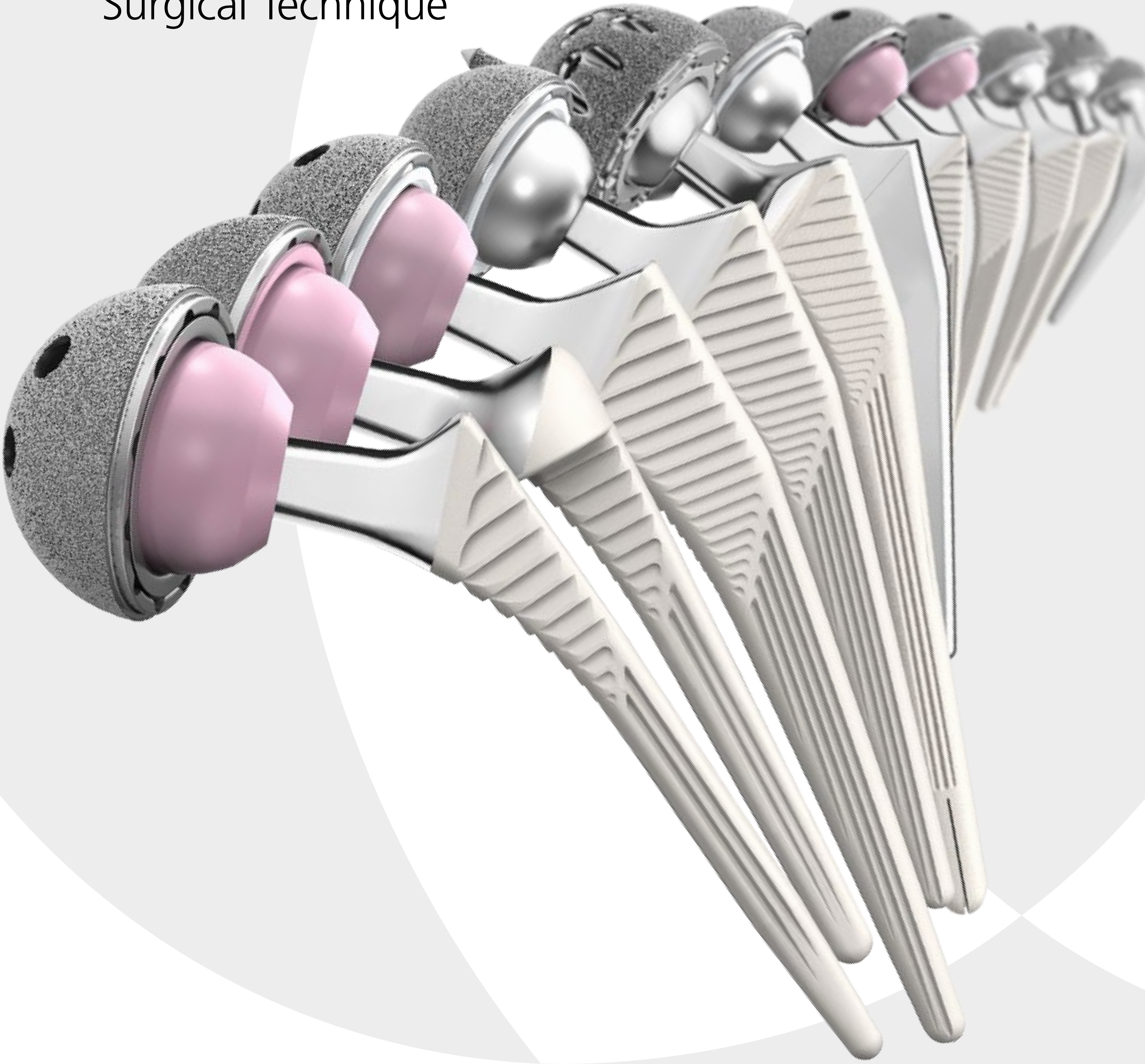
CORAIL®
HIP SYSTEM

CORAIL® Hip System

Product Rationale and Surgical Technique



DePuy Synthes
PART OF THE Johnson & Johnson FAMILY OF COMPANIES

"CORAIL... a system for all my patients"

Dr JP Vidalain, France

"CORAIL... proven and reliable"

Mr D Beverland, UK

"A simple system … popular with the OR team"

Dr C Clark , USA

"CORAIL … ideal for minimal invasive surgery"

Dr M Michel, Switzerland

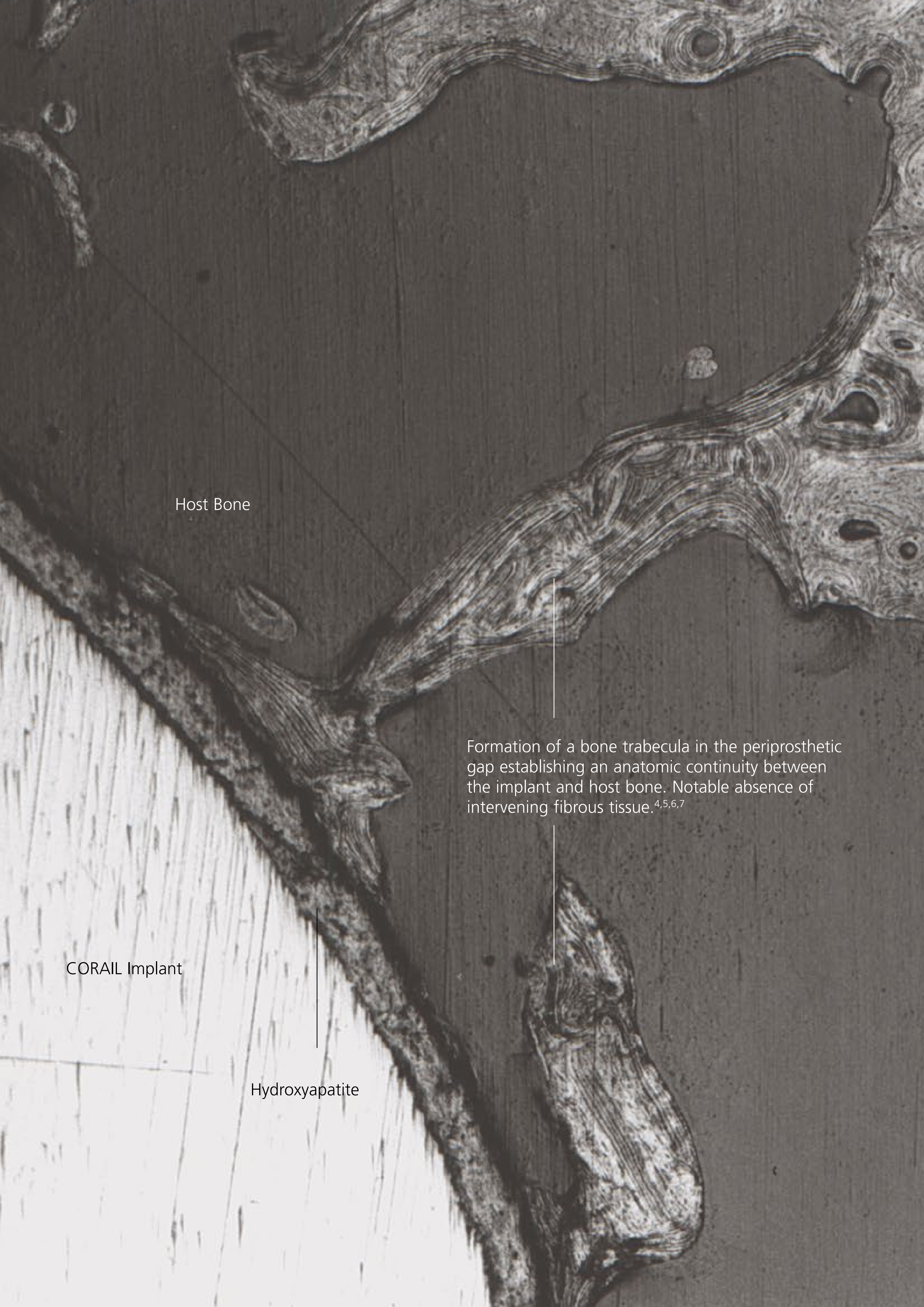
"Ideal system for a wide number of indications"

Prof KH Koo, Korea

INTRODUCTION

"In use worldwide; since 1986; FDA cleared in 1996; recognised at the highest level (10A) in 2004 by ODEP (Orthopaedic Data Evaluation Panel) in the UK. The CORAIL philosophy is based on simple principles: primary mechanical stability, secondary biological integration, bone preservation and harmonious stress transfer. The design geometry gives the primary mechanical stability. The Hydroxyapatite (HA) coating allows secondary biological integration. The combination of the design and the HA coating of the CORAIL Hip System has been proven to work.[1-3] The surgical technique is simple and allows for bone preservation as we are looking for "optimum filling" and not close cortical contact with the implant. The restoration of bone stock occurs with the creation of newly formed bone all around the stem thanks to the effect of both the design and the HA coating. The compaction broaching surgical technique is reproducible and straightforward. There are no long-term radiographic changes. The CORAIL Hip System has now become a Gold Standard among primary cementless stems."

