

عنوان مقاله:

Biomechanical effects of distraction device angle in unilateral mandibular lengthening by distraction osteogenesis using a finite element model

محل انتشار:

دوفصلنامه ارتودنسی ایران، دوره 4، شماره 3 (سال: 1388)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Azita Tehrani - Associate professor, Dental Research Center, Dept. of Orthodontics, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Hossein Behnia - Professor, Dept. of Oral & Maxillofacial Surgery, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Majid Heidarpour - Post graduate student, Dept. of orthodontics, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Bahman Toutiaee - MA, Engineering Dept., Iran Center for Dental Research

M. Javad Khosropour - Orthodontist, Private Practice, Tehran, Iran

خلاصه مقاله:

Aim: Analyzing the changes made during distraction osteogenesis (DO) in asymmetric mandibles
Materials and methods: This study was performed on a three dimensional model of a desiccated mandible, based on a finite element method. The distraction devices were placed with an angle of 90, 60 or 30 degrees to the oblique surgical cut. The directions of the pins were such that the 30 and 60 degree pins were placed in a counterclockwise direction relative to the perpendicular pin. The distractors were opened for 15 and 30 mm. The amount and direction of movement of proximal and distal segments and the displacement of pogonion were evaluated in all three planes of space.
Results: In the distal segment, the maximum change in pogonion was seen in 30 degree angle. In the proximal segment, if the distraction device was used with 90 degree angle, the condylar process rotated in the clockwise rotation. In 30 degree angle, this process rotated in a counterclockwise direction and the minimum rotation was seen in 60 degree angle.
Conclusion: If gonial angle is to be augmented in a downward direction maximally, the angle of distraction device to the surgical cut is critically important (that is, it should be perpendicular to surgical cut). By use of perpendicular mode, ramus slops more posteriorly. It is better to use the distraction pin with a thirty degree angle if the ramus needs to be uprighted. The oblique surgical cut, irrespective of the distraction pin angle, increases the anterior facial height.

کلمات کلیدی:

Distraction Osteogenesis, mandibular asymmetry, mandibular lengthening, finite element method

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1400171>

