unit of analysis was the patient. Bone changes were examined by x-ray starting with the image taken at surgery using a measurement method that has been repeatedly checked for reliability. The method was improved by digitizing analog x-ray images, which allowed image postprocessing and measurement with the FRIACOM® program. A reliability study conducted as a preliminary investigation showed that digital measurement improved the accuracy of measurement in comparison with analog measurement.

An average of one ‘Coronal Bone Defect’ of 0.86 mm appeared between insertion of the implant and prosthetic restoration and increased by another 0.33 mm over the following year. After continuing annual progress in the general range of 0.01 to 0.1 mm, after five years a mean value of 1.45 mm or a median value of 1.05 mm resulted. The surrounding alveolar process was largely retained.

Implants restored with free-end connecting bridges show bone changes that are not significantly different from those of other implant indications. The surrounding alveolar process is generally retained by the implant therapy. These results agree with those of other authors. Free-end connecting bridges can be recommended for prosthetic restoration of the mandible.

The FRIACOM® digital image processing system increases the accuracy of bone change measurements in comparison to analog methods. The FRIACOM® System is suitable for scientific analysis of x-ray images.

THE IMZ®-TwinPlus SYSTEM—
4-YEAR CLINICAL EXPERIENCE*

Weibrich, Gernot, MD, DMD, Gnoth, Sven-Hendrik, MD, Buch, Rainer Stefan Rudolf, MD, DMD, Müller Frank, Frawke DMD, Loos, Anja, Wagner, Wilfried MD, DMD, Prof. University of Mainz, Clinic for Oral and Maxillofacial Surgery, Mainz/Germany

Weibrich, Gernot, MD, DMD, Clinic for Oral and Maxillofacial Surgery University of Mainz, Mainz/Germany

For more than twenty years the IMZ® System has been in clinical use, since 1995 modified as IMZ® TwinPlus. The aim of this prospective clinical trial was to analyse the success of the latter implant system, which is a self-threading cylindrical titanium screw with a deep profile structured surface (FRIADENT GmbH, Mannheim, Germany). Investigated parameters were the peri-implant situation of the soft tissues, the bone loss and the rate of implant failure after a maximum period of 4.5 years of clinical use.

From 1995 to 2000, sixty-eight patients were provided with a total of 278 IMZ®-TwinPlus screw implants for various indications (mainly alveolar ridge atrophy). One hundred ninety-one implants were inserted without any, 35 implants with a loco-regional and another 52 implants after comprehensive reconstructive osteoplastic surgery. Thirty-eight patients with 155 implants were re-examined using a standardised protocol to evaluate peri-implant hard- and soft tissue situation as well as the patient’s subjective assessment of the treatment.

With a maximum of 54 months, the mean observation period was 30 months. The implant failure rate has risen to 6% so far (n = 18 in 12 patients). Two patients bearing 7 implants have passed away. One patient with 4 implants was lost to follow up. At examination, 249 implants were still under function, thus the implant survival rate was 91%. The Kaplan-Meier survival rate after 34 months proved 91%.

To our knowledge there are no other data published on the survival rate of the IMZ®-TwinPlus implant system. The results of this study evaluate a survival rate similar to the classical IMZ® cylinder implant and other implant systems for the analysed observation period.

After a maximum observation period of 4.5 years the IMZ®-TwinPlus implant system showed results in the range of other well-established implant systems. Designed to resist rotation of the superstructure the IMZ®-TwinPlus screw implant widens the range of indications in comparison to the classical IMZ® cylinder implant system1-2.


*This paper contains results of the dental dissertation of Th. Morbach, MD.

RADIOLOGICAL CHANGES IN THE PERIODONTIUM OF THE ABUTMENT TOOTH WITH THE IMPLANT-TOOTH-SUPPORTED CONNECTING BRIDGE

Prospective 5-year study using the FRIACOM® digital image processing and measurement systems

Dr. J. Schäfer, German Gómez-Román, Prosthetic Department of the Center for Dentistry, Oral Surgery and Orthodontics of the University of Tübingen/Germany

In the last decade implants have come into standard use for prosthetic restoration in even the partially dentulous patient. With these patients it is often a question of whether teeth and implants should be connected with a bridge, because the different movability of the abutments could theoretically have damaging effects on all the elements of the connecting bridge. More attention has been directed to the reaction of the peri-implant bone, with no investigation of the periodontium of the abutment tooth. The goal of this study was to investigate radiological changes of the periodontium at abutment teeth of connecting bridges.

This prospective longitudinal study over 2.5 years examined 97 patients with 174 abutment teeth. The ratio of teeth to implants varied and the implants were of different systems. The unit of analysis was the patient. The x-ray image taken at the time of prosthetic restoration was used as the initial situation. The bone changes were measured on digitalized radiological images with a measurement method tested for reliability. The Student t-Test and the Wilcoxon signed rank test were used for statistical evaluation. After five years the abutment teeth showed a vertical bone resorption of an average of less than 0.1 mm compared to the initial situation, the defect width increased by about 0.1 mm, and the surrounding alveolar process showed signs of resorption of about this magnitude. In no case were the differences statistically significant and they were less than the accuracy of the measurement method.

A bone change of this magnitude cannot be considered significant in comparison to the generally occurring periodontal resorption. With respect to the abutment tooth, connecting bridges can be accepted for attached prosthetic restoration of the partly edentulous arch.

59