

Stability of Astra Tech dental implants

Implant stability, or the relative absence of micro-movements, is a prerequisite for achieving osseointegration. Stability at implant placement (initial/primary stability) is a pure mechanical phenomenon which is dependent on the osteotomy preparation technique in relation to the implant dimension, the bone quality and quantity, and on the macro and micro design of the implant. Secondary stability is a biological phenomenon; the result of the healing that takes place around the implant, i.e. the osseointegration. This process of bone formation and remodelling at the implant-bone interface is dependent on many factors e.g. the implant surface properties, loading conditions, and the individual host response.

There is no consensus regarding which method to use when measuring implant stability. One commonly used, non-invasive method, is resonance frequency analysis, which evaluates the stiffness of the bone-implant complex¹. The result is given as implant stability quotient, ISQ. A dip in ISQ is usually seen during the early healing phase and is related to the shift between initial/primary stability and secondary stability^{2,3}.

No significant dip is documented for clinically functioning Astra Tech OsseoSpeed™ implants. Neither during the early (< 2 months) nor late healing phase (1-5 years)⁴⁻¹¹ at conventional treatment regimes. Instead, stable and slightly increasing ISQ values are reported for well functioning Astra Tech implants^{4-8, 10-17}. This corresponds to the increased strength of the implant-bone interface around OsseoSpeed implants as measured by tensile pull-out test, and to maintained/increased ISQ and removal torque values, found in experimental studies^{1, 18-22}. Taken together, this data is interpreted as a continuous gain in osseointegration.

In conclusion, OsseoSpeed implants do not show a significant dip in implant stability quotient during healing and osseointegration.

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