



Severe unilateral scissors-bite with a constricted mandibular arch: Bite turbos and extra-alveolar bone screws in the infrazygomatic crests and mandibular buccal shelf

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A 33-year-old woman had a chief complaint of difficulty chewing, caused by a constricted mandibular arch and a unilateral full buccal crossbite (scissors-bite or Brodie bite). She requested minimally invasive treatment but agreed to anchorage with extra-alveolar temporary anchorage devices as needed. Her facial form was convex with protrusive but competent lips. Skeletally, the maxilla was protrusive (SNA, 86°) with an ANB angle of 5°. Amounts of crowding were 5 mm in the mandibular arch and 3 mm in the maxillary arch. The mandibular midline was deviated to the left about 2 mm, which was consistent with a medially and inferiorly displaced mandibular right condyle. Ectopic eruption of the maxillary right permanent first molar to the buccal side of the mandibular first molar cusps resulted in a 2-mm functional shift of the mandible to the left, which subsequently developed into a full buccal crossbite on the right side. Treatment was a conservative nonextraction approach with passive self-ligating brackets. Glass ionomer bite turbos were bonded on the occlusal surfaces of the maxillary left molars at 1 month into treatment. An extra-alveolar temporary anchorage device, a 2 × 12-mm OrthoBoneScrew (Newton A, HsinChu City, Taiwan), was inserted in the right mandibular buccal shelf. Elastomeric chains, anchored by the OrthoBoneScrew, extended to lingual buttons bonded on the lingually inclined mandibular right molars. Cross elastics were added as secondary uprighting mechanics. The maxillary right bite turbos were reduced at 4 months and removed 1 month later. At 11 months, bite turbos were bonded on the lingual surfaces of the maxillary central incisors, and an OrthoBoneScrew was inserted in each infrazygomatic crest. The Class II relationship was resolved with bimaxillary retraction of the maxillary arch with infrazygomatic crest anchorage and intermaxillary elastics. Interproximal reduction was performed to correct the black interdental spaces and the anterior flaring of the incisors. The scissors-bite and lingually inclined mandibular right posterior segment were sufficiently corrected after 3 months of treatment to establish adequate intermaxillary occlusion in the right posterior segments to intrude the maxillary right molars. The anterior bite turbos opened space for extrusion of the posterior teeth to level the mandibular arch, and the infrazygomatic crest bone screws anchored the retraction of the maxillary arch. In 27 months, this difficult malocclusion, with a Discrepancy Index score of 25, was treated to a Cast-Radiograph Evaluation score of 22 and a pink and white esthetic score of 3. (*Am J Orthod Dentofacial Orthop* 2018;154:554-69)

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A buccal crossbite is a malocclusion when the palatal cusp of the maxillary tooth is buccal to the buccal cusp of the opposing mandibular dentition; a lingual crossbite is when the maxillary buccal cusp is lingual to the buccal cusp tip of the opposing mandibular tooth. Brodie¹ defined a malocclusion as a “Brodie bite” or “Brodie syndrome” when the mandibular jaw “telescoped” within the upper arch; ie, the mandibular teeth are completely contained within the maxillary arch. Sim² preferred the more generic



Fig 1. Pretreatment facial and intraoral photographs.

term “bilateral buccal crossbite,” but van der Linden and Boersma³ introduced the term “scissors-bite” for the total “endo-occlusion” of the mandibular posterior teeth. Moyers⁴ characterized a bilateral buccal crossbite as a skeletal disharmony between the mandible and the maxilla. If the scissors-bite is bilateral, the mandible may be functionally retruded; if it is unilateral, there is often a cant to the occlusal plane and a lateral deviation of the mandible.^{4,5}

DIAGNOSIS AND ETIOLOGY

The patient’s chief concern was the inability to chew on the right side. Her medical and dental histories were noncontributory. Facially, she had a convex profile with protrusive lips (Fig 1), but her dental smile line was acceptable. The intraoral examination showed a scissors-bite on the right, a lingually inclined mandibular

right posterior segment, a Class I molar relationship on the left, an anterior deep overbite, canting of the occlusal plane down on the right, and mandibular anterior crowding (Fig 1). The mandible deviated to the left on closure resulting in a dental midline shift 2 mm to the left (Fig 2). The dental casts showed that the maxillary right posterior teeth impinged on the mandibular gingiva, and there was no intercuspation of the right posterior segment (Figs 3 and 4).

The pretreatment cephalometric analysis showed a protrusive pattern of the maxilla, incisors, and lips (Fig 5; Table). The panoramic radiograph showed extrusion of the mandibular right posterior segment (Fig 6) consistent with the unilateral scissors-bite. The temporomandibular joint radiographs showed no significant difference in the morphology or kinematics (movement) of the right and left condyles in the open and rest

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