

Le Fort IV + I Distraction Osteogenesis Using an Internal Device for Syndromic Craniosynostosis

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Monobloc and Le Fort III distractions can improve midfacial hypoplasia, a characteristic feature of syndromic craniosynostosis. The purpose of treating midfacial hypoplasia is to improve exophthalmos and dental occlusion. Typically, in Le Fort III or monobloc distractions, the midface is mobilized en bloc, and the extent and direction of the mobilization is determined according to the preferred intermaxillary occlusion. However, to obtain the preferred functional and esthetic results while correcting midface hypoplasia, the most sensible approach is the use of different degrees of mobilization and vectors for the upper and lower halves of the midface. This report describes the case of an adolescent with Crouzon syndrome showing frontal recession exophthalmos and an anterior crossbite. His condition was treated with monobloc minus Le Fort I and Le Fort I distraction using only internal devices, which the authors have designated Le Fort IV plus I distraction.

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Monobloc and Le Fort III advancements can improve midfacial hypoplasia, a characteristic feature of syndromic craniosynostosis.^{1,2} The purpose of treating midfacial hypoplasia is to improve exophthalmos and dental occlusion. Typically, for Le Fort III or monobloc advancements, the disadvantages are significant blood loss, a long operation time, the need for a bone graft, postoperative relapse, and, occasionally, cerebrospinal fluid leaks caused by immediate advancement.³ Distraction osteogenesis can overcome such disadvantages by gradual advancement and the generation of new bone, and this procedure has become widely used for the craniofacial area.⁴

In conventional advancement and distraction osteogenesis, the midface is mobilized en bloc, and the amount and direction of the mobilization is determined according to the preferred intermaxillary occlusion. However, to obtain the preferred functional and

esthetic results while correcting midface hypoplasia, the most sensible approach involves the use of different degrees of mobilization and vectors for the upper and lower halves of the midface.

This report describes the case of an adolescent with Crouzon syndrome showing frontal recession exophthalmos and an anterior crossbite. To treat his condition, the authors performed monobloc minus Le Fort I and Le Fort I distraction using only internal devices, which they have designated Le Fort IV plus I distraction.

Report of Case

A 15-year-old patient with Crouzon syndrome refused to go to school because of severe midfacial hypoplasia. He had undergone fronto-orbital advancement and cranial reshaping at 2 years of age and subsequent Le Fort III distraction osteogenesis at 6 years of

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FIGURE 1. A, The patient immediately after Le Fort III advancement at 3 years of age. B, Lateral, C, frontal, and D, occlusal views at 15 years of age. (Fig 1 continued on next page.)

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