Controversies in Implantology

ITI
Congress
Nordic
Copenhagen
September 1 - 2

2023

Conventional versus novel materials for a fixed prosthesis

Sharing knowledge with peer experts by use of audience interaction ---- www.slido.com ----

Asbjørn Jokstad| Tromsø, Norway

Bjarni E. Pjetursson | Reykjavik, Iceland

Which material combinations are optimal in four clinical scenarios?

Single missing tooth in molar area

Single missing tooth in anterior area

34 years old female

Photos: Dr. Riccardo Kraus

Several missing teeth on molar area

3-unit FDP

Edentulous arch

Tell us what you think on: Slido.com

Code #: ITINordic

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? Abutment Restorative Retention Workflow

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CARES® X-Stream™ restorative options

MATERIAL OVERVIEW

Which material combinations are optimal for a specific indication?

? Abutment Restorative Retention Workflow

1 Bridges and bars are available with up to 10 implant abutment connections
2 Molar bridge excluded
3 Not available for Bars
4 Only available for Fixed bars
5 Not available for NNC and WN
6 Not available for NNC
7 Restorations only available without screw channel hole
8 Restorations only available with screw channel hole

			Tooth replacement options Full-contour or frameworks for single tooth, bridges and bars												
			Zirconia								Metal		Polymer		
			nIce®	IPS e.max® CAD	zerion® GI	zerion LT®[5]	zerion® ML	3M™ ESPE™ Lava™ Plus Zirconia[4]	3M™ Lava™ Esthetic	zerion® UTML[2,3]	coron®	ticon®	polycon® ae[3]	VITA® CAD-Temp	JUVORA™ PEEK
PURE Ceramic	Implant Monotype		Single	Single		Single	Single	Single	Single		Single	Single	Single	Single	
CARES® Abutments	CARES® Abutment, Zirconium dioxide[5,6]		Single	Single	Full	Full	Full	Full	≤ 3 U	≤ 3 U			Full	Full	Full
	CARES® Abutment, Titanium[6,7]		Single	Single	Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
	CARES® Abutment, Titanium[6,7,8]					Single		Single			Single		Single		Single
	CARES® Abutment, CoCr[6,7]		Single	Single	Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
	CARES® Abutment, CoCr[6,8]				Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
Variobase®	Variobase® for Crown		Single	Single	Single	Single	Single	Single	Single	Single	Single		Single	Single	Single
	SC Variobase® for Crown				Single	Single	Single	Single	Single	Single	Single		Single	Single	Single
	Variobase® for Crown AS					Single		Single			Single		Single		
	Variobase® for Bridge/Bar Cylindrical[8]				Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
	Variobase® for Bridge/Bar Cylindrical Coping for Screw-retained Abutments[8]				Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
Stock Abutments	BL Cementable Abutments		Single	Single	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	
	TL synOcta® Cementable Abutments		Single	Single	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	

Single = Single tooth | Full = Full arch | U = Units

Which implant system has been used? (… an increasing quandary

CARES® X-Stream™ restorative options

MATERIAL OVERVIEW

1 Bridges and bars are available with up to 10 implant abutment connections
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PURE Ceramic	Implant Monotoype		Single	Single		Single	Single	Single	Single		Single	Single	Single	Single	
CARES® Abutments	CARES® Abutment, Zirconium dioxide5,6		Single	Single	Full	Full	Full	Full	≤ 3 U	≤ 3 U			Full	Full	Full
	CARES® Abutment, Titanium6,7		Single	Single	Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
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	SC Variobase® for Crown				Single	Single	Single	Single	Single	Single	Single		Single	Single	Single
	Variobase® for Crown AS					Single		Single			Single		Single		
	Variobase® for Bridge/Bar Cylindrical8				Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
	Variobase® for Bridge/Bar Cylindrical Coping for Screw-retained Abutments8				Full	Full	Full	Full	≤ 3 U	≤ 3 U	Full	Full	Full	Full	Full
Stock Abutments	BL Cementable Abutments		Single	Single	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	
	TL synOcta® Cementable Abutments		Single	Single	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	≤ 3 U	

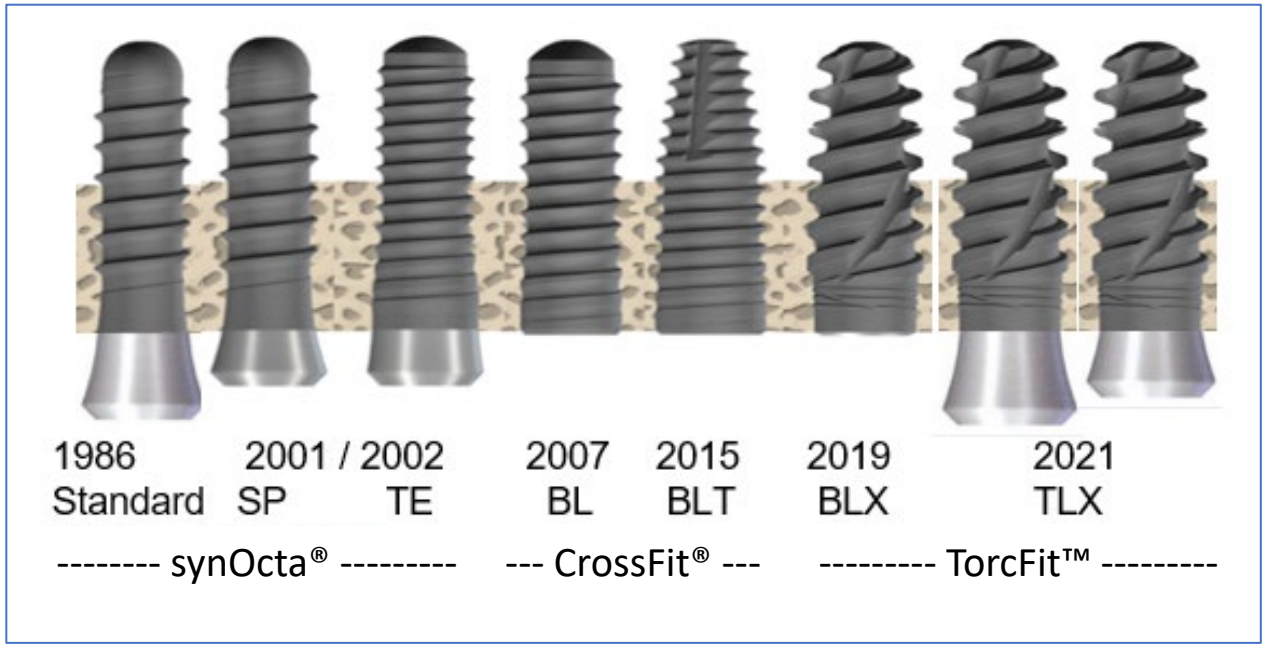
Single = Single tooth | Full = Full arch | U = Units

Manufacturers systems

Current and former: ~750 ~4000

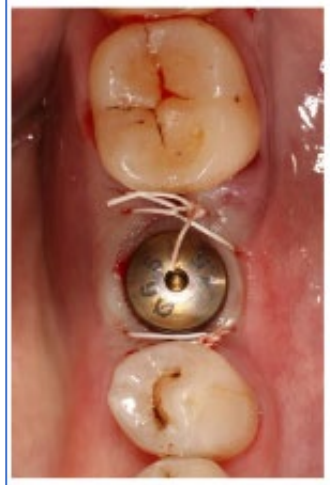
Disappeared: ~400 ~2000

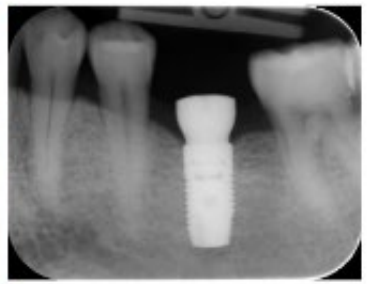
Straumann currently: (3) + 8 + (1)



Which material combinations are optimal in four clinical scenarios?

Single missing tooth in molar area





64 years old male

Which abutment material?

Single missing tooth in anterior area

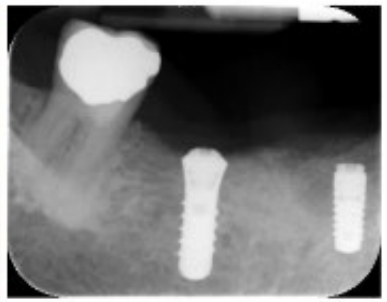
34 years old female

Which restorative material?

?
Abutment
Restorative
Retention
Workflow

Several missing teeth on molar area

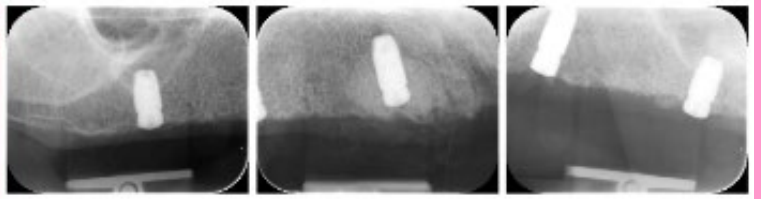
3-unit FDP



75 years old female

Which retention material?

Edentulous arch



65 years old female

Digital or analog workflow?

Tell us what you think on: Slido.com

Code #: ITINordic

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Which country do you come from?

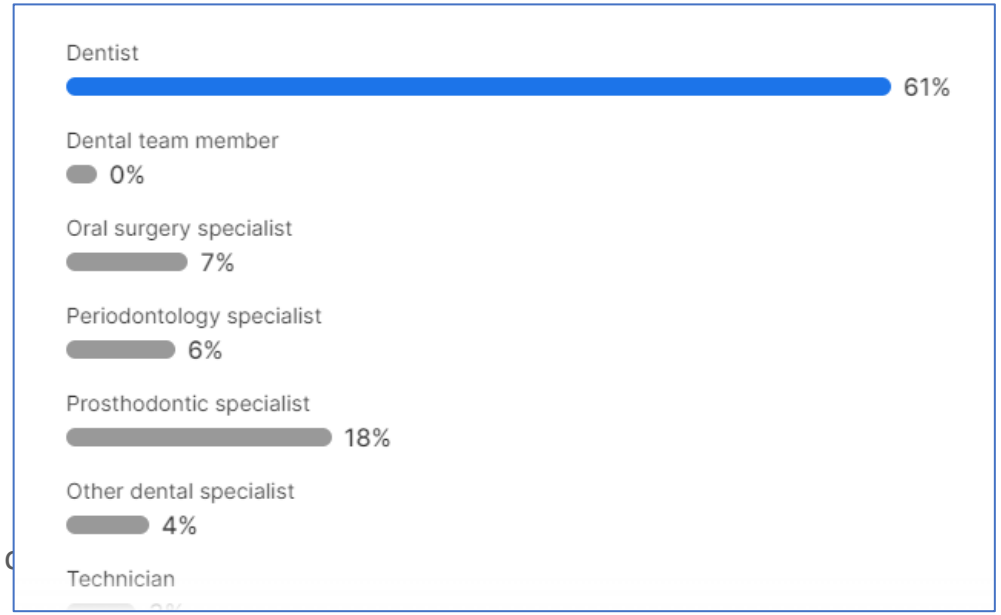
Replies:

ⓘ Start presenting to display the poll r

slido

What is your educational background?

Replies:



ⓘ Start presenting to display the poll results

Which crown material combination is optimal in the posterior mandible?

Tell us on:
Slido.com

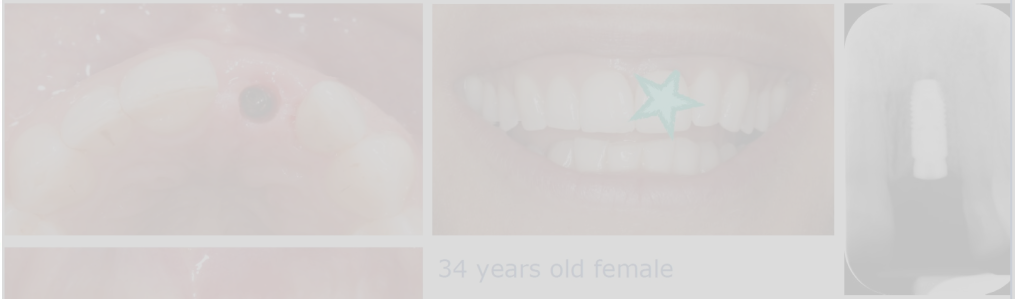
Code #:
ITINordic

Single missing tooth in molar area

64 years old male

Which abutment material?

Single missing tooth in anterior area



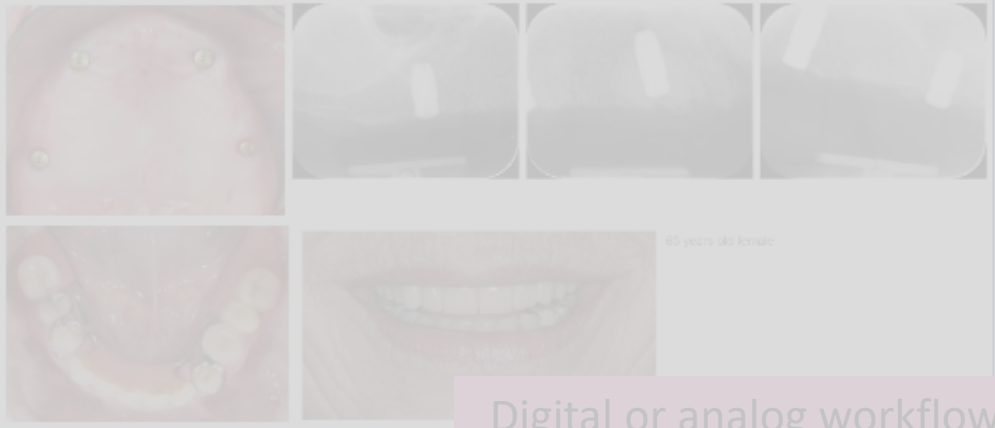
34 years old female

Which restorative material?

Several missing teeth on molar area
3-unit FDP

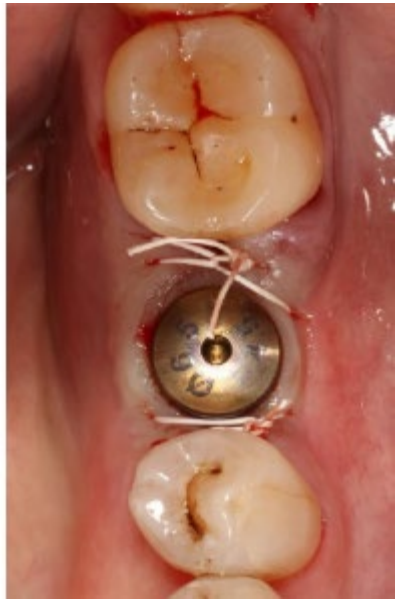
Which retention material?

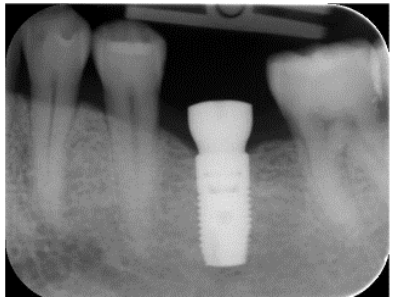
Edentulous arch



Digital or analog workflow?

Case 1: Optimal abutment - best evidence





All published clinical studies 1980 - 2023
n= 546

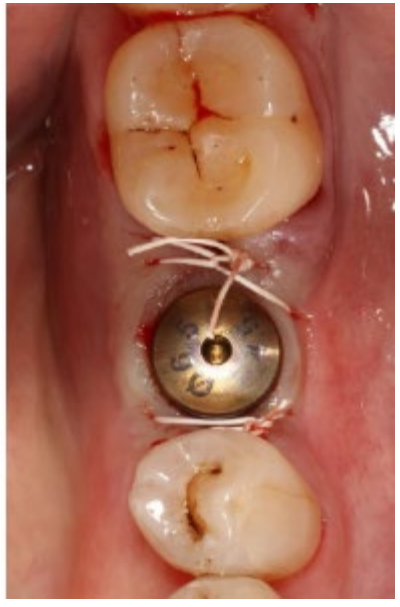
All <u>Straumann implant</u>
clinical studies
n= 160

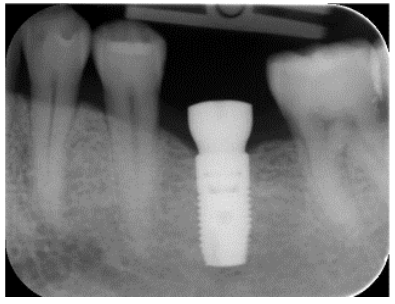
Single molar in the mandible

<u>Prevailing:</u>

1. Stock titanium
2. CAM customized zirconia
   CAM customized titanium
3 Titanium base
4 Stock zirconia

Case 1: Optimal abutment - best evidence





All published clinical studies 1980 - 2023
n= 546

Single molar in the mandible

All Straumann implant clinical studies
n= 160

Prevailing:
1. Stock titanium
2. CAM customized zirconia
   CAM customized titanium
3 Titanium base
4 Stock zirconia

Not apply (n=12)
Not described (n=25)
Described: (n=21)

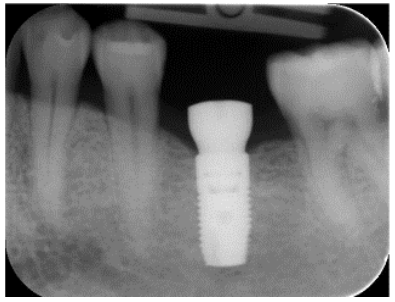
All Straumann Bone level implant (BL/BLT) clinical studies
n= 58

Stock titanium : 10
Titanium base: 6 (Variobase)
CAM zirconia: 4 (CARES)
Stock zirconia: 1

RCT- comparison
U.Zurich - Thoma/Heierle/Lamperti ea, 5y
Lithium disilicate glass-ceramic fused to zirconia abutment vs. luted to zirconia abutment

Longest case series on (Straumann)Variobase
Hacettepe U (Güncu ea), 115 p., up to 5 years

OPTIONS for a missing molar



1/2 Stock titanium abutment + porcelain fused to metal

3/4 Stock customizable (Clinic/Lab) titanium abutment + porcelain fused to metal

5/6 CAM titanium abutment + porcelain fused to metal

7/8 Stock castable alloy coping + porcelain fused to metal

9/10 Stock zirconia abutment + porcelain fused to metal

11/12 CAM zirconia abutment + porcelain fused to metal

13/14 Stock titanium abutment + CAM zirconia

15/16 Stock customizable (Clinic/Lab) titanium abutment + CAM zirconia

17/18 CAM titanium abutment + CAM zirconia

19/20 Stock zirconia abutment + CAM zirconia

21/22 CAM zirconia abutment + CAM zirconia

23/24 CAM zirconia coping-to-titanium base+ porcelain fused to metal

25/26 CAM zirconia coping-to-titanium base+ CAM zirconia

27 CAM Zirconia luted-to-titanium base

Additional considerations:

CADCAM: CAD software, additive/subtractive CAM, device, green/sintered, postprocessing, etc.

