The Canine Ligature Spur as an Edgewise Arch Auxiliary

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One of the most useful auxiliaries for the edgewise arch mechanism is the so-called canine ligature spur. We know that nature, when she carries the teeth forward during the process of jaw growth, uses the points of proximal contact to perform the tooth movement that accompanies such growth. One of the advantages of the edgewise arch appliance is its ability to utilize, in a similar way, these anatomical points. This is so because every tooth is ligated to the archwire and. by bracket engagement, main-

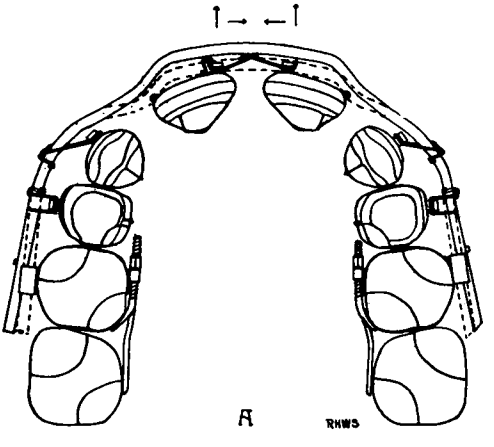

Figure 1. The edgewise arch appliance, with canine ligature spur auxiliaries, adjusted on a case of seven years of age.

tained in accurate adjustment to this portion of the appliance. Consequently pressure applied on one tooth, through ligature traction, is transmitted through the entire series lying in the same direction of the line of force. In the use of ligature spurs advantage may be taken of this fact and it is this feature that renders the canine spur so efficient.

The canine spur is practicable in very young dentures and also in dentures of older children. When it is necessary to gain room for the incoming permanent incisor teeth in growing dentures, not only is increased width required in the region between the canines but a forward movement of the incisor teeth should also be coincidentally made, rounding out the curve

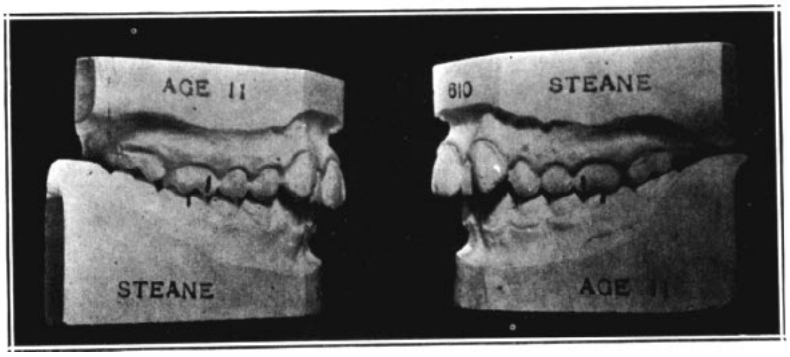

Figure 2. A Class I case requiring distal movement of the buccal segments of the maxillary arch without lingual movement of the maxillary incisor teeth.

of the dental arch in this area. When the ideal typal archwire is applied and the teeth are ligated to it, stop spurs must be adjusted to rest against the mesial end of the molar tubes so as to prevent the wire from sliding through these tubes and pressing lingually upon the incisor teeth. These stop spurs hold the wire away from the incisor and canine teeth, which require movement forward and laterally, respectively, and the desired changes can be begun very effectively.

It is usually impossible, however, to primarily place the molar spurs at their ideal location because the archwire would then be irritating to the cheeks and lips. So, as previously mentioned, it becomes necessary to change their location, after one or two treatments, and "tease" them distally. This requires the removal of the archwire and secondary soldering operations. These two procedures can be avoided by placing ligature spurs or soldering staples on the archwire about 3/16″ distal to the location of the canine brackets. The application of these auxiliaries should be made at the same appointment in which the molar stop spurs are attached to the archwire. Ligature traction from these spurs or staples will force the archwire out of the molar tubes, increasing its length from molar tube to molar tube, and

coincidentally placing a forward pressure upon the incisor teeth. The anchorage against the forward force is distributed throughout both buccal sections of the dental arch by virtue of proximal tooth contact. The direction of movement of the canines will be directly lateralward instead of

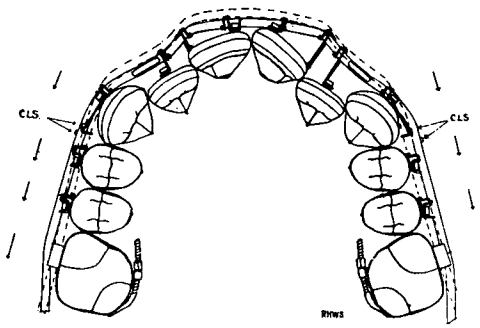

Figure 3. The appliance adjustment, with the canine ligature spur auxiliaries (C. L. S.), for the maxillary arch of the case illustrated in Figure 2.

lateralward and forward as is the case when canine spurs are not used. Figure 1 illustrates, diagramatically, an edgewise arch appliance with such canine spurs in position.

