DePuy Synthes
COMPANIES OF Johnson & Johnson

TRI-LOCK® BONE PRESERVATION STEM

Featuring GRIPTION® Technology

DESIGN RATIONALE

TRI·LOCK®
BONE PRESERVATION STEM
FEATURING GRIPTION® TECHNOLOGY

IMPLANT GEOMETRY

Extending the TRI-LOCK® Stem heritage
The original TRI-LOCK® Stem was introduced in 1981. This implant was the first proximally coated tapered-wedge hip stem available to orthopaedic surgeons and their patients. The original TRI-LOCK Stem has demonstrated a 95% femoral component survivorship estimate at 10 years.[1]

Preserving the natural anatomy
The reduced lateral shoulder, thin geometry and reduced length of the TRI-LOCK Bone Preservation Stem allow for a minimal amount of bone to be removed from the patient. These same features, along with approach enabling instrumentation, allow the surgeon to perform minimally invasive techniques.

Delivering stable, predictable performance
The TRI-LOCK Bone Preservation Stem incorporates GRIPTION® Fixation Technology, which offers an enhanced coefficient of friction when compared to POROCOAT® Porous Coating. GRIPTION Fixation Technology is designed to help provide consistent implant seating height of the TRI-LOCK Bone Preservation Stem through a simple reproducible surgical technique that is designed to achieve initial fixation and allows for biological fixation to the bone.

Restoring high level function
The TRI-LOCK Bone Preservation Stem neck geometry has been designed to improve range-of-motion compared to the neck geometry of the original TRI-LOCK Stem. Progressive dual offsets with direct lateralization provide the ability to accurately recreate individual patient soft tissue tension. An extensive size range and consistent intervals between sizes help achieve proper fit and aid in recreating leg length.

Providing advanced bearing options
The TRI-LOCK Bone Preservation Stem's 12/14 ARTICUL/EZE® Taper enables the use of the most advanced bearing options available today. The PINNACLE® Acetabular Cup System gives the surgeon a choice of bearing materials, and the option for screw fixation.

Enabling a simple technique
Today's total hip surgeon demands proven performance, simplified instrumentation, and surgical approach flexibility. The new TRI-LOCK Bone Preservation Stem delivers on all fronts. The broach-only technique and wide range of instrumentation enable both traditional and less-invasive surgical approaches.

Note: The statements in this brochure only refer to the TRI-LOCK Bone Preservation Stem system used with *DePuy Synthes Joint Reconstruction metal on polyethylene and ceramic on polyethylene bearing combinations.**

