References
3. Data on file at DePuy Orthopaedics, Inc.

BIOLOx® delta is a trademark of CeramTec AG.

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DESIGNED BY SURGEONS

Our advanced Pinnacle® System was designed in conjunction with a team composed of the following surgeons:

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Associate Director
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Assistant Professor of Orthopaedic Surgery
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DePuy Pinnacle® Hip Solutions is designed with a wide range of acetabular cup options, biological and mechanical fixation alternatives and advanced bearing technologies. With more options than any competitive product, these proven, modular solutions provide you with the power to choose without compromise. Pinnacle allows you to meet the individual needs of patients and their lifestyle.
ENHANCED OPTIONS

Our unique approach to modularity gives you more ways to bring together all the right components and materials for optimized performance. Utilizing the advanced bearing options of DePuy Pinnacle® Hip Solutions allows you to achieve stability, wear reduction and surgical flexibility.

Choose a solution featuring the most advanced technologies available – metal-on-metal, ceramic-on-polyethylene or metal-on-polyethylene.
PROVEN DESIGN – THE VIP TAPER

Variable Interface Prosthesis (VIP) taper technology contributes to advanced modularity by supporting both polyethylene liners and hard bearing inserts. VIP taper technology also enables macro- and microstability by functioning as a supporting and locking mechanism.
Our exclusive TrueGlide™ technology enhances performance with smooth, natural motion and less friction. Advanced tribology is the science behind this innovation, and the main reason for improved wear resistance over conventional technology. TrueGlide technology optimizes the diametrical clearance and surface finish of the implant, allowing the body to create a thin film of synovial fluid, enabling bearing lubrication and reducing wear. The result is a smooth, more fluid range of natural motion.
TrueGlide™ TECHNOLOGY

Improved Wear Resistance

Bearing surfaces are fully separated and the load fully supported by the lubricating fluid.
IMPROVED LUBRICATION PROMOTES HEALTHY JOINTS

Synovial fluid fully separates and lubricates the load-bearing surfaces in a healthy joint. TrueGlide technology helps establish fluid film lubrication between bearing surfaces to minimize wear. Extensive laboratory testing demonstrates that large bearing diameter and low diametrical clearance can dramatically decrease wear, metal particles and ions.5,6

**Conventional Boundary Lubrication**

Substantial direct interaction between surfaces. Lubrication is provided by slippery molecules adhering to surfaces.

**Conventional Mixed Lubrication**

Load is partially supported by the lubricating fluid but with some direct interaction between surfaces, requiring boundary lubrication.
92% WEAR REDUCTION – AltrX™

AltrX™ is an ultra-low-wear polyethylene and an advanced option in alternative bearings. The unique Altra-Link™ manufacturing process is used to optimize the balance between wear reduction and mechanical integrity. Unlike annealed polyethylene, AltrX consistently eliminates free radicals and oxidative potential.

BIOLOX® delta-on-AltrX

BIOLOX® delta-on-AltrX bearings provide an alternative solution for high-demand patients. This low-wear option produces 33 percent less volumetric wear than AltrX liners with cobalt chrome heads. BIOLOX delta-on-AltrX is also less susceptible to added wear from third-body debris such as bone cement or bone fragments.
92% WEAR REDUCTION – Ultamet® XL

Ultamet® XL metal-on-metal bearings have a head-to-shell ratio like no other modular system. These large diameter, high-carbon cobalt chrome bearings have optimized diametrical clearance and sphericity, allowing fluid film lubrication, enhanced stability and low wear while preserving acetabular bone.
ADVANCED FIXATION

TRUE TISSUE IN-GROWTH

At DePuy, our innovative coating technologies coax natural bone to grow deep within implant material for longer-lasting, secure placement. Other fixation alternatives can’t deliver the same stability. Just look to our long-standing clinical heritage and you’ll see why we lead the way in implant fixation.
INNOVATIVE SOLUTIONS IN FIXATION

Our advanced Gription™, Porocoat® and DuoFix® porous coatings promote biological tissue in-growth for enhanced fixation.

Data on file, DePuy Orthopaedics, Inc.
OPTIMIZED FIXATION

WITH Gription™

Gription technology is a cementless coating specifically engineered to maintain a clinically advantageous 63-percent porous, 300-micron pore structure to maximize both short- and long-term fixation. This allows for greater tissue growth and revascularization onto and around an implant.

Combined macrotexture and microtexture topographies can provide a favorable mechanical loading environment for bone reconstitution and enable greater cell adhesion and proliferation. Gription coating has demonstrated a predicted coefficient of friction of 1.2 in lab testing, offering substantial improvement over standard porous coatings and suggesting a 20 percent improvement over a contemporary tantalum cementless interface.³
Porocoat® Porous Coating encourages more biological fixation to bone. Our proprietary Porocoat Porous Coating is composed of commercially pure titanium sintered metal beads, which allow bone to affix biologically into the porous coating.

With more than 30 years of clinical heritage and a recent 5-year follow-up showing 99.9 percent survivorship, Pinnacle cups with Porocoat Porous Coating have been successful in achieving stability and long-term fixation.¹
Our DuoFix® Fixation System is a combination of Porocoat Porous Coating and highly amorphous hydroxyapatite (HA). DuoFix uses tiny, spherical beads to maximize surface area for immediate stability and fast, deep biological tissue in-growth into the porous coating. Plasma spray flame applications provide a consistent layer of HA to accelerate osteointegration and aid in achieving early fixation.

