

Case Report

Class II Div I Treatment With Maxillary Pre-Molar Extraction – A Case Report

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Aim & objective of the present case report was to evaluate the management of Class II division 1 malocclusion in non-growing patient with extraction of upper first premolars only. Mandibular premolar extraction was avoided as there was no crowding and no need for space in the lower arch. Clinical and cephalometric evaluation revealed skeletal Class II division 1 malocclusion with maxillary incisor proclination, convex profile, average mandibular plane angle, incompetent lips, increased overjet and overbite. After extraction of upper 1st premolars, retraction of upper anterior teeth was done. Following treatment marked improvement in patient's smile, facial profile and lip competence were achieved and there was a remarkable increase in the patient's confidence and quality of life.

Keywords: Class II malocclusion, Maxillary premolar extraction.

Introduction

Treatment of Class II malocclusions can be achieved by several means, depending on the characteristics associated with the problems, such as patient age & compliance, antero-posterior discrepancy¹. Methods include extra oral appliances^{2,3} functional appliances^{4,5} and fixed appliances^{6,7}. The treatment plan may also include extractions of all first premolars^{8,9,10} and the extraction of only 2 maxillary premolars is generally indicated when there is no crowding or cephalometric discrepancy in the mandibular arch^{11,12}. Extraction of four premolars is indicated in growing patients primarily for mandibular arch crowding, a cephalometric discrepancy, or a combination of both^{9,12,13}.

Anchorage is essential to maintain the posterior segment in place in a complete Class II malocclusion during retraction of the anterior teeth when only 2 maxillary premolars are extracted. However, when 4 premolars are extracted for treatment of Class II malocclusion there is an even greater need for anchorage, as the anterior and posterior maxillary dental segments must be distalized to reach a Class I molar-canine relationship at the end of treatment.^{11,14}

Consequently, treatment success depends even more on patient compliance. On the basis of these considerations, it is speculated that the occlusal success rate of Class II correction with 4 premolar extractions is more likely to be compromised by the absence of patient compliance in the use of anchorage devices than is treatment with 2 premolar extractions.

Case Report

A young female patient of 24 years of age had a chief complaint of forwardly placed teeth in the upper arch and irregularity of teeth in the lower front teeth region. An extra oral examination revealed a mesocephalic head shape with amesoprosopic facial form. The patient had an increased visibility of the upper anterior teeth. The profile of the patient was convex, with a posterior facial divergence, with potentially competent lips (figure 1). The patient showed a retruded mandible with a horizontal growth pattern and she had a negative VTO.

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Figure 1: Pre-treatment photographs

Her intraoral examination revealed that the patient had a Class II molar and canine relationship, and proclined maxillary incisors with an overjet of 10mm, with an associated palatal impingement of the lower incisors. The study model analysis confirmed the arch length and a tooth material discrepancy of 11mm tooth material excess in the maxilla and 3 mm tooth material excess in the mandible. According to the total space

analysis, 13mm of space was required in the maxilla and 2 mm of space was required in the mandible. A surgical approach to the treatment was not desired by the patient, and although the antero-posterior jaw discrepancy was severe, the selective extraction of two permanent maxillary first pre-molar teeth was considered to be acceptable.

Treatment goals:

- Obtaining a good facial balance
- Obtaining an optimal static and functional occlusion and stability of the treatment results.
- The treatment objectives which would lead to an overall improvement of the hard- and soft-tissue profile and the facial aesthetics were:
- To correct the maxillary incisor proc-lination.
- To achieve an ideal overjet and overbite
- To achieve a lip competence.
- To achieve a flat occlusal plane.
- To achieve an adequate functional occlusal intercuspation with a Class II molar and a Class I canine relationship.

- The molar positions, the arch width, and the midlines needed to be maintained.

Treatment plan:

- Extraction of the maxillary first premolars.
- Alignment and leveling of the arches.
- Leveling the curve of Spee without increasing the arch perimeter.
- Closing the extraction space by sliding mechanics.
- Final consolidation of the space and
- Settling of the occlusion.



Figure 2- Retraction of maxillary anteriors

The maxillary first premolars were extracted and the patient underwent a fixed orthodontic mechanotherapy (MBT 0.022-inch slot). An initial 0.016-inch round nickel titanium arch wire was used for the levelling and the alignment of both the arches. Both first and second molars were banded to prevent anchor loss during the retraction. The upper and lower 0.016 x 0.022-inch reverse curve NiTi were placed, which was later followed by the placement of 0.017 x 0.025-inch nickel titanium wires at 12 weeks. At the end of 16 weeks, enough leveling and aligning had occurred to place the upper and lower 0.019 x 0.025-inch SS wires.

At the 20th week, enmass retractions of the six anterior teeth were carried out by using sliding mechanics. A step wise activation was done every month to close the extracted tooth space.

At the same time, utmost care was taken to prevent an undesirable mesial drift of the maxillary molars. As the camouflage treatment with 2 premolar extractions requires anchorage conservation and in order to reinforce our anchorage, we used an upper second molar banding. After the closure of the 1st premolar extraction space, the extraction site was stabilized with a figure of eight ligation between the molars. A 0.019 x 0.025 nickel titanium arch wire was placed to level the arch, followed by the placement 0.014 stainless steel wires for the occlusal settling, following which the case will be debonded and a fixed upper and lower lingual bonded retainer will be given.

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