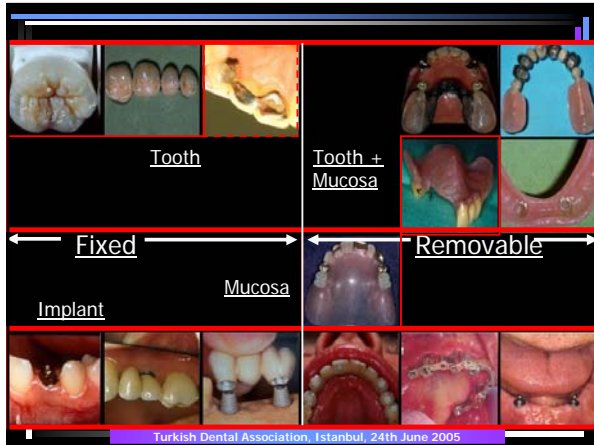


NEW MATERIALS AND TECHNIQUES IN PROSTHODONTICS

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New materials & methods

- Dental implants
- Articulators
- Precision attachments
- Repairs (Ceram fracture, crown removal, post retrieval, etc.)
- Denture fabrication: production, materials, lining & repairs
- Laboratory: process & new materials

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New materials & methods–Fixed prostheses

1. Rotating instrument
2. Root Post
3. Gingival retraction
4. Impression
5. Bite & jaw registration
6. Color shade
7. Temporary construction
8. Restorative materials
9. Production techniques
10. Cementation

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New materials & methods–Fixed prostheses

Preparation & finishing kits

Axis

- Acrylic Adjustment Kit
- R.A.P.T.O.R. Resin Sculpting Set
- R.A.P.T.O.R.

Brasseler

- Acrylic Temporization Kit
- Anterior Bur Box
- Esthetic Inlay/Onlay
- Nixon Inlay/Onlay II
- Nixon Porcelain Veneer II Laminate Veneer System
- Ultra Denture Adjustment & Polishing Kit

Cosmedent
Top Finisher System

Dentsply/Caulk
Enhance Composite Finishing and Polishing System

Nobel Biocare
Procera Preparation Kit

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New materials & methods–Fixed prostheses

Rotating instrument

Root Post

1. Cast
2. Prefabricated
 - Metal
 - Non-metal

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1. Cast posts

Indirect technique

- Impression

Direct technique: Post & resin

- Wax
- Resin
 - Accuset
 - ExactaCast
 - Luminex
 - GC Pattern Resin



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2. Prefabricated posts

1. Cast Posts

- Indirect
- Direct: Post & resin

2. Prefabricated Posts

	Additional core	
Metal	No	Yes
Non-metal	-	Yes
		> 30 products

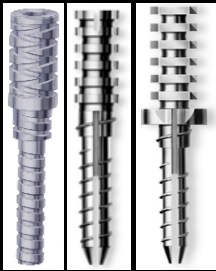
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"Core"-materials

Bis-core	Bisco	Dual co.	CuRay-support	Sci-Pharm	Dual co.
Bisfil core	Bisco	Light co.	Encore	Centrix	Chem.Co
Bisfil II	Bisco	Chem.Co	FluoroCore	Dentsply	Dual co.
Blue core	Teledyne	Chem.Co	Fuji-II LC	GC	GIC-modif.
Build-It! FR	Jeneric	Dual co.	HardCore	Pulpdent	Dual co.
Ceracap	Brasseler	ceramic	Infracore	Temrex	Dual co.
Clearfil Core	Kuraray	Chem.Co	Ketac silver	3M ESPE	Ag-GIC
" " PhotoCore	Kuraray	Light co.	Light-Core	Bisco	Light co.
Coradent	Vivadent	Chem.Co	LuxaCore Auto	DMG	Dual co.
Core Paste	Den-Mat	Chem.Co	MagnaCore	Bosworth	Dual co.
" " Syringe	Den-Mat	Dual co.	Microrest Core	GC	Chem.Co
Core-Flo	Bisco	Chem.Co	Parapost	Paracare	Coltene
CoreRestore2	sds/Kerr	Dual co.	Rebilda	VOCO	Chem.Co
" " HDOC	sds/Kerr	Light co.	Ti-Core	EDS	Chem.Co
CoreShade	Shofu	GIC	Vitremer	3M Espe	GIC-modif.

