
CURRENTcontroversies
Science in implant prosthetics
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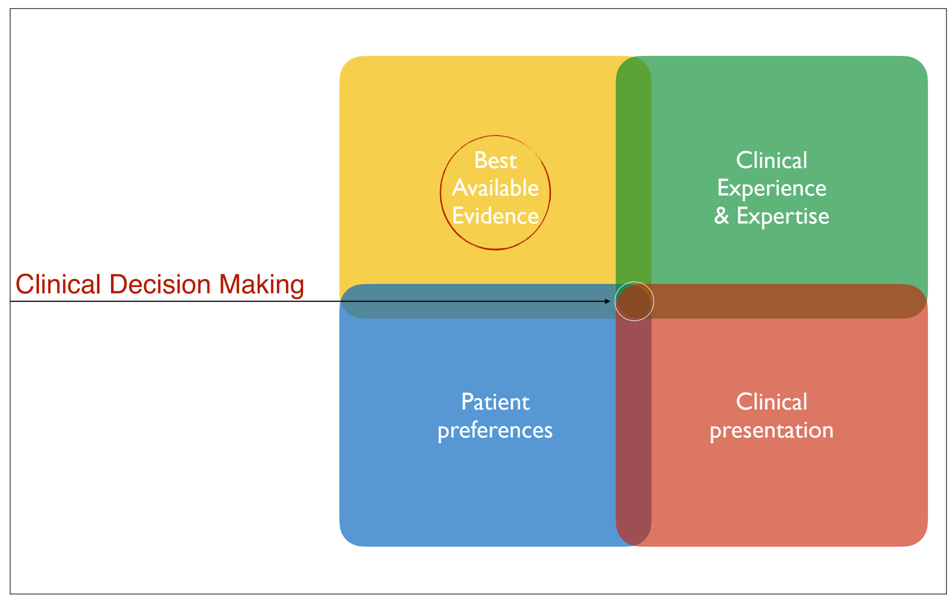
Coordinator - Clinical implant education


Treatment team
MOY
ALAWIE
SCHOENBAUM


Controversy...
How do we decide?

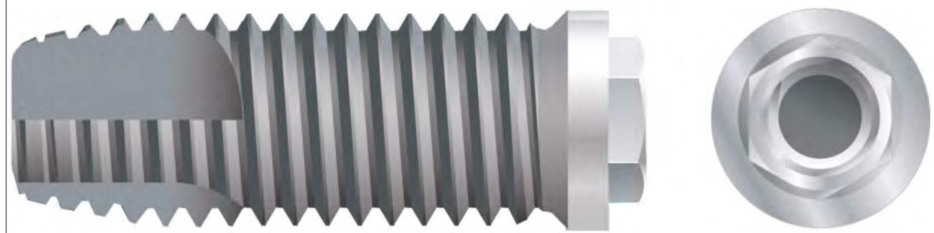

Best
Available
Evidence
Clinical
Experience
& Expertise
Clinical Decision Making
Patient
preferences
Clinical
presentation

Hierarchy of Evidence

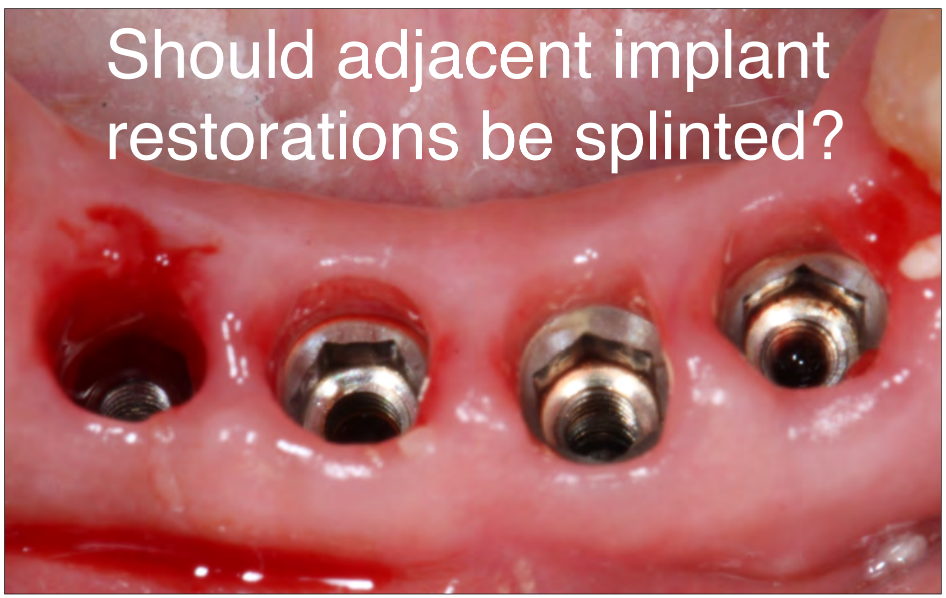
Schoenbaum TR. Science in the Practice of Clinical Dentistry. Dental Clinics. 2020 Oct 1;64(4):609-19.

Fig. 1. A hierarchy of evidence for clinical dental research. This hierarchy is best understood as a risk for bias pyramid, not a hierarchy of truth. The higher levels of evidence are more likely to be correct, but they are not implicitly superior. Sys, systematic.

Implants have evolved…

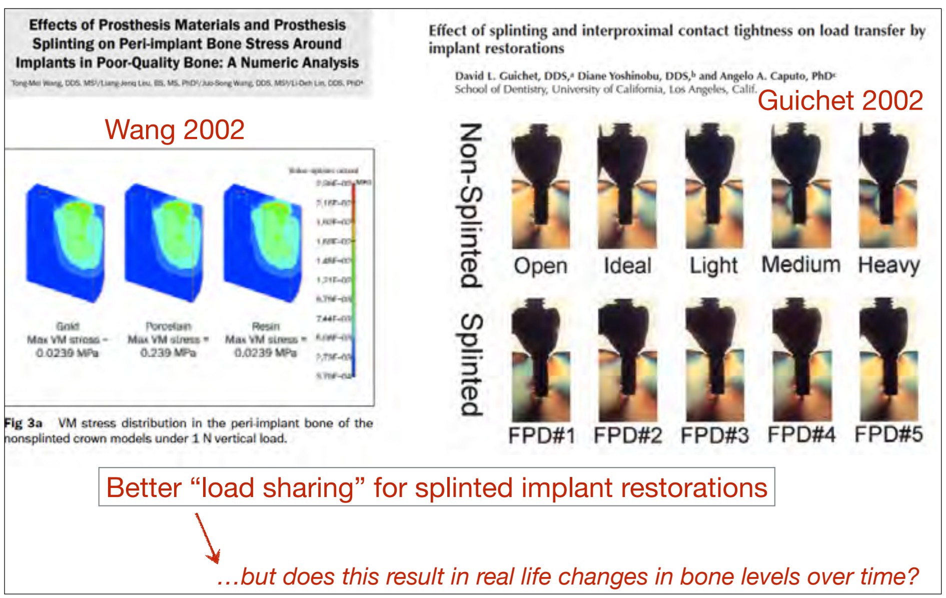


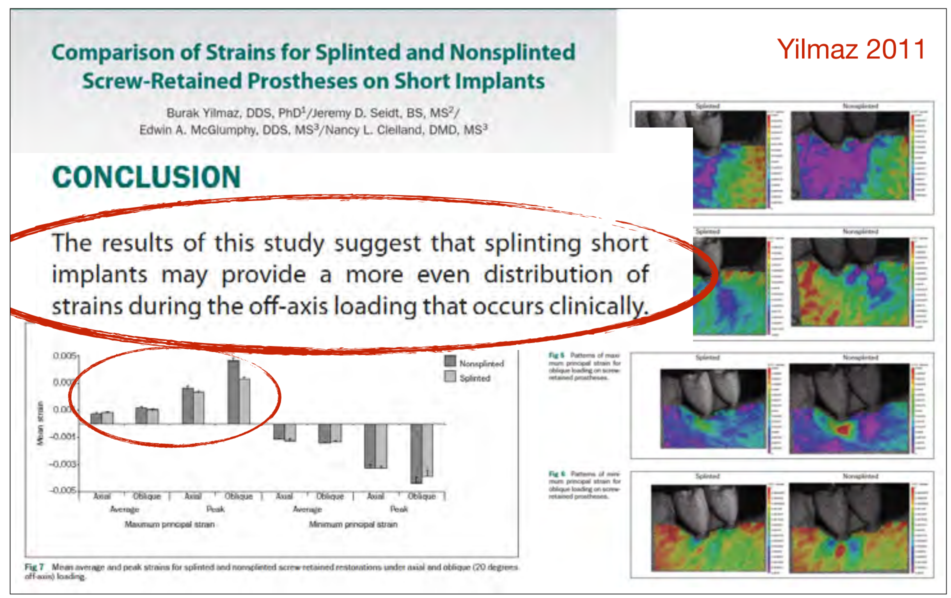
… so have the data, the guidelines, and the rules




non-splinted


Rational for **splinting** implants:
/ reduce or "share" stress?
/ reduce implant loss?
/ reduce screw loosening?
/ ease of delivery?


Effects of Prosthesis Materials and Prosthesis Splinting on Peri-implant Bone Stress Around Implants in Poor-Quality Bone: A Numeric Analysis
Wang 2002
Gold
Max VM stress = 0.0239 MPa
Porcelain
Max VM stress = 0.239 MPa
Resin
Max VM stress = 0.0239 MPa
Fig 3a VM stress distribution in the peri-implant bone of the nonsplinted crown models under 1 N vertical load.
Effect of splinting and interproximal contact tightness on load transfer by implant restorations
David L. Guichet, DDS, Diane Yoshinobu, DDS, and Angelo A. Caputo, PhD
School of Dentistry, University of California, Los Angeles, Calif.
Guichet 2002
Non-Splinted
Open
Ideal
Light
Medium
Heavy
Splinted
FPD#1
FPD#2
FPD#3
FPD#4
FPD#5
Better "load sharing" for splinted implant restorations
…but does this result in real life changes in bone levels over time?


Comparison of Strains for Splinted and Nonsplinted Screw-Retained Prostheses on Short Implants
Burak Yilmaz, DDS, PhD/Jeremy D. Seidt, BS, MS/
Edwin A. McGlumphy, DDS, MS/Nancy L. Clelland, DMD, MS
Yilmaz 2011
CONCLUSION
The results of this study suggest that splinting short implants may provide a more even distribution of strains during the off-axis loading that occurs clinically.
Nonsplinted
Splinted
Maximum principal strain
Minimum principal strain

Split-Mouth Comparison of Splinted and Nonsplinted Prostheses on Short Implants: 3-Year Results

Nancy Clelland, DMD, MS[1]/Jahanzeb Chaudhry, DDS, MDS[2]/
Robert G. Rashid, DDS, MS[3]/Edwin McGlumphy, DDS, MS[1]

Clelland 2016
3yr *in-vivo* data

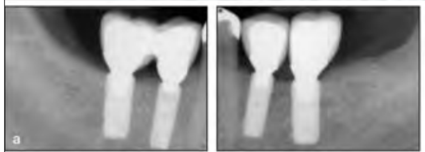


Table 2 Mean Bone Levels Measured Below Machined Bevel Surface of All Implants (Including All Lengths) and Standard Deviations

Type	Time (mo)	Mean distance (mm)	SD (mm)
Nonsplinted	0	0.75	0.92
	12	0.66	0.79
	24	0.47	0.74
	36	0.44	0.58
Splinted	0	0.76	0.80
	12	0.67	0.80
	24	0.61	0.72
	36	0.68	0.82

CONCLUSIONS

According to the results of this prospective 3-year study of splinted ipsilateral and nonsplinted contralateral implants in 15 patients: *(1)* peri-implant bone levels around splinted and nonsplinted implants were not statistically different for implants greater than 6 mm in length; *(2)* nonsplinted 6-mm implants revealed a gain in bone at 24 and 36 months compared with baseline; *(3)* all screw loosening only occurred on the nonsplinted side for 5 of 15 patients; and *(4)* implant loss after loading occurred for one 6-mm nonsplinted implant.