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


Host Bone
Formation of a bone trabecula in the periprosthetic gap establishing an anatomic continuity between the implant and host bone. Notable absence of intervening fibrous tissue.[4,5,6,7]
CORAIL Implant
Hydroxyapatite

PROVEN RESULTS

97.0%

Survivorship in 5456 cases at 15 years. Havelin L. J. Bone and Joint Surg. 2007[1]

99.1%

Survivorship in 120 Consecutive Cases at 12 years. Chatelet JC.
Rev Chir Orthop Reparatrice Appar Mot. 2004[8]

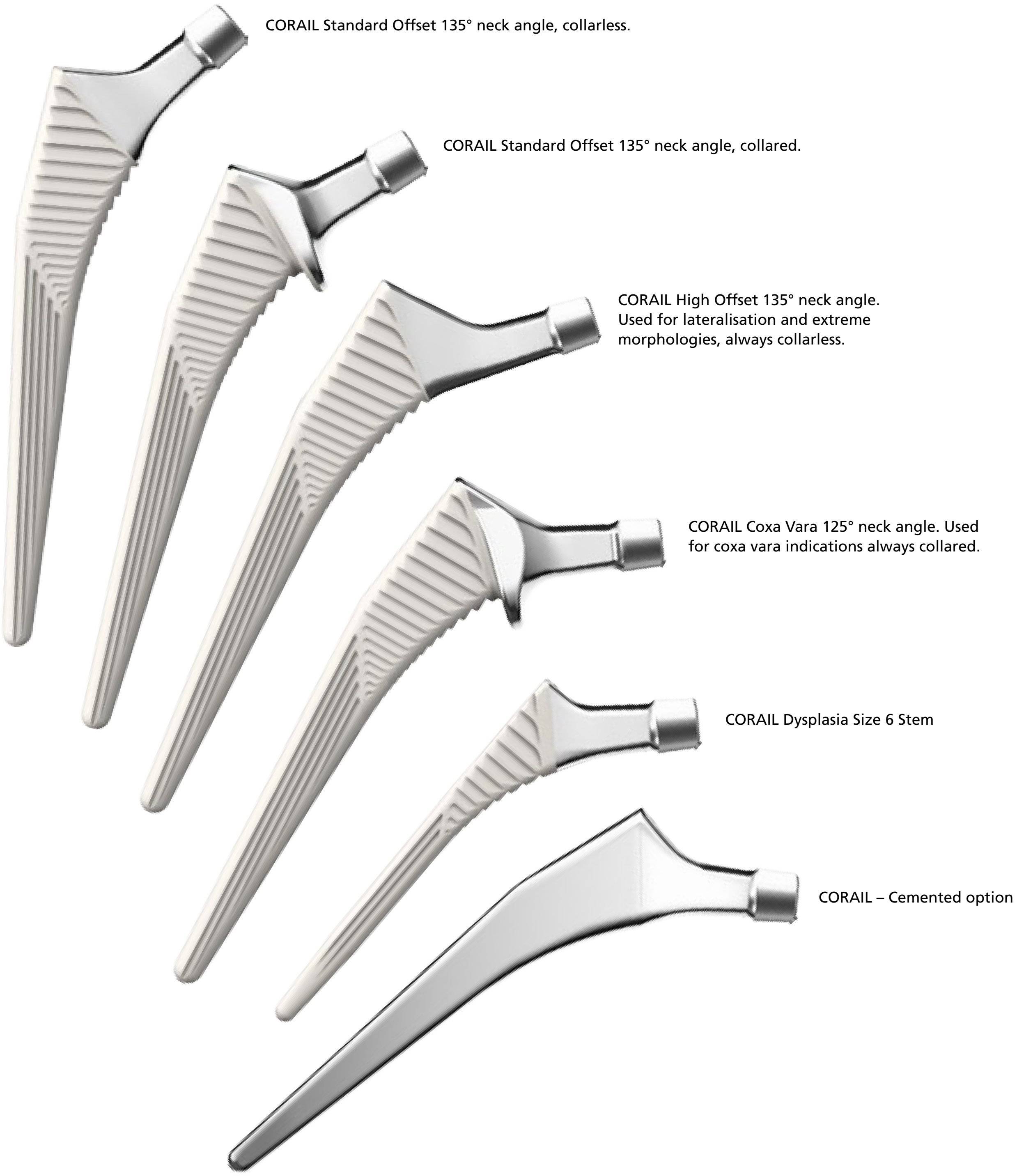
97.7%

Survivorship in 208 patients. Femoral Bone Modelling in HA Coated Stems
with 20 yrs Follow-Up. Boldt J. EFORT Congress. 2008[9]

"The most striking clinical finding in our material was the absence of thigh pain, which is often seen both in proximally and fully porous-coated stems…thigh pain, seems to be eliminated with the entirely HA-coated stem, probably because of comprehensive diaphyseal bonding."

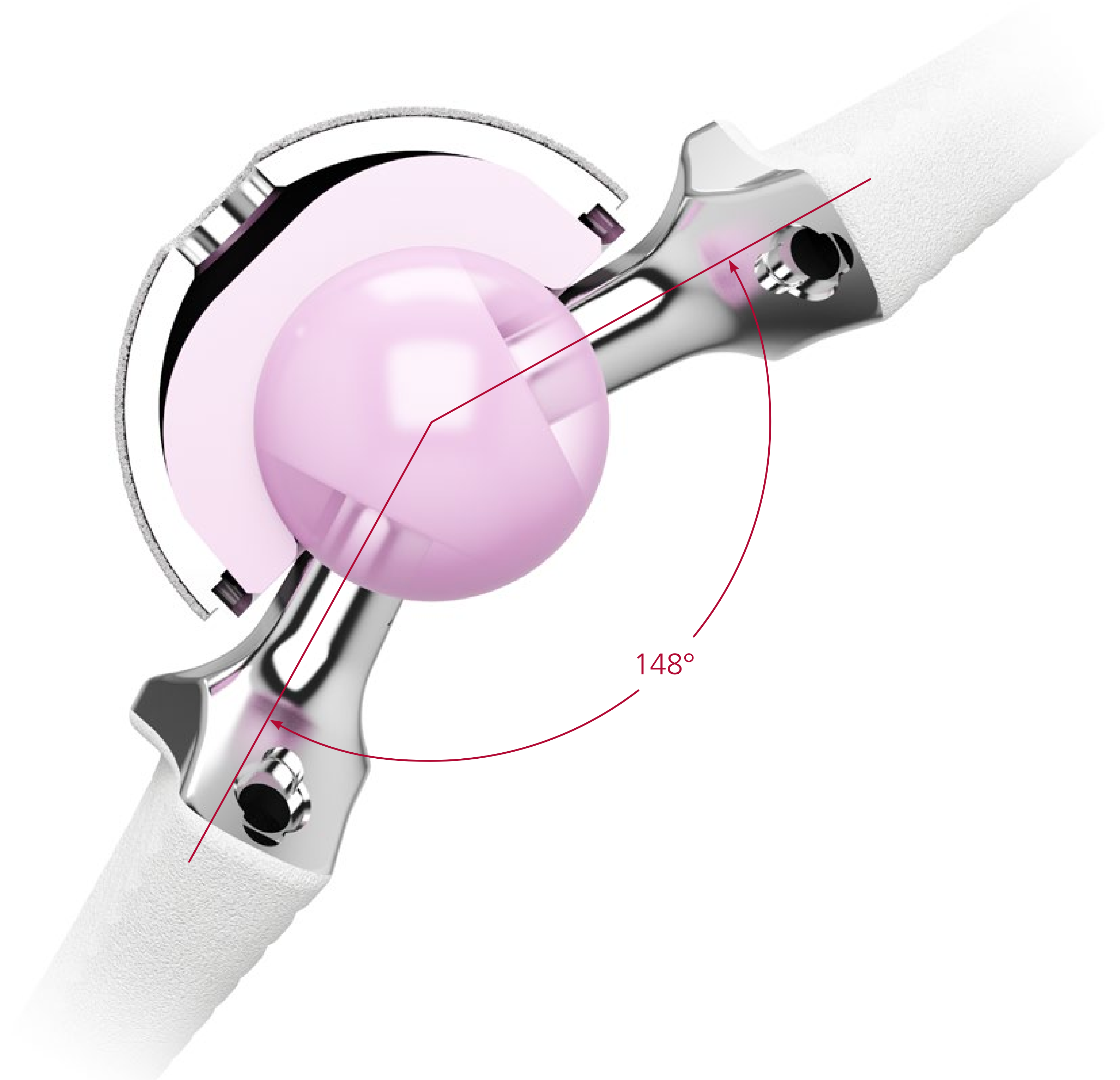
Røkkum M., J. Arthroplasty, 1999[10]

EXTENSIVE RANGE –
WIDE RANGE OF INDICATIONS



The CORAIL Hip System offers five different primary stems and a cemented stem.

