Kansal’s Retainer: A Removable, Tooth-Borne Orthodontic Retainer

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ABSTRACT

Adequate retention of a finished orthodontic patient can be the difference between a successful or an unsuccessful treatment. The acrylic portion of the conventional Hawley’s appliance causes a reduced compliance in many orthodontic patients. In an attempt to overcome the drawbacks of the previously used orthodontic retainers a tooth-borne orthodontic retainer was designed, also called the ‘Kansal’s retainer’ (Patent pending).

Keywords: Retainer, Tooth-borne, Kansal’s bow.


INTRODUCTION

Orthodontic retainers are an integral part of orthodontic treatment, which helps to prevent relapse and hold the teeth in desired position achieved during active orthodontic treatment. Over the years there have been various modifications of orthodontic retainers and these designs have certain inherent advantages and disadvantages. A new design of orthodontic retainer called Kansal’s retainer is introduced in an attempt to reduce the disadvantages of the previous appliances.1,2

CONSTRUCTION OF KANSAL’S RETAINER

Kansal’s retainer is a removable, tooth-borne orthodontic retainer which has wire and acrylic components. The wire components include modified labial bow, Kansal’s bow and pin-head clasps (Fig. 1).

WIRE COMPONENTS

Modified Labial Bow

The modified labial bow consists of labial arc, mini U-loops, occlusal arms, retentive arms and retention bends. The labial arc is configured such that it lies on the labial aspect of the teeth. The labial arc is in close proximity of facial aspect of teeth and, hence, prevents relapse of teeth from the labial aspect. It is fabricated with 19 or 21 gauge wire.
The mini U-loop start from the end of the labial arc and end at the junction of the canine and adjacent premolar (Fig. 2). It is relatively very small and starts slightly distal to middle third of labial surface of the canine and ends in the embrasure area. It is approximately 1.5 to 2.0 mm in height and approximately 1.0 to 1.5 mm in width. The U-loop does not extend to gingival level. This makes modified labial bow more comfortable and less visible. The mini U-loop is used to activate the Kansal’s retainer by compressing it.

The ends of the mini U-loops initiate into occlusal arms which crossover from labial to lingual/palatal surface in the embrasure areas between canines and adjacent premolars. The occlusal arms extend into retentive arms extending just short of soft tissue. The ends of the retentive arms are given a 90° bend of approximately 1.5 mm length and functions as a retentive tag (Fig. 3). It resists the dislodgement of the modified labial bow from the acrylic component of the said removable tooth-borne orthodontic retainer.

The modified labial bow can extend from premolar of one side to premolar of other side as in long labial bow. In such cases, the location of the rest of the wire framework will shift distally without changing the purpose or basic design of the retainer. The modified labial bow can be preformed commercially by a company or by the operator in their clinics.

**Kansal’s Bow**

It performs a dual function by preventing relapse from lingual/palatal aspect of teeth and acting as retentive clasp from the buccal aspect of the teeth. It is fabricated using a 21 gauge wire. Kansal’s bow includes a palatal/lingual arc, a vertical step on the sides, premolar contour, occlusal arm and buccal retention clasp (Figs 4 and 5). The said palatal/lingual arc of the Kansal’s bow extends from lingual or palatal aspect of distal edge of right canine of one side to distal edge of left canine of other side and, hence, prevents relapse from lingual or palatal aspect of teeth. The vertical step initiates from the end of the lingual/palatal arc and is bent at 90° toward the gingival level at the distal edge of canine with a length of 0.5 to 2 mm. The purpose of the said first vertical step is to avoid occlusal interference of the Kansal’s bow. The vertical step extends into premolar contour and runs over the retentive arms of the modified labial bow (Fig. 6).

As the name suggests, the premolar contour runs around the palatal/lingual surface of the premolar (adjacent to canine) hence, forming a contour as per the anatomy of the premolar. It is located just above the gingival margin and, hence, does
not extend to the soft tissues. The premolar contour ends in the embrasure between first and second premolar (in non-extraction case) or premolar and molar (in extraction case).

The occlusal arm initiates from the end of the premolar contour and crosses over from lingual/palatal to labial surface of teeth between first and second premolar (in non-extraction case) or premolar and molar (in extraction case).

The buccal retention clasp initiates from the end of occlusal arm which runs toward gingival level and is configured to form a compressed, flat and round edged loop to form a pin-head shaped clasp. The buccal retention clasp is the only part of the Kansal’s bow, which lies on the buccal aspect of the teeth.

The Kansal’s bow can extend between the distal contacts of second premolars. In such case, location of all other wire framework will shift distally without changing the purpose or basic design of the retainer.

The said modified labial bow and the Kansal’s bow sandwich the teeth between them and do not allow them to move thereby preventing the undesirable relapse of the teeth.

**Pin-head Clasps**

Major retention is provided by adding pin-head clasps on mesial and/or distal aspect of molars on either side (Fig. 7). The retentive arm in the palatal/lingual side extends just short of soft tissues. Though pin-head clasps are preferred; any other clasp can also be used for adding retention.

**ACRYLIC COMPONENT**

After the fabrication of the said wire components (Fig. 8), they are acrylized (Fig. 9) to join all the wire components into a single functional unit without extending to the soft tissues hence, forming the said removable tooth-borne orthodontic retainer.

Wire framework is acrylized from lingual/palatal aspect of molar region covering the retentive arms of pin-head clasps, part of Kansal’s bow on the palatal/lingual aspect in premolar region, retentive arm of modified labial bow and extending to the distal surface of the canine on the palatal/lingual aspect without extending to soft tissues (Figs 10 and 11). After acrylization, the appliance is finished and polished and delivered (Fig. 12).

**ADVANTAGES**

It has minimal acrylic component which rests only on teeth and does not take the support of tissues for its retention, therefore, it is less bulky, has low food accumulation and is easy to clean. The patient’s speech and taste is not compro-

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**Fig. 7:** Pin-head clasps

**Fig. 8:** All the wire components of Kansal’s appliance placed on the model

**Fig. 9:** Acrylized and finished appliance

**Fig. 10:** Acrylized and finished appliance placed on model (occlusal view)
mised. Mini U-loops cause no gingival impingement and also they are less visible, hence more comfortable and esthetic.

CONCLUSION

Any treatment is a failure unless the treatment results can be retained. This is achieved by orthodontic retainers. Kansal’s retainer is an attempt to fulfil the basic requirement of an effective orthodontic retainer with some added advantages which would greatly improve patient’s compliance thereby increasing the predictability of wearing the retainer and thus decreasing the chances of relapse after orthodontic treatment.

REFERENCES