
Spectrum of cross bite management

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ABSTRACT

Cross bite is a condition where one or more teeth may be abnormally malposed buccally or lingually or labially with reference to the opposing tooth or teeth. Different techniques have been used to correct cross bite. This paper concerns orthodontic management of different types of cross bite. Orthodontic treatment carried out with pre-adjusted (Roth type 018 slot) fixed brackets with space management and alignment to accomplish the treatment. The esthetics and occlusion were maintained after retention.

Key words: Cross bite, space management, alignment, retention. (Bangladesh Journal of Orthodontics and Dentofacial Orthopedics, Vol. 2, No. 2, April 2012, p 34-37).

INTRODUCTION

Graber has defined cross bite as a condition where one or more teeth may be abnormally malposed buccally or lingually or labially with reference to the opposing tooth or teeth¹. One or more of the upper teeth biting on the inside of the lower teeth characterizes a crossbite.² Cross bite can involve a single tooth or a group of teeth. Cross bite can occur in the front and/or the sides of the mouth. Cross bite is an occlusal irregular condition where a lower tooth has a more buccal position than the antagonist upper tooth or vice versa.² Cross bite can be classified as anterior or posterior.

Anterior cross bite is a malocclusion in which one or more of the upper anterior teeth occlude lingually to the mandibular incisors; the lingual malposition of one or more maxillary anterior teeth in relation to the mandibular anterior teeth when the teeth are in centric relation.¹⁻⁴ Posterior cross bite refers to an abnormal transverse relationship between the upper and lower posterior teeth. In this condition, instead of the mandibular buccal cusp occluding in the central fossa of the maxillary posterior teeth they occlude buccal to the maxillary buccal cusp. Thus posterior cross bite occurs as a result of lack of co-ordination in the lateral dimension between the upper and the lower arches.¹⁻⁴ The majority of cross bites are caused by dental factors: a congenitally-caused eruption pattern of the maxillary anteriors. Trauma to the primary dentition may also lead to the displacement of the primary or permanent tooth bud. Arch length discrepancy, retained deciduous tooth, thumb sucking habit, nasal obstruction, narrow maxilla and mouth breathing may cause cross bite.¹⁻⁴ Early correction of cross bites is recommended.²⁻⁵

Cross bite should be corrected because it can:

- Cause premature wear of the teeth
- Cause gum disease including bone loss
- Cause asymmetrical development of the jaws
- Cause dysfunctional chewing patterns
- Make a person's smile less attractive

TREATMENT OBJECT

Braces are a simple yet effective form of orthodontic treatment and can generally be used to correct cross bite of the teeth. In conjunction with the braces unilateral or bilateral expansion may be required. To correct lock bite condition posterior bite plane is also incorporated for cross bite correction. In some circum-

stances cross elastics are helpful. While many people are hesitant to get braces because of their cosmetic nature and effect in social life, the results generally outweigh the temporary effects.

Treatment objectives were to:

1. Level and align the arches.
2. Correct cross bite.
3. Maintain Class I canine and molar relationships.
4. Normalize the overbite and overjet.
5. Improve the gingival condition.
6. Maintain the profile.
7. Achieve long-term stability.

TREATMENT PROGRESS

Chief complaints and diagnosis were presented in Table 1. Treatment was started with pre-adjusted (Roth type 018 slot) brackets. A 0.012, 0.014 and 0.016 inch nitinol arch wire was used for leveling and alignment. A 0.016 × 0.022 inch nitinol arch wire was inserted for the final alignment and detailing. Lastly a 0.016 × 0.022 inch stainless steel arch wire was used for the alignment stabilization.

Case 1: Maxillary right central incisor was in cross bite position. Total treatment duration was only 2 and half months. The patient and her parents were fully satisfied (Figure 1).

Case 2: Maxillary left lateral incisor was in cross bite position. Total treatment duration was 6 months. The patient and her parents were happy after treatment (Figure 2).

Case 3: Maxillary right lateral incisor was in cross bite position with high canine. Total treatment duration was 16 months. The patient and her parents were fully satisfied after treatment (Figure 3).

Case 4: Maxillary left lateral incisor was in cross bite position. Posterior bite plane was incorporated for 1 month only. Total treatment duration was 7 months. Fixed retainer was set on labial surface due to insufficient space to set retainer on palatal surface. Patient was happy after treatment (Figure 4).

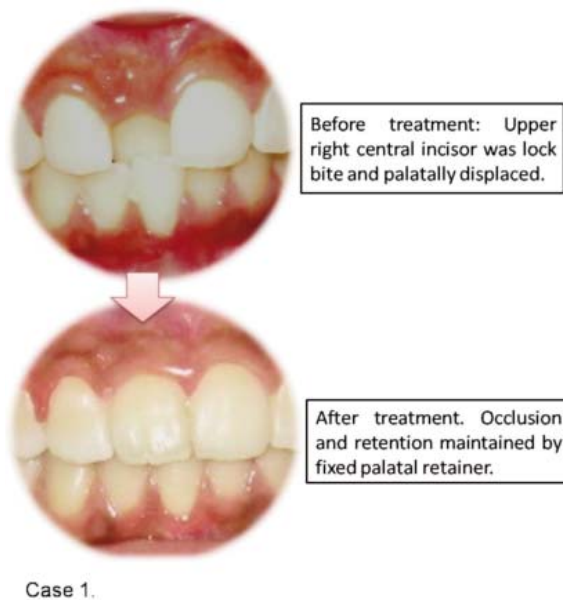
Case 5: Maxillary left lateral incisor was in cross bite position with high canine. Lower right lateral incisor was lingually placed and the canine was buccally placed. All the 1st premolars were extracted. Total treatment duration was 17 months. The patient and her parents were happy after treatment (Figure 5).

