Considerations for selecting Stud Type Attachments

Question: What are the considerations for selecting a stud type attachment for overdentures?

Answer: An overdenture is now defined as a restoration that covers at least one root or implant. Implants may be viewed as artificial roots. Periodontally compromised teeth are often too weak to support a partial denture for the long term. The large crown to root ratio created by periodontal disease results in forces that can gradually extract the remaining teeth. Fig. 1

Reduction of the clinical crown creates a more favorable crown to root ratio to compensate for progressive bone loss. Shorter overdenture attachments have an obvious advantage in this regard. Fig. 2

Today, a multitude of stud type overdenture attachments exist in different types and sizes. The selection of a specific attachment can seem overwhelming at first, but is basically a process of elimination. The selection process is simplified once the basic considerations are evaluated.

Basic Considerations

Location: Radicular, Intraradicular:
Stud type attachments may be positioned over the root/implant (radicular) or in the root/implant abutment (intraradicular) Fig. 3. Examples of an intraradicular attachment include the original Roach attachment, Zest and the Swiss Logic. Radicular attachments include the Dalla Bona, Rothermann, ORS, Uni-Anchor, Magnets, and O-Rings, etc.

Function: Solid/Rigid, Resilient:
To redirect occlusal stresses, stud type attachments are designed to be either solid/rigid or resilient. A solid attachment allows no movement between the male and female elements. This feature transfers stress towards the roots/implants and away from the ridge. The movement allowed by a resilient attachment transfers stress away from the roots/implants and towards the tissue Fig. 4. For this reason, resilient attachments are selected much more frequently than solid attachments in the U.S. Many attachments such as the Rothermann, Dalla Bona, Ceka or Swiss Anchor, etc, are available in a solid and a resilient version.

Retention:
Retention can be created by friction, a mechanical undercut, magnetism, or suction. The vast majority of stud type attachments rely on mechanical retention. An exception is the solid Dalla Bona attachment with cylindrical parallel walls providing frictional retention.

Space:
Perhaps the most critical consideration for any attachment is the available space. When space is limited, a flat button type attachment such as a Rothermann should be considered.

Direct or Indirect:
Many overdenture attachments today are available in a direct or indirect version. A direct attachment is premanufactured in metal and does not require a laboratory casting. An indirect attachment is incorporated on or into a post and coping type casting.

Cost:
Finally, cost is always a factor. The cost of an attachment is dependent on the material composition and the complexity of the manufacturing.

Summary:
Understanding the fundamentals of stud type attachments will aid in the selection of the appropriate attachment to meet the patient’s needs.