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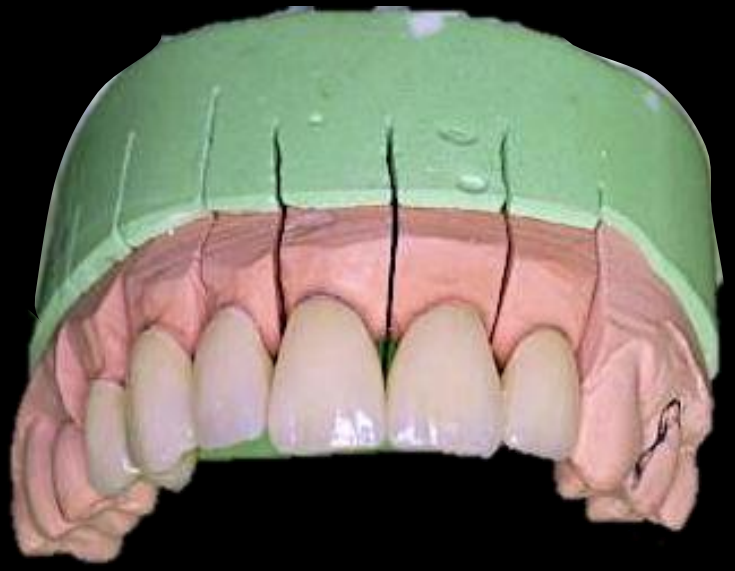
Try-in

Trial insertion of indirect restorations



Acknowledgements:Dr Matsubara

LEARNING OUTCOMES:

1) Understand the features of an ideal fixed indirect restoration
2) Discuss the steps of a systematic try-in for indirect fixed restorations
3) Describe the necessary adjustments in the restoration before its cementation
4) Know how to assess the seating of a crown/bridge on the prepared tooth
5) Describe the steps of an occlusal adjustment

Reading

Practice | Published: 13 July 2002

Crowns and other extra-coronal restorations: Try-in and cementation of crowns

R W Wassell ✉, D Barker & J G Steele

CLINICAL PROCEDURES

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Clinical examination

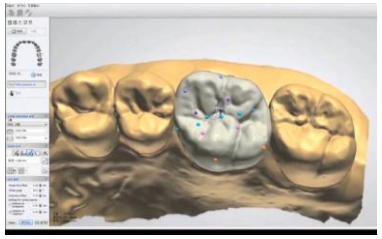
Primary Impression

Tooth preparation + Temporisation

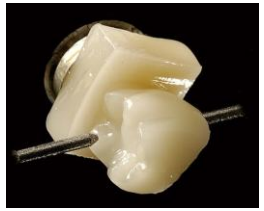
Definitive Impression

Intraoral scanning

CAD All-ceramic



Milling



Try-in

Casting and veneering

Wax up (gold crown, PFM)

Cementation

Review

TRY-IN PROCEDURE

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IDEAL CROWN

- Easily seated
- Stable
- Accurate occlusal contact
- Adequate proximal contacts
- Accurate marginal fit
- Aesthetic

TRY-IN PROCEDURE

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Evaluation:
Seating, fitting, contact points

Systematic approach

1. Evaluation of the crown on the die
2. Seating the crown on the prepared tooth
3. Assessment of the seated crown

TRY-IN PROCEDURE

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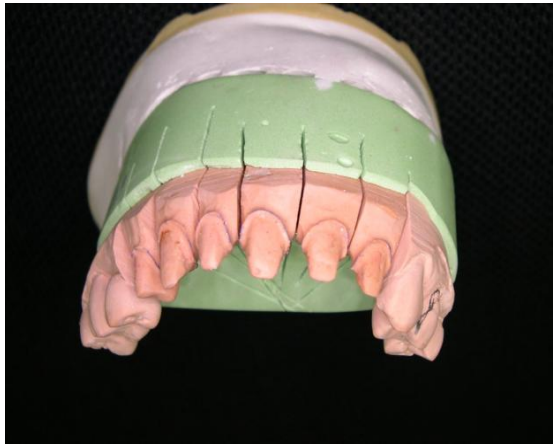
EVALUATION OF CROWN ON THE DIE

Aims:

- Detection of fabrication errors (laboratory related) prior to the clinical appointment
- Save critical chair time
- Anticipation of problems before clinical appointment
- Consider good lighting and magnification
- In case of problem, consult with the dental laboratory



TRY-IN PROCEDURE

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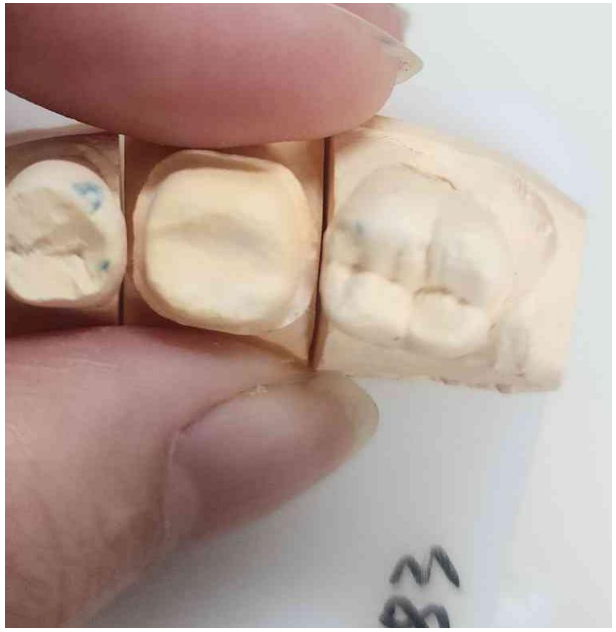
EVALUATION OF CROWN ON THE DIE



EVALUATION OF CROWN ON THE DIE

Assess the die and opposing model

- Poor pouring
- Overtrimming
- Fracture
- Scratches
- Wear

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EVALUATION OF CROWN ON THE DIE

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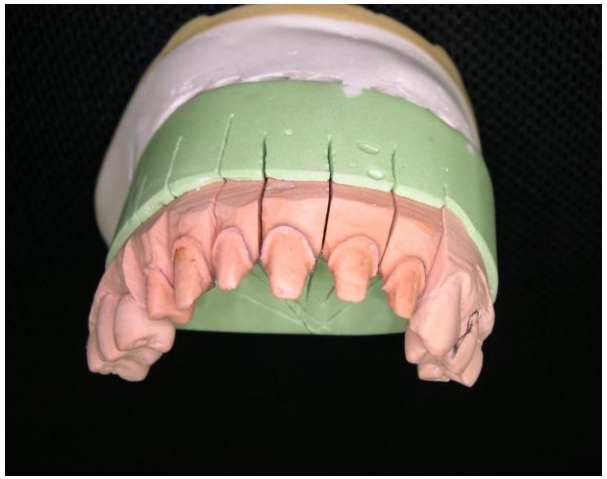

