


There Is Still a Place For Attachment-Retained Removable Partial Dentures

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Subject code – Removable Prosthodontics

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### Learning Objectives

- Advantages of attachment retained prosthetics in non-implant cases
- Where attachment retained prosthetics fall in the spectrum of patient choices
- Learn clinical keys to accuracy and success
- The importance of two-way communication with the dental laboratory

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This presentation is intended to provide a review of the principles and clinical keys to success of non-implant supported attachment partial dentures.



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### Introduction

When multiple teeth in a given arch are missing, what are the alternatives?



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### Fixed or Removable

**Fixed**

- Fixed Bridge
- Implants
- (more rarely) Combinations of Natural Teeth and Implants

**Removable**

- Implant only retention, natural teeth still present
- Implant plus natural teeth retained
- Conventional using natural teeth



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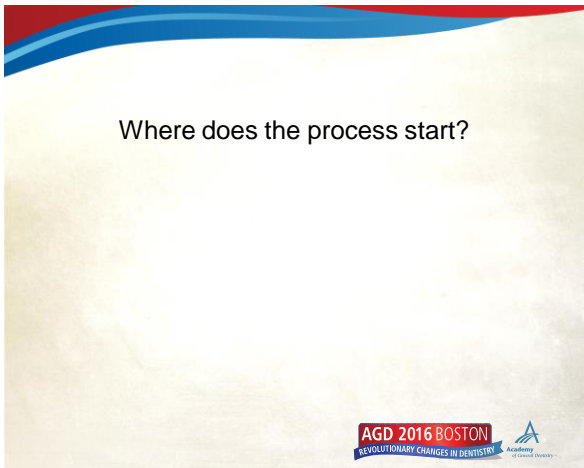
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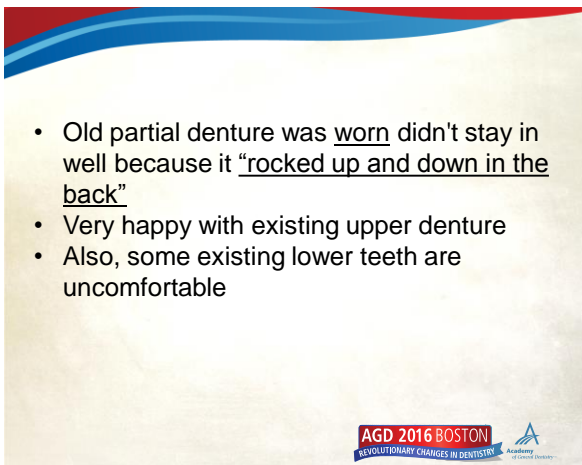
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## Clinical Exam Summary

- Health Hx generally unremarkable
- TM exam – wnl
- Soft tissue exam - unremarkable
- Periodontal – fair to good hygiene – routine prophyl
- Satisfactory existing upper denture
- Recurrent decay #'s 27, 28, 29
- Leaking crown, probable recurrent decay #21
- #28, 29 not restorable
- Crowns needed



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## Radiographic Exam



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## Treatment Plan Choices

### Fixed

- First choice to solve “rocking and fit” complaint
- **IS THERE A POINT MISSING HERE?**



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## Treatment Plan Choices

- Removable
- Removable with Implants in posterior ridge area for additional retention



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## Patient's first decision point

Removable was patient's choice

Patient did NOT want implants due to family member history of having a miserable experience with implants



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## Treatment Plan

- Hygienic Phase – Prophy
- Extract Non-restorable teeth #28, 29
- Restorative
  - Abutment teeth #21, 27 planned for crowns and to hold attachments



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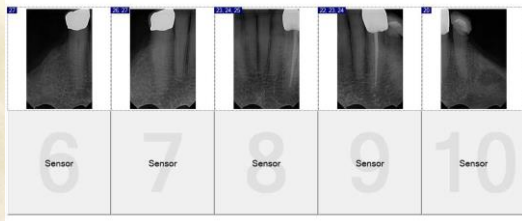
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## Bone Healing After Extractions



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Removable was patient's first choice

So now – What kind?

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## What Kind of RPD?

### Two Basic Choices

- Conventional Clasped
- Attachment type




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## RPD – Conventional or Attachment type?

