Buccal Bone Augmentation Around Immediate Implants With and Without Flap Elevation: A Modified Approach

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Purpose: The aim of this study was to compare the clinical success and bone healing of implants placed in fresh extraction sockets using a flapless procedure compared to those placed with flap elevation. Materials and Methods: Twenty teeth in 20 patients were selected for this study and were scheduled for tooth extraction and immediate implant placement. Ten implants were placed with flap elevation (control group), and 10 implants were placed without flap elevation (test group). All the sites selected showed a complete bone defect at the facial wall. All the implants included in this study were 2-stage implants placed at the level of palatal/lingual bone in augmented bone. Each surgical site was protected with a collagen membrane and, subsequently, a standardized radiograph was taken to evaluate the distance between the implant shoulder and the first bone-implant contact (DIB). Six months after placement, both control and test implants underwent a second-stage surgery and a clinical examination to determine the implant stability quotient (ISQ), DIB, and the distance between implant shoulder and the crestal bone at the midbuccal aspect (DIC). Results: One implant failed in the test group. Only 1 implant (test group) showed bone growth over the implant neck at the re-entry procedure. Implant stability quotient (ISQ) and DIB did not show any significant differences between the control and test group; however, a higher DIC was found in the test sites compared to the control sites. Conclusion: Data from this study showed that immediate implants with and without mucoperiosteal flap elevation can be successfully used even in the presence of bone defects requiring augmentation procedures. It was also noted that the bone regenerated reached a higher coronal level in the group with flap elevation than in the group without flap elevation. Int J Oral Maxillofac Implants 2008;23: 841–846.

Key words: biomaterial, bone defect, dental implants, extraction sockets, mucoperiosteal flap

Implants placed in fresh extraction sockets have been shown to reduce not only morbidity rates in patients but also the total time between tooth removal and the final prosthetic restoration. Several clinical human studies have demonstrated high levels of success for implants (all of which were functional subsequent to restoration) placed in fresh extraction socket sites.1–4 As recent studies have suggested,5,6 the use of barrier membranes is not always necessary, especially for small bone defects such as small circumferential defects (not exceeding 2 mm) that have the potential to heal spontaneously. Schwartz-Arad and Chaushu7 reported a successful clinical outcome for 9 single implants placed immediately after tooth extraction without the need for incisions and/or primary flap closure. Complete bone healing was achieved with minimal gingival recession and papilla preservation; the clinical cases with extensive bone loss were excluded from the study. Implant placement without mucoperiosteal flaps has been associated with high success rate and has shown several advantages such as a reduction in intraoperative bleeding and postoperative patient discomfort.8,9 Bone resorption of varying degrees can occur subsequent to soft tissue flap reflection. This phenomenon can be prevented and/or reduced using a flapless implant procedure due to the reduction in surgical trauma and to the integrity of the blood vascular supply from the periosteum. In addition, excellent soft tissue healing