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Open Bite Management With Extraction Of First Molar: A Case Report

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Abstract

Open bite is a malocclusion that occurs in the vertical plane, characterized by lack of vertical overlap between the maxillary and Mandibular dentition. The anterior open bites particularly skeletal open bites are called as “stigmata of malocclusion”. The varied etiological characteristic features of open bite are discussed in this article. Open bites are easy to diagnose but difficult to retain. The various modes of treatment are also discussed depending upon the age of the patient. This paper describes a case report of a 19 years old male patient reported at the department of orthodontics & dentofacial orthopedics complaining of problem in biting from front teeth and I do not like my smile.” Clinical examination revealed 3 mm of anterior open bite. Fixed mechanotherapy was planned and after initial levelling & alignment, the diastema was closed with the help of elastomeric chain. A successful result has been achieved after 19 months of treatment. Proper planning & execution is the key to successful treatment.

Keywords: open bite, first molar extraction, temporary anchorage device

Introduction

Currently the orthodontist has a number of treatment options and or mechanics to treat this anomaly: intraoral anchorage appliances, bite block, mini-implants, orthognathic surgery and bicuspid or first molar extractions.

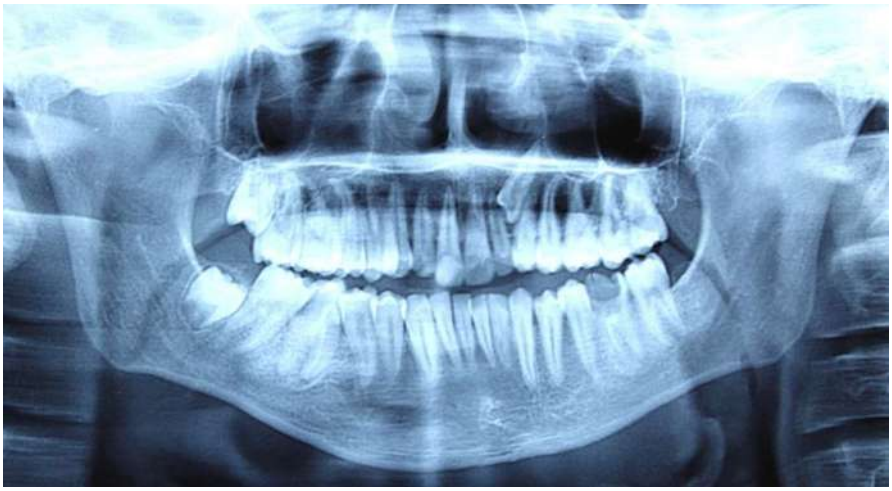
Orthodontic treatments where extractions of first permanent molars have been suggested are often considered as difficult to handle, with extended treatment time. However, there are several case reports in the literature of patients with open bites treated by means of first molar extractions. These cases were treated under the principle that by eliminating posterior contact points (possible fulcrums) and moving the posterior segment mesially, a mandibular anterior rotation would occur, thus closing the anterior open bite. However, for this treatment alternative to be successful with stable functional results, it is necessary to do a proper case selection.

Case Report

A 19-year-old male patient came to Department of Orthodontics and Dentofacial Orthopedics, Dr. R. Ahmed Dental College & Hospital complaining of “I have a problem in biting from front teeth and I do not like my smile.” On Extraoral examination he was found to have mesoprosopic facial form with competent lips having 1mm of inter-labial distance. Intraorally there is 4 mm of open bite, clinically missing upper left canine, carious teeth present with lower first molar bilaterally.

Lateral cephalogram analysis shows patient is having class II skeletal base with average growth pattern, proclined upper and lower incisors. Soft tissue analysis shows upper & lower lips are normal in position.

Fig 1 – Pretreatment Orthopantomogram



Pretreatment Lateral cephalogram

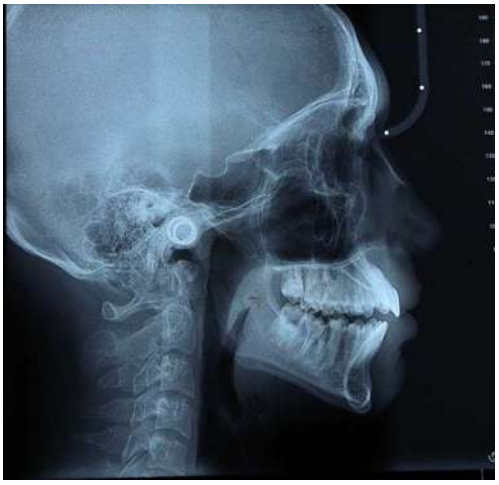


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Fig 2 – Extraoral pretreatment photographs

Fig-3 Intraoral pretreatment photographs

Diagnosis

A male, age 19 years and 10 months, had an anterior open bite with Class II skeletal malocclusion with insignificant medical history. His chief complaint

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was “I have a problem in biting from front teeth and I do not like my smile.”