Titanium abutment: Titanium, Titanium-alloy, Ti-Nitrite anodized “gold hue”, “pink hue”

titanium base – design, gingival height & prosthetic height

Zirconia - 3%-, 4%-, 5%-YTZ, ATZ, monolithic/veneered, multilayer, etc.

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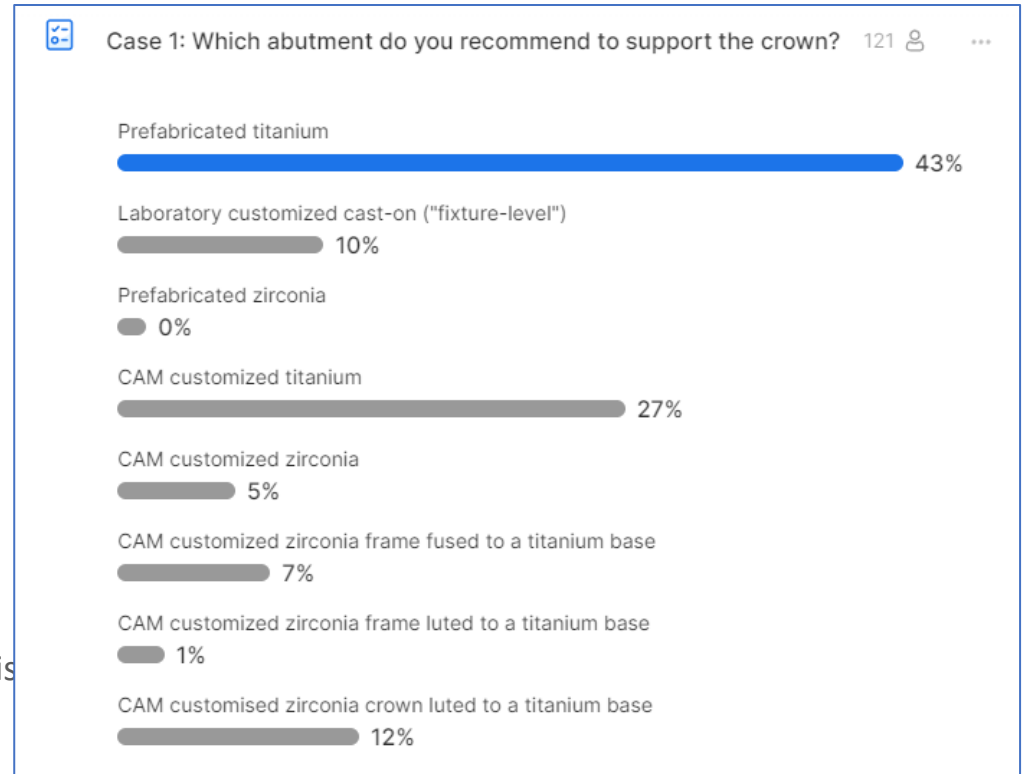
Case 1: Which abutment do you recommend to support the crown?

Replies:



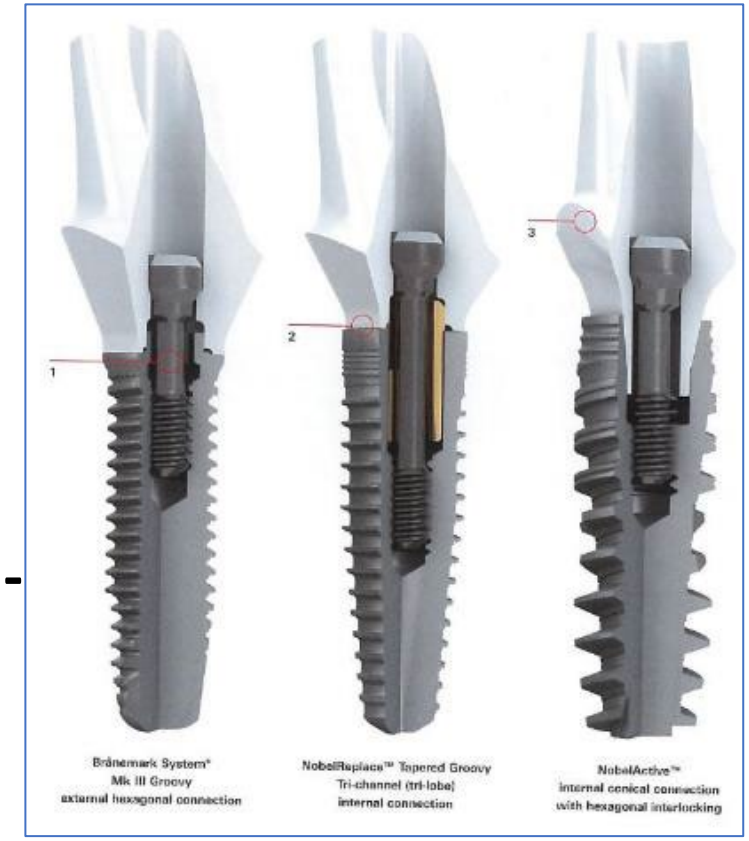
ⓘ Start presenting to display the poll results on this

Zirconia abutments come in many configurations

Prefabricated
CAD-CAM: Algorithms & device
Material: e.g., ATZ or YTZ
Device & material properties
  Misfit
  Tolerance
Original / third-part origin

The titanium platform surface - zirconia abutment interface configuration is critical!

May explain why reported clinical outcomes range from excellent to catastrophic failures



Example: advert from Nobel Biocare 2009

Recommended review:

The Implant Supracrestal Complex and Its Significance for Long-Term Successful Clinical Outcomes

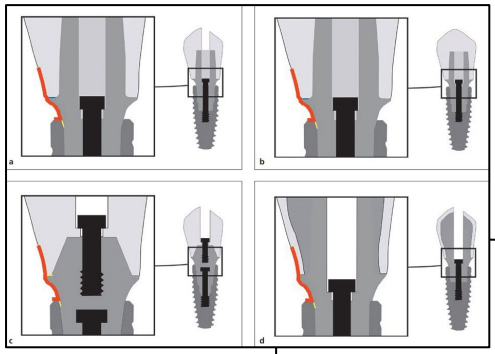
Nikos Mattheos, DDS, MASc, PhD
Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand; Department of Dental Medicine, Karolinska Institute, Sweden.

Ioannis Vergoullis, DDS, MS
Department of Periodontics, Louisiana State University, Baton Rouge, Louisiana, USA.

Martin Janda, DDS, MSc, PhD
Department of Prosthodontics, Malmö University, Malmö, Sweden.

Alberto Miseli, DDS
Department of Prosthodontics, Universidad Central de Venezuela, Caracas, Venezuela.

Int J Prosth 2021, doi: 10.11607/ijp.7201



NEWS in 2005
Prefabricated abutment
"HIP" zirconia
ZirDesign

Restorative Components

CEMENT-RETAINED RESTORATIONS

ZirDesign
Zirconia

* Incl. Abutment Screw Design 3.5 (Ti-alloy)

** Incl. Abutment Screw Design 4.0/4.5/5.0 (Ti-alloy)

Product	3.5*	4.0**	4.5/5.0**
Diameter	4.5	5.5	5.5
Ref.No.	24183	24184	24185

Ceramic Abutment
Zirconia

* Incl. Abutment Screw 3.5 (Ti-alloy)

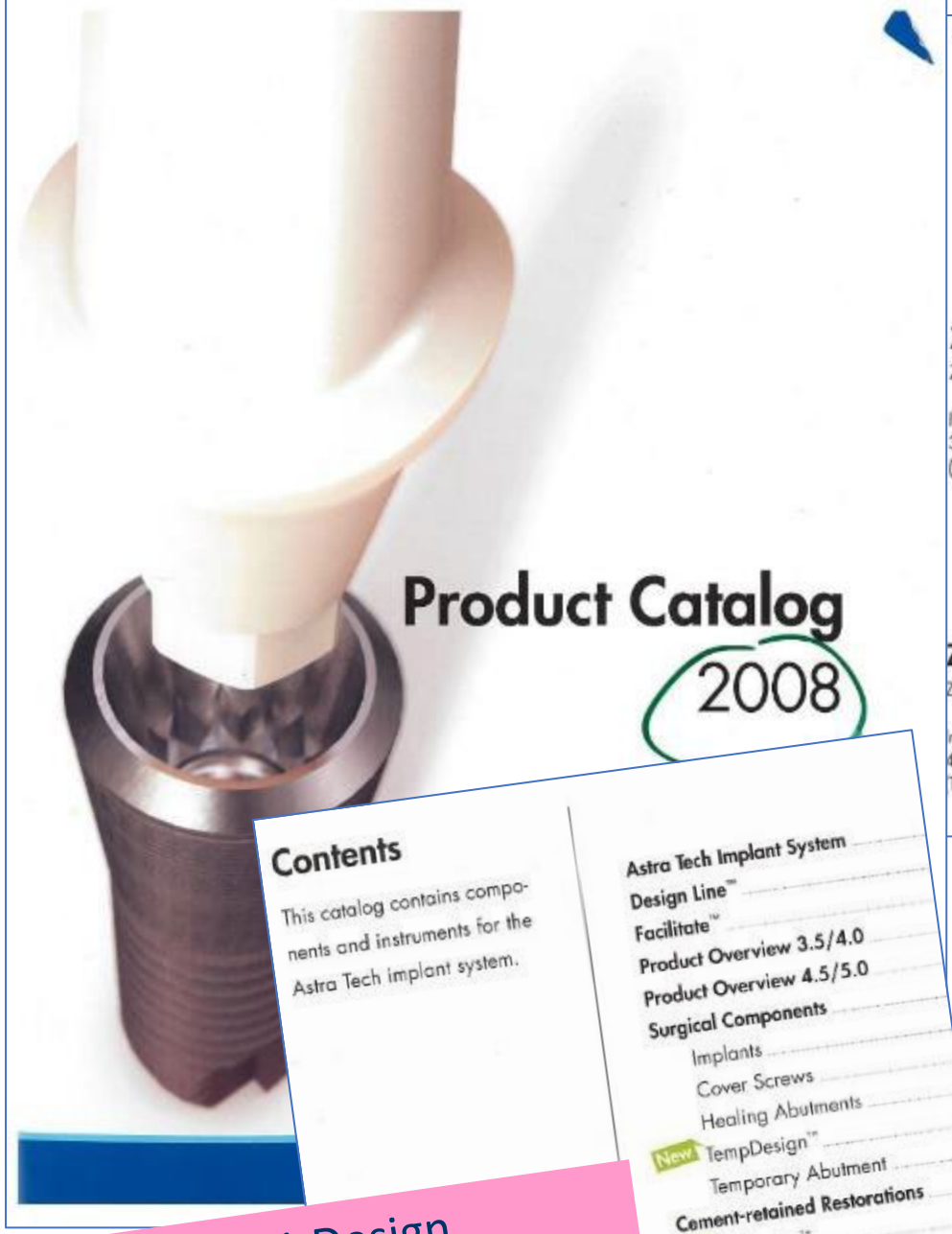
** Incl. Abutment Screw 4.0/4.5/5.0 (Ti-alloy)

Product	3.5*	4.0**	4.5/5.0**
Diameter	4.5	5.5	5.5
Ref.No.	24022	24023	24024

Abutment Screw Design
Ti-alloy

Included with ZirDesign and TiDesign.

Product	3.5	4.0/4.5/5.0
Ref.No.	24208	24209

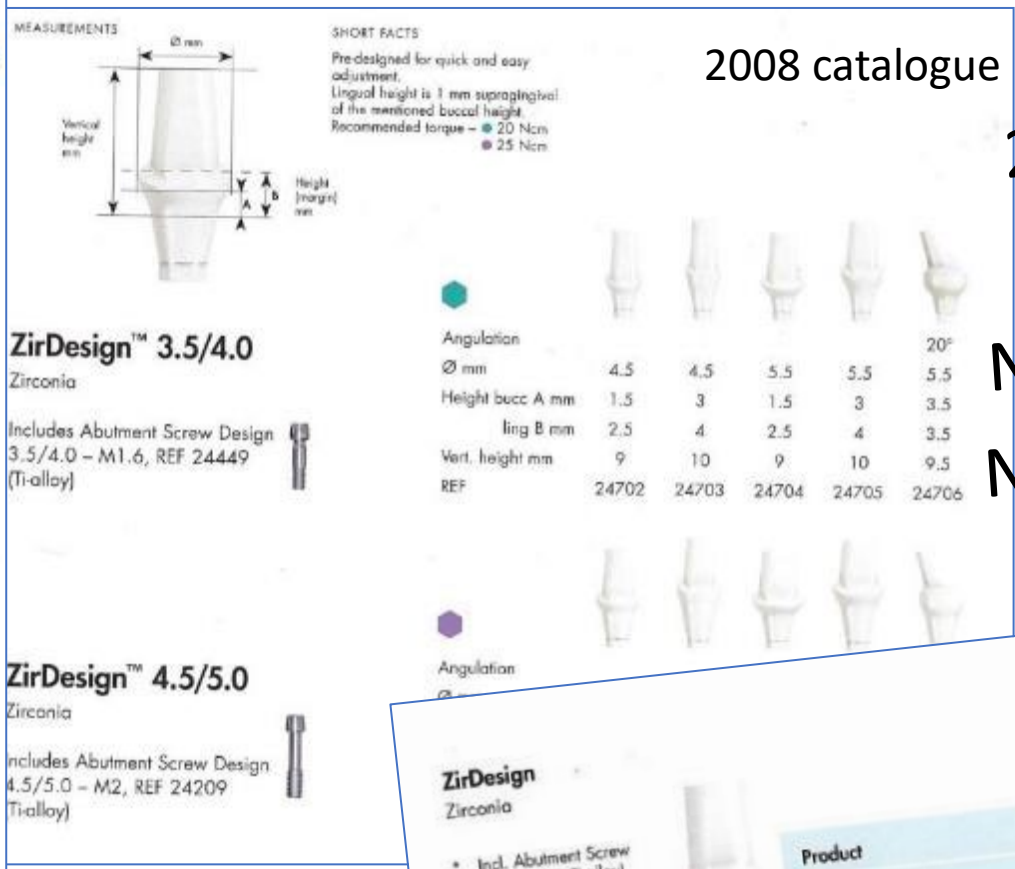


Contents

This catalog contains components and instruments for the Astra Tech implant system.

ZirDesign relaunched in 2008 (!)