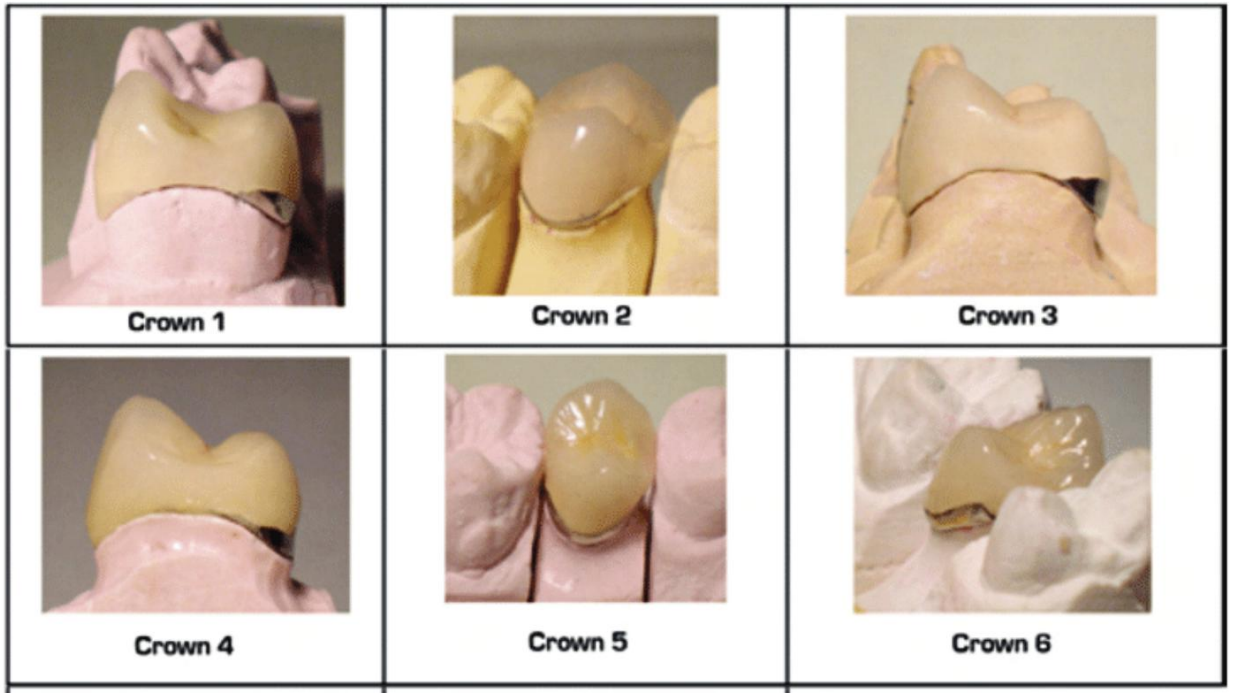

EVALUATION OF CROWN ON THE DIE

Internal surface:

- Casting problems: air bubbles
- Casting nodules or blebs
- Ideally, the casting should touch the die at the margins only

Die spacer

TRY-IN PROCEDURE

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EVALUATION OF CROWN ON THE DIE

Overall fit and resistance:

- Looseness
- Excessive gap
- Proximal contact areas

Marginal fit:

- Open margins
- Overhangs or underextensions

Try-In

Table 1. Check list of laboratory errors affecting marginal fit

Error	Cause	Remedy
Tight proximal contacts	Imprecise die location or abrasion of the adjacent stone contact points	Check for displacement of the dies when the crown is seated on the working cast. Identify tight contact by interposing articulating paper, grind and polish
Casting blebs on fit surface	Air bubbles trapped during investment	Identify under magnification and remove with small round bur
Over-extended crown margins	Poor impression, poor die trimming, surplus untrimmed wax or porcelain	Trim from axial surface (Fig. 1) and polish — consider returning crown to lab
Under-extended crown margins	Poor impression, poor die trimming, difficulty identifying finish line	If under-extension obvious and impression satisfactory have crown remade. Alternatively retake impression
Damaged dies	Finish line chipped because of careless handling or abraded when casting reseated with blebs or overextended margins	Always try and determine why the die is damaged. If the crown does not fit after adjusting blebs or over-extended margins return it to laboratory
No die spacer (Space needed to accommodate cement lute)	Technician not aware of technique or forgot to apply	Lack of spacer results in a tightly fitting crown which may not seat during try in and may 'lift' further after cementation

EVALUATION OF CROWN ON THE DIE

External surface

- Appearance (restoration design)
- Contour
- Shade
- Rough or smooth (polished)

Occlusion (articulator)

- Centric contacts
- Eccentric contacts
- Interferences

SEATING THE CROWN

- The crown should seat on the prepared tooth without forcing
- If it is not seating, possible **causes** may involve:

SEATING THE CROWN

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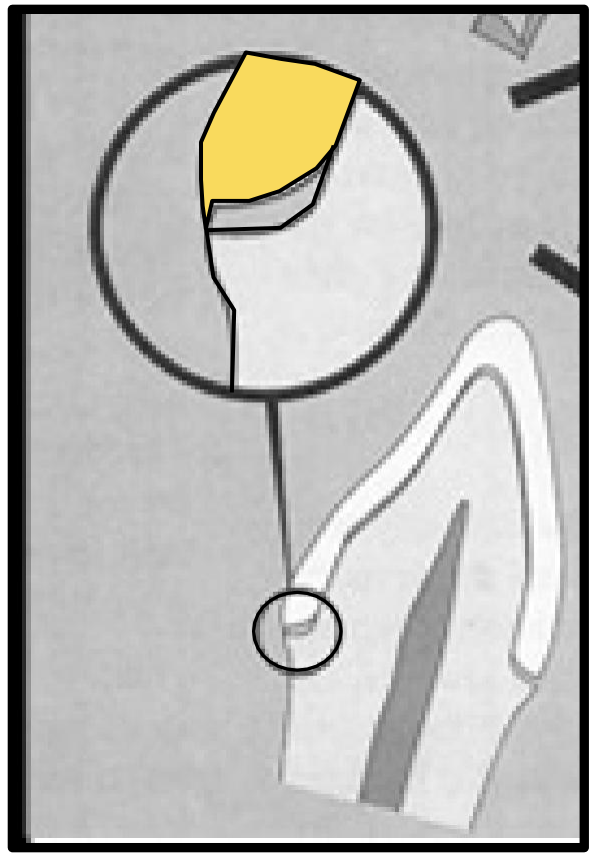

Single crown

Proximal contacts

Internal fit

Inaccurate margins/ over extensions

Retained temporary cements

Trapped gingival tissue

TRY-IN PROCEDURE

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SEATING THE CROWN

- The crown should seat on the prepared tooth without forcing
- If not, possible **causes** may involve:

Single crown

Proximal contacts
Internal fit
Inaccurate margins/ over extensions
Retained temporary cements
Trapped gingival tissue

FPD

Same as for single crown
Tissue contact under pontics
Location and shape of connectors

TRY-IN PROCEDURE

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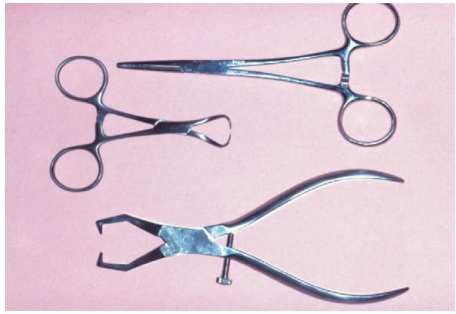
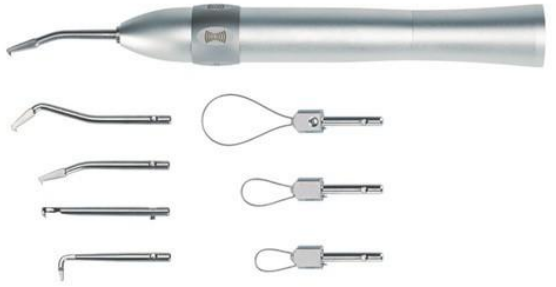
SEATING THE CROWN



