The Punch Clasp

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***Abstract*: Removable orthodontic appliances have clasps as retentive components of the appliance. There are various types of clasps described in the literature. In this article a new clasp design is suggested which is easy to fabricate, offers good patient compliance, has less breakage, and provides good retention.**

I. INTRODUCTION

Clasps are retentive components of a removable appliance which "clasp" the teeth and prevent displacement of the appliance. Various types of clasps have been described in the literature for the retention of removable orthodontic appliances for example: The Circumferential clasp, Jacksons clasp, Schwarz clasp, southend clasp, ball end clasp, pin head clasp, triangular clasp, delta clasp and the most commonly used Adams clasp.[1,2,3,4,] Amongst these a few are designed to function as primary clasp and a few are adjunctive clasps.

Clasps engage the undercut areas of the tooth to obtain retention. There are two types of undercuts: proximal and cervical undercut. The Adams clasp takes retention from the proximal undercut and circumferential clasp takes retention from cervical undercut.

I have designed a clasp which takes retention from both the undercuts.

II. PUNCH CLASP CONSTRUCTION AND ADJUSTMENT

The punch clasp is fabricated with 0.7mm stainless steel wire. A helix is made on the palatal aspect approximately 4- 5 mm away from the free gingival margin.(Fig.1) The v shaped wire with helix is closely adapted to engage the palatal embrasures and then turns towards the occlusal surface dipping with a smooth curve in the interdental embrasure so that it is not uncomfortable to the patient while occluding.(Fig.2 and 5) The interdental curve can be made either with a universal or with an optic plier. The wire then turns on the buccal aspect mesially and distally. When the wire reaches the mesial and distal undercut on the labial aspect it is turned labially so that it contours well in these undercuts.(Fig.3) Now the wire is turned in a C form to engage the cervical undercut from both the sides. The free ends of the wire lie in the centre of the tooth buccaly in the cervical region.(Fig.4)

III. `MODIFICATIONS OF PUNCH CLASP

The free ends of the punch clasp can be modified by turning them as half helix so as to engage elastics.(Fig.6) In partially erupted teeth the free ends can be modified so as to resemble pin head clasp as in these cases the cervical undercut is not available for retention.

Advantages:

1. Ease of fabrication
2. Less breakage since there are no sharp turns which might cause stress concentration points.
3. It can be easily adjusted since it has free ends on the buccal surface.
4. It is highly comfortable since it does not impinge on the buccal mucosa as it is closely adapted
5. to tooth surface.(Fig.7&8)
6. Its modification can be used in partially erupted tooth also.
7. It does not need any special pliers for fabrication.
8. It is not very conspicuous.
9. It can be used on anterior teeth also.
10. The free ends can be modified to engage elastics also.

IV. DISCUSSION

The Adams clasp which is commonly used in removable appliance fabrication has the disadvantage that its bridge might hurt the patients' cheek since it's away from the tooth surface. Also the arrowheads are points of stress concentration since the design resembles vertical loop so there are frequent breakages of the clasp.[5] The punch clasp has a vertical loop with helix and moreover it is embedded in acrylic so there are less chances of breakage. The fabrication of Adams clasp is also time consuming. The circumferential clasp does not provide good retention since it does not wrap around the tooth and is cantilever in design. The punch clasp since it is made of one wire engaging both the mesial and distal sides of the tooth in continuation provides better retention and clasps the tooth like a prong.

V. CONCLUSION

The Punch clasp is an easy to fabricate clasp which provides good retention and offers patient compliance because of its inconspicuous design. It can be used in removable appliances as a primary clasp for retention.

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PHOTO LEGEND

Figure 1: Making helix

Figure 2: Occlusal adaptation

Figure 3: labial bend for interdental adaptation

Figure 4: Punch clasp buccal view

Figure 5: Punch clasp occlusal view

Figure 6: Modified Punch clasp

Figure 7: Punch clasp in removable appliance buccal view

Figure 8: Punch clasp in removable appliance occlusal view

Figure 1: Making helix

Figure 2: Occlusal adaptation

Figure 3: Labial bend for interdental adaptation

Figure 4: Punch clasp buccal view

Figure 5: Punch clasp occlusal view

Figure 6: Modified Punch clasp

Figure 7: Punch clasp in removable appliance buccal view