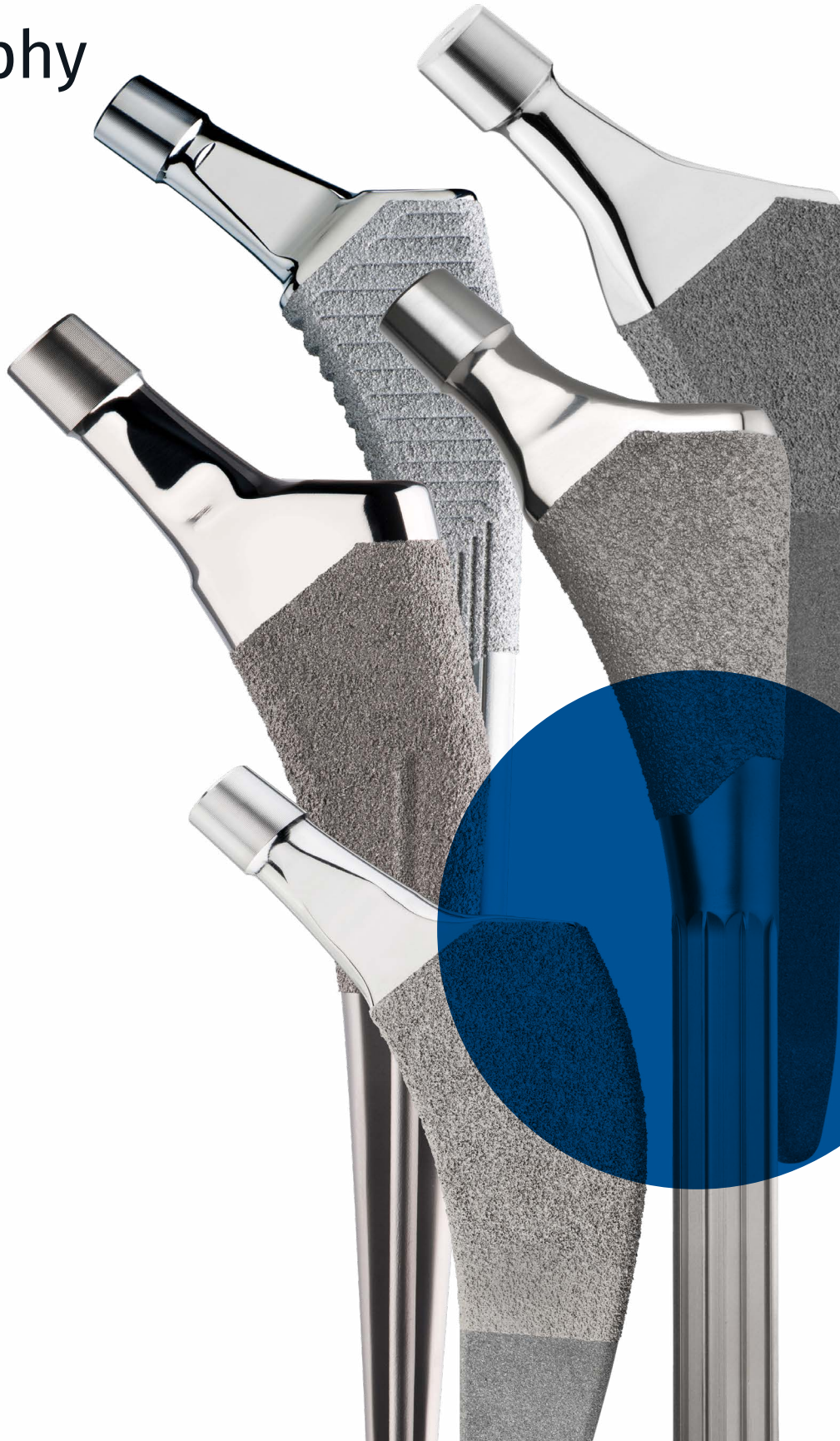
Profemur®

Stem philosophy



MicroPort Orthopedics

Full Function, Faster®

Every stem has a story

Profemur® Preserve

Short stem philosophy

Principles

- Primary wedge fixation in proximal cortical bone
- Short in length - limited bone removal aims to facilitate future revisions by minimizing occupation of the femur
- Double and triple tapered wedge geometries designed for proximal load transfer to discourage bone resorption caused by stress shielding

Design features

Rotational stability

Rectangular cross-section and wedge shaped geometry allow for four-point fixation along the four corners within the femoral canal.[1]

Fixation

Proximal portion of stems are coated with plasma spray coating to promote bone apposition.

Stem insertion

Facilitated by a reduced lateral shoulder and curved distal geometry.

Thigh comfort

Pursued by a rounded distal tip to facilitate load transfer to the body of the stem rather than concentrating load on the tip.

Competitors

Zimmer Biomet Taperloc Microplasty®

Zimmer Biomet Fitmore®

DePuy Tri-Lock BPS®

Smith & Nephew SMF®

Zimmer Biomet CLS Brevius®

[1]Swedish Hip Arthroplasty Register: Annual Report. http://www.shpr.se

History of Preserve

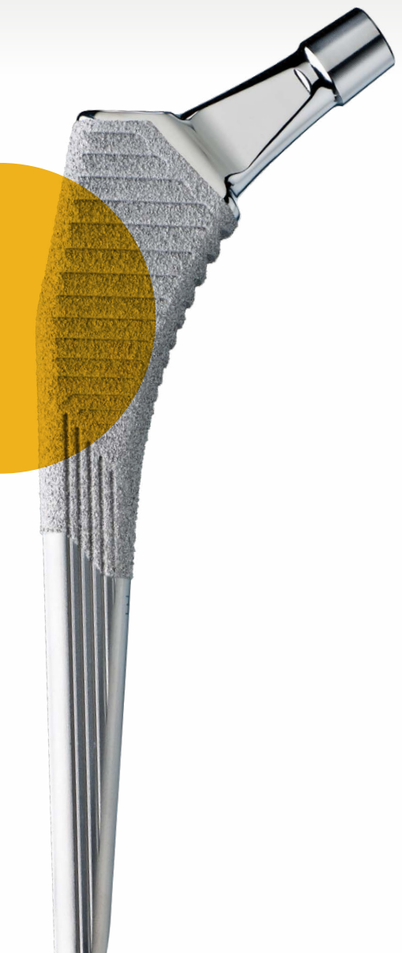
Successful THA outcomes have driven the average patient age down, but younger patients are more active and face an increased risk of implant failure.[1] Since revisions require additional bone removal, physicians may seek a long term strategy for patients who will likely require one or two revisions throughout their lifetime. A less invasive future revision would be facilitated if the original implant was a short stem.

Short stems are often utilized in minimally invasive surgeries since both the stem and procedure share a similar philosophy. Short stems are designed to be inserted through a small incision and into the femur along a curved path that avoids disruption to the abductors.

History of Gladiator

The original cementless triple taper stem concept was launched in 1986 and has grown in popularity as successful survivorship data was published.[1,2] Providing both a wedge fixation and proximal fill, the triple taper design is also well-suited for a cemented stem.

Over the years, many companies have released a cemented and cementless stem option that uses mostly the same instruments, providing intraoperative flexibility in the event a cemented stem is needed.



Profemur® Gladiator

Triple taper stem philosophy

Principles

- Triple taper creates fit and wedge fixation in proximal cortical bone
- Trapezoidal cross-section provides rotational stability
- Horizontal grooves designed for proximal load transfer to discourage bone resorption caused by stress shielding

Design features

Rotational Stability

Trapezoidal cross-section and vertical grooves promote rotational stability within the canal.

Fixation

Proximal portion of stems are coated with plasma spray coating to promote bone apposition.

Stem Insertion

Facilitated by a reduced lateral shoulder and rounded distal geometry.

Thigh Comfort

Pursued by a rounded distal tip to facilitate load transfer to the body of the stem rather than concentrating load on the tip.

