/23062126/
- Sulaiman et al., Fracture rate of monolithic zirconia restorations up to 5 years: A dental laboratory survey, *J Prosthetic Dent*, Sep 2016, 116 (3), <https://pubmed.ncbi.nlm.nih.gov/27178771/>
- Tang et al., Clinical evaluation of monolithic zirconia crowns for posterior teeth restorations, Oct 2019, *Baltimore Medicine*, 98 (40), pubmed.ncbi.nlm.nih.gov/31577743/
- Tulbah et al., Quality of Communication between dentists and dental laboratory technicians for fixed prosthodontics in Riyadh, Saudi Arabia, *Saudi Dental J*, Jul 2017, 29(3), [nih.gov/pmc/articles/PMC5502910/](https://ncbi.nlm.nih.gov/pmc/articles/PMC5502910/)

OKU Sutro Excellence Day Project Cover Sheet

(ONE Cover Sheet per project)

Project Title: _____

Award Category:

List names of all contributors to this project:

1. Student Name: _____ #989 _____

Program: _____ Class Year _____

2. Student Name: _____ #989 _____

Program: _____ Class Year _____

3. Student Name: _____ #989 _____

Program: _____ Class Year _____

4. Student Name: _____ #989 _____

Program: _____ Class Year _____

5. Student Name: _____ #989 _____

Program: _____ Class Year _____

6. Student Name: _____ #989 _____

Program: _____ Class Year _____

7. Student Name: _____ #989 _____

Program: _____ Class Year _____

Last field on next page...

8. Enter your abstract text here (300 word max) :

Thank you for filling out the OKU-Sutro Excellence Day Project Cover Sheet!
Please merge this Cover Sheet with your Final Project Materials (ie, research poster, clinical case, paper, or other creative production) before uploading to the OKU-Sutro Excellence Day Sharepoint website.