

## Effect of two different types of precision attachments on the retention of partial denture (A comparative study)

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**Abstract:** This comparative study was made to test the retention of the partial dentures in 40 patients divided into two equal groups using two different precision attachments. It was found that, the first group with the first type of attachment showed significant higher values of retention than the second group.

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### 1. Introduction:

In dentistry, exactness attachments are the useful mechanical portions of the removable partial denture developed of plastic, metal or a mixture of both. They include 2 components referred as the 'male' half that mounted to a crown within the patient's mouth and a 'female' half that holds the part (1). There are thousands of various varieties of exactness attachments utilized in dentistry. But they have not been widely used. A exactness attachment may be a hidden male and female sort of clip hidden below a dental plate or prosthetic device and hooked up to crowns or implantations. They are all planned to adapt dentures/prostheses to be clipped into place in order that they are doing not move till they're unclipped. They are typically not visible once everything is in its place within the mouth. They will be accustomed substitute noticeable silver or gold clasps (clips) on distinctive dentures in numerous things. The look varies staggeringly from a bar on 2 or a lot of implants or teeth with a rider clip(s) within the dental plate to male and feminine holes and channels in crowns.

Rubber O-ring retainers on a ball in an extremely tooth or implant square measure another example ordinarily used. Some square measure intracoronal (fit within a crown) and a few square measure extracoronal (are hooked up to the skin of the crown). it's a massive field technically.(2) the development of preciseness attachment dentures doesn't need associate uncommon degree of talent and is at intervals the scope of the professional person World Health Organization will make teeth to obtain complete crowns and build fastened bridges (3). Associate obedience to the code of broad spreading of pressures and therefore the incorporation of a relaxed factor of safety by the utilization of multiple splinting of teeth assure duration of results

(4). Technical enhancements moving appliance construction square measure being created perpetually. The gathering of the application directly on the main forged by suggests that of the electrical journeyman, followed by freehanded fastening of the male attachments, and has eliminated a tedious and unsure operation (5).

Dental exactitude attachments connect removable partial dentures to fastened denture underneath a male/female protection mechanism. Some benefits to dental exactitude attachments embrace rectifiable odontology health, less force on abutment teeth, cosmetic look, longevity and stability. The 'male' half is fastened to the crown or denture whereas the 'female' half holds the removable plate. There square measure a spread of male/female protection mechanisms on the market. These embrace ball and socket, friction grip slide attachment, latch burs, post and socket, spring preserved socket and snap-on screw in. The male half of dental exactitude attachments is usually a high strength precious alloy whereas the feminine part consists of a additional elastic alloy. A patient would possibly like one over the opposite counting on easy attachment. Some dental exactitude attachments square measure higher fitted to totally different areas of the jaw. Variety of protection mechanism, material of exactitude attachment and meant use all ought to be thought of once selecting a dental exactitude attachment (6).

Selection of attachment: Proper attachment selection requires evaluation of 3 factors: location, retention and available space. Location: Intracoronal attachments are incorporated entirely within the contours of the cast crown for the tooth. The advantage of the intracoronal attachment is that the forces exerted by the prosthesis are applied more closely to the long axis of the tooth. Intracoronal

attachments are non-resilient and may require double abutting or splinting of the adjacent teeth. This form of attachment offers indirect retention and a more precise path of placement. The three-dimensional size of the tooth will predict the functional or biomechanical success with this attachment. A clinical crown of greater than 4 mm is generally required with a similar faciolingual width (7).

In situations with diminished attachment length as a result of reduced interocclusal height, milled lingual bracing arms should be considered. Extracoronal attachments are situated external to the developed contours of the crown. The majority of extracoronal attachments have resilient attributes. Attachment alignment is not as critical in highly resilient extracoronal attachments due to the omniplanar motion possible. This creates the advantage of multiple paths of placement for the prosthesis. Patients with biomechanical limitations not withstanding a rigid attachment apparatus or anatomic limitations precluding a finite path of placement are strong candidates for resilient attachments.(8)

Biomechanics and support for attachment retained RPD: Once a decision has been made to restore a region with attachment prosthesis, the manner in which the vertical and horizontal forces are to be supported requires consideration. A partial prosthesis may be tooth borne or tooth-tissue borne. Attachments for Kennedy Class III and Class IV tooth-supported prostheses should be considered solid, whereas large Class IV and distal extension I or II prostheses which are increasingly tissue supported