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2. Prefabricated posts, metal



Steel
Titanium-alloy
Titanium

"Active" – "Inactive"

Conical
Parallel
Steps
Slots & grooves

Threaded
Smooth
Structured

Flat
Conical
Ovoid

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2. Prefabricated post, non-metal

Five main groups

1. Ceramic, prefabricated
2. Ceramic, made in the dental laboratory



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Posts made in ceramics

Prefabricated

Biopost (Incermed), ZrOx, D, ~ 1990

Cerapost (Brasseler), 1995

Cosmopost (Ivoclar), 1998

Laboratory

+ "Cosmopuck" (Ivoclar), 1998

In-Ceram (VITA), 1994

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2. Prefabricated post, non-metal

Five main groups:

1. Ceramic, prefabricated
2. Ceramic, made in laboratory
3. "Black post", Carbonfibres dispersed in resin
4. "White post", Quartsfibres dispersed in resin
5. "Translucent post"

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Non-metal, non-ceramic posts - many variants

- Quarts → composite
- Quarts+Zirkonium → "resin"
- (Carbon) → epoxi
- Quarts & Carbon → polyester



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New materials & methods—Fixed prostheses

Rotating instrument

Root Post

Gingival retraction

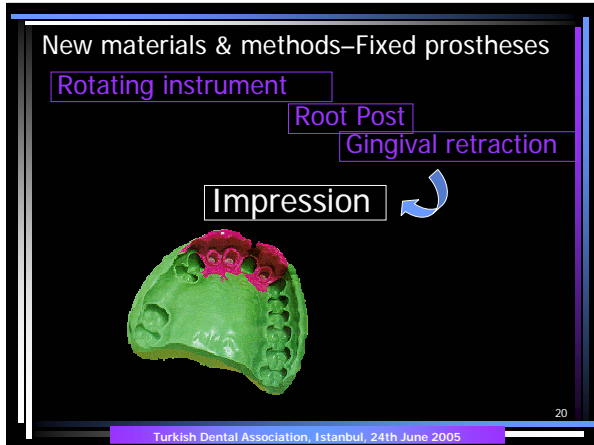
1. Cord
 - Impregnated
 - Non-impregnated
2. Gel/paste
3. Cotton
4. Electrosurgery
5. (Copper-tube)

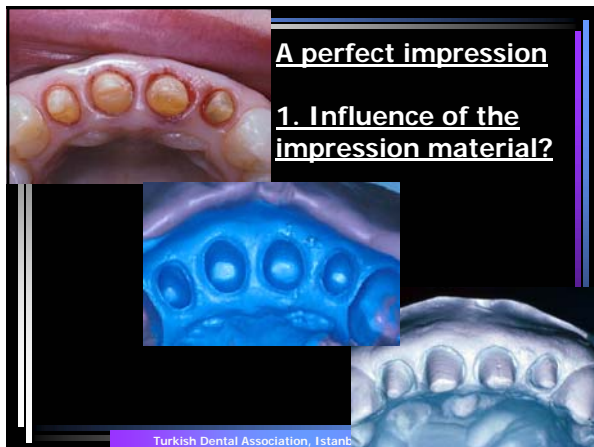


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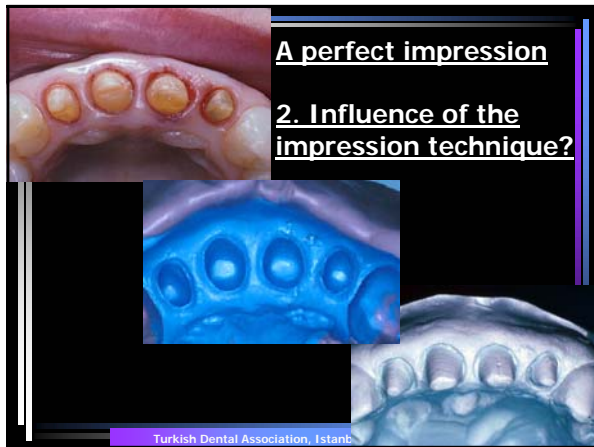


Most commonly used materials in USA

	Crowns /bridges	Inlays /onlays
Vinyl siloxane	81%	71%
Alginate	38%	20%
Polyeter	28%	22%

*Dental Products Report Survey, Nov 2000 n= 319 dentists₂₂

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Method 1 - Dual-arch

SYN: Dual-arch impression, Double-arch impression, Triple tray technique, Closed-bite impression, Double arch single mix impression, Double arch double mix impression

Dual-arch

- Patient comfort
- Maximum intercuspid
- Easy for laboratory
- Time
- Occlusion?