In older patients these canine spurs are most frequently used when a distal movement of the buccal sections of the denture is desirable without a coincidental lingual movement of the incisor teeth. Figure 2. Such an action calls for divergent forces to be set in activity from a point of origin that is located just at the canine region of the archwire.

When we use the tip back bends in the buccal sections of an archwire, we must have intermaxillary force in action in order to carry the crowns distally, otherwise the roots will be carried mesially. We must picture, then, the archwire itself as actually moving distally, in relation to the cranium, during this tooth changing. This being the case any teeth attached thereto tend to take on similar movements. Such a tooth shifting is ideal in Class II, Division I malocclusion, because the entire maxillary denture must be carried backward in relationship to its present position in the skull. In Class II, Division II and in Class I cases in which the buccal segments of the dental arches are anterior to normal and the incisors are in normal relation to

skull anatomy, we do not wish to disturb the areas that are correct, hence some means must be provided whereby pressure may be maintained in a forward direction on the anterior portion of the dental arch and in a backward action on these buccal segments.

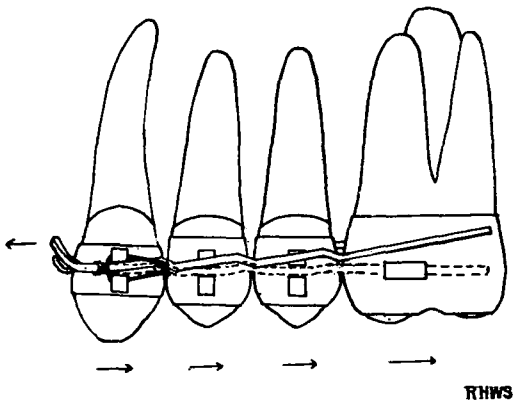

Figure 4. The distal tipping bends and the canine ligature adjustment for the distal movement of the buccal teeth for the case seen in Figure 2.

Ligature traction from a properly placed canine spur is one of the methods of supplying and renewing this double force. It was suggested to the writer by Dr. Allan G. Brodie. After the archwire has been long enough in position to gain bracket engagement of all the buccal teeth, a ligature spur is soldered to the buccal surface of the archwire, 3/16″ distally to the canine bracket area. Figure 3. Tip back bends are placed in the buccal segments of the wire and this is replaced in the mouth. Figure 4. The incisor teeth are then ligated to the archwire. Next the canine ligature is applied with its point of traction at the canine spur. The ligature locking pliers and the

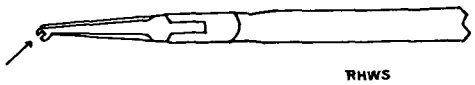

Figure 5. Modified How pliers used for tightening the canine ligature. The arrow points to the notch that has been filed in the plier ends so that they will slip over the archwire.

modified How pliers, Figure 5, are used to gain the proper traction upon this ligature, Figure 6, and it is tightened under the tension gained hereby. This causes the archwire to bow, labially, between the canine and lateral teeth,

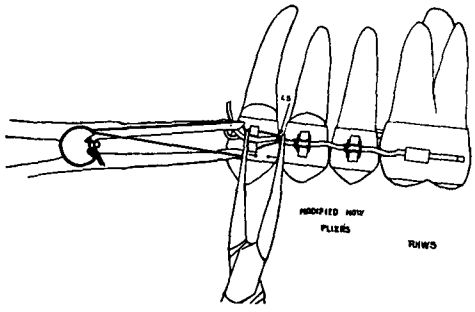

Figure 6. The use of the modified How pliers and the ligature locking pliers in tightening the canine ligature. L.S., canine ligature spur.

placing a forward force upon the incisors and a distal pressure upon the buccal segments of the denture. The latter force is increased by the use of the elastics. After the canine ligature has been applied, the premolar brackets are engaged with ligatures. These divergent forces should be renewed about at three week intervals. A second spur, mesial to the lateral incisor bracket, may be required to obtain full advantage of the two reverse actions that are desired.

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