

Orthodontic treatment of a patient with severe crowding and unilateral fracture of the mandibular condyle

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A 15-year-old girl who had a unilateral condylar fracture with severe crowding in both arches was treated with 4 premolar extractions followed by orthodontic therapy with a temporary skeletal anchorage device in the maxillary arch. The total active treatment time was 21 months. Her occlusion was significantly improved by orthodontic treatment, and the range of condylar movement was also improved. Posttreatment records after 30 months showed excellent results with a good stable occlusion. The remodeling process of the condyle was confirmed with cone-beam computed tomography images. (Am J Orthod Dentofacial Orthop 2016;149:899-911)

Whereas mandibular fracture has the second highest incidence rate among facial bone fractures, condyle fracture accounts for 29% to 52% of all mandibular fractures, making it the most frequent facial fracture.^{1,2} Nonsurgical treatment has been commonly accepted and recommended for pediatric patients; however, the treatment of choice for a condylar fracture in adults has remained controversial for many years.³ Currently, the classification system of Lindahl⁴ for condylar fractures is most generally accepted and used. According to it, condylar fractures can be divided anatomically into 3 sites: intracapsular (condylar head), extracapsular (condylar neck), and subcondylar region. Furthermore, Lindahl classified the extent of dislocation into medial, lateral, and no overlap or fissure, and condylar head fractures into horizontal, vertical, and compression.

Although a fractured mandibular condyle has shown regeneration similar to its original size in most cases,^{5,6} it can also be associated with deteriorating side effects including mandibular deficiency, temporomandibular joint (TMJ) dysfunction, or facial asymmetry, if not managed properly.⁷⁻⁹ Treatment of a condylar fracture depends on various factors including the extent of the injury, the level of the fracture, the size and position of the fractured condylar segment, the degree of dislocation and displacement, the stage of the dentition, the presence of a facial fracture, malocclusion and mandibular dysfunction, and the age and willingness of the patient to have surgery.^{3,10,11} The treatment options range from conservative treatment consisting of observation, analgesia, and a soft diet, to maxillomandibular fixation or functional appliance therapy,^{5,12} and in some cases surgical intervention.^{6,13-16} In growing patients, most authors have recommended the conservative approach because of the growth potential of the condyle.^{6,14,15} This article demonstrates the successful orthodontic treatment of a 15-year-old girl with a unilateral condylar fracture that was treated conservatively. Normal occlusion and jaw movement were achieved, and satisfactory condylar process remodeling and possible repositioning of the temporomandibular fossa through apposition were observed.

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All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest, and none were reported.

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DIAGNOSIS AND ETIOLOGY

A 15-year-old girl was referred for an evaluation of orthodontic treatment. Her chief complaint was ectopically erupting maxillary canines. During her