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Method 2-
One polymerisation phase
- one viscosity

SYN: One phase technique, Single phase impression, Medium viscosity technique, Single mix technique, Single mix single impression, Monophase technique

Materials – ex.

Aquasil Monophase	Dentsply
Examix Monophase	GC
Imprint II	3M Espe
Impregum F	3M Espe
Provil Novo Monophase	Kulzer
President System 75	Coltene

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Method 3-
One polymerisation phase
- two viscosities

SYN: Double mix technique, Double mix single impression, Express technique, One step putty wash technique, Sandwich impression, Simultaneous one-step technique, Two phase technique/ impression, Wet/Wet impression

Materials – ex.

Aquasil Putty + Reprosil HF Light	Dentsply
Examix Putty + Examix Regular eller Inject	GC
Express Putty + Express Medium	3M Espe
Impregum F + Permadyne	3M Espe
Optosil Comfort P Plus + Xantopren	Kulzer
President Heavy + President (Jet) Light	Coltene

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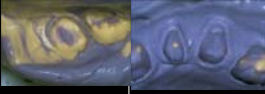
Method 4 –
Two polymerisation phases
-two viscosities

SYN: Correction impression, Double impression, Double mix double impression, Overlay impression, Putty-wash technique / impression, Two-step putty-wash technique, Wash technique, Wet/Dry impression

Materials – ex.

Coltoflax + Coltex Xtrafine	Coltene
Panasil Heavy + Panasil Regular	Kettenbach
President Putty Soft + President (Jet) Light	Coltene
Examix Putty + Examix Regular	GC
Express Putty + Express Medium	3M Espe
Aquasil Putty + Reprosil HF Light	Dentsply


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Dual-arch	Single-phase	Two-phase	Two-phase - two stage
<ul style="list-style-type: none"> •Patient comfort •Maximum intercuspид •Easy for laboratory •Time 	<ul style="list-style-type: none"> •Fast 	<ul style="list-style-type: none"> •Hydraulic 	<ul style="list-style-type: none"> •Hydraulic
<ul style="list-style-type: none"> •Occlusion? 		<ul style="list-style-type: none"> •Putty : wash hardness compatibility? 	<ul style="list-style-type: none"> •Technique sensitive •Hydraulic •Replacement

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Alternative method 5 - "Hydraulic principle"


For upper anterior abutments with fragile gingiva



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Alternativ method 6 - "Laminar" principle
(Ref: G Schoenrock (1989))

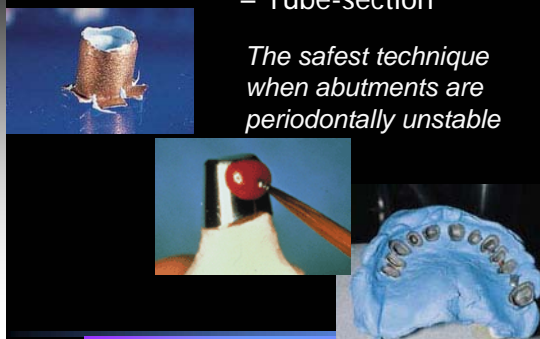
For lower posterior abutments with dry work field problems



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Alternative method 7
– Tube-section

The safest technique when abutments are periodontally unstable




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A perfect impression

3. Influence of the impression tray?

1. Dual-arch
 1. Metall
 2. Plastic
2. Other
 1. Metall
 2. Plastic
 3. Individual




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Trays – Dual-arch

- Bite Relator (Temrex)
- Bite Tray (Kerr)
- Exacta
- First Bite
- Quad-Tray
- Tri-Bite (Tri-Bite)
- Triple Tray (Premier)



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Trays - metal

Platinated brass
Steel
Titanium
Aluminium

Perforated
Uperforated

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Trays – metal

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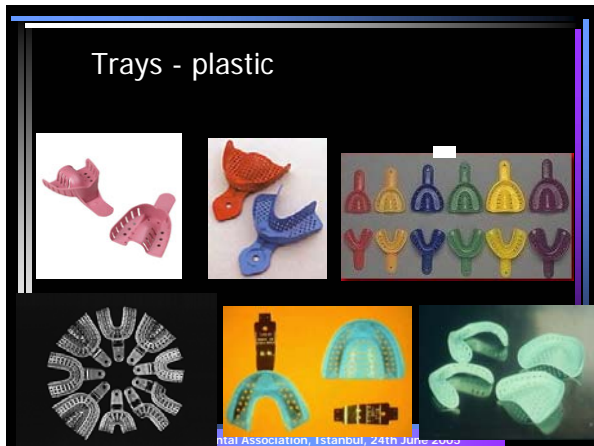
Trays – metal, for implant prosthodontics