Remove the provisional restoration

- Excavator, sickle probe
- Hemostat, Backhaus forceps, pliers
- Crown remover:
  - Back-action crown remover
  - Automatic crown remover
  - Richwill crown remover



TRY-IN PROCEDURE

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SEATING THE CROWN

Remove the provisional restoration

- Excavator, sickle probe
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- Crown remover:
  - Back-action crown remover
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  - Richwill crown remover

TRY-IN PROCEDURE

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SEATING THE CROWN

Proximal contacts

- Assess tightness with dental floss
- There should be some tightness but not too difficult
- Articulating paper (20 µm), marking liquid (Accufilm), spays (occlude)
- The shim stock (8 µm) should just pass through the contact
- Minor adjustment at a time
- If the contacts are open, return to the laboratory for material addition

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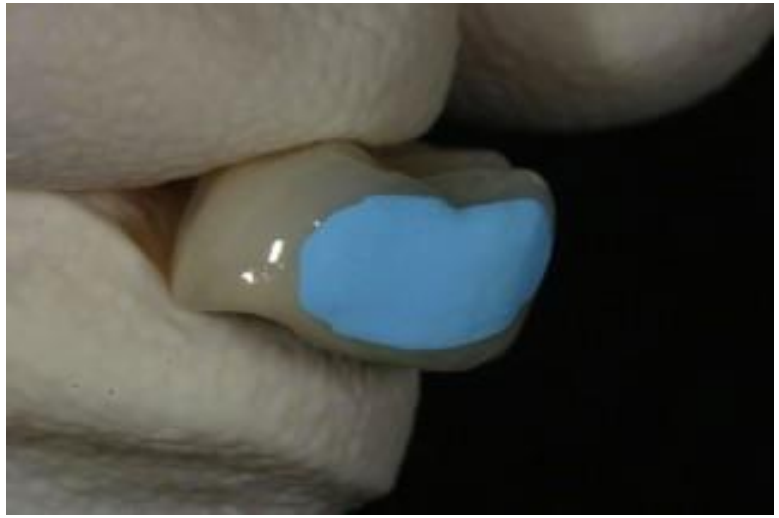
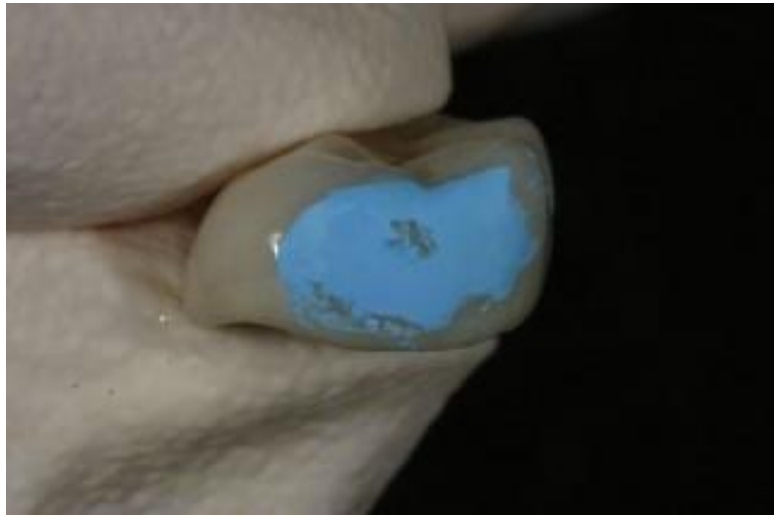
SEATING THE CROWN

Proximal contacts

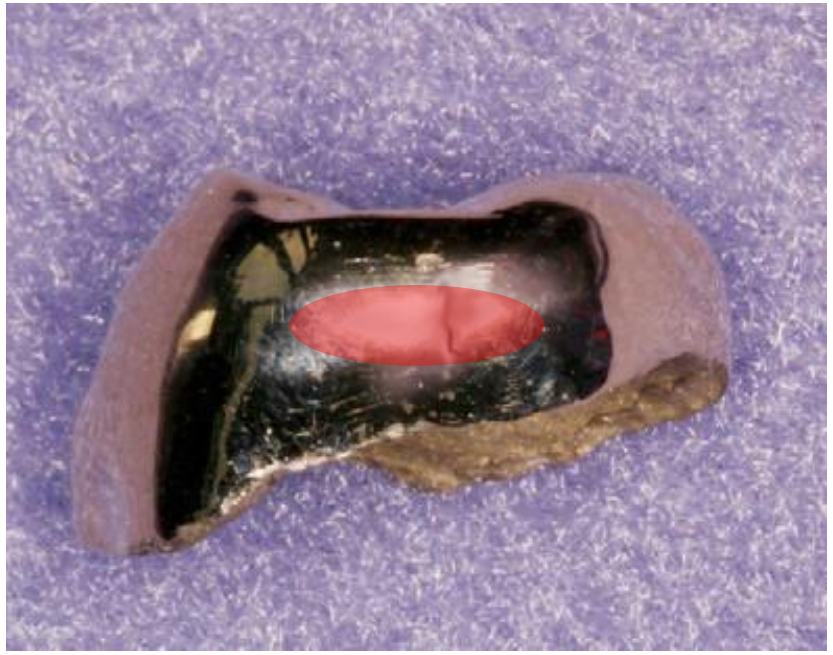




SEATING THE CROWN

Proximal contacts

Should be at the same location to the natural proximal contacts



SEATING THE CROWN

Internal fit

- The restoration should seat completely without interference of the occlusal or axial surfaces
- The fitting surface should be checked and adjusted accordingly
  - Disclosing medium (Fit Checker, LB impression material)
  - Spraying thin layer of aerosol indicator (Occlude)
- The relief can be achieved with a diamond bur

TRY-IN PROCEDURE

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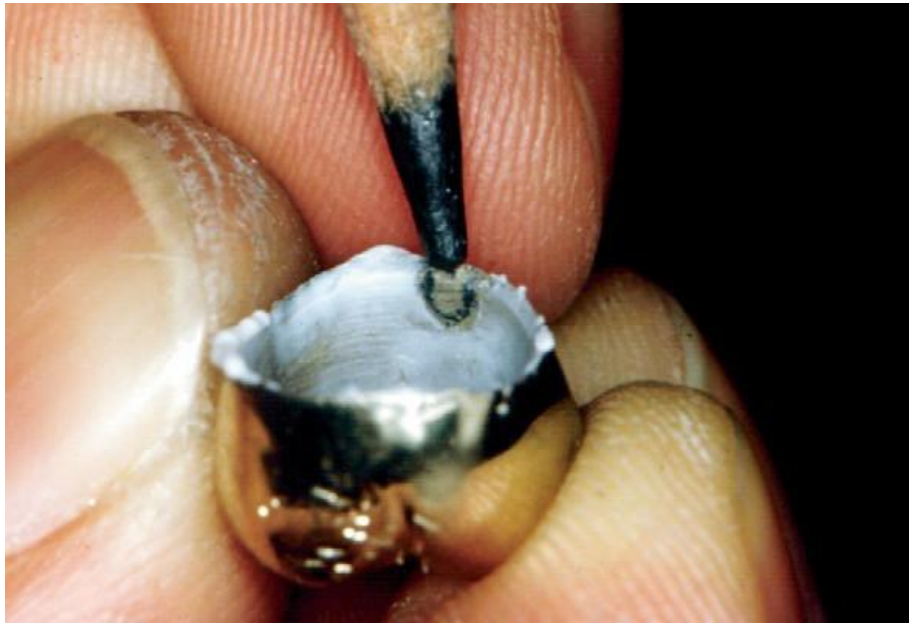
SEATING THE CROWN

