



Taiwan Academy of Osseo-integration TAOi
Taipei 22-23 July 2017

CAD-CAM TECHNOLOGY AND ZIRCONIA

*New opportunities for
esthetic single-tooth restorations*

Urs | Belser

TOPICS



- **Introduction and scope**
- Prosthetic procedures - case presentations
- Conclusions & perspectives









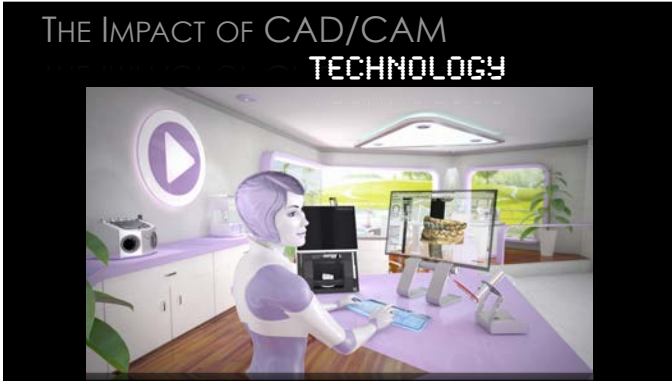


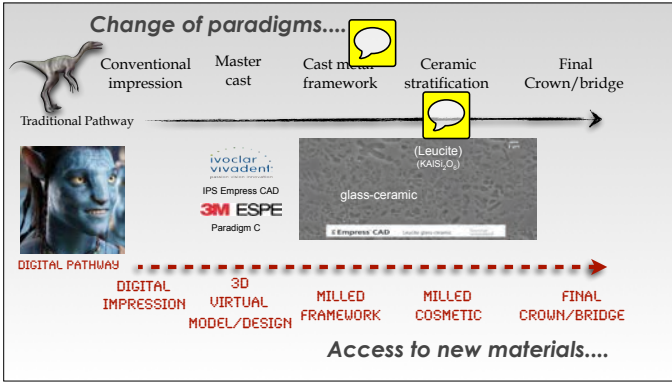


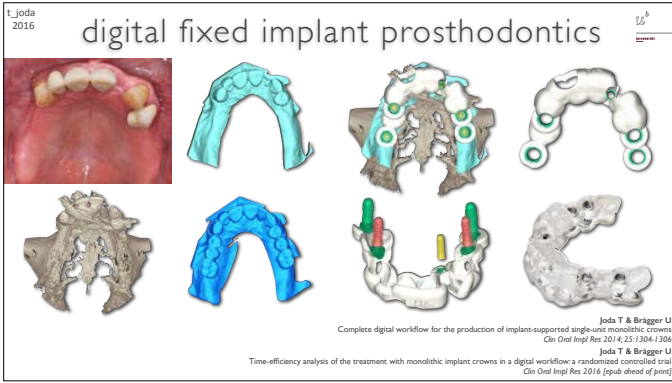


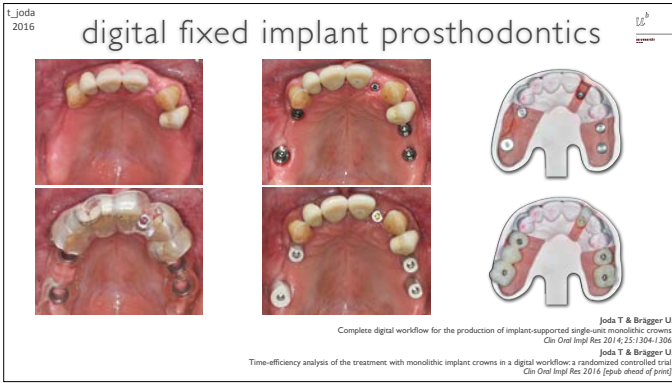


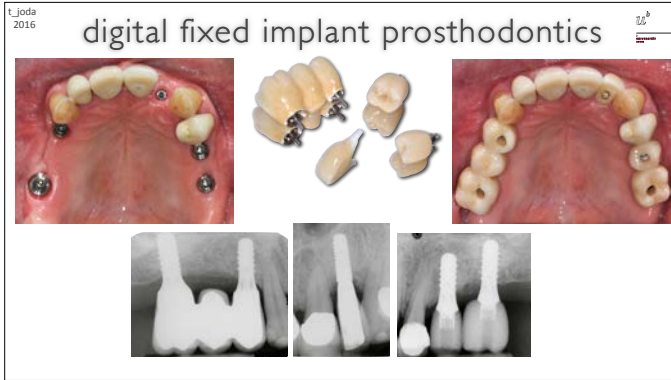










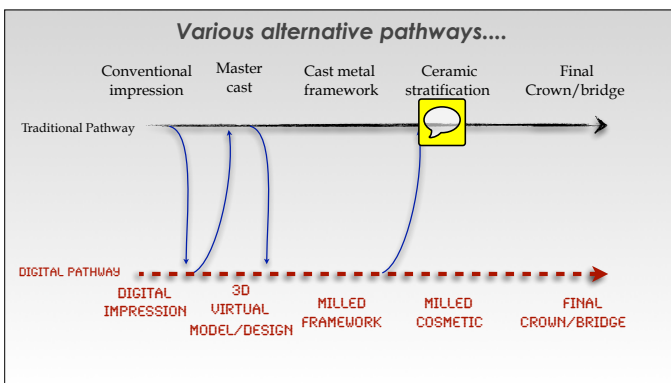


Digital implant dentistry

The objective is reached when the following **9** parameters are met:

- more **precise**, more **biocompatible**, more **durable**, more **functional**, more **esthetic**, less **risky**, less **expensive**, **faster** and more **comfortable** for patient & clinician...