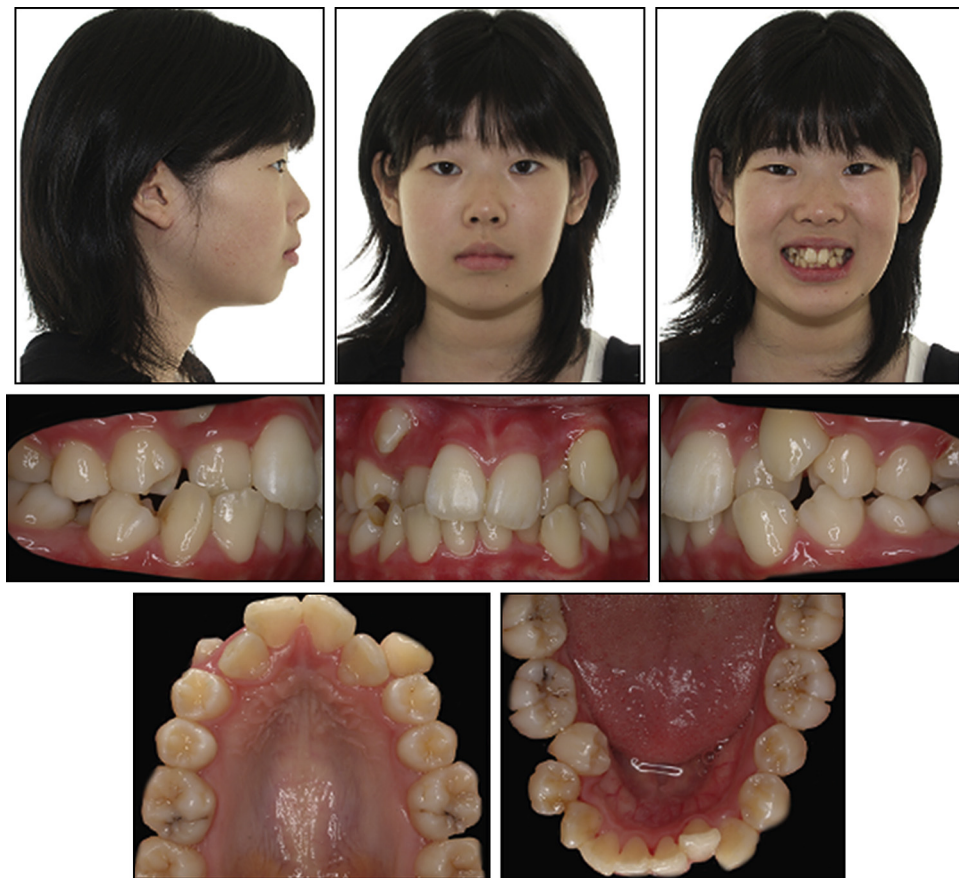


Fig 1. Pretreatment facial and intraoral photographs.

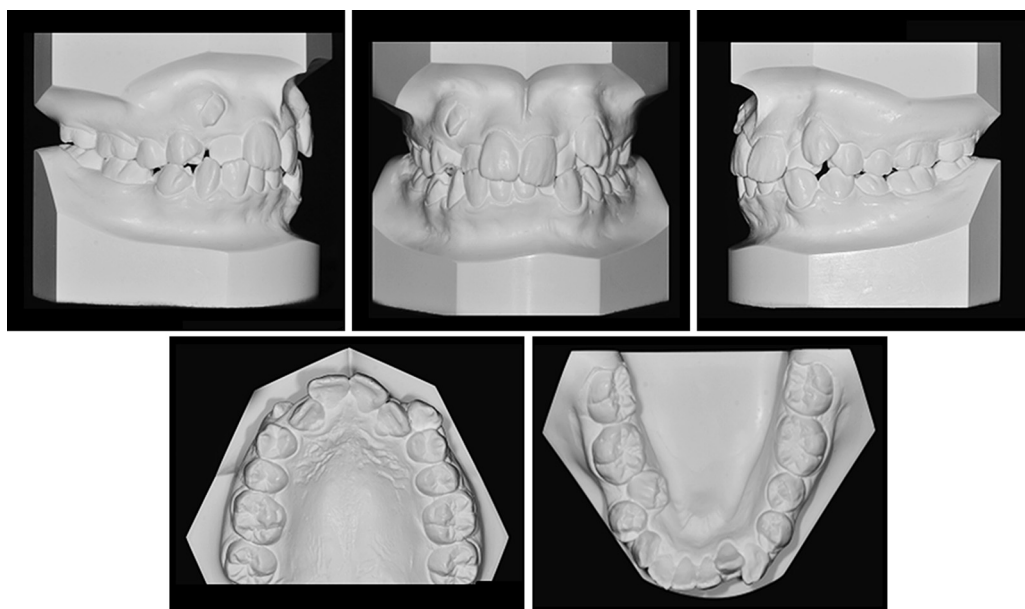


Fig 2. Pretreatment dental casts.

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