Multiple Single-Tooth Implant Restorations in the Posterior Jaws: Maintenance of Marginal Bone Levels with Reference to the Implant-Abutment Microgap

Michael R. Norton, BDS[1]

Norton 2006

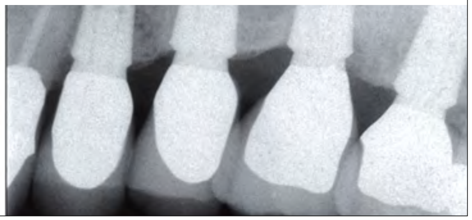
Maxilla	
First premolar	19
Second premolar	28
First molar	28
Second molar	8
Mandible	
First premolar	9
Second premolar	31
First molar	37
Second molar	21

Table 2 Marginal Bone Loss

	n	Bone loss (mm) Min	Median	Max	Mean	SD	P
Jaw							
Mandible	34	0.1	0.54	2.7	0.70	0.63	.812
Maxilla	24	0.0	0.46	1.4	0.56	0.38	
Gender							
Female	34	0.1	0.52	2.7	0.72	0.59	.370
Male	20	0.0	0.48	1.4	0.53	0.35	
All	54	0.0	0.51	2.7	0.65	0.52	
Smoking status							
No	47	0.0	0.50	2.7	0.63	0.52	.425
Yes	7	0.1	0.84	1.6	0.77	0.52	
All	54	0.0	0.51	2.7	0.65	0.52	
Surface							
Mesial	54	0.0	0.35	2.6	0.53	0.49	< .001
Distal	54	0.0	0.64	2.8	0.76	0.59	
Difference M-D	54	-1.2	-0.21	0.3	-0.23	0.31	

Average of 39 months
137 posterior implants
non-splinted

1 failure
Average bone loss 0.65mm



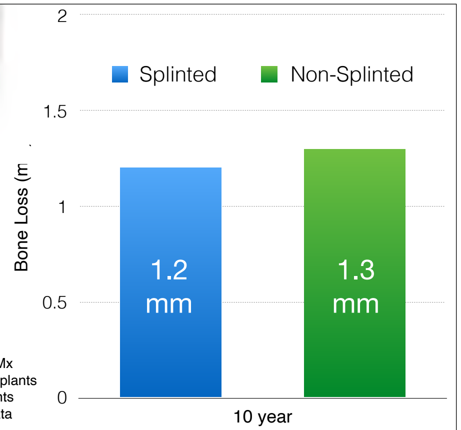
Clinical Evaluation of Marginal Bone Level Change Around Multiple Adjacent Implants Restored with Splinted and Nonsplinted Restorations: A 10-Year Randomized Controlled Trial

Paolo Vigolo, DMD, MScD[1]/Sabrina Mutinelli, DMD[2]/
Massimiliano Zaccaria, DMD[3]/Edoardo Stellini, DMD[4]

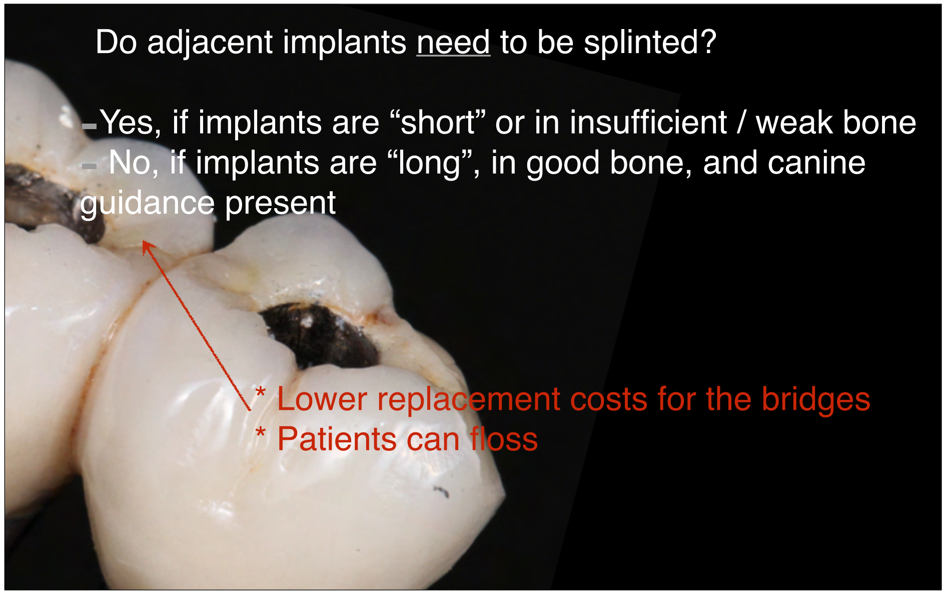
Vigolo et al

Vigolo 2015

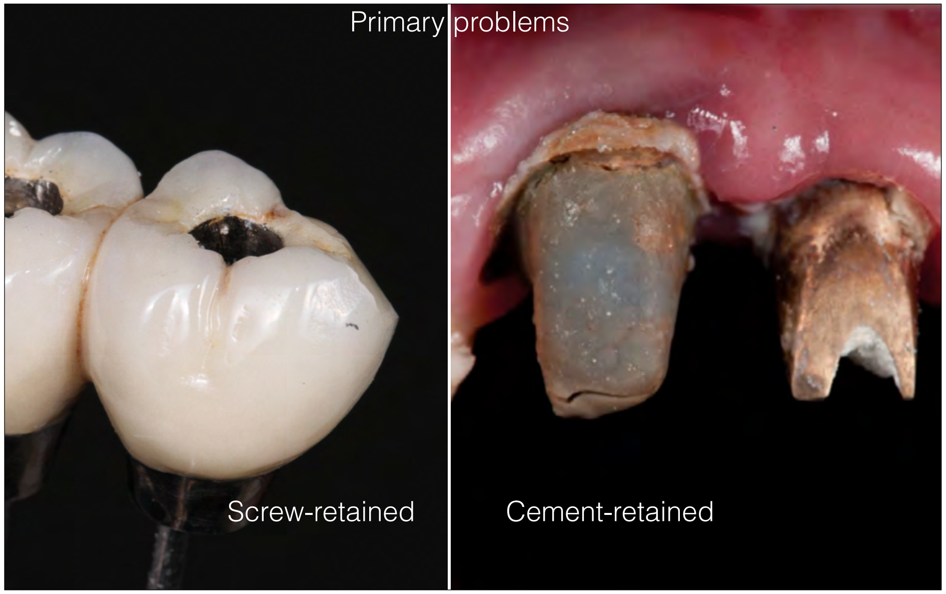
Posterior Mx
Ext hex implants
132 implants
10 year data

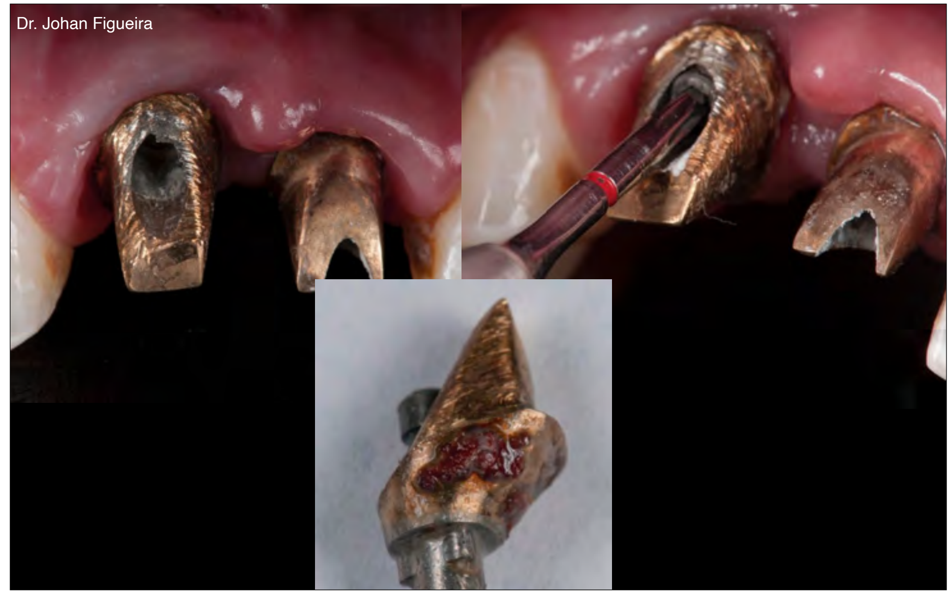


Conclusion:
A significant difference in bone loss was seen between the two groups (splinted vs. non-splinted). However, the difference of 0.1mm was not considered clinically meaningful.



	Screw Retained	Cement Retained
Advantages	- ease of retrievability / maintenance - no risk of retained cement - easier to manage pontics and immediate loading - can be used when occlusal clearance is as low as 4mm - porcelain can be carried to the head of the implant	- can be used with significantly angled implants - familiar delivery protocol - reinforced porcelain options (Zirconia, e.Max)
Disadvantages	- highest, but unknown cost (variable alloy costs) - requires highly trained technician - cannot easily resolve angulation issues - ~~generally unaesthetic obturation~~ - increased risk of porcelain fracture - ~~some evidence of increased gingival recession~~	**- risk of cement retention and associated peri-implantitis** **- more difficult to remove if needed**





How Common are these failures?

Long-Term Outcome of Cemented Versus Screw-Retained Implant-Supported Partial Restorations

Joseph Nissan, DMD[1]/Demitri Narobai, DMD[2]/Ora Gross, DMD[2]/
Oded Ghelfan, DMD[2]/Gavriel Chaushu, DMD, MSc[3]

Table 1 Comparison of Complications and Clinical Parameters of Screw-Retained and Cemented Implant-Supported Partial Restorations

Complications/clinical parameters	Screw-retained restoration	Cemented restoration	P
Ceramic fracture	38% ± 0.3%	4% ± 0.1%	< .001
Abutment screw loosening	32% ± 0.3%	9% ± 0.2%	.001
Metal frame fracture	0	0	NS
Mean Gingival Index	0.48 ± 0.5	0.09 ± 0.3	< .001
Mean marginal bone loss (mm)	1.4 ± 0.6	0.69 ± 0.5	< .001

marginal bone loss was statistically significantly higher (P < .001) for screw-retained (1.4 ± 0.6 mm) than for cemented (0.69 ± 0.5 mm) restorations. ***Conclusion:*** *The long-term outcome of cemented implant-supported restorations was superior to that of screw-retained restorations, both clinically and biologically.* Int J Oral Maxillofac Implants 2011;26:1102–1107

Journal of Oral Rehabilitation

Journal of Oral Rehabilitation 2011 **38**; 697–711

The 32 final included studies were further classified as following

- 17 long-term studies ≥ 5 years
- 15 short-term studies < 5 years

Review Article 2011

Prosthetic outcome of cement-retained implant-supported fixed dental restorations: a systematic review

M. S. CHAAR, W. ATT & J. R. STRUB *Department of Prosthodontics, School of Dentistry, Albert-Ludwigs University, Freiburg, Germany*

Conclusions

It may be stated that despite the questionable retrievability of cement-retained implant-supported fixed restorations, this treatment modality is a reliable and effective option in fixed implant prosthodontics, especially for implant-supported SCs and short-span FDPs. However, it is not advocated for long-span FDPs, full-

Effects of Implant Diameter and Prosthesis Retention System on the Reliability of Single Crowns

Estevam A. Bonfante, DDS, MS, PhD[1]/Erika O. Almeida, DDS, MS, PhD[2]/
Fabio C. Lorenzoni, DDS, MS, PhD[3]/Paulo G. Coelho, DDS, BS, MS, MSMtE, PhD[4]

Purpose: *The probability of survival of implant-supported prostheses may be affected by the interplay between different implant diameters supporting screwed or cemented crowns. The purpose of this study was to investigate the effect of implant diameter and prosthesis retention system on the reliability and failure modes of single crowns.* **Materials and Methods:** *Internal-hexagon implants were divided into six groups (n = 21 each) according to implant diameter (3.3, 4.0, or 5.0 mm) and crown retention system (screwed or cemented). Abutments were torqued to the implants, and crowns were then fixed and subjected to step-stress accelerated life testing in water. Use-level probability Weibull curves and reliability for missions of 50,000 cycles at 100, 150, and 200 N were calculated. Failure analysis was performed.* **Results:** *Cemented systems presented higher reliability than screwed ones, except between 3.3-mm-diameter cemented and screwed systems at a load of 100 or 150 N. Failure modes were restricted to the abutment screw and varied with implant diameter only in the cement-retained groups.* **Conclusion:** *Higher reliability was observed for cement-retained crowns and implants of larger diameter compared to screw-retained and smaller diameter. Failure modes differed between groups.* INT J ORAL MAXILLOFAC IMPLANTS 2015;30:95–101. doi: 10.11607/jomi.3545

2015

Table 1 Calculated Reliability for a Given Mission of 50,000 Cycles According to Load

	C3		S3		C4		S4		C5		S5	
Result	100 N	150 N	100 N	150 N	100 N	200 N	100 N	200 N	100 N	200 N	100 N	200 N
Upper bound	0.98	0.87	0.97	0.91	1	0.8	0.97	0.23	1	0.99	0.99	0.8
Reliability	0.90	0.35	0.90	0.72	0.99	0.67	0.92	0.11	1	0.99	0.99	0.67
Lower bound	0.79	0.13	0.65	0.29	0.99	0.49	0.79	0.03	0.99	0.97	0.90	0.50
β	0.60		3.29		1.84		0.59		2.74		1.59	

S = Screw retained
C = Cement retained

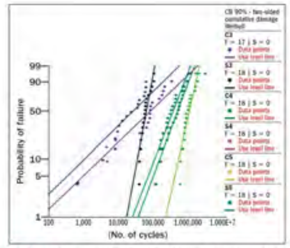


Fig 1a Use-level probability Weibull showing probability of failure as a function of time.

