Bilateral First premolar Scissor bite Correction Using Cross arch Elastics: A Case Report

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Abstract: Scissors-bite is a malocclusion characterized by buccal inclination or buccalversion of the maxillary posterior tooth and/or linguoclination or lingualversion of the mandibular posterior tooth. This type of malocclusion causes reduced contact of the occlusal surfaces and can cause excessive vertical overlapping of the posterior teeth. When the mouth is closed the molars miss each other and overlap with no contact. The chewing function is affected in patients having scissor bite since the involved teeth make no contact with each other. Patients may also experience a clicking or pain in the jaw joints since the jaw is usually forced to function in a deviated position during the chewing process. In patients with mixed dentition, scissor bite results in extrusion of the involved tooth which often leads to occlusal interference and a mandibular functional shift with growth. Malocclusion can influence masticatory function. Early diagnosis of scissor bite is thus essential to correct the inclination of the compromised teeth and thus prevent a lateral shift of the mandible before adaptive remodeling of the TMJ can cause asymmetrical mandibular growth.

Key words scissors-bite; cross arch elastics

INTRODUCTION

A scissor bite, also known as Buccal non-occlusion, is defined as buccal displacement of a maxillary posterior tooth, with or without contact between the lingual surface of the maxillary lingual cusp and the buccal surface of the mandibular antagonist’s buccal cusp. A complete buccal crossbite, known as a Brodie bite, is caused by a combination of excessive maxillary width and a narrow mandibular alveolar process, although the width of the mandibular base is usually normal. The prevalence of scissorbite malocclusion is 1.1% in children and 0.4–2.7% in adults. Differential diagnosis and treatment of posterior crossbites in children must determine whether the discrepancy is a localized problem in tooth eruption (dental crossbite), a gross basal disharmony between the maxilla and mandible (skeletal crossbite), or a transverse discrepancy in upper to lower arch width that produces a lateral shift of the mandible on closure (functional crossbite). Dental posterior crossbites involve atypical eruption and alignment with localized displacement of individual teeth into cross-bite configurations. When the mouth is closed teeth miss each other and overlap with no contact.

Scissor-bite, labial eruption of the upper molar, lingual tipping of the lower molar or any combination of these conditions can cause occlusal interference by restricting lateral jaw movement. These changes may explain why the smooth and efficient grinding-type masticatory jaw movement may be difficult for patients with scissorbite.

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CASE REPORT
DIAGNOSIS
A 13 year old boy presented a chief complaint of irregularly placed teeth. His mother reported that he had no oral habits and was in excellent physical and dental health. The maxillary dental midline coincided with the facial midline. An intraoral examination revealed bilateral single tooth scissor bites with respect to 14, 44 and 24, 34 with a class I molar relation (figs. 1 & 2). The upper arch was extremely wide, with pronounced buccal tipping of first premolars on both the sides, while the lower arch was extremely constricted, with equally pronounced bilateral lingual tipping of first premolars. Functional analysis revealed a true bilateral buccal non occlusion due to dental positioning, and the skeletal asymmetry was confirmed by an anteroposterior radiograph taken with the teeth apart and a panoramic radiograph.

TREATMENT PLAN
The treatment plan was to correct the scissor bite through tooth movement alone. Lingual buttons were bonded on the buccal surfaces of 14, 24 and lingual surfaces of 34, 44. Cross arch elastics were placed from buccal surface of 14 to lingual surface of 44 and similarly on the contralateral side (figs. 3 & 4). To allow full correction of the scissor bite, composite was added to the occlusal and buccal surfaces of the lower first molars. Patient was given instructions for changing elastics once a day and in case of any tear.

TREATMENT PROGRESS
Patient had a very good compliance and a noticeable movement was achieved in 3 weeks. Correction occurred within 8 weeks and complete cuspal interdigitation was established (figs. 5 & 6). The retention appliance was not required because mechanical interlocking by interdigitation of cusps held the teeth in their respective new relationship.

Figure 1. Intraoral preoperative view showing scissors bite with respect to 14 and 44.
Figure 2. Intraoral preoperative view showing scissors with respect to 24 and 34.
Figure 3. Intraoral view showing cross – elastics.
Figure 4. Intraoral view showing cross – elastics.
DISCUSSION

Scissor bite is characterized by labial eruption of the maxillary posterior teeth. Either the maxillary tooth does not occlude with its mandibular antagonist tooth or contact is made between the lingual surface of the maxillary lingual cusp and the buccal surface of the mandibular buccal cusp. Scissor bite is caused by an arch-length discrepancy in the posterior region. The scissor bite has no significant influence on the facial profile and is not known to reduce airway. The chewing function is bad since the involved posterior teeth make no contact with each other. Patients may experience a clicking or pain in the jaw joints since the jaw is usually forced to function in a deviated position during the chewing process. Tooth wear is unlikely since teeth usually do not come in contact with each other. Most often posterior crossbite and scissor bite are seen with respect to isolated molars or premolars and are usually corrected in conjunction with comprehensive edgewise orthodontics. Within an interceptive context, isolated posterior tooth crossbite can be corrected using cross-arch elastics.

The maxillary first molars tend to erupt buccally, whereas the mandibular first molars tend to erupt lingually. This tendency for a contradictory direction of eruption may produce a posterior crossbite (scissors bite)\(^9,10\). The primary problems in correcting a scissor bite involving a molar are (1) buccal tipping with over extrusion of the maxillary molar, (2) lingual tipping with over extrusion of the mandibular molar, (3) a molar position that is resistant to correction, and (4) a lack of space for appliances on the palatal side of the maxillary molar and buccal side of the mandibular molar\(^8\).

In patients with mixed dentition, scissor bite causing extrusion of the involved tooth can result in occlusal interference and a mandibular functional shift with growth. Therefore, early treatment is needed. Malocclusion can influence masticatory function\(^11-15\). In individuals with normal occlusion, the chewing pattern involves lateral deviation of the mandibular incisor towards the bolus, which is followed by medial deviation during closing\(^16,17\). However, in patients with unilateral posterior crossbite, a higher prevalence of a reverse chewing pattern\(^12\) and lower maximum bite force, as compared to that of patients with normal occlusion, has been reported\(^12,13\), and the lateral and medial poles of the condyle on the crossbite side move more medially and less laterally during mastication\(^14\). Early diagnosis of scissor bite is thus essential to correct the inclination of the compromised teeth and thus prevent a lateral shift of the mandible before adaptive remodeling of the TMJ can cause asymmetrical mandibular growth.

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