

## Immediately loaded zygomatic implants vs conventional dental implants in augmented atrophic maxillae: 4 months post-loading results from a multicentre randomised controlled trial

### ABSTRACT

The presence of insufficient bone volume can limit dental implants placement and so several bone augmentation procedures with different grafting materials have been developed, in order to allow a correct implant anchorage. In case of severely atrophic maxillae, zygomatic implants can be an alternative to conventional bone augmentation and implant rehabilitation. The aim of this randomised controlled trial (RCT) of parallel group design was to compare the clinical outcome of immediately loaded cross-arch maxillary prostheses supported by zygomatic implants vs conventional implants placed in augmented bone. Patients with totally edentulous atrophic maxillae were randomly allocated to bone augmentation with a bone substitute and six to eight conventionally loaded dental implants (augmentation group) or four zygomatic implants, or two zygomatic and two conventional implants to be immediately loaded (zygomatic group). In the augmentation group, collagenated blocks (OsteoBiol® Sp-Block, TecnoSS®, Giaveno, Italy) of equine cancellous bone were used as onlays/veneers. The blocks were hydrated before use for 5 to 10 min with sterile, lukewarm physiological solution or with antibiotics. Afterwards, they were modelled to be adapted to the receiving site. To fill the gaps between the recipient bone and the bone blocks, OsteoBiol® mp3® bone substitute granules were used. Small defects could only be grafted with bone substitute granules according to clinical indications and the surgeon's preference. Nasal sinus lift procedures using OsteoBiol® mp3® bone substitute granules could also be implemented. All the grafted areas and the maxillary windows were covered with OsteoBiol® Evolution resorbable barriers from equine pericardium. After implant insertion, the surgeon was allowed to cover exposed implant threads using a paste made of 600 micron to 1000 micron pre-hydrated collagenated cortico-cancellous granules of porcine origin, mixed with OsteoBiol® Gel 0 in sterile syringe (OsteoBiol® mp3®, 1 cc, TecnoSS®) and resorbable collagen barriers (OsteoBiol® Evolution, TecnoSS®). Patients were followed up to 4 months after loading, in order to measure outcomes related to prosthesis, implant and augmentation failures, any complications, quality of life (OHIP-14), the number of days that patients experienced total or partial impaired activity, time to function, and number of dental visits. No augmentation procedure failed. Preliminary 4-months post-loading data suggest that zygomatic implants were associated with statistically significantly less prosthetic and implant failures, as well as time needed to functional loading when compared with augmentation procedures and conventionally loaded dental implants. More complications were reported for zygomatic implants, which were solved spontaneously or could be handled.

### CONCLUSIONS

Keeping in mind that placement of zygomatic implants is a complex procedure requiring skilled and experienced operators, zygomatic implants proved to be a better rehabilitation modality for severely atrophic maxillae. Anyway, long-term data are essential to confirm or dispute these preliminary results.

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