

CORAIL[®]
HIP SYSTEM

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Design Rationale



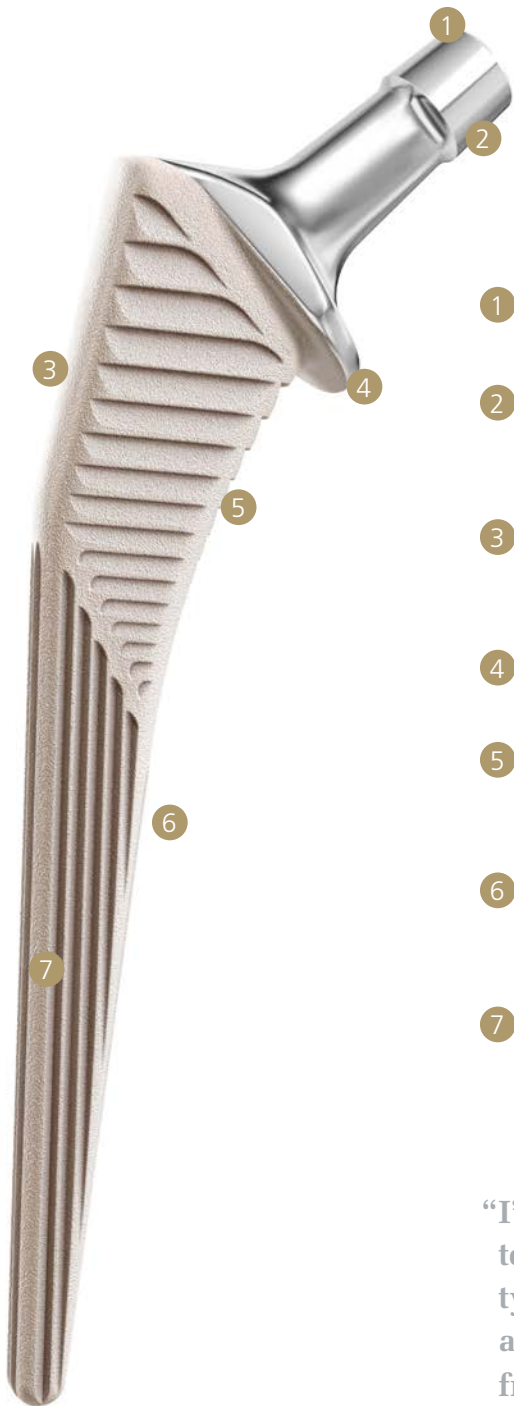
The Science of Simplicity

“The advanced features of the CORAIL® Stem, and its bone-preserving surgical technique, have made it a great choice for minimally invasive hip surgery. More than thirty years ago, we began a revolution with the use of HA in orthopaedics. Today we face an exciting new era, and we look forward with confidence in sharing continued success with the world’s orthopaedic community.”

ARTRO Group - Design Surgeon Team, Clinique d'Argonay
International Visitation Centre - Annecy, France

US Surgeon Team

James Caillouette, MD; Charles R. Clark, MD; Mark Froimson, MD;
Jonathan Garino, MD; William Lanzer, MD; Joel Matta, MD; Sam Sydney, MD



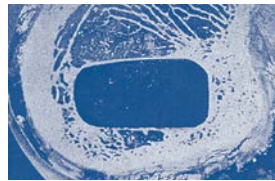
- 1 Multiple offset options aiming to restore hip biomechanics
- 2 Tapered neck geometry and ARTICUL/EZE® Hip Taper designed to increase range of motion
- 3 Low-profile lateral shoulder design enables easy insertion in reduced incision techniques, including the anterior approach
- 4 Available in collared and non-collared options
- 5 Step geometry is designed to convert hoop stresses to compressive loads
- 6 Vertical/horizontal grooves designed to provide rotational and axial stability
- 7 Proprietary HA coating

“I’ve used the CORAIL since 1998 and with its easy-to-use surgical technique, choose to use it on many types of patients, including those with osteopenia and in hemiarthroplasty cases for femoral neck fracture treatment.”