2008 catalogue

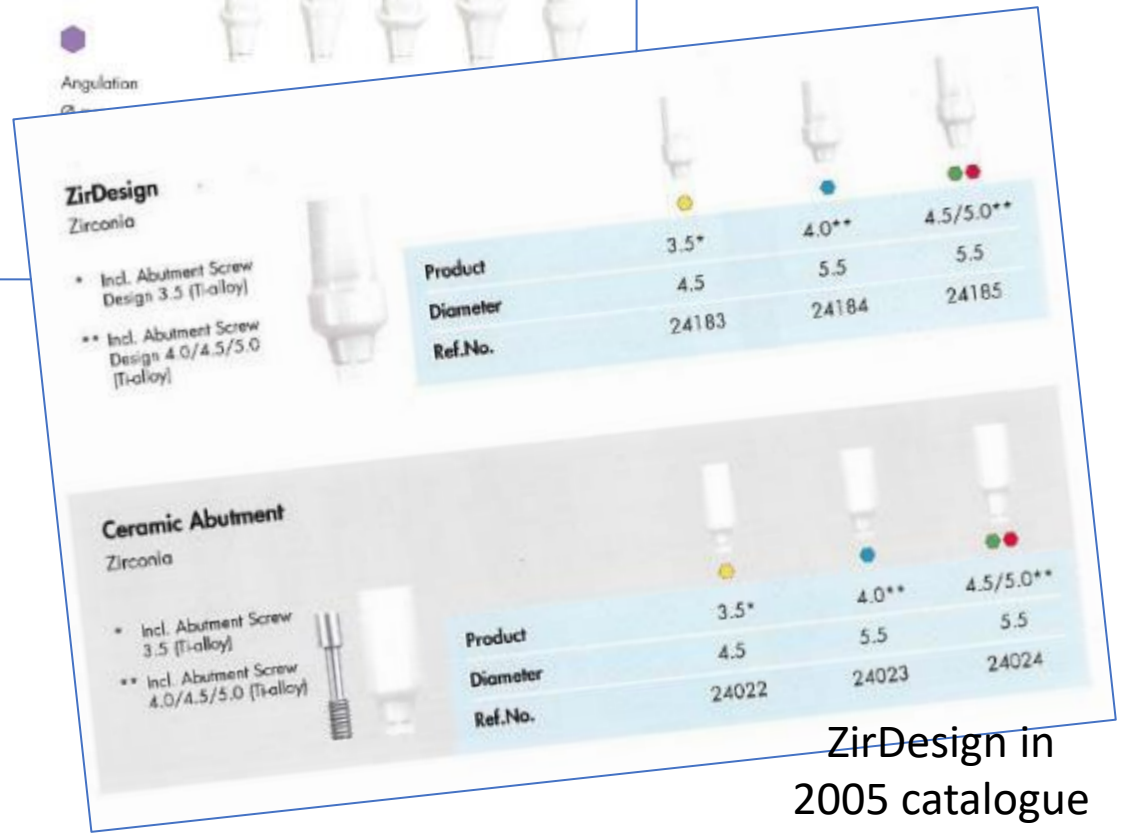


2008 catalogue:

New geometry

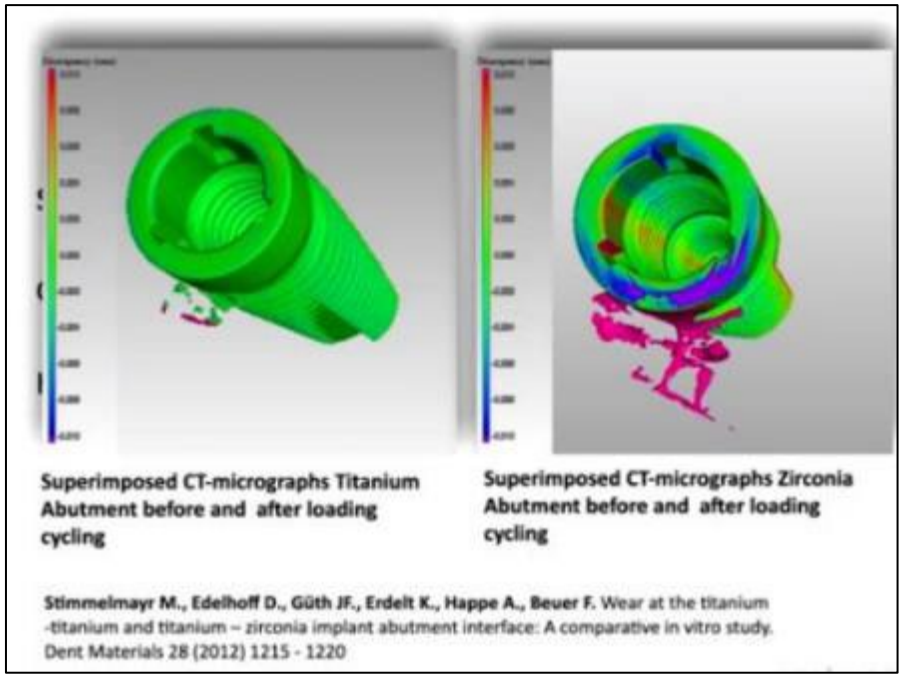
New screw design

New parts number



ZirDesign in 2005 catalogue

Zirconia against titanium surface – micromotion



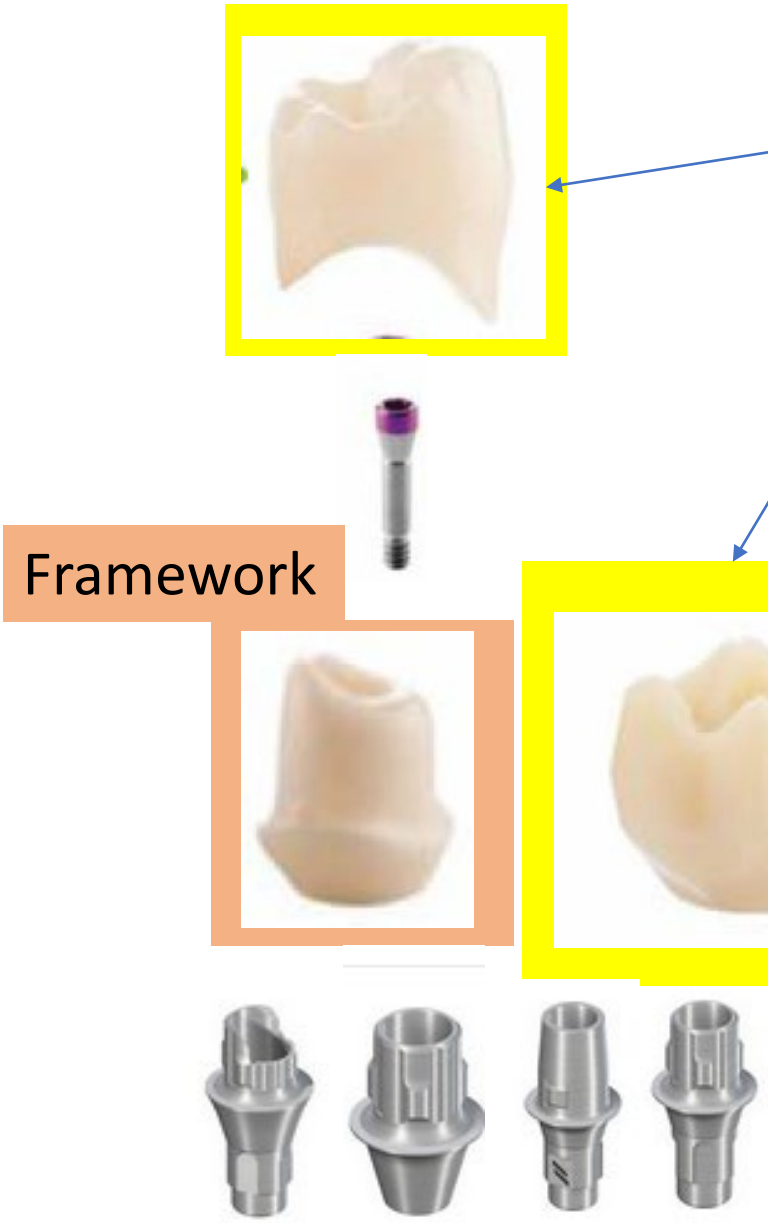
From: Klotz & Taylor, IJOMI 2014

<u>RISK management:</u>
<u>Original</u> components
vs.
non-original

Alternative to zirconia:titanium surface is Zirconia +/- veneering bonded to titanium

Prefabricated (e.g. Straumann Variobase) or CAM customized

Titanium base use and proposed terminology



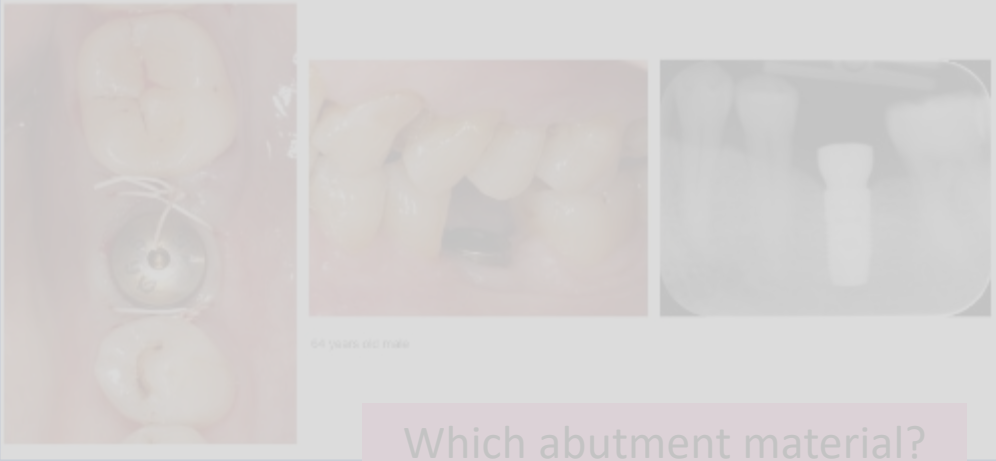
ITI Consensus meeting 2023 (Chantler et al)

Which crown material combination is optimal in the anterior maxilla?

Tell us on:
Slido.com

Code #:
ITINordic

Single missing tooth in molar area



Which abutment material?

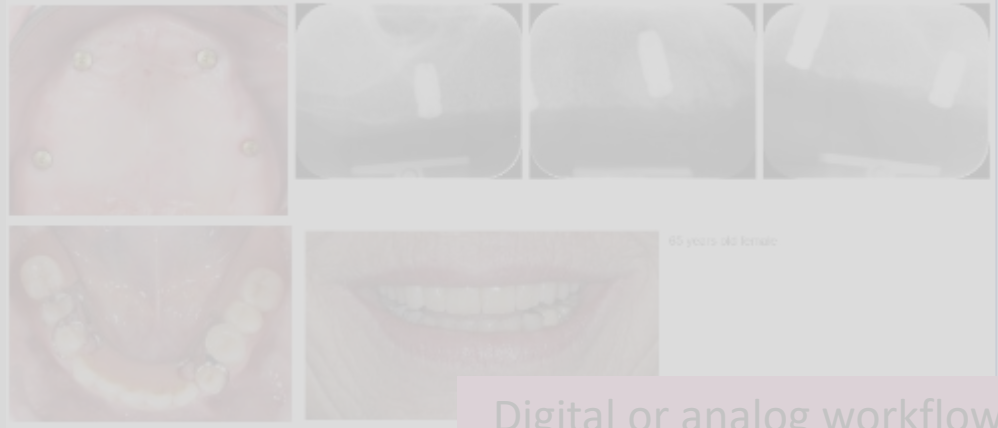
Single missing tooth in anterior area

Which restorative material?

Several missing teeth on molar area
3-unit FDP

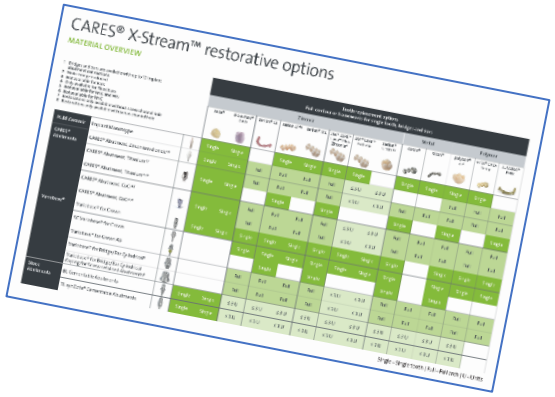
Which retention material?

Edentulous arch



Digital or analog workflow?

How many implant-related products are marketed globally today?



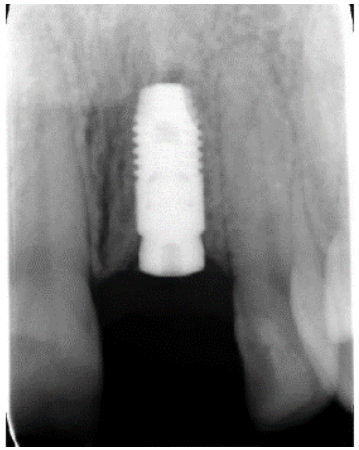
Producer	Brand name	Mater	category	Prepa
Ivoclar Vivadent	IPS e.Max ZirPress	Glass-ceramic fluorapatit	Veneering porcelain	Heat-Pressed
Ivoclar Vivadent	IPS e.Max Ceram	glass-ceramic nano-fluora	Veneering porcelain	Veneering porce
Ivoclar Vivadent AG (Li	IPS e.max ZirCAD®MO/LT	Zirconia-3Y-TZP	Veneered: IPSe.maxCera	(Partial sinter) M
Wieland dental, Germa	ZENO Zr	Zirconia-3Y-TZP	Veneered: (Wieland)Zirc	(Partial sinter) M
Creation Willy Geller Ir	YTZP	Zirconia-	Veneered: (WG)Creation	
Vita Zahnfabrik H. Raut	VITA In-Ceram YZ cube	Zirconia-3Y-TZP	Veneered: (VITA)VM9 9(	(Partial sinter) M
VITA, Germany	Vitablocks Mark II /TriLuxe /	Feldspatic -Extrusion mou	Veneered: (VITA)VM9	Mill -> °C
VITA, Germany	VITA Inceram AL cube	Alumina-Aluminium Trioxi	Veneered: (VITA)VM7	
VITA, Germany	VITA In-ceram Alumina	AluminiumOksid slip-infilt	Veneered: (VITA)VM7	
VITA, Germany	VITA In-ceram Spinell	AluminiumOksid slip-infilt	Veneered: (VITA)VM7	
VITA, Germany	VITA In-ceram Zirconia	Ceramic -Slip cast glass-i	Veneered: (VITA)VM7	
Panasonic, Japan	NanoZR	Zirconia-Ce-TZP-Al2O3	Veneered: (Shofu)Vintag	
Kuraray Noritake Denta	Katana® Zirconia HT	Zirconia-4Y-PZP	Veneered: (Noritake)Cer	
Kuraray Noritake Denta	Katana® Zirconia ML	Zirconia-M4Y-PZP	Veneered: (Noritake)Cer	
Nobel Biocare	Procera Zirconia	Zirconia-3Y-TZP (Pre-sinte	Veneered: (Nobel)Nobel	
Dentsply Sirona (USA)	Cercon base	Zirconia-3Y-TZP	Veneered: (Cercon)Cerai	(Green) Mill ->
Dentsply Sirona (USA)	Cercon smart ceramics	Zirconia-3Y-TZP	Veneered: (Cercon)Cerai	(Partial sinter) M
3M ESPE, Seefeld, Gerr	Lava™ Frame	Zirconia-3Y-TZP	Veneered: (3M)Lava Cer	(Partial sinter)-M
Amann Girrbach AG (Au	Ceramill ZI	Zirconia-3Y-TZP	Veneered	(Partial sinter) M
Wieland dental, Germa	Zenotec Zr	Zirconia-3Y-TZP	Veneered	
Dental Direkt, Spenge,	DD Bio Z W /S /A /K	Zirconia-3Y-TZP (HIP)	Veneered	(HIP) Mill ->
Etkon, Grafelringen, Ge	zerion	Zirconia-3Y-TZP (HIP)	Veneered	(HIP) Mill ->
CeramTec, Plochingen,	Zirconia disk	Zirconia-3Y-TZP (99wt% Z	Monolithich/Veneer	
Ivoclar Vivadent	IPS e.max CAD	Glass-ceramic-Lithium dis	Monolithic	(Partial sinter) M
Dentsply De Trey	Celtra Press	Lithium disilicate glass ce	monolithic	
Ivoclar Vivadent	IPS e.max CAD	Lithium disilicate glass ce	monolithic	CAD/CAM
Ivoclar Vivadent	IPS e.max Press	Lithium disilicate glass ce	monolithic	Heat-Pressed
Dentsply De Trey	Celtra CAD	Lithium metasilicate+disil	monolithic	
Dentsply De Trey	Celtra Duo	Lithium metasilicate+disil	monolithic	
Vita Zahnfabrik	Suprinity	Lithium metasilicate+disil	monolithic	
Glidewell	Obsedian	Lithium silicate glass cera	monolithic	
H Schein, USA	Zirlux FC2	Zirconia-	Monolithic	
Ivoclar Vivadent	IPS e.max ZirCAD MT	Zirconia 4Y-TZP	monolithic	
Kuraray Noritake	Katana ST/STML	Zirconia 4Y-TZP	monolithic	
Wieland Dental	Zenostar MT	Zirconia 4Y-TZP	monolithic	
Tosoh	Zpex 4	Zirconia 4Y-TZP	monolithic	
Ivoclar Vivadent AG (Li	Diazir	Zirconia-3Y-TZP	Monolithic	(Partial sinter) M

Record: 23 of 238 Unfiltered Search

Myriads!

Number of commerciably available ceramics in dentistry = ~250

Case 2: Optimal restorative -best evidence



All published clinical studies 1980 - 2023
n= 819

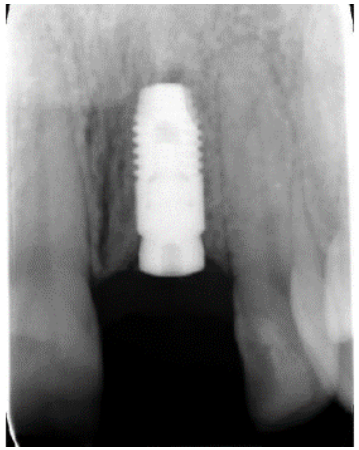
All Straumann implant
clinical studies
n= 223

Single incisor in the maxilla

Prevailing restorative materials:

(Ivoclar)IPS e.max ZirPress (LiDiSi)
(Ivoclar)IPS e.max Press (LiDiSi)
+/-
(Ivoclar)IPS e.max ceram (FA)
Fused to zirconia abutment
+/- bonded to* a titanium base
(* luted or fused)

Case 2: Optimal restorative -best evidence



All published clinical studies 1980 - 2023
n= 819

All Straumann implant clinical studies
n= 223

All Straumann Bone level implant (BL/BLT) clinical studies
n= 131

Not apply (n=22)
Not described (n=84)
Described: (n=25)

Single incisor in the maxilla

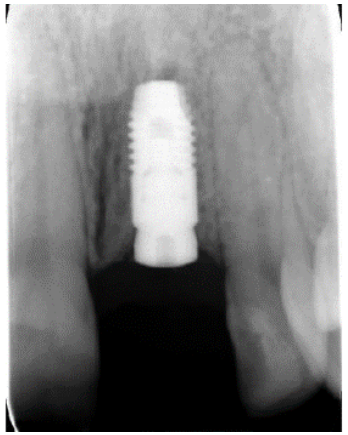
Prevailing restorative materials:

(Ivoclar)IPS e.max ZirPress (LiDiSi)
(Ivoclar)IPS e.max Press (LiDiSi)
+/-
(Ivoclar)IPS e.max ceram (FA)
Fused to zirconia abutment
+/- bonded to* a titanium base
(* luted or fused)

Recommended literature:
RCT, U. Bern&Geneva (Wittneben ea, → 3y
CAM customized zirconia abutment + hand buildup lidisi glass ceramic veneering vs. stock zirconia abutment + pressed lidisi glass ceramic
Prospective case series, → 10 years
U. Bern (Buser/Chappuis) (Contour augmentation)
(Wieland)Y-TZP + (Ivoclar)IPS e.max ceram fa- g.c.