Case 6: Maxillary right premolars and first molar were in cross bite position. Unilateral expansion and cross elastics were used to normalize this malocclusion. Total treatment duration was 20 months. The patient was satisfied after treatment (Figure 6).

Case 7: Mandibular right canine was in cross bite position while the right incisors were in edge to edge bite position. Posterior bite plane was incorporated for 2 months to correct the canine cross bite. Total treatment duration was 18 months. The patient was fully satisfied after treatment (Figure 7).

Case 8: Camouflage treatment was done to correct this skeletal class III malocclusion. This case was treated without any extraction. Posterior bite plane and class III elastics were used. Patient and his parents were informed about only dental correction. Total treatment duration was 22 months. Patient and his parents were fully satisfied after treatment (Figure 8).

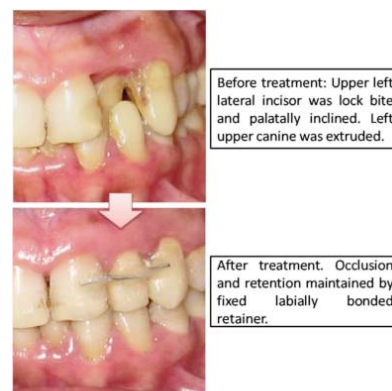
Case 9: Maxillary left lateral incisor was in cross bite position. Maxillary left central incisor was broken badly with faulty root canal treatment. On examination there was a sinus near root apex of that tooth. A periapical x-ray was taken. There was a periapical lesion and faulty root canal treatment was diagnosed. Affected tooth had second degree mobility. Left central incisor was extracted. Maxillary left lateral incisor was brought in occlusion by braces incorporated with fixed lingual arch and soldered spring. Total treatment duration was 9 months. Patient was happy after treatment (Figure 9). When ideal occlusion was obtained, all the appliances were removed. Fixed lingual type retainer was set for retention prepared by coaxial wire and fixed by light cure composite.



Case 2.



Case 3.



Case 4.



Before treatment: Upper left lateral incisor was lock bite and palatally inclined. Upper left canine was high and buccally placed. Lower left lateral incisor was lingually placed. Lower left canine was buccally placed.



After treatment. Occlusion and retention maintained by upper Hawley type retainer and lower by fixed lingual retainer.

Case 5.



Before treatment: Unilateral cross bite of upper right premolars and 1st molar.



After treatment. Occlusion and retention maintained by upper Hawley type retainer.

Case 6.



Before treatment: Lower right canine was cross bite and lingually inclined.



After treatment. Occlusion and retention maintained by upper Hawley type retainer and lower by fixed lingual retainer.

Case 7.

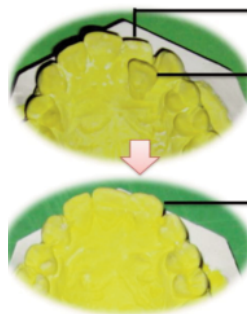


Before treatment: Anterior teeth crossbite. Canine to canine.



After treatment. Occlusion and retention maintained by upper Hawley type retainer and lower by fixed lingual retainer.

Case 8.



Upper left central incisor: had broken down crown and over sealed root canal treated with periapical infection. Treatment: Extraction was done.

Upper left lateral incisor was in lock bite. Treatment: Movement towards occlusion done by fixed lingual arch with spring and alignment carried out by fixed orthodontic treatment.

Results after treatment. Though lock bite correction itself having retention I set fixed palatal retainer to prevent any sorts of relapse.

Case 9.

DISCUSSION

If there is cross bite, the tooth/teeth can be moved with braces into the correct position. Lock bite cases often require selective bite plane. Once space is created, braces will move the tooth in the line of occlusion with selective force mechanism and align the tooth/teeth. A thorough clinical assessment and accurate records are necessary. Treatment modalities will vary according to the specific diagnosis. Clinical management of cross bite is often challenging for the orthodontist, particularly when the tooth is in deep overbite, a bite plane can prevent interference from the opposing arch. Cross bites are a prevalent condition in children.⁵⁻⁶ They represent a challenge to the clinician in both diagnosis and treatment planning. Cross bites may be dental or skeletal in etiology.^{2,4} Anterior dental cross bite requires early and immediate treatment to prevent abnormal enamel abrasion, anterior teeth mobility and fracture, periodontal pathosis and temporomandibular joint disturbance.⁵⁻⁸

The main goal of treatment is to tip the affected tooth or teeth labially/ buccally or lingually/ palatally to the point where a stable overbite relationship exists.⁹ Relapse is usually prevented by the normal overjet/overbite relationship that is achieved.⁹ Correction of cross bite can help to prevent premature contact, dental decay and periodontal disease by improving the ability to remove plaque from the teeth.¹⁰

CONCLUSION

These results achieved in these cases fulfill initial treatment objectives and may be considered a success. From a functional and esthetic perspective the patients and their parents are entirely pleased with the outcome of treatment.

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