Internal fit

Fit Checker application

- Penetrated areas of the medium indicate high spots
- Can be adjusted accordingly



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SEATING THE CROWN

Internal fit

If crown fits the model well but does not seat in the mouth, consider problems with impression

Caused by:

- Early impression removal
- Distortion of impression
- Latex contamination

⬇

Take a new impression

SEATING THE CROWN

Marginal fit

- Should be as accurate as possible
- Poor marginal adaptation:
  - Gap (100 microns is the borderline for acceptability, and can be felt by a probe)
  - Overhang
  - Under extension
  - Ledge

TRY-IN PROCEDURE

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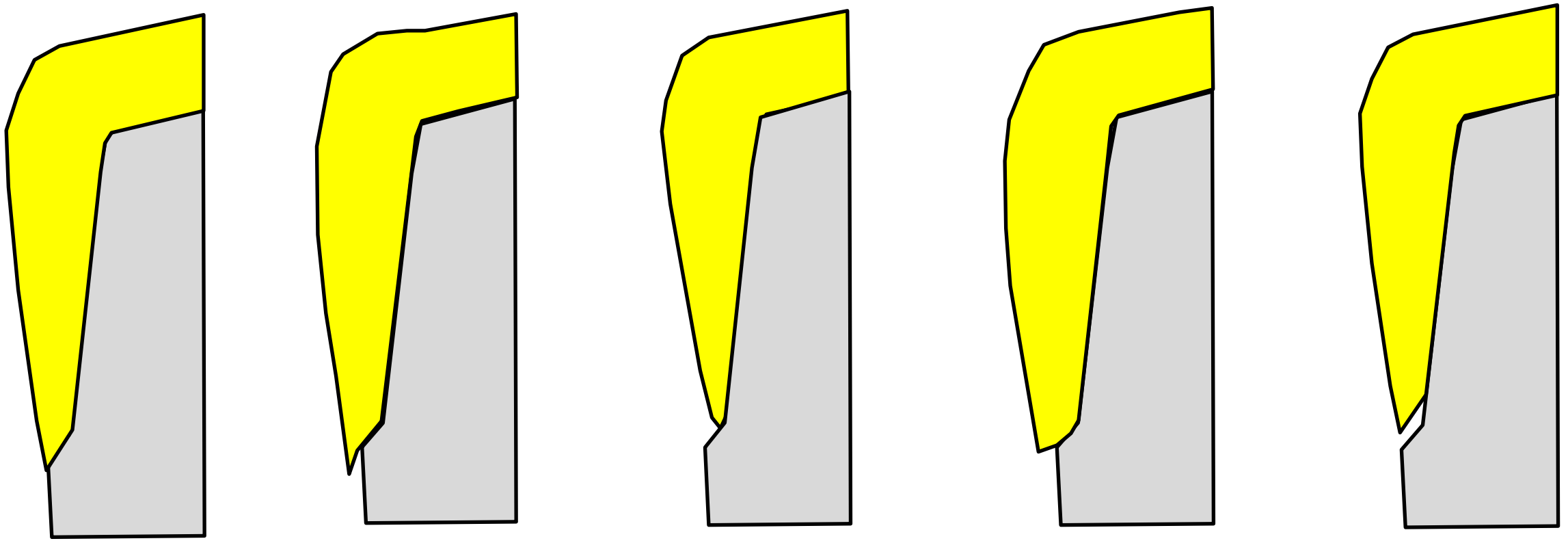
SEATING THE CROWN

Marginal fit



Ideal | Overextended | Underextended | Overhang | Open margin

SEATING THE CROWN

Marginal fit

Effects of open margins:

- Sensitivity
- Dissolution of cement
- Plaque retention
- Caries
- Gingival inflammation

SEATING THE CROWN

Marginal fit

- Poor marginal fit can be due to inability to read the finish line by the technician

Overhangs/overextension: can be adjusted
Underextention: may require remake
Gap: require remake

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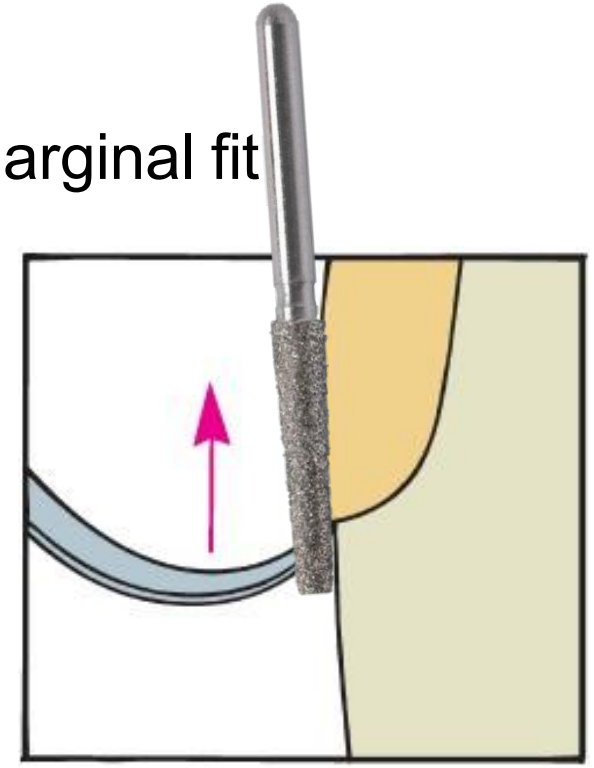
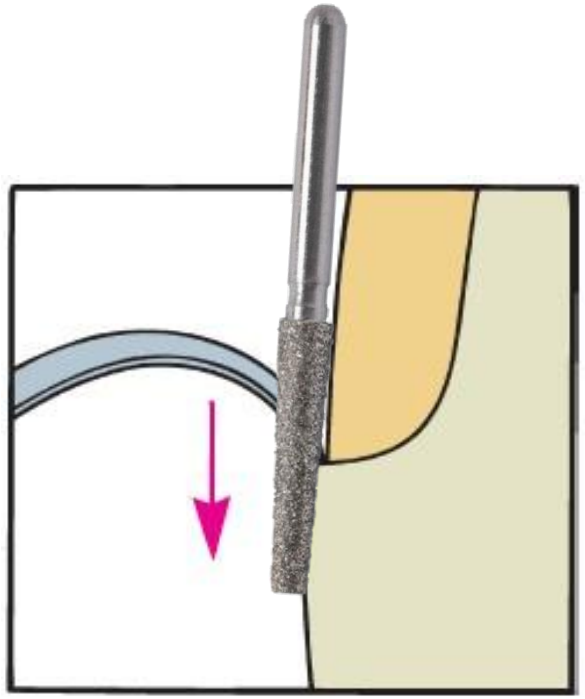
SEATING THE CROWN