WIN-TRAY

Kohler
Medizintechnik

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Most used in USA

Percent used for impressions

	Crowns /bridges	Inlays /onlays
Vinyl siloxane	81%	71%
Alginate	38%	20%
Polyeter	28%	22%

Do you ever use individual tray?
Yes 73% No 24%

*Dental Products Report Survey, Nov 2000 n= 319 dentists³⁸

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Tray - individual

Candulor C-plast	Candulor Dental	Chemical
Cavex Shellac	Cavex	Heat
Citotray	Bayer AG	Light
Comtray	Schütz Dental	Light
Easy Tray	Kerr	Heat
Erkolen	Erkodent	Heat/Vacuum
Extoral	Pro-Den	Light
Fastray	H Bosworth	Chemical
Formatray	Kerr	Chemical
Hylon	Premier	Chemical
Individo/Lux	VOCO	Chemical/Light
Ostron 100	G-C Dental	Chemical
Palatray/LC	Hereaus Kulzer	Chemical/Light
Pekatray	Bayer	Chemical
Spectra-Tray	Ivoclar	Light
SR-Ivolen	Ivoclar	Chemical
T-LUX	Scheu Dental	Light
TrayAcryl	Schütz Dental	Chemical
Triad	Dentsply	Light

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New materials & methods—Fixed prostheses


Rotating instrument

Root Post

Gingival retraction

Impression


Bite & jaw registration



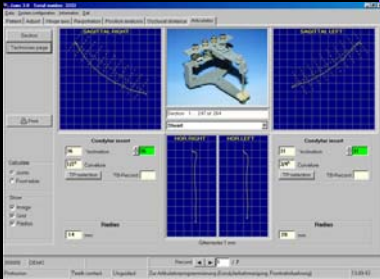
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Bite & jaw registration



Symmetry Facial Plane Relator



JAWS 3D

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New materials & methods—Fixed prostheses

Rotating instrument


Root Post

Gingival retraction

Impression

Bite & jaw registration

Color shade



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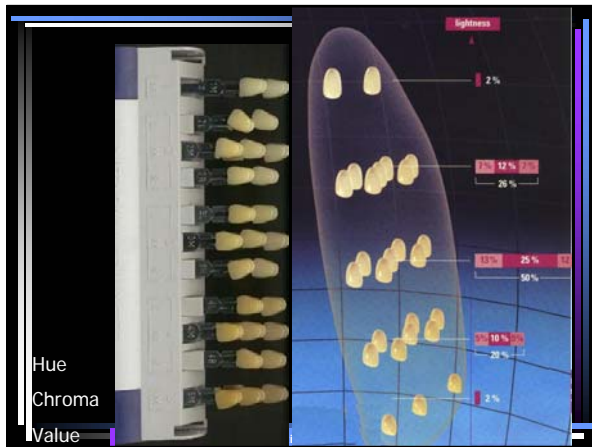
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Digital Shade Systems

- Dental Color Analyser (clearlight.com/~aei)
- Metalor-ikam system (metalor-ikam.com)
- Pocketspec (Pocketspec.com)
- ShadeVision /ShadeRite (X-Rite.com)
- Shadescan (Cynovad.com)
- Spectroshade (mhtint.com)
- ShadeEye NCC (Shofu.com)



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New materials & methods–Fixed prostheses

- Rotating instrument
- Root Post
- Gingival retraction
- Impression
- Bite & jaw registration
- Color shade
- Temporary construction



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Chemical cured

Cool Temp	Coltene
Integrity	Dentsply
Luxatemp Automix	DMG
Protemp 3 Garant	3M ESPE
Structur 2	VOCO GmbH
Tempofit	Detax
Trim II H	Bosworth



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Temporary cements

- Eugenol -containing
 - E.g. Temp-Bond og IRM
- Non-eugenol-containing
 - E.g. Nogenol og Dycal
- Light & chemical cured
 - E.g. Provilink

Zinc oxides top for cements

What types of materials do you use for cementation of temporary restorations?

