MicroThread – biomechanical bone stimulation

The principles of retention elements in terms of minute threads on the implant neck, MicroThread, was introduced on the ASTRA TECH Implant System as early as 1992 and is one of the key features of the ASTRA TECH Implant System BioManagement Complex. Thus, clinical documentation for MicroThread has been available for the last 20 years. This review includes technical, pre-clinical as well as clinical literature focusing on evaluating the effects of MicroThread, using appropriate methodologies.

The size and shape of the increased retention elements have been thoroughly investigated. It has been shown that the peak stress values in the bone can be dramatically reduced with optimal design of the minute threads, particularly when combined with a conical implant abutment connection located below the marginal bone. Furthermore, it has been suggested that the load transfer characteristics of the implants are dependent on the size and design of the implant neck. In fact, the more optimal load distribution offered by the MicroThread feature counteracts marginal bone resorption.

Pre-clinical data has shown benefits with MicroThread as compared with a smooth implant neck in terms of increased bone-to-implant contact and maintained marginal bone levels.

A clinical study comparing ASTRA TECH Implant System with and without the MicroThread feature showed more advantageous marginal bone maintenance around immediately placed implants with the MicroThread feature following 2 years in function. Another clinical study showed significantly better maintained bone around the MicroThread implants after 3 years following a conventional loading protocol. Only one published study on immediately loaded implants with MicroThread vs. without MicroThread showed no difference in terms of 1-year marginal bone maintenance.

MicroThread maintains the marginal bone and offers a good foundation for a long-term esthetic result.

For information on ASTRA TECH Implant System in clinical use, please refer to www.dentsplyimplants.com


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