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Delayed expansion of the atrophic mandible by ultrasonic surgery: a clinical and histologic case series

HORIZONTAL AUGMENTATION

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ABSTRACT

In this paper the Authors present a human case series with clinical and histologic results about delayed expansion of mandibles by ultrasonic surgery. 32 patients with residual alveolar ridge width between 2,3 and 4,1mm in the coronal area of the posterior mandible were included in the study in order to be subjected to the intended ridge expansion treatment. After achieving a proper bone expansion, two submerged implants (Bone System) per ridge were inserted in the premolar and molar areas, meanwhile the gaps were filled with cortico-cancellous porcine biomaterial (OsteoBiol® *Gen-Os*®, Tecnoss®, Giaveno, Italy). Three months after implant placement, bone cores were harvested from the regenerated areas for histologic analysis and a histomorphometric analysis was performed in order to determine the percentages of newly formed bone, grafted material and marrow spaces.
At three months, the implant success rate was 96,88% and the mean increase in ridge width was 5,17±0,86 mm. Clinically, the intercortical bony gap seemed to be filled with newly formed bone. The histologic specimens showed a mixture of new bone and particles of biomaterial and the histomorphometric analysis showed 64±3,1% of the specimen was composed of newly formed bone, 8±0,8% was made up of marrow spaces, and 27±2,6% comprised the residual grafted biomaterial.

CONCLUSIONS

Even if further long-term studies are needed to evaluate the findings of this study, it is possible to conclude that mandibular ridge expansion using a delayed split-crest technique by means of ultrasonic surgery and association with a biomaterial can be helpful in setting the adequate environment for implant placement.

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ORIGINAL ARTICLE
International Journal of Oral and Maxillofacial Implants
2015 Jan-Feb:30(1):144-9

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