Immediate Implants Supporting Single Crown Restoration: A 4-Year Prospective Study

Ugo Covani,* Roberto Crespi,* Roberto Cornelini,* and Antonio Barone*

**Background:** The placement of implants at the time of tooth extraction has several clinical advantages, such as preservation of the alveolar ridge width and height and reduction of the restorative treatment time. The aim of this study was to evaluate the cumulative success rate of dental implants placed in fresh extraction sockets with and without guided bone regeneration (GBR) used to support a single crown restoration. All of the patients were preselected as candidates for implants.

**Methods:** Ninety-five patients aged 20 to 68 years with 163 implants were included. All patients were partially edentulous and participated in a personally tailored recall schedule. The follow-up period was 48 months. Patients underwent a clinical and radiographic evaluation annually.

**Results:** The 4-year cumulative success rate was 97%. Five of the 163 implants failed, two during the initial healing time, which were considered early failures and three a year after prosthetic rehabilitation, which were considered late failures. No failure of prosthetic rehabilitation was observed.

**Conclusions:** Implants placed into fresh extraction sockets with or without regenerative procedures and used to support single crown prostheses showed a very high cumulative success rate (97%) in a 4-year prospective study. Several observations should be made: 1) all the patients were preselected as candidates for implants and were following a strict oral hygiene regimen; 2) all efforts were made to reduce the number of cases requiring GBR procedures; 3) all the implants had an acid etched/sandblasted implant surface; and 4) all the prosthetic restorations were single crowns. J Periodontol 2004;75:982-988.

**KEY WORDS**

Dental implants, immediate; follow-up studies; guided bone regeneration.

* Implants placed immediately and short after tooth extraction have been shown to be a successfully predictable treatment modality. Immediate implants have several advantages such as reduction of the treatment time with fewer surgical procedures and morbidity compared to a traditional approach; optimal esthetic result if the natural tooth has an ideal position and angulation; and a reduction of treatment expense if no regenerative procedures are needed. Evidence exists that about 45% of the alveolar crest may be resorbed after tooth extraction, with the majority of this resorption occurring after the first 6 months. The placement of a fixture immediately after tooth extraction may help to preserve the bone alveolar dimension, allowing placement of longer and wider implants and improving the crown-implant ratio. As a result, the bone-implant contact surface area increases, which could decrease the amount of stress due to the occlusal load at the bone-implant interface and allow for a better chance of success.

The use of barrier membranes to prevent the migration of cells from the connective and epithelial tissues into the gap between implant and surrounding bone walls, which could prevent osseointegration, does not always appear necessary. However, treatment of large peri-implant defects, bone fenestration, and bone dehiscence usually implies the use of barrier membrane with or without bone grafting material. Several authors have reported a high rate of premature membrane removal due to exposure to the