...than traditional pathways



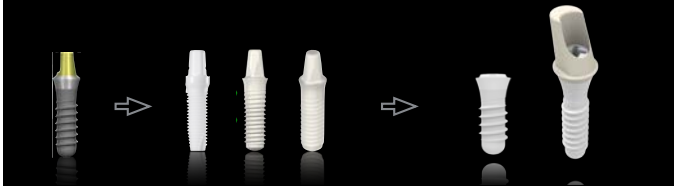




Why "metal-free, white implant dentistry"?

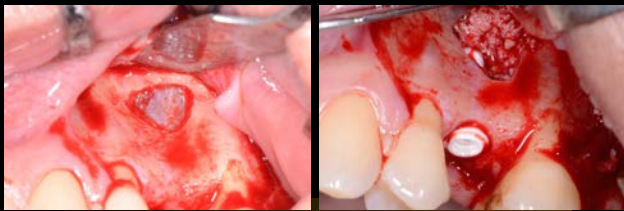
Why "ZrO₂"?

Why two-part?



1	2											13	14	15	16	17	18	
1A	2A											3A	4A	5A	6A	7A	8A	
H	He											B	C	N	O	F	Ne	
Li	Be											Al	Si	P	S	Cl	Ar	
Na	Mg	3	4	5	6	7	8	9	10	11	12	Ga	Ge	As	Se	Br	Kr	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	In	Sn	Sb	Te	I	Xe	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	Hg	Tl	Pb	Bi	Po	At	Rn
Cs	Ba	La-Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac-Lu	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Uuq	Uup	Uuh	Uus	Uuo	
LANTHANIDES		La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu		
ACTINIDES		Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		

