



Immediately loaded zygomatic implants versus conventional dental implants in augmented atrophic maxillae: three-year post-loading results from a multicentre randomised controlled trial

ABSTRACT

When insufficient bone volumes make impossible to perform a successful implant treatment, it is necessary to perform a bone augmentation procedure. Different techniques have been proposed, featuring the use of autologous bone or bone substitutes. More recently, the use of zygomatic implants has been proposed as an alternative to bone augmentation procedures. Despite the fact that zygomatic implants have been in use for more than 20 years, comparative trials evaluating their effectiveness and potential risks in comparison to conventional augmentation procedures are still lacking. Consequently, in this three-centre RCT of parallel-group design the Authors aimed to compare the clinical outcomes of immediately loaded cross-arch maxillary prostheses on zygomatic implants versus conventional implants placed in augmented bone in case of atrophic or severely atrophic maxillae. The selected patients were categorised according to the degree of the maxillary atrophy and then randomly allocated to either the zygomatic implant group, or the bone augmentation group followed by delayed placement of six to eight conventional implants to be loaded after 4 months of unloaded healing. In the zygomatic implant group, in case of severely atrophic maxillae the surgeons, at their discretion, covered the exposed implant threads using a paste made of 600–1000 μm pre-hydrated collagenated cortico-cancellous granules of porcine origin mixed collagen gel in sterile syringe (OsteoBiol[®] mp3[®], Tecness[®], Giaveno, Italy) and resorbable collagen barriers (OsteoBiol[®] Evolution, Tecness[®]). In the augmentation procedure and conventional implants in severely atrophic maxillae, after internal displacement of the bony window, the maxillary epithelium lining was carefully raised, and the sinus was packed with OsteoBiol[®] mp3[®]. In the event of rupture of the sinus lining, resorbable barriers (OsteoBiol[®] Evolution, Tecness[®]) were used to contain the graft. In the anterior maxilla, collagenated blocks (OsteoBiol[®] Sp-Block, Tecness[®]) of equine cancellous bone were hydrated, modelled and used as onlays/veneers. OsteoBiol[®] mp3[®] was used to fill the gaps between the recipient bone and the bone blocks. In case of small defects, only bone substitute granules were used. All the grafted areas and maxillary windows were covered with OsteoBiol[®] Evolution, resorbable barriers of equine pericardium.

CONCLUSIONS

Based on the measured outcomes, three-year post-loading data suggest that immediately loaded zygomatic implants are associated with fewer prosthesis failures (two versus eight patients), implant failures (three patients lost 6 zygomatic implants versus nine augmentation patients who lost 42 implants) and time needed for functional loading (1.3 days versus 444.3 days) as compared to augmentation procedures and conventionally loaded dental implants. However, as significantly more complications were reported at zygomatic implants, long-term data are required, even if in the short-term, zygomatic implants seemed to be a better means of rehabilitating severely atrophic maxillae.

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