Competitors

DePuy Corail®

Smith & Nephew Polarstem®

Zimmer Biomet Avenir®

Exactech Alteon HA®

[1]Vidalain, JP, Twenty-year results of the cementless Corail stem. Int Orthop. 2011 Feb; 35(2): 189–194.
[2]G. Hallan, et al, Medium- and long-term performance of 11,516 uncemented primary femoral stems from the Norwegian arthroplasty register. J Bone Joint Surg (Br) 2007; 89(12): 1574–1580.

Profemur® TL

Tapered wedge stem philosophy

Principles

- Primary wedge fixation in proximal cortical bone
- Proximal taper engages medial and lateral metaphyseal canal while preserving bone anteriorly and posteriorly
- Long dual taper design promotes three point contact fixation and balanced load distribution

Design features

Rotational stability

Distal groove helps promote rotational stability within the canal.

Fixation

Proximal portion of stems are coated with plasma spray coating to promote bone apposition.

Stem insertion

Facilitated by reduced lateral shoulder and tapered distal geometry.

Thigh comfort

Pursued by a rounded distal tip to facilitate load transfer to the body of the stem rather than concentrating load on the tip.

Competitors

Stryker Accolade II®

Zimmer Biomet Taperloc® XR 123°

Zimmer Biomet Taperloc®

Zimmer Biomet M/L Taper Fixed®

Smith & Nephew Anthology

[1]Total Hip Arthroplasty with an Uncemented Tapered Femoral Component Jeff rey R. McLaughlin and Kyla R. Lee. J Bone Joint Surg Am. 2008;90:1290-1296. Doi:10.2106/JBJS.G.00771
[2]McLaughlin, J.R. and K.R. Lee, Uncemented total hip arthroplasty with a tapered femoral component: a 22- to 26-year follow-up study. Orthopedics, 2010. 33(9): p. 639.
[3]Parvizi, J., et al., Primary total hip arthroplasty with an uncemented femoral component: a long-term study of the Taperloc stem. J Arthroplasty, 2004. 19(2): p. 151-6.sss

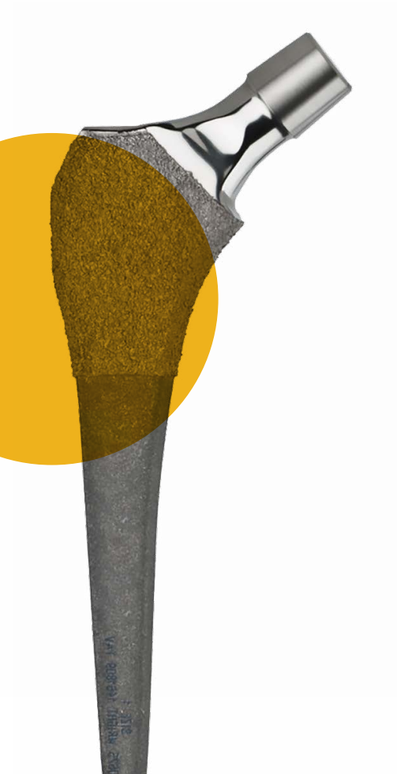
History of TL

The origins of the tapered wedge stem design trace back to the cemented Straight Mueller, which was introduced in 1977. While the wedge concept has remained constant, the design underwent many evolutionary improvements resulting in the modern uncemented tapered wedge stems of today. Overall, the uncemented tapered wedge concept has demonstrated long term survivorship.[1,2,3]

History of Z

The first generation stem was designed in 1979 as a tapered, cementless stem with a rectangular cross-section. As designs evolved through the years, the original concept proved out clinically: the "fit without fill" technique leads to preserving endosteal blood supply, improving initial stability and fitting a variety of bone shapes.[2]

The endosteal blood supply is preserved because the contents of the intramedullary canal are less disrupted by the Zweymüller philosophy. Hence the stem can gain initial stability in a wide variety of femoral bone shapes because the canal is broached to the size of the stem, as opposed to fitting the irregulary shaped femoral canal for stability.