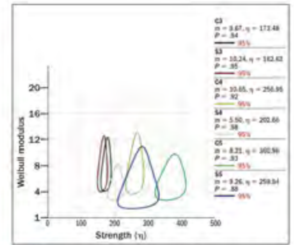


Fig 1b Contour plot (Weibull modulus vs characteristic strength [η, in N]) for group comparisons. Note that there is no statistical difference where contour plots overlap.

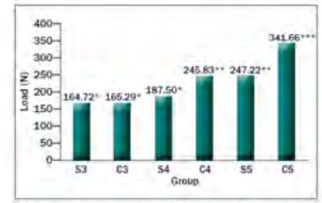


Fig 2 Mean load to failure values of each group. Different numbers of asterisks represent statistically significant differences in between-group comparisons.

Influence of Prosthesis Type and Retention Mechanism on Complications with Fixed Implant-Supported Prostheses: A Systematic Review Applying Multivariate Analyses

Christopher Millen, BDS, MFDS, MClinDent, MPros[1]/
Urs Brägger, DMD, Dr Med Dent[2]/Julia-Gabriela Wittneben, DMD, Dr Med Dent, MMSc[3]

Int J Oral Maxillofac Implants 2015;30:110–124.

Single Crown Data

The complication rates of each prosthesis type in the current review revealed a variety of different outcomes. There was a tendency toward more technical complications with screw-retained SCs, without statistical significance. More specifically, there were significantly more instances of abutment loosening with screw-retained crowns, which was in accordance with the results of the systematic review of Sailer et al.[1] More framework fractures occurred with cemented SCs; however, this could not be compared to Sailer et al. as data on framework fracture were not presented in their published article. No statistically significant differences were identified for biologic complications relative to retention type for single implant-supported crowns, whereas in the previous review from Sailer et al,[1] more soft tissue complications were documented with screw-retained SCs. This difference may have resulted because of esthetic complications that, while not considered by Sailer et al, contributed to the overall biologic complications in the current review. Esthetic complications may be of particular importance to patients.[87]

Table 4 Technical Complications with SCs

Complication	Retention	No. of studies	No. of prostheses	Exposure time (y)	No. of complications	Complication rate* (95% CI)	P
Loss of retention	Cement	22	1,193	6,155	23	0.55 (0.25–1.23)	.834
	Screw	6	309	1,196	10	0.47 (0.12–1.79)	
Exposure of access hole	Cement	0	0	–	–	– (–)	N/A
	Screw	6	309	1,196	1	0.08 (0.01–0.59)	
Fracture and/or chipping	Cement	22	1,126	5,770	23	0.41 (0.26–0.65)	.529
	Screw	7	355	1,426	4	0.28 (0.10–0.79)	
Loosening of occlusal screw	Cement	0	0	–	–	– (–)	N/A
	Screw	8	373	1,606	13	0.90 (0.20–4.09)	
Loosening of abutment	Cement	22	1,126	5,770	18	0.33 (0.15–0.71)	.003
	Screw	6	309	1,196	23	2.07 (0.65–6.58)	
Fracture of abutment	Cement	22	1,126	5,770	0	0 (–)	> .999
	Screw	6	309	1,196	1	0.08 (0.01–0.56)	
Fracture of framework	Cement	2	109	521	14	2.69 (1.59–4.54)	< .001
	Screw	7	355	1,426	1	0.07 (0.01–0.50)	
Fracture of implant	Cement	22	1,126	5,770	0	0 (–)	N/A
	Screw	6	309	1,196	0	0 (–)	
Screw fracture	Cement	22	1,126	5,770	0	0 (–)	> .999
	Screw	7	355	1,426	4	0.31 (0.07–1.32)	
Resin chipping and/or fracture	Cement	1	12	36	0	0 (–)	N/A
	Screw	6	309	1,196	0	0 (–)	
Other	Cement	20	958	4,611	33	0.60 (0.19–1.86)	.145
	Screw	7	327	1,376	7	0.30 (0.08–1.14)	
Summary of all complications except "resin chipping and/or fracture"	Cement	24	1,246	6,485	111	1.91 (1.25–2.94)	.071
	Screw	8	373	1,606	64	3.12 (1.79–5.42)	

*Estimated complication rate per 100 years (95% confidence interval).

Table 9 Biologic Complications with SCs

Complication	Retention	No. of studies	No. of prostheses	Exposure time (y)	No. of complications	Complication rate* (95% CI)	P
Bone loss (> 2 mm)	Cement	20	1,111	6,028	34	0.41 (0.19–0.88)	.213
	Screw	7	327	1,376	1	0.08 (0.01–0.94)	
Peri-implantitis	Cement	19	1,022	4,590	15	0.24 (0.08–0.71)	.999
	Screw	6	309	1,196	0	0 (–)	
Presence of fistula, suppuration	Cement	20	1,044	5,633	20	0.41 (0.18–0.93)	.567
	Screw	7	327	1,376	2	0.24 (0.04–1.49)	
Peri-implant mucositis	Cement	18	967	4,040	59	1.71 (0.53–5.57)	.687
	Screw	6	309	1,196	2	1.16 (0.14–9.90)	
Recession	Cement	18	882	3,946	6	0.19 (0.05–0.69)	.704
	Screw	7	327	1,376	1	0.12 (0.01–1.55)	
Loss of implant	Cement	20	1,075	5,565	15	0.27 (0.16–0.47)	.736
	Screw	7	355	1,426	3	0.22 (0.07–0.72)	
Any esthetic problem	Cement	20	1,117	5,500	10	0.19 (0.06–0.58)	.010
	Screw	6	309	1,196	14	1.09 (0.30–4.02)	
Other	Cement	20	1,142	5,960	43	1.22 (0.41–3.65)	.698
	Screw	6	309	1,196	14	0.93 (0.28–3.11)	
Summary of all complications except "loss of implant"	Cement	22	1,195	6,260	187	3.40 (1.98–5.82)	.425
	Screw	8	373	1,606	34	4.46 (2.07–9.58)	

*Estimated complication rate per 100 years (95% confidence interval).

Cement vs. Screw retained single unit crowns

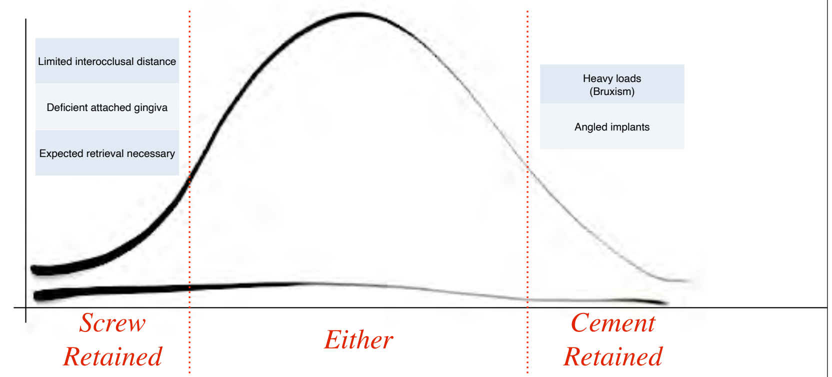
Based on BEST AVAILABLE peer-reviewed literature:

No consistent or clear difference in success for single crowns.

CEMENTretained
- risk of residual cement
- more difficult to retrieve

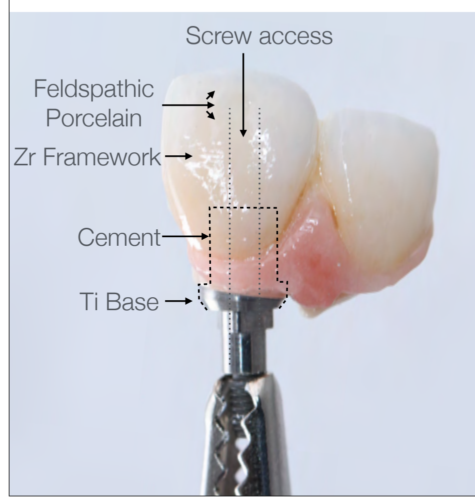
SCREWretained
- more loose screws
- more porcelain fracture

Ideal restoration for Single crowns

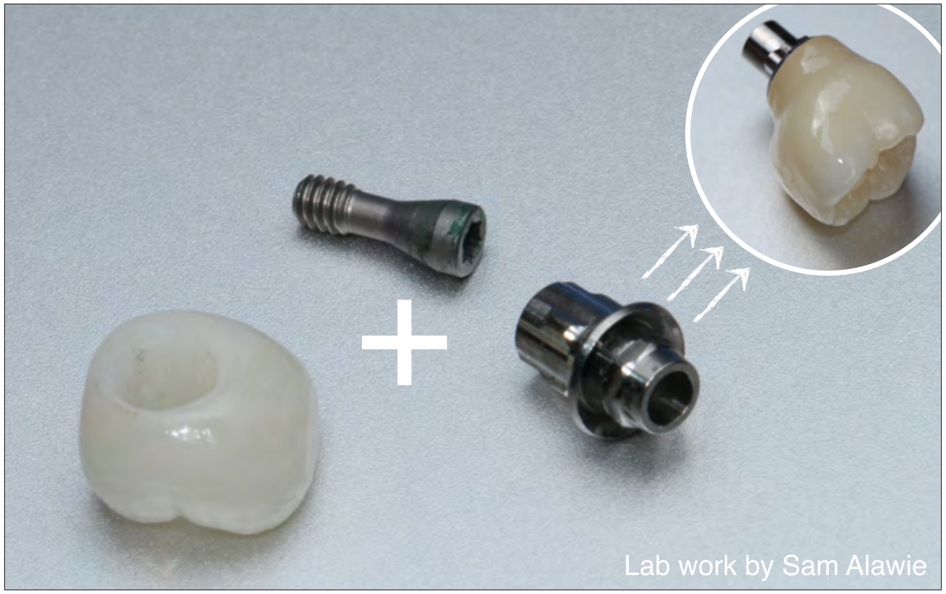


What about "screwmentable" crowns?
What about screw-retained full-Zr?
What about screw-retained Zr/TiBase?

What about screw retained Zr / Ti Base?



- Did your lab use an abutment with an appropriate height?
- Did your lab use the manufacturer's abutment?
- Did your lab properly prep the Zr and Ti?
- Did your lab properly cement it?

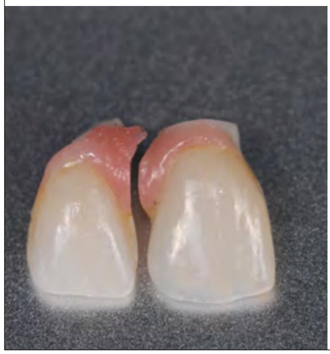


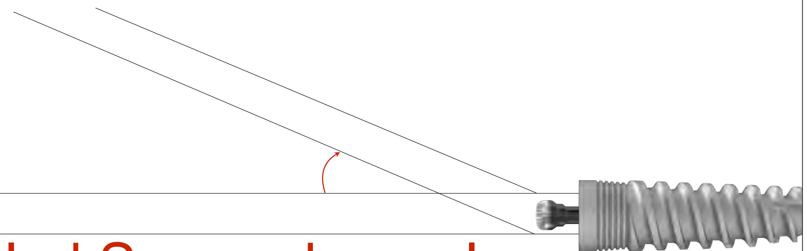
What about "screwmentable" crowns?
What about screw retained Zr?

Currently undergoing *beta* testing…

Possible complications with Zr / Ti Base?