27 previous options +

OPTIONS for single space aesthetic area



28/29 Prefabric titanium abutment + Glass ceramic

30/31 Prefab customizable (Clinic/Lab) titanium abutment + Glass ceramic

32/33 CAM titanium abutment + Glass ceramic

34/35 Prefabric zirconia abutment + Glass ceramic

36/37 CAM zirconia abutment + Glass ceramic

38/39 CAM zirconia coping bond-to-titanium base+ porcelain fused to metal

40/41 CAM zirconia coping bond-to-titanium base+ CAM zirconia

42/43 CAM zirconia coping bond-to-titanium base+ Glass ceramic

43/44 CAM zirconia coping bond-to-titanium base+ CAM Glass ceramic

45 CAM Zirconia bond-to-titanium base

46 Glass ceramic bond-to-titanium base

47 CAM Glass ceramic bond-to-titanium base

Additional considerations:

Glass cerams: Lithium disilicate- / Leucite- / Zirconia- reinforced silicate ceramic?

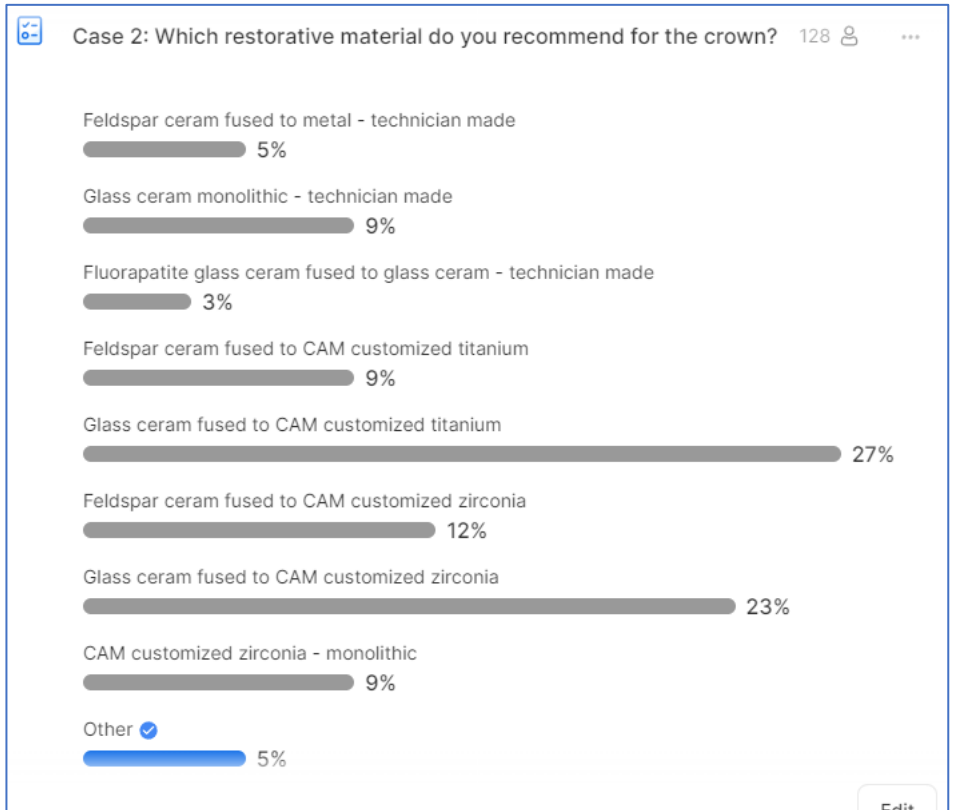
Emerging polymer-ceramic (CAD-CAM) materials? E.g., “Polymer Infiltrated Ceramic Network” (Vita)VITA Enamic) / “Resin Nano Ceramic” (e.g. (3M)LAVA Ultimate)

slido

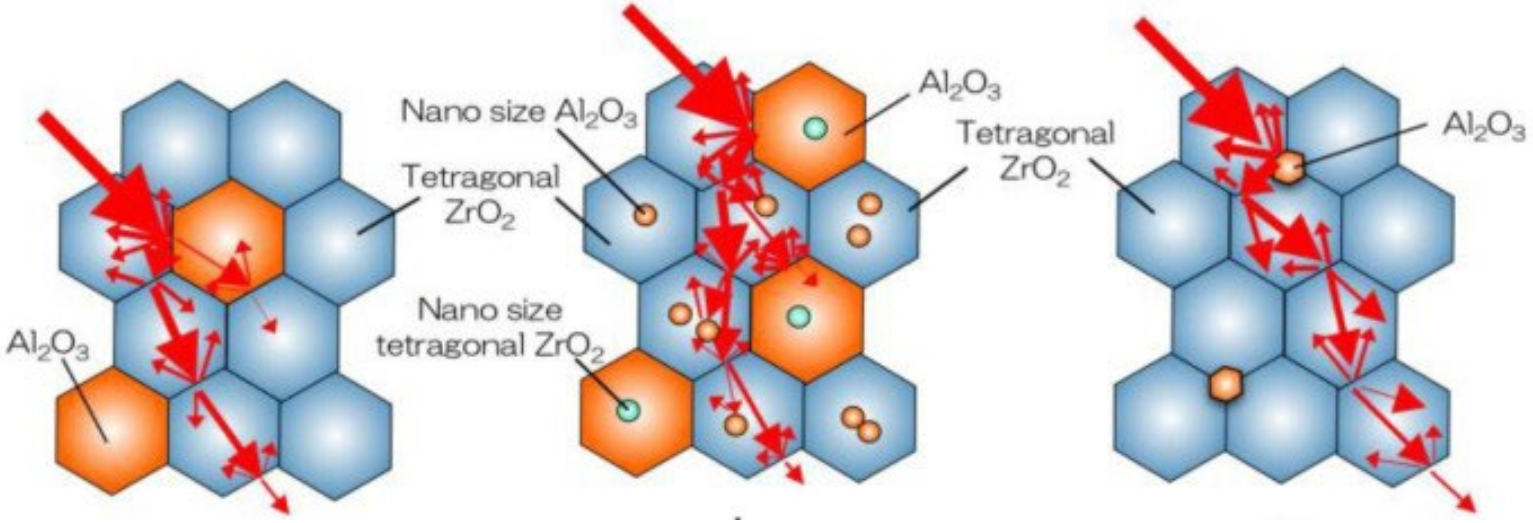
Case 2: Which restorative material do you recommend for the crown?

Replies:

ⓘ Start presenting to display the poll results on this slide.



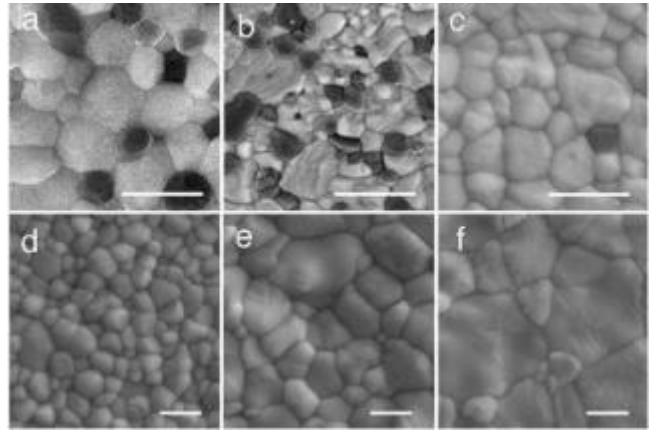
Light transmission : (bi-)refringence depends on crystal structure & chemistry



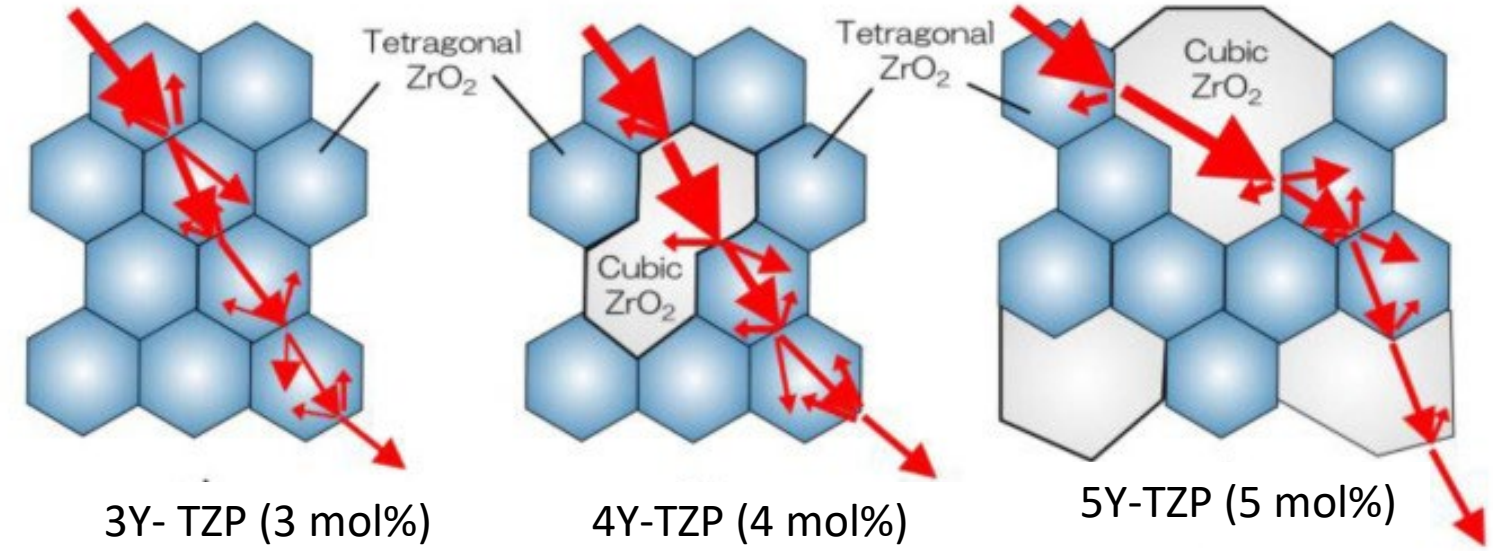
Alumina-strengthened ATZ

Ce-TZP/alumina nanocomposite NanoZR

Conventional TZP 3Y-HA



3Y-HA 3Y 4Y 5Y



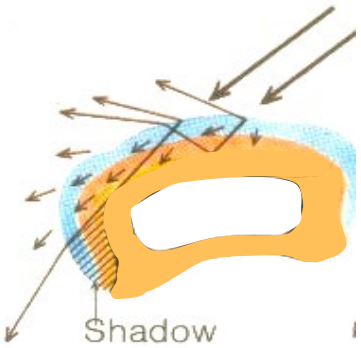
3Y- TZP (3 mol%)

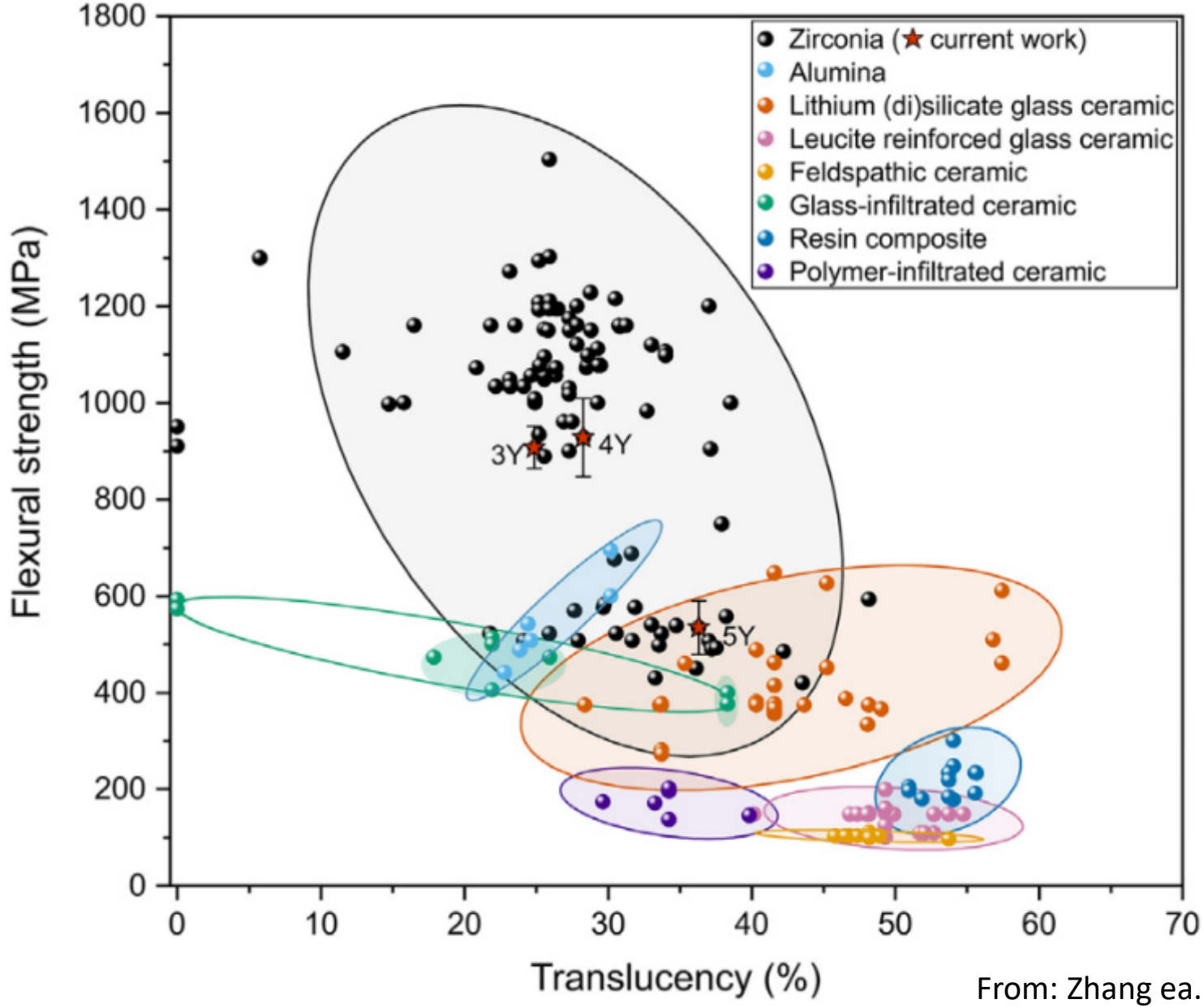
4Y-TZP (4 mol%)

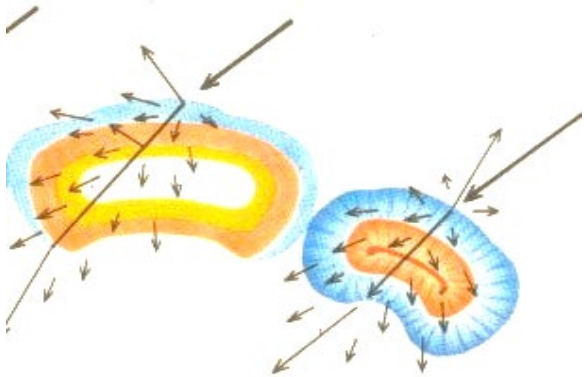
5Y-TZP (5 mol%)

From: Ban, 2021. doi: 10.3390/ma14174879

Translucency : strength depend on chemistry & crystal structure

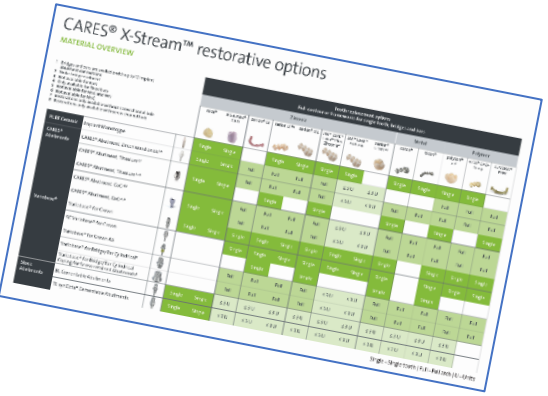






From: Zhang ea. 2019 Acta Biomaterialia

How many implant-related products are marketed globally today?



