UPRIGHTING OF LINGUALLY ROLLED BICUSPID BY REMOVABLE ACTIVE SPRING

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ABSTRACT

The use of removable appliances in modern clinical orthodontic practice can generally be considered an outdated treatment modality for managing malocclusions. Although, in day to day practice patient, don’t always go for fixed orthodontic mechanotherapy for a single tooth correction, which can be easily corrected by an effectively designed removable appliance. Lingually tipped bicuspid usually occurs due to decreased mandibular arch length and causes dis-occlusion. An active spring in the retainer plate can be used to correct lingually rolled teeth and maintains the occlusion.

Keyword: Bicuspid Uprighting, Removable appliance, Modified Beggs Retainer.

I. INTRODUCTION

Lingual rolling of the posteriors is commonly encountered in orthodontic practice. It could lead to the development of scissor bite and non-working side interference. The orthodontic clinician often faces the challenge of correcting the localized occlusal problems while working within the aesthetic demands of the patient.¹ So, the removable appliance can be a choice of treatment for single tooth correction. If not treated it can lead to dental compensations like over eruption of the opposing tooth causing an occlusal interference, functional disturbances, and compromised periodontal health. An iatrogenic lingual rolling also can be the result of applying extra force in extraction cases during space closure.²

The removable appliance can be used as an adjunct to enhance the fixed mechanotherapy as well as its possible to achieve adequate occlusion with a suitable appliance. The continued use of removable components can be attributed to the relative simplicity of fabrication and adjustment, low cost, and reduced chair-side time.³ However, the clinical effectiveness depends upon the patient's cooperation but minor tooth movement correction can be easily achieved.

CASE SUMMARY

A 16-year female patient who had already undergone fixed orthodontic treatment 4 years back having all 1st premolar extracted with the initial diagnosis of Angles Class I malocclusion with bimaxillary protrusion. She complained of lower posterior right dis-occlusion. On examination, there was a lingually rolled 2nd bicuspid which
causes dis-occlusion in the arch. As the patient had already undergone fixed mechanotherapy a few years back and doesn’t want to undergo the same.

![Fig:1 Pretreatment Photographs](image1)

A removable plate with a modified spring design was incorporated. The spring was made of 22 gauge SS round wire; with 2 helical coils of 3 mm diameter, a U loop - the active force component and 2 retentive arms that go in the acrylic plate. The U loop of the spring is at a 45° to the occlusal plane.

![Fig 2: Appliance Design](image2)

This whole assembly is incorporated in the Beggs retainer. Activation of the appliance was done before the placement by closing the loop which gives a push effect on the lingually tipped bicuspid.

![Fig 3: Appliance Placement in the cast and the patient](image3)

The patient was recalled after one week to check for any discomfort, then after one month and for every consecutive month the follow-up was done, and occlusal stability was seen.

![Fig 4: Post–Treatment Photographs](image4)
The results were stable throughout the retention protocol period. After one year the retention was checked and a stable result has been achieved.

Fig 5: Post- retention 1 year follow up

II. DISCUSSION

Most orthodontic clinicians are often faced with the challenge of uprighting the lingually rolled bicuspids and molars due to the difficulty in accomplishing a vector of the moment that is adequate to upright. If left untreated it can lead to dental compensation like over eruption of the opposing maxillary molar causing an occlusal interference and functional disturbances. A tipped tooth is very commonly seen among orthodontic patients. It may be due to premature loss of the deciduous tooth, or by an ectopic eruption and most commonly is due to the absence of E-space.

Removable appliances are capable of simple tipping movements and allow differential eruption of teeth. However, the use of the appliance is considerably limited than in the past. Although, it can be used to achieve simple tooth movement like tipping, rotation correction, etc. The use of removable components can be attributed to the relative simplicity of fabrication and adjustment, low cost, reduced chair-side time, and most importantly esthetics. One of the disadvantages is it required full patients co-operation which is difficult to get desired treatment result. But in co-operative patient its show good result as its full patient compliance.

In this case report, the patient has been advised to wear the appliance for a minimum of 11-12 hours for 9 months then gradually shift to only nightwear for three months. The incorporated helical spring provides the intermittent force and allows time to remodel the periodontal fibres around the lingually tipped bicuspid. The supporting Begg’s retainer is used to maintain the arch integrity. Two helical coils with the active component of U-loop were incorporated which is approximately 1/3rd of the root apices causing controlled tipping in the tooth allowing the lingually tipped bicuspid to be in the arch.

III. CONCLUSION

Proper biomechanics and choice of the appliance are of importance in the correction of malocclusion. The compliance with removable orthodontic appliances is suboptimal, and the number of patients wearing appliances is considerably less than stipulated. However, in this case-report due to good patient co-operation desired result was achieved, as it illustrates conservative treatment with minimum trauma and properly applied biomechanics can have the desired correction and good occlusion.

REFERENCES