DuoFix also helps to seal the acetabulum against particulate debris, reducing the chance of component loosening. This coating technology encourages long-term fixation of the acetabular cup to the host bone.
ENABLING MOTION

Optimized head-to-shell ratios across a full spectrum of sizes proportionally increase jump distance and stability, and reduces the chance of dislocation. A smooth range of natural motion is yet another key benefit for patients.
HIGH STABILITY, LOW WEAR – Ultamet® XL

40 and 44mm Ultamet® XL bearings are engineered to increase stability and reduce wear while offering modularity and adjunct fixation. Made with highly polished, high-carbon cobalt chrome, these bearings offer optimized diametrical clearance and sphericity to provide fluid film lubrication and wear resistance.
HIGH STABILITY, LOW WEAR – AltrX™ LD

AltrX™ LD liners are large-diameter, Altra-Link™ polyethylene liners designed to enhance stability with inner diameter (ID) sizes of 40, 44 and 48 mm. These large-diameter liners are available in lateralized and face-changing designs. With a focus on wear reduction, AltrX LD liners are potentially less susceptible to higher wear as a function of head size.
ADVANCED MATERIALS

ENHANCED MATERIALS TO OPTIMIZE CHOICE

DePuy Pinnacle® Hip Solutions materials offer mechanical integrity, wear resistance and oxidative stability. Our advanced modularity and range of solutions allow you to match the right components to your patient’s needs – more important than ever, considering today’s patients are demanding far more from implants than previous generations.
IMPROVED TOUGHNESS – AltrX™

Remelted in an argon convection, ultra-low-wear AltrX™ is mechanically tough. It also consistently eliminates free radicals and oxidative potential, unlike annealed polyethylene.
IMPROVED STRENGTH – BIOLOX® *delta*

The advanced technology of BIOLOX® *delta* ceramic heads provides high-stability, low-wear articulations, which are especially relevant with more active patients. BIOLOX *delta* heads are available with or without titanium sleeves for both primary and revision surgeries.
INNOVATIONS FROM DePuy

DePuy supports the implant process at every level:
- Advanced materials
- Less invasive techniques
- Advanced instrumentation
- Computer-assisted surgery
- Exceptional survivorship\(^1\)
COMPLETE FEMORAL SOLUTIONS

DePuy Pinnacle® Hip Solutions are fully compatible with DePuy’s complete line of advanced femoral stems. These options provide an implant that suits the surgeon’s preferred technique and the patient’s natural anatomy. Each implant is rooted in proven clinical heritage, while unique design elements make these stems the most advanced available today.

- AML®, with Porocoat® Porous Coating, was the first cementless primary femoral stem and continues to produce successful clinical results after 30 years.

- S-ROM® provides stem modularity and gives the surgeon flexibility for matching the patient’s natural anatomy.

- Summit,™ a proximally fixated stem, anatomically loads the bone to help prevent stress shielding.

- The Corail® compaction broaching stem not only preserves bone, but also enables surgical approaches that would prove difficult with other systems.

- The latest advance in DePuy’s hip stem portfolio is the Tri-Lock® Bone Preservation Stem. The unique features of this stem enable the preservation of both bone and soft tissue, provide exceptional stability and aid in restoring high-level function.
ANTERIOR APPROACH

The Anterior Approach for Total Hip Replacement, as described by Joel Matta, MD, is an advanced application of the Smith-Petersen approach using the PROfx™ or hana™ table from Mizuho OSI. The technique does not cut any muscles, but separates them to allow access into the hip joint. The result is that muscles are spared during surgery. With these advantages, the Anterior Approach can provide a less invasive approach to the surgery.

DePuy has partnered with Dr. Matta to build a comprehensive training and education program around the technique. The program features learning centers inclusive of:

- Hands-on cadaveric training
- Didactic lectures and interactive discussion
- Advocation for OR visitations to experienced surgeons

To further augment the comprehensive Anterior Approach program, DePuy offers:

- Surgical technique papers
- Surgical technique videos
- Specially designed Anterior Approach instrumentation
- A field specialist
CAS HIP SOLUTIONS

Computer-assisted surgery (CAS) has changed orthopaedic operating rooms for years. Why should total hip surgery be any different? Explore the options to achieve reproducible cup placement, visualized reaming/broaching, combined anteversion hip solutions, and many other exciting new hip CAS advancements. When performing a CAS Total Hip Arthroplasty (THA), another intraoperative solution is accurate determination of leg length and offset calculations along with a software system that fully incorporates DePuy components.
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ADVANCING EDUCATION

In 2009, the DePuy Education and Research Center opens in Raynham, Massachusetts to promote innovation and further the commitment to professional medical education.

The new Education and Research Center represents an important step forward in our commitment to offer educational programming in service to our customers. The expansive new facility will allow us to enlarge the scope of our training. This new facility includes:

- 200-seat auditorium
- Dedicated lab with capacity for a dozen stations
- Up to six classrooms for training and education
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