

Retreatment of previously treated orthodontic case

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Abstract: This case report describes the retreatment of a patient with a Class I crowded malocclusion which was treated with the

extraction of upper canines and lower first premolars which lead to collapsed upper anteriors, a worse smile and relapsed crowding which he wanted to have retreated.

Keywords: Anterior collapsed bite, Lower crowding, Retreatment.

Introduction:

A Class I arch-length tooth-size discrepancy is usually treated by extraction of all four first premolars^{1,2}. But in some cases where upper canines are blocked out buccally, there are some practitioners who extract upper canines instead of upper first premolars to relieve the crowding and expedite treatment time³. This kind of treatment sometimes leads to a collapsed anterior bite and poor smile aesthetics⁴.

This case report describes the retreatment of such a case which consisted of extraction of a lower left lingually blocked out lateral incisor⁵⁻⁹ to correct the lower crowding and improve aesthetics of the smile¹⁰.

Diagnosis and etiology:

A 20-year-old adult came for orthodontic treatment to the department of orthodontics, Manipal College of Dental Sciences, Manipal. His Chief Complaint was an unaesthetic smile and a lingually blocked out lower right lateral incisor. He had previously undergone orthodontic treatment at the age of 13 years with the extraction of upper canines and lower first premolars to correct his Class I crowding.

Unfortunately, after treatment he didn't wear the retainers, as instructed. As a result, despite the extractions, he still had significant crowding in the lower arch and a collapsed upper bite leading to an unaesthetic smile. He was not satisfied with his smile; so he decided to seek retreatment.

On extraoral examination (Fig 1), the patient had a mildly convex profile with a prominent chin button contour, a right angled nasolabial angle, a deep mentolabial sulcus and a poor smile arc.

Fig 1**Fig 1: Pretreatment extraoral photographs**

On intraoral examination (Fig 2) there was a 100% deep bite with the upper incisors traumatizing the gingiva labial to the lower incisors. There was crowding in the lower arch due to a lingually blocked out lower left lateral incisor, and the curve of Spee was 4mm. There was gingival recession, advanced periodontal disease and a Grade II mobility of the lower left lateral incisor. Its condition was discussed with the periodontist who gave it a poor prognosis. There was attrition of the lower anteriors due to the deep bite. There was buccal crossbite in relation to left premolar and lingual crossbite in relation to right premolar region. The upper arch was collapsed in the anterior region.

Fig 2



Fig 2: Pretreatment intraoral photographs

Cephalometrically (Fig 3, Table), there was a Class I skeletal relationship with retroclined maxillary and mandibular incisors and a horizontal growth pattern.

Fig 3



Fig 3: Pretreatment radiographs

Table

Measurement	Normal	Pretreatment	
Posttreatment			
SNA ($^{\circ}$)	82 \pm 2	75	74
SNB ($^{\circ}$)	80 \pm 2	73	72
ANB ($^{\circ}$)	2	2	2
FMA ($^{\circ}$)	25	19	20
SN-GoGn ($^{\circ}$)	32	25	26
IMPA ($^{\circ}$)	90	85	94
Interincisal angle ($^{\circ}$)	132	152	131
UI-NA ($^{\circ}$)	22	18	24
UI-NA (mm)	4	5	4
LI-NB ($^{\circ}$)	25	10	22
LI-NB (mm)	4	0	3
E line- U (mm)	-4	+1	0
E line- L (mm)	-2	+1	0

Orthopantomogram revealed (Fig 3), the maxillary and mandibular third molars were in a favorable functional position. But, there was no significant root resorption despite the previous unsuccessful orthodontic treatment.

Diagnosis: Dentoskeletal Class I with crowding and an anterior collapsed bite.

Treatment objectives:

- ∅ To manage the poor periodontal condition of the lower left lateral incisor.
- ∅ To correct the inclination of the maxillary and mandibular incisors; which would also improve his smile aesthetics.
- ∅ To correct the deep curve of spee
- ∅ To uncrowd the lower arch
- ∅ To achieve a stable buccal occlusion

Treatment alternatives:

Based on the treatment objectives, two treatment options were considered. First, to align the upper and lower arch without any extractions, but this would protract the lower incisors during leveling of the deep curve of spee and also the lower left lateral incisor required advanced periodontal therapy. However, the patient was, not concerned with saving the lower left lateral incisor and wanted to have it extracted. Hence, it was decided to extract the lower left lateral incisor and level and align both arches completely; which would also address his Chief Complaint.

