Review Article

Precision Attachment

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ABSTRACT

Precision attachments offer considerable advantages because of their flexibility.[1]Aremovable partial denture with a retained attachment system is one of the treatment modalities which may assist prosthodontist to achieve better functions and aesthetics in substituting missing teeth and oral structures.

Keyword: Precision attachment

Introduction

Partial edentulous problem following loss of teeth is one of the most prevalent clinical condition. The desire to balance between functional stability and cosmetic appeal gave rise to the development of precision attachments which were initially developed towards the end of the 19th century by Parr, Peeso, Chayes.[3]They not only offer intra coronal retention and splinting of teeth, but also have the added singular feature of being a removable prosthesis.These are the restorations of choice in unusual conditions that might include nonparallel abutments, long edentulous spans, distal extension bases, or residual ridges of peculiar shapes.[4]

Synonyms:Internal attachments, Frictional attachments, Slotted attachments, Parallel attachments, Key and keyway attachments.

Classification

I. Intra-Coronal Attachment - is one that is contained within the contours of the crown of the tooth. It is placed closer to the long axis and deeper into the tooth so as to direct forces along the long axis of the tooth.[5]

a. Frictional- Tapered and parallel-walled boxes and tubes,adjustable metal plates,springs,studs, locks.

b. Magnetic

Advantages:

- Retention unaffected by crown contour
- Reduced bulk
- Stability
- Stresses on abutment teeth minimized.

Disadvantages:

- Extensive preparation of abutment teeth required
- Cost and time.
- Crown length and pulp size.

II. Extra –Coronal Attachment- Extra-coronal type may be all or partly contained outside the confines of the crown.[6]

a. *Cantilever*- Rigid, Mobile

b. *Bar attachment*

Advantages:

- Can be universally used (no restriction in size)
- Greater freedom in design
- Can be fashioned to give greater retention by including locking screws or latches. E.g. stabilex, cones, flesher.[6]

Diagnosis and treatment planning

Essential information for adequacy of proper treatment planning includes the following.[7]

1. Medical and dental history.
2. Discussion of patient expectation.
3. Extra-oral examination.
4. Intra-oral examination.
5. Periodontal survey and periodontal consideration.
6. Endodontic consideration.
7. Occlusal analysis.
8. Radiographs.
9. Study models.

Clinical Implications

Of the various types of partial edentulous condition present, distal extension situations are the most prevalent and challenging one to restore.It is critical that the appropriate attachment be selected and utilized for individual clinical situation to provide patient with improved comforts and function.

Two types of distal extension denture using precision attachment:

1. **Bilateral Free End Saddle Dentures**- These dentures have two components:
   a. The extra-coronal attachment linked to a crown on the abutment tooth.
   b. The locking pin in the denture that engages the attachment. These dentures allows the hinge movement and do not require the preparation of boxes in the distal abutments which may compromise the health of the pulp.
2. **Unilateral Free End Saddle Denture-** There is considerable torque on the prosthesis from opposing natural teeth a robust attachment such as PR should be used with two or more abutment teeth providing retention and resistance to torque.

Overdenture Attachment

Overdentures can be retained by teeth,magnet, attachments or implants.[7]

Stud attachment

Stud attachments are among the simplest of all the attachments. It consists of male and female part. They are called anchors because they anchor the roots.[8] Stud attachments are divided into two groups:

1. Extra-radicular
2. Intra-radicular

Posts with Diaphragms

Anchors are usually retained by posts with diaphragms as they will be subjected to considerable displacement forces during removal of the prosthesis, so the care has to be taken to ensure that they are sufficiently retentive.

Resilient Eccentric Rothermann Anchors

It consist of a clasp arm which is the matrix engaging an undercut on a shallow cylinder which is the patrix.

Bar attachment

They are helpful in good maintenance and to preventremovable partial denture rotation. There are mainly two types of bar joints:

1. Single sleeve bar joints
2. Multiple sleeve bar joints

Dolder bar

It is a Single sleeve bar joints .Available in Egg shaped / pear shaped bar in cross section that permits a certain amount of rotation of the prosthesis while still retaining the denture.

The Ackerman bar

It is a multiple sleeve bar joint. There are two types of bar: round bar is that it can be bent in all directions and can be constructed to follow not only the antero-posterior relationship but also the vertical changes in the arch. The egg shaped bar has extra rigidity making bending more difficult.

Conclusion

The precision attachment in combination with other aspect of advanced partial denture construction offers us the possibility of making prosthesis that are aesthetic, retentive, strong and problem free and that are undetectable and will not compromise the oral health of the our patients. The clinicians who familiarize himself with precision attachments will add a new dimensions to his treatment options and this will also broaden his referral base.

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