Precision and Semi-Precision Attachments
Where? When? Why?

George E. Bambara, MS, DMD
FACD, FICD
Objectives of the Program

• Understanding how attachments preserve hard and soft tissue
• Selection of the appropriate attachments
• Understand the uses of attachments
• Familiarization with different attachments
• Maintenance and hygiene
Properly Designed Clasps Work

Concerns

• Uneven distribution of forces
• Possible orthodontic movement
• Periodontal compression
• Clasps can be plaque traps
Removable Partial Dentures
Periodontal Status

RPD’s WERE ASSOCIATED WITH

• Increased periodontal pathology
• Increased plaque and tarter accumulation
• Increased gingival inflammation
• Increased probing depths
• Increased recession
• Increased abutment tooth mobility

Zlataric’ et.al., The Effect of Removable Partial Dentures on Periodontal Health of Abutment and Non-Abutment Teeth. JPeriodontology, 2002, 73:
Clasps vs. Attachments

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

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

Rantanen, Wetherall and Smales, Feinberg et.al.
CLASS I LEVER
Class II Lever
Class III Lever
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
• Stabilization
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
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”
What is a Precision Attachment?

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

*They are Generally*

- Intracoronal
- Rigid = NonResilient
Benefits of Precision Attachments

- Consistent quality
- Controlled wear
- Less wear
- Easier repair
- Standard parts are interchangeable
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
Benefits of Semi-Precision Attachments

- Less costly
- Easy fabrication
- May be cast in alloy
Semi-Precision Attachments

They Are Generally

- Extracoronal
- Non-rigid = Resilient
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
Selection of Attachments

- Location
- Opposing arch
- Function
- Retention
- Available space (3-5mm)
- Cost
Criteria Selection for Resilient and Non Resilient Attachments

• Do not oppose two resilient attachments unless teeth are very weak
• Opposing distal extensions with strong abutments: upper - non resilient, lower - resilient
• Lower distal extension vs.
  – Natural dentition - resilient
  – Full denture - non resilient
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
Stud Attachments

A **ball** and **socket** type of attachment in which one component is attached to an abutment or implant, and the other element is retained in the prosthesis.
Advantages
Stud Attachments

• Low profile
• Easy hygiene maintenance
• Enhanced crown/root ratio
The Ball Attachment

A spherical, resilient, adjustable stud attachment with vertical and rotational movement for retaining partial and complete overdentures
Advantages

- Low Profile - limited space
- Easy path of insertion
- Adjustable female
- All adjustments done in prostheses
- Can be rigid – vertical movement only
- Can be resilient – vertical and rotational
- Easy fabrication
- Hygienically maintainable
Accessory Attachments

Plunger

Screw Type

Frictional
Magnetic Attachments

• Processing magnet-in denture
• Intraradicular keeper

All magnetic attachments should be processed chairside in the denture
Magnetic Indications

- Overdentures
- Implant restorations
Magnetic Realities

- Provide little lateral stability
- Used in limited applications
- Heat curing will weaken magnets
- Corrosion