Trusted technology.
Trusted performance.

smith&nephew

POLAR3◇

Total Hip Solution

Supporting healthcare professionals

Trusted technology. Trusted performance.

The POLAR3◇ Total Hip Solution, powered by Smith & Nephew's proprietary VERILAST◇ Technology, has the best survivorship figures of any total hip construct according to the world's largest national joint registry.[1]

For outcomes that outperform and to get patients back to life's important moments – the solution is clear.

Trusted technology

The components of the POLAR3◇ Total Hip Solution have stood out on their own for over 10 years. Now, they shine together as a system with proven success in clinical performance.[1,2] For the balance of trusted technology with products that address contemporary issues, POLAR3 Total Hip Solution strikes the balance.

POLARSTEM◇ Cementless Stem System

15 Years of clinical heritage

- 7A* ODEP rating
- >250,000 implantations

R3◇ Acetabular System

11 Years of clinical heritage

- 7A* ODEP rating
- >1,000,000 implantations

VERILAST◇ Technology for Hips

14 Years of clinical heritage

- >1,000,000 implantations of OXINIUM◇ components
- New US ICD 10 code for Oxidized Zirconium introduced in 2017 based on unique material and performance data

POLARSTEM® Cementless Stem System

Stem

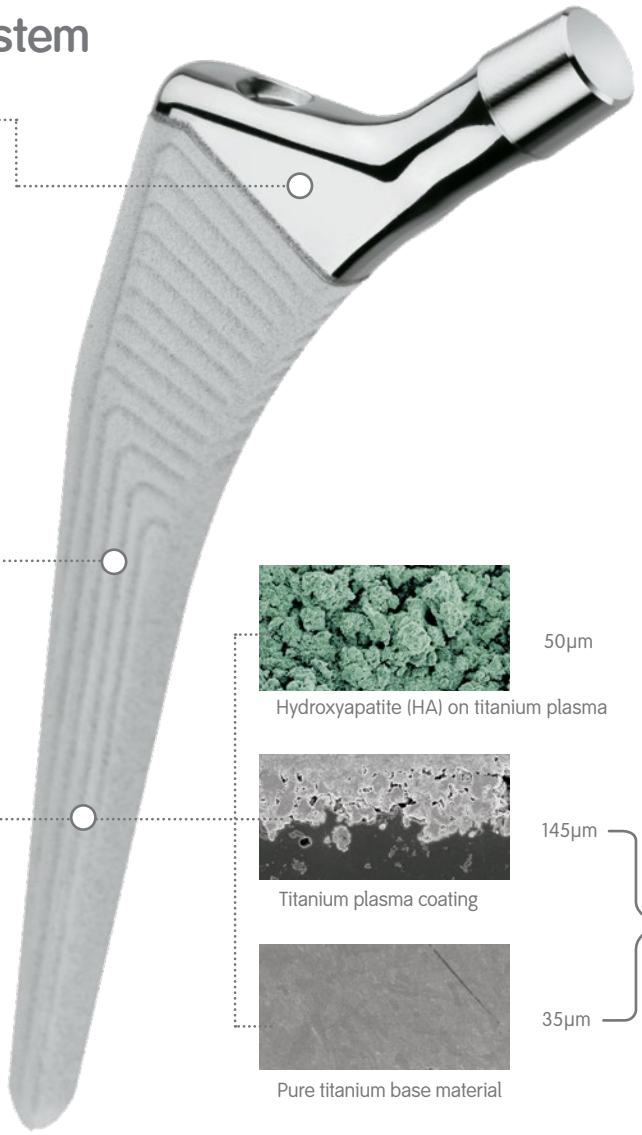
- The proximal body of the stem, in the anterior/ posterior planes, is designed to provide excellent proximal stability, possibly reducing the incidence of subsidence[3,4]
- The triple taper, self-locking stem is designed to distribute the load transmission without abnormal peak loads[5,6]
- The shortened stem length and narrow distal tip allows for ease of implantation through any surgical approach[7,8]

Structure

- The proximal grooves are perpendicular to the average load direction therefore possibly reducing the incidence of stem subsidence[5,6]
- The stem is designed with a distinctive axial structure to increase rotational stability[5,6]

Coating

- The stem design incorporates the advanced surface roughness of Titanium Plasma spray with a HA coating[9]