Treatment progress:

The malocclusion was treated with a preadjusted 0.022-in slot Roth appliances. The upper first premolars were bonded with canine brackets to torque their roots labially; to remove interferences in lateral excursions and provide the patient with a bilateral group functional occlusion. A transpalatal arch was soldered to the first molars to reinforce the anchorage. The initial leveling arch wires were 0.014 inch nitinol. After 2 months of initial leveling upper and lower 0.018 inch stainless steel wires with reverse curve were placed. The patient was not very cooperative in maintaining his appliance and his lower right canine and premolar brackets kept debonding. Hence, it was decided to band them.

After 8 months, upper and lower 0.019 x 0.025 inch stainless steel wires were placed for final finishing. The lower extraction space was utilized in leveling the 4mm curve of spee in the lower arch without protracting the lower incisors. The upper incisors were stripped proximally to reduce the slightly excessive overjet, followed by fluoride application. The patient was insisting on appliance removal as his study course was finished and he was leaving Manipal. Hence, the lower second premolar uprighting couldn't be completed and the

patient was instructed to wear treatment time was 11 months. The patient was retained with a maxillary Hawley and a mandibular bonded canine-to-canine retainer.

Results:

The facial photographs show that the post-treatment profile was satisfactory (Fig 4). The patient was satisfied with his teeth and profile.

Fig 4



Fig 4: Posttreatment extaroral photographs

The final occlusion reasonably simulated a Class I canine (upper first premolars functioning as upper canines) and a Class I molar relationship (Fig 5).

Fig 5



Fig 5: Posttreatment intraoral photographs

The uprighting of the lower right second premolar was insufficient as the patient insisted on appliance removal. Root resorption was minimal, even though this was a retreatment (Fig 6). Cephalometrics revealed (Fig 6, Table). The superimposition (Fig 7) showed improved torque, little intrusion of upper incisors and marked intrusion of lower incisors.

Fig 6

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Fig 6: Post treatment radiographs

Fig 7

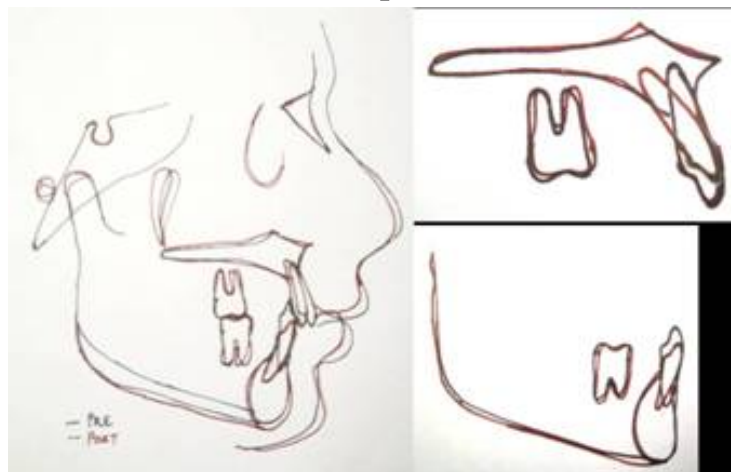


Fig 7: Pre-treatment (black) and post-treatment (red) cephalometric tracings, superimposed on: (a) sella-nasion plane at sella; (b) palatal plane at ANS; (c) mandibular plane at menton

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SNA ($^{\circ}$)	82 \pm 2	75	74
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Discussion:

This retreatment approach provided satisfactory occlusal and esthetic results. Although this is a retreatment case but he did not exhibit potential local factors for root resorption. If this patient had exhibited temporomandibular joint symptoms, it would have been advisable to begin orthodontic treatment after that problem was properly diagnosed and treated¹¹. Orthodontic treatment could have been an

important part in correcting that disorder. Although orthodontic treatment usually reduces the incidence of temporomandibular disorders, it might not provide a complete solution¹². Therefore, treatment of the temporomandibular joint symptoms would have to be coordinated with the orthodontic treatment.

Though, the left lateral incisor could have been saved by periodontal therapy, but considering its poor prognosis and chances that its alignment in arch would throw lower incisors more forward, it was decided to extract it. The space was utilized in leveling the deep curve of spee and little excessive overjet was reduced by minimal stripping of the upper anteriors. The objectives of providing good functional occlusion¹³ with a nice smile¹⁰ was accomplished and the patient was highly satisfied with the treatment results.

Conclusion:

The clinician must offer alternative choices that produce a good functioning environment for each patient. But, before undertaking any procedure, it must be based on a sound diagnosis and discussed with the patient.

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