OPTIMISED NECK GEOMETRY – WIDER RANGE OF MOTION



Abduction / Adduction

The CORAIL Stem features a 12/14 ARTICUL/EZE® Mini Taper (AMT) which allows a range of motion of up to 148° with the PINNACLE® Cup System.[11]

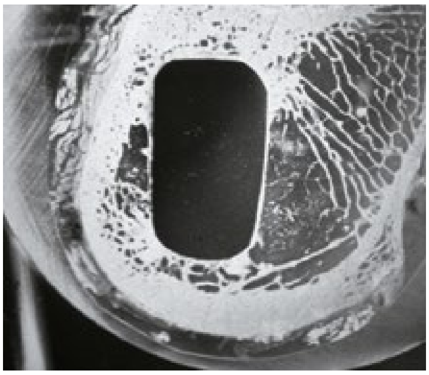
PROVEN FIXATION

"We believe that all components were bonded directly to the bone, promoted by the reliable primary fixation and the osteoconductive effect of HA."[10]

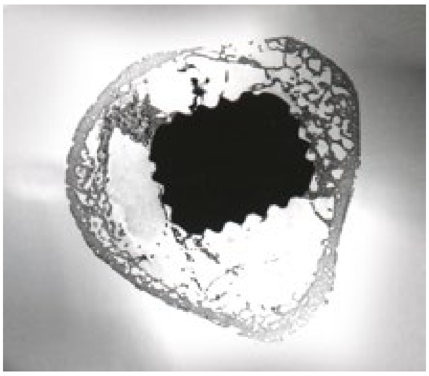
Røkkum M., J. Arthroplasty, 1998

The CORAIL stem receives the Level 10A - Highest Evidence Rating from ODEP.*[12]

Orthopaedic Data Evaluation Panel, UK 2015



The medial to lateral taper resists axial / torsional stresses. HA coating promotes osteointegration for optimum fixation[3]



Vertical grooves and HA coating provide stabilisation to avoid distal thigh pain[3]

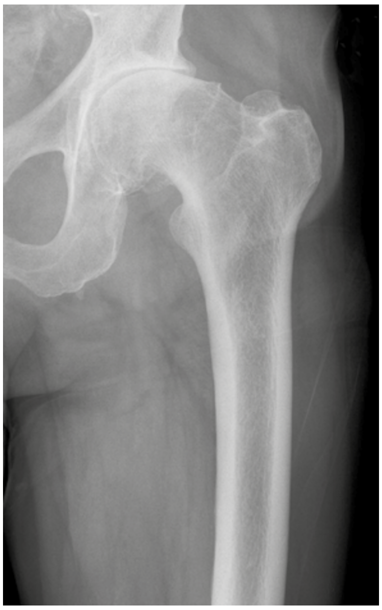
The design of the extra medullary section improves the biomechanics of the stem. The low profile neck increases the range of motion of the stem within the cup before the neck impinges on the cup.[11,13] The AMT taper (ARTICUL/EZE Mini Taper) captures completely the femoral head reducing the potential for impingement of the cup.

The CORAIL stem has a propriety HA coating on the grit-blasted surface. The HA coated medial to lateral taper resists axial / torsional stresses and promotes osteointegration for optimum fixation.[15]

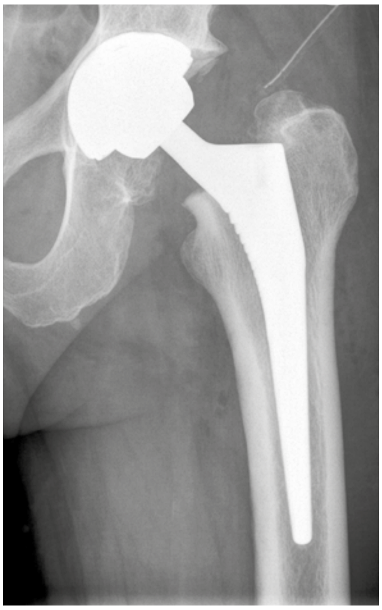
The design of the CORAIL stem, with its titanium alloy and its full hydroxyapatite coating ensures load transfer without abnormal peak forces[3,4,15,16] and allows a very low incidence of thigh pain.[3,5,8,15,17-19]

CORAIL AS A PRIMARY CEMENTLESS STEM

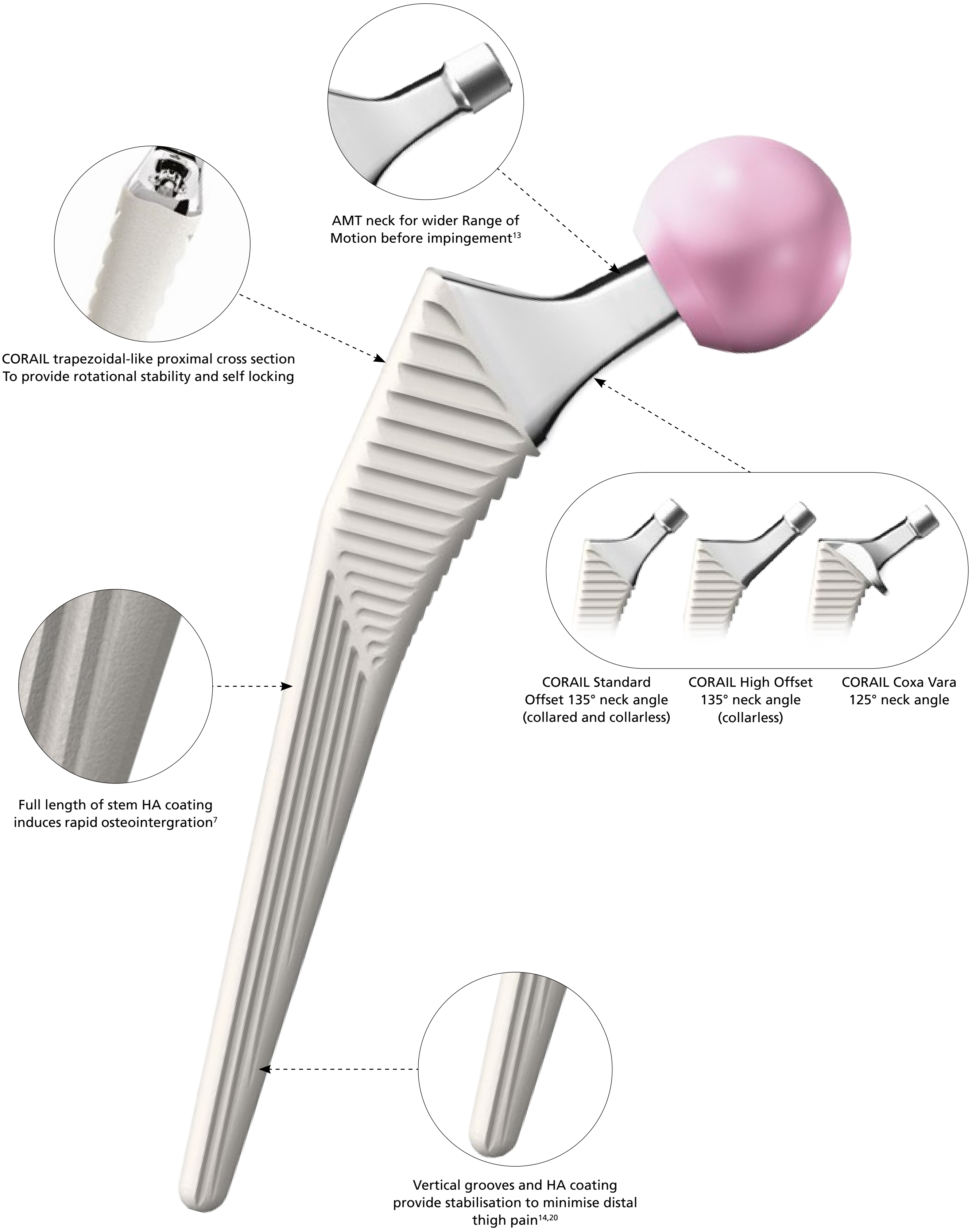
After twelve years of constant pain, this young patient was unable to sleep through the night and facing the fact that he could no longer run his business as his quality of life was extremely poor. However, only seven months after his CORAIL Hip surgery (PINNACLE 36 mm Ceramic-on-Ceramic), he was back enjoying life with friends, skiing and ice climbing.



Pre-op X-ray



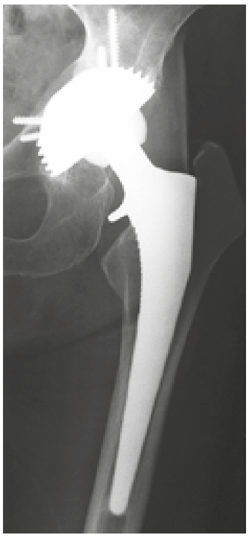
Post-op X-ray (7 months)


AMT neck for wider Range of Motion before impingement[13]
CORAIL trapezoidal-like proximal cross section To provide rotational stability and self locking
CORAIL Standard Offset 135° neck angle (collared and collarless)
CORAIL High Offset 135° neck angle (collarless)
CORAIL Coxa Vara 125° neck angle
Full length of stem HA coating induces rapid osteointergration[7]
Vertical grooves and HA coating provide stabilisation to minimise distal thigh pain[14,20]

CORAIL AS A FRACTURE STEM

Post-op X-ray (immediate)

13 year follow-up



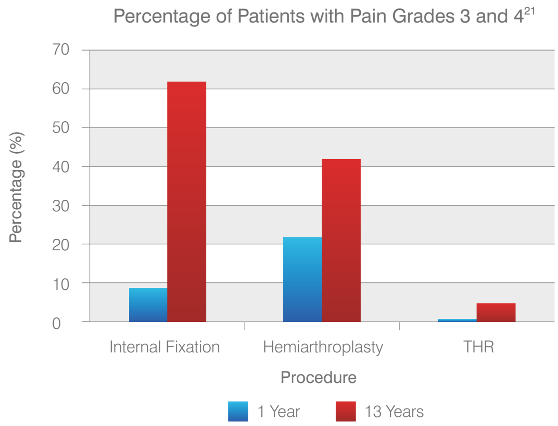
21 year follow-up

This lady was the very first CORAIL stem patient and the first fractured neck of femur case treated with CORAIL. Although suffering from severe osteoporosis, she was then a very active woman - a keen alpine skier and mountaineer. In August 1986, she suffered a fractured neck of femur after a mountain accident. She was operated on at the Clinique d'Argonnay, Annecy, by Dr Machenaud of the ARTRO Group, who implanted the first CORAIL Stem.