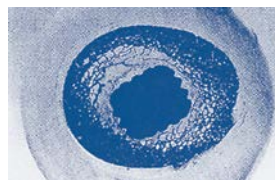
Jonathan Garino, MD - Philadelphia, Pennsylvania

Proven Fixation⁴

The CORAIL Stem stepped geometry is oriented to reduce shear forces and improve compression loading in host cancellous bone.



Proximal trapezoid cross section resists axial/torsional stresses and promotes initial stability.



Distal quadrangular cross section provides rotational stability without cortical contact



1 year post-op



16 years post-op

Long-Term Survivorship

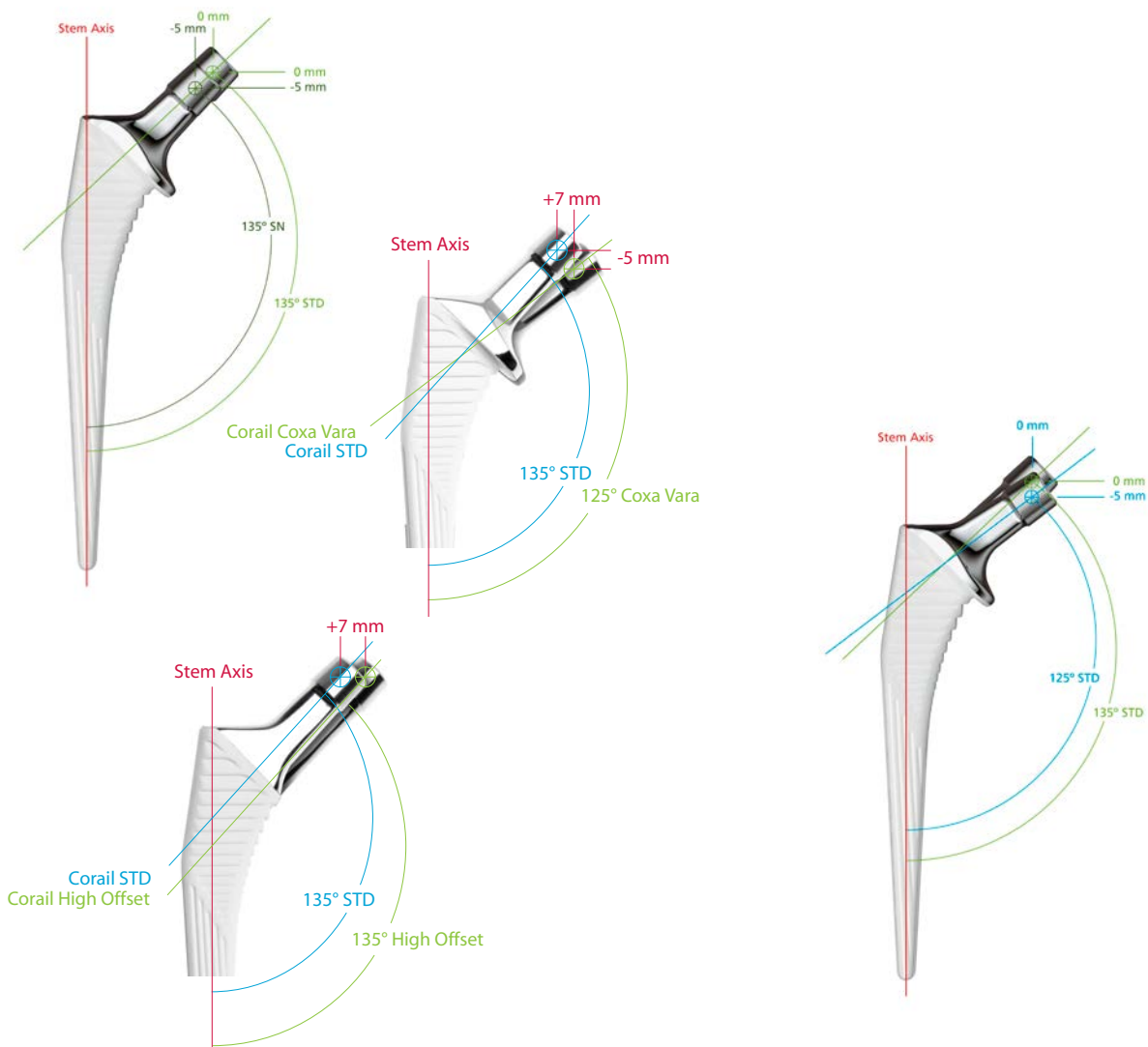
96.3% — Stem Survivorship at 25 years¹

93.7% — Stem Survivorship at 30 years²

“I find the CORAIL Stem design and HA coating provides initial stability for my patients.”