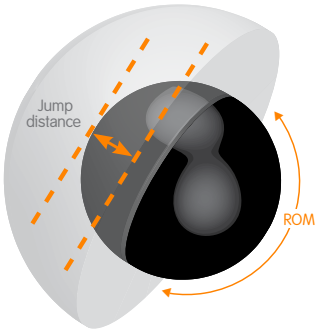


Instrumentation

- Compaction teeth anterior posterior and bone cutting teeth medial lateral provide good cortical bone contact
- Female broaches allow for a good assessment of rotational stability and allow for the "femur first" technique[10]
- Instrumentation is available for any surgical approach

Trusted technology

R3◇ Acetabular System

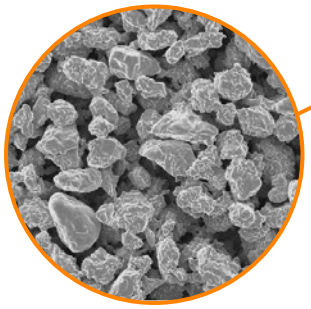


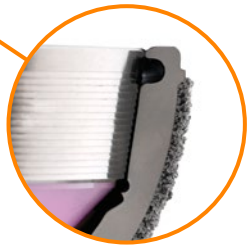
Joint stability

Launched over ten years ago and with over one million acetabular cup implants sold, the R3◇ Acetabular System provides surgeons the perfect combination of clinical heritage with modern day design. The R3 Acetabular System combined with the Smith & Nephew portfolio of hip stems provides an advanced hip replacement system with:

- Wide range of advanced bearing options
- An advanced porous coating designed to achieve excellent primary stability[11,12]
- Flexible instrumentation

R3 XLPE liner locking mechanism





R3 ceramic liner locking mechanism

Cup stability and STIKTITE◇

STIKTITE coating on an R3 Acetabular Shell allows for a true scratch-fit feel immediately upon impaction. This is because STIKTITE coating has been shown to have a higher coefficient of friction than trabecular metal against all types of bone.[11] Also, STIKTITE coating has pores that are ideally sized to allow for boney ingrowth. In fact, STIKTITE has been shown to be more stable in the acetabulum when compared to last generation porous coatings.[12] These features help ensure your cup will stay where you put it.

Liner stability and the R3 locking system

The unique R3 locking system not only accepts multiple bearings, it is designed to provide exceptional stability and protection to our XLPE liner to prevent soft tissue entrapment. The double channel lock is located deep within the shell to allow axial stability of our XLPE liner. The 12 large anti-rotational tabs designed to provide rotational stability.[13]

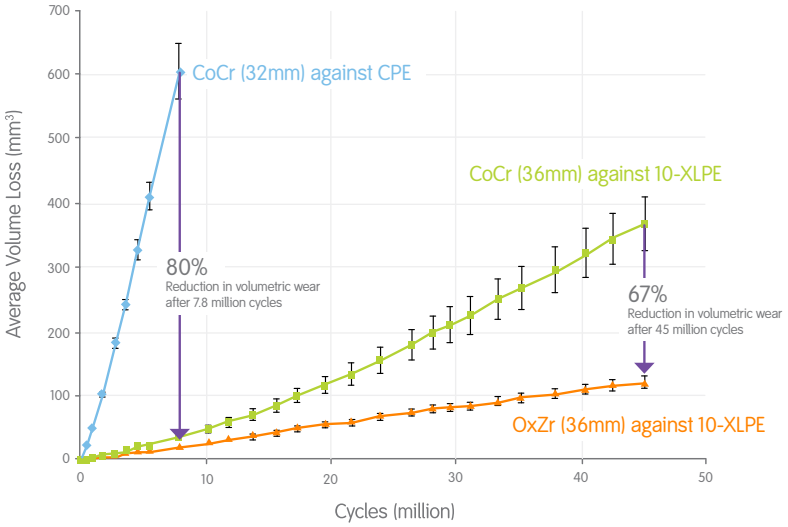
VERILAST◇ Technology for Hips

VERILAST Technology for Hips from Smith & Nephew uses the exclusive bearing combination of proprietary OXINIUM◇ and highly cross-linked polyethylene, which provides superior clinical survivorship[2] and biocompatibility[14,15,16] without sacrificing versatility or introducing the risk of ceramic-like fracture.[17]

Wear performance

VERILAST Technology for total hip arthroplasty has been laboratory tested and shown to provide superior wear performance compared to CoCr on highly-crosslinked polyethelene, for up to 45 million cycles. With advanced materials designed to last, VERILAST Technology helps restore patients to their active lifestyles.