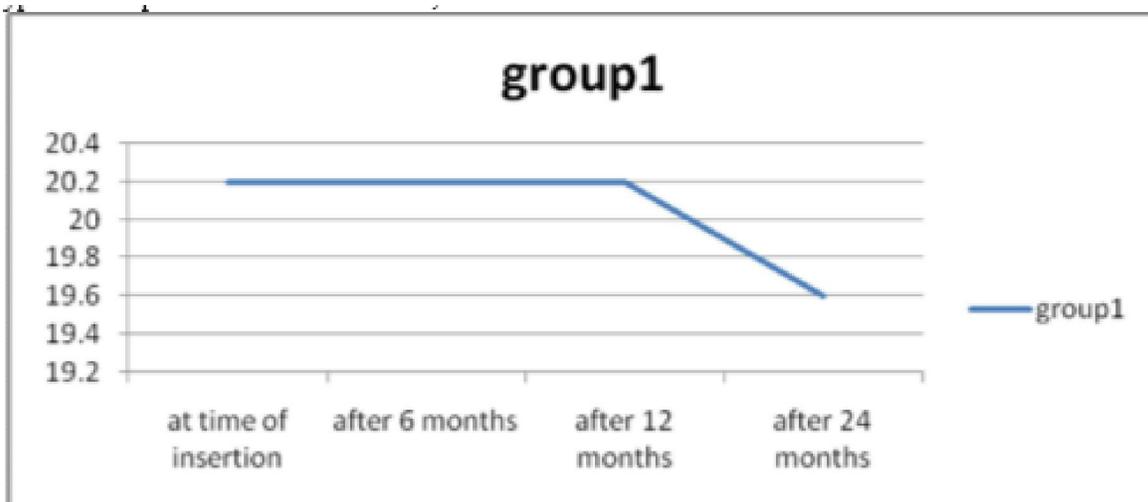
and it should be considered resilient. Rigid attachment allows virtually no movement between the prosthesis and the abutment tooth. Resilient attachments allow for a spectrum of movement ranging from limited uniplanar to universal. Staubli(9) has categorized rigid and resilient attachments into six classifications, from rigid to universal resiliency. The higher classification number correlates with a greater degree of resiliency and suggests less torque transfer to the root or implant abutment.

## 2. Materials and methods:

Two groups of patients, each consisting of 20 patients, treated with partial denture with two different types of precision attachments, were selected and evaluated regarding the retention at the time of insertion and then after six, 12, and 24 months of wearing the denture. The first group was using the Biloc Dental Precision Attachment.

## 3. Results:

The data of retention forces were collected, as expressed in Newton, and statistically analyzed and then tabulated in the following tables and expressed in the following graphs. Table (1) showing the means and standard deviations of the retention in the first group using the denture with the first type of attachment, at the time of denture insertion and after 6, 12, and 24 months of denture wearing. It was shown that there no or non- significant increase in the retention over time.



Fig(1): means of retention in the first group.

**Table(1): means±S.D of retention in the first group. P>0.05**

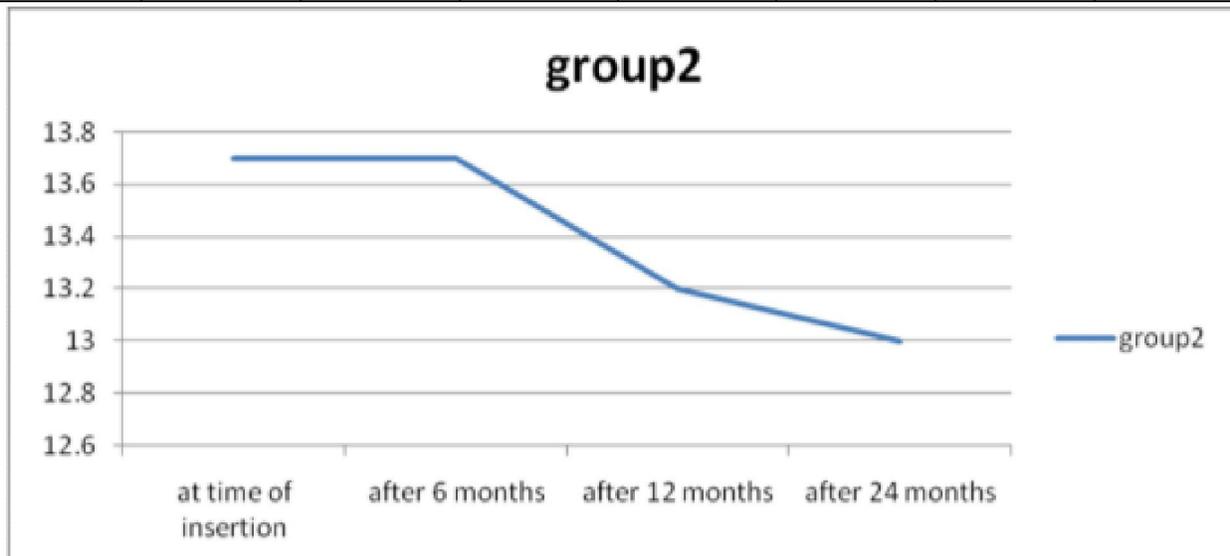
At time of insertion		After 6 months		After 12 months		After 24 months	
Mean	±S.D	Mean	±S.D	Mean	±S.D	Mean	±S.D
20.2	0.63	20.2	0.63	20.2	0.63	19.6	0.61