- cement failure at the Zr / Ti interface
- failure of any overlying porcelain
- failure of the Zr frame work
- overload of implant or bone or abutment screws

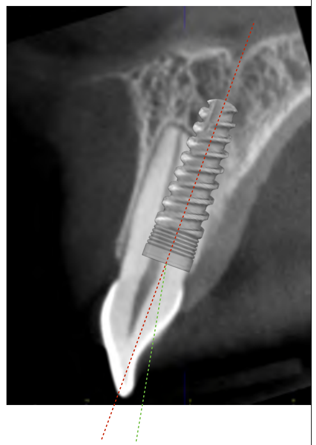


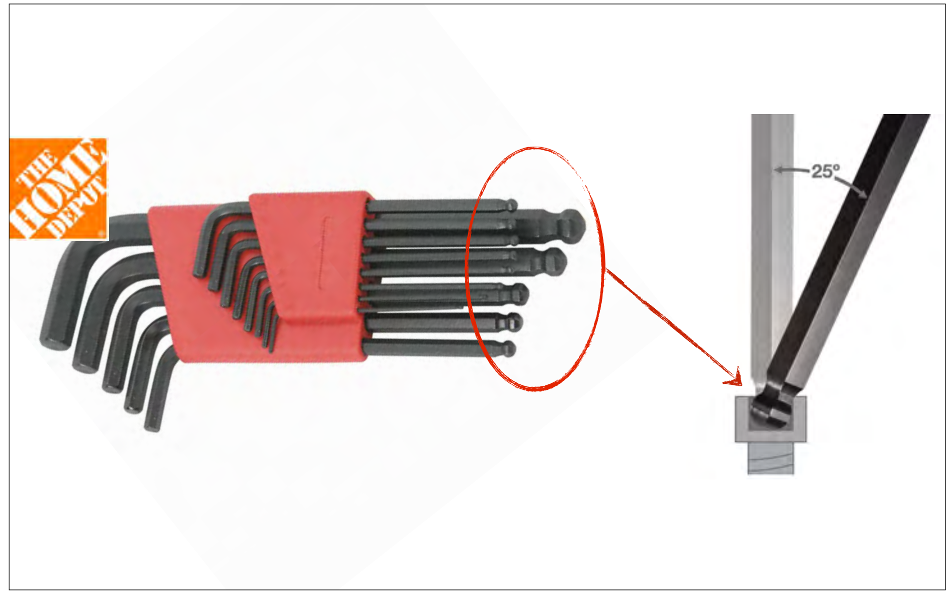


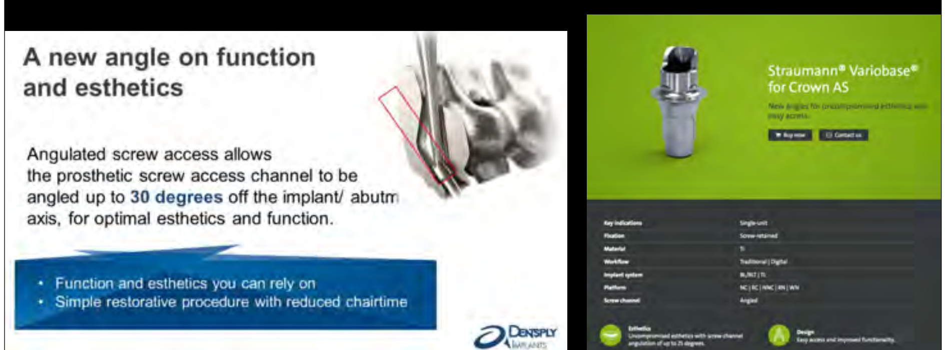
Angled Screw channels

Angled Screw channels

- Allows for screw retained restorations with palatal access channels
- Only available with a few manufacturers or 3rd party parts
- Can correct 20-30 degrees
- Some are only for Cr-Co, some for PFM, some for solid Zr, some for Zr/TiBase

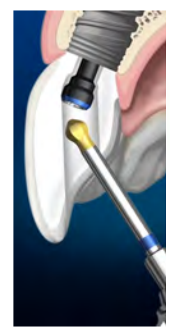






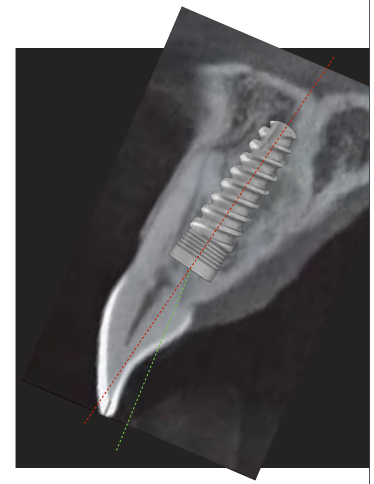
Angled Screw Channel (ASC) from Nobel

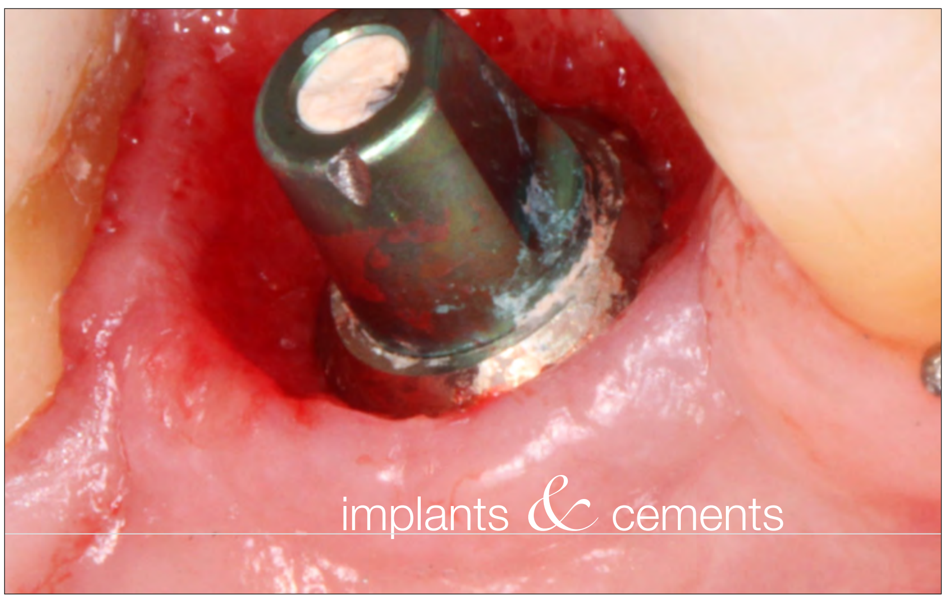
- TiBase is compressed between Zr and implant
- no cement
- Screw is torqued against the Zr
- Corrects up to 25 degrees



Potential issues:

- Zr fracture
- leakage
- screw breakage
- Zr —> Ti wear rates

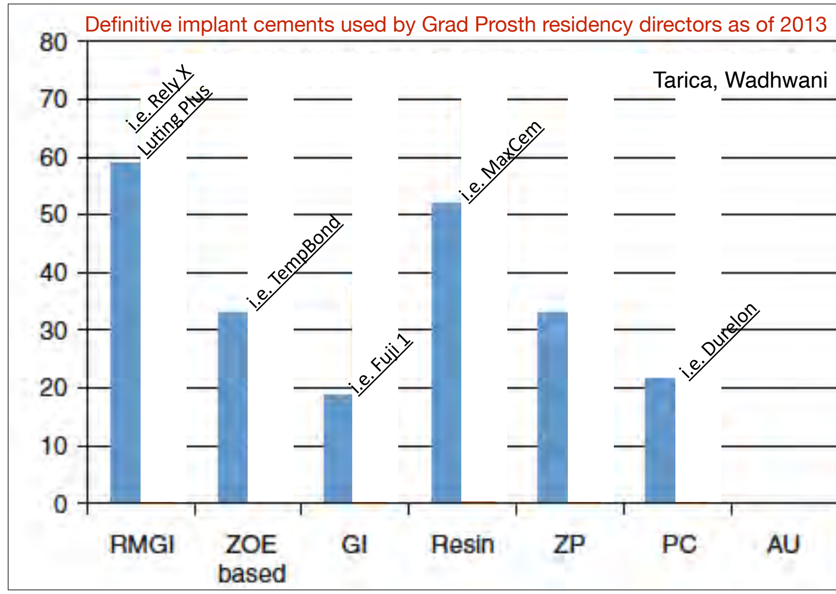




Considerations:

- retention strength — *Does the crown fall off prematurely?*
- solubility — *Will excess cement dissolve over time?*
- radiopacity — *Can excess be detected radiographically?*
- bactericidal effects — *Can the cement inhibit bacterial growth?*
- retrievability? — *Can we remove the crown if desired? Is this necessary?*

What is the “*gold standard*” ?



What about Durelon?

☞ Instructions for Use should not be discarded fo

Fields of Application

- Cementation of inlays, onlays, crowns, and bridge metal-ceramics or veneered with composite
- Cementation of inlays, onlays, crowns, and bridges made from composite or ceramics provided these are suitable for conventional cementing
- Cementation of pins and screws provided these are suitable for conventional cementing
- Cementation of orthodontic bands
- Linings

Durelon Maxicap is **not suitable for cementation from/to titanium-based restorations, since cement discoloration can occur on the points which come into contact with titanium**.

Precautionary Measures

3M MSDSs can be obtained from www.mmm.com or contact your local subsidiary.

Preparation

Effects of a Cementing Technique in Addition to Luting Agent on the Uniaxial Retention Force of a Single-Tooth Implant-Supported Restoration: An In Vitro Study 2010

Robert E. Santosa, BDS, MDSc[1]/William Martin, DMD, MS[2]/Dean Morton, BDS, MS, FACP[3]

Purpose: *Excess residual cement around the implant margin has been shown to be detrimental to the peri-implant tissue. This in vitro study examines the retentive strengths of two different cementing techniques and two different luting agents on a machined titanium abutment and solid screw implants. The amount of reduction of excess cement weight between the two cementation techniques was assessed.* **Materials and Methods:** *Forty gold castings were fabricated for 4.1 mm in diameter and 10 mm in length solid-screw dental implants paired with 5.5-mm machined titanium abutments. Twenty implants received a provisional cement, and 20 implants received a definitive cement. Each group was further divided into two groups. In the control group, cement was applied and the castings seated over the implant-abutment assembly. The excess cement was then removed. In the study group, a "practice abutment" was used to express excess cement prior to cementation. The weight of the implant-casting assembly was measured and the residual weight of cement was calculated. The samples were then stored for 24 hours at 100% humidity prior to tensile strength testing.* **Results:** *Statistical analysis revealed significant differences in tensile strength across the groups. Further Tukey tests showed no significant difference in tensile strength between the practice abutment technique and the con tional technique for both definitive and provisional cements. There was a significant reduction in r ual cement weight, irrespective of the type of cement, when the practice abutment was used pri cementation.* **Conclusions:** *Cementation of implant restorations on a machined abutment using practice abutment technique and definitive cement may provide similar uniaxial retention force anc nificantly reduced residual cement weight compared to the conventional technique of cement rem*

Int J Oral Maxillofac Implants 2010;25:1145–1152

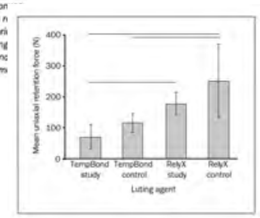
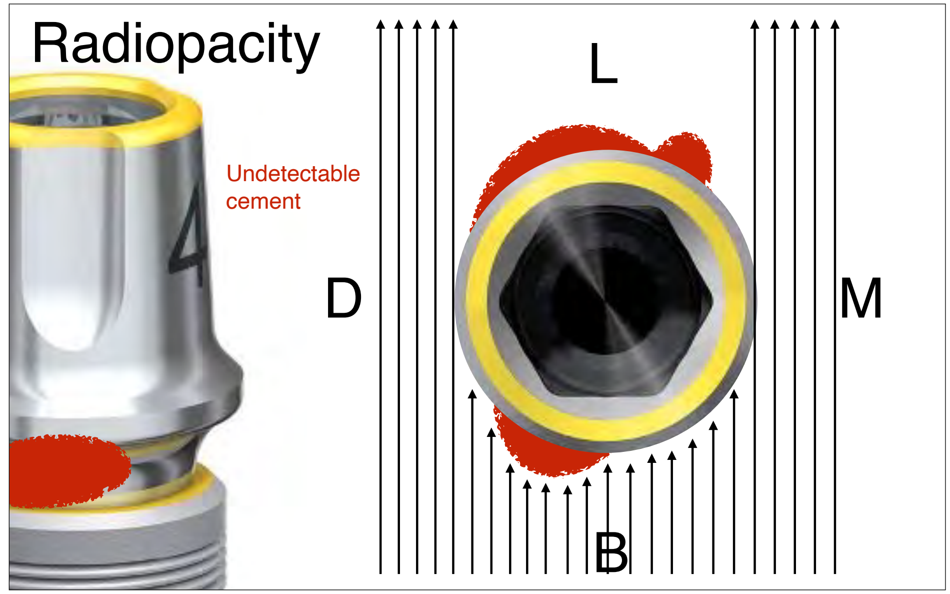


Fig 2 Uniaxial retention force/tensile strength (N) of the different cement groups. Horizontal lines indicate significant differences ($\alpha < .05$).

