Abstract: Distraction osteogenesis has been applied to the craniofacial skeleton as well as the long bones of the extremities. This technique does not require bone grafting and allows correction of craniofacial deformities with less invasion. Moreover, the distraction procedures can expand the overlying soft tissues simultaneously. We determined the indications of distraction osteogenesis, analyzed the types of devices available, and examined patients treated with distraction for the mandible, midface, and cranium. In all three sites, the devices tended to be the buried type and made of absorbable materials. Administration of some cytokines for shortening the consolidation period may be considered. Among disorders indicated for distraction osteogenesis, there are several syndromic craniosynostoses, which involve mutations in the fibroblast growth factor receptor (FGFR) 2 gene. The FGFR 2 mutation was suggested to clinically accelerate osteogenesis at the distraction site. The usefulness and appropriateness of the distraction protocol must be assessed for each individual disorder. Although distraction osteogenesis in the craniofacial skeleton has advanced technologically, all possible risks must be discussed with the patient and family members when obtaining preoperative informed consent, especially until establishment of fully safe distraction procedures. J. Med. Invest. 50: 117-125, 2003

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K. Matsumoto et al.  
Craniofacial distraction osteogenesis
K. Matsumoto et al.  Craniofacial distraction osteogenesis
K. Matsumoto et al.  Craniofacial distraction osteogenesis
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