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Orthodontic management of a young girl with Class I malocclusion with crowding and lock bite: A case report

Faruk SMO[1] BDS, Hossain MZ[2]BDS, PhD

ABSTRACT

We describe the treatment of a young girl age, 18 years, with Class I malocclusion with anterior crowding and lock bite of two upper lateral incisors. The patient was treated by opening of space for lateral incisors with open coil spring with standard edgewise technique. The treatment resulted in Class I molar relation with proper alignment of both upper and lower anterior segment, an ideal overjet, overbite and incisor angulations.

Key Words: **Class I malocclusion, crowding, lock bite, edgewise orthodontic therapy.**

INTRODUCTION

Crowding of the teeth is a common manifestation of class-I malocclusion. Crowding usually occurs as a result of disproportion between tooth size and arch length. A relative decrease in arch length or an increase in tooth material can result in crowding. Presence of supernumerary teeth, prolonged retention of deciduous teeth, abnormalities in size and shape of teeth can also lead crowding.[1]

Dental crowding can be defined as a disparity in the relationship between tooth size and jaw size which results in imbrications and rotation of teeth2. Three conditions which may predispose the dental arches to crowding are excessively large teeth, excessively small bony bases of the jaws, and a combination of large teeth and small jaws[2].

The correction of dental crowding can be accomplished via a variety of orthodontic procedures. For example, the extraction of permanent teeth[3,4]and the mesiodistal reduction of tooth size[5]are procedures that are designed to fit less total tooth mass into a particular dental arch. Other treatment procedures, including palatal expansion[6,7]and the use of certain functional appliances,[8] are directed toward expanding the dental arches in order to accommodate the existing teeth.

It is important for every orthodontist to have adequate knowledge & correct understanding of the various types of malocclusions before instituting a treatment plan. There is no universal method of managing the condition .It is essential to have an adequate knowledge of normal growth pattern & various cephalometric analysis for proper diagnosis & treatment planning.

CASE REPORT

Case history

Tanni, age 18 years, came to the Department of Orthodontics of Dhaka Dental College and Hospital for treatment. She had Class I malocclusion with crowding on both the upper and lower anterior segment with lock bite of upper right and left lateral incisors. Patient's major reason for seeking treatment was to improve her dental esthetics.

Clinical examination

Right profile view Frontal view Left profile view

Figure-1: Pre-treatment extra-oral facial photographs

1. Dr. S.M. Omar Faruk, BDS, FCPS-II Trainee, Dept. of Orthodontics and Dentofacial Orthopedics, Dhaka dental College and Hospital, Mirpur-14, Dhaka-1206 2. Professor Dr. Mohammad Zakir Hossain, BDS, PhD, Professor and Head Deparment of Orthodontics, Dhaka Dental College and Hospital, Mirpur Dhaka

Extra oral examination of the patient:

Shape of the head	:	Mesocephalic
Profile Analysis	:	Slightly concave
Shape of the face	:	Oval
Facial symmetry	:	Symmetrical
Lips	:	Competent
Upper lip line	:	Normal
Lower lip line	:	Normal
Naso-labial angle	:	Normal
Labio-mental depression	:	Normal
Temporo-Mandibular joint	:	Normal path of closure
Breathing	:	Nasal .
Deglutition	:	Normal .

Intraoral view-Right side

Intraoral Anterior view

Intraoral view-Left side

Upper Occlusal view

Lower Occlusal view

Fig-2: Pre- treatment intra-oral photographs

The patient was in the permanent dentition. She presented with an overjet of 1 mm, and the overbite was 3.5mm. Molar & canine relationship were Class-I. Incisor relationship was class-II. Both the upper lateral incisors were on lock bite. Her oral hygiene was good.

Model analysis

ARCH DISCREPANCY:

Upper arch
Arch perimeter - Total tooth material
= 86mm – 94mm
=- 8 mm

Lower arch
Arch perimeter -Total tooth material
=83 mm – 87 mm
= - 4 mm

Remarks
Crowding in both the arches due to tooth tissue discrepancy.

Radiographic examination

Fig 4 : Pre treatment OPG

All the permanent teeth are present(All 3rd molars were impacted). No pathological lesion is noted.