Cumulative volumetric wear comparison[18]

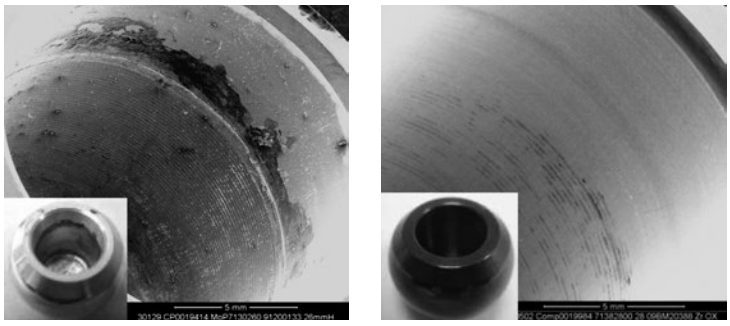


Corrosion avoidance

With its biocompatible properties, due to its use of oxidized zirconium, VERILAST Technology has shown to reduce taper corrosion in total hip arthroplasty, minimizing the concern of trunnionosis.[14,15]

An article published in the HSS Journal showed that in a 22 year retrieval database, OXINIUM femoral heads are associated with decreased corrosion damage compared to CoCr femoral heads. Furthermore, chromium rich deposits which were present on some CoCr femoral heads were completely absent from OXINIUM.[15]

SEM image of worst case CoCrMo taper (at left) and worst case OxZr (at right).[15]



Trusted performance

Total hip replacement is considered one of the most clinically successful procedures in modern medicine. Despite that success, a recent meta-analysis showed that almost 1 in every 10 hip patients are still not satisfied with their hip prostheses.[19]

With excellent registry data for POLARSTEM◇, R3◇, and VERILAST◇ Technology in registries around the world, the POLAR3 Total Hip Solution has outcomes that outperform.[1,2]

Outcomes that outperform

According to the 2017 report of the National Joint Registry for England, Wales, Northern Ireland and the Isle of Man (NJREW), POLARSTEM◊ with R3◊ is the best performing hip combination at 7 years regardless of fixation method[1] –

99.02%

survivorship

Consider the data further

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ODEP 7A* POLARSTEM◊ cementless

7A* ODEP rating for POLARSTEM cementless!
http://www.odep.org.uk/products.aspx

POLARSTEM◊ / R3◊ Best performing cementless hip combination in the UK:
According to the 7 years results in the 14th Annual Report 2017 of the National Joint Registry for England, Wales, Northern Ireland and the Isle of Man (based on cumulative percentage probability of revision).

