In atrophic edentulous maxillae, should we regenerate or use residual bone?

In the world, there are 500 million of completely edentulous people. Edentulism has a significant impact on quality of life: esthetic concerns due to alteration of the vertical dimension and facial profile, decreased masticatory efficiency, temporomandibular joint dysfunction and problems associated with the use of removable complete prostheses, such as stomatitis, angular cheilitis, oral candidiasis, ulcers and hyperplasia.\(^1,2\) Edentulism has repercussions in social life and day-to-day activities. Edentulous patients may feel embarrassed when talking, smiling or eating in front of other people, and this can lead to social isolation and subsequent loneliness.\(^3\)

The best solution for patients with complete edentulism is rehabilitation with prostheses supported on implants. Improved oral health and quality of life can be seen in edentulous patients with atrophied maxillae after implant treatment with an immediate loading protocol.\(^4\) It is frequent that edentulous patients present severe bone atrophy. In these cases we should ask ourselves whether we need to regenerate before placing the implants or if can use the residual pristine bone. Therefore, we must establish whether it is better to place an implant with or without bone grafting.

A problem of regenerative procedures is bone graft resorption. Volumetric measurements of the grafts evidence progressive and unavoidable bone resorption of almost all the grafted bone in the maxilla and mandible. In a study with a number of years of follow-up, after vertical and horizontal alveolar ridge augmentation of atrophic maxillae and mandibles with autogenous crest block bone grafts, very high percentages of bone graft resorption were found.\(^5\) The use of anatomical buttresses is an alternative that overcomes the higher morbidity and higher treatment fees of regenerative procedures, as well as the longer postoperative periods for delivery of the definitive restorations. Flying buttresses are external discharge elements used in Gothic architecture in the form of a half arch. Buttresses collect the pressure at the start of the vault and transmit it to another buttress attached to the wall of a lateral nave. They were first used in 1180 in the construction of the central nave of the Notre Dame of Paris to reinforce its vault. In orofacial structures, buttresses are areas of dense bone that form a protective frame and dissipate forces around the craniofacial cavities: fronto-maxillary buttress, pterygomaxillary buttress, zygomatic buttress, palatal cortical bone and nasopalatine duct (an additional area of residual bone).\(^6-8\)

A study that compared conventional dental implants placed in augmented atrophic maxillae and the placement of implants in buttresses found a greater loss of implants in the augmentation group.\(^9\) It also found that the mean period for functional restoration was 1 week in the buttresses group and more than 1 year in the augmented patients.\(^9\)

Prof. Miguel Peñarrocha Diago
Editor-in-Chief

Editorial note: A list of references is available from the publisher.