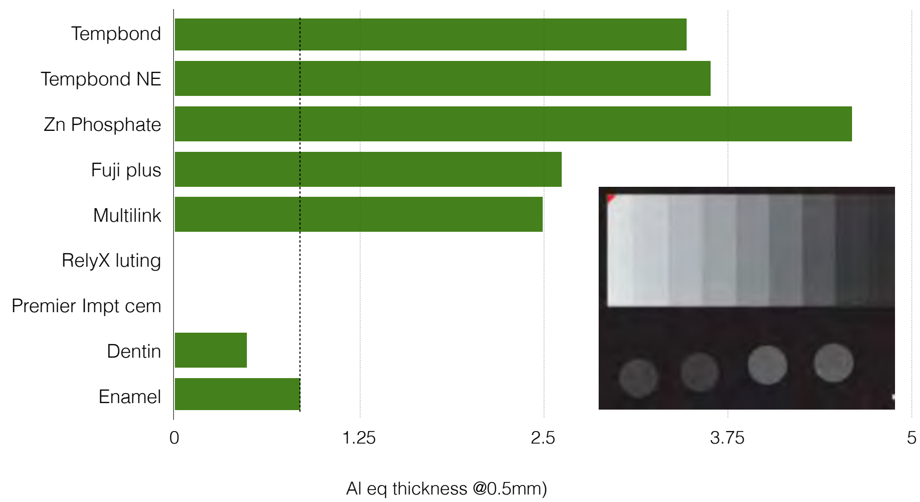
Wadhwani 2012

Radiopacity



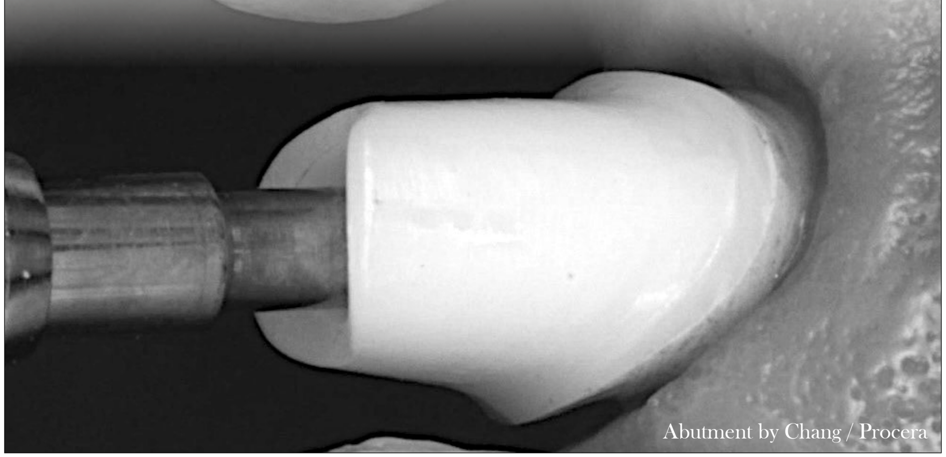
Radiopacity

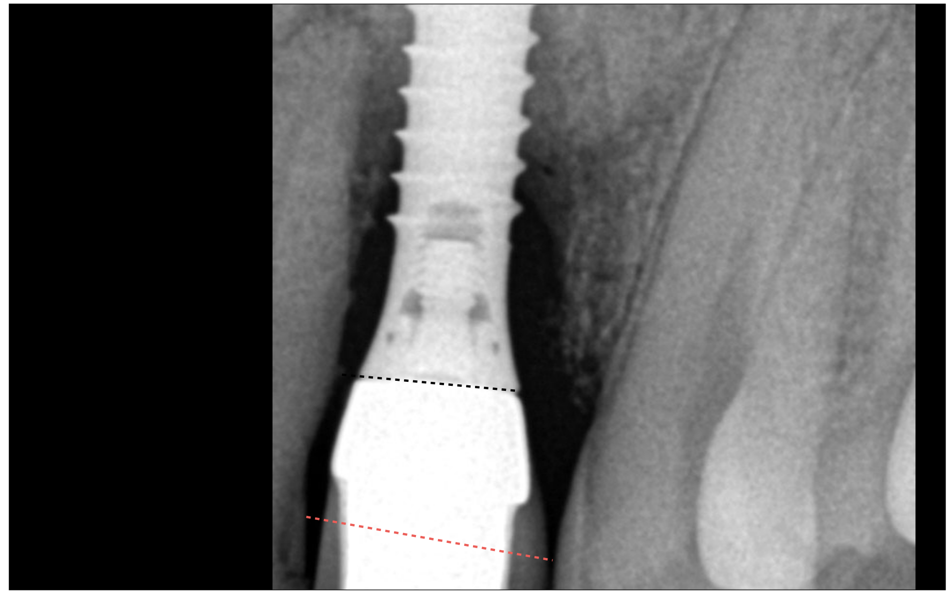
Pette GA, Ganeles J, Norkin FJ. Radiographic appearance of commonly used cements in implant dentistry. Int J perio rest Dent. 2013;33:61-8.

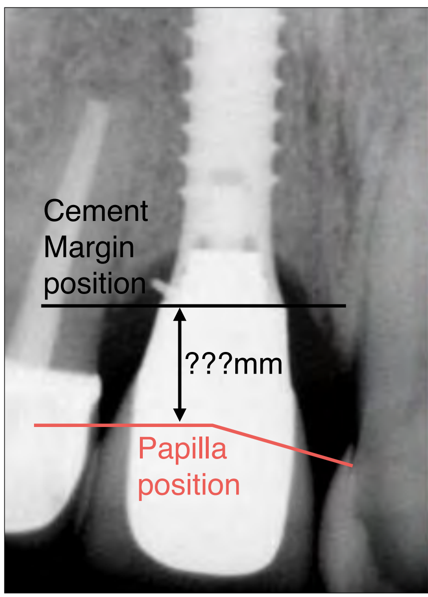


What about tempbond?

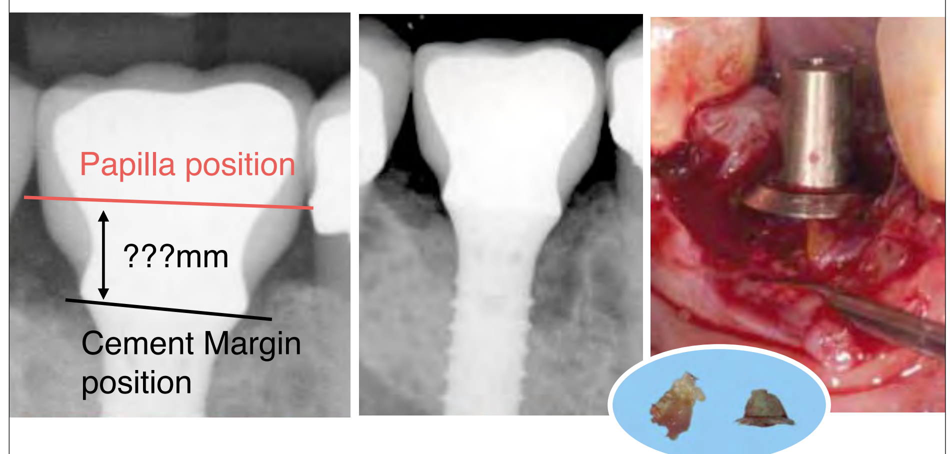
Margin Placement
for cement retained restorations



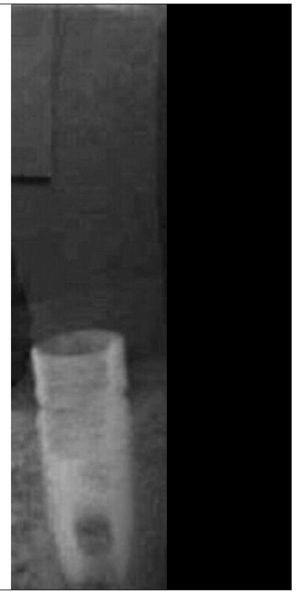


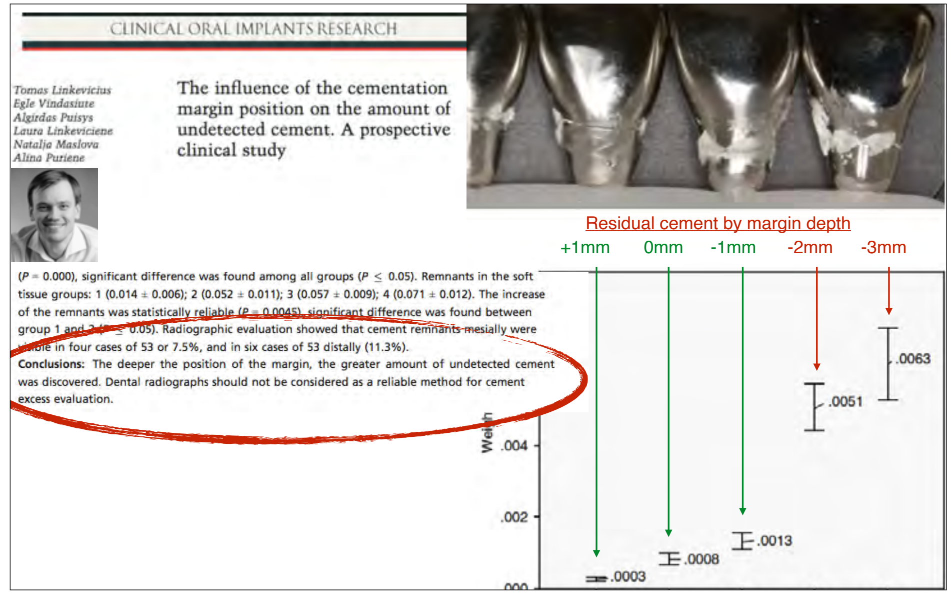


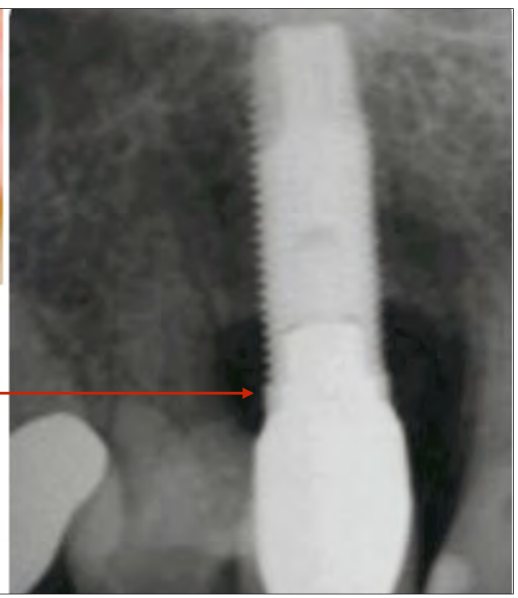
Wadhwani 2012



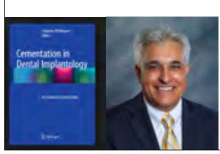
Wadhwani 2012



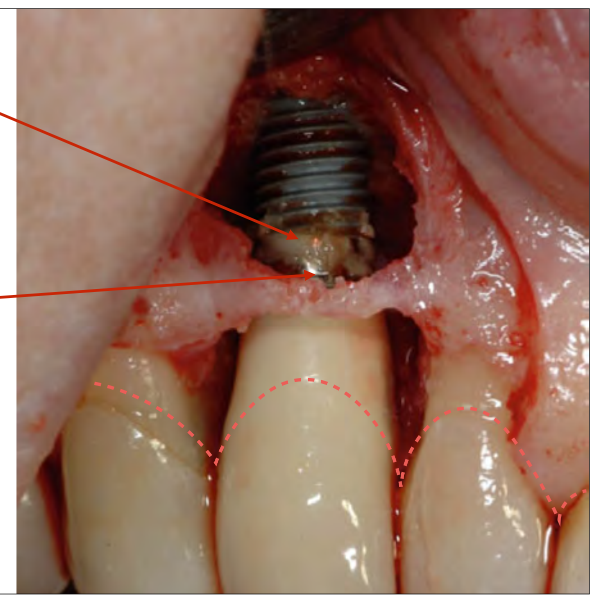




No cement visible



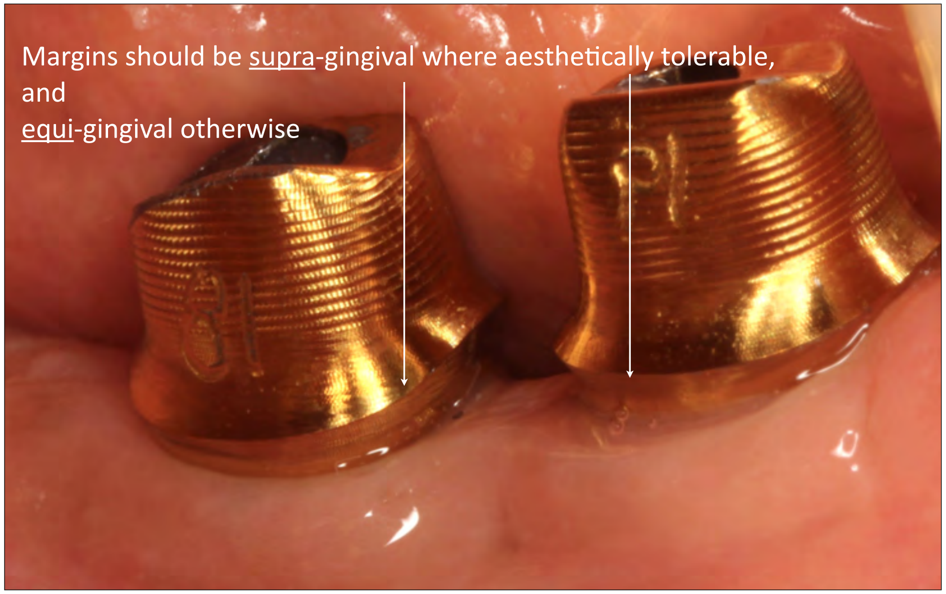
Wadhwani et al.



