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Comprehensive treatment approach for condylar hyperplasia and mandibular crowding with custom lingual braces and 2-jaw surgery

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We report on the successful treatment of a 32-year-old woman with condylar hyperplasia and severe mandibular crowding. In addition, her maxilla was canted to the right, her mandibular midline and chin point deviated to the left, and her maxillary canines were missing. The treatment plan included (1) aligning and leveling the teeth in both arches, (2) correcting overbite and overjet, (3) performing LeFort I osteotomy and bilateral split osteotomies, and (4) correcting the malocclusion postsurgically. The orthodontic treatment was performed with custom lingual braces and clear brackets, and virtual surgical planning techniques were used to plan the orthognathic surgery. The condylar hyperplasia and the mandibular crowding were corrected. At the end of treatment, the patient's face appeared symmetrical. The results suggest that esthetic and functional results can be achieved with the cooperation of 2 specialties and the use of state-of-the-art technology. (Am J Orthod Dentofacial Orthop 2017;151:174-85)

Condylar hyperplasia (CH) is characterized by overgrowth of the condylar head and neck and the ramus unilaterally. The overgrowth results in deviation of the chin to the contralateral side, with subsequent results in the occlusion and facial symmetry.[1,2] The etiology of this rare condition is not clearly defined yet, and there are only assumptions of the factors causing CH.[2-5] Diagnosis of CH is often based on clinical findings, radiographic results, photographs, and cast analysis. To plan effective treatment, it is essential to determine the type of CH and whether the condition is progressive.[3] Definitive treatment includes orthognathic surgery for the correction of the skeletal deformity and orthodontics for establishing a proper occlusion.[5]

In this case report, we describe the innovative, comprehensive treatment of an adult patient with unilateral CH and severe mandibular crowding. See Supplemental Materials for a short video presentation about this study.

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DIAGNOSIS AND ETIOLOGY

In November 2011, a 32-year-old woman came to the Department of Orthodontics at the University of Birmingham in Alabama with the chief complaint of facial asymmetry. She had grown normally until the age of 3, when she suffered a fracture of the condyle. The fracture was treated conservatively, and she developed a noticeable facial growth disturbance as she matured. She also had difficulty in chewing and experienced frequent muscle spasms.

When facial asymmetry is suspected, the first step is to conduct thorough extraoral and intraoral examinations. At the records appointment, impressions of the maxillary and mandibular jaws were taken, and a facebow was used. A tongue depressor was also used to help evaluate the situation. The clinical findings were highly indicative of structural involvement of the right temporomandibular joint, so cephalometric and panoramic radiographs were acquired. Furthermore, a cone-beam computed tomography (CBCT) scan, a 3dMD (Atlanta, Georgia) image, and intraoral and extraoral pictures were taken on that day to complete the records (Figs 1-3).

Fig 1. Initial extraoral and intraoral photographs.

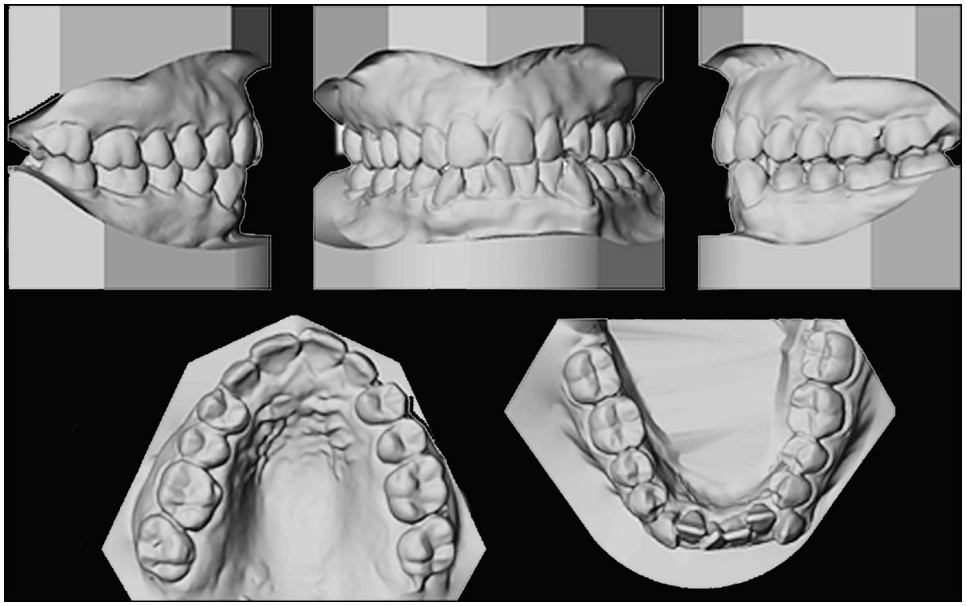

Fig 2. Initial orthodontic casts.

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