### Advantages of attachment type -

- Better retention superior to classic most common clasp / rest system
- More durable than above also
- More esthetic
- Less motion movement vertical movement of distal saddle areas – fewer relines needed
- Less costly, less time involved than implant replacements




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## Functional Classifications

- Class 1A- Solid, rigid, non-resilient
- Class 1B- Solid, rigid- lockable
- Class 2- Vertical resilient
- Class 3- Hinge resilient
- Class 4- Vertical and hinge resilient
- Class 5- Rotational and vertical resilient
- Class 6- Universal, omni-planer




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## RPD – Conventional or Attachment?

Clasps vs. Attachments

### Clasps:

- Less expensive.
- 5 to 6 year life.
- 30% loss of retention.
- Poor chewing efficiency.
- 93% caries rate.
- 50% compliance.




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## RPD – Conventional or Attachment?

Clasps vs. Attachments

### Attachments:

- 15 year + life.
- More expensive.
- 99% retention.
- Excellent chewing efficiency.
- 8% caries rate.
- 100% compliance.

Rantanen, Wetherall and Smales, Feinberg et.al.




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## Indications for Attachments

- Aesthetics
- Redistribution of forces
- Minimize trauma to soft tissue
- Control of loading and rotational forces
- Non parallel abutments- Segmenting
- Future salvage efforts- Segmenting
- Retention




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**DISADVANTAGES**

- More cost than traditional clasped design
- More technically demanding for accuracy
  - Is your lab capable /experienced?

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**Keys to Success**

- Patient selection
- Health of remaining teeth
- Occlusion
- Managing expectations

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**nd  
Patient's 2 Decision Point**

Conventional clasped or attachment type?  
Betty chose attachment type!

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### Selection of Attachments

- Location
- Opposing arch
- Function
- Retention
- Available space ( 3-5mm )
- Cost

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### What Kind of Attachment?

- Precision
- Semi-Precision

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## Precision vs Semi Precision – Considerations

### Precision and Semi-Precision Attachments

- Where?
- When?
- Why?



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## Precision vs Semi Precision – Considerations

### Patient Dexterity and Attachment Wear

- Insertion and removal cause wear
- Poor dexterity
- Avoid multiple attachments with complex a complex path of insertion
- Use lingual "guiding arms"



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## What is a Precision Attachment?

- An attachment that is fabricated from **milled alloys**
- Tolerances are within .01mm



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## Benefits of Precision Attachments

- Consistent quality
- Controlled wear
- Less wear
- Easier repair
- Standard parts are interchangeable



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## Precision Attachments are Generally

- Intracoronal
- Rigid = **NonResilient**



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## What is a Semi-Precision Attachment?

- An attachment that is fabricated by the **direct casting of plastic, wax, metal, or refractory patterns**
- Their method of fabrication subjects them to inconsistencies



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Benefits of Semi-Precision Attachments

- Less costly
- Easy fabrication
- May be cast in alloy

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Semi-Precision Attachments are Generally

- Extracoronal
- Can be intracoronal
- Non-rigid = **Resilient**

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Key Advantage!

- **Resiliency!!**
- Class 2 through 6 removable partials are all resilient (have at least some degree of soft tissue load bearing)
- In our common case example there is considerable soft tissue load bearing on the distal extensions
- soft tissue is **resilient!**

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## Resilient Attachments

- 0.1mm – 0.4 mm difference in the displacement of the tissue and the denture base, as opposed to the axial intrusion of the abutment teeth
- Directs forces to the supporting tissues and the abutment teeth



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## Patient Dexterity and Attachment Wear

- Insertion and removal cause wear
- Poor dexterity
- Avoid multiple attachments with complex a complex path of insertion
- Use lingual “guiding arms”



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## Coronal Attachments

### **INTRACORONAL:**

- Placed within the contours of the crown form
- Needs more tooth reduction
- Rigid connectors

### **EXTRACORONAL**

- Placed outside the contours of the crown form
- Needs less tooth reduction
- Stress redirectors and are considered resilient



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## Patient Considerations

- Parallel attachments for easier path of insertion
- Less attachments – better
- Patient dexterity
- Hygiene – Stannous Fluoride rinses
- 3 month recall




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## Our Final Choice in this example case

- Semi precision intracoronal attachment using #21 and 27 as abutments
- Tapered Slide design (non adjustable)
- Plastic Dovetail Connector or “PDC” Attachment




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- **PDC**, Plastic Dovetail Connector

### DESCRIPTION

- The PDC is an intracoronal, non-adjustable tapered slide attachment.
- Both the female and male components are made of a castable plastic.
- The PDC micro and small have a built-in mandrel on the male and female.




