



## Correspondence

# Comprehensive orthognathic correction of post-traumatic Le-Fort II deformity

**KEYWORDS**

orthognathic  
correction;  
post-traumatic  
deformity;  
Le Fort I osteotomy

The correction of post-traumatic craniofacial deformities is recognized as a challenge to experienced surgeons. The reason for developing post-traumatic deformity of the craniofacial skeleton can be categorized into two groups: those related to the fracture itself, severe comminution and bone and soft tissue loss, and those related to the treatment, excessively delayed initial treatment, a lack of definitive treatment, inadequate initial surgical repair, and failure of hardware.<sup>1</sup> Malocclusion after primary treatment of maxillofacial trauma is not as frequently seen. The most common reason for malocclusion after primary midfacial trauma treatment is maxillary widening or impaction, as the anteroposterior (AP) and/or transversal dimensions have been altered during the operation, and the occlusal plane might easily become oblique and tilted. In impacted maxilla, the impaction of the nose is usually the most disturbing subjective symptom for the patient.<sup>2</sup>

A 25-year-old man was referred from an orthodontist for malocclusion and facial asymmetry from a previous midface trauma. The immediate surgical result seemed to be unsatisfactory (Figure 1A, C and D). The maxilla fractures were treated with an internal fixation with wire (Figure 1B). In addition to the maxilla canting, the patient's main complaints were impaction of the nose and a deviation to the right. Occlusal adjustment by the orthodontist was

performed to reduce the premature contacts. At 6 months after orthodontic management, the cephalometric analysis and surgical prediction were conducted to design a surgical plan. After discussion with the patient, she decided to follow the plan as double jaw surgery (Le Fort I osteotomy, bilateral intraoral oblique osteotomy, and genioplasty) with maxillomandibular fixation (MMF) to correct the maxilla and mandible simultaneously (Figure 1E–I). The result simultaneously corrected the facial midline and regained the occlusion (Figure 1J–L).

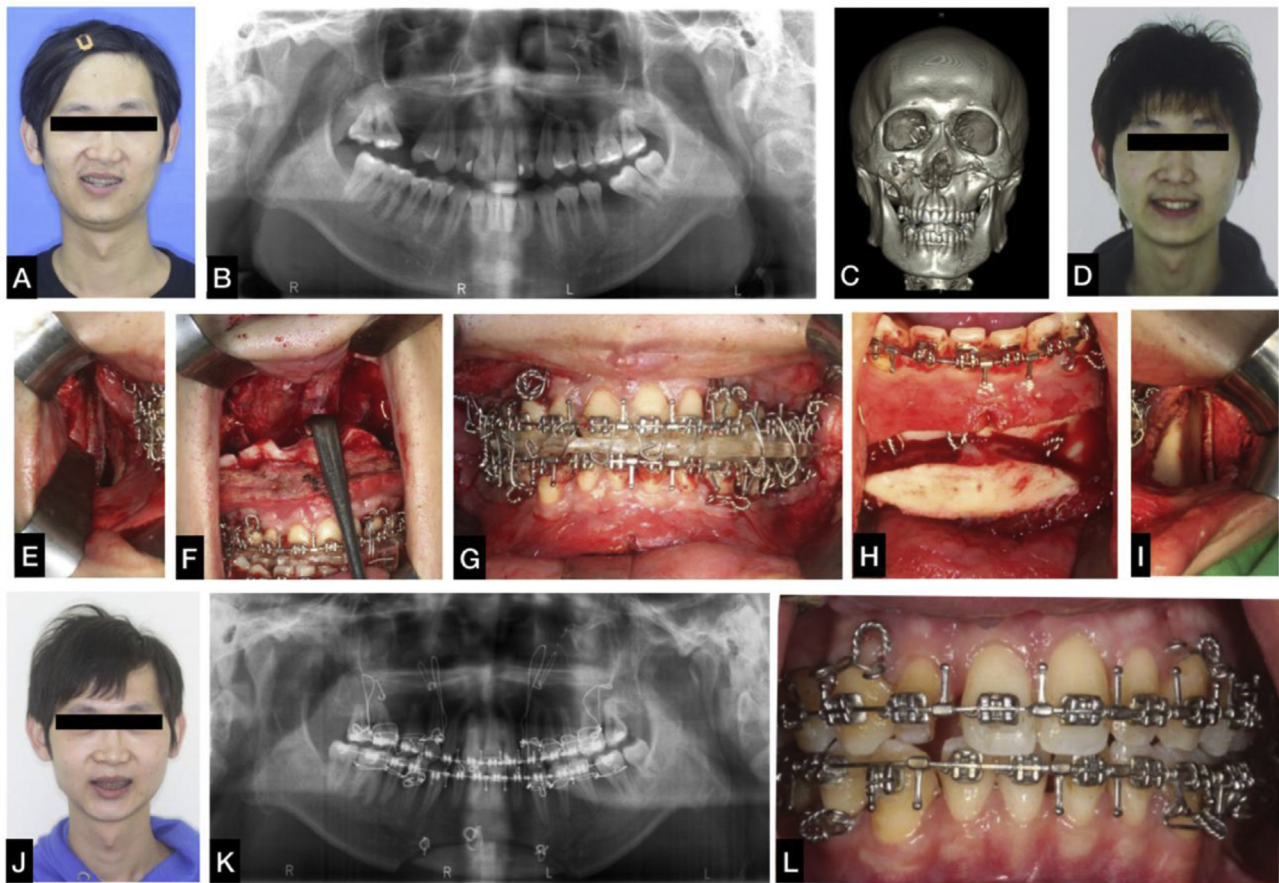
Le Fort II fractures present significant corrective challenges, because of the complex conditions associated with midface instability and malocclusion.<sup>3</sup> Malocclusion and facial asymmetry can be found early during the healing process or as the long-term sequelae after the initial fracture repair. An early relapse in mild cases can frequently be managed by elastics and orthopedic appliances, but in more significant recurrences a return to the operating room may be necessary. The integration of normal bone is critical in the first 4–8 weeks, depending on the age of the patient, and the maturation slowly takes place. Soft callus formation may take approximately 2–3 weeks, but the hard callus stage lasts usually 3–4 months until the fragments are firmly united by new bone. The timing of corrective surgery should be at least 6 months after the initial injury, because the risk of remobilizing a malunion compromises the result.<sup>4</sup> Additionally, occlusal relapse can occur late, which consists of complex etiology of functional dental and muscular forces equilibrium and remodeling of the facial skeleton.<sup>5</sup> A long-term follow-up of a traumatic deformity's surgical correction is important, and management directly toward the causes is crucial.

**Conflict of interest**

The authors have no conflicts of interest relevant to this article.

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**Figure 1** (A) The patient exhibits facial asymmetry, canting maxilla with severe deviation to the right; (B) Panoramic examination revealing the previous closed reduction with an internal fixation with wire; (C) CT 3D reconstruction revealing the previous Le Fort I fracture; (D) Frontal picture of patient prior to midface trauma; (E) Right mandible ramus vertical bone splitting; (F) Maxilla Le Fort I down fracture; (G) Occlusion is determined by pre-surgical form splinting; (H) Genioplasty; (I) Left mandible ramus vertical bone splitting; (J) Post-surgical 2 months follow up of facial asymmetry improvement; (K) Post-surgical panoramic view; (L) Stable occlusion post-surgery under adjustment by orthodontic appliance.

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