Management of Supra-erupted Posterior Teeth- A Review
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Abstract
Supraerupted 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 prosthesis is planned on the opposing edentulous area, re-establishing a functional posterior occlusion requires a comprehensive dental treatment plan. If the dentoalveolar 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 and if the extrusion is great, a prosthetic rehabilitation is impossible and removal of the teeth is often proposed. This paper gives a brief review of the various treatment modalities discussed in the literature to manage supraerupted posterior teeth.

Key words: Supraerupted Teeth, Coronoplasty, Intentional Endodontics, Temporary Anchorage Device.

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Introduction
The partial dentate state may be the fate of many elderly dentate patients in the future, as the prevalence of edentulousness decreases in the population (1). The main positional change to be expected in unopposed teeth, retained root stump and carious teeth is over eruption. Kiliaridis et al (2) identified that over eruption >2 mm occurred in 24% of unopposed teeth, with 18% having no demonstrable over eruption at all (3). In other words, 82% demonstrated some over eruption (1).

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.

Treatment Modalities: 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,

1. 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 plane (4).

2. 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 (4).

3. 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 (5).
4. Molar intrusion can be achieved successfully with orthodontic TADS (Temporary Anchorage Devices) re-establishing a functional posterior occlusion & reducing the need for prosthetic crown reduction (6).

5. Orthognathic surgical procedures. A Posterior Segmental Osteotomy can be effective in correcting the problem. If it is a dento-alveolar extrusion (7).

6. Extraction of the tooth, in case of the alveolar bone support is lost, i.e. in cases of furcation involvement.

**Coronoplasty (Enameloplasty):** Correction of the occlusal supra contacts are by; a) Grooving – correcting the grooves and fissures, b) Spherodizing- restores the buccolingual width of the occlusal surface to normal dimension. c) Pointing- restores the cusp point contours (8). In Coronoplasty elimination of deflective occlusal contacts through selective reshaping of the occlusal surfaces of teeth, which result in more favorable distribution of occlusal forces.

**Objective of occlusal treatment are:**
1. To direct the occlusal forces along the long axis of the teeth.
2. To attain simultaneous contact of all teeth in centric relation.
3. To eliminate any occlusal contact on inclined planes to enhance the positional stability of the teeth.
4. To have centric relation coincide with the maximum inter-cuspation position.
5. To arrive at the occlusal scheme selected for the patient (9).

**Nine steps of Coronoplasty:**
1. Remove retrusive pre-maturities and eliminate the deflective shift from Retruded Cuspal Position (RCP) to Inter Cuspal Position (ICP)
2. Adjust ICP to achieve stable, simultaneous, multi-pointed, widely distributed contacts.
3. Test for excessive contacts (fremitus) on the incisor teeth.
4. Remove posterior protrusive supra contacts and establish contacts that are bilaterally distributed on the anterior teeth.
5. Remove or lessen mediotrusive (balancing) interferences.
6. Reduce excessive cusp steepness on the laterotrusion (working) contacts.
7. Eliminate gross occlusal disharmonies.
8. Recheck tooth contact relationships.
9. Polish all rough surfaces(8).

**Molar Intrusion by Orthodontic Treatment:**
Orthodontic Temporary Anchorage Devices (TADS) provide a minimally invasive treatment alternative, one that does not require the patient’s compliance, for molar intrusion.

True molar intrusion can be achieved successfully with orthodontic TADs (Titanium-Alloy Mini Screw, ranging from 6 to 12 millimeters in length and 1.2 to 2 mm in diameter, that is fixed to bone temporarily to enhance orthodontic anchorage), re-establishing a functional posterior occlusion and reducing the need for prosthetic crown reduction.

TADs should be inserted into a region with high bone density and thin keratinized tissue. The location chosen should be the optimal one in terms of both the patient’s safety and biomechanical tooth movement. Bone density and soft-tissue health are the key determinants that affect stationary anchorage and mini screw success (6).
Extruded posterior teeth can be intruded orthodontically, by other methods, such as (10)
- Inter-maxillary device
- Sectional mechanics
- Removable appliance
- Trans-palatal bar
- Anchorage from mini-plates
- Mini-screws (TADS)
- Magnets

Orthognathic Surgical Procedure: Posterior Segmental Osteotomy: This is a simple but strict technique, without which one can achieve a good surgical outcome but a poor final occlusion. Some distortions can occur at any stage of surgery. Thus, we believe that using an acrylic splint as a surgical guide is mandatory to achieve a good final occlusion. The interim denture and/or the placement of an orthodontic arch wire prevents the risk of movement in transverse and vertical dimension (11).

Conclusion
Muller De Van stated that “the preservation of that which remains is of utmost importance and not the meticulous replacement of that which has been lost” (12). This statement holds true in case of management of supraerupted teeth. Because invariably the moment we see a small amount of supra-eruption, we still go ahead with replacement of the opposing edentulous area with an RPD or FPD which leads to occlusal disharmony and consequently TMJ Disorders. When the dentoalveolar extrusion is not too severe, it is possible to recapture space by performing Coronoplasty or intentional endodontic treatment of the supra-erupted teeth. When the extrusion is too great, a prosthetic rehabilitation is impossible and removal of teeth is often proposed. A more conservative treatment can be achieved by performing Segmental Osteotomy of guilty segment.

Molar intrusion can be achieved by temporary anchorage device (TAD) orthodontically. The scope of orthodontics is expanding. TADs have allowed the orthodontist to overcome anchorage limitations and perform difficult tooth movements predictably and with minimal patient compliance.

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References:


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