



Management of Supra Erupted Maxillary Molar by Using A Modified Removable Posterior Bite Plane –Two Case Reports

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ABSTRACT

Supra erupted posterior tooth is one of the common clinical findings in dental practice. Delayed replacement of lost teeth often leads to extrusion of the opposing teeth into the edentulous space, which leads to masticatory insufficiency and TMJ disorders. When the prosthesis is planned on the opposing edentulous area, re-establishing a functional posterior occlusion requires a comprehensive dental treatment plan. If the dento alveolar extrusion is not severe, it is possible to recapture the space by performing coronoplasty & intentional endodontic treatment of the supraerupted tooth. When the extrusion is moderate, orthodontic intrusion can be done, when extrusion is severe prosthetic rehabilitation is impossible and removal of the teeth is often proposed. Through this case reports we are introducing a removable posterior bite plane retained by ball end clasp to manage a supra erupted maxillary molars along with ongoing fixed orthodontic treatment.

Keywords: *Supra Erupted Tooth, Orthodontic Intrusion, Modified Bite Plane.*

INTRODUCTION

The partial dentate state may be the fate of many elderly dentate patients in the future, as the prevalence of edentulous situation decreases in the population. The main positional change to be expected is over eruption of unopposed teeth. Craddock et al¹ identified that over eruption >2 mm occurred in 24% of unopposed teeth, with 18% having no demonstrable over eruption at all. In other words, 82% demonstrated some over eruption².

If we replace the edentulous area with the prosthesis, without correcting the supra-erupted teeth, it may lead to inefficiency in the masticatory function due to improper distribution of masticatory force, deviation in the mandibular movement and problems in the Temporomandibular Joint. Before we plan the different treatment modalities, we should have a mounted diagnostic cast and a very good radiograph to evaluate the size of the pulp and the dento-alveolar structure. Enameloplasty can effectively reduce occlusal discrepancy in a moderately extruded tooth. Approximately 1-2 mm of enamel can be removed in many situations. At times the reduction of a single cusp improves the occlusal plane⁴. If the tooth does not lend itself to Enameloplasty, the placement of an extra coronal cast metallic restoration is indicated. The degree of reduction is limited as much or more by the clinical crown length of the tooth as by the size of the dental pulp. Intentional Root Canal treatment of tooth with perfectly vital pulp may be necessary in cases of hyper erupted tooth or drifted teeth that must be reduced so drastically that the pulp is certain to be involved. Molar intrusion can be achieved successfully with orthodontic TADS (Temporary Anchorage Devices) there by re-establishing a functional posterior occlusion & reducing the need for prosthetic crown reduction. A dento-alveolar extrusion can be corrected effectively using a Removable Posterior Bite Plane Appliance which was retained by using ball end clasps. The appliance was very effective and almost 4mm of intrusion was achieved in 2 months. This appliance can be an alternative to temporary anchorage device for the absolute intrusion of supra erupted molars and is cost effective and minimally invasive compared to mini implant assisted intrusion. The Appliance Is Having An Advantage Of Using Physiological Force For Intrusion With No Evident Root Resorption^{5,7}.

CASE REPORT-1

ETIOLOGY AND DIAGNOSIS

A 17 year old female patient reported to the department of orthodontics, Coorg institute of dental science with a chief complaint of proclined upper and lower incisors and missing 36, 37, 38. On examination the patient had a class I skeletal pattern with orthognathic maxilla and mandible with average growth pattern, proclined upper and lower incisors, missing 36,37,38, supraerupted 26, 27 and incompetent lips.

TREATMENT OBJECTIVES

- Correction of upper and lower incisors proclination
- Correction of supraerupted 26, 27
- Prosthetic replacement of 36,37

CASE REPORT-2

ETIOLOGY AND DIAGNOSIS

A 19 year old female patient reported to the department of orthodontics, Coorg institute of dental science with a chief complaint of proclined upper and lower incisors and missing 16, 37. On examination the patient had a class I skeletal pattern with orthognathic maxilla and mandible with average growth pattern, proclined upper and lower incisors, missing 16 and 37, supraerupted 27 and incompetent lips.

TREATMENT OBJECTIVES

- Correction of upper and lower incisors proclination
- Correction of supraerupted 27
- Prosthetic replacement of 16,37
- Achieve a pleasing soft tissue profile

TREATMENT ALTERNATIVES

1. Modified Trans Palatal Arch.
2. Mini Implant.
3. Placement of bracket more occlusally.
4. Removable Bite Plane Appliance.