Although this patient has been reoperated for acetabular wear, she is doing well after 30 years and participates in winter sports with family and friends. This patient is just one of the many fractured neck of femur patients who have benefited from the CORAIL stem's reliability.

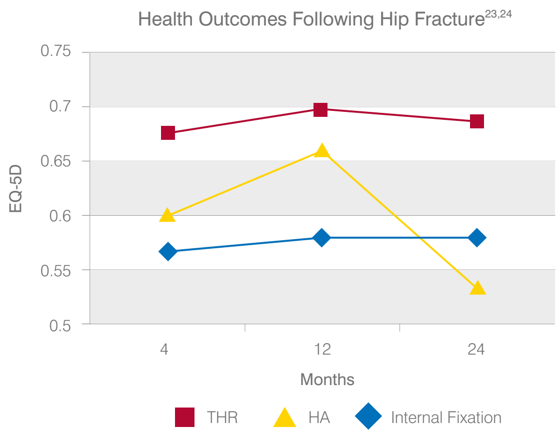
Recent results of fractured neck of femur trials show that primary arthroplasty provides a better solution than hemi-arthroplasty or internal fixation. In randomised clinical trials Total Hip Replacement (THR) has been found to provide improved clinical results in relation to hip function, level of pain and health-related quality of life than either internal fixation or hemiarthroplasty, in previously mobile, otherwise healthy lucid fractured neck of femur patients aged more than 60 years old.[21-23] In those patients, randomised clinical trials have also reported lower revision rates for THR than either hemi-arthroplasty or internal fixation.[23]

Pain Grades



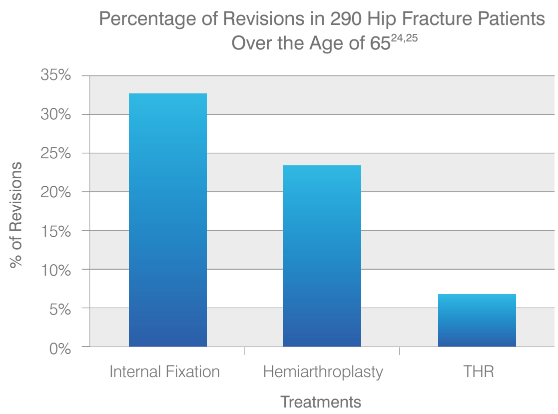
THR following femoral neck fracture consistently leads to reduced post-operative pain.

Health Outcomes



THR is associated with improved health and overall quality of life relative to other treatment options

Revision Rates in Fracture



The CORAIL stem extramedullary geometry is designed for extended range of motion to provide increased stability reducing the risk of dislocation and revision surgery.

CORAIL AS A CEMENTED STEM

Pre-op X-ray

Post-op X-ray

Following an ‘intra-capsular fracture’ this male was templated for a hydroxyapatite coated CORAIL stem.

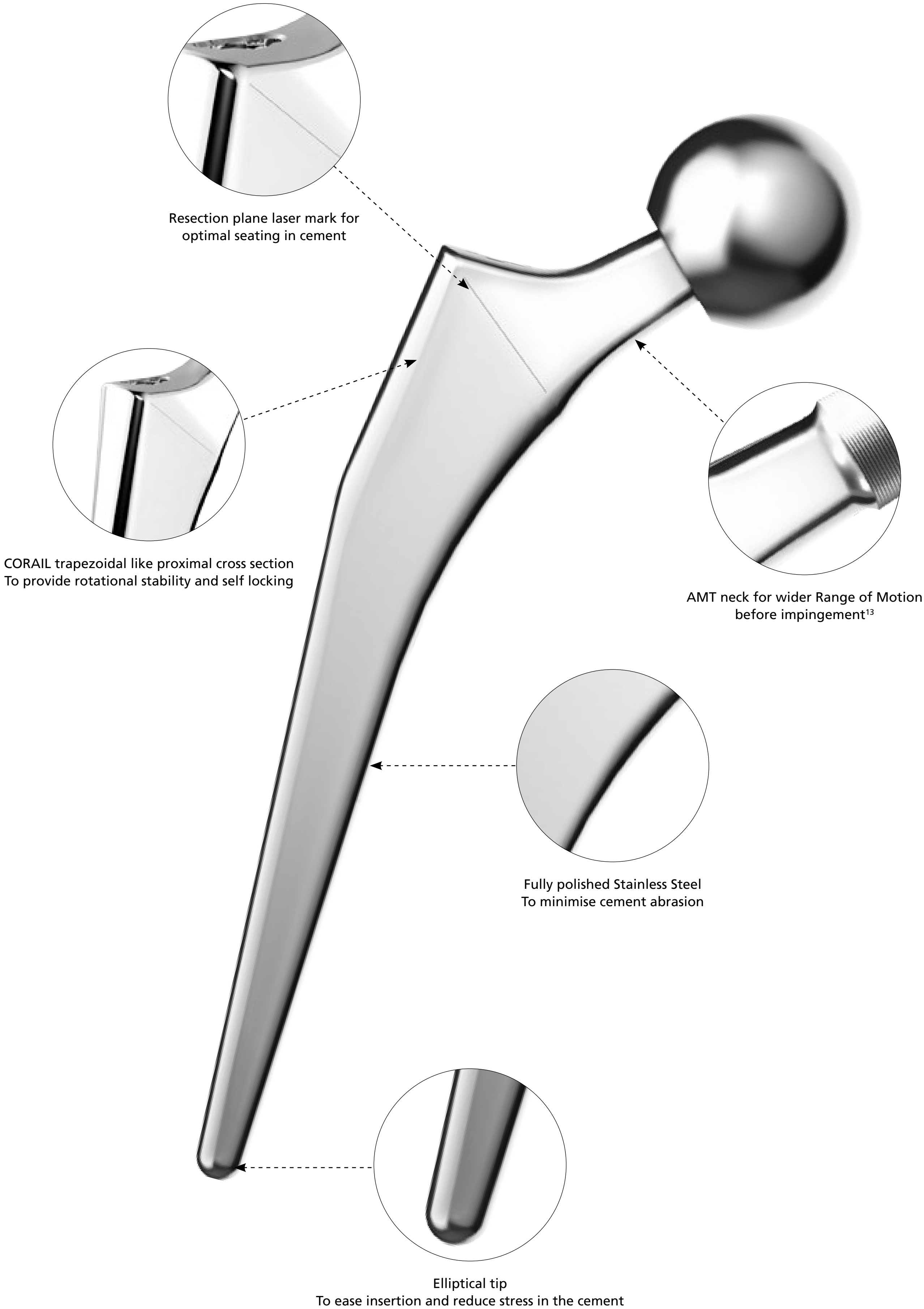
Having prepared the femur for a CORAIL Stem, the surgical team selected the cemented option from the CORAIL Hip System. This was a more suitable implant for this patient. Both hydroxyapatite coated and cemented options share exactly the same broach envelope and instrumentation.

“The cement mantle distribution was similar for the Titan and Cemented version of the CORAIL Hip System.”

Nick Bishop, Dr MM Morlock, Ph.D.
Technical University Hamburg-Harburg, Biomechanics Section. Hamburg, Germany, Sept 2008

“In the current FEA study, the mechanical performance of the CORAIL Hip System Cemented implant was analysed and compared to that of the Titan and CHARNLEY® implants. The simulations indicated that the mechanical performance of the CORAIL Hip System Cemented was superior to that of the Titan and CHARNLEY stems. Fewer cracks were formed in the cement mantle surrounding the Cemented version of the CORAIL Hip System during the loading history. Furthermore, the migration values for the CORAIL Hip System implant were very small (lower than 20 μm).”