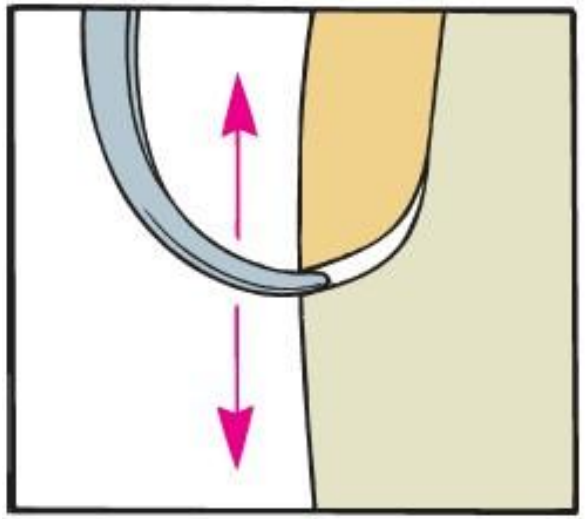
Marginal fit



Gingivo-occlusal direction



Occluso-gingival direction



Both

New impression

TRY-IN PROCEDURE

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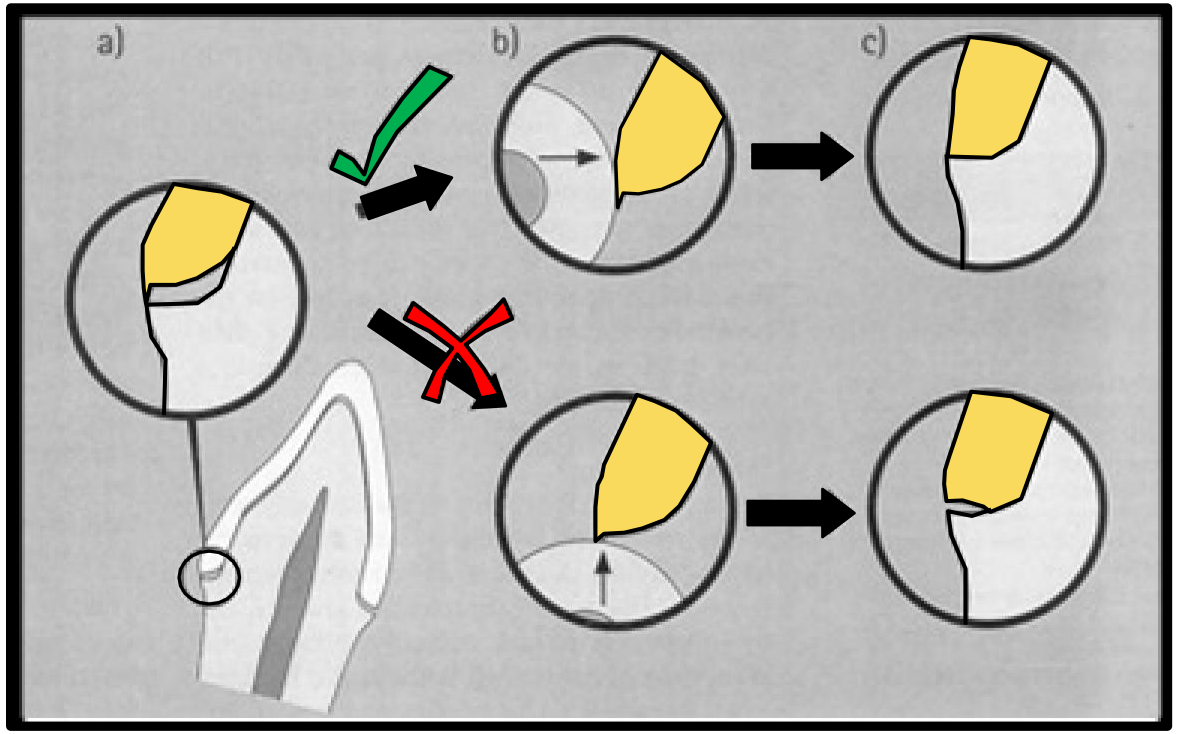
SEATING THE CROWN

Marginal fit

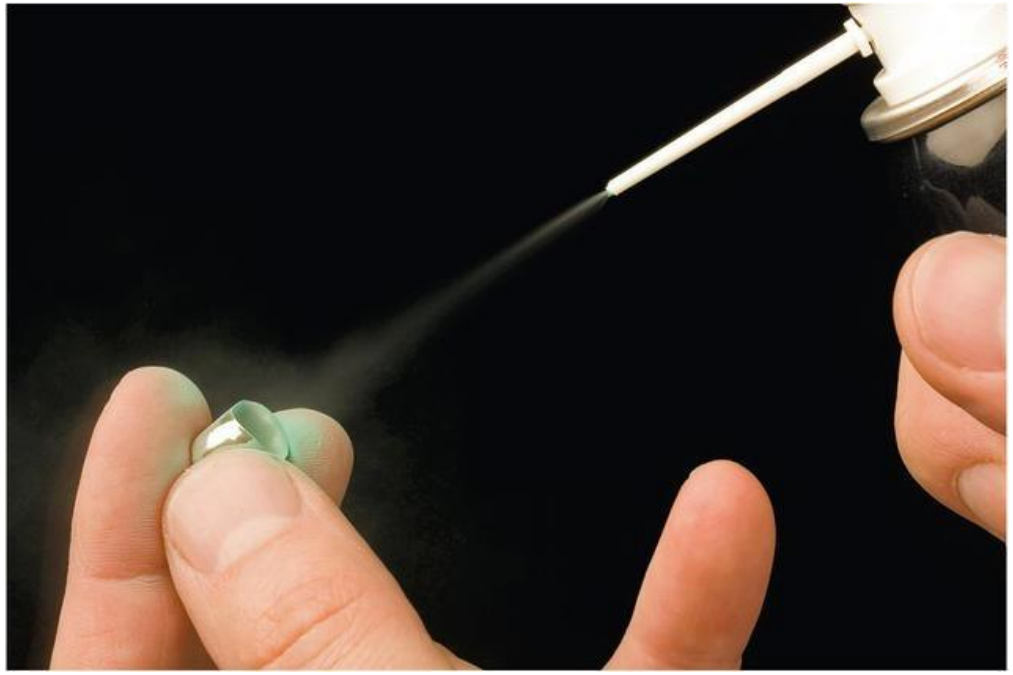
Adjust overextended margins or overhangs from the external surface, not the fitting surface

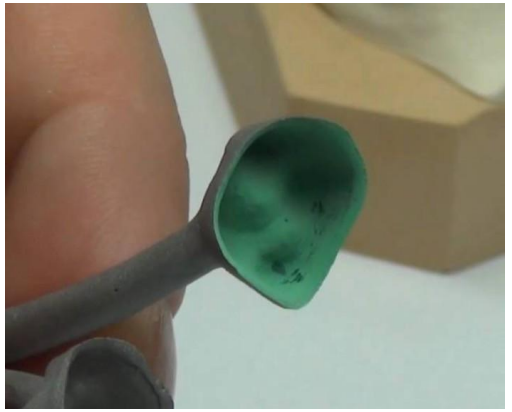


TRY-IN PROCEDURE

PFM or bilayered ceramic crown– internal and marginal fit of the coping

SEATING THE CROWN





TRY-IN PROCEDURE

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ASSESSMENT OF THE SEATED CROWN

Aims

► Check
- Stability
- Contour
- Occlusion
- Aesthetics

► Confirm the suitability for cementation

TRY-IN PROCEDURE

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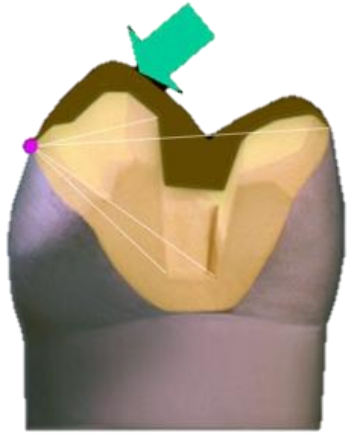
ASSESSMENT OF THE SEATED CROWN



Stability

- Restoration should not rotate when the force is applied
- Instability causes failure in function (mainly in cementation)

internal surface misfit

↓

caused by distortion in impression or fabrication process

TRY-IN PROCEDURE

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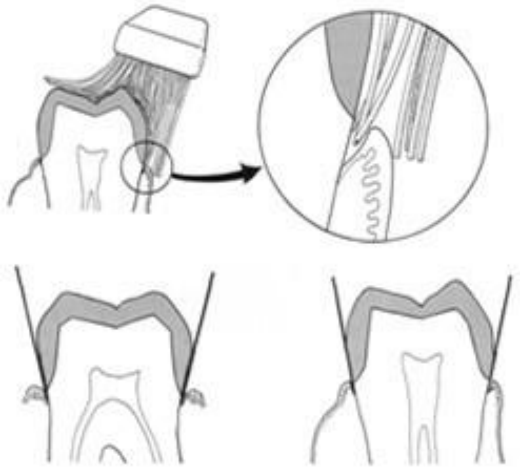
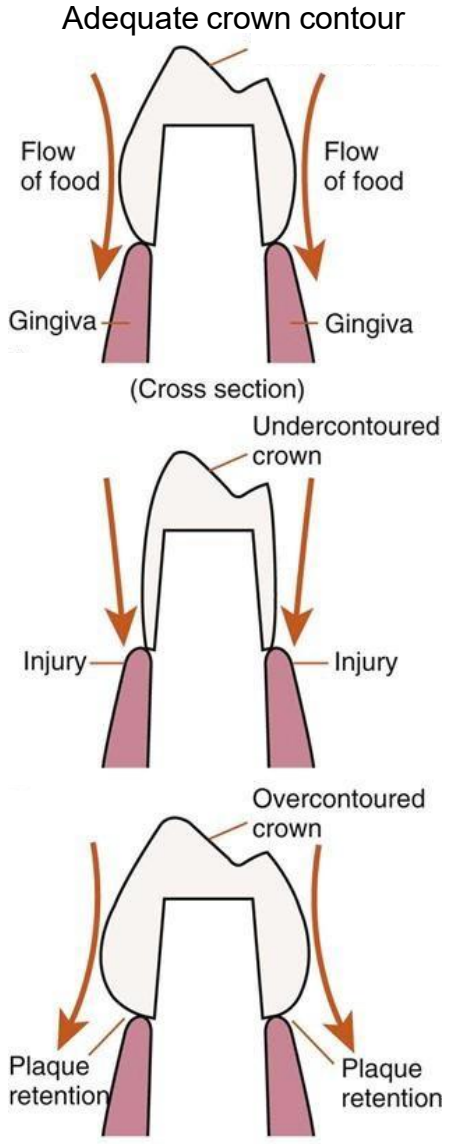
ASSESSMENT OF THE SEATED CROWN

Contour

►Improper contour may impair gingival health and affects the natural appearance

►They must be adjusted before cementation





ASSESSMENT OF THE SEATED CROWN

Occlusion

- The crown should be fully seated
- Major adjustments should be done prior to cementation
- Minor adjustments can be completed after cementation
- Inadequate occlusal contacts can be caused by
    - Poor occlusal recording
    - Poor articulation

ASSESSMENT OF THE SEATED CROWN

Occlusion

Shim stock assessment

- The shim stock will determine if an occlusal contact is present
- Assess the occlusion on all teeth with and without the prosthesis
- Assess the occlusion on the crown

8-10 µm thick

TRY-IN PROCEDURE

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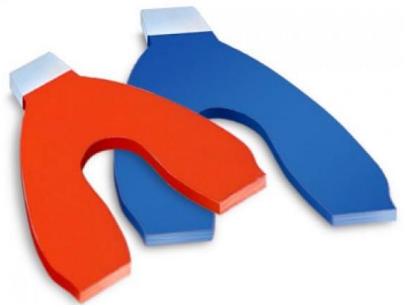
ASSESSMENT OF THE SEATED CROWN

Occlusion

Articulating paper assessment

- Mark heavy contacts or interferences in centric and eccentric
- Articulating paper will locate the contact area
- Use different colors for different movements