Zinc oxide eugenol	60%
Zinc oxide non-eugenol	50%
Resin	23%
Polyacrylate	23%
Other	14%

* Multiple responses accepted
Source: December 2002 ISPE
Temporary Restorations Survey

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New materials & methods–Fixed prostheses

Rotating instrument

Impression

Root Post


Gingival retraction

Bite & jaw registration

Color shade

Temporary construction

Restorative materials



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Most used in USA – full ceramics

1. Pressed	63%
(e.g., Empress, OPC)	
2. Aluminium-oxide	46%
(e.g., Procera)	
3. Lithium disilicate	36%
(e.g., Empress 2)	

*Dental Products Report Survey, Nov 2000 n= 319 dentists₅₃

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Fibre-reinforced Composite

Laboratory

- FibreKor & Sculpture
- Vectris & Targis

Clinic

- Connect & BelleGlass
- Fiber-splint
- FibreSpan NSI & Nulite
- GlasSpan
- Ribbond & Revolution
- Ribbond Triaxial & Revolution
- Splint-it! & Flow-It! & Protect-It!
- Stick / Sticknet / Everstick

Glass

Kevlar

Polyethylene

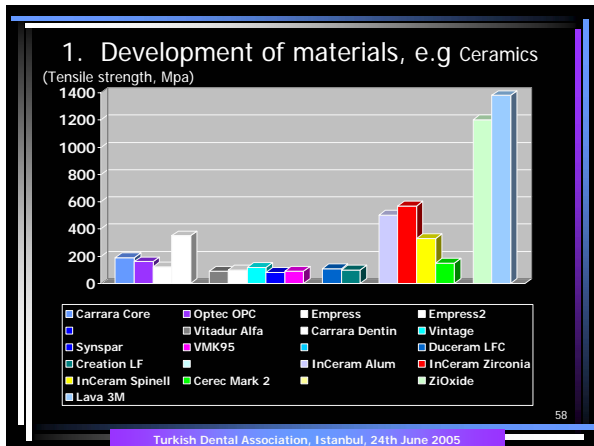
Pre-Impregnated

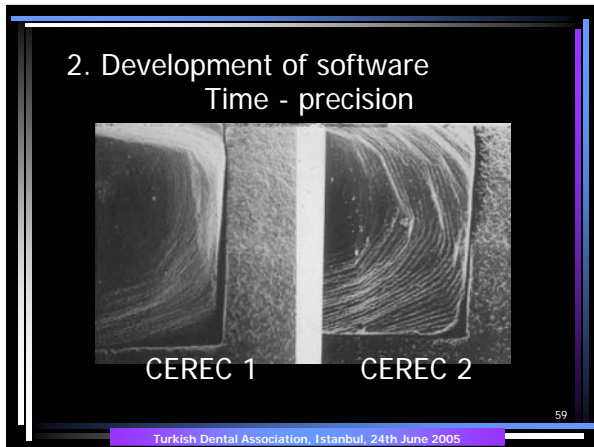
Mesh

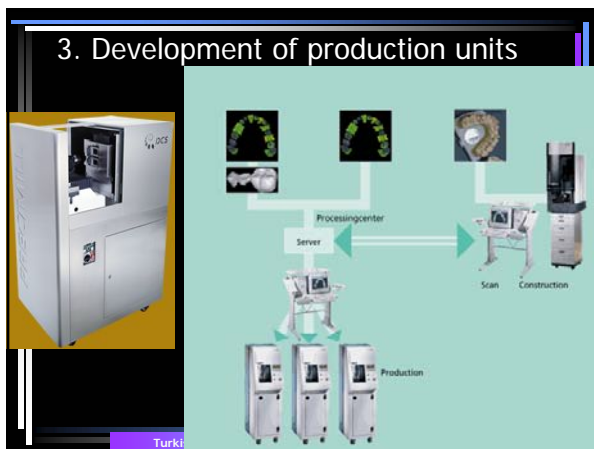
Parallel

Twinned₅₄

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Zinkphosphate cement

1. Clean surface with H₂O₂, wash, dry
2. Mix powder and liquid
3. Apply cement in crown
4. Place crown on prepared tooth
5. Wait
6. Remove surplus with probe
7. Inspect crown margin

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Thank
you for
your
kind
attention