Table (2) showing the means and standard deviations of the retention in the second group using the denture with the second type of attachment, at the time of denture insertion and after 6, 12, and 24 months of denture wearing. It was shown that there

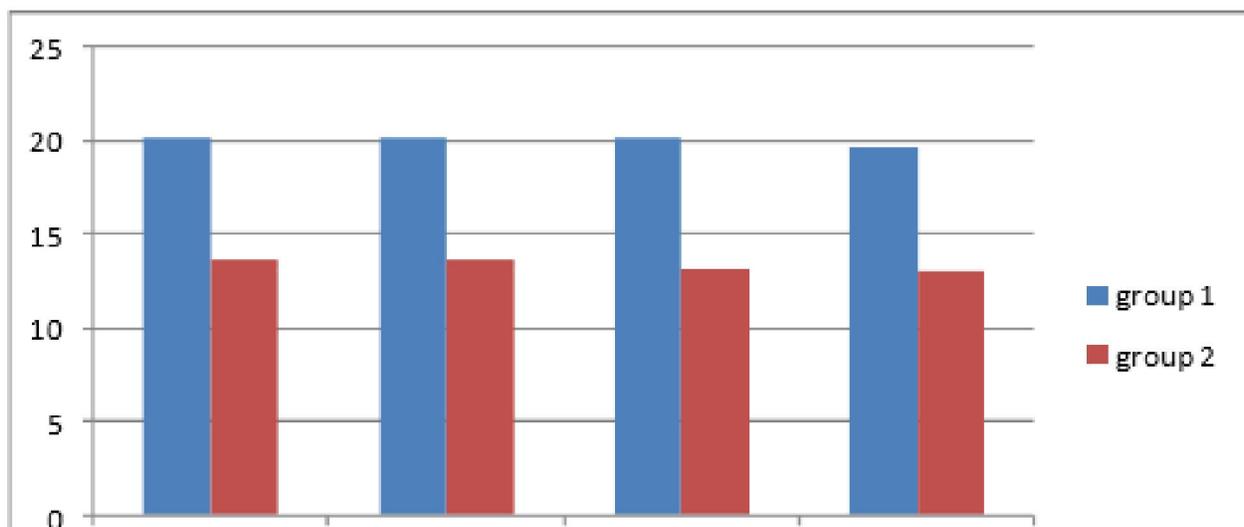
no or non-significant increase in the retention over time. Table (3) showing that there were a significant difference in the retention between the first and second groups, the first group had significant higher retention than the second one.

**Table (2): means±S.D of retention in the second group. P>0.05**

At time of insertion		After 6 months		After 12 months		After 24 months	
Mean	±S.D	Mean	±S.D	Mean	±S.D	Mean	±S.D
13.7	0.55	13.7	0.55	13.2	0.54	13.0	0.53



**Fig (2): means of retention in the second group.**



**Fig(3): means of retention in the first and second groups.**

**Table (3): means±S.D of retention in the first and second groups. P<0.05**

Group	At time of insertion		After 6 months		After 12 months		After 24 months	
	Mean	±S.D	Mean	±S.D	Mean	±S.D	Mean	±S.D
<b>Group 1</b>	20.2	0.63	20.2	0.63	20.2	0.63	19.6	0.61
<b>Group 2</b>	13.7	0.55	13.7	0.55	13.2	0.54	13.0	0.53

**4. Discussion:**

John Grummitt has been utilizing many varieties of exactitude attachments throughout his over thirty year career. He is always happy to debate how they will be of facilitate in any scenario wherever hidden dental plate or corrective retention is needed (10). A multifunctional precision attachment used, in a previous study, in a fastened plate with questionable prognosis enhances the utility of the reconstruction. Within the treatment conferred, future loss of the posterior abutments won't jeopardize the entire rehabilitation. Osseointegrated implants utilized in conjunction with a set prosthetic device or a removable plate will restore the missing segments (11). Easy cleaning-The design of the extracoronary CEKA attachment has a so-called "periodontal friendly" female. It starts right underneath the natural contact point of the crown, and makes gingival contact. The marginal area remains easily accessible for oral hygiene (12).

**Conclusions:**

Removable partial dentures fabricated with exactness attachments are the feasible choices for patients in who fixed restorative, implants are contraindicated. Adherence to exactitude techniques, correct diagnosis and periodic recall preventative medical aid can lead to fortunate treatment and preservation of the patient's existing dentition. 2- The first type of attachment is significantly better than the second type as regarding the retention.

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