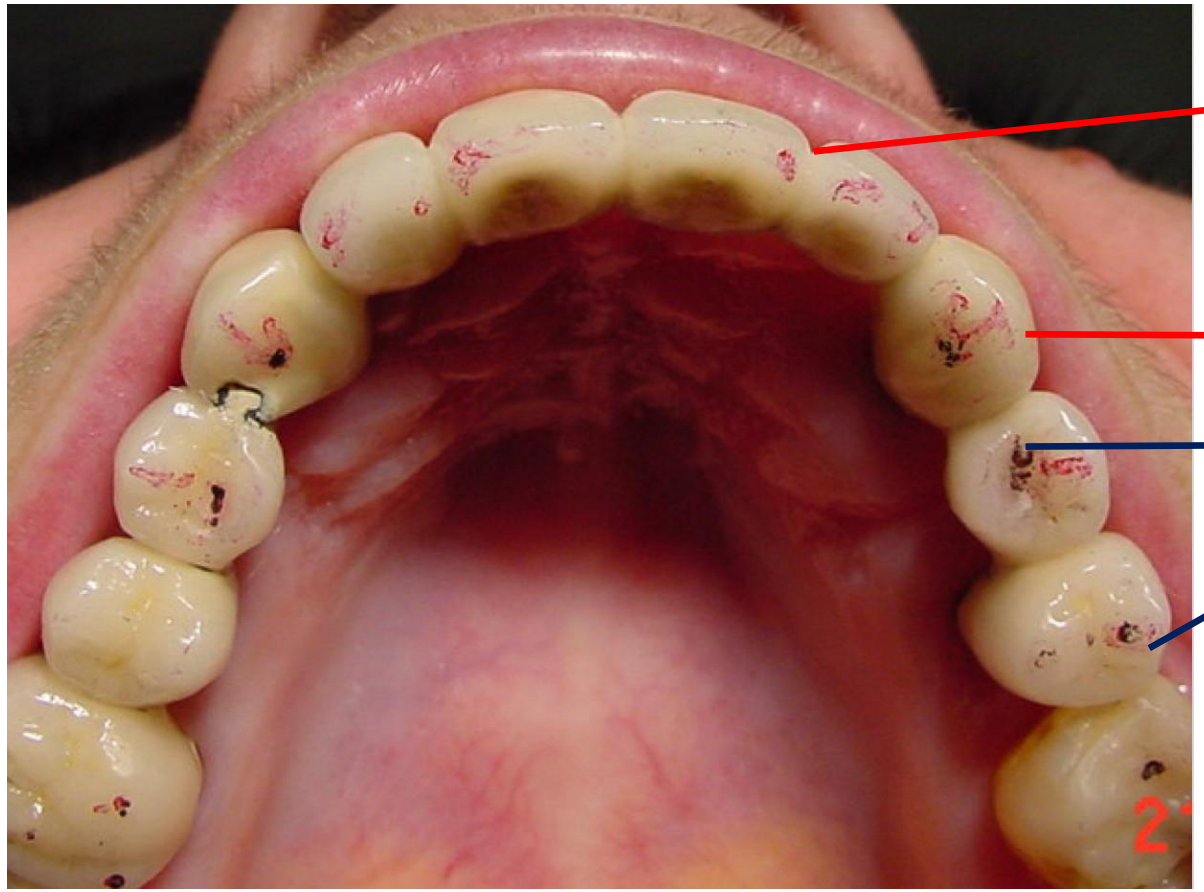


ASSESSMENT OF THE SEATED CROWN

Occlusion

►Dark articulating paper (blues) for CR or maximal intercuspation position

►Lighter articulating paper (red) for eccentric position



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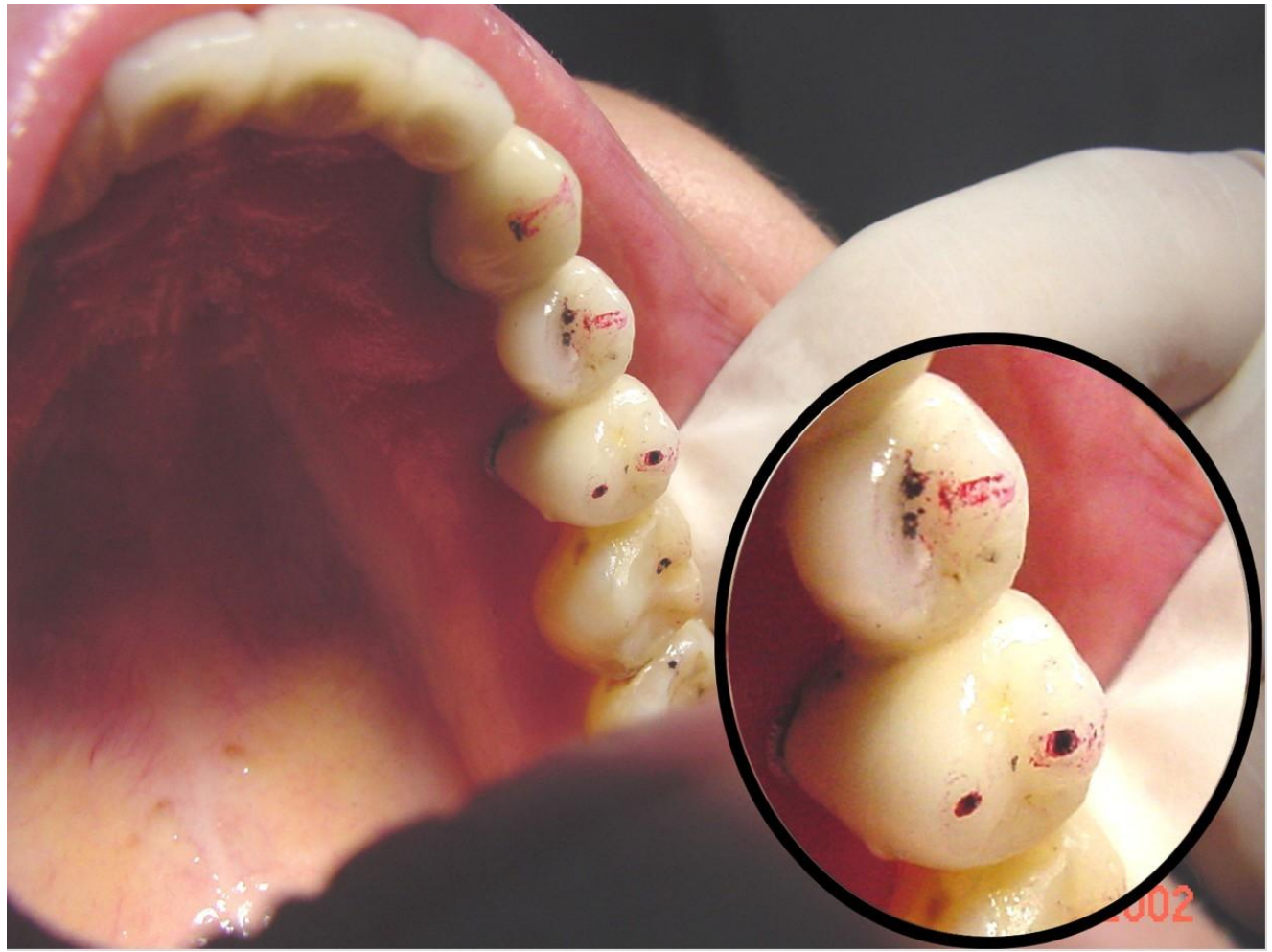
ASSESSMENT OF THE SEATED CROWN