Introdu	www	Company	Brand name	Component(s)	Co
	gctech.eu	GC Corporation	Aadva	Scanner(Aadva)	Japa
	www.zfx-dental.com	zfx gmbH	Zfx-Scan II /III /Zfx™ Inhou	Scanner(Zfx-Scan II	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec zeno4820	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec zeno4030	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec zeno3020	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec Select ion	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec Select hybrid	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec select /mini / CA	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec pro	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec mini	3/4-axis-milling uni	Ger
2005	wieland-dental.de	Wieland Dental (Ivoclar Viva	Zenotec CAM	3/4-axis-milling uni	Ger
-2006	http://www.schick-de	Schick dental	Z1 Milling Unit	Copy-milling unit	Ger
	yenadent.com	Yena Dent	Yenascan / CAM 5.1 / D14-		Turk
		Shenzhen XTcera Medical Te	X-Mill 220 / 300 / 400 / 500		Chi
2003	www.xawex.ch	Xavex AG, Switzerland <- ZFI	Xawex Dentalsystems		Swi
	http://vericoresystem	Whip Mix Corp	Vericore System	---	USA
2005	www.3shape.com	3Shape A/S	TRIOS digital intraoral imp	Design-Software	Den
	schuetz-dental.com	Schütz Dental gmbH	Tizian Smart-scan / Tizian		Ger
	schuetz-dental.com	Schütz Dental gmbH	Tizian Cut eco plus		Ger
	schuetz-dental.com	Schütz Dental gmbH	Tizian cut 5.2Plus		Ger
	schuetz-dental.com	Schütz Dental gmbH	Tizian Cut 5 smart		Ger
	http://www.strauman	Straumann Cares Digital solu	Straumann CADCAM	---	Swi
		Degos	Starline 355NS		
1991-1999	----------	Sopha Bioconcept	Sopha-CAD/CAM	Scanner(Opticast) -	Fran
	mc-dental.de /cad-can	MC-dental GmbH	Smart Mill start / plus / ur		Ger
	nobilmetal.it	Nobil-Metal S.p.A	Sinergia		Italy
	anthogyr.com	simeda medical	Simeda SCAN-CAD(Exoca		
		Shera Werkstoff-Tech	Sheraeco mill wet		
		Shera Werkstoff-Tech	Sheraeco mill dry		
		Shera Werkstoff-Tech	Sheraeco 5xchange		
2001	http://www.strauman	Straumann <- etkon AG, Swi	Scanner es	Scanner(Scanner es	Swi
1987-2007	www.bienair.com	Bien Air,	Scan200/Mill200	Scanner -> Design-S	Swi
	http://www.zirkonzah	Zirkonzahn s.r.l.	S600 Arti(scan / Modelier	Scanner() -> Design	Italy
	http://www.zirkonzah	Zirkonzahn s.r.l.	S600 Arti(scan / Modelier	Scanner() -> Design	Italy

ord: 6 of 197 Unfiltered Search

Myriads!

CADCAM devices in dentistry = ~200

Journal of Oral Rehabilitation
Journal of Oral Rehabilitation 201
2017 44; 261–290

Review

Computer-assisted technologies used in oral rehabilitation and the clinical documentation of alleged advantages – a systematic review

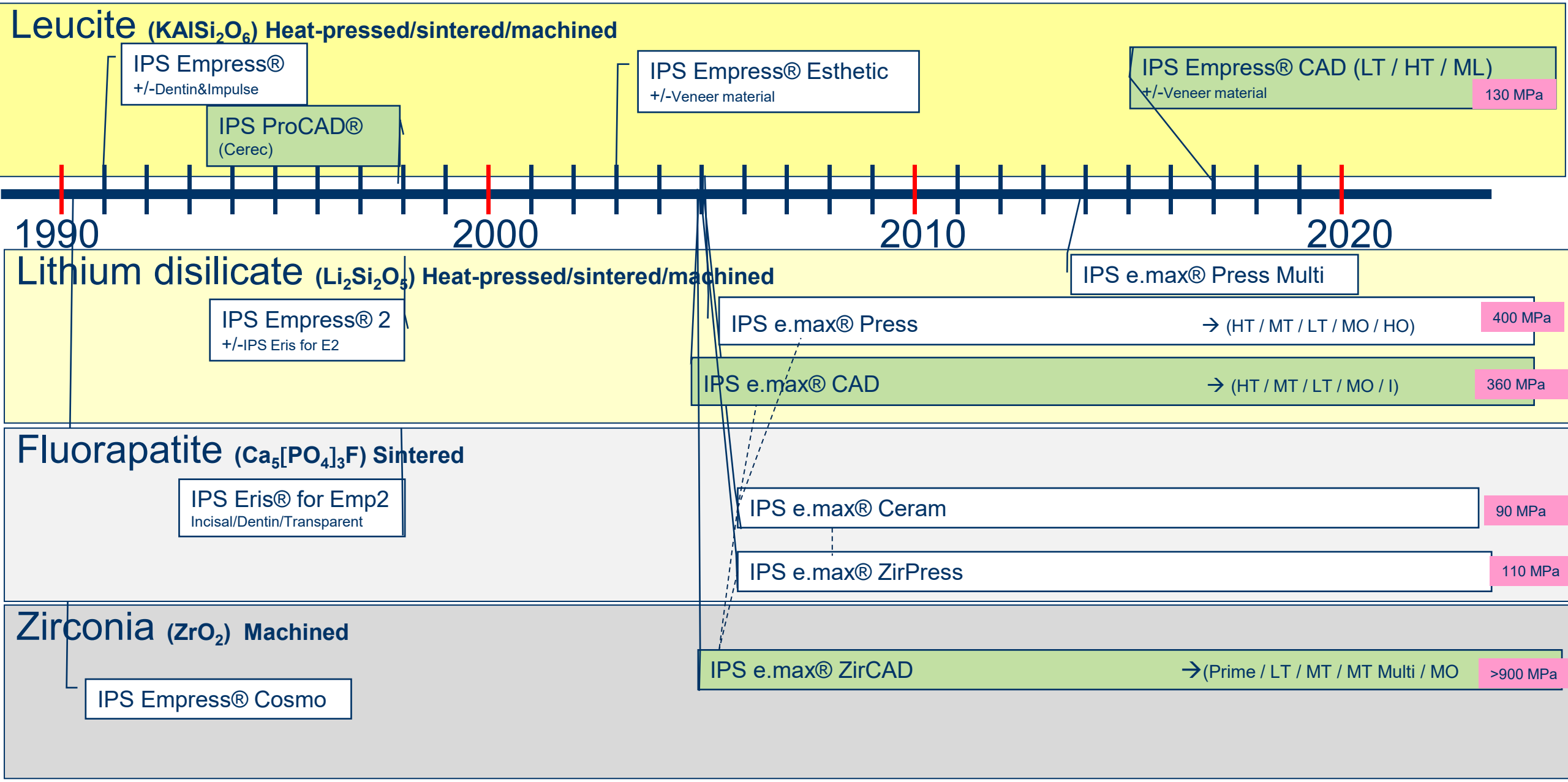
A. JOKSTAD Department of Clinical Dentistry, UiT The Arctic University of Norway, Tromsø, Norway

SUMMARY The objective of this systematic review is to identify current computer-assisted technologies used for managing patients with a need to re-establish craniofacial appearance, subjective discomfort and stomatognathic function, and the extent of their clinical documentation. Electronic search strategies were used for locating clinical studies in MEDLINE through PubMed and in the Cochrane library, and in the grey literature through searches on Google Scholar. The searches for commercial digital products for use in oral rehabilitation resulted in identifying 225 products per November 2016, used for patient diagnostics, communication and therapy purposes, and for other computer-assisted applications in context with oral rehabilitation. About one-third of these products were described in about 350 papers reporting from clinical human studies. The great majority of digital products for use in oral rehabilitation has no clinical documentation at all, while the products from a distinct minority of manufacturers have frequently appeared in more or less scientific reports. Moore's law apply also to digital dentistry, which predicts that the capacity of microprocessors will continue to become faster and with lower cost per performance unit, and innovative software programs will harness these improvements in performance. The net effect is the noticeable short product life cycle of digital products developed for use in oral rehabilitation and often lack of supportive clinical documentation. Nonetheless, clinicians must request clinically meaningful information about new digital products to assess net benefits for the patients or the dental professionals and not accept only technological verbiage as a basis for product purchases.

KEYWORDS: computer-aided design, computing methodologies, dentistry, dentists, microcomputers, software

Accepted for publication 7 January 2017

Current marked leader ceramics portfolio (Ivoclar)



The scientific evidence for best practices in implant dentistry?

Yea	medlinei	doi	Authors	school	Title	Source	patsituation	Study Design	product	Study objective	Intervention
2023	35938349	10.1111/jc	Gintaute A,	University, B	Patient-re	J Prosthodon	Partial	RCT, 3 arms - dc	(Straumann)Standa	To analyzed patient-	Workflow for fa
2022	36434348	10.1186/s	Parvini P, M	University, F	Immediat	Int J Implant I	Terminal / Sing	Prospective cohc	(Straumann)BLX_ø/	To evaluate the volu	Extraction and
2022	36098814	10.1007/s	Santamaría	University, L	The effec	Clin Oral Inve	Adverse, impla	RCT, 2 arms	(Straumann)Standa	To assess the effec	Antibiotic proto
2022	35323829	10.11607/	Guncu MB,	University, A	Clinical, T	Int J Prosthoc	Single, mandib	Retrospective ca	(Straumann)BLT_ø:	To evaluate the biol	Abutment geor
2022	35324053	10.1111/c	Puisys A, D	Private clinic	Connecti	Clin Implant I	Terminal	RCT, 2 arms	(Straumann)BLX_ø:	To assess the esth	Extraction and
2022	35320619	10.1111/c	Kamolratan	University, B	The impa	Clin Implant I	maxilla, poster	RCT, 2 arms	(Straumann)Bone L	To compare the nev	Sinus elevation
2022	35000248	10.1111/jc	Genetti L, E	University, R	Clinical E	J Prosthodon	posterior	Cross-sectional	(Straumann)BLT	To evaluate the pinl	Appraise effect
2022	35318752	10.1111/c	Puisys A, Au	Private clinic	Immediat	Clin Oral Imp	Terminal > Sin	RCT-split, 2 arm	(Straumann)BLT Rc	To assess the impa	Extraction and
2022	35238084	dx.doi.org	Polymeri A,	University, A	Non-surg	Clin Oral Imp	Adverse, Peri-i	RCT, 2 arms	(3i/Biomet/Zimmer)	To assess the adjur	Peri-implantitis
2022	35488479	10.1111/c	Lv H, Sun X	University, C	Flapless	Clin Oral Imp	maxilla, poster	RCT, 2 arms	(Straumann)Bone L	To evaluate patient-	Sinus elevation
2022	35524437	dx.doi.org	Zhao L, Hu	University, B	Evaluatio	Clin Oral Imp	Terminal	Prospective cohc	(Bicon)Integra-CP (:	To investigate the 3-	Extraction and
2022	35652362	10.1111/c	Wei SM, Li	University, S	Does ma	Clin Oral Imp	Terminal	RCT, 2 arms	(Straumann)Bone le	To compare the ac	Surgical implar
2022	35129763	10.1186/s	Hanozin B,	University, L	Digital vs	Int J Implant I	Single	RCT, 2 arms	(Straumann)BLT Rc	To compare short-te	Workflow for fa
2022	35235629	10.11607/	Tabrizi R, S	University, T	Evaluatio	Int J Oral Max	maxilla, poster	RCT, 2 arms	(Straumann)Bone L	To compare bone c	Sinus elevation
2022	35830312	10.11607/	Cardaropoli	Private clinic	Bone and	Int J Periodor	Terminal	RCT, 2 arms	(Straumann)BLT_ø2	To evaluated the rac	Extraction and
2022	35353088	10.11607/	Cardaropoli	Private clinic	Bone and	Int J Periodor	Terminal	RCT, 2 arms	(Straumann)BLT_ø2	To evaluate Soft tiss	Extraction and
2022	35258131	10.1111/jc	Schwarz F,	University, F	Efficacy c	J Clin Period	-atrophy	Within subject, 2	(Nobel Biocare)Nob	To assess and com	Atrophic jaw ric
2022	35734895	10.1111/jc	Wang X, Fo	University, H	Increasec	J Clin Period	Terminal	RCT-split, 2 arm	(Straumann)Bone L	To compare the pat	Extract and ric
2022	34728252	dx.doi.org	Kunavisarut	University, B	Patient-re	J Dent. 2022	Single posterio	RCT, 2 arms - ex	(Straumann)Standa	To analyze patient-	Workflow for fa
2022	34906619	10.1016/j.	Uehara Y, K	University, T	Comparis	J Dent. 2022	Edentulous, m	RCT, cross-over	(Straumann)BLT SL	To compare the ge	Restore an ede
2022	35230354	10.11607/	Hamilton A,	University, B	Digitally F	Int J Prosthoc	Single, mandib	Retrospective ca	(Straumann)BLT_ø:	To review the factor	Appraise effect
2022	34708422	10.1111/jc	Silva CGB,	University, S	Peri-impl	J Clin Period	Terminal	RCT, 2 arms	(Straumann)BLT	To compare tissue	Extraction and
2022	35102440	10.1186/s	Solakoglu Ö	University, H	A 3-year	Int J Implant I	Terminal	RCT, 2 arms	(Dentsply/Astra) (St	To longitudinally ev	Extract and ric
2022	34797431	10.1007/s	Wei SM, Sh	University, S	Accuracy	Clin Oral Inve	Terminal	RCT, 2 arms	(Straumann)Bone L	To compare the acc	Implant geome
2022	35051314	10.1111/c	Lamperti ST	University, Z	Cemente	Clin Oral Imp	Single	RCT, 2 x 2 x 2 ar	(Straumann)Bone L	To compare cemen	Abutment mate
2022	35506299	10.1002/jp	Tsai YL, Tsa	Public, Chial	Stability c	J Periodontol	Terminal > Sin	RCT, 2 arms	(Straumann)Bone L	To ascertain wheth	Contour augme
2021	34307657	10.1155/2	De Angelis I	Private clinic	Technica	Biomed Res	Partial, maxilla	Cross-sectional	(Straumann)Bone L	To analyze the diffe	Appraise effect
2021	34632540	10.1186/s	Murakami K	Private clinic	Clinical e	Int J Implant I	Partial	Cross-sectional	(Zimmer/Calcitek St	To evaluate the effe	Restore a parti
2021	34919618	dx.doi.org	Sabatini GP	University, S	Primary a	Int J Oral Max	Edentulous, m	RCT, 2 arms	(Straumann)Standa	To compare the prir	Implant numbe
2021	33490278	10.1155/2	De Angelis I	Private clinic	Influence	Biomed Res	Terminal > Sin	Retrospective ca	(MIS) (Straumann)B	To evaluate peri-im	Extraction and
2021	34661774	10.1186/s	Lie SAN, Le	University, M	Implant s	Int J Implant I	maxilla, poster	RCT-split, 2 arm	(Straumann)Bone L	To investigate The	Sinus elevation
2021	34129708	10.1111/c	Jonker BP,	University, R	Early imp	Clin Oral Imp	Terminal > Sin	RCT, 3 arms	(Straumann)BLT Rc	To test whether earl	Extraction and
2021	33217058	10.1111/c	Jonker BP,	University, R	Soft tissu	Clin Oral Imp	Terminal > Sin	RCT, 3 arms	(Straumann)BLT Rc	To compare two rid	Extraction and
2021	34219259	10.1111/jc	Huang JP, L	University, H	Clinical e	J Clin Period	-atrophy	RCT, 2 arms	(Straumann) 79%	To evaluate the outc	Peri-implant sc
2021	34378853	10.1111/c	Kim YY, Sor	University, S	Immediat	Clin Implant I	Partial	RCT, 2 arms	(Shinhung)Luna (Sti	To determine the ou	Implant geome
2021	34165835	10.1111/c	Kappel S, K	University, H	Maxillary	Clin Oral Imp	Edentulous, m	RCT, cross-over	(Straumann)Standa	To determine implar	Implant numbe
2021	34808006	10.1111/c	Hentenaar D	University, G	Erythritol	Clin Oral Imp	Adverse, Peri-i	RCT, 2 arms	(Nobel Biocare) (Str	To compare erythrit	Peri-implantitis
2021	32800577	10.1016/j.	Rammelsbe	University, H	Long-terr	J Prosthet De	Adverse, impla	Retrospective ca	(Nobel Biocare)Rep	To evaluate the chi	Restore a parti

Since 2002:

Constant curated clinical studies repository

Full-text access + data mining algorithms

<u>Status 01.09.2023:</u>

Clinical studies = ~8000

RCTs = ~2000

Straumann implants studies = ~1400

BL / BLT (cross-fit connection) = ~240

The scientific evidence for best practices in implant dentistry?