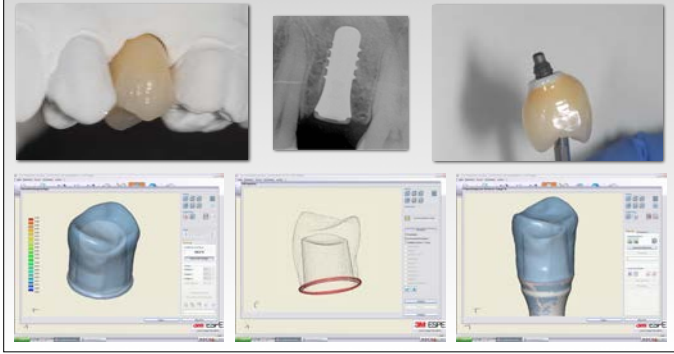
Implant-Surgery



April 2014

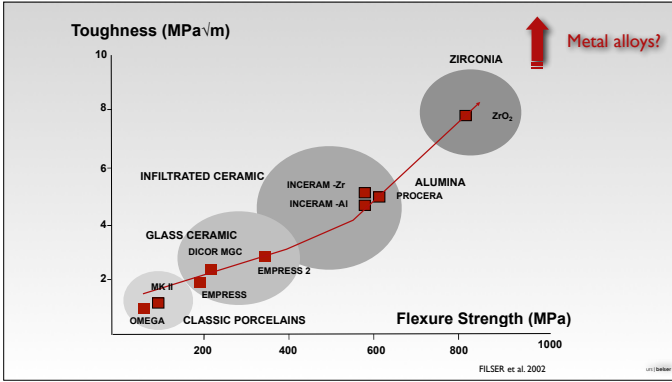
Surgeon: Prof. Dr. D. Buser

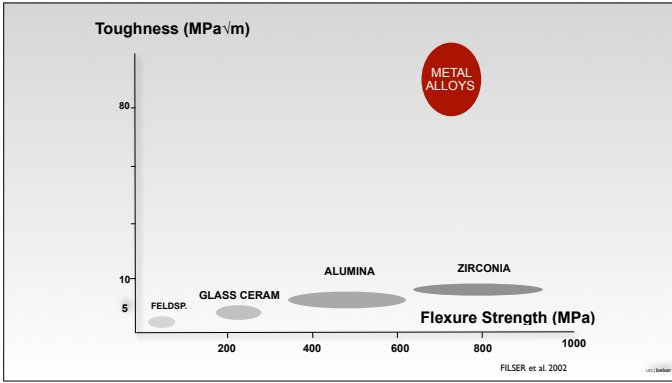
Two-part ZrO₂ Implant











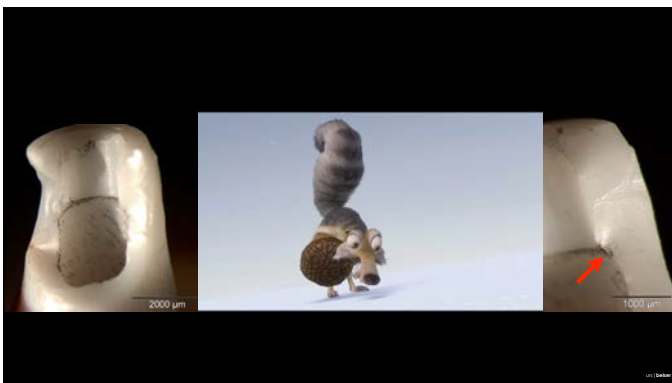
While a crack runs through zirconia, all grains in the vicinity of the crack transform into a monoclinic phase which is 4% bigger in volume than the tetragonal phase and therefore compresses the crack which needs more energy to continue to propagate.

