PRACTICE PAPER

Clinical Application of Loops in Orthodontics

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ABSTRACT

The inclusion of loop component as an integral part of arch wire construction is certainly not a new orthodontic concept. The principles and uses of vertical loops were first described by Robinson in 1915, who was an early advocate of light wire and light continuous forces by means of loops. The resiliency of a semi-rigid or the so called heavy arch wires as well as the lighter gauge wires may be increased by incorporating various loop designs.

Keywords : helix, intrusion, extrusion

INTRODUCTION

The several loop designs that have been described have specific applications and when properly employed produce effective responses. They can be quite effective additional means for controlling orthodontic forces. This paper highlights clinical applications of various loops for orthodontic tooth movements. The following list analyses different types of loops selected for specific movement of a single or a group of teeth. These types of movements of teeth can be produced effectively by the loops.[1] They usually are included in the initial alignment arch wire to attain bracket alignment. However, the loops may also be used in various treatment stages; leveling, alignment, space closure and finishing. Loops may be employed with or without helixes according to the force requirements.

Common Applications of Loops

A few of the of common applications of the loops in orthodontic treatment procedures are as follows:

1) Mesial or distal movement (such as midline correction): double vertical loop against bracket fixed to the contained section of the arch wire activated by tying back or compression. A combination of open and closed vertical loops can be used.

2) Space closure (Contraction of the arch): Closed vertical loops with stops.

3) Space opening (Expansion of the arch): Open Vertical loop with stops.

4) Bite Opening: T Loops mesial to the canines. Note that the arch wire in the anterior segment between the two loops should have a reverse curve which transmits the pressure equally to all four incisors.[2]

5) Root tipping or root paralleling: Root tipping is effectively accomplished by use of a box loop. Any box loop includes the same mechanics – namely: a horizontal section of free wire against the bracket of a distally or mesially inclined tooth, including it in such a manner so as to produce the directional force necessary to move the root in the direction desired.

6) Axial inclination correction: other loops of interest are a closed loop activated by tie back in the maxillary arch as series of vertical loops mesial to the canine, a torquing loop between the twin brackets of the central incisors and a rotation vertical loop on either side of the lateral incisor.[3]

7) Leveling and rotating: with horizontal T Loop.

8) Intrusion of anterior segment: A very common and successful application of a horizontal loop can be achieved when it is used to depress the anterior segment. If a pair of these loops is contoured mesial to the canine, the reciprocal activity with a long range of action will be very effective.

9) Second molar alignment: occasionally the horizontal loop maybe used to bring a second molar into position when it has not been a part of the original strap-up. A horizontal loop with a helical coil is placed mesial to the second molar.

10) Extrusion: rapid elevation of severely positioned teeth is possible through the use of a double horizontal helical loop. This is the loop design commonly employed to

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move the surgically exposed premolar. The double horizontal loop produces the force in the occluso-gingival plane and by moving it force is further reduced while the range of activity is increased.

11) Labial tipping: Double horizontal loop contoured in rectangular wire (Stoner) is used and the force reduction is obtained by placing the loop in a reducing solution (an electrolytic polisher). The particular type of loop configuration can be used effectively to depress and rotate teeth, tip the roots and move them labially.

CONCLUSION

Optimum control of tooth movement requires the application of specific orthodontic force systems.[4] All this can be accomplished successfully by the precise application of different sizes, shapes and types of loops, having a control on the distribution, direction, degree, and duration of force applied.

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