Case Report

Orthodontic Treatment of Bimaxillary Protrusion - A Case with Extracted Maxillary Lateral Incisor

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Abstract

This article is presented for reporting a case of an extracted maxillary lateral incisor before orthodontic treatment planning, and canine substitution was performed as best option remained. This procedure required special consideration for esthetics and functional issues. A 21-year-old female patient with missing upper right lateral incisor with Class I bimaxillary protrusion came to seek treatment for malaligned teeth. Previously, she tried getting them corrected by extracting most prominent tooth which was maxillary right lateral incisor most probably. As she must have strongly requested to the previous dental surgeon about extraction, she got the lateral incisor removed. But to patient’s displease, extraction of upper right lateral incisor didn’t solve the problem and came to Orthodontist for correction of malaligned teeth. This skeletal Class II patient was having lateral tongue thrust on the right side causing posterior open bite, and on the left side, premolar and molar were in crossbite. Over-retained and malpositioned 53 caused 13 impacted and might have caused 12 to erupt so much labially that it needed to be removed. At the end of treatment, the patient was having Class II molar relation on both sides. The upper right canine was reshaped to look like lateral incisor. Esthetic results were satisfactory to the patient.

Keywords: Crowding, lateral tongue thrust, missing maxillary lateral incisor

INTRODUCTION

Congenitally missing maxillary lateral incisors affect jaw growth, retruded single, or both jaws.¹ But if lateral incisor is missing because of extraction, it astonishes the clinician. We the clinicians know best of our subject although sometimes cannot stop the wrong treatment plan as it is in accord with patients’ strong demand. Our prime objective of treatment planning is patient’s expectation. Hence, we have to do it. A similar experience was noted by our team when a 21-year-old female patient reported to our clinic with missing upper lateral incisor.

When severe protrusion case is to be treated, extraction is must to maintain the harmony and integrity of esthetics and function.² First or second premolars are usually extracted in extraction case treatment. Extraction of premolars allows that retraction of anteriors relieves crowding and might help in achieving proper molar relationship. However, this pattern may change for cases where unusual extractions are done, only after careful diagnosis and planning. For example, extraction of all first permanent molars is done usually in poor prognostic molars. Cases of upper lateral incisor extraction are also reported where contralateral lateral is not suitable to retain.¹ Incisor extraction may be considered if teeth are affected by trauma, severe impactions, abnormal shape, resorption, or extensive caries.⁴⁻⁷

Where lateral incisor is to be extracted, treatment options are similar to the options we have in congenitally missing lateral incisor or microdontia. Weather to open space for prosthetic replacement or to close space by canine replacement for lateral incisor depends on many factors such as malocclusion, underlying skeletal pattern, profile, growth,

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canine morphology, and smile esthetics.[8] The case presented here was with skeletal Class II malocclusion, complicated by lateral tongue thrust, impacted maxillary canine, and missing lateral incisor. The case was treated with extraction of three bicuspids rather than extraction of remaining left sides’ lateral incisor.

**CASE REPORT**

**Diagnosis neoadjuvant androgen deprivation treatment planning**

A 21-year-old female patient with a chief complaint of protruding and crooked upper front teeth came to our clinic. She had convex profile and acute nasolabial angle. Lip seal was absent, circumoral musculature strain on lip closure. Lateral tongue thrust on the right side and posterior crossbite on the left side were observed. 53 was over-retained and 13 was impacted. This scenario must have kept no place for 12 eruption. Hence, it must have been ectopically erupted. She gave a dental history of 12 extraction few years back to get crooked front teeth corrected immediately. Mild crowding in the lower arch was seen [Figures 1 and 2]. There was a tooth size–arch length discrepancy of 10 mm in the upper arch and 8.5 mm in the lower arch. Cephalometric analysis showed Class II skeletal relationship with vertical growth pattern. With these findings, the case was diagnosed as Skeletal Class II malocclusion case with moderate anterior crowding.

**Treatment objectives**

1. Alignment of upper and lower dental arches to improve facial profile
2. To remove lateral tongue thrust
3. Achieving proper posterior occlusion.

For obtaining these treatment objectives, extraction of 53, 24, 34, and 44 was decided. Extraction of contralateral 22 was avoided as the patient was skeletal Class II, and canines were bulky and prominent. Impacted 13 was exposed after extraction of 53 and bonded with lingual button. Upper and lower arches were bonded with fixed appliances (MBT 0.022” Brackets). Initial leveling aligning was obtained on 0.016” NiTi followed by 0.019 × 0.025” NiTi. Space closure was done on 0.019 × 0.025” SS wire. Upper right canine was aligned with the arch and contact point of canine and central incisor was achieved.

Lateral open bite was corrected, and proper occlusal contacts were achieved. On the left side, cross bite was not responding to the given wires. The patient used to forget application of cross elastics for crossbite correction on the left side. After canine alignment, intrusion of the upper anteriors was done with intrusion utility arch. Lower space closure was done simultaneously. But before, we could commence posterior occlusion patient insisted for debonding for her wedding. Even after explaining need and risk of posterior malocclusion, the patient strongly demanded for debonding [Figures 3 and 4].

Maxillary right canine was shaped to look like lateral incisor. The patient was very happy to see her smile esthetics. Fixed retention was given to the patient and advised yearly follow-up.

**DISCUSSION**

Most of the patients come for orthodontic treatment with a chief complaint in maxillary anterior area due to malalignment in this region. Extraction of these malaligned teeth is generally avoided because of related functional and esthetic problems. However, most common congenitally missing teeth are lateral
incisors. Still sometimes, extraction of maxillary incisors for various reasons is required, such as peg-shaped laterals, severely malpositioned or impacted teeth, or root resorption by ectopically positioned maxillary canines. There have been reported cases of incisor extraction for orthodontic treatment. Orthodontic space closure followed by canines to replace the absent maxillary lateral incisors is treatment of choice used to provide a better esthetics and function. Here, right lateral incisor was already missing, so canine was substituted as lateral and right-side first premolar was left from extraction plan. Other treatment option for this case was extraction of the left maxillary lateral incisor. However, this case was not fulfilling the indications for contralateral tooth’s extraction. It is extremely rare to extract maxillary lateral incisors except their viability is compromised by some pathologic condition. There are some criteria which help us decide which teeth are best suited for extraction in any particular case, type of malocclusion, posterior occlusion, amount and site of crowding or spacing, intercanine width, amount of alveolar protrusion, and most importantly smile esthetics. Although for maintaining symmetry in smile, if we would have gone for left lateral incisor extraction, the arch constriction would have worsened the patient’s malocclusion. In addition to this, patient’s canines were bulky and prominent. We tried maintaining gingival margin of 13 with 11 for smile esthetics, but canine prominence did not allow it.

Lateral tongue thrust habit was eventually resolved, and occlusion was gained on the right side. The patient was getting married so even after explaining her about proper posterior occlusal relationship and got the debonding done without occlusal settling. As patient’s primary concern was front teeth, she was satisfied with her esthetics. Retention is important in cases of space closure. Fixed retention was given to the patient. When the patient reported after 1 year of treatment, her occlusion was relatively stable.

Careful assessment of patient problems and needs gives effective final results. Although this was a case of unusual extraction pattern, therapeutic extraction of incisors needs to be evaluated again as the orthodontist is responsible for putting the teeth in a position where the restorative dentist can execute a conservative and esthetic restoration.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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