

# Management of single tooth anterior crossbite

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## Abstract:

*Anterior crossbite is the term used to describe an abnormal labiolingual relationship between one or more maxillary and mandibular incisor teeth. Different techniques have been used to correct anterior crossbite. This paper concerns orthodontic treatment of a 13 years old Bangladeshi female with a class I malocclusion along with single tooth anterior crossbite. Orthodontic treatment carried out with preadjusted 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: Crossbite, space management, alignment, retention.*

## Introduction

One or more of the upper teeth biting on the inside of the lower teeth characterizes a crossbite.<sup>1</sup> Crossbite can occur in the front and/or the sides of the mouth. Crossbite is an occlusal irregular condition where a lower tooth has a more buccal position than the antagonist upper tooth or vice versa. Crossbite can involve a single tooth or a group of teeth. Crossbite can be classified as anterior or posterior.

Anterior crossbite is a malocclusion in which one or more of the upper anterior teeth occlude lingually to the mandibular incisors; the lingual malpositions of one or more maxillary anterior teeth in relation to the mandibular anterior teeth when the teeth are in centric relation<sup>1-2</sup>. The majority of anterior crossbites a single tooth or a few teeth and are caused by dental factors: A congenitally-caused eruption pattern of the maxillary anteriors. Trauma to the primary dentition which leads to the displacement of the primary or permanent tooth bud. Early correction of crossbites is recommended<sup>2-4</sup>.

## Crossbite 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 your smile less attractive

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## Treatment object:

Braces are a simple yet effective form of orthodontic treatment and can generally be used to remedy crowding of the teeth. While many people are hesitant to get braces because of their cosmetic nature and effect on social life, the results generally outweigh the temporary effects.

Treatment objectives were to:

1. Level and align the arches.
2. Correct cross bite of maxillary right central incisor.
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:

The maxillary right central incisor tooth, which is in single tooth crossbite condition needed to be leveled to correct misalignments. The maxillary arch had 2 mm arch length discrepancy (Fig-1) and overjet was 2 mm. To normalize the single tooth crossbite and misalignments, the best treatment option is creation of 2 mm space for maxillary right central incisors. Treatment was started in the maxillary arch with preadjusted Roth type (018 slot) brackets. A 0.012, 0.014 and 0.016 inch nitinol arch was used for leveling and labial alignment of the maxillary right central incisors. After space creation by selective disking and leveling of the maxillary right central incisor, a 0.016 × 0.022 inch nitinol arch 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.

An ideal occlusion was obtained after 2 and half months active fixed orthodontic treatment and all the appliances were removed. Fixed lingual type retainer was set on the palatal surface of the maxillary right, left central incisors and right lateral incisor prepared by coaxial wire and set by light cure composite (Fig-1).

Figure 1: Pre and post treatment intraoral and facial photographs.



### Discussion

Crossbites are a prevalent condition in children<sup>3,4</sup>. They represent a challenge to the clinician in both diagnosis and treatment planning. Crossbites may be dental or skeletal in etiology<sup>1-2</sup>. A thorough clinical assessment and accurate records are necessary. Treatment modalities will vary according to the specific diagnosis. Clinical management of a single-tooth anterior crossbite is often challenging for the orthodontist, particularly when the tooth is in deep overbite, a biteplane can prevent interference from the opposing arch. Anterior dental crossbite requires early and immediate treatment to prevent abnormal enamel abrasion, anterior teeth mobility and fracture, periodontal pathosis and temporomandibular joint disturbance.<sup>3-8</sup> The main goal of

treatment is to tip the affected maxillary tooth or teeth labially to the point where a stable overbite relationship exists.<sup>7</sup> Relapse is usually prevented by the normal overjet/overbite relationship that is achieved.<sup>7</sup>

If there is a single tooth crossbite, the tooth can be moved with braces into the correct position. Once space is created, braces will move the tooth in the line of occlusion with selective force mechanism and align the teeth. Correction of crossbite can help to prevent premature contact, dental decay and periodontal disease by improving the ability to remove plaque from the teeth<sup>8</sup>.

### Conclusion:

The results achieved in this case fulfill initial treatment objectives and may be considered a success. From a functional and esthetic perspective the patient and her parents are entirely pleased with the outcome of her treatment.

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