EXTENDING THE TRI-LOCK® HERITAGE

95%

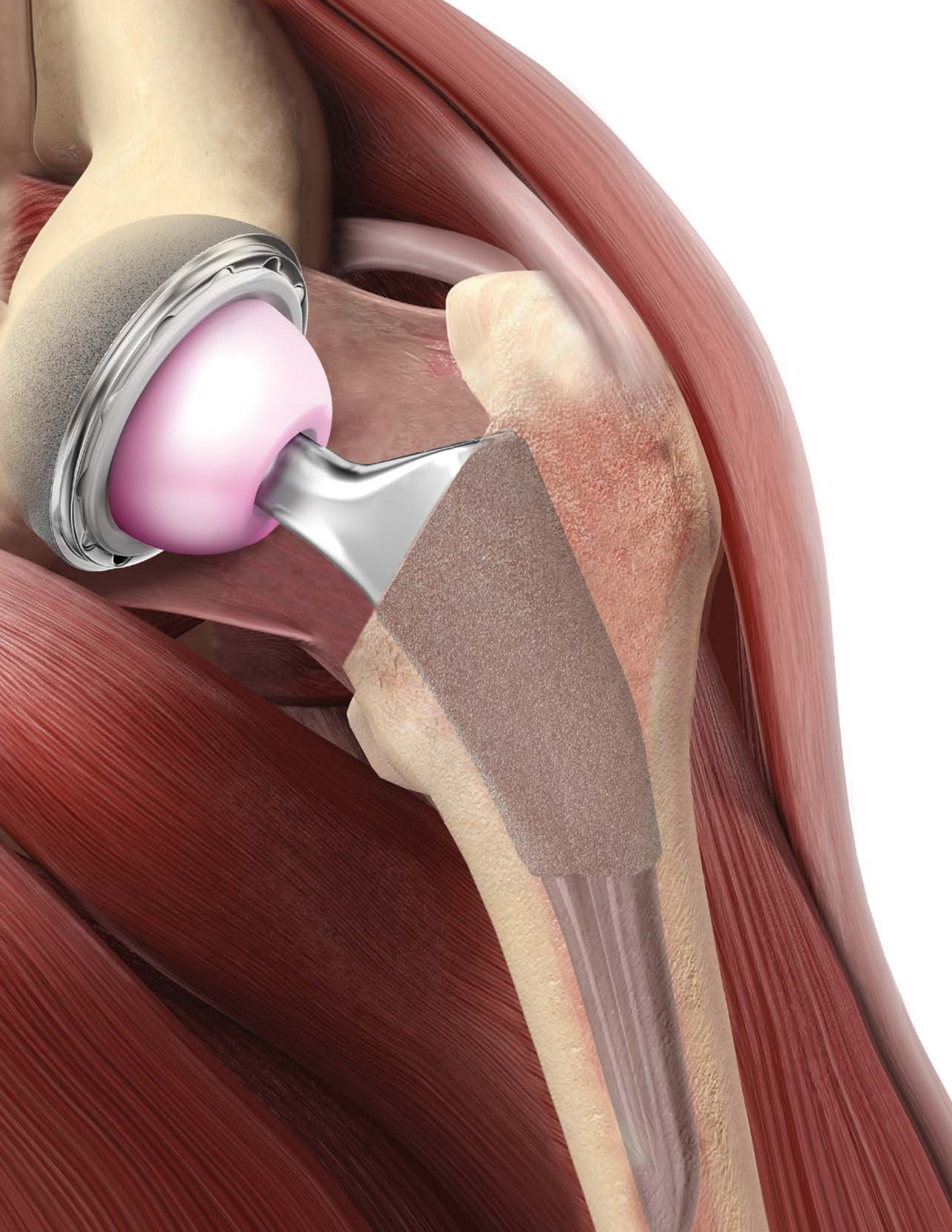
Femoral component survivorship estimate at 10 years.[1]

The original TRI-LOCK Stem was introduced in 1981. This implant was the first proximally coated tapered wedge hip stem available to orthopaedic surgeons and their patients. Since its introduction, the success of the TRI-LOCK Stem has been well documented in published studies. Using component revision for aseptic loosening as the end point, the numbers are convincing.

