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Maxillary First Permanent Molar Crossbite Correction- Case Reports

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Abstract:

Dental posterior crossbites involve atypical eruption and alignment of tooth/teeth into crossbite configuration but with normally related jaw bases. Most often involves maxillary first molars or premolars. Using the concept of interceptive orthodontics, isolated first permanent molar crossbites can be corrected by use of cross-arch elastics. A hook or a button can either be bonded directly to the enamel or welded onto band and then be cemented to the involved tooth. A hook or a button should be placed on the lingual surface of maxillary molar and buccal surface of mandibular molar and is then engaged with elastics. The patient or guardian should be instructed to change elastics daily until crossbite is corrected. Typically first permanent molar crossbite is corrected with cross-arch elastics in 4-8 weeks.

Keywords: posterior crossbite, inter arch elastics, interceptive orthodontics

1. Introduction

Crossbite is defined as an abnormal buccal or lingual relation of one or more teeth of one arch to the opposing tooth or teeth of the other arch, caused by deviation of tooth position or abnormal jaw position. Based on location, it can either be anterior or posterior crossbite. This can also be classified on the basis of nature, of underlying cause, as skeletal, dental and functional crossbites.

If the condition arises only from palatal malposition of a maxillary tooth with or without associated labial malposition of contacting mandibular teeth, it may be called as dental crossbite.ⁱ Skeletal crossbites on the other hand have all the teeth positioned normally on the maxillary and mandibular basal bone but present with anterior or posterior crossbite because of retrognathic maxilla or prognathic mandible. Just as the prevalence of class 3 malocclusion and anterior crossbite varies among racial and ethnic groups, so too do the components of these malocclusions. Masaki, in a comparative study of native Japanese and of Americans of European ancestry, reported that maxillary skeletal retrusion occurred more often in Asians, whereas mandibular prognathism is often observed in individuals of European-American ancestry.

Dental crossbite is commonly evident during early mixed dentition phase.ⁱⁱ⁻ⁱⁱⁱ Many of the etiologic factors like trauma to the primary incisors and displacement of the permanent tooth bud, delayed exfoliation of primary incisors and palatal eruption of the succedaneous tooth, supernumerary teeth, odontomas, ectopically erupting teeth can contribute to the development of dental crossbite.ⁱⁱ⁻ⁱⁱⁱ Several treatment modalities like the use of jack screws, molar palatal attachments (MPA), buttons with interarch elastics, slow expansion arches like W arch, omega loops, etc, rapid expansion appliances like Hyrax screws and Hass screws are available for treatment of single tooth or multiple teeth, anterior or posterior crossbites.

Following is the presentation of two case reports of single molar tooth crossbite which were corrected using buttons and interarchelastics.

2. Case Report-1

A 12 year old female patient was referred to our department of Pedodontics and Preventive dentistry, Dr. R. Ahmed Dental college and Hospital, Kolkata, west Bengal from the department of Prosthodontics of Dr. R Ahmed Dental college and Hospital for correction of right maxillary first permanent molar crossbite before they could overtake the treatment of full mouth rehabilitation to treat dentinogenesis imperfecta effecting her entire dentition. Patient on intraoral and radiographic examination was found to have Dentinogenesis imperfecta. Patient had Angle's class 1 molar relation on left side.(Figure-1) For correction of 16 crossbite, band with button soldered on palatal aspect was cemented on 46.(Figure-2) Buttons could not be bonded directly onto the tooth because of compromised quality of hard tissue due to dentinogenesis imperfecta. Elastics of 3/16inch (5mm) lumen which deliver almost 6 ounce or 170gms of force were engaged with buttons. The patient was instructed to change the elastics daily. Bite was raised on the opposite side to release the involved tooth for required movement. Patient was called weekly for follow up to check for patient's motivation and also for sincere involvement in following the described daily routine of changing the elastic. The correct buccopalatal relation of 16 with respect to 46 was obtained in 12weeks. Following correction of crossbite, the bite was brought back to preoperative condition.(Figure-3)



Figure 1: (preoperative)



Figure 2: (during treatment)



Figure 3: (post operative)

3. Case Report-2

A 10 year old male patient reported to our department of Pedodontics and Preventive Dentistry, Dr. R Ahmed Dental Sciences and Hospital, Kolkata, west Bengal with the complaint of maxillary anterior teeth crowding. On intraoral examination, 26 was also found in crossbite. (Figure-4) The crossbite of 26 was intervened for correction before treating maxillary anterior teeth crowding. Bondable button was bonded buccally, on 36 and palatally on 26 and similar elastics were engaged. (Figure-5) The patient was similarly instructed to change the elastics every 24 hours and report weekly for progress. The correct buccopalatal relation of 26 with respect to 36 was obtained in 8weeks. (Figure-6)



Figure 4: (preoperative)



Figure 5: (during treatment)



Figure 6: (post operative)

4. Discussion

Crossbites need to be intervened for correction as early as possible or else they can lead to serious oral health problems like a traumatic occlusion, which can result in attrition of teeth, mobility and apical migration of labial gingiva. A functional crossbite can result from any cuspal interference which results in mandibular shift which may lead to apparent mandibular asymmetry and temporomandibular joint dysfunction syndrome.^{iv} This is the reason why early treatment is important to re-establish proper muscle balance by elimination of any cuspal interference. The most appropriate timing of treatment considered, is early mixed dentition stage.^v The treatment of posterior dental crossbite has been considered as the correction of buccolingual tipping of a single or group of teeth establishing balance between the upper and lower arches. Interarch elastics in the treatment of a single tooth posterior crossbites provided satisfactory results. The usage of lingual buttons have the advantage that they are less bulky, more esthetic, no need of laboratory procedures, easy and quick bonding and also the fixed appliance therapy can be carried out simultaneously.

5. References

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