Pubmed	doi	aai	PROS	Authors	Title	Source	Country
DRAFT	10.111	2023	4202 235	De Souza AE	Effect of dental implant therapy on the p	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 129	Srinivasan M	Oral function in completely edentulous	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 235	Jung J, Ryu	Effect of anti-resorptive therapy on shor	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 128	Monje A, Ro	Significance of buccal bone wall thickne	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 129	Hamilton A,	Selection criteria for immediate implant	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	NO	Wittneben J,	Clinical performance of immediately loa	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 236	Stefanini M,	Do soft tissue augmentation technique	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 237	Roehling S,	Clinical and radiographic outcomes of a	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 226	Abou-Ayash	Treatment effect of implant-supported fi	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	NO	Chantler J, E	Clinical performance of single screw-re	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 129	Ioannidis A,	Additively and subtractively manufacture	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 237	Laleman I, L	The effect of different abutment materia	Clin Oral Implants	[ITI 7]
DRAFT	10.111	2023	4202 334	Pjetursson E	Systematic review evaluating the influer	Clin Oral Implants	[ITI 7]
34245172	10.111	2022	4202022	Anitua E, Alk	Implant-prosthetic treatment in patients	Spec Care Dentist	Spain, Priva
33504723	10.218	2022	4202018	Putra RH, Yo	The accuracy of implant placement with	J Prosthodont Res	Japan, Toho
34160869	10.111	2022	4202017	Li QL, Yao M	Survival Rates of Splinted and Nonsplin	J Prosthodont. 202	China, Sun
35527511	10.111	2022	4201912	Schmidt A, W	Accuracy of digital implant impressions	Clin Oral Implants	Germany, Ju
35156296	10.111	2022	4201808	Atieh MA, Alr	Airflow for initial nonsurgical treatment	Clin Implant Dent I	New Zealan
34761430	10.111	2021	4202017	Tomasi C, A	Efficacy of rehabilitation of stage IV peri	J Clin Periodontol.	Sweden, Gö
34330529	10.101	2021	4201809	Lemos CAA	Are implant-supported removable partia	J Prosthet Dent. 2(	Brazil, Feder
34041613	10.118	2021	NO	Kunzendorf	Indications for 3-D diagnostics and nav	Int J Implant Dent.	Germany, U
32401121	10.108	2021	4201914	Jiang X, Zhu	Association between diabetes and den	Acta Odontol Scan	China, Jilin
33635397		2021	4202017	Jorba-Garci	Accuracy assessment of dynamic comp	Clin Oral Investig.	Spain, Unive
33670136	10.339	2021	4202017	Schnutenha	Accuracy of Dynamic Computer-Assiste	J Clin Med. 2021;	Germany, U
33540465	10.111	2021	NO	Wei SM, Zhu	Accuracy of dynamic navigation in impla	Clin Oral Implants	China, Shar
34398327	10.100	2021	4202014	Pauletto P, F	Clinical performance of short versus st	Clin Oral Investig.	Brazil, Feder
33854095		2021	4202015	Yu X, Xu R, Z	A meta-analysis indicating extra-short i	Sci Rep. 2021 Apr	China, Sun
34037243	10.111	2021	No	Bitinas D, Bi	Short implants without bone augmenta	Aust Dent J. 2021;	Lithuania, Li
33600520		2021	No	Carosi P, Lo	Short Dental Implants (≤ 6 mm) to Reh	Int J Oral Maxillofa	Italy, Tor Ver
33589294	10.101	2021	No	Terheyden H	Vertical bone augmentation and regula	Int J Oral Maxillofa	Germany, R

Cochrane Library

Status, 01.09.2023:

Clinical studies = ~8000

Straumann implants = ~1400 studies

Straumann BL / BLT implants = ~240 studies

Systematic Reviews (SRs) = ~2000

SRs - effects of abutment or prosthesis material on outcomes = ~250

SR - effects of abutment or prosthesis material on outcomes from the Bern-Geneva-universities group = ~25

SRs from the Geneva-Bern-universities on material effects on outcomes

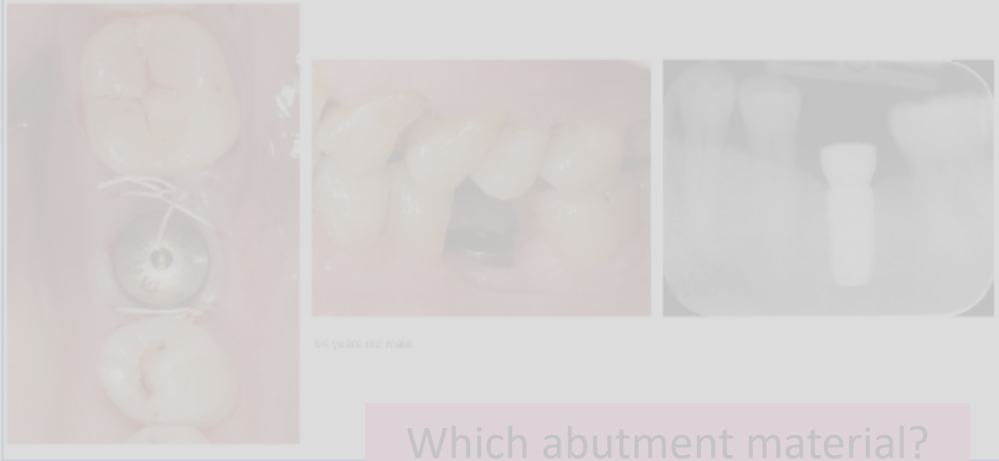
Pjetursson, Sailer ea	…influence of …prosthetic material and prosthetic design …of implant-supported multiple unit restorations...posterior area	2023 ITI consensus COIR
Messias, Pjetursson ea	….full-arch edentulism with fixed or removable dentures retained by root-form dental implants:…	JCP & COIR 2023; Sup
Zarauz, Pjetursson ea	Esthetic Outcomes of Implant-Supported Single Crowns Related to Abutment Type and Material	IJP. 2021; 43: 229
Pjetursson, Sailer ea	….the survival, failure, and the complication rates of veneered and monolithic all-ceramic implant-supported single crowns	COIR. 2021; 32(su 21):254
Pitta,…Pjetursson ea	….Influence of Abutment Material on Peri-implant Soft Tissue Color Measured Using Spectrophotometry.	IJP. 2020; 33: 39
Pjetursson, Zarauz ea	….influence of the implant-abutment connection …. implant abutments supporting fixed implant reconstructions.	COIR. 2018; 29 (su 18):160
Pjetursson, Valente ea	….the survival and complication rates of zirconia-ceramic and metal-ceramic single crowns	COIR. 2018; 29 (su 16):199
Sailer,…Pjetursson	….the survival and complication rates of zirconia-ceramic and metal-ceramic multiple-unit fixed dental prostheses	COIR. 2018; 29 (su 16):184
Pjetursson,…Sailer	….comparison of survival and complication rates in older and newer publications.	IJOMI. 2014; 29 sup: 308
Jung,…Pjetursson ea	…..biological, technical, and aesthetic complications of single crowns on implants … with a mean follow-up of 5 years.	COIR. 2012; 23 sup 6: 2-21
Pjetursson, Thoma ea	…..implant-supported fixed dental prostheses (FDPs) after a mean observation period of at least 5 years.	COIR. 2012; 23 sup 6: 22
Pjetursson, Zwahlen ea	Quality of reporting of clinical studies to assess and compare performance of implant-suported restorations	JCP. 2012; 39 (su 12): 139
Sailer,…Pjetursson ea	….the performance of ceramic and metal implant abutments supporting fixed implant reconstructions.	COIR. 2009; 20 sup 4: 4-31
Aglietta,…Pjetursson ea	…..implant supported fixed dental prostheses with cantilever extensions after an observation period of at least 5 years.	COIR. 2009; 20: 441
Pjetursson,Tan ea	…..survival of implants inserted in combination with sinus floor elevation.	JCP. 2008; 35 (sup 8): 216
Tan, Pjetursson ea	…..survival of implants inserted in combination with sinus floor elevation. Part II: transalveolar technique.	JCP. 2008; 35 (sup 8): 241
Jung, Pjetursson ea	….the 5-year survival and complication rates of implant-supported single crowns.	COIR. 2008; 19: 119-130
Pjetursson, Brägger ea	…..tooth-supported fixed dental prostheses (FDPs) and implant-supported FDPs and single crowns (SCs).	COIR. 2007; 18 sup 3: 97
Lang, Pjetursson ea	….fixed partial dentures (FPDs) after an observation period of at least 5 years. II.Combined tooth-implant-supported FPDs	COIR. 2004; 15: 643
Pjetursson, Tan ea	….fixed partial dentures (FPDs) after an observation period of at least 5 years. I. Implant-supported FPDs	COIR. 2004; 15: 625

Which FDP material combination is optimal in the posterior mandible?

Tell us on:
Slido.com

Code #:
ITINordic

Single missing tooth in molar area



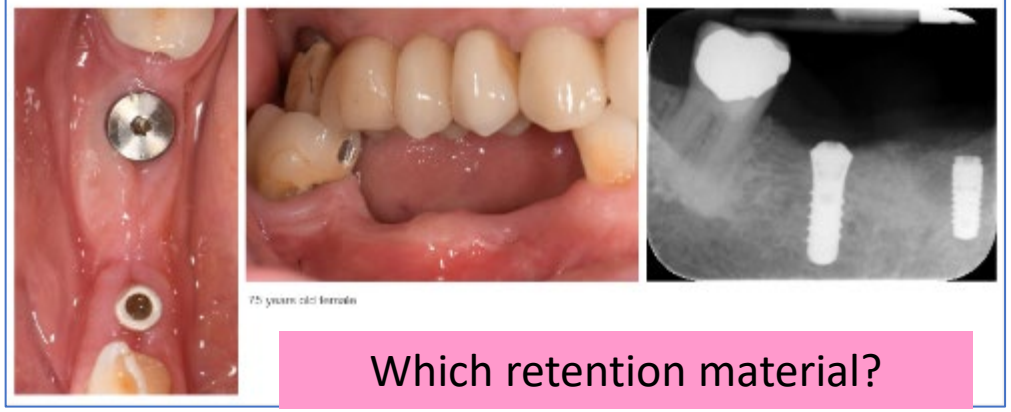
Which abutment material?

Single missing tooth in anterior area

34 years old female

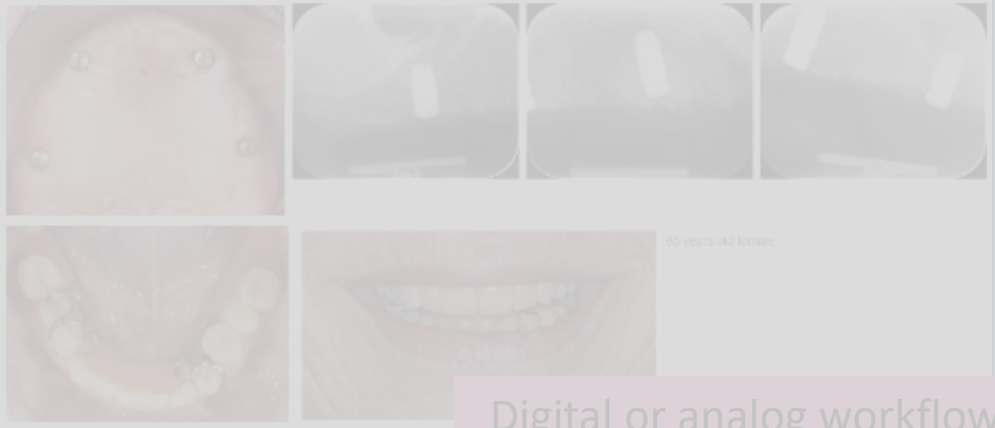
Which restorative material?

Several missing teeth on molar area
3-unit FDP



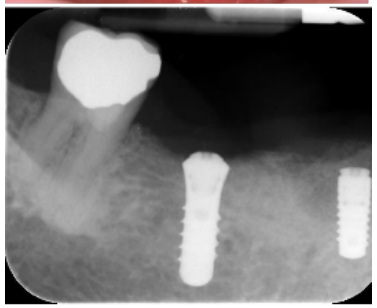
Which retention material?

Edentulous arch



Digital or analog workflow?

Case 3: Optimal retention/material -best evidence



All published clinical studies 1980 - 2023
n= 597

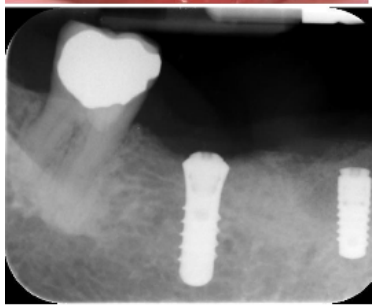
All Straumann implant
clinical studies
n= 123

Missing teeth in the posterior mandible

Prevailing 3 cements:
(3M) Rely X Unicem
(Kuraray)Panavia F
(Ivoclar)Multilink implant

Titanium base cement:
(Ivoclar)Multilink Hybrid Abutment

Case 3: Optimal retention/material -best evidence



All published clinical studies 1980 - 2023
n= 597

Missing teeth in the posterior mandible

All Straumann implant clinical studies
n= 123

Prevailing 3 cements:
(3M) Rely X Unicem
(Kuraray)Panavia F
(Ivoclar)Multilink implant

Titanium base cement:
(Ivoclar)Multilink Hybrid Abutment

All Straumann Bone level implant (BL/BLT) clinical studies
n= 31

Retention
Not described (n=19)
Described: (n=12)
- Polymer (2)
- 4-meta polymer (2)
- Other (4)
- Screw retained (4)

Prosthodontic Classification
- Complicating Factors
- Prosthesis Factors
- Occlusal Factors
- Complexity

ITI SAC Assessment Tool

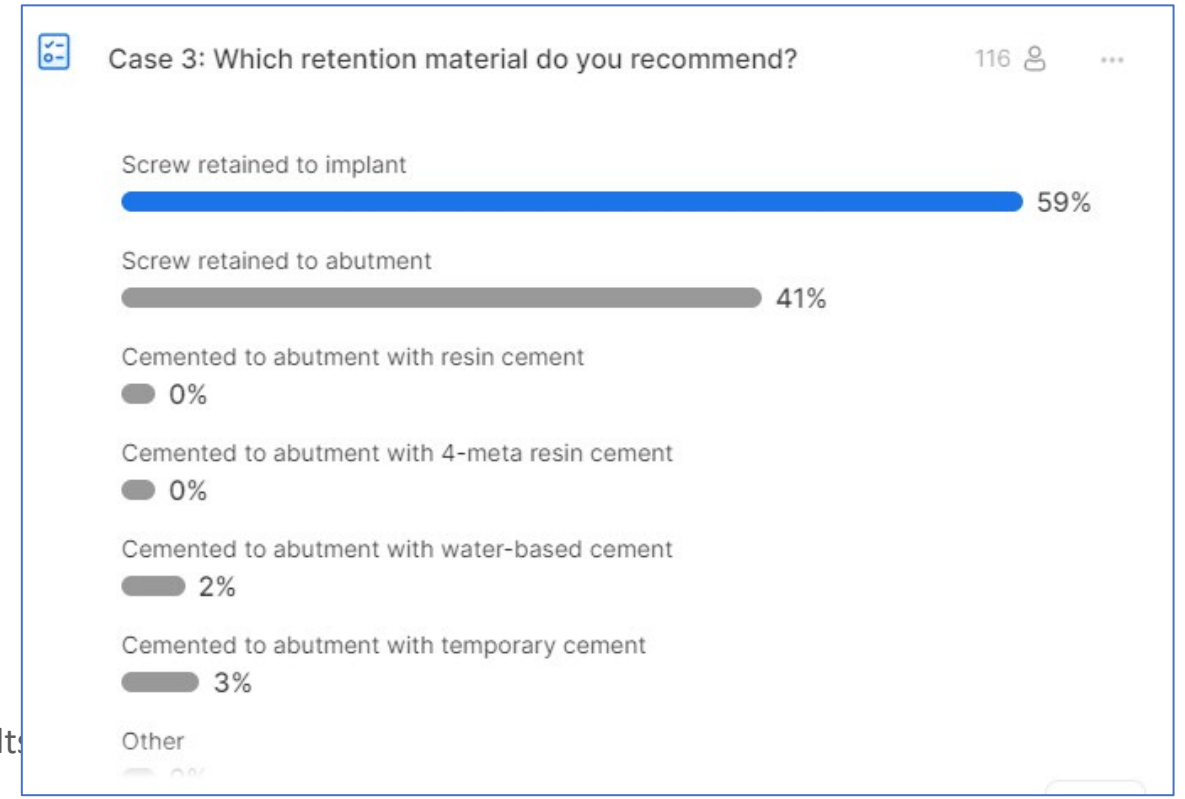
Scientific evidence to guide optimal choice for specific clinical case is often limited

MAKE USE OF THE SAC TOOL ON THE WEB
Merge risk-appraisal with shared decision-making

slido

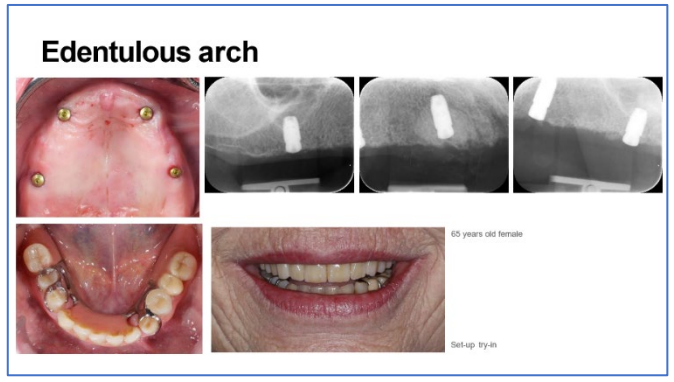
Case 3: Which retention material do you recommend?

Replies:



ⓘ Start presenting to display the poll results

Which material combinations are optimal in four clinical scenarios?

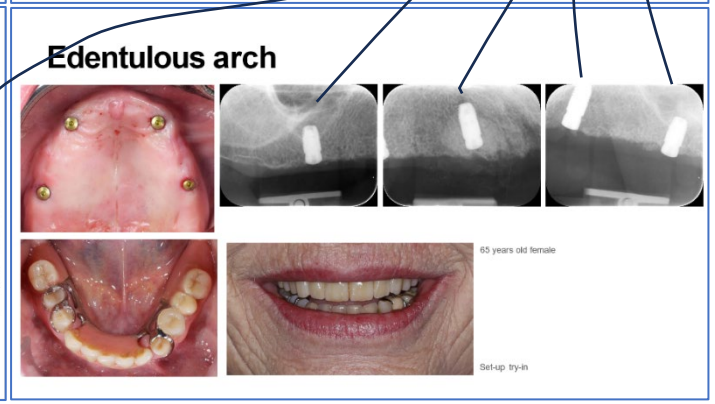


Options depend on

1. Type of implant & implant : abutment connection

Which material combinations are optimal in four clinical scenarios?