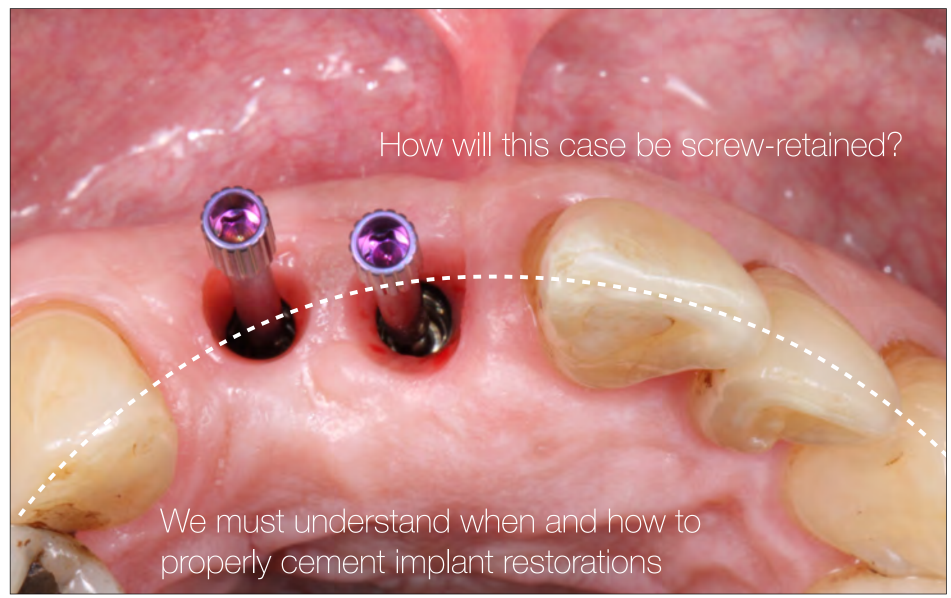
cement?

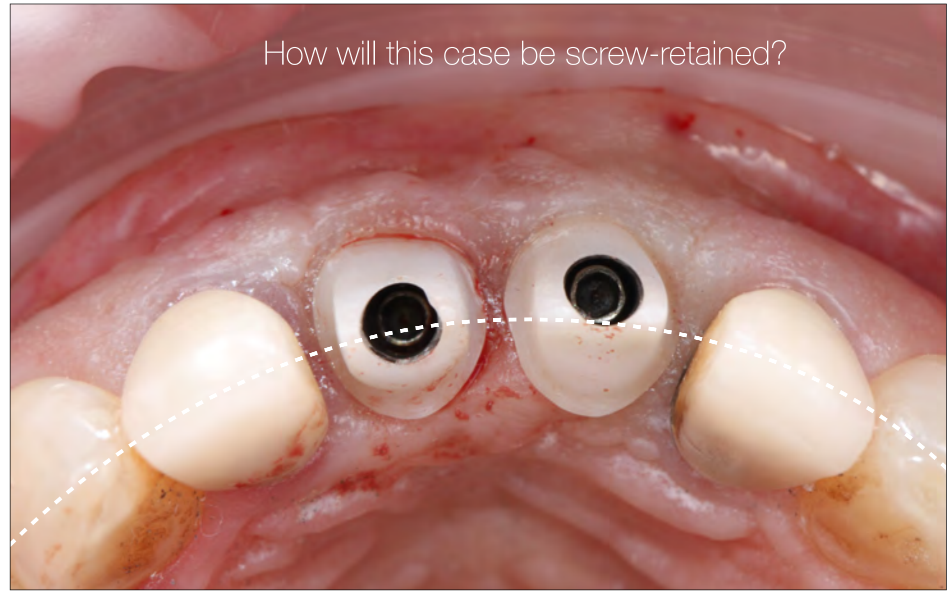
margins below the bone!
4-7mm subgingival!

Wadhwani et al.

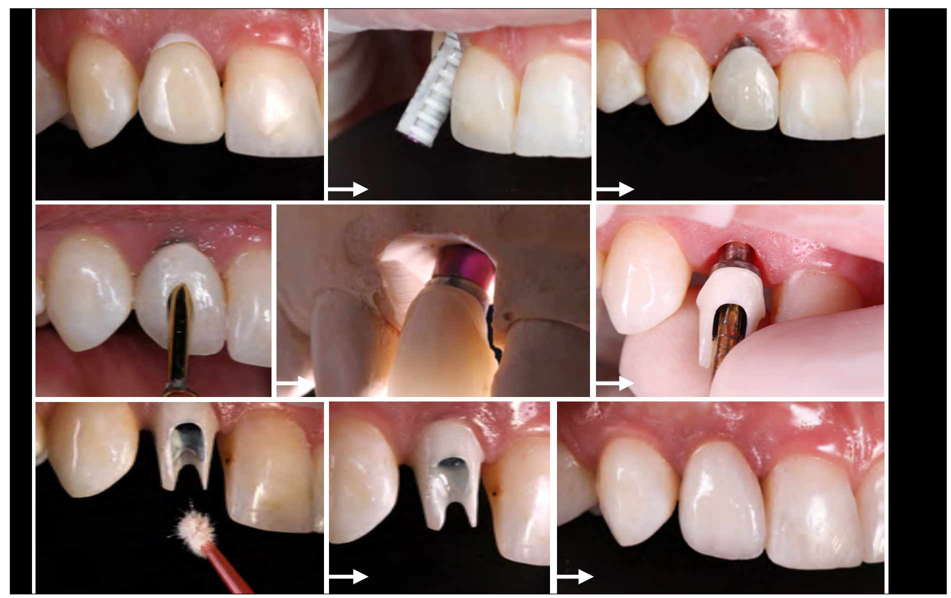


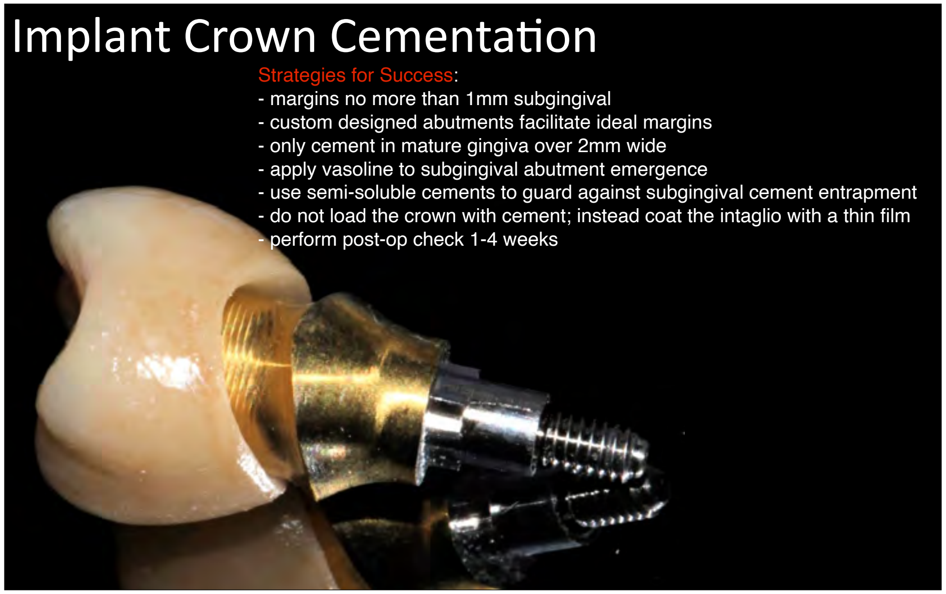
“I only do screw-retained…”

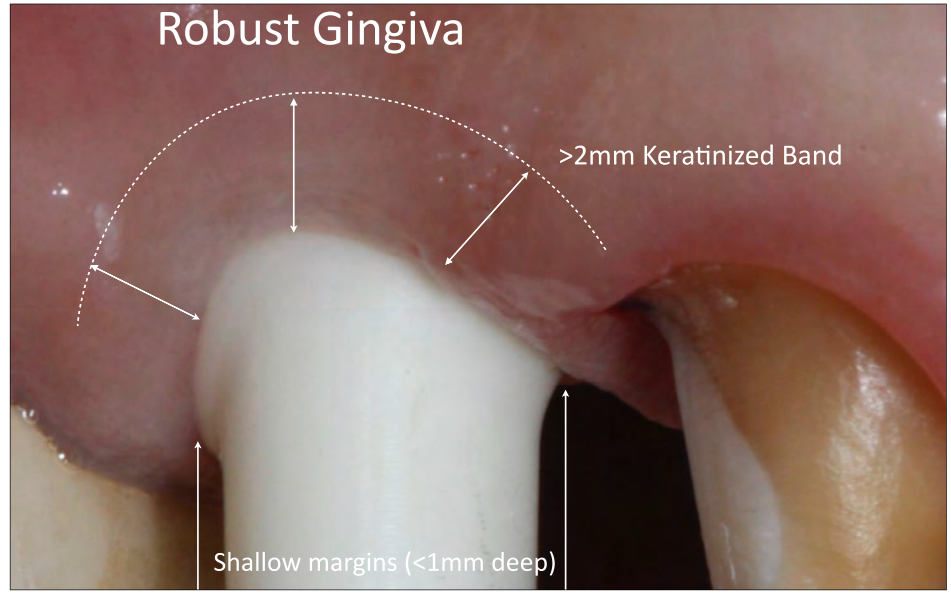


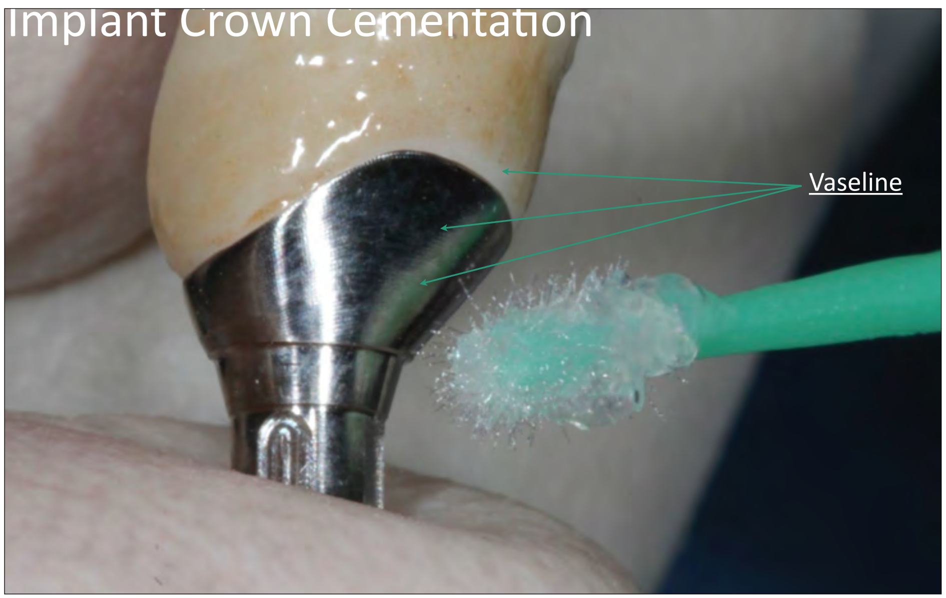

How will this case be screw-retained?


How will this case be
screw-retained?