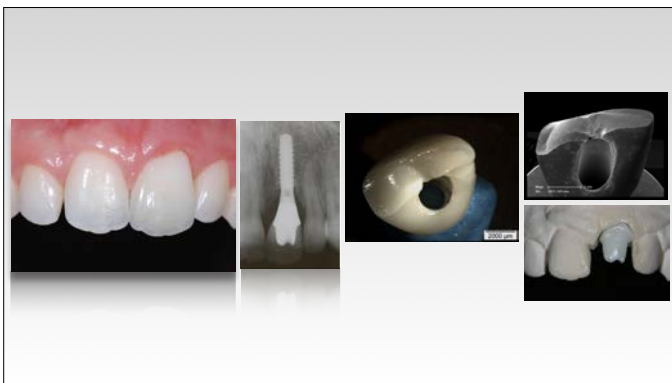
ABUTMENT DESIGN PRINCIPLES

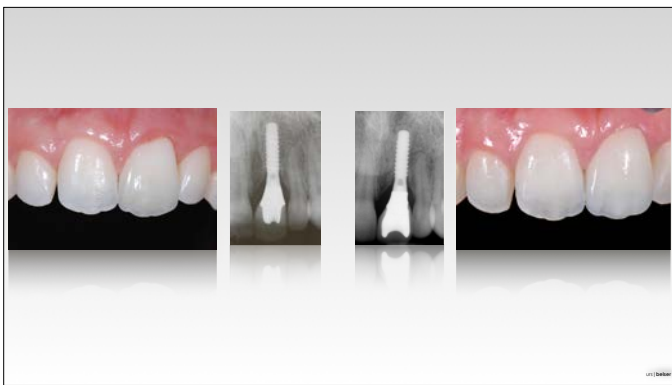











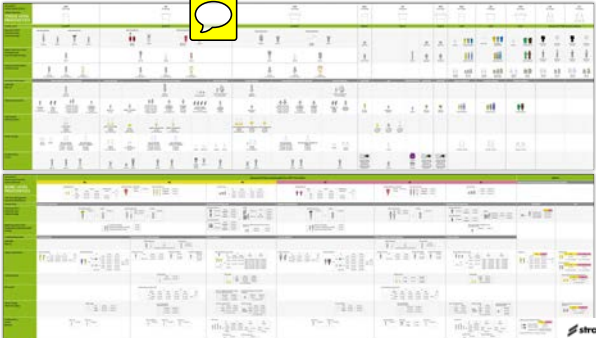


TOPICS



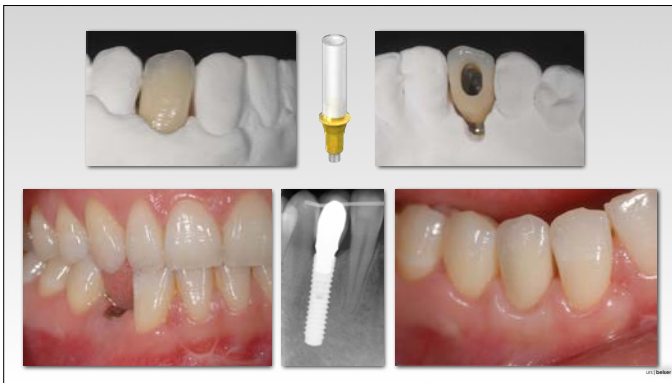
- Introduction and scope
- **Prosthetic procedures - case presentations**
- Conclusions & perspectives

A complete prosthetic portfolio for TIs and BLIs - covers "all thinkable options"

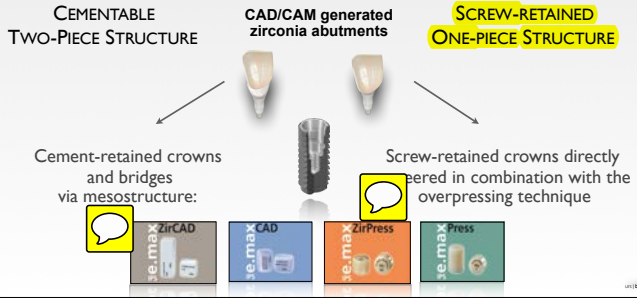


Abutment selection - Bone Level (Partial edentulism - implant FDP's)

	Anterior				Posterior			
	single		multi-unit		single		multi-unit	
	screw-retained	cement-retained	screw-retained	cement-retained	screw-retained	cement-retained	screw-retained	cement-retained
Premium								
Advanced								
Standard								



SUPRASTRUCTURES ON ZIRCONIA-ABUTMENTS

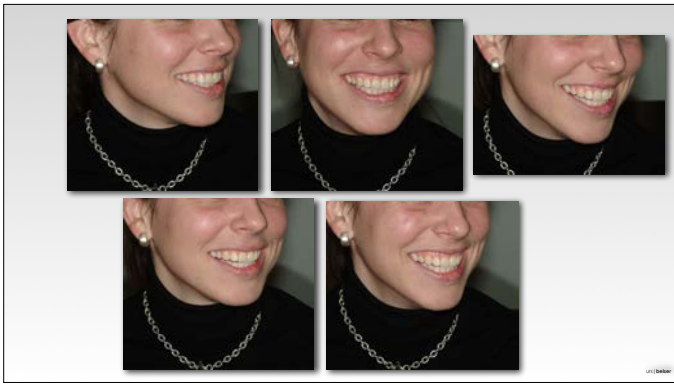














The use of polytetrafluoroethylene tape for the management of screw access channels in implant-supported prostheses