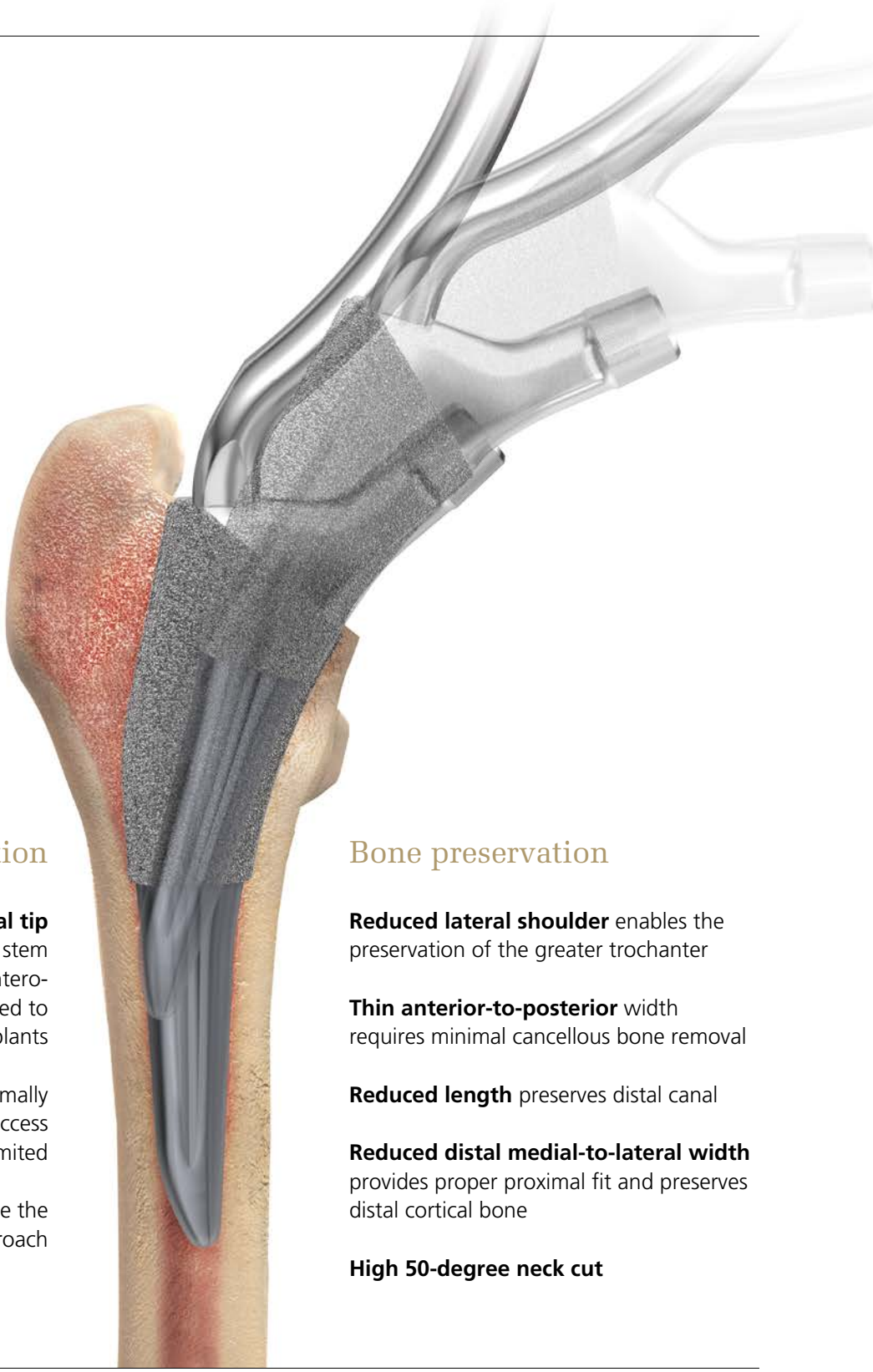
Axial stability
The TRI-LOCK Bone Preservation Stem achieves axial stability within the femur by making intimate cortical contact at the medial and lateral endosteal cortices. The natural taper of the femoral canal is reflected in Proximal-to-Distal Taper of the TRI-LOCK Bone Preservation Stem, as viewed in an A/P radiograph. This taper prohibits distal migration when cortical contact is achieved.

Rotational stability
The inherent rotational stability of the TRI-LOCK Bone Preservation Stem is a result of the narrow anterior-to-posterior width of the stem. This narrow geometry allows the stem to be sized to fill the largest dimension of the femoral canal (the medial-to-lateral width). Since the M/L width of the implant is larger than the A/P width of the femoral canal, the TRI-LOCK Bone Preservation Stem maintains rotational stability.

Long-term clinical results[1].
The initial axial and rotational stability of the TRI-LOCK Bone Preservation Stem provide the opportunity for long-term clinical results. Initial stability limits micromotion at the implant to cortical bone interface, resulting in a higher probability for long term, durable fixation.



PRESERVING THE NATURAL ANATOMY



Soft tissue preservation

Reduced length, contoured distal tip and reduced lateral shoulder ease stem insertion through the anterior and antero-lateral approaches when compared to previous generation implants

Broach only technique enables minimally invasive surgical approaches where access with straight reamers is limited

Instrumentation designed to enable the surgeons' preferred approach

Bone preservation

Reduced lateral shoulder enables the preservation of the greater trochanter

Thin anterior-to-posterior width requires minimal cancellous bone removal

Reduced length preserves distal canal

Reduced distal medial-to-lateral width provides proper proximal fit and preserves distal cortical bone