Options depend on
implant system
implant: abutment connection



CrossFit® connection

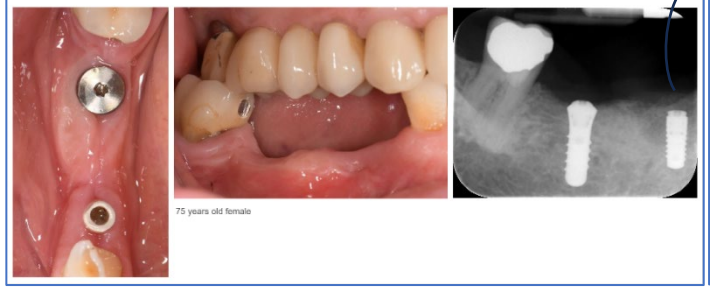
Which material combinations are optimal in four clinical scenarios?

Options depend on
implant system
implant: abutment connection
Cement / Screw retention

Single missing tooth in molar area

Single missing tooth in aesthetic area

Several missing teeth on molar area
3-unit FDP



Edentulous arch

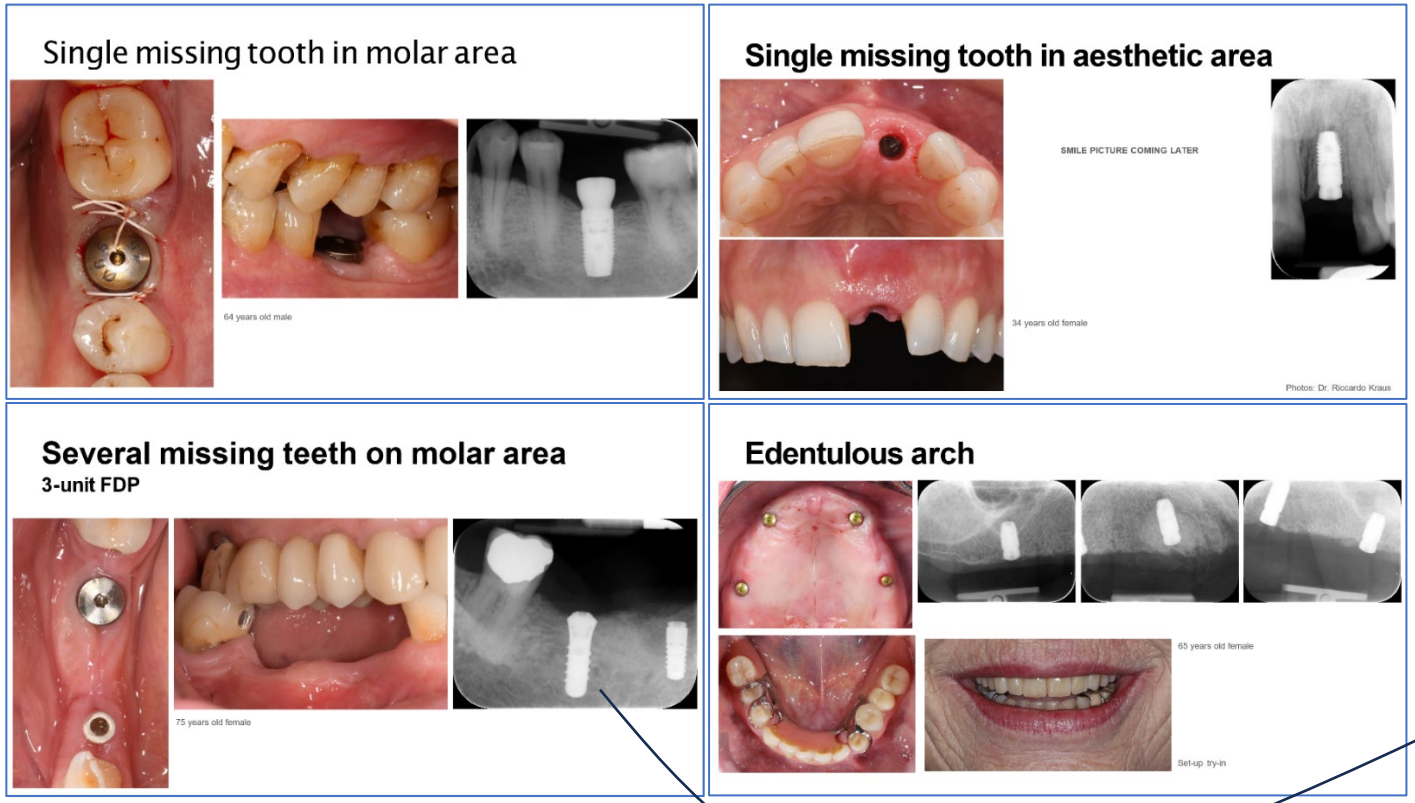
Stock abutments

CrossFit®
connection

CARES

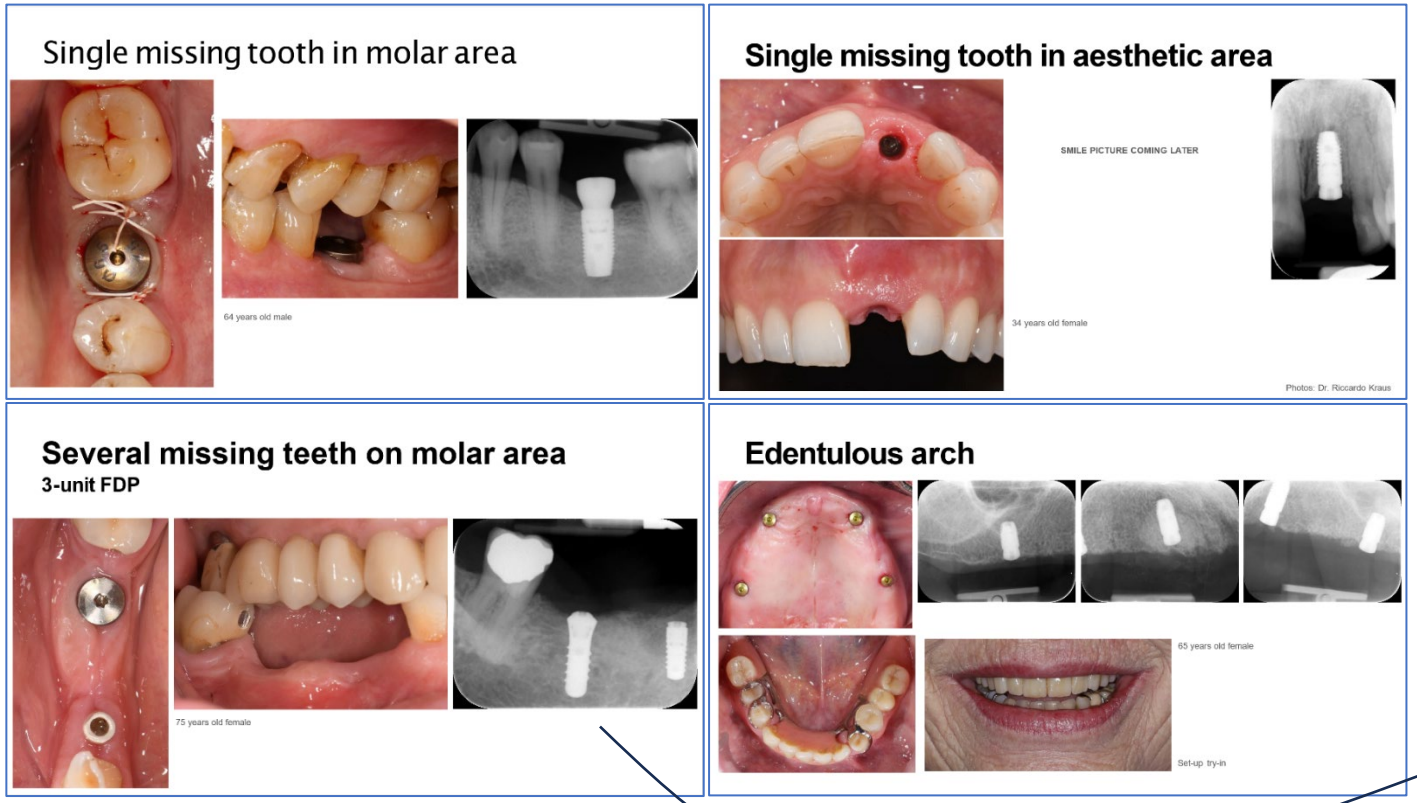
Which material combinations are optimal in four clinical scenarios?

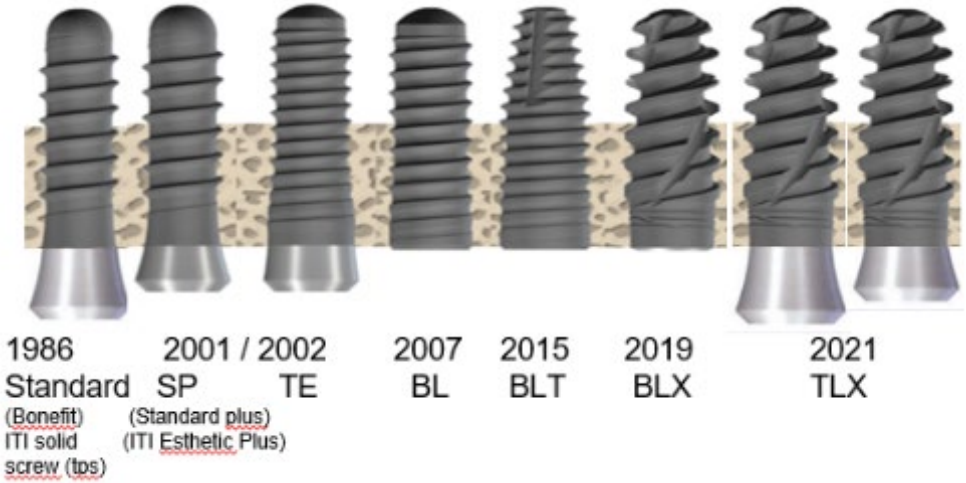
Options depend on
implant system
implant: abutment connection
Cement / Screw retention



Which material combinations are optimal in four clinical scenarios?

Options depend on
implant system
implant: abutment connection
Cement / Screw retention

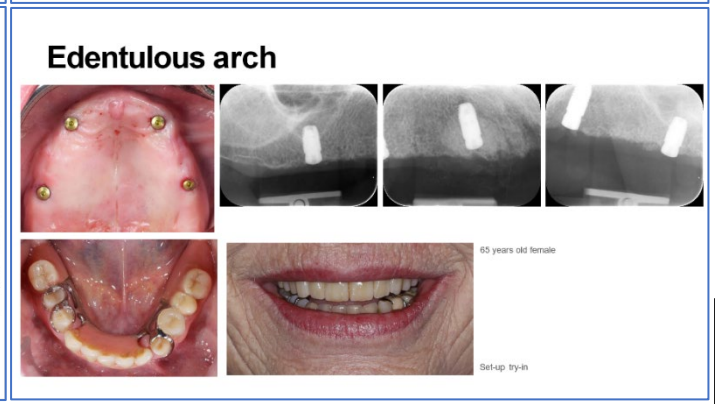




"Classic" Octa→ ~2000 →synOcta

TODAY: 11 abutment variants
Gold / Solid
synOcta (5)
Variobase (since 2013) (4)
CARES digital solutions

Which material combinations are optimal in four clinical scenarios?



Options depend on
implant system
implant: abutment connection
Cement / Screw retention
Abutment material and interface
Restorative material

Octa←2000

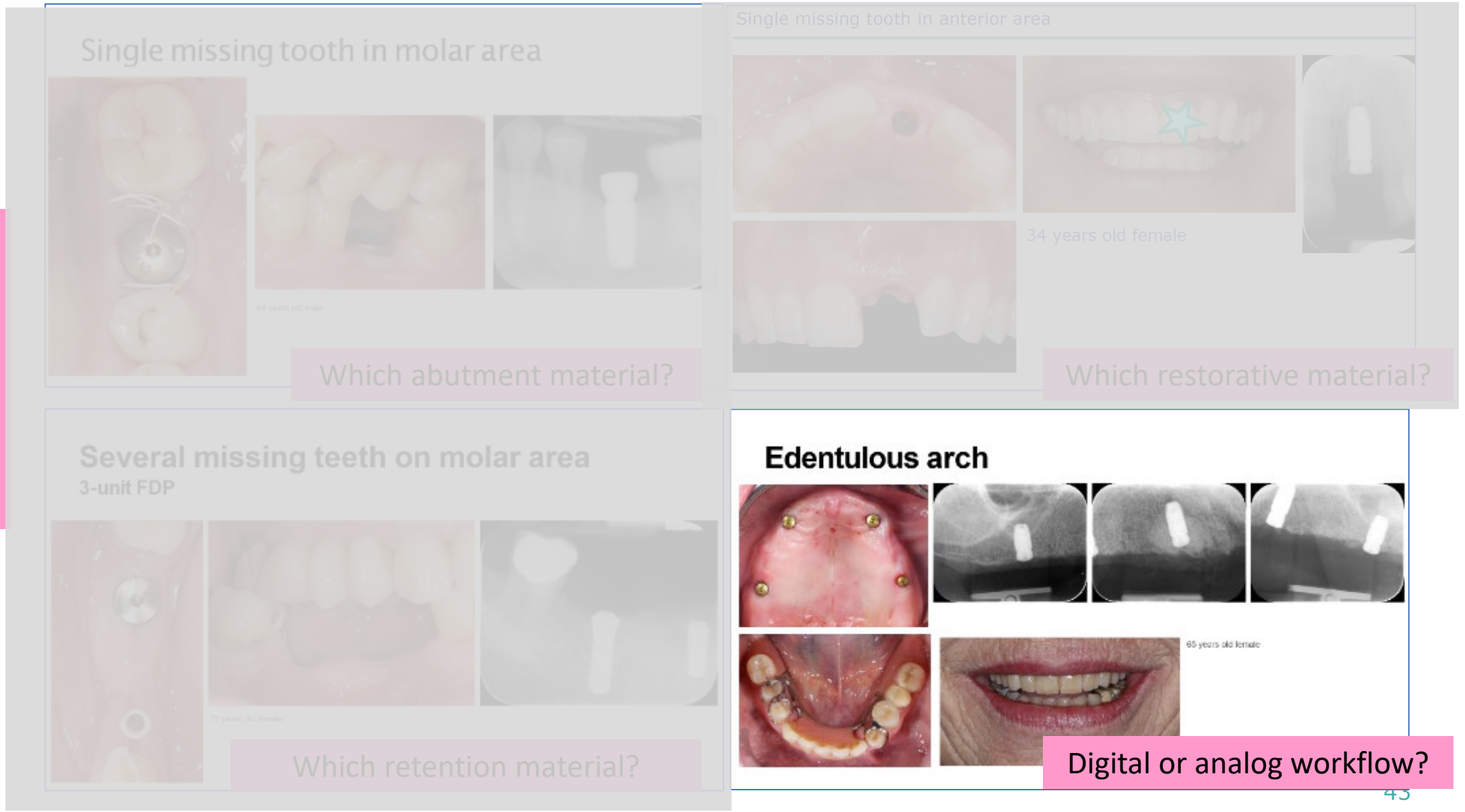
2000→synOcta

Digital solutions
Digital workflow

Which FDP material combination is optimal for in an edentulous maxilla?

Tell us on:
Slido.com

Code #:
ITINordic



Case 4: Optimal workflow - best evidence*

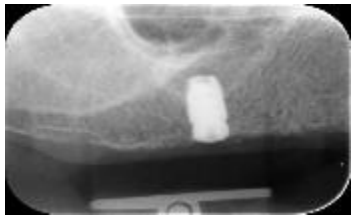
*(Published since 2010)

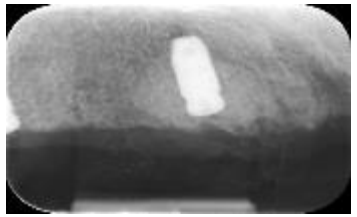
Edentulous maxilla

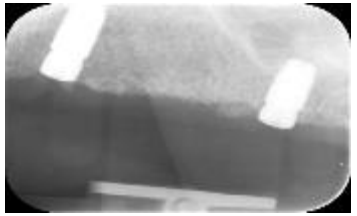
All published clinical studies 1980 - 2023
n= 273

All Straumann implant clinical studies
n= 33

Fixed solution







Innovations

- Feldpar ceramic fused to zirconia frame
- Resin teeth in acrylic base bond to titanium frame
- Titanium bar laser-welded to titanium copings
- Zirconia fused/luted to milled titanium/Co-Cr frame
- Ceramic crowns luted to zirconia frame
- ….

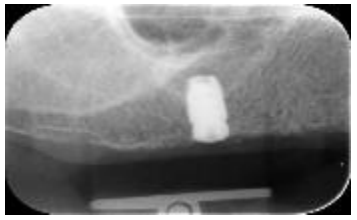
Case 4: Optimal workflow - best evidence*

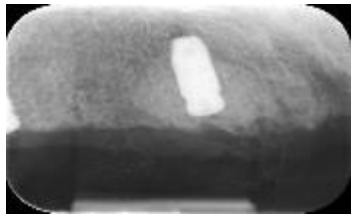
*(Published since 2010)

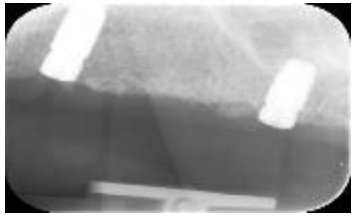
Edentulous maxilla

All published clinical studies 1980 - 2023
n= 273

Fixed solution







All Straumann implant clinical studies
n= 33

Innovations

- Feldpar ceramic fused-to-Zirconia frame
- Resin teeth in acrylic base bond-to-Titanium frame
- Titanium bar laserwelded to titanium copings
- Zirconia fused/luted-to-milled titanium/Co-Cr frame
- Ceramic crowns luted to zirconia frame
- ….

