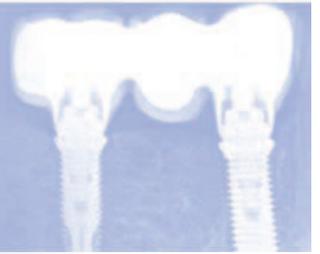


Immediate occlusal loading of NanoTite™ PREVAIL® Implants: A prospective 1-year clinical and radiographic study



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What Was Done?

Primary implant stability, commonly accepted as a prerequisite for implant success, is particularly important when an immediate loading protocol is planned. Initial stability is often indicated by torque resistance and can also be influenced by bone quality, the osteotomy preparation, and the design of the implant. The macrostructure (e.g. the threads and tapered/straight design) of the implant may influence the ability to gain primary implant stability, while the microstructure (i.e. the surface texture) may play a role in obtaining high secondary stability. Pre-clinical studies have shown that the NanoTite Surface Treatment results in statistically significantly enhanced integration compared to OSSEOTITE® Control Implants. In the present single-center study, the authors evaluated the outcome of NanoTite Implants used for immediate loading of fixed prostheses and single-unit restorations.

How Was It Done?

NanoTite Certain® PREVAIL Implants (4/5/4mm diameter × 8.5-15mm) were placed into undersized osteotomies. The final drill was chosen according to the predominant local bone quality (Lekholm and Zarb scale). In Type I bone, the final drill used was 3.25mm diameter; in Type II bone-3.0mm diameter, and for Type III and IV bone-2.75mm diameter. A countersink drill was then used to enable ideal crestal seating of the PREVAIL (expanded collar) Implant.

Torque values achieved during final implant positioning were measured using a drill unit, and RFA values were evaluated with an Ostell Mentor Device. The implants were immediately loaded only if the ISQ values met or exceeded 55, and a minimum of 25Ncm of torque was achieved. Thirty-five out of 38 patients met these criteria and received immediate restoration. QuickBridge® Provisional Components were used for multi-unit restorations, and

PreFormance® Posts were used for single-unit restorations. All single-unit crowns were left out of occlusion and free from interproximal contacts. In total, 102 implants were restored.

All patients returned to the clinic for follow-up after three, six, and twelve months. To evaluate the marginal bone loss, digital periapical radiographs were taken using a custom holder to ensure identical positioning of the radiographic film. Implant success was evaluated according to the guidelines of Albrektsson and Zarb (Int J Prosthodont 1993).

What Were the Results?

The mean ISQ value at implant placement was 73.4 ± 8 . One provisional fixed-partial denture showed mobility due to screw loosening. One implant failed in the anterior maxilla (Type IV bone), while the two adjacent implants integrated successfully. The cumulative survival rate after one year was 99.2%. The average bone loss for the 102 implants was 0.37mm for the same timeframe. For 93% of the implants studied, the success was judged to be grade I, according to the guidelines by Albrektsson and Zarb.

Clinical Relevance

The authors attributed the excellent results found in this study in part to the modified drilling protocol. Adaptation of the final drill to the local bone quality appears to be particularly important in immediate load cases. Primary stability of the implant can be considered adequate if the insertion torque values are at least 25Ncm and the ISQ values are at least 55. To reduce the risk of macro-movement at the implant interface during the healing period, it is of utmost importance to splint multi-units and place single-unit restorations with a non-occlusal load protocol, taking care to avoid any lateral contacts.

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