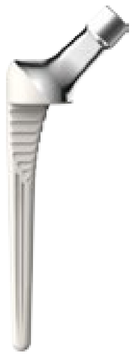
Dennis Janssen, MSc, Nico Verdonschot, PhD, Radboud
University Nijmegen Medical Centre Orthopaedic Research Lab, Nijmegen, The Netherlands, Apr 2008


Resection plane laser mark for optimal seating in cement
CORAIL trapezoidal like proximal cross section
To provide rotational stability and self locking
AMT neck for wider Range of Motion before impingement[13]
Fully polished Stainless Steel
To minimise cement abrasion
Elliptical tip
To ease insertion and reduce stress in the cement

CORAIL SURGICAL TECHNIQUE – CONTENTS

CORAIL PRIMARY STEM (CEMENTLESS) - SURGICAL TECHNIQUE

CORAIL DYSPLASIA SIZE 6 STEM - SURGICAL TECHNIQUE



CORAIL PRIMARY STEM (CEMENTED) - SURGICAL TECHNIQUE

PRE-OPERATIVE PLANNING, SURGICAL APPROACH, FEMORAL NECK RESECTION, PROXIMAL CANCELLOUS BONE COMPACTION, FEMORAL CANAL PREPARATION, TRIAL REDUCTION (PLEASE REFER TO THE CORAIL PRIMARY STEM (CEMENTLESS) SURGICAL TECHNIQUE PAGES 16-19)

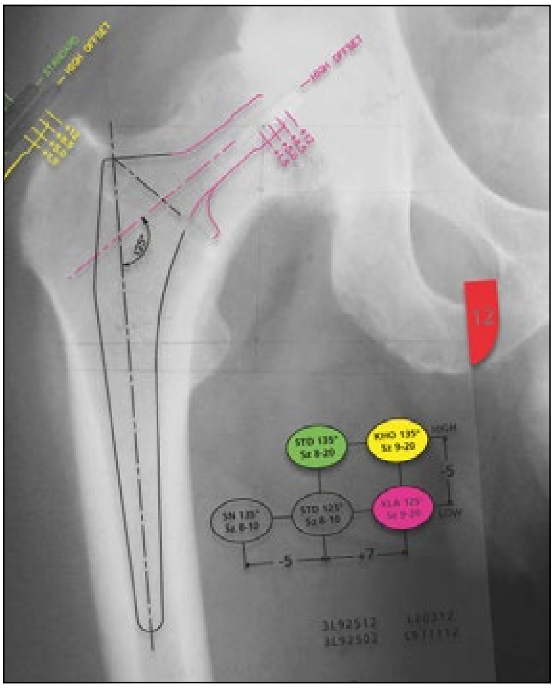
CORAIL PRIMARY STEM (CEMENTLESS) – SURGICAL TECHNIQUE

Pre-operative Planning

The CORAIL Hip System provides pre-operative templates at three different magnifications (100%, 115% and 120%). The templates are placed over the AP and lateral radiographs to help determine the implant size in order to restore the patient's natural anatomy. When templating ensure that the prosthesis does not make cortical contact. Understand the difference between fit and fill and optimum fit. The surgical objective is a 1–2 mm gap between the cortices and the implant. If in doubt template a size that contacts the cortex and then go down a size. Templating should be done with a medium neck so that the possibility to change to a short or a long neck still remains in order to adjust leg length. The pre-operative templating will indicate the level of neck resection.

In Dorr Type A ('champagne flute') femurs[26] (Figure 1) proper metaphyseal fit may require a larger size than the femoral canal can accommodate distally.

In these cases consideration should be given to distal reaming to enlarge the canal to accommodate a broach of the appropriate size.



Pre-op templating

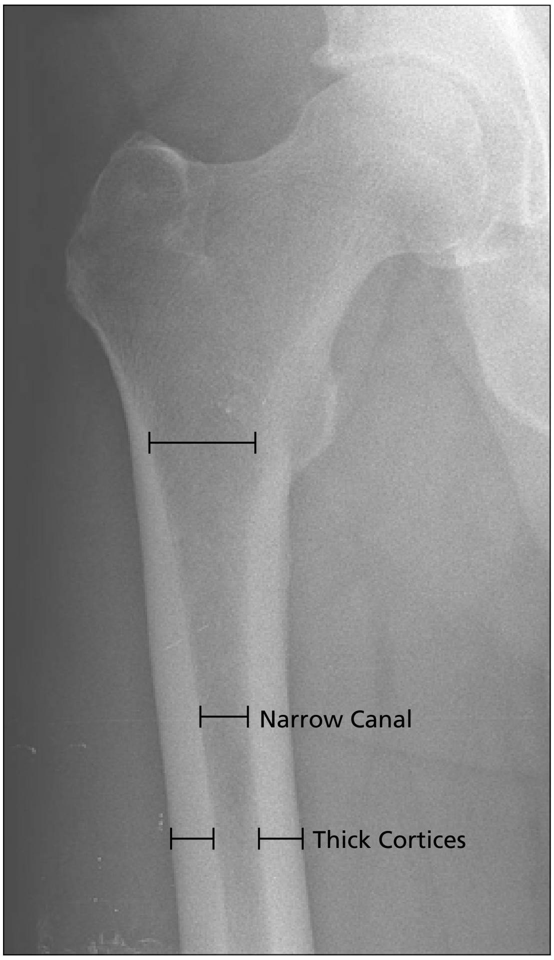


Figure 1. Example of a DORR Type A femur.

Posterolateral approach

Anterolateral approach

MICROHIP™ direct-anterior approach

Surgical Approach

The CORAIL stem can be used with any surgical approach that the surgeon is familiar with.

Femoral Neck Resection

The angle of resection should be 45°. The neck resection guide should be used to determine the level of the femoral neck resection in conjunction with pre-operative templating. If the resection is too high, it may result in a varus positioned stem.

Note: the osteotomy can be performed in one or two steps depending on the surgeon's preference.

Proximal Cancellous Bone Compaction

It is important to select a point of entry posterolaterally to the Piriformis Fossa to avoid varus positioning. Use a curette or general instrument to indicate the direction of the canal. Use the bone tamp to compact the cancellous bone proximally. This is an important step as the philosophy of the CORAIL stem is based on bone preservation.

To prevent under-sizing or varus positioning, the greater trochanter may be prepared with an osteotome to allow better insertion of the broaches.

Please refer to the PINNACLE Surgical Technique for full details with regards to the acetabulum preparation (DPEM/ORT/1112/0366(2)).

Femoral Canal Preparation

Ensure that broaching is started postero-laterally. The broach should run parallel to the posterior cortex following the natural anatomy of the femur. Begin with the smallest broach attached to the broach handle and increase the size of broach sequentially until longitudinal and rotational stability is achieved, broaching should then be stopped. Careful preoperative planning is key to help selection of the final broach size. The version will be determined by the natural version of the femur.

In Type A Femurs,[26] the diaphysis should be reamed prior to broaching to ensure that the CORAIL stem is implanted into compacted cancellous bone in the metaphysis.

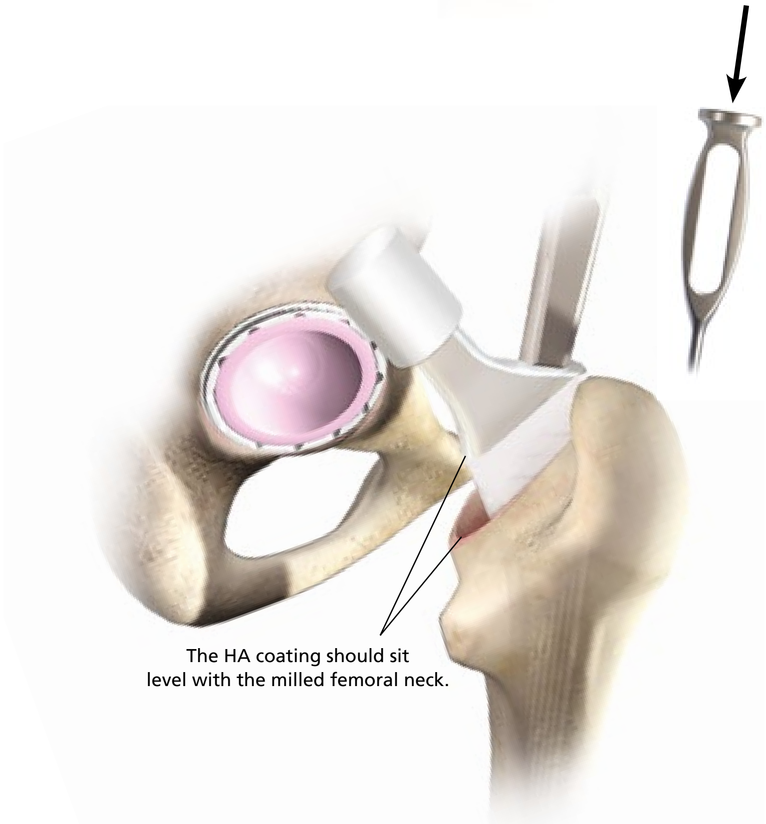
Calcar Reaming

If concern around sizing still exists, intraoperative x-rays could be considered, where available.

Trial Reduction

Leave the last broach in place and use the calcar mill to achieve a flat resection surface. The calcar reaming should allow an optimised fit of the collar on the calcar.

Note: Ensure all soft tissue is clear before performing calcar reaming.



The HA coating should sit level with the milled femoral neck.

Femoral Component Insertion

Important Note: The protective covers should be left on until the components are ready to be implanted. Before implanting a femoral head, the male taper on the femoral stem should be wiped clean of any blood, bone chips or other foreign materials.

With the final broach in situ, attach the appropriate trial neck and trial head. Reduce the hip and assess what adjustments, if any, are required to ensure stability through a full range of motion. Remove the trial head, neck trial and final broach. Do not irrigate or dry the femoral canal. This will help to preserve the compacted cancellous bone quality and encourage osteointegration of the stem.

Addition of Bone Graft (Optional)

When implanting the definitive stem (that has the same size as the final broach) in the femoral canal, ensure that it is directed in by hand. This will help avoid changing the version as a precautionary measure. You should not have more than a thumb's breadth between the resection line and the top of the HA coating on the stem. If the stem does not readily go down this far, the surgeon should broach again. If the HA level of the stem sinks below the resection line, the surgeon should consider a larger stem or using a collar. Then lightly tap the stem impactor to fully seat the stem.

Note: The stem is 0.31 mm thicker than the broach to allow the necessary press-fit.