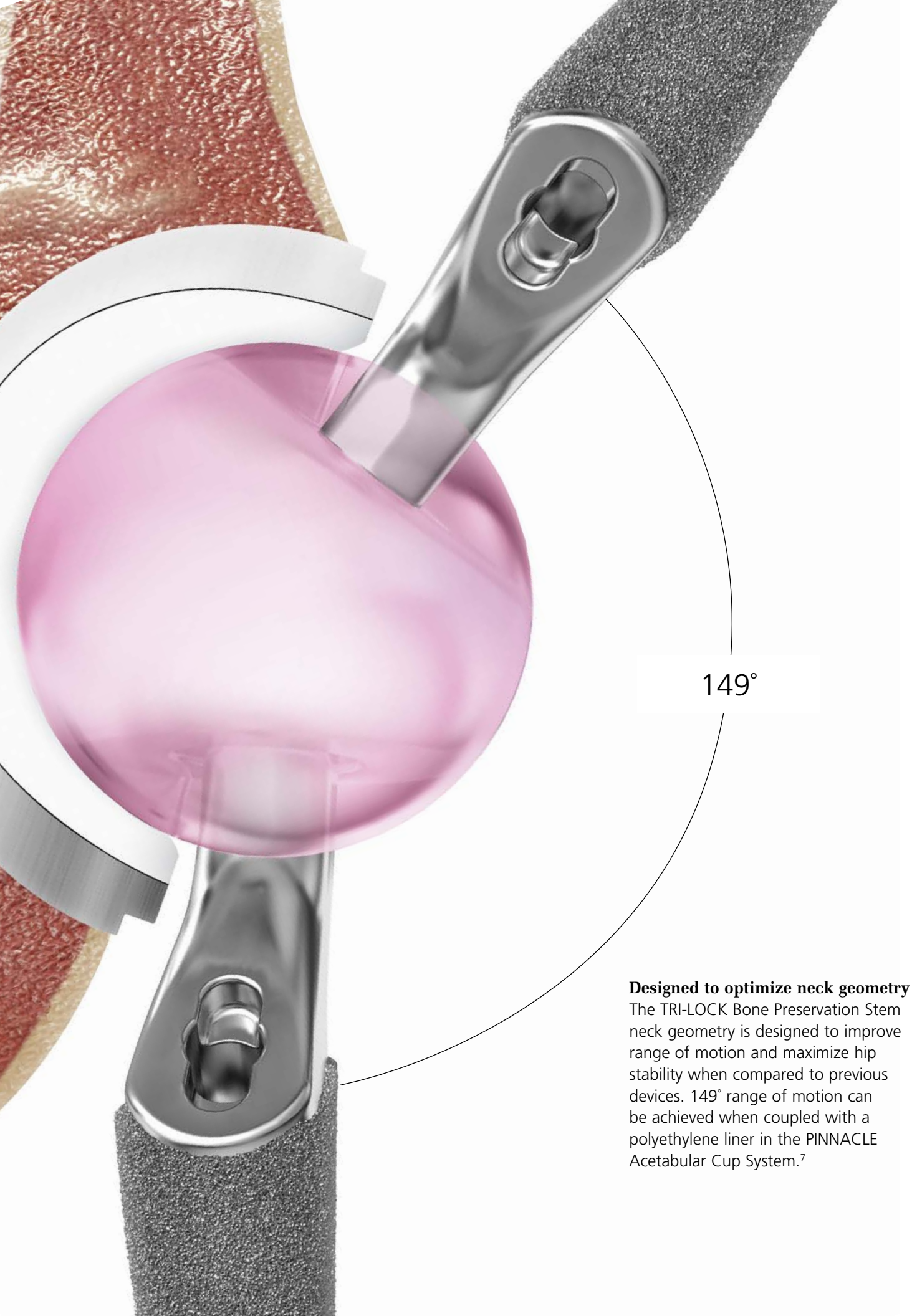
High 50-degree neck cut

DELIVERING STABLE, CONSISTENT PERFORMANCE

GRIPTION® Fixation Technology

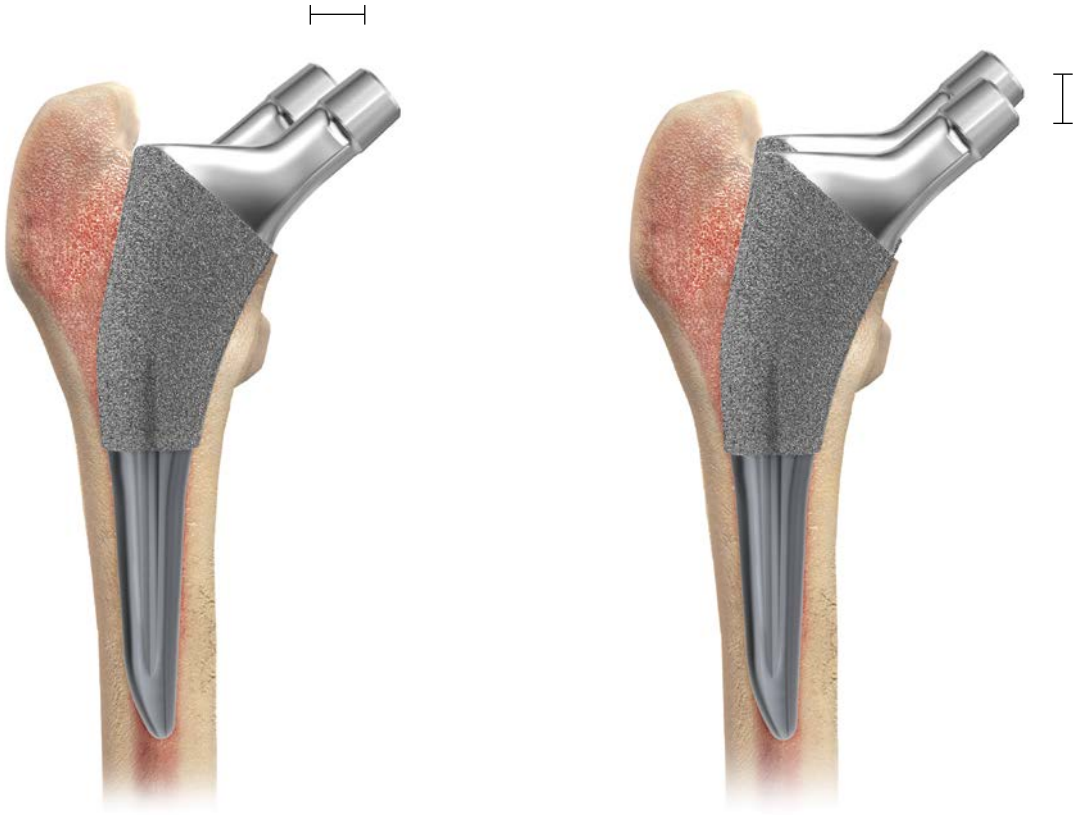
- GRIPTION Porous Coating has a 1.2 coefficient of friction exceeding that of plasma spray and porous tantalum material.[2, 3]
- The volume porosity of GRIPTION Porous Coating reaches 80% at the surface.[4] This increased porosity allows for higher oxygenation and revascularization of bone and/or fibrous tissue.[5]
- GRIPTION Porous Coating provides a 300-micron average pore size, similar to *DePuy Synthes Joint Reconstruction's* POROCOAT Porous Coating.[4, 6]
- GRIPTION Porous Coating is highly microtextured. This microtexture provides an increased surface area for osteoblast and/or fibroblast cells to adhere and proliferate.[10]
- The TRI-LOCK Bone Preservation Stem and GRIPTION Porous Coating are composed of titanium, a material with proven biocompatibility and a low modulus of elasticity.[9]

The TRI-LOCK Bone Preservation Stem incorporates GRIPTION Porous Coating fixation technology. This advanced coating technology builds upon *DePuy Synthes Joint Reconstruction's* 30-year tradition of cementless implant excellence. The critical coating properties that POROCOAT Porous Coating has shown effective for long-term survivorship have been replicated in GRIPTION Porous Coating. Advanced technology has allowed *DePuy Synthes Joint Reconstruction* to design the properties of GRIPTION Porous Coating to provide consistent implant seating height and initial stability.



Designed to optimize neck geometry
The TRI-LOCK Bone Preservation Stem neck geometry is designed to improve range of motion and maximize hip stability when compared to previous devices. 149˚ range of motion can be achieved when coupled with a polyethylene liner in the PINNACLE Acetabular Cup System.[7]

