Scientific Review
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EV connection with Conical Seal Design™—a tight and stable fit

The EV connection is an internal conical connection located below the marginal bone level. Conical Seal Design seals off the surrounding tissue and contributes to the formation of the Soft Tissue Chamber, allowing for high esthetic results. Conical Seal Design has been a part of the Astra Tech Implant System since 1985 and the One-position-only feature was added in 2006.

The EV connection was introduced for DS PrimeTaper Implant System in 2021 and DS OmniTaper Implant System in 2022.

Reduced peak stress and a tight seal preserve the marginal bone

The internal connection, with an 11° tapered cone as the load bearing connection between implant and abutment, extends below the marginal bone crest, thus transferring the load deep into the bone. This conical construction results in a stable fit and the location contributes to stress distribution over a larger area which reduces peak stresses especially in the cortical bone, leading to preservation of the marginal bone[1, 2].

The tight connection forms a seal that separates the inside of the implant from the surrounding tissues[3], minimizing micro-leakage and micro-movements thereby preventing bacterial leakage and tissue inflammation[4–15]. Comparisons generally favor internal conical connections over other connection types[11, 12, 16].

Precise installation with indexing and One-position-only

The internal cone guides the abutment into a quick and precise fitting[17–22] , making x-rays to confirm seating unnecessary[23]. Continued development of the EV connection[3, 24–26] added indexing with the option of One-position-only for Atlantis abutments, which further simplifies the installation procedure, leading to predictable results.

Strong and stable construction with minimal complications

Abutment screw loosening is a rare phenomenon and the EV connection has passed mechanical as well as assembly/disassembly tests fulfilling all requirements[27–30]. Strength evaluations with good results, including narrow implants[31, 32], are reported[24, 33–36]. Numerous theoretical and experimental studies have further characterized the Conical Seal Design using other methods[37–55].

Conclusion

The EV connection, including Conical Seal Design, Soft Tissue Chamber, and One-position-only, simplifies clinical procedures and helps preserve the marginal bone by forming an effective seal against bacterial colonization and transferring the load deeper down in the bone, thus reducing peak stresses. It ensures reliable function and long-term esthetics* in all clinical situations.

*See Scientific review "Soft Tissue Chamber" at www.dentsplysirona.com/science

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