Dental Research Directory

Osteodistraction of a previously irradiated mandible with or without adjunctive hyperbaric oxygenation: an experimental study in rabbits.

Muhonen A, Muhonen J, Lindholm TC, Minn H, Klossner J, Kulmala J, Happonen RP.

Department of Oral and Maxillofacial Surgery, University of Turku, Finland.

The purpose of this study was to analyse the effects of irradiation and hyperbaric oxygenation (HBO) on mandibular osteodistraction (OD). Eighteen rabbits were divided into three groups: 1. Irradiation (R), 2. Irradiation+HBO (R-HO), and 3. Control group (C). Animals of groups R and R-HO received in the mandible irradiation 22.4 Gy in four 5.6 Gy fractions (equivalent to 50 Gy/25 fractions). In addition, group R-HO was given HBO at 2.5 ATA for 90 min per day 18 times preoperatively. Unilateral osteotomy was made 1 month after completion of radiotherapy. After a 1 week latency period bone distraction was started at rate of 1 mm per day, continued for 2 weeks, and left to consolidate for 4 weeks. Amount of new bone was measured histomorphometrically from midsagittal sections. Area of new bone was equal in all groups. Bone was more mature and bone spicules better organized in group C than in groups R and R-HO. Cartilaginous cells were found in distracted bone in all groups but larger chondroid islands were evident only in group R. It seems that despite delayed bone formation, OD can be performed after radiotherapy.

HBO had a beneficial effect on bone quality of a previously irradiated mandible.

Legal Disclaimer

The content and information provided within this site is for informational and educational purposes only. Consult a doctor before pursuing any form of therapy, including Hyperbaric Oxygen Therapy. The Information provided within this site is not to be considered Medical Advice. In Full Support of the F.D.A., Hyperbaric Oxygen Therapy is considered Investigational, Experimental, or Off-Label.

Please consult with your Treating Medical Physician