Profemur® Z

Zweymüller stem philosophy

Principles

- Primary wedge fixation in proximal cortical bone
- "Square peg in a round hole" design provides rotational stability
- Dual longitudinal taper geometry designed for proximal load transfer to discourage bone resorption caused by stress shielding

Design features

Rotational Stability

Rectangular cross-section and the wedge shaped geometry allow for four-point fixation along the four corners within the femoral canal.[1]

Fixation

Proximal stem coated with plasma spray and distal stem grit-blasted to promote bone apposition.

Trochanteric Wing

Extended lateral shoulder contributes to proximal fill in addition to rotational stability.

Thigh Comfort

Pursued by a rounded distal tip to facilitate load transfer to the body of the stem rather than concentrating load on the tip.

Competitors

Zimmer Biomet Alloclassic® Zweymüller

Smith & Nephew Polarstem®

DJO Global CLP®

StelKast ProClass®

[1]Bergschmidt, P., et al., Cementless total hip replacement: a prospective clinical study of the early functional and radiological outcomes of three different hip stems. Arch Orthop Trauma Surg, 2009
[2]Swanson, T.V., The tapered press fit total hip arthroplasty: a European alternative. J Arthroplasty, 2005. 20(4 Suppl 2): p. 63-7

Profemur® Renaissance®

Canal filling stem philosophy

Principles

- Maximum contact between stem and bone for maximum stability and maximum bone apposition
- Primary fixation by press-fit occurs in the diaphysis, with proximal coating providing secondary fixation in the metaphysis
- Press fitted splines improve rotational stability and assist in load distribution to prevent bone resorption

Design features

Rotational stability

Distal splines and grooves promote rotational stability within the canal

Diaphyseal fixation

Provides intraoperative flexibility among different bone types (Dorr types*) and metaphyseal sizes because the stem can be raised, lowered, anteverted, and retroverterted while maintaining stability.

Flare Options

Fill different metaphyseal tapers and to solve for proximal/distal bone mismatch.

Thigh comfort

Pursued by a rounded distal tip and coronal slot facilitate load transfer to the body of the stem.

Competitors

Stryker Secur-Fit® Plus Max

Exactech Novation® Splined

Smith & Nephew Echelon® (Porous Primary)

Zimmer Biomet Progressive®

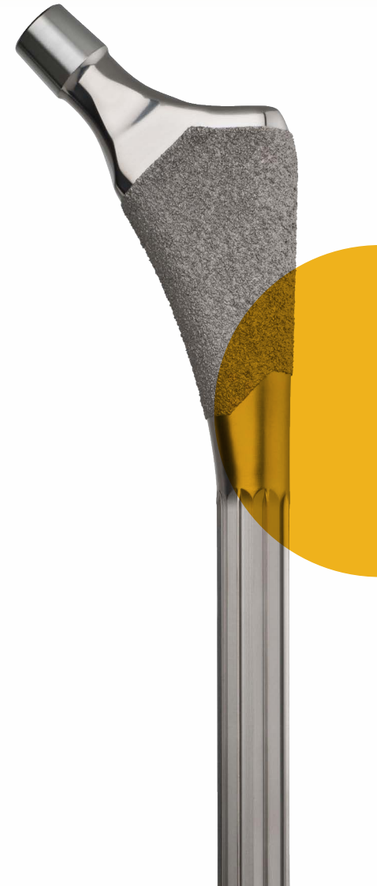
[1]Wayne G. Paprosky, MD, FACS, Canal Preparation and Stem Insertion: Cylindrical Stems, AAOS 2012, from www.aaosnotice.org/2012_Proceedings/adult-hip-CylindricalStems

History of Renaissance®

The term "fit and fill" originated when filling the femoral canal with cement was a popular primary THA technique. Today, rather than filling the canal with cement, "fill" refers to filling the canal with a cylindrical stem. Designs with distal splines provide distal fixation, while the proximal portion is matched to best "fit" the proximal canal.

Patients with osteopenia may be best served by distally fitted stems because proximally fitted stems may increase the risk of a femur fracture.[1]

*Dorr Type is a categorization of the femoral taper, canal and the width of the cortical bone.



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Individual results and activity levels after surgery vary and depend on many factors including age, weight and prior activity level. There are risks and recovery times associated with surgery and there are certain individuals who should not undergo surgery.