Femoral Head Impaction

Once the CORAIL stem is fully seated, cancellous bone from the resected femoral head is added around the proximal part of the stem using the bone tamp to seal the femoral canal and to reduce the time for osteointegration which provides definitive stability.

A final trial reduction is carried out to confirm joint stability and range of motion.

A DePuy Synthes 12/14 head must be used. Clean and dry the stem taper carefully to remove any particulate debris. Place the femoral head onto the taper and lightly tap it (especially if a ceramic head is used) using the head impactor. Ensure bearing surfaces are clean and finally reduce the hip.

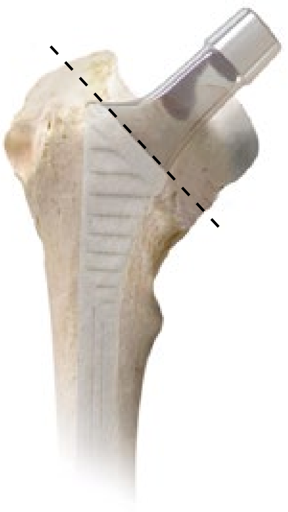
CORAIL DYSPLASIA SIZE 6 STEM – SURGICAL TECHNIQUE

CAUTION: This section is for Size 6 Stems only
This stem is contraindicated with hemiarthroplasty surgery.
This stem must not be implanted in patient weighing more than 60kg (130lb).
All 12/14 heads available in the DePuy Synthes Portfolio are compatible with this stem. The maximum offset for the head is limited to 13mm.

Pre-op templating

Pre-operative Planning

X-ray templates are used during the pre-operative planning to define the femoral neck cutting plane, the degree of lateralisation and the positioning of the cup inside the native acetabular cavity.



Implant K6S

Implant K6A

Femoral Neck Resection

Following exposure of the proximal femur, the first neck cut is made higher than the one planned, in order to remove the femoral head. The second neck cut will depend on the implant chosen during the pre-operative planning. If the implant chosen is the K6S, then the neck cut will be a 45° angle cut. If the implant chosen is the K6A, then the neck cut will be biplaner as identified.

Femoral Canal Preparation

The axis of the femoral cavity is then located using a curette.

Implant K6S   Implant K6A

Trial Reduction

The femoral cavity is prepared using the single monobloc broach specific to each type of implant.

The chosen broach is inserted firmly down to the level of the cervical cutting plane.

Implant K6S   Implant K6A

Implant K6S

Implant K6A

Femoral Component Insertion

Important Note: The protective covers should be left on until the components are ready to be implanted. Before implanting a femoral head, the male taper on the femoral stem should be wiped clean of any blood, bone chips or other foreign materials.

The trial stem is introduced to the prepared cavity.

Joint mobility and stability tests can be carried out using trial heads.

Implant K6S

Implant K6A

Femoral Head Impaction

The stem is introduced by hand first and then impacted down to the level of either the hydroxyapatite coating in case of the K6S or at the level of the trochanteric bearing in case of the K6A.

A final trial reduction is carried out to confirm joint stability and range of motion.

A DePuy Synthes 12/14 head must be used. Clean and dry the stem taper carefully to remove any particulate debris. Place the femoral head onto the taper and lightly tap it (especially if a ceramic head is used) using the head impactor. Ensure bearing surfaces are clean and finally reduce the hip.

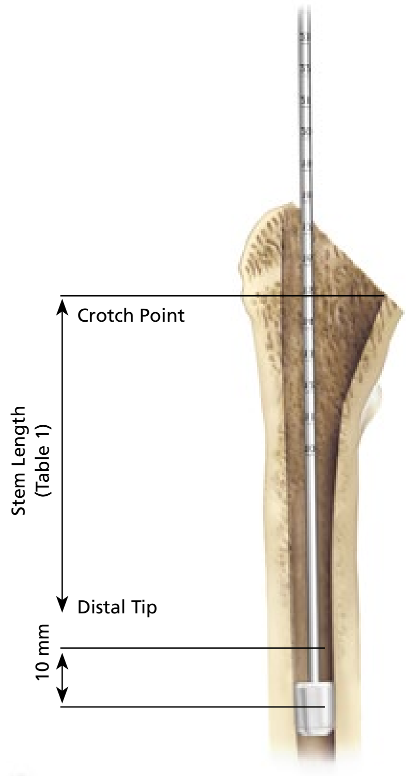
CORAIL PRIMARY STEM (CEMENTED) – SURGICAL TECHNIQUE

CAUTION: This section is for Cemented Stems only - HA Coated Implants must not be implanted with cement.

The canal is prepared in exactly the same way as for the CORAIL Cementless. To implant the cemented option the following additional steps are required. (For a full description, please refer to the CORAIL Primary Stem (Cementless) Surgical Technique pages 16-19).

Cement Restrictor - Trial

Select the size of trial cement restrictor identified during pre-operative templating to fit the distal canal. Attach it to the cement restrictor inserter and insert the trial cement restrictor to the planned depth. Check that it is firmly seated in the canal. Remove the trial cement restrictor.



Pulse Lavage

The use of pulse lavage is recommended to clean the femoral canal of debris and to open the interstices of the bone.

By using pulse lavage prior to setting the cement restrictor, the risks of creating fatty embolism will be reduced.[27]

Cement Restrictor - Implant

Insert the selected DePuy Synthes cement restrictor implant at the same level as the restrictor trial.

Note: The size of the cement restrictor should be one size larger than the last trial restrictor inserted to the planned level. The planned level should be 1cm below the tip of the implant

Implant Size	Stem Length Crotch point to distal tip	Restrictor Depth
8	95 mm	105 mm
9	110 mm	120 mm
10	120 mm	130 mm
11	125 mm	135 mm
12	130 mm	140 mm
13	135 mm	145 mm
14	140 mm	150 mm
15	145 mm	155 mm
16	150 mm	160 mm
18	160 mm	170 mm
20	170 mm	180 mm

Table 1

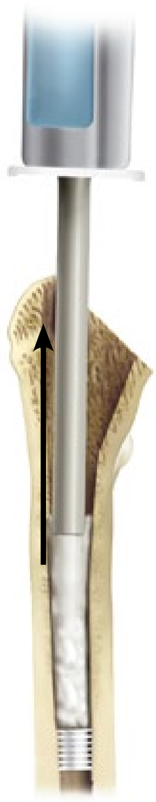
Final Bone Preparation

The bone can be dried by passing a swab down the femoral canal which helps to remove any remaining debris.

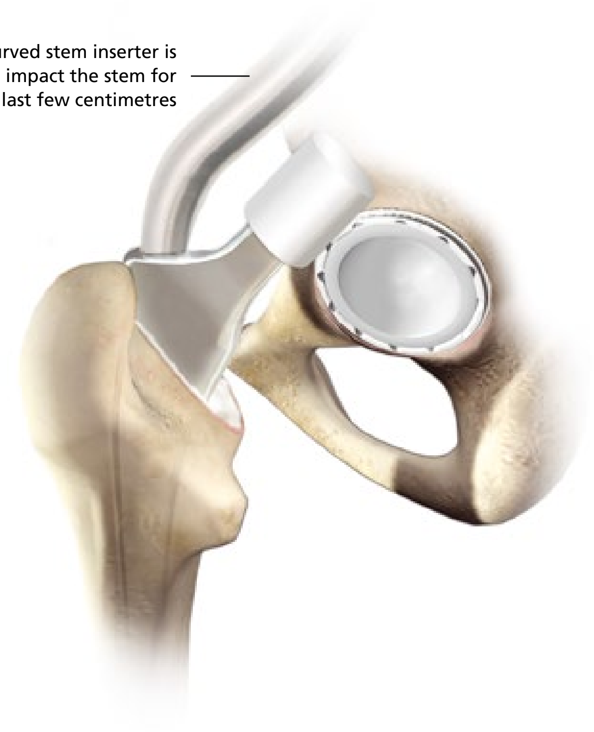
Cementing Technique

High viscosity cement should be used (SMARTSET® HV or SMARTSET GHV Gentamicin bone cement with the CEMVAC® Vacuum Mixing System). Attach the syringe to the CEMVAC cement injection gun. Assess the viscosity of the cement. The cement is ready for insertion when it has taken on a dull, doughy appearance and does not adhere to the surgeon's glove. Start at the distal part of the femoral canal and inject the cement in a retrograde fashion, allowing the cement to push the nozzle gently back, until the canal is completely filled and the distal tip of the nozzle is clear of the canal.

Note: Setting time may vary if the cement components or mixing equipment have not been fully equilibrated to 23°C before use.



Cut the nozzle and place a femoral pressuriser over the end. The cement must be pressurised to ensure good interdigitation of the cement into the trabecular bone. Continually inject cement during the period of pressurisation. Use the femoral preparation kit curettes to remove excess bone cement. Implant insertion can begin when the cement can be pressed together without sticking to itself. For a full description, please see the Utilising Modern Cementing Techniques literature (Cat No:4010030).