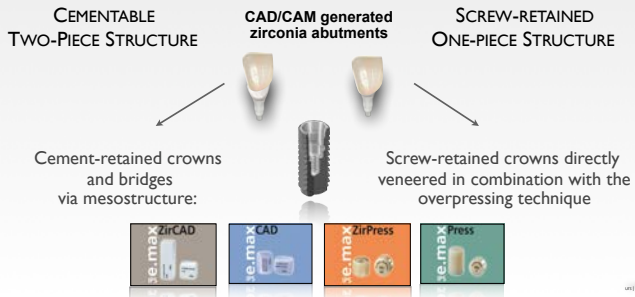
Moráquez OD & Belser UC
J Prosthet Dent. 2010;103:189-91

PREPARING A PTFE TAPE FOR CLINICAL USE

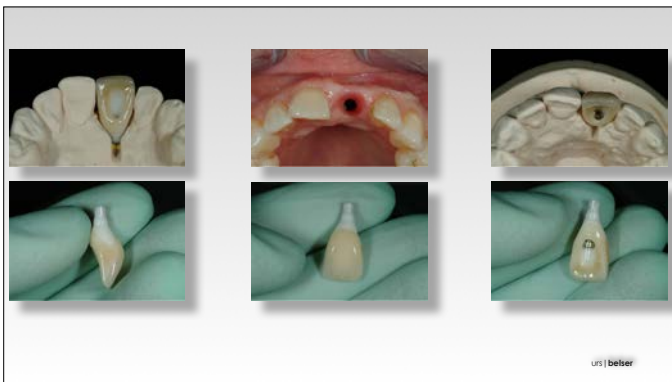
The use of polytetrafluoroethylene tape for the management of screw access channels in implant-supported prostheses

Moráquez OD & Belser UC
J Prosthet Dent. 2010;103:189-91

SUPRASTRUCTURES ON ZIRCONIA-ABUTMENTS









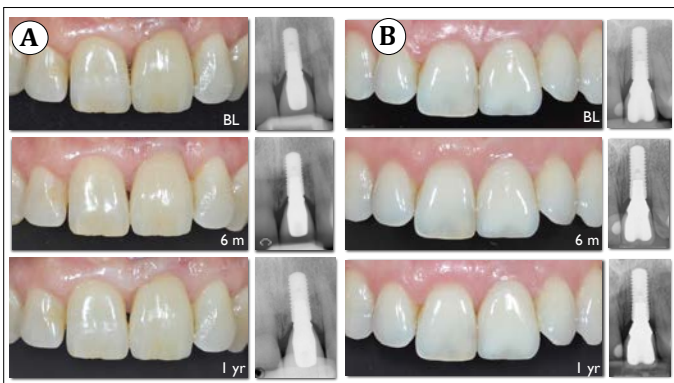














Truninger TC, Stawarczyk B, Leuterer CR, Sailer TR, Hämmerle CHF & Sailer I

Bending moments of zirconia and titanium abutments with internal and external implant-abutment connections after aging and chewing simulation

Clin Oral Impl Res 23:12-18, 2012

It may be concluded that the failure type and bending moments of zirconia abutments vary with respect to their **implant-abutment connection** after aging and chewing simulation. Furthermore, the use of a **secondary metallic component** might have a beneficial influence on the stability of zirconia abutments.

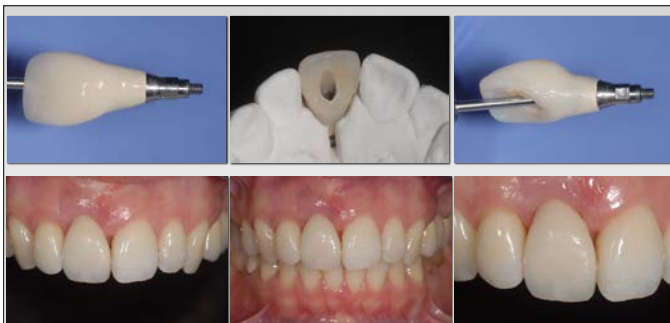
Development of optimum abutment-implant interfaces



Responding to complex material, design & engineering challenges in best tradition of the SWISS watch industry