Treatment objectives

To achieve proper overjet and over bite.

Treatment plan

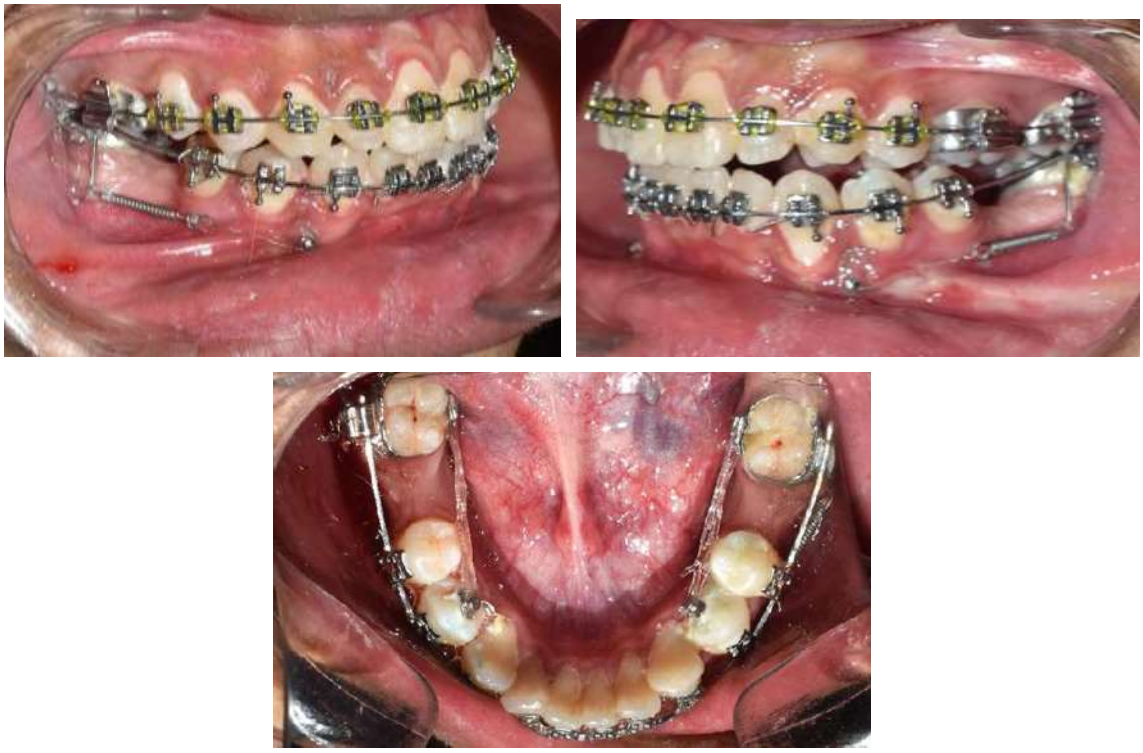
The patient was planned to be treated with extraction of bilateral lower first molar and extraction of upper left canine.

Treatment Progress:

Patient was treated with fixed mechanotherapy using Pre-Adjusted Edgewise MBT 022 Slot Brackets, to achieve ideal overjet and over bite.

In both maxillary & mandibular arch, alignment and leveling were achieved with a sequence of 0.014- and 0.018-in nickel-titanium arch wires, later replaced by rectangular nickel-titanium arch wires (0.017 X0.025 and rigid stabilizing wire(.019X.025). In lower arch Temporary anchorage device of size (1.5*8mm) has been placed intraradicularly between canine and first premolar and closed coil spring and elastomeric chain was used to close the space by mesialisation of 2nd molar. Lingual button was placed on lingual surface of canine and 2nd molar. Retraction is done by both closed coil spring on buccal side and elastomeric chain on lingual side for better bodily movement of lower 2nd molar. Fixed lingual retainer was given in maxillary & mandibular arch to prevent relapse.

Fig-3 Mid treatment Intraoral photographs



Treatment results

After 22 months of treatment, post treatment records showed that the treatment goals were successfully achieved. An esthetic smile arch, good alignment of teeth and proper occlusal settlement were observed.

In addition, improvement in patient self-esteemed and confidence. Open bite was corrected with the achievement of ideal overbite.