Implant Crown Cementation
Strategies for Success:
- margins no more than 1mm subgingival
- custom designed abutments facilitate ideal margins
- only cement in mature gingiva over 2mm wide
- apply vasoline to subgingival abutment emergence
- use semi-soluble cements to guard against subgingival cement entrapment
- do not load the crown with cement; instead coat the intaglio with a thin film
- perform post-op check 1-4 weeks

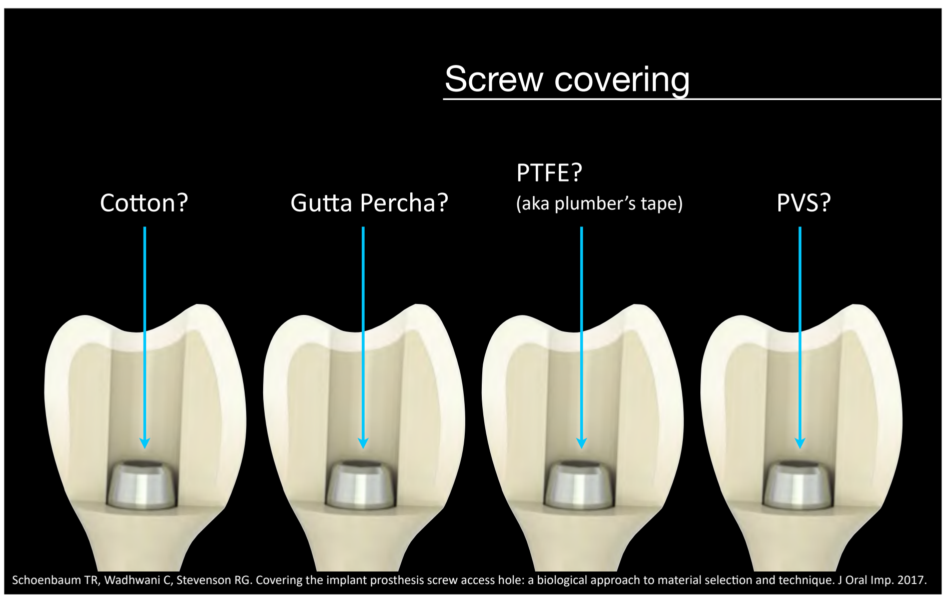

Robust Gingiva
>2mm Keratinized Band
Shallow margins (<1mm deep)

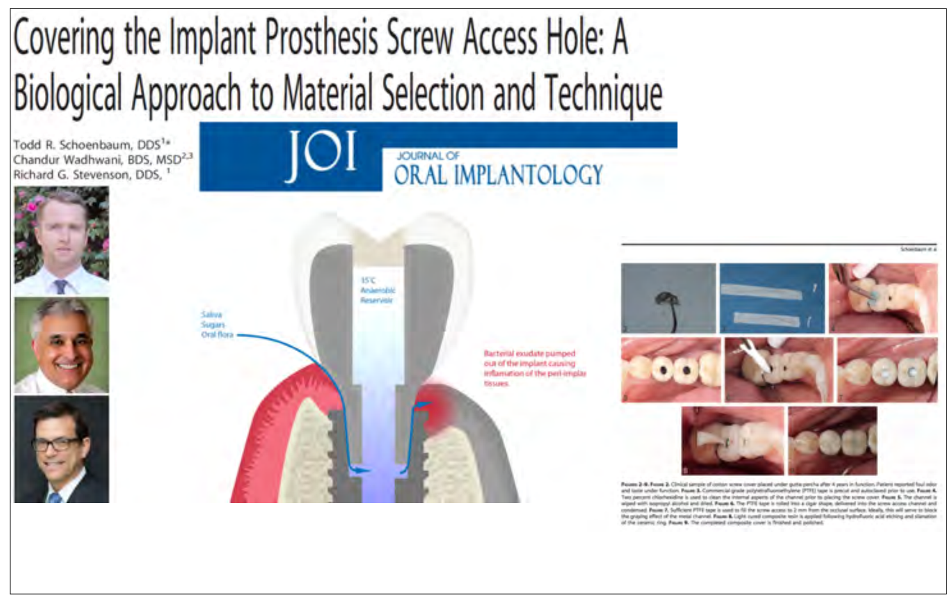

Implant Crown Cementation
Vaseline

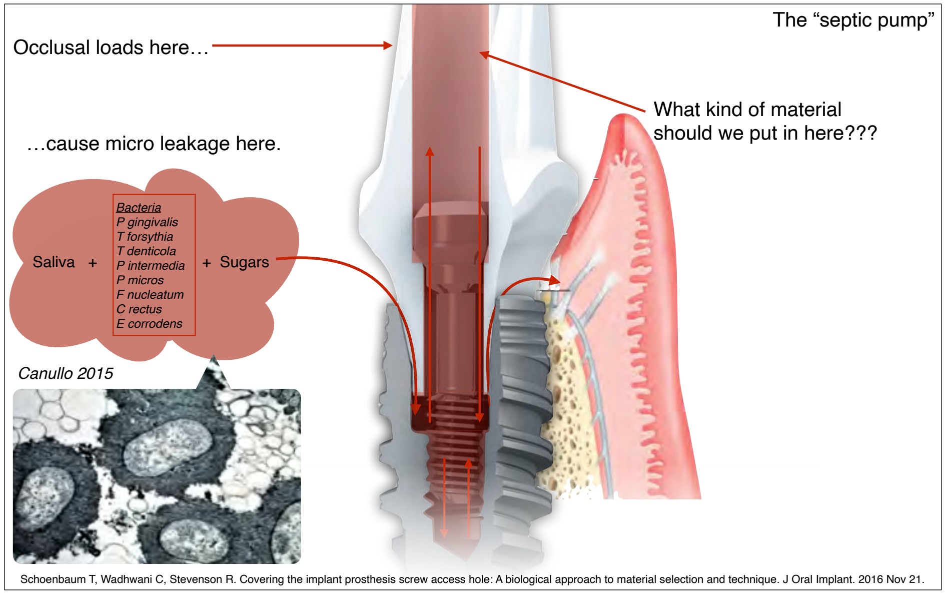

Surgeon: Tom Han
Technician Yi-Yuan Chang

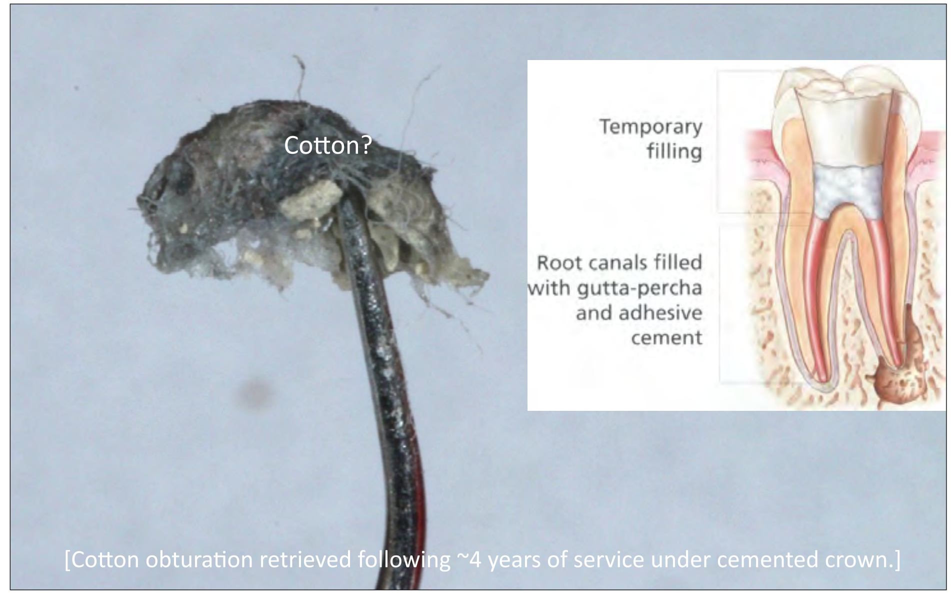

18 month followup
Layered Zirconia crown
RMGI cement
Custom Procera Zirconia Abutment


2 week Followup
Layered e.max crown
RMGI cement
Custom Procera Zirconia Abutment


Screw covering
Cotton?
Gutta Percha?
PTFE?
(aka plumber's tape)
PVS?
Schoenbaum TR, Wadhwani C, Stevenson RG. Covering the implant prosthesis screw access hole: a biological approach to material selection and technique. J Oral Imp. 2017.

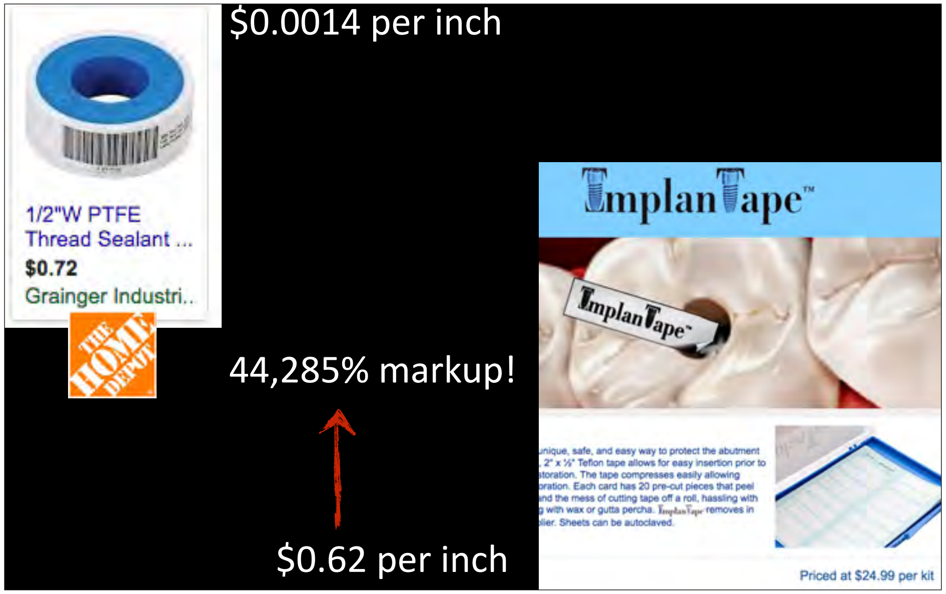

Covering the Implant Prosthesis Screw Access Hole: A Biological Approach to Material Selection and Technique
Todd R. Schoenbaum, DDS[1*]
Chandur Wadhwani, BDS, MSD[2,3]
Richard G. Stevenson, DDS, [1]
JOI
JOURNAL OF
ORAL IMPLANTOLOGY


Occlusal loads here…
The "septic pump"
…cause micro leakage here.
What kind of material should we put in here???
Saliva +
Bacteria
P gingivalis
T forsythia
T denticola
P intermedia
P micros
F nucleatum
C rectus
E corrodens
+ Sugars
Canullo 2015
Schoenbaum T, Wadhwani C, Stevenson R. Covering the implant prosthesis screw access hole: A biological approach to material selection and technique. J Oral Implant. 2016 Nov 21.

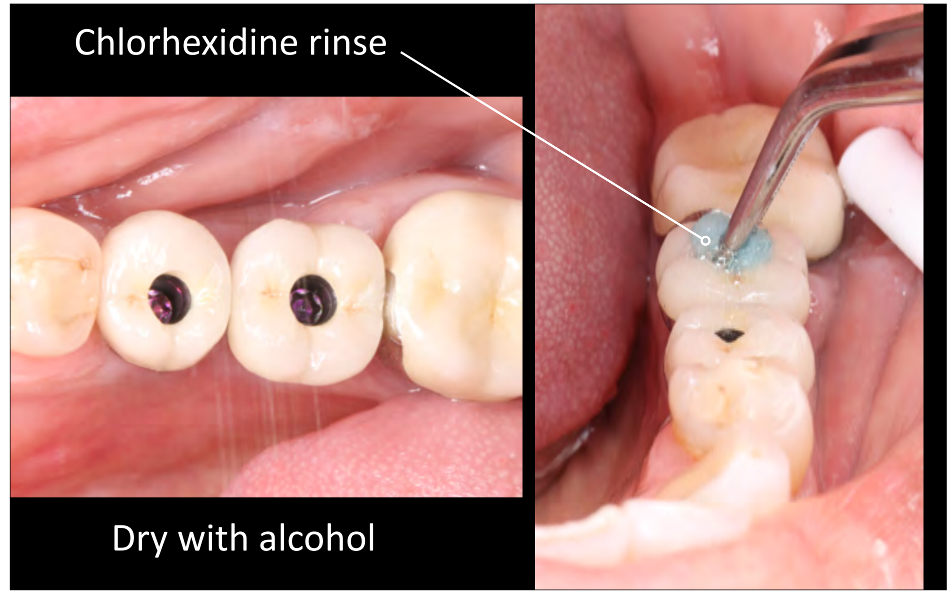

Cotton?
Temporary filling
Root canals filled with gutta-percha and adhesive cement
[Cotton obturation retrieved following ~4 years of service under cemented crown.]