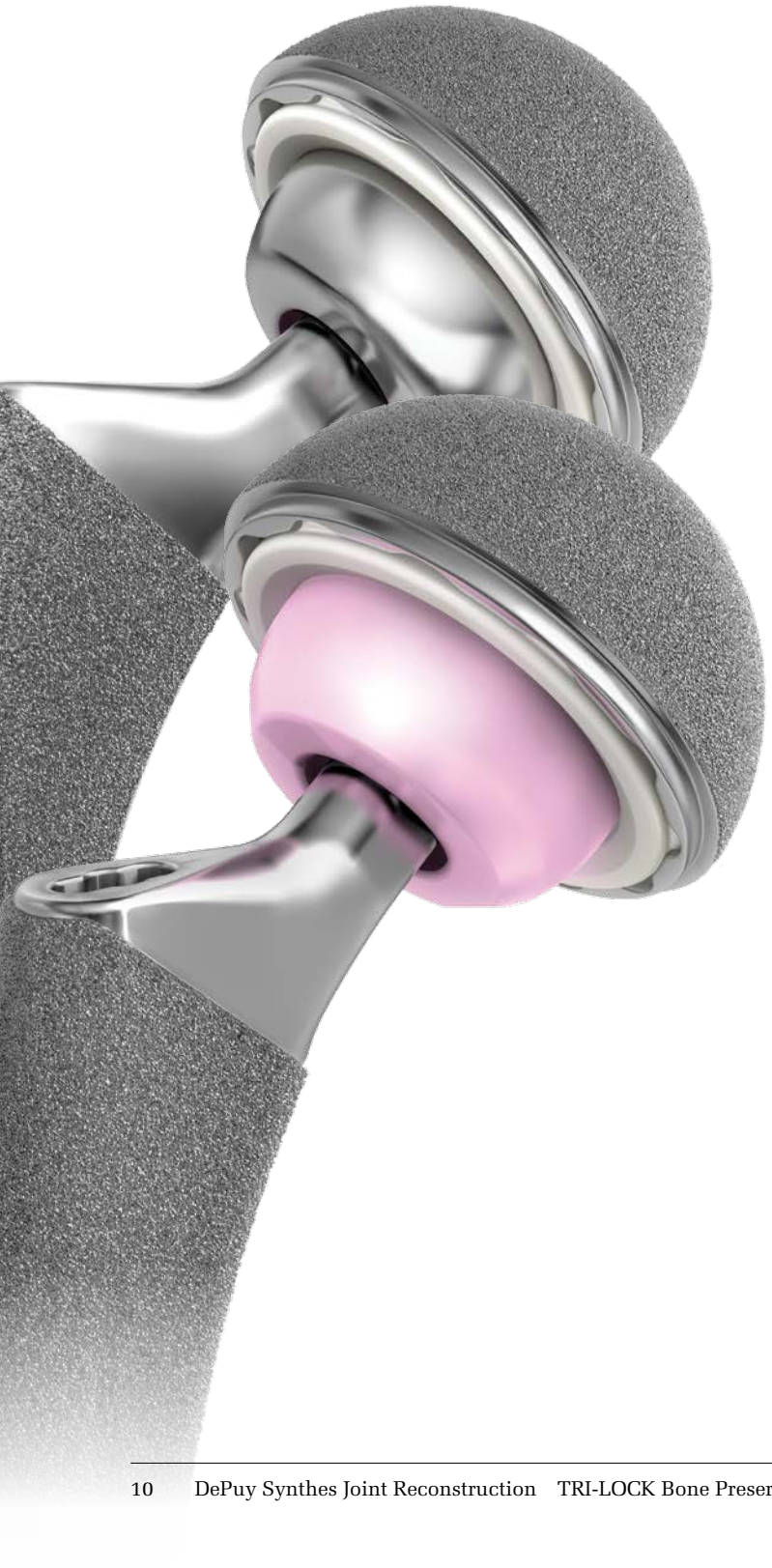
RESTORING HIGH LEVEL FUNCTION



Progressive dual offset
Stem offset is proportional to stem size. Each stem size offers a standard and high offset option. The high offset option lateralizes the stem 6–8 mm depending on size. By maintaining a constant 130˚ neck angle, tissue tension can be increased without affecting leg length.

Extensive size range
The TRI-LOCK Bone Preservation Stem system features 13 stem sizes, allowing the surgeon to address the full patient population. Consistent intervals between each stem size help achieve proper fit within the femur. Component sizing can also be used to fine tune seating height and adjust leg length.

PROVIDING ADVANCED BEARING OPTIONS



PINNACLE Acetabular Cup System with MARATHON® Polyethylene

MARATHON Polyethylene combines mechanical integrity with wear resistance. This moderately cross-linked (5 Mrad) polyethylene is manufactured to have zero oxidative potential.

PINNACLE Acetabular Cup System with ALTRX® Polyethelene

This moderately cross-linked polyethylene (7.5 Mrad) demonstrates mechanical toughness and zero oxidative potential, while providing a 92 percent reduction in wear.[8]

ENABLING A SIMPLE SURGICAL TECHNIQUE

Step 1: Neck osteotomy

Step 2: Femoral canal preparation

Step 3: Femoral component insertion

APPROACH ENABLING BROACH HANDLE OPTIONS

Straight

Straight-long

Curved

Dual-offset

APPROACH ENABLING STEM INSERTER OPTIONS

Threaded

Straight modular

Curved modular

Offset modular

Bullet-tip modular

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