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Fig 2 – Extraoral post-treatment photographs

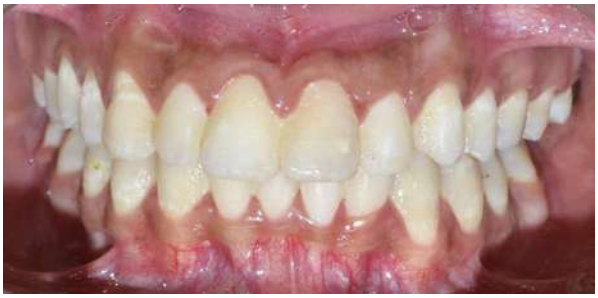
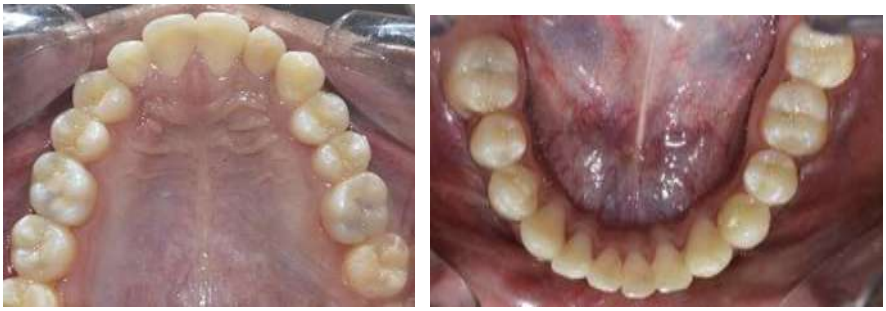


Fig 4 – post treatment extra & intraoral Photographs



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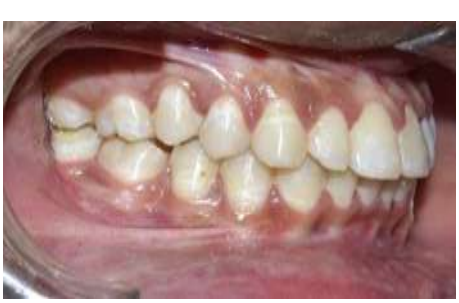
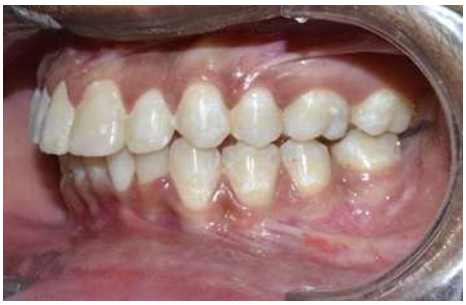
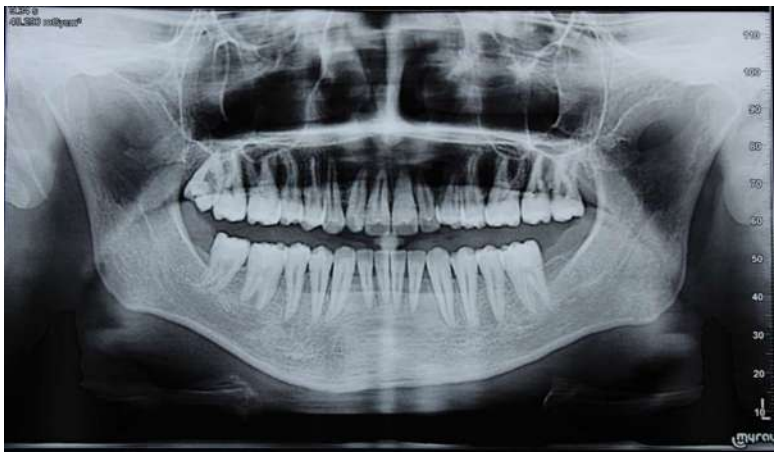
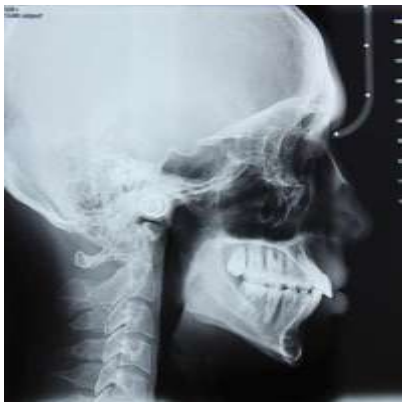



Post treatment OPG & Lateral cephalogram

Parameters	Pretreatment	Post treatment
SNA	73º	73º
SNB	71º	71º
ANB	2º	2º

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Upper CI to NA linear /angular	5mm/28º	6mm/29.5º
Lower CI to NB linear /angular	7mm/30º	4mm/25º
IMPA (Tweed)	101º	96º
FMA	28º	26.5º
Y -axis	65º	63º
Jara back ratio	63.22º	65.5º
Nasolabial angle	98º	102º

Discussion:

Orthodontic treatment with first molar extraction is a therapeutic option that now adays causes controversy due to the fact that these teeth are considered fundamental keys to the occlusion. But there are some situations where extraction of 1st molar is required due to carious or poor prognosis.

Conclusion

First molar extractions are good treatment option that provide stable functional and aesthetic results for skeletal open bite cases. It is important to consider that this therapeutic alternative demands an adequate case selection and high level of clinical expertise and skill in order not to compromise the treatment results and expectations.

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