

Conical Seal Design™ – a strong and stable fit

One of the key features of the Astra Tech BioManagement Complex™ is the design of the implant–abutment connection, i.e. the Conical Seal Design™. This design has been part of the implant system since 1985. Hence, all available scientific documentation on Astra Tech implants, today more than 300 published articles, include results on this key feature.

The Conical Seal Design has the inner conus inside the implant and the outer conus on the abutment. The connection between the implant and abutment is hence located below the marginal bone level, transferring the load deeper down in the bone and reducing the peak stresses in the bone^{1,2}. Since the connection is of a conical shape and not an internal flat-to-flat design, the abutment quickly, simply and nontraumatically guides itself into a predictable and precise fitting³⁻⁵, avoiding the need for X-rays to confirm abutment seating⁶. The tight connection seals off the interior of the implant from the surrounding tissues, truly minimizes micro-leakage and micro-movements,⁷⁻⁹ making it a stable and reliable connection which promotes healthy soft tissues¹⁰⁻¹⁶ and maintenance of the marginal bone¹⁷⁻²⁵. The Conical Seal Design prevents screws from loosening^{5,26-29} and the system has passed mechanical and removal tests without any concerns noted in the literature³⁰⁻³⁵. Theoretical and experimental studies with various study designs have evaluated the Conical Seal Design³⁶⁻⁴¹.

The clinical use of the Conical Seal Design has been extensively documented including several prospective long-term (≥ 5-10 years) clinical studies for single tooth⁴²⁻⁴⁵, removable dentures^{26, 28, 43, 46-49}, fixed prosthesis^{24, 27, 50-56}, and compromised situations^{51, 57, 58}. The design of prosthetic solutions, with or without cantilever extensions, or connected to non-parallel implants, did not affect the change in the mean marginal bone level after 3 years⁵⁹ (linked to natural teeth), or 5 years^{60, 61} in function.

The Conical Seal Design simplifies clinical procedures and helps preserve the integrity of peri-implant tissues. It ensures reliability, function and esthetics in all clinical situations.

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