

Class III Malocclusion Treated with Extraction of Lower First Premolars: Case Series

Mohammad Khursheed Alam, Shifat A Nowrin*, Fazal Shahid and Sanjida Haque

Orthodontic Unit, School of Dental Sciences, Health Campus, Universiti Sains, Malaysia
rin612@gmail.com

Available online at: www.isca.in, www.isca.me

Received 12th May 2016, revised 25th June 2016, accepted 13th July 2016

Abstract

Class III malocclusion (either anterior cross bite or edge-to-edge bite) is the results of labio lingual mal relationship of one or more upper and lower incisor teeth. To correct the Class III malocclusion different methods has been practiced. In each of the cases presented here, the class III malocclusion was treated by extracting lower 1st premolars. The procedure is a simple and effective method for treating this malocclusion and can establish normal overbite and overjet.

Keywords: Class III malocclusion, first premolars extraction, edge-to-edge bite, case report, anterior cross bite.

Introduction

A few treatment modalities can measure when treating Class III malocclusion cases, as indicated by the anteroposterior disparity, patients' age and patient consistence. For adult patients, the treatment options may include altered apparatuses with extractions, for example, four premolar extraction and two premolars extraction of lower jaw¹.

For stability and satisfying result for class III malocclusion, combination of surgical-orthodontic treatment is the best treatment choice². According to the patient's desire occasionally, we have to avoid the surgery and finish the case with camouflage treatment with selective teeth extraction³⁻⁶.

Lingual position of upper anterior teeth in relation to lower anterior teeth is defined as anterior cross bite⁷. It may consider a vital esthetic and functional concern for affected person. If anterior cross bite not treated, it sometimes restricts the maxillary growth, mandibular displacement, traumatic bite and may prolong the treatment time⁸.

Various etiological factors including supernumerary anterior teeth, displacement of permanent tooth germs due to trauma, lingual eruption path of upper anterior incisors, retained deciduous tooth, inappropriate arch length, anterior incisor region crowding and habit of upper lip biting⁹.

Moreover, for edge to edge bite if not treated, it may cause abnormal enamel attrition, fracture, periodontal pathosis, mobility of anterior teeth and disturbance of temporomandibular joint¹⁰.

Here we describe two cases of skeletal class III malocclusion with edge-to-edge anterior bite and anterior cross bite. In these

case reports, the anterior cross bite and edge-to-edge bite were corrected by extraction of lower first premolars.

Case Reports

Case 1: A 23 years old woman came for orthodontic consultation. Her chief complaint was the unaesthetic appearance of edge-to-edge anterior bite. Patient has no medical problems. For dental history, patient had history of dental scaling and restoration. Moreover, 3 years back patient was using removable orthodontic appliance for correction of anterior cross bite. Patient has a habit of tongue thrusting, abnormal swallowing pattern and bruxism. Clinical examination showed that the profile was concave, no lip trap, lip is competent and there is no clicking and no tenderness on opening/closing.

All teeth were present including third molars. Patient had edge-to-edge incisor relationship, class III molar relation in both side, class I canine relation in left side and class III canine relation in right side. Lower central line shifted 1mm to the left, Ommoverjet and overbite (Figure-1).

Case 2: The Patient was 16 years old Malay girl, came to our hospital with Class III malocclusion and class III skeletal pattern complicated by anterior cross bite with reverse over jet. Lower left 2nd premolar is rotated and lingually placed. Upper midline is slightly deviated (Figure-2).

Three years back she was using removable orthodontic appliances for correcting the crowding and posterior open bite. Clinical examination showed that the profile was concave, no lip trap, lip is competent and there is no clicking and no tenderness on opening/closing.

All teeth were present excluding third molars. Patient had anterior cross bite, class III molar and canine relation in both side. Upper central line shifted 1mm to the right.



Figure-1

Pre-treatment extra and intra oral photograph of case 1



Figure-2

Pre-treatment extra and intra oral photograph of case 2

Treatment objectives and plan

The treatment objectives of both these patients are to establish normal overbite and overjet, correct the midline shifting, correct the edge-to-edge bite (Case 1), correct the anterior cross bite (Case 2) and attain an even occlusal relationship.

For both of the patients we planned to extract both of mandibular 1st premolars and align the teeth until desired occlusion obtain. Patients were also given oral hygiene instructions and diet counseling for improving the oral hygiene.

Treatment Progress

Case 1: Mandibular first premolars were extracted and after that the orthodontic fixed appliance was bonded on the upper and lower teeth using the MBT 0.022 inch Preadjusted

Edgewise Appliance. Power chain applied between molar to canine on both side to retract the teeth. Class III elastic was also applied to facilitate the retraction. Box elastic applied for overbite management. The treatment took almost 16 months.

All over the time, patient cooperated very well. At the end of almost 16 months, the edge-to-edge bite was corrected. Over correction of class III malocclusion done, Canine relation in class II, molar relation class III (Figure-3). At this stage, patient wish to de-bond as her main concern anterior edge-to-edge bite corrected. Patient was satisfied with the aesthetic outcome. Figure 4 shows the changes of before and after treatment.

Case 2: After one week of mandibular first premolars extraction, the orthodontic fixed appliance was bonded on the lower teeth using the MBT 0.022 inch Preadjusted Edgewise Appliance. Leveling and alignment done, the lower 2nd premolar rotation was corrected. Thereafter to retract the anterior teeth distally, power chain was applied. After 12 months of treatment, the anterior cross bite had successfully corrected and class I relationship is obtained in anterior and canine region. In addition, molar relation finished with class III (Figure-5). At the end of treatment, Essix type of retainer was given.