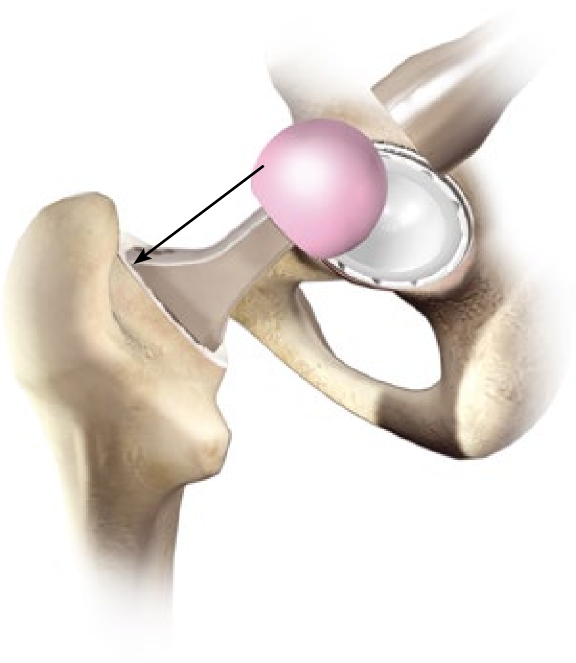
Femoral Component Insertion

Important Note: The protective covers should be left on until the components are ready to be implanted. Before implanting a femoral head, the male taper on the femoral stem should be wiped clean of any blood, bone chips or other foreign materials.

Select a stem of the same size as the final broach inserted. Introduce the implant using the curved stem inserter in line with the long axis of the femur in one slow movement. Its entry point should be lateral, close to the greater trochanter.

During stem insertion maintain thumb pressure on the cement at the medial femoral neck. Insert the stem up to the resection level. If necessary, a few light taps on the stem inserter will bring the stem to the right level.

Remove excess cement with a curette. Maintain pressure until the cement is completely polymerised.

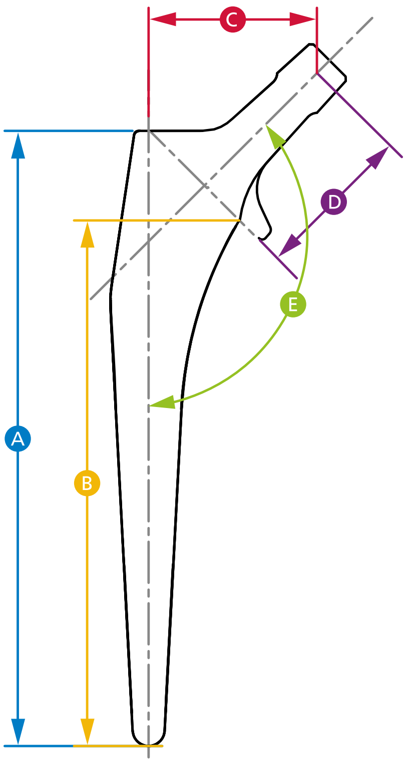


Femoral Head Impaction

A final trial reduction is carried out to confirm joint stability and range of motion.

A DePuy Synthes 12/14 head must be used. Clean and dry the stem taper carefully to remove any particulate debris. Place the femoral head onto the taper and lightly tap it (especially if a ceramic head is used) using the head impactor. Ensure bearing surfaces are clean and finally reduce the hip.

SIZING INFORMATION

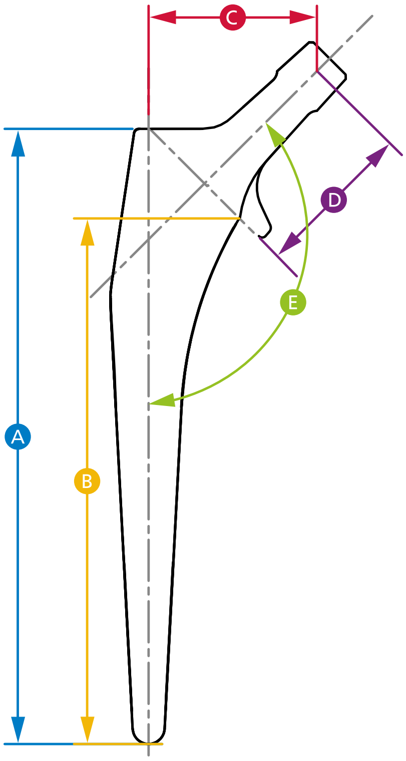


Size	STANDARD OFFSET – COLLARLESS				
	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Length (mm) (D)	Neck Shaft Angle (E)
8	115	93	38.3	39	135°
9	130	108	38.8	39	135°
10	140	118	39.5	39	135°
11	145	123	40.3	39	135°
12	150	128	41.0	39	135°
13	155	133	41.7	39	135°
14	160	138	42.3	39	135°
15	165	143	43.0	39	135°
16	170	148	43.8	39	135°
18	180	158	44.8	39	135°
20	190	168	45.8	39	135°

Size	STANDARD OFFSET – COLLARED				
	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Length (mm) (D)	Neck Shaft Angle (E)
8	115	93	38.3	39	135°
9	130	108	38.8	39	135°
10	140	118	39.5	39	135°
11	145	123	40.3	39	135°
12	150	128	41.0	39	135°
13	155	133	41.7	39	135°
14	160	138	42.3	39	135°
15	165	143	43.0	39	135°
16	170	148	43.8	39	135°
18	180	158	44.8	39	135°
20	190	168	45.8	39	135°

Size	HIGH OFFSET – COLLARLESS				
	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Length (mm) (D)	Neck Shaft Angle (E)
9	130	108	45.7	43	135°
10	140	118	46.4	43	135°
11	145	123	47.2	43	135°
12	150	128	47.9	43	135°
13	155	133	48.5	43	135°
14	160	138	49.2	43	135°
15	165	143	49.9	43	135°
16	170	148	50.7	43	135°
18	180	158	51.8	43	135°
20	190	168	52.9	43	135°

SIZING INFORMATION



Size	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Length (mm) (D)	Neck Shaft Angle (E)
COXA VARA – COLLARED					
9	130	108	45.6	40	125°
10	140	118	46.3	40	125°
11	145	123	47.1	40	125°
12	150	128	47.8	40	125°
13	155	133	48.5	40	125°
14	160	138	49.1	40	125°
15	165	143	49.8	40	125°
16	170	148	50.6	40	125°
18	180	158	51.8	40	125°
20	190	168	52.8	40	125°

Size	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Length (mm) (D)	Neck Shaft Angle (E)
STANDARD OFFSET – CEMENTED					
8	115	93	38.3	39	135°
9	130	108	38.8	39	135°
10	140	118	39.5	39	135°
11	145	123	40.3	39	135°
12	150	128	41.0	39	135°
13	155	133	41.7	39	135°
14	160	138	42.3	39	135°
15	165	143	43.0	39	135°
16	170	148	43.8	39	135°
18	180	158	44.8	39	135°
20	190	168	45.8	39	135°

Size	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Length (mm) (D)	Neck Shaft Angle (E)
HIGH OFFSET – CEMENTED					
9	130	108	45.7	43	135°
10	140	118	46.4	43	135°
11	145	123	47.2	43	135°
12	150	128	47.9	43	135°
13	155	133	48.5	43	135°
14	160	138	49.2	43	135°
15	165	143	49.9	43	135°
16	170	148	50.7	43	135°
18	180	158	51.8	43	135°
20	190	168	52.9	43	135°

Size	Stem Length (mm) (A)	Stem Length (mm) (B)	Offset (mm) (C)	Neck Shaft Angle (E)
DYSPLASIA RANGE – SIZE 6				
6S	110	93	30.8	135°
6A	110	94	34.4	135°

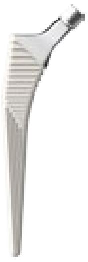
Note: All measurements are based on a 28 mm +5.0 ARTICUL/EZE head.

ORDERING INFORMATION

Implants

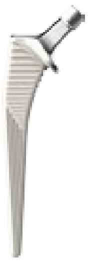
CORAIL Standard Offset Stem (Collarless)

3L92507	CORAIL Size 8
3L92509	CORAIL Size 9
3L92510	CORAIL Size 10
3L92511	CORAIL Size 11
3L92512	CORAIL Size 12
3L92513	CORAIL Size 13
3L92514	CORAIL Size 14
3L92515	CORAIL Size 15
3L92516	CORAIL Size 16
3L92518	CORAIL Size 18
3L92520	CORAIL Size 20



CORAIL Standard Offset Stem (Collared)

3L92498	CORAIL Size 8
3L92499	CORAIL Size 9
3L92500	CORAIL Size 10
3L92501	CORAIL Size 11
3L92502	CORAIL Size 12
3L92503	CORAIL Size 13
3L92504	CORAIL Size 14
3L92505	CORAIL Size 15
3L92506	CORAIL Size 16
3L92508	CORAIL Size 18
3L92521	CORAIL Size 20

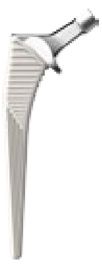


CORAIL High Offset Stem (Collarless)

L20309	CORAIL Size 9
L20310	CORAIL Size 10
L20311	CORAIL Size 11
L20312	CORAIL Size 12
L20313	CORAIL Size 13
L20314	CORAIL Size 14
L20315	CORAIL Size 15
L20316	CORAIL Size 16
L20318	CORAIL Size 18
L20320	CORAIL Size 20

CORAIL Coxa Vara High Offset Stem (Collared)

3L93709	CORAIL Size 9
3L93710	CORAIL Size 10
3L93711	CORAIL Size 11
3L93712	CORAIL Size 12
3L93713	CORAIL Size 13
3L93714	CORAIL Size 14
3L93715	CORAIL Size 15
3L93716	CORAIL Size 16
3L93718	CORAIL Size 18
3L93720	CORAIL Size 20