TREATMENT PLAN

- It was decided to correct the supra erupted maxillary left second molar by using modified removable posterior bite plane appliance in both the cases.

APPLIANCE DESIGN

An Upper and lower alginate impression was made. A wax bite was taken in the patient mouth with 4mm inter occlusal clearance in the posterior region. Upper and lower casts were articulated with the wax bite on a semi adjustable articulator. 2 ball end clasps were adapted in the interdental areas of 33, 34 and 35. Edentulous space on the mandibular arch opposite to the supra erupted tooth was marked and a posterior bite plane appliance was fabricated by using self-cure acrylic. The height of the appliance was adjusted in such a way that only the supra erupted teeth were in contact. The appliance was then removed from the cast and tried in the patient mouth. The occlusal aspect of the appliance was trimmed to make it flat so that the cusp tips of supra erupted teeth will touch on the appliance evenly. (FIG.NO.2 and 9).

This appliance can be further modified for retention after a required intrusion is achieved by adding one or more acrylic tooth in the same appliance. (FIG.NO.6 and 12) This will act as a space maintainer as well as a retention appliance for intruded tooth/teeth. This will also help in mastication and chew.

TREATMENT PROGRESS

The appliance was delivered and post insertion instructions were given. The patient was asked for full time appliance wear except while brushing. Instructions were given about maintaining the appliance. On recall, after one month almost 2mm of intrusion was achieved. So the bite plane was activated by adding acrylic on the occlusal aspect of the appliance to increase the height as there was a need for further intrusion. On recall after one month adequate intrusion was achieved and appliance was modified by incorporating acrylic tooth on the bite plane for the retention of intruded molar as well as for the functional requirements. Amount of intrusion was measured from a line joining the buccal cusp tips of supra erupted molar to a line running along the edge of edentulous area opposite to supra erupted teeth (FIG.NO 1)

CONCLUSION

The removable posterior bite plane appliance has the advantages of:

- ❖ Physiological force, hence Less root resorption compared to mini implant assisted intrusion,
- ❖ Minimally invasive and cost effective compared to mini implant assisted intrusion.
- ❖ Reduced buccal flaring compared to placement of bracket more occlusally for intrusion,
- ❖ Less patient discomfort compared to modified Trans palatal arch assisted intrusion
- ❖ Simultaneous intrusion of more than one tooth is possible,
- ❖ Easy to manage as patient can remove the appliance for cleaning
- ❖ Less bulky compared to conventional bite plane appliance
- ❖ Over all treatment time will reduce as this appliance can be placed along with fixed orthodontic treatment,
- ❖ No need for special retention appliance for intruded molar as the same bite plane appliance can be modified by adding an acrylic tooth on the appliance. Thus the same appliance can act as a retention appliance, space maintainer as well as removable partial denture.

The appliance can be re activated by increasing the height of the appliance by adding self-cure acrylic on the occlusal surface of the appliance if the required intrusion is more.

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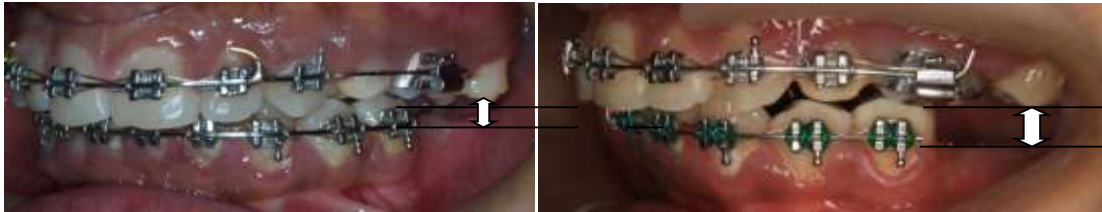


Figure.No.1.Method to Measure the Amount of Intrusion

Case Report 1



Fig.No.2.Pre Appliance Insertion



Fig.No.3.Modified Posterior Bite Plane Appliance



Fig.No.4. Immediate appliance Insertion



Fig.No.5. Two Months after Appliance Wear



Fig.No.6.Modified Bite Plane Appliance with Acrylic Tooth



Fig.No.7.Post Modified Bite Plane Appliance with Acrylic Tooth

Case Report 2



Fig.No.8.Pre Appliance Insertion



Fig.No.9.Modified Posterior Bite Plane Appliance



Fig.no.10.Immediate Appliance Insertion.



Fig.No.11.Two Months after Appliance Wear



Fig.No.12.Modified Bite Plane Appliance with Acrylic Tooth



Fig.No.13.Post Modified Bite Plane Appliance with Acrylic Tooth