

# Clinical study comparing cementless Polar stem and the cementless Corail stem in total hip replacement

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<b>Registration date</b> 21/03/2012	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 09/08/2021	<b>Condition category</b> Musculoskeletal Diseases	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

A total hip replacement (THR) is used in the treatment of severe and debilitating arthritis of the hip; the natural, arthritic ball and socket joint is removed and replaced with an artificial prosthesis, or implant.

A THR implant (also known as prosthesis) comes in four pieces; a stem, a head, a liner and a cup. These all fit together; the head and the liner form the ball and socket part of the joint. The head sits on the stem, and the liner fits in the cup. The stem sits inside the thigh-bone (femur) and the cup sits in the pelvic bone. It is important in THR that the stem and the cup are well fixed in place and do not move within the bone. This type of movement, referred to as migration, is linked with early to mid-term failure of the implant, and can require re-operation. The orthopaedic manufacturer De Puy developed a stem called the 'Corail', which has been shown to have minimal migration, and is the most commonly used implant in THR. It has two versions, one with a collar and one without. It is not known whether the presence of the collar helps prevent excessive migration. This has led to the development of the 'Polar' stem by the orthopaedic manufacturer Smith & Nephew, which is similar in design to the Corail, but has not been directly compared in performance to the Corail. The first aim of this study is to assess the relative migration of the Polar and the Corail stems over a 2-year period in THR to see whether the Polar performs comparably or even better than the Corail. The second aim is the comparison of migration of the cementless R3 cup with a well-established cementless comparison by using radiostereometric analysis (RSA). This study has been designed to document the migration of the implants over 2 years via x-ray analysis and clinical outcomes.

### Who can participate?

Patients aged 50-75 who have a diagnosis of debilitating hip arthritis and require THR

### What does the study involve?

The study involves a radiostereometric analysis (RSA) x-ray, which is a widely used method of measuring implant movements. It involves the insertion of 1-mm spherical tantalum markers around the prosthesis and x-rays being taken at intervals to show any change in relative position. These metallic markers are easy to identify on x-rays, do not cause a reaction in the body and

have no known side-effects. Participants undergo THR with one of three possible hip arthroplasty stems: the Corail collared stem, the Corail collarless stem or the Polar stem, and the tantalum markers are inserted at the time of surgery. RSA is then used as part of routine follow-up after the operation, to measure any migration of the stem.

What are the possible benefits and risks of participating?

The benefits may include identifying a superior prosthesis in terms of migration, resumption of high levels of function and overall patient satisfaction. There are risks associated with THR surgery. However, all implants used in the study have the CE mark, and are used routinely in many hospitals by many surgeons. There are no additional risks associated with participating in this study in comparison to an identical patient receiving an identical THR. The tantalum metallic markers do not cause a reaction in the body and have no known side-effects. There are no extra burdens associated with the study, as patients will return for clinical and RSA follow-up at 6 weeks, 6 months, 1 and 2 years after the operation, identical to those patients who are not in the study.

Where is the study run from?

University College Hospital NHS Foundation Trust (UK)

When is study starting and how long is it expected to run for?

July 2012 to July 2015

Who is funding the study?

The study is part funded by Smith and Nephew Orthopaedic, who developed the Polar THR

Who is the main contact?

Prof. Fares Haddad

## Contact information

**Type(s)**

Scientific

**Contact name**

Prof Fares Haddad

**Contact details**

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## Additional identifiers

**Protocol serial number**

N/A

## Study information

**Scientific Title**

A prospective, randomised, single centre clinical study comparing cementless Polar stem and the cementless Corail stem in total hip replacement

**Study objectives**

The null hypothesis is that there is no difference in migration rates of the Corail or Polar stems at 2 years.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

NRES Committee London – City Road and Hampstead, 17/06/2015, ref: 15/LO/0661

**Study design**

Prospective randomised single-centre clinical study

**Primary study design**

Interventional

**Study type(s)**

Treatment

**Health condition(s) or problem(s) studied**

Hip osteoarthritis, total hip replacement

**Interventions**

The 75 patients recruited to the study will be randomly allocated to one of 3 groups:

1. Polar stem + R3 cup
2. Corail collarless + Pinnacle cup
3. Corail collared + Pinnacle cup

Each patient will have a 1:3 chance of receiving either the Polar stem and R3 cup, the Corail collarless stem and Pinnacle cup or the Corail collared stem and Pinnacle cup; they will not be aware of the prosthesis they have received until the end of the study. Although it is possible to randomise and blind the prosthesis to the patient and the Researcher gathering outcome data, it is not possible to blind the surgeon on the day of surgery.

Surgery will be performed and routine post-operative care provided, which includes rehabilitation and safe discharge from hospital. Each participant, regardless of each treatment arm, will receive identical care. A post-operative Radiostereometric Analysis (RSA) xray will be performed prior to discharge, and each participant will then be seen at 6 weeks, 6 months, 1 and 2 years post-op for RSA images and clinical follow-up.

**Intervention Type**

Procedure/Surgery

**Primary outcome(s)**

Comparison of migration of the cementless Polar stem (Smith & Nephew Orthopaedics) with a well established cementless collarless and collared comparison stem (Corail, DePuy Orthopedics) in THR, by using RSA

### **Key secondary outcome(s)**

1. Comparison of migration of the cementless R3 cup (Smith & Nephew Orthopaedics) with a well established cementless comparison (Pinnacle, DePuy Orthopedics) by using RSA
2. Documenting the performance of the Polar and Corail implants in the clinical setting over two years post-operatively, using information on infection and complication rates and specific Health Related Quality of Life (HRQoL) outcome/satisfaction scores to see whether there is any difference in performance

### **Completion date**

01/07/2020

## **Eligibility**

### **Key inclusion criteria**

1. The surgeon and the patient must agree that total hip replacement (THR) is necessary
2. The patient must be fit for THR in the opinion of the surgeon and the interdisciplinary team
3. The indication for THR must be primary osteoarthritis, avascular necrosis, femoral neck fracture, or hip dysplasia
4. Patients requiring primary arthroplasty
5. Patients must be aged between 50 - 75 years at the time of surgery
6. Both male and female
7. The patient must be capable of giving informed consent and express a willingness to comply with the post-operative review program
8. The patient must be a permanent resident in an area accessible to the study site

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Mixed

### **Sex**

All

### **Key exclusion criteria**

1. Post-traumatic OA (proximal femur fracture)
2. Post-infection in respective joint
3. Prior osteotomy of the affected hip
4. Patients under treatment for osteoporosis (with bisphosphonate)
5. OA patients diagnosed Charnley Classification
6. Patients requiring cortisone medication
7. Patients whose body mass index is higher than 35

- 8. Patients already participating in the RSA hip study.
- 9. The individual is unable or unwilling to sign the patient informed consent specific to this study
- 10. Previous THR on contra-lateral side
- 11. Patients requiring revision arthroplasty

**Date of first enrolment**

02/11/2015

**Date of final enrolment**

01/07/2018

## Locations

**Countries of recruitment**

United Kingdom

England

**Study participating centre**

University College London Hospital

London

United Kingdom

NW1 2PG

## Sponsor information

**Organisation**

Joint UCL / UCLH / Royal Free Biomedical Research Unit (UK)

**ROR**

<https://ror.org/02jx3x895>

## Funder(s)

**Funder type**

Industry

**Funder Name**

Smith & Nephew Orthopaedics (UK)

# Results and Publications

## Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

## IPD sharing plan summary

Other

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes