

## **MicroThread™ – biomechanical bone stimulation**

The principles of retention elements in terms of smaller sized minute threads on the implant neck, MicroThread™, was introduced on the Astra Tech Implant System™ as early as 1992 and is one of the important key features of the Astra Tech BioManagement Complex™.

The size and shape of the increased retention elements have been thoroughly investigated<sup>1</sup>. 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 under the level of the marginal bone<sup>1-4</sup>. It is suggested that the load transfer characteristics of the implant is dependent on the size and design of the implant neck<sup>5-7</sup>. In fact, the optimal load distributions that MicroThread offers counteract marginal bone resorption<sup>8</sup>. A great deal of pre-clinical documentation explore the tissue healing<sup>9-19</sup>. Benefits of MicroThread compared with a smooth neck in terms of established bone-to-implant contact<sup>20,21</sup> and maintained marginal bone levels are documented<sup>22</sup>. The advantages of MicroThread, in terms of maintained marginal bone levels have been confirmed in a randomized controlled clinical trial<sup>23</sup> and when placed immediately into extraction sockets<sup>24</sup>.

Extensive clinical data from patient material clearly indicates that the MicroThread on the Astra Tech implant is a safe and predictable choice for both anterior<sup>24-38</sup> and posterior<sup>39-44</sup> single tooth restorations, and for other treatment options<sup>45-67</sup>. Also in the long-term perspective, the MicroThread at the implant neck help maintain the marginal bone and soft tissue architecture, which is a prerequisite for a long-term esthetic result. (Mean marginal bone loss of  $\leq 0.3$  mm after 5 years<sup>28,35,38,68,69</sup> and 0,1–0,7 mm after 8<sup>70</sup> and 10<sup>71</sup> years have been reported in prospective studies).

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