Post treatment photographs presented changes in her facial appearance (Figure-6). The facial extents had been maintained. Class I occlusion with a normal overjet and overbite was succeeded.



Figure-3

Post-treatment extra and intra oral photograph of case 1

Discussion: Traditionally, nonsurgical treatment of Class III malocclusion like camouflage in adult patients incorporates mandibular premolar extractions to affect dental remuneration of the mandibular incisors^{11, 12}. To improve the anterior cross bite or edge-to-edge bite, premolar extraction plays important

role by providing space to retract lower incisors. Usually patient with class III malocclusion having the concave profile and after extraction of lower premolar it may disturb the concave profile due to lingual inclination of lower incisors compare to non-extraction case¹³. Sometimes it causes unwanted barrier like root resorption or root exposure in area of anterior teeth¹⁴.

In these cases, we tried to improve the class III relationship by distalizing the mandibular incisors with first premolars extractions.

In case of class III malocclusions, it is important to identify the components of the malocclusion properly. If the malocclusion is dentoalveolar then only the teeth movement can correct it. However, if the malocclusion is skeletal then sometimes it is need to correct combination with orthognathic surgery and conventional orthodontic treatment¹⁵. Moreover, in clinical Orthodontics genetic analysis also plays an important tool¹⁶. Therefore, for treatment planning this also should be kept in mind.

For adults, few approaches are accessible to treat class III malocclusion either camouflage orthodontic treatment or a combination of orthodontics and surgery. Treatment plan depends on the severity of the malocclusion and patients main concern.



Figure-4
Intra oral changes for case 1



Figure-5
Post-treatment extra and intra oral photograph of case2

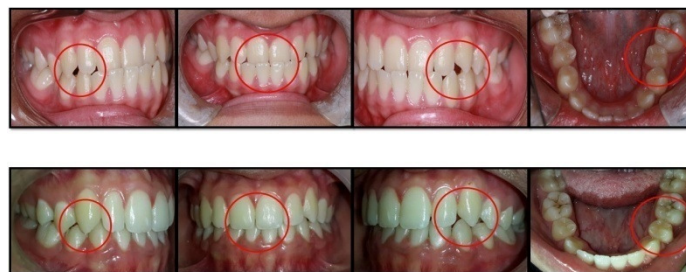


Figure-6
Intra oral changes for case 2

Conclusion

With the extraction of mandibular 1st premolars and aligning the teeth, the class III malocclusion was corrected. To plan appropriate treatment approaches, proper diagnosis and detailed clinical evaluation must be accomplished before. To manage this kind similar malocclusion, the orthodontists can utilize this procedure.

References

1. Kim Y. and Nahm D-S. (2008). Class II division 1 malocclusion treated with extraction of upper first premolars: Case report. *Orthod. Wave.*, 67(1), 23-29.
2. Proffit WR. and Fields HW Jr et. al (2000). Contemporary orthodontics. 3rd Edn. St Louis: Mosby, Elsevier Health Sciences publisher, 5.
3. Lin J. and Gu Y. (2003). Preliminary investigation of nonsurgical treatment of severe skeletal Class III malocclusion in the permanent dentition. *Angle. Orthod.*, 73(4), 401-410.
4. Bailey L.J., Haltiwanger L.H., Blakey G.H. and Proffit W.R. (2001). Who seeks surgical-orthodontic treatment: a current review. *Int. J. Adult. Orthod. Orthognath. Surg.*, 16(4), 280-292.
5. Van Venrooy J.R. and Proffit W.R. (1985). Orthodontic care for medically compromised patients: possibilities and limitations. *J. Am. Dent. Assoc.*, 111(2), 262-266.
6. Gaidry D., Kudlick EM., Hutton J.G. Jr. and Russell DM. (1985). A survey to evaluate the management of orthodontic patients with a history of rheumatic fever or congenital heart disease. *Am. J. Orthod.*, 87 (4), 338-344.
7. Tsai HH. (2001). Components of anterior crossbite in the primary dentition. *ASDC. J. Dent. Child.*, 68(1), 27-32.
8. Mok CW. and Wong RW. (2009). Self correction of anterior crossbite: a case report. *Case. J.*, 2(1), 67-69.
9. Park JH. and Kim TW. (2009). Anterior crossbite correction with a series of clear removable appliances: a case report. *J.Esthet.Restor. Dent.*, 21(3), 149-159.

10. Alam MK. and Sikder MA. (2011). Orthodontic treatment of Class III malocclusion (Case Series). *Ban. J. Orthod. and Dentofac. Orthop.*, 2(1), 26-27.
11. Costa Pinho TM., Ustrell Torrent JM. And Correia Pinto JG. (2004). Orthodontic camouflage in the case of a skeletal Class III malocclusion. *World. J.Orthod.*, 5(3), 213-223.
12. Popp TW., Gooris CG. and Schur JA. (1993). Nonsurgical treatment for a Class III dental relationship: a case report. *Am. J. Orthod. Dentofac. Orthop.*, 103(3), 203-211.
13. Battagel JM. and Orton HS. (1991). Class III malocclusion: a comparison of extraction and non-extraction techniques. *Eur. J.Orthod.*, 13(3), 212-222.
14. Kaley J. and Phillips C. (1991). Factors related to root resorption in edgewise practice. *Angle. Orthod.*, 61(2), 125-132.
15. Daher W., Caron J. and Wechsler MH. (2007). Nonsurgical treatment of an adult with a Class III malocclusion. *Am. J. Orthod. Dentofac. Orthop.*, 132(2), 243-251.
16. Nowrin SA., Alam MK. and Basri R. (2015). Genetic effect and prevalence of class III malocclusion in different population: an overview. *Int. J. Pharm. Biol. Sci.*, 6(2), 910-918.