Parameter	Patient,s measurement	Reference value
SNA (angle)	83°	82°
SNB (angle)	82°	80°
ANB (angle)	1°	2°
Inter incisal angle	147°	131°
Upper1 to NA(mm)	2mm	4mm
Upper1 to NA(angle)	18°	22 °
Lower1 to NB(mm)	1mm	4mm
Lower1 to NB(angle)	17°	25°
Go Gn to SN (angle)	18°	32°

Fig 5: Pretreatment Lateral Cephalometric Radiograph and evaluation

TREATMENT OBJECTIVES

The following treatment objectives were established

1. Eliminate the crowding present in the upper and lower arch.
2. Correction of lockbite.
3. Establishment of normal overjet and overbite.
4. Establish and maintain occlusal harmony and interdigitation for improved aesthetics and proper function.

Treatment plan

1. Initial alignment & leveling of upper & lower jaw with multiloop archwire
2. Opening of space between central incisor and canine of both side of upper arch with open coil spring.
3. Labial movement of upper lateral incisors incorporated with posterior bite plane.
4. Coordination & interdigitation of upper & lower arch to give proper cuspal relationship.

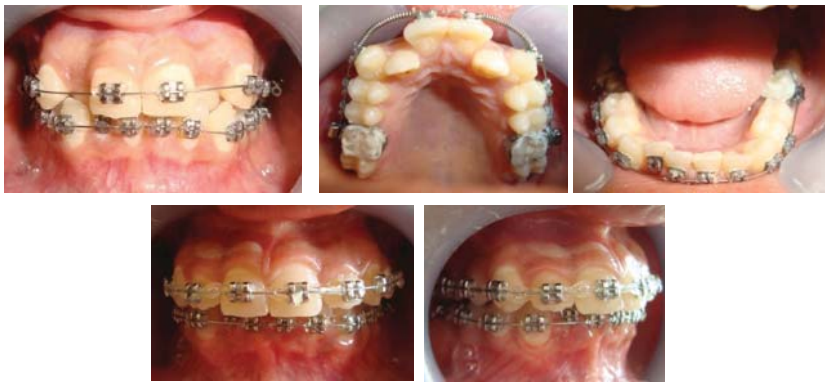


Fig 6:Intraoral photograph during treatment

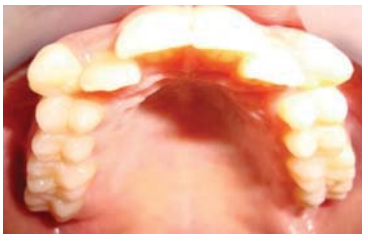
Pre-treatment	Post -treatment
	
Intraoral view-Right side	Intraoral view-Right side
	
Intraoral Anterior view	Intraoral Anterior view
	
Intraoral view- Left side	Intraoral view-Left side
	
Intraoral view- Upper Occlusal	Intraoral view- Upper Occlusal
	
Intraoral view-Lower Occlusal	Intraoral view- Lower Occlusal

Fig7:Pre-treatment and post- treatment intraoral photograph:

Parameter	Patient,s measurement	Reference value
SNA (angle)	83°	82°
SNB (angle)	82°	80°
ANB (angle)	1°	2°
Inter incisal angle	115°	131°
Upper1 to NA(mm)	5mm	4mm
Upper1 to NA(angle)	30°	22 °
Lower1 to NB(mm)	4mm	4mm
Lower1 to NB(angle)	30°	25°
Go Gn to SN (angle)	25°	32°

Post treatment cephalometric evaluation

Fig 8 Pre-treatment and Post- treatment extra oral Photograph

Discussion

One of the most common problems in orthodontics today is crowding. This patient was treated with opening of space with open coil spring and alignment of upper lateral incisors onto normal occlusion. Light edgewise forces to produce a result that was pleasing to the patient and satisfying to the orthodontists in one and half years.

Conclusion:

Analysis of final records indicated that all treatment objectives were achieved. The upper lateral incisors were placed in good alignment, good occlusion was maintained. A satisfactory esthetic result had been achieved. The parent & patients psychological satisfaction was also achieved.

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Correspondence

Dr. S.M. Omar Faruk, BDS
FCPS-II Trainee
Dept. of Orthodontics and Dentofacial Orthopedics
Dhaka dental College and Hospital
Mirpur-14, Dhaka-1206
Mobile: +8801552410354.