Not described (n= 4)
Described: (n= 7)
Analog (2)
Analog-Digital (4)
Digital (1)

All Straumann Bone level implant (BL/BLT) clinical studies
n= 11

Straumann Pro Arch

Recommended literature on prosthetic workflow:
RCT, Markovic ea - U Belgrade – JOI 2022
RCT, Kim ea – U Seoul - COIR 2020

Case series from Univ. Rochester:
Chochlidakis, Ercoli, ea J Pros Dent 2020
Nikellis, Ercoli, ea J Pros 2020

1 Data acquisition CT/IO/EO

>2 planning

>3 surgery static/dynamic

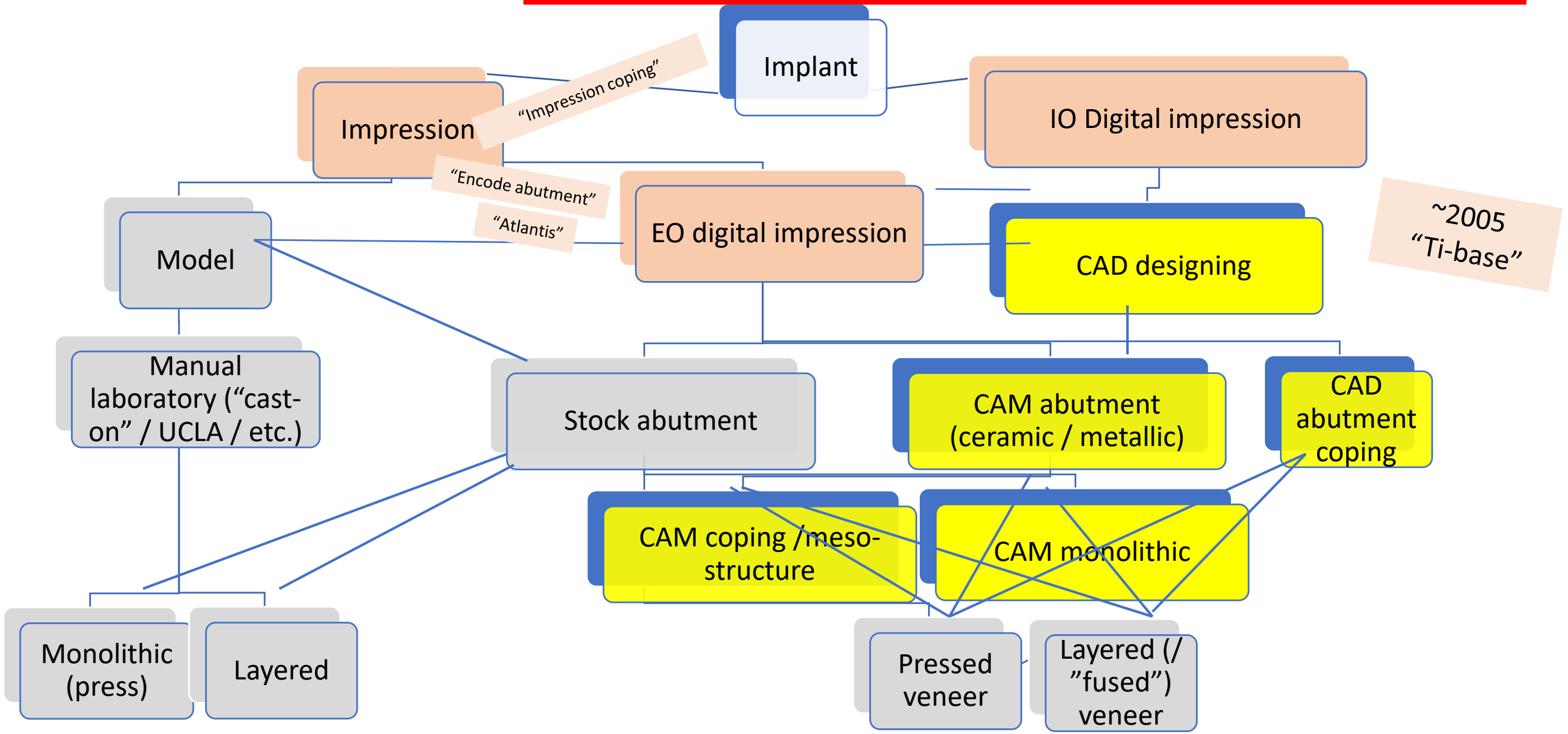
>4 impression IO/EO

>5 device design "CAD"

>6 design production "CAM"

>7 post process sinter/surface

>8 prosthesis +/- veneering



1 Data acquisition CT/IO/EO

>2 planning

>3 surgery static/dynamic

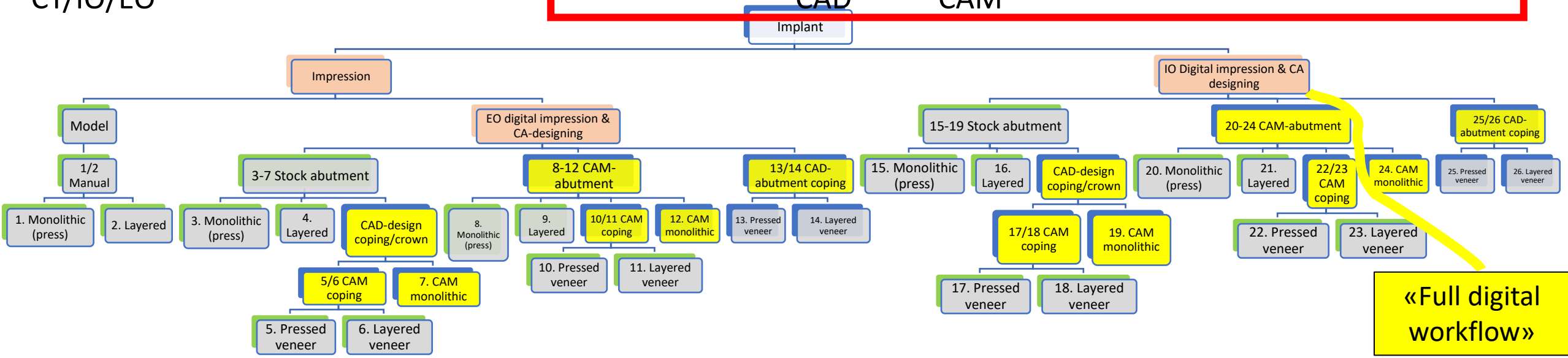
>4 impression IO/EO

>5 device design "CAD"

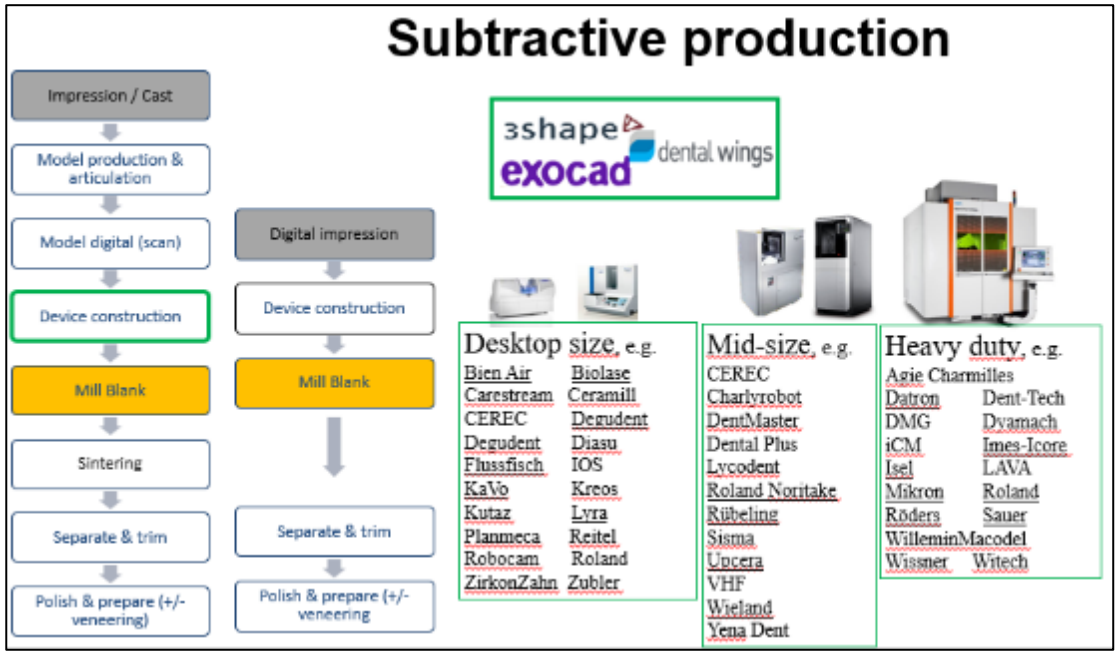
>6 design production "CAM"

>7 post process sinter/surface

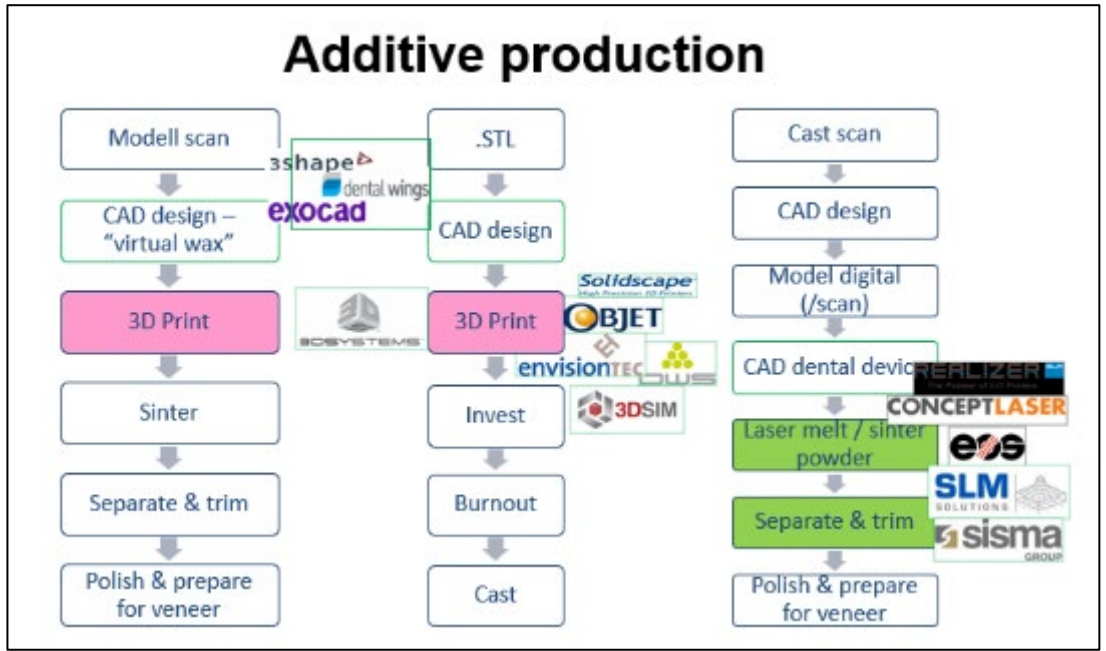
>8 prosthesis +/- veneering



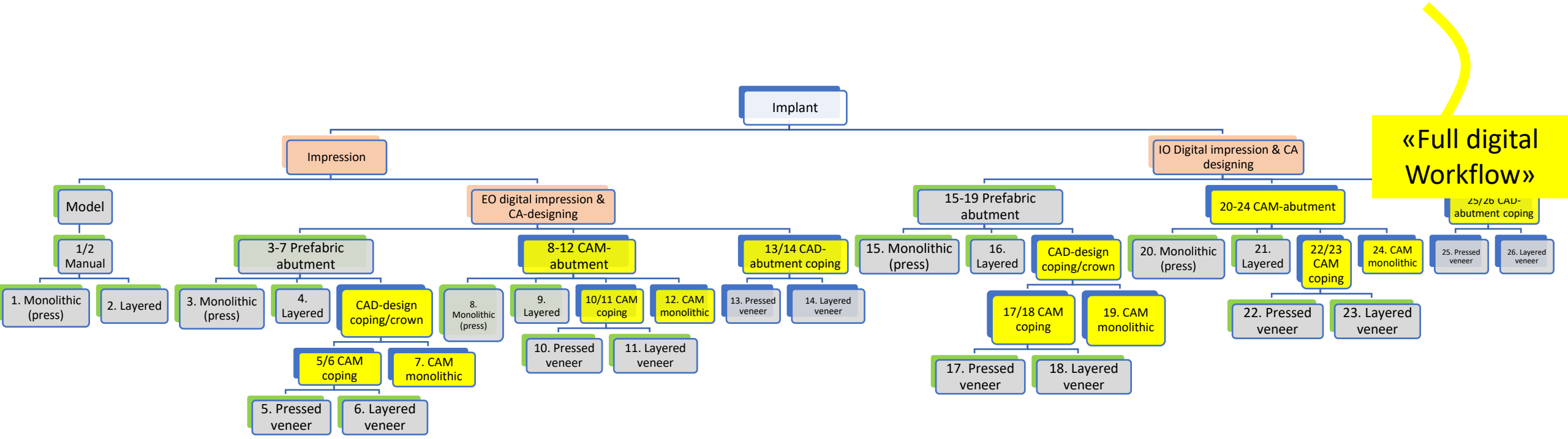
«Full digital workflow»



or



1 Data acquisition CT/IO/EO	>2 planning	>3 surgery static/dynamic	>4 impression IO/EO	>5 device design “CAD”	>6 design production “CAM”	>7 post process sinter/surface	>8 prosthesis +/- veneering
Dental Wings Smilecloud/		straumann DWOS/CoDiagnostiX	DWIO/Virtuo CARES 7	CARES Visual	Straumann P(rint)/Straumann D/M CARES milling centre		



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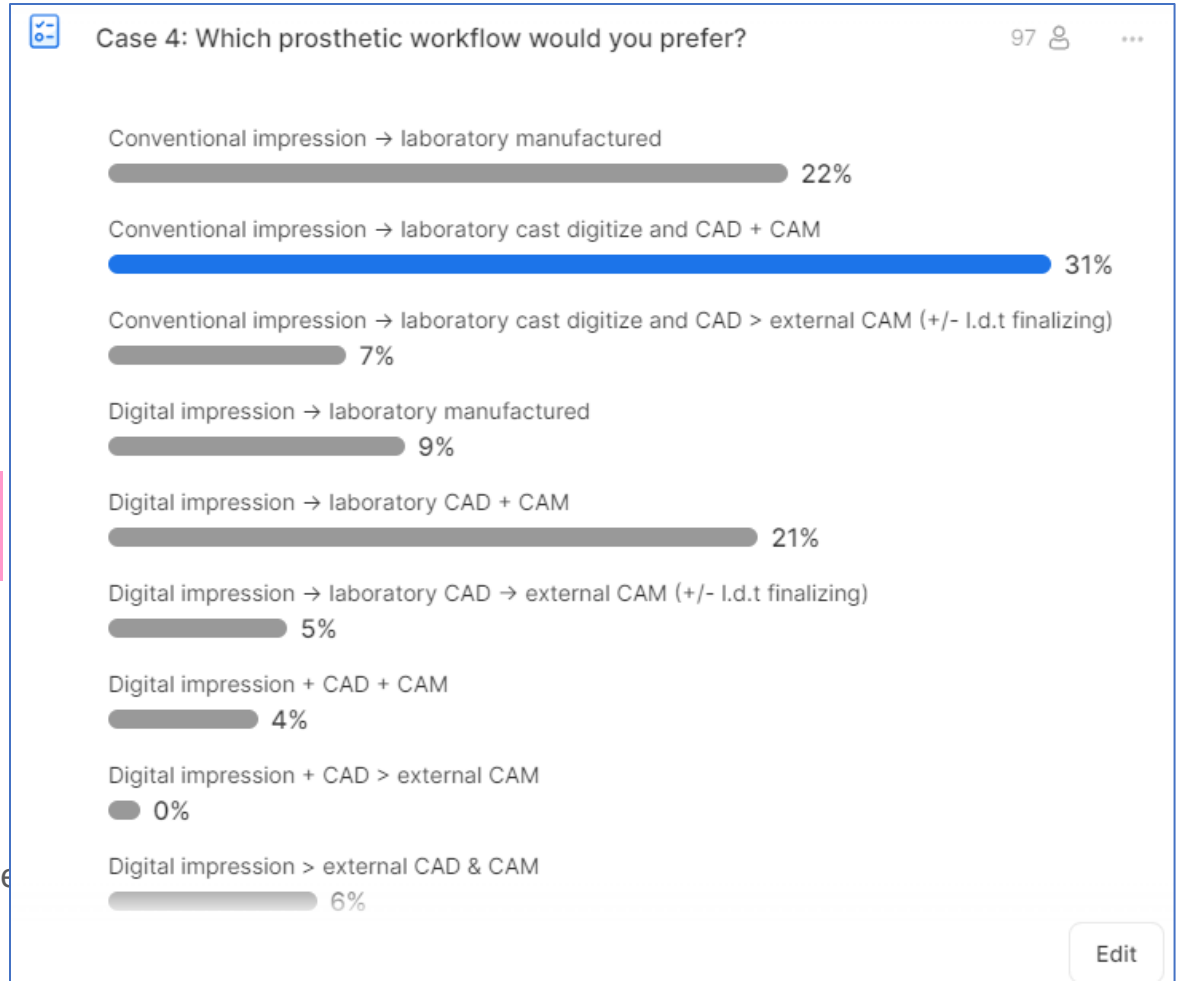
Case 4: Which prosthetic workflow would you prefer?

Replies:



ⓘ Start presenting to display the poll re

THANK YOU.