William Lanzer, MD - Seattle, Washington

Enhanced Biomechanics



Collarless and Collared Stem Options

Short Neck, Standard Offset, and High Offset stems are available in both Collarless and Collared options to provide surgeons with options based on their preference.

High offset options add +7mm of offset through direct lateralization to restore hip biomechanics in a wider range of patients.

Collared Stem Options

Coxa Vara High Offset option is available in a Collared version only. Coxa vara collared neck option offers an increased offset and varus neck angle for femoral restoration and proper soft-tissue tensioning of varus neck angled patients.

Collared stems are available to control subsidence and add rotational stability in patients with osteopenic bone.



Neck Enhancements

Narrowed anterior-posterior neck dimensions and optimized ARTICUL/EZE Taper increase range of motion and reduce risk of mechanical impingement.

ARTICUL/EZE 12/14 Taper is fully captured by all nonskirted ARTICUL/EZE Heads, eliminating the creation of a false skirt due to trunnion protrusion.

Polished neck is designed to generate less wear debris secondary to prosthetic impingement.

“I use the CORAIL because of its ease of implantation and long track record. Used with the PINNACLE® Acetabular Cup System, it lets me select multiple options in order to optimize hip biomechanics in my patients.”

Charles R. Clark, MD - Iowa City, Iowa

Bone Preserving Philosophy

Compaction Broaching

A philosophy of respecting and preserving patient anatomy, biology and physiology are key to the CORAIL Stem success.

Compressing and compacting the cancellous bone during the broaching process maintains the medullary canal endosteum, preserving blood supply to the bone and the bone/implant interface.



Compaction broaching creates an excellent bone/implant contact ratio and high pullout strength, and it increases prosthetic torsional stability.³



Compaction broaching preserves the blood supply to promote healing and growth of bone around the implant, and this technique has shown excellent long-term survivorship.^{2,3}



18 years post-op

“Compaction broaching coupled with CORAIL creates ‘silent’ hip replacement. We haven’t seen any adverse, long-term radiographic changes.”

James Caillouette, MD - Newport Beach, California

“I find the CORAIL Stem and instrumentation facilitate ease of insertion using an anterior approach.”

Joel Matta, MD - Los Angeles, California

Heritage

The fully HA-coated CORAIL Total Hip System can be used in a variety of types and sizes of femora.



Type A: Champagne Flute

Type B: Proportional Shape

Type C: Stovepipe

**“I find it to be reproducible and easy to implant,
and use it on many different types of patients.”**

Sam Sydney, MD - Baltimore, Maryland

**“After independently reviewing the ARTRO Group CORAIL
data in 1998, I decided to try the CORAIL Stem. I’m pleased
with the results and now use it on many types of patients.”**

Mark Froimson, MD - Cleveland, Ohio

Surgical Technique



Step 1: Neck Osteotomy



Step 2: Femoral Canal Preparation



Step 3: Offset Selection & Head Trialing



Step 4: Femoral Component Insertion

References:

1. Vidalain JP (2011) The CORAIL Hip System: A Practical Approach Based on 25 Years of Experience. Springer; pg 94-101.
2. J Arthroplasty. 2018 Feb;33(2):482- 490. Clinical and Radiographic Outcomes at 25-30 Years of a Hip Stem Fully Coated With Hydroxylapatite. Jacquot L1, Bonnin MP2, Machenaud A1, Chouteau J1, Saffarini M3, Vidalain JP1.
3. Vidalain JP (2011) The CORAIL Hip System: A Practical Approach Based on 25 Years of Experience. Springer; pg 70-72.
4. Xu J, Xie Z, Zhao J, et al. Results of a hydroxyapatite-coated femoral stem (Corail) in Chinese: a minimum 10-year follow-up. Springerplus. 2016;5(1):1983. Published 2016 Nov 15. doi:10.1186/s40064-016-3656-5

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CAUTION: USA Law restricts these devices to sale by or on the order of a physician.

Not all products are currently available in all markets.

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