New Perspectives for implant restorations





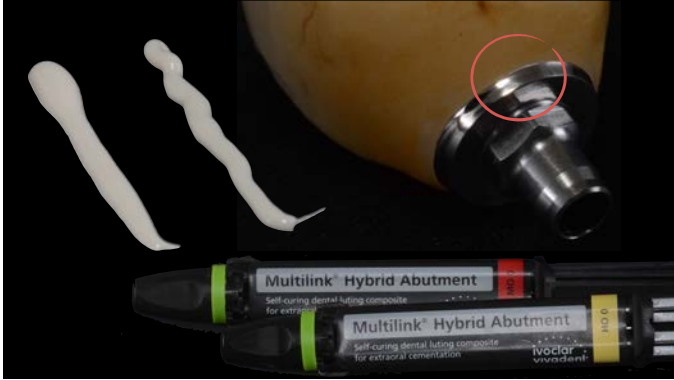
Initial provisional implant restoration 11, before mucogingival surgery



Courtesy Prof. Anton Sculean

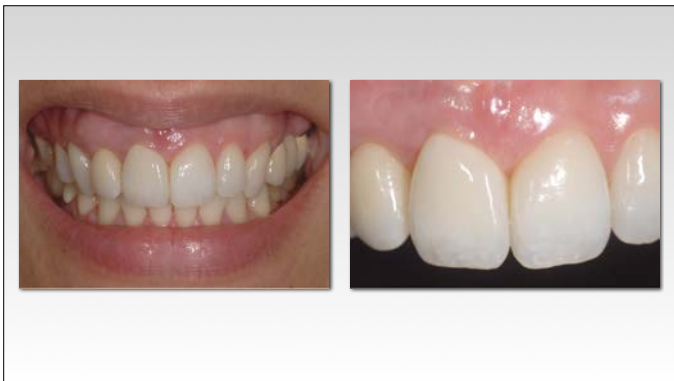
Ti-bonding base, directly screw-retained
(one-piece restoration)





Ti-bonding base, directly screw-retained
(one-piece restoration)



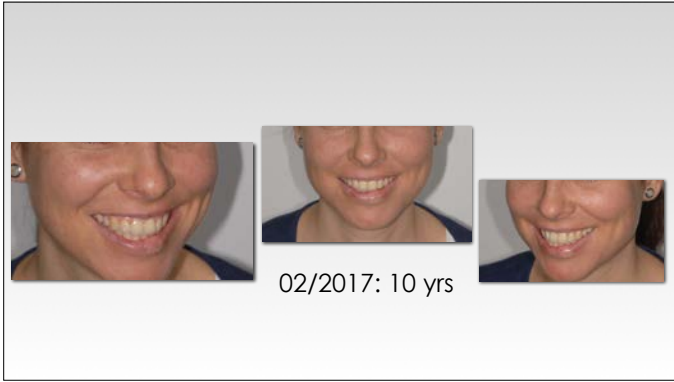




Before mucogingival surgery
"Slim" provisional restoration

6 months after mucogingival surgery
Final all-ceramic implant crown











Ti-bonding bases and ZrO2 CAD/CAM crowns directly screw-retained (one-piece restorations)



Bisque bake try-in

© 2018 Bredent

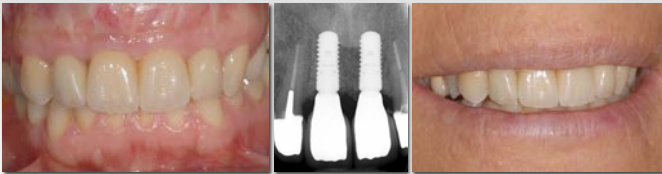
Ti-bonding bases and ZrO2 CAD/CAM crowns directly screw-retained (one-piece restorations)



Final restorations

© 2018 Bredent

BL-Implants 11&21 - Ti-bonding bases and ZrO2 CAD/CAM crowns directly screw-retained (one-piece restorations)



Final restorations

© 2018 Bredent

Ti-bonding bases and ZrO2 CAD/CAM crowns directly screw-retained (one-piece restorations)



Initial situation

Final restorations

© 2018 Bredent



