Occlusion



TRY-IN PROCEDURE

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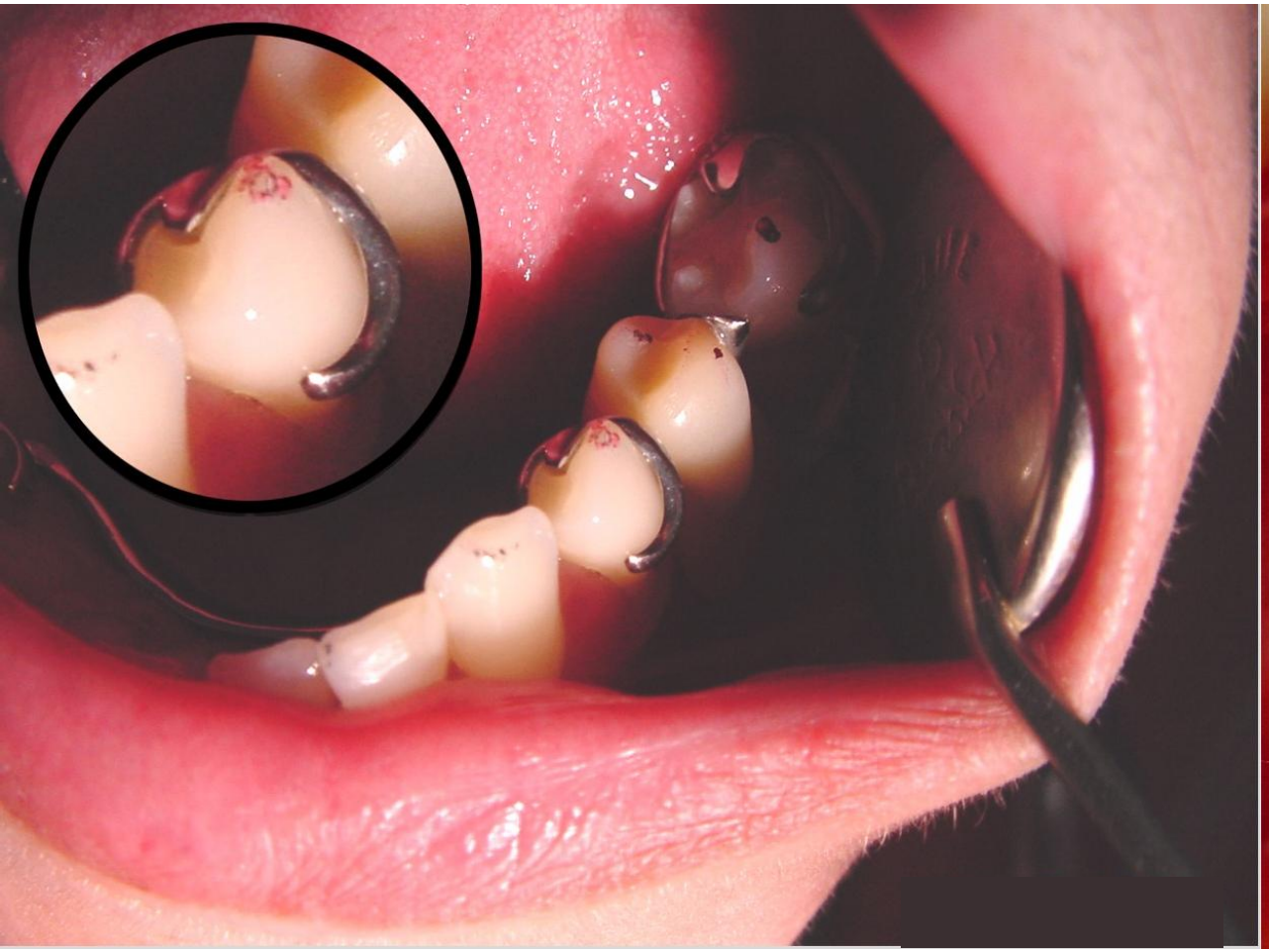
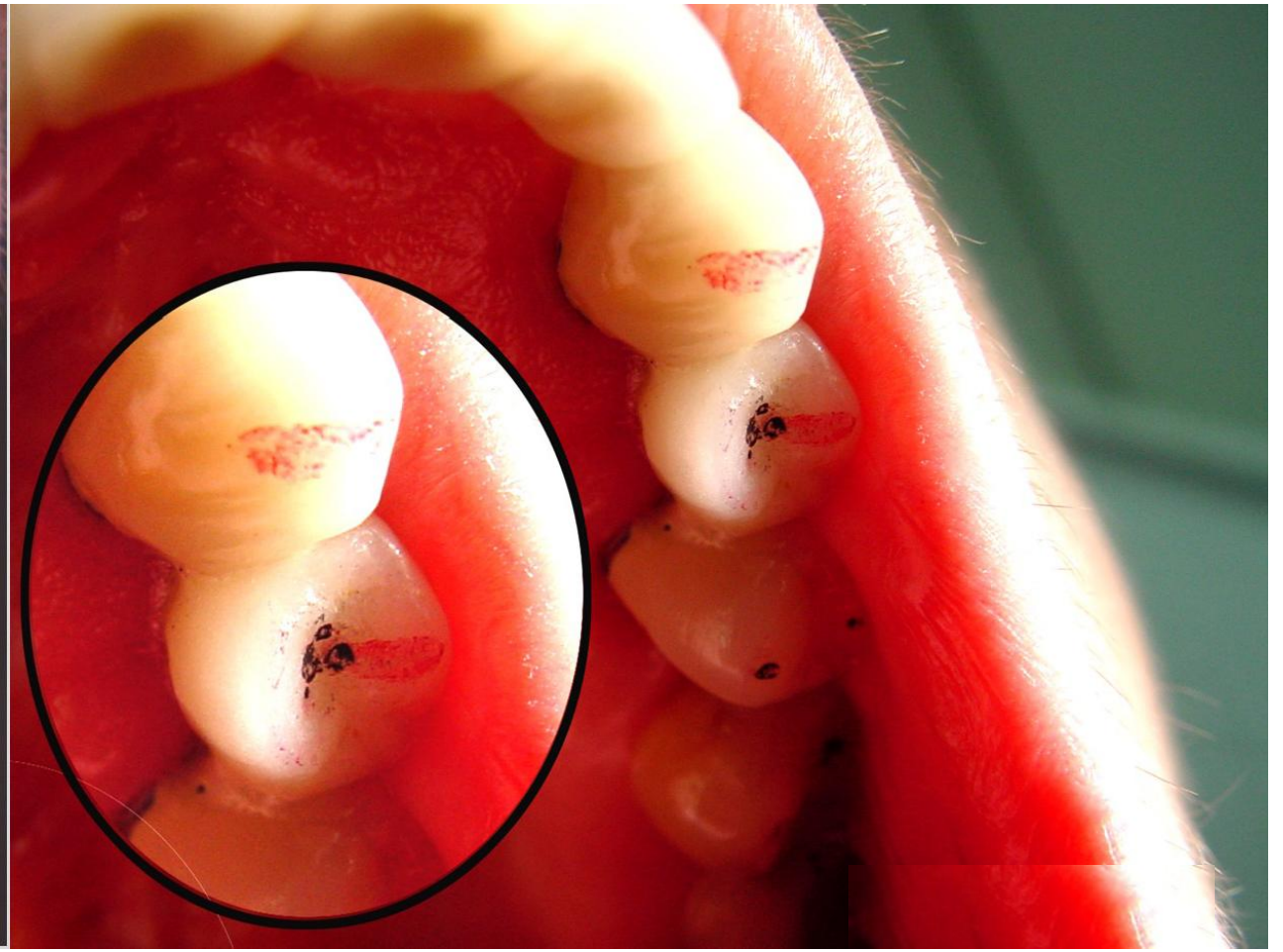
ASSESSMENT OF THE SEATED CROWN





ASSESSMENT OF THE SEATED CROWN

Occlusion

Premature contact (centric)

- Adjust grooves or cusp inclines
- Never the tip of cusp

Interferences (eccentric)

- Adjust cusp inclines
- Tip of cusps if necessary

TRY-IN PROCEDURE

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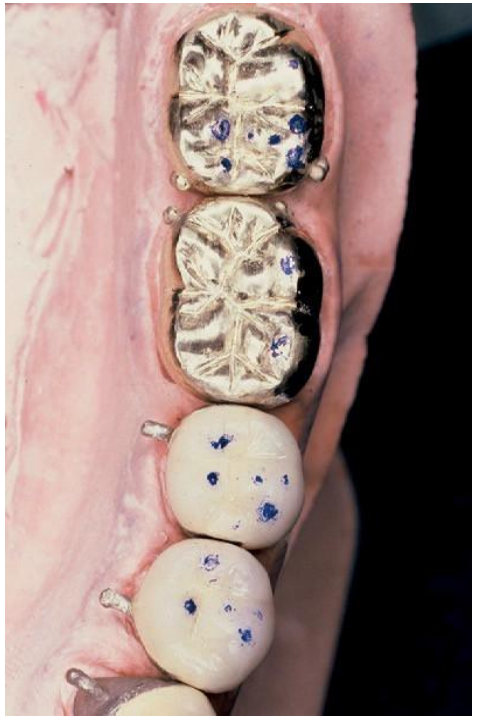
ASSESSMENT OF THE SEATED CROWN

Occlusion

- ► Completed adjustment
- Well distributed occlusal contacts
- Posterior teeth: the prosthesis and the remaining dentition should have the same occlusal contact and hold shim stock
- Anterior teeth: the prosthesis should lightly hold shim stock if other anterior teeth do



TRY-IN PROCEDURE

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ASSESSMENT OF THE SEATED CROWN

Aesthetics

- Patient approval should be obtained prior to cementation
- Shade and morphology
  - Lighter shade: can be stained and glazed
  - Darker shade: should be cut back and followed by new ceramic application
- Modify the morphology with diamond burs and soflex discs
  - Send back for glazing
- Consider temporary cementation

Before

After

ASSESSMENT OF THE SEATED CROWN

Finishing and Polishing

- Metal: rubber polishing wheels and points
- Ceramic: Rough ceramic will wear the opposing teeth
  - Composite finishing rubber burs
  - Rubber cup and diamond polishing paste
  - Or send to laboratory for reglazing

TRY-IN PROCEDURE

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Systematic approach

1. Evaluation of the restoration on the die

a) Die and opposing model
b) Internal surface of restoration
c) Restoration on the model (die)

2. Seating the crown on the prepared tooth

a) Proximal contact
b) Internal fit
c) Marginal fit

3. Assessment of the seated crown

a) Stability
b) Contour
c) Occlusion
d) Aesthetics

Thanks for listening!

Thank you!