Stem / cup brand	n	Median (IQR) age at primary	Percentage (%) males	Cumulative percentage probability of revision (95% CI) at:					
				1 year	3 years	5 years	7 years	10 years	13 years
Uncemented									
Accolade / Trident	24,868	66 (59-73)	43%	0.92 (0.81-1.05)	1.91 (1.74-2.10)	2.65 (2.44-2.88)	3.23 (2.97-3.51)	4.57 (4.05-5.16)	5.36 (3.95-7.24)
Corail / Duraloc Cementless Cup	4,044	70 (64-75)	39%	0.75 (0.52-1.06)	1.69 (1.33-2.14)	2.50 (2.05-3.04)	3.57 (3.02-4.22)	5.59 (4.81-6.49)	9.69 (7.97-11.74)
Corail / Pinnacle	122,635	66 (59-73)	44%	0.81 (0.76-0.86)	1.64 (1.57-1.72)	2.56 (2.45-2.66)	3.93 (3.78-4.09)	6.52 (6.20-6.87)	8.17 (6.91-9.64)
Corail / Trilogy	2,883	68 (62-74)	39%	0.64 (0.41-1.02)	1.17 (0.83-1.65)	1.67 (1.24-2.25)	2.28 (1.73-2.99)	3.32 (2.44-4.50)	4.66 (2.95-7.33)
Corail / ASR Resurfacing Cup	2,630	61 (54-67)	54%	1.07 (0.74-1.54)	7.52 (6.57-8.60)	23.31 (21.72-25.00)	35.32 (33.49-37.22)	44.07 (41.95-46.26)	-
Corail Pinnacle Gription	4,220	67 (58-75)	40%	1.11 (0.81-1.51)	1.99 (1.50-2.63)	2.36 (1.76-3.16)	-	-	-
Furlong HAC Stem / CSF	16,907	69 (62-76)	40%	1.04 (0.90-1.21)	1.73 (1.54-1.94)	2.11 (1.90-2.35)	2.65 (2.40-2.92)	3.59 (3.27-3.94)	4.59 (4.10-5.14)
Furlong HAC Stem / Furlong HAC CSF Plus	20,681	66 (59-73)	44%	1.10 (0.97-1.25)	1.79 (1.61-1.99)	2.12 (1.91-2.34)	2.47 (2.22-2.75)	-	-
Polarstem Cementless / R3 Cementless	**6,137**	**66 (59-73)**	**45%**	**0.62 (0.45-0.87)**	**0.91 (0.68-1.22)**	**0.98 (0.72-1.32)**	**0.98 (0.72-1.32)**	**-**	**-**
SL-Plus Cementless Stem / EP-Fit Plus	5,218	65 (59-73)	43%	1.21 (0.94-1.55)	2.62 (2.21-3.11)	3.82 (3.31-4.42)	4.52 (3.94-5.19)	5.91 (5.15-6.78)	-
Synergy Cementless Stem / R3 Cementless	2,999	65 (56-71)	50%	1.02 (0.71-1.46)	1.50 (1.09-2.07)	2.10 (1.49-2.95)	4.75 (3.02-7.44)	-	-
Taperloc Cementless Stem / Exceed ABT	20,700	65 (58-72)	44%	1.10 (0.96-1.25)	1.52 (1.35-1.70)	1.84 (1.64-2.06)	2.15 (1.89-2.44)	2.15 (1.89-2.44)	-
Anthology R3 Cementless	3,474	63 (55-71)	42%	1.01 (0.72-1.42)	1.58 (1.17-2.12)	2.45 (1.78-3.35)	4.57 (2.90-7.15)	-	-
Metafix Stem Trinity	3,467	64 (56-69)	45%	0.83 (0.56-1.21)	1.50 (1.09-2.06)	1.65 (1.18-2.32)	-	-	-
M/L Taper Cementless Continuum	4,820	61 (53-68)	49%	1.15 (0.88-1.50)	1.81 (1.44-2.27)	1.96 (1.56-2.46)	-	-	-
M/L Taper Cementless / Trilogy IT	2,889	63 (55-70)	52%	1.00 (0.69-1.46)	2.50 (1.84-3.39)	2.50 (1.84-3.39)			
Furlong Evolution Cementless / Furlong HAC CSF Plus	2,644	62 (52-70)	42%	1.34 (0.95-1.89)	1.97 (1.41-2.74)				

National Joint Registry
www.njrcentre.org.uk
Working for patients, driving forward quality

05038-en V3 1017

For additional information, please see our NJREW handout (05038-en V3 1017).

When compared against the class average of cementless constructs in the NJREW, POLARSTEM has a:

- 46% reduction in overall femoral revision[20]
- 36% reduction in risk of dislocation[20]
- 61% reduction in risk of aseptic loosening[20]

Similarly, the R3◊ Acetabular System has a:

- 55% reduction in the overall risk of acetabular revision[21]
- 77% reduction in the revision risk from aseptic loosening[21]
- 44% reduction in the revision risk from malalignment of the socket[21]

Trusted performance

Outcomes that outperform

In the 2017 Australian National Joint Registry, the ceramicised metal/XLPE combination, which is exclusively VERILAST◇ Technology, has the highest survivorship of any bearing construct at 10 years: 96.6%.[2]

Furthermore, VERILAST Technology has a 44% lower risk of revision after one year when compared to Metal on XLPE.[2]

What about the young, active patient?

In 2016, the Australian National Joint Registry did a special report on patients <55 years. When looking at bearing combinations, the ceramicised metal/XLPE combination had the highest survivorship at 10 years in this patient group with a primary diagnosis of osteoarthritis: 96.0%.[22]

See the Australian National Joint Registry Results insert to read more.

Although the Ceramicised Metal/ XLPE combination has the lowest reported cumulative percent revision at 10 years, this results should be interpreted with caution. This bearing is a single company product used with a small number of femoral stems and acetabular component combinations. This may have a confounding effect on the outcome, making it unclear if the lower rate of revision is an effect of the bearing surface or reflects the limited combination of femoral and acetabular prostheses.

Smith & Nephew, Inc.
1450 Brooks Road
Memphis, TN 38116
USA
Telephone: 1-901-396-2121
Information: 1-800-821-5700
Orders/Inquiries: 1-800-238-7538

www.smith-nephew.com

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