Teflon tape - for **screw retained** crowns
(aka plumber's tape; aka PTFE tape)

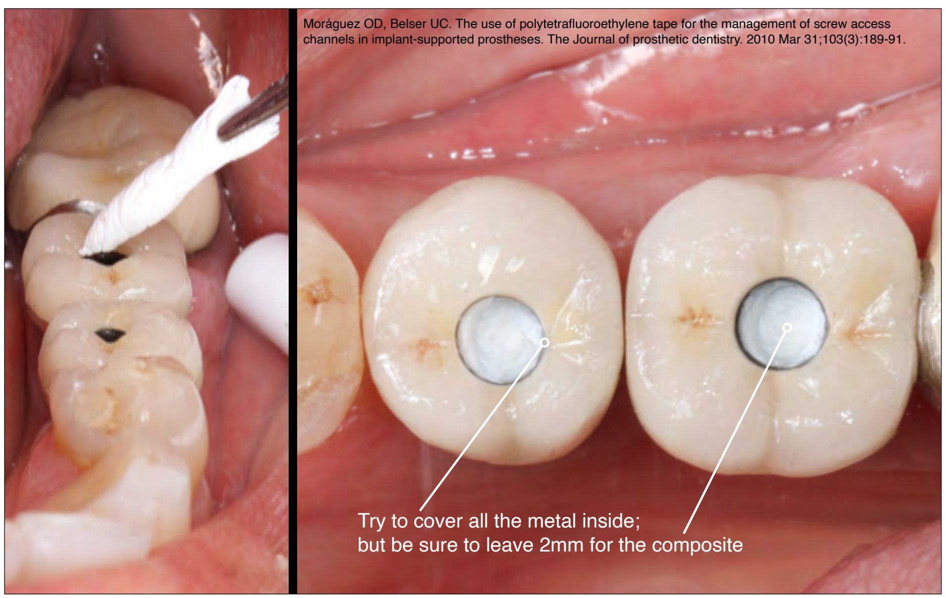

Teflon tape - for **screw retained** crowns
(aka plumber's tape; aka PTFE tape)



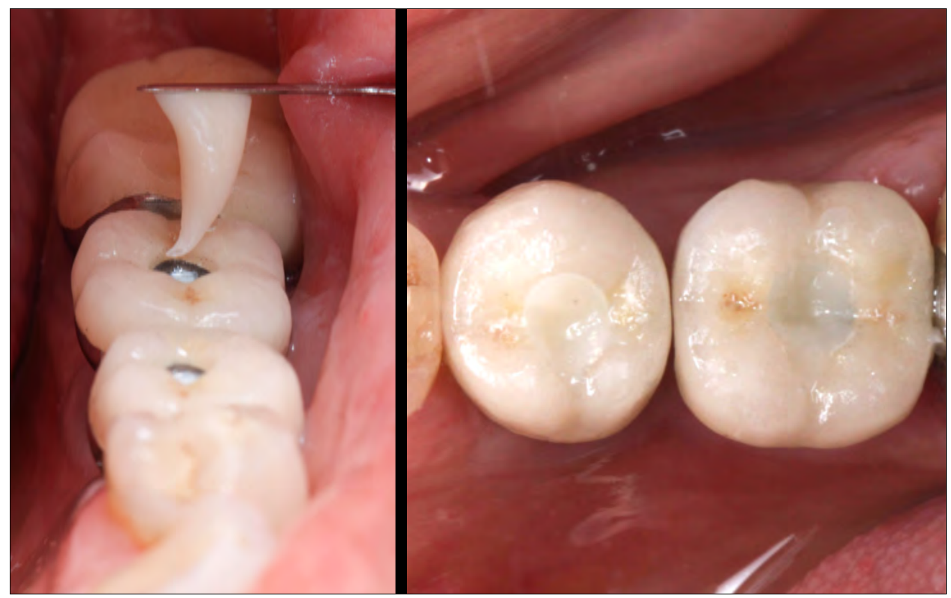
$0.0014 per inch
1/2"W PTFE
Thread Sealant ...
$0.72
Grainger Industri..
THE HOME DEPOT
44,285% markup!
$0.62 per inch
ImplanTape™
ImplanTape™
unique, safe, and easy way to protect the abutment
, 2" x ½" Teflon tape allows for easy insertion prior to
storation. The tape compresses easily allowing
oration. Each card has 20 pre-cut pieces that peel
nd the mess of cutting tape off a roll, hassling with
g with wax or gutta percha. ImplanTape removes in
lier. Sheets can be autoclaved.
Priced at $24.99 per kit

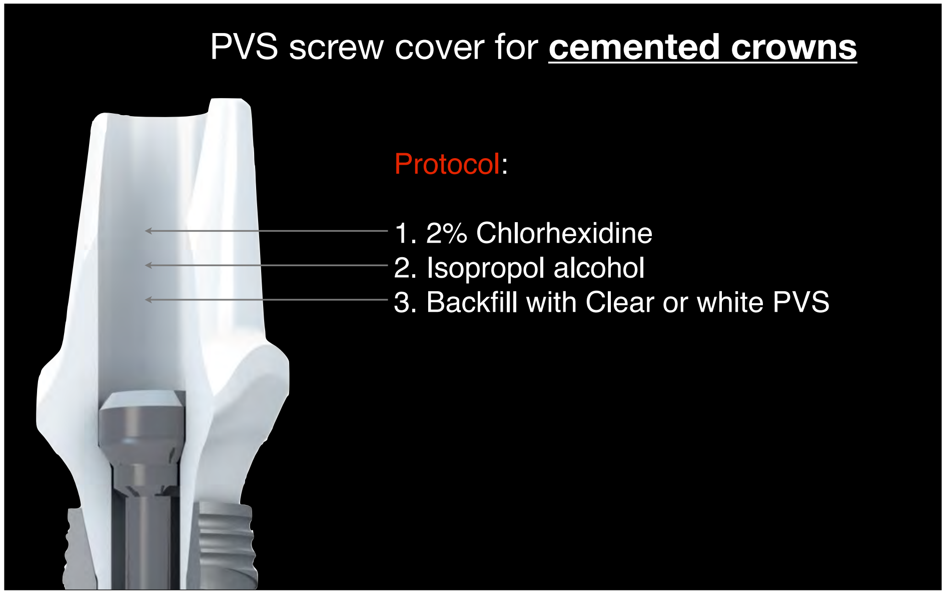


Chlorhexidine rinse
Dry with alcohol

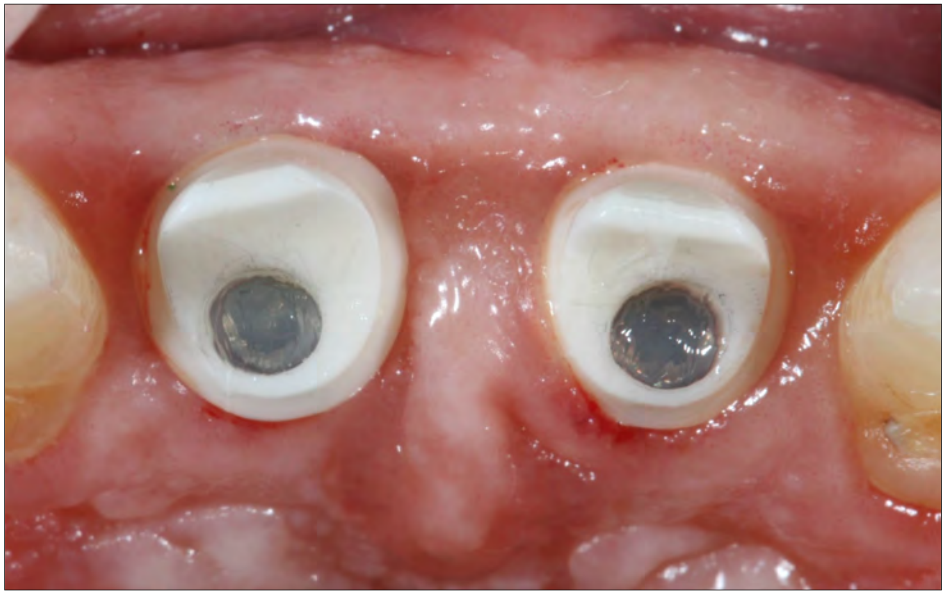


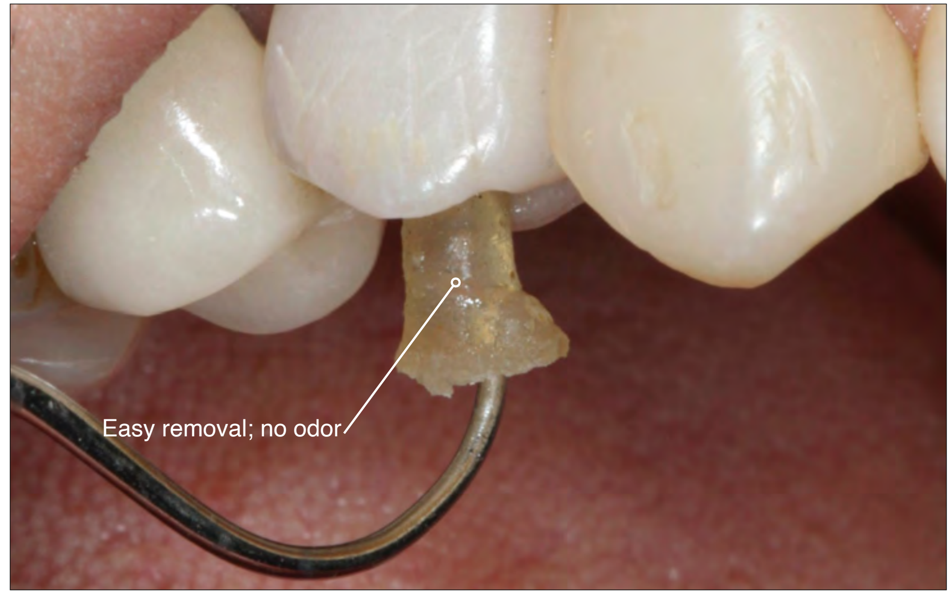
Moráguez OD, Belser UC. The use of polytetrafluoroethylene tape for the management of screw access channels in implant-supported prostheses. The Journal of prosthetic dentistry. 2010 Mar 31;103(3):189-91.
Try to cover all the metal inside;
but be sure to leave 2mm for the composite

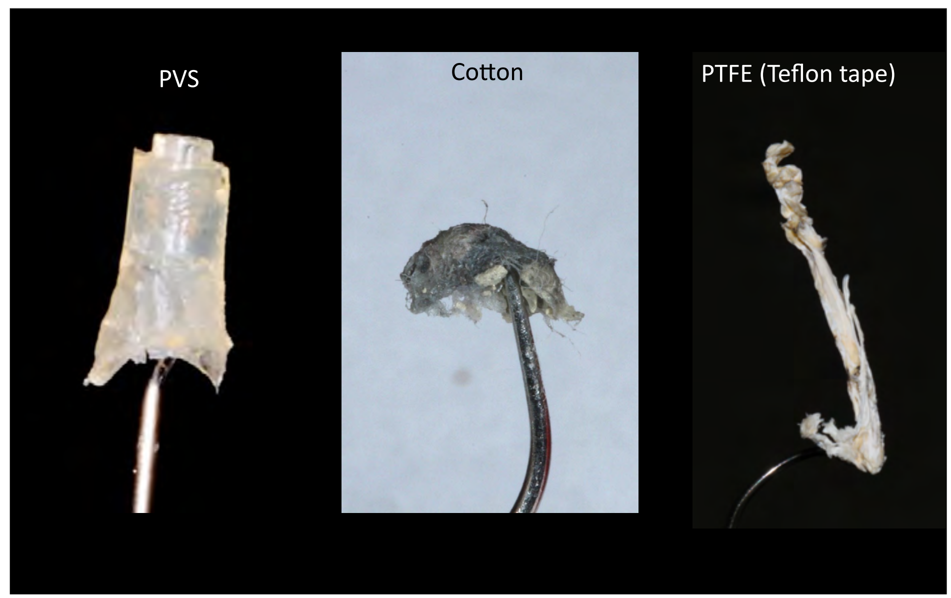



PVS screw cover for **cemented crowns**
Protocol:
1. 2% Chlorhexidine
2. Isopropol alcohol
3. Backfill with Clear or white PVS


Clear PVS or White PVS




Easy removal; no odor


PVS
Cotton
PTFE (Teflon tape)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DENTAL COLLEGE OF GEORGIA
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Fellow of the AMERICAN COLLEGE of DENTISTS
MEMBER OF THE AMERICAN ACADEMY OF ESTHETIC DENTISTRY
Member of the Pacific Coast Society for Prosthodontics
Member of the AMERICAN ACADEMY of RESTORATIVE DENTISTRY