CASE REPORT

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Stability of unilateral sagittal split ramus osteotomy for correction of facial asymmetry: long-term case series and literature review

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Bilateral sagittal split ramus osteotomy is considered a standard technique in mandibular orthognathic surgeries to reduce unexpected bilateral stress in the temporomandibular joints. Unilateral sagittal split ramus osteotomy (USSO) was recently introduced to correct facial asymmetry caused by asymmetric mandibular prognathism and has shown favorable outcomes. If unilateral surgery could guarantee long-term postoperative stability as well as favorable results, operation time and the incidence of postoperative complications could be reduced compared to those in bilateral surgery. This report highlights three consecutive cases with long-term follow-up in which USSO was used to correct asymmetric mandibular prognathism. Long-term postoperative changes in the condylar contour and ramus and condylar head length were analyzed using routine radiography and computed tomography. In addition, prior USSO studies were reviewed to outline clear criteria for applying this technique. In conclusion, patients showing functional-type asymmetry with predicted unilateral mandibular movement of less than 7 mm can be considered suitable candidates for USSO-based correction of asymmetric mandibular prognathism with or without maxillary arch surgeries.

Key words: Unilateral sagittal split ramus osteotomy, Functional facial asymmetry, Laterognathism, Temporomandibular joint

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I. Introduction

Sagittal split ramus osteotomy (SSO) is one of the most common procedures to correct mandibular deformities including prognathism, retrognathism, and asymmetry since its introduction by Trauner and Obwegeser[1]. Performing SSO on bilateral mandibular rami (bilateral SSO, BSSO) to reduce unexpected stress or torsion in the temporomandibular joint (TMJ) is considered a standard technique in mandibular orthognathic surgeries. Previously, it was believed that only bilateral mandibular approaches could be used to separate the tooth-bearing distal mandible segment from both TMJ-attached proximal segments, allowing free repositioning of the proximal segments into neutral condyle positions and fixing the distal segment with minimal TMJ tension[2,3].

However, in a recent report, unilateral SSO (USSO) was used to correct lateral deviation of the mandible and yielded favorable outcomes[3]. If unilateral surgery could guarantee long-term postoperative stability, as well as favorable results in correcting facial asymmetry, operation time and the incidence of postoperative complications, including inferior alveolar nerve damage, hemorrhage, or a bad split, could be reduced compared to those observed in bilateral mandibular surgeries[3,4]. However, USSO may cause rotation of the opposing mandibular condyle, likely leading to adverse effects such as condylar resorption, limited mouth opening, or TMJ disorders[2,5]. Due to these considerations, current use of USSO has been extremely limited. Thus, the use and acceptance of

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