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- **PDC**, Plastic Dovetail Connector

DESCRIPTION (cont)

- The medium only has a mandrel on the male.
- The PDC males also have a lateral extension built-in for more accuracy in waxing.
- The measurements list the width of the male occlusally, the gingival area is smaller due to the taper.



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Plastic Dovetail Connector Attachment



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Showing PDC attachment engaged



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## Abutment Teeth Prepared



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## Final Impression for Crowns



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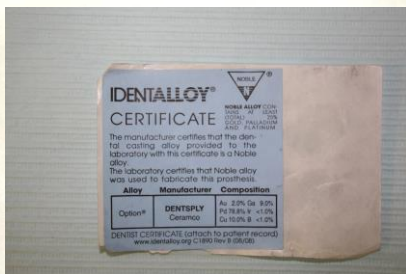
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## Use Quality Materials



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### Crowns Fabricated with Attachments wax-up



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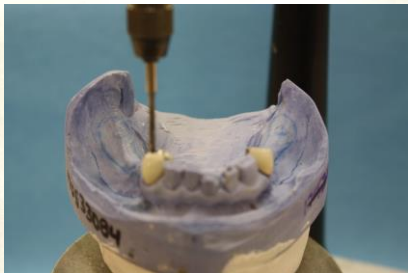
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### Attachments are Parallel



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### Attachments are Parallel



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Crowns are tried in but NOT CEMENTED



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Another plastic impression tray is selected and modified



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Putty Impression with crowns in place



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### Trim putty impression



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### Trim borders



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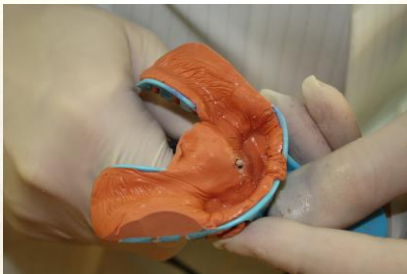
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### Clinical Tip: vent holes in putty impression



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Vent hole in area of teeth, not on occlusal or incisal edges



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Borders Checked in mouth



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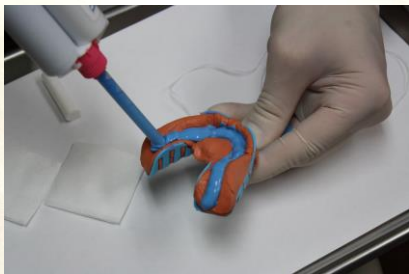
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Final Impression



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Crowns are picked up in a new putty -wash impression



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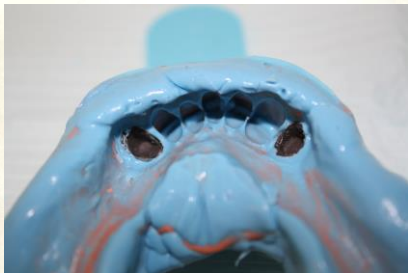
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Case is returned to lab



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Lab fashions new Master Model with acrylic dies to hold crowns



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### Framework Waxed and Fashioned from the new Master Cast



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### Framework with Crowns engaged



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### Try-in Verifies Fit



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### Wax Rims added to record jaw relations



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### Occlusion and OVD are verified



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### Phonetics Verified



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Case mounted – OVD Was Opened in this case about 1-2 mm



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Wax Try-In Stage



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Jaw Relations



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### Lab Invests and Processes in Usual Manner



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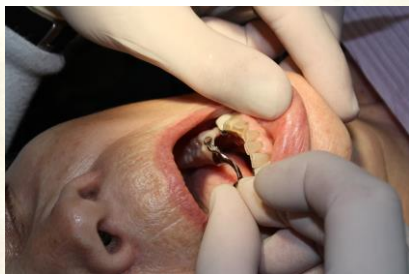
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### Fit Verified



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### Fit Verified



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### Crowns are Cemented



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### Cement Removed



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### Completed Case



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### Completed Case



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### Completed Case



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Success?

YES! Now she wants cosmetic care! Wants crowns on #'s 22-26!!!

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