CORAIL Cemented Standard Offset

L96408	CORAIL Cemented Size 8
L96409	CORAIL Cemented Size 9
L96410	CORAIL Cemented Size 10
L96411	CORAIL Cemented Size 11
L96412	CORAIL Cemented Size 12
L96413	CORAIL Cemented Size 13
L96414	CORAIL Cemented Size 14
L96415	CORAIL Cemented Size 15
L96416	CORAIL Cemented Size 16
L96418	CORAIL Cemented Size 18
L96420	CORAIL Cemented Size 20

CORAIL Cemented High Offset

L96509	CORAIL Cemented Size 9
L96510	CORAIL Cemented Size 10
L96511	CORAIL Cemented Size 11
L96512	CORAIL Cemented Size 12
L96513	CORAIL Cemented Size 13
L96514	CORAIL Cemented Size 14
L96515	CORAIL Cemented Size 15
L96516	CORAIL Cemented Size 16
L96518	CORAIL Cemented Size 18
L96520	CORAIL Cemented Size 20

Standard Dysplasic CORAIL Stem

L20106	K6S

CORAIL Stem with Trochanteric Base

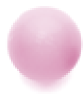
L20006	K6A

ORDERING INFORMATION

Implants

Femoral Heads

ARTICUL/EZE BIOLOX® *delta*



1365-28-310	28 mm +1.5
1365-28-320	28 mm +5
1365-28-330	28 mm +8.5
1365-32-310	32 mm +1
1365-32-320	32 mm +5
1365-32-330	32 mm +9
1365-36-310	36 mm +1.5
1365-36-320	36 mm +5
1365-36-330	36 mm +8.5
1365-36-340	36 mm +12

ARTICUL/EZE ULTAMET™

1365-11-500	28 mm +1.5
1365-12-500	28 mm +5
1365-13-500	28 mm +8.5
1365-50-000	36 mm -2
1365-51-000	36 mm +1.5
1365-52-000	36 mm +5
1365-53-000	36 mm +8.5
1365-54-000	36 mm +12
1365-04-000	40 mm -2
1365-05-000	40 mm +1.5
1365-06-000	40 mm +5
1365-07-000	40 mm +8.5
1365-08-000	40 mm +12
1365-60-000	44 mm -2
1365-61-000	44 mm +1.5
1365-62-000	44 mm +5
1365-63-000	44 mm +8.5
1365-64-000	44 mm +12

All 12/14 heads available in the DePuy Synthes portfolio are compatible with the CORAIL Stem with a maximum offset of 13 mm:

- "Classical" heads: all 12/14 ARTICUL/EZE, 12/14 CoCr, 12/14 BIOLOX femoral heads, aSPHERE ARTICUL/EZE 12/14

- In case of ceramic head revision, BIOLOX delta TS heads should be used, as these are designed for revision of BIOLOX ARTICUL/EZE heads.

- To select the correct DePuy Synthes Femoral Head to be used with CORAIL AMT HA-coated stem in case of hemiarthroplasty, refer to algorithm presented in document ref. DPEM/JRC/1213/0002.

Core Instrumentation

L20500	Base Aluminium Basket
L20501	Bottom Thermoformed Tray
L20502	Middle Thermoformed Tray
L20503	Top Thermoformed Tray
L20504	Top Basket

L20408	Broach 8
L20409	Broach 9
L20410	Broach 10
L20411	Broach 11
L20412	Broach 12
L20413	Broach 13
L20414	Broach 14
L20415	Broach 15
L20416	Broach 16
L20418	Broach 18
L20420	Broach 20

ARTICUL/EZE Trial Head

2530-81-000	28 mm +1.5
2530-82-000	28 mm +5
2530-83-000	28 mm +8,5
2530-84-000	28 mm +12
2530-91-000	32 mm +1
2530-92-000	32 mm +5
2530-93-000	32 mm +9
2530-94-000	32 mm +13
2531-50-000	36 mm -2
2531-51-000	36 mm +1.5
2531-52-000	36 mm +5
2531-53-000	36 mm +8.5
2531-54-000	36 mm +12
2531-04-000	40 mm –2
2531-05-000	40 mm +1.5
2531-06-000	40 mm +5
2531-07-000	40 mm +8.5
2531-08-000	40 mm +12
2531-60-000	44 mm –2
2531-61-000	44 mm +1.5
2531-62-000	44 mm +5
2531-63-000	44 mm +8.5
2531-64-000	44 mm +12

ORDERING INFORMATION

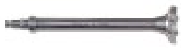
Core Instrumentation

L20431 Standard Offset Neck Segment

L20432 Coxa Vara Neck Segment

L20433 High Offset Neck Segment

2570-04-200 Calcar Mill Large
2570-04-100 Calcar Mill Small



2598-07-570 Positioner Inserter

2570-05-100 Stem Impactor

2001-65-000 Head Impactor

9653-68-000 Anteversion Axis

L20440 Neck Resection Guide

L93606 Bone Tamp

L93205 Bone Impactor

2002-31-000 Osteotome

9522-11-500 Curved Broach Handle

Optional Instruments

2598-07-350 Universal Anterior Broach Handle, Left

2598-07-360 Universal Anterior Broach Handle, Right

9522-10-500F Straight Broach Handle

9522-12-500F Extra Curved Broach Handle

2598-07-460 Universal Stem Inserter Handle

2598-07-440 Curved Inserter Shaft (CORAIL/TRI-LOCK®)

9400-80-007 MI Calcar Reamer Small

L20464 CORAIL Dysplasia Tray

DDH – Size 6 Instrumentation

L20465 CORAIL Dysplasia Tray Cover

L20462 Trial stem K6S

L20463 Trial stem K6A

L20461 Monobloc Broach for stem K6S

L20460 Monobloc Broach for stem K6A

Cementing Instrumentation

Cement Restrictor Kit

5460-02-000	Cement Restrictor Inserter
5460-30-000	Cement Restrictor Trial 1
5460-32-000	Cement Restrictor Trial 2
5460-34-000	Cement Restrictor Trial 3
5460-36-000	Cement Restrictor Trial 4
5460-38-000	Cement Restrictor Trial 5
5460-40-000	Cement Restrictor Trial 6
5460-42-000	Cement Restrictor Trial 7

DePuy Synthes Bone Cements

3092040	SMARTSET HV Bone Cement 40g
3095040	SMARTSET GHV Gentamicin Bone Cement 40g

CEMVAC Vacuum Mixing System

Hardware

831401	DePuy Synthes Multi-Pressure Vacuum Pump
831202	Syringe Holder
831205	CEMVAC 1 Piece Gun
3210016	Nozzle Cutter

Disposables

831215	Single Syringe Set (Box 20 x 1 single sterile pack)
831220	Double Syringe Set (Box 10 x 2 double sterile pack)
831230	Revision Nozzle (8.5 mm x 5)
831231	Revision Nozzle (6.5 mm x 5)
831234	Nozzle Adaptor 90 Degree (x 5)
3206005	Standard Femoral Pressuriser (x 5)
3206002	Wedge Femoral Pressuriser Large (x 5)

Templating

Pre-operative Templates

L94041	CORAIL X-ray Templates 100 STD HO 8-20
L94042	CORAIL X-ray Templates 115 STD HO 8-20
L94043	CORAIL X-ray Templates 120 STD HO 8-20
L94044	CORAIL X-ray Templates 100 SN 8-10 & Dysplasia 6
L94045	CORAIL X-ray Templates 115 SN 8-10 & Dysplasia 6
L94046	CORAIL X-ray Templates 120 SN 8-10 & Dysplasia 6

Digital Templates

The availability of digital templates depends on DePuy Synthes International's agreement with the vendors.

Please contact DePuy Synthes International for more information

DNIs

23L92501	DNI CORAIL Standard with Collar Size 11 HA
23L92521	DNI CORAIL Standard with Collar Size 20 HA
23L92512	DNI CORAIL Standard Size 12 HA
23L93711	DNI CORAIL Coxa Vara Size 11 HA
23L92511	DNI CORAIL Standard Size 11 HA
2L20311	DNI CORAIL High Offset Size 11 HA
2L20006	DNI CORAIL Dysplasia with Trochanteric Base Size 6 HA
2L20106	DNI CORAIL Dysplasia Size 6 HA

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Johnson & Johnson Medical Limited PO BOX 1988, Simpson Parkway, Livingston, West Lothian, EH54 0AB, United Kingdom.
Incorporated and registered in Scotland under company number SC132162.

DePuy France S.A.S.
7 Allée Irène Joliot Curie
69800 Saint Priest
France
Tel: +33 (0)4 72 79 27 27
Fax: +33 (0)4 72 79 28 28

CE 0459

DePuy Orthopaedics, Inc.
700 Orthopaedic Drive
Warsaw, IN 46582
USA
Tel: +1 (800) 366 8143
Fax: +1 (574) 267 7196

DePuy International Ltd
St Anthony's Road
Leeds LS11 8DT
England
Tel: +44 (0)113 270 0461

DePuy (Ireland)
Loughbeg
Ringaskiddy
Co. Cork
Ireland
Tel: +353 21 4914 000
Fax: +353 21 4914 199

DePuy International Ltd
Trading as DePuy CMW
Cornford Road
Blackpool FY4 4QQ
Lancashire
England
Tel: + 44 (0)1253 765 167
Fax: + 44 (0)1253 697 431

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