

Treatment of unilateral posterior crossbite with facial asymmetry in a female patient with transverse discrepancy

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A unilateral posterior crossbite with facial asymmetry is difficult to correct with orthodontic treatment alone. This case report describes the orthodontic treatment and additional plasty without orthognathic surgery for a 19-year-old woman with a transverse discrepancy. The posterior crossbite was resolved by expansion of the narrow maxillary arch and space closure in the mandibular arch. This accelerated the correction of the functional shift of the mandible. After resolution of the unilateral posterior crossbite, the problems of the anteroposterior molar relationship were treated using orthodontic mini-implants. Mandibular angle reduction plasty was performed for the asymmetric mandibular border to improve the facial appearance. After treatment, the patient had a more symmetrical facial appearance, normal overjet and overbite, and midline coincidence. The treatment results remained stable 1 year after treatment. This case report demonstrates that a minimally invasive treatment can successfully correct a unilateral posterior crossbite with a transverse discrepancy. (*Am J Orthod Dentofacial Orthop* 2015;148:154-64)

Generally, when we establish the treatment plan for patients with facial asymmetry, surgery is included¹ because facial asymmetry is usually caused by skeletal problems.² Orthodontic treatment alone is a difficult choice in this situation.³ Patients with facial asymmetry and a skeletal Class III malocclusion must be treated by orthognathic surgery even if there is no facial asymmetry. However, more consideration is needed to treat patients with facial asymmetry and a skeletal Class I relationship. Because correction of the asymmetry is the only goal of the orthognathic surgery in this case, satisfaction with the treatment may be low after surgery. Moreover, patients with facial asymmetry and a transverse discrepancy can be treated with orthodontics alone.⁴ This case report describes the treatment of a woman with a unilateral posterior

crossbite and facial asymmetry. She had a skeletal Class I relationship. Her chin and mandibular midline were deviated to the left side with a left posterior crossbite. Because there was a transverse discrepancy, a nonsurgical approach for the correction of the occlusion could be planned. Mandibular angle reduction plasty was planned for the asymmetrical mandibular inferior border. By avoiding orthognathic surgery, it was possible to minimize the patient's discomfort.

DIAGNOSIS AND ETIOLOGY

The patient was a 19-year-old woman who visited Seoul National University Dental Hospital in South Korea for an orthodontic consultation. No specific medical problems or temporomandibular joint symptoms were observed. She had a skeletal Class I relationship and facial asymmetry, with the chin deviated 4.5 mm to the left. A slight maxillary deficiency and a normal vertical growth pattern were seen. A Class I molar relationship on the right and a Class II molar relationship on the left were observed, and a posterior crossbite from the left lateral incisor to the left second molar was observed (Fig 1). The mandibular dental midline was deviated 6.5 mm to the left. There was space between the mandibular anterior teeth (Fig 2). The cant of the occlusal plane was minor. In the lateral cephalometric analysis, no mouth protrusion or problems of anterior tooth inclination were found (Table 1). The major

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Fig 1. Pretreatment facial and intraoral photographs.

problems were summarized as frontal asymmetry, deviation of the chin, left posterior crossbite, and mandibular dental midline deviation. Furthermore, the patient had a slight transverse centric occlusion–centric relation discrepancy. This functional shift of the mandible caused mandibular asymmetry, which could be observed in the panoramic and posteroanterior radiographs (Fig 3). In particular, the mandibular left inferior border was much bulkier than right inferior border. This difference in mass was the cause of the facial asymmetry.

TREATMENT OBJECTIVES

The treatment objectives for the dentition were correction of the left posterior crossbite, making the maxillary and mandibular midlines coincident, and closing the mandibular arch space. The treatment objectives for the skeleton were improving the facial asymmetry, including

the deviation of the chin, and improving the transverse discrepancy. Thus, facial symmetry, normal overjet and overbite, and Class I canine-to-molar relationships could be obtained.

TREATMENT ALTERNATIVES

Facial asymmetry and unilateral posterior crossbite are difficult to treat with orthodontics alone. Therefore, the first plan was orthodontic treatment accompanied by orthognathic surgery. Extraction of the 2 maxillary third molars was planned. Leveling of maxillary and mandibular arches and space closure of the mandibular arch were planned as the presurgical orthodontic treatment. After that, the asymmetries of the chin and mandible could be corrected with orthognathic surgery. Postsurgical orthodontic treatment would finish correction of the malocclusion.

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