Revival™
Modular Revision Hip Stem
Surgical technique

Corin
Responsible Innovation
Contents
Operative summary 4
Technical features 5
Operative technique 6
  1. Pre-operative planning 6
  2. Existing stem removal 6
  3. Canal preparation 6
  4. Distal component insertion 7
  5. Bone preparation for the proximal component 7
  6. Trial proximal component insertion 7
  7. Trial reduction 8
  8. Proximal component insertion 8
  9. Locking the proximal component 8
  10. Trial reduction 9
  11. Head impaction 9
Ordering information 10
Revival™ sizing guide 11
Complexity meets Simplicity

* Ceramic liners and ceramic-on-ceramic articulations are not approved for use in the USA.
Operative summary

a. Canal preparation
b. Distal component insertion
c. Bone preparation for the proximal component
d. Trial proximal component insertion
e. Trial reduction
f. Proximal component insertion
g. Locking the proximal component
h. Trial reduction
The Revival™ Modular Revision Hip Stem is a modular system designed for prosthesis replacement in cases of serious bone loss.

Manufactured from titanium alloy Ti 6Al 4V ELI, the Revival™ stem is designed for biocompatibility and mechanical strength. The surface finish is obtained by abrasion with corundum to increase the contact surface which may help with prosthesis-bone fixation.

Technical features

The femoral implant consists of three elements – a proximal component, distal component and locking screw.

Locking screw

The locking screw is used to hold the ‘Morse’ taper cone in place and has a retention feature to prevent loosening.

Proximal component

The modular proximal component is designed to restore the physiological anatomy using four lengths (40mm, 50mm, 60mm and 70mm) and two CCD angles (125° and 135°).

Distal component

The distal component is conical in shape and has longitudinal fins. The modular design has four lengths (100mm, 160mm, 200mm and 240mm) and eight diameters (14mm, 16mm, 17mm, 18mm, 19mm, 20mm, 22mm and 24mm). The 200mm and 240mm distal components have a 3° anatomical pro-curvature to avoid point effects on the cortical bone. The two components are assembled using a ‘Morse’ taper 2° 51’ so that the proximal component can be dialled into position to achieve the anteversion required. The system delivers 360° rotation.
Operative technique

1. Pre-operative planning

It is advisable to conduct pre-operative planning to determine the diameter and length of the distal component and the size of the proximal component. Planning should include antero-posterior X-rays and the templates provided with the Revival™ system. The templates are 15% enlargements and are placed over the X-ray to determine the size of the distal component, so that it is well anchored to good quality cortical bone and extends at least 10mm below the tip of the existing implant. The exact position of the longitudinal osteotomy, if needed, also needs to be determined.

2. Existing stem removal

a) Removal of a cemented stem

Once the stem has been removed from the cement mantle by utilising universal extraction instruments or manufacturer-specific instruments, ensure all cement is removed prior to preparation of the femur for the Revival™ femoral components. An osteotomy of the femur may be necessary to facilitate removal of the cement.

b) Removal of a cementless stem

Biologic fixation that may exist between the existing implant and bone can make the removal of a cementless stem difficult. When removing a proximally porous coated stem, it may be necessary to perform an osteotomy of the femur just below the level of the porous coating to assist in stem removal. When removing an extensively coated stem, an extended trochanteric osteotomy may be necessary. Sectioning the stem and utilising trephine reamers can assist in the removal of the porous coated distal segment of a cementless stem.

3. Canal preparation

After an initial opening of the diaphyseal canal, proceed to reaming with the conical reamers – there is a dedicated conical reamer for each prosthetic size. Start reaming with a conical reamer one or two sizes smaller than the size identified in the pre-operative planning, and incrementally increase the reamer size. The reamers must be inserted in the femoral canal until the depth gauge is in line with the apex of the greater trochanter.

It is advisable to ream up to the level of the indicator of the proximal body so that the other three sizes will be available during insertion of the proximal component (typically aim to have at least one size above and one size below). Work with the successive reamers until meeting firm resistance and the typical sound of cortical engagement, normally corresponding to the size identified in the pre-operative plan. The reamers can be attached to a powered driver via the Jacobs chuck or by hand via the modular handle.
4. Distal component insertion

Fix the distal component to the impactor and proceed to insert it into the previously prepared canal. The long distal components (200mm and 240mm) must be orientated in the direction of the femoral curvature as they have a 3° pro-curvature. Now proceed with the insertion, advancing gradually and checking the distance until the maximum depth is reached, so as to obtain torsional stability and avoid any further insertion. The marking on the impactor should coincide with the right offset length, as per the pre-operative planning. Any differences in calculated length can be recovered with the different sizes of proximal component and the different head offsets.

5. Bone preparation for the proximal component

Remove the impactor from the distal component and screw on the guide shaft for the tubular reamer. Prepare the inside of the proximal femur with the tubular reamer prior to housing the proximal component.

6. Trial proximal component insertion

Insert the trial proximal component and secure with the proximal component trial screw.

Note: There is a dedicated screw for each size of proximal body. The trialling is performed with the definitive distal component as there are no distal component trials. It is advisable not to tighten this screw excessively.
7. Trial reduction
Attach the appropriate head trial to the proximal component \textit{in situ} and perform a trial reduction, assessing the stability of the hip, the length of the limb, the range of movement and any impingement on the acetabular cup. Also check the desired anteversion, marking the bone at the reference line marked in the side of the trial proximal component. If the leg has been lengthened so that it cannot be managed easily with the available head options, consideration should be given to the other proximal component options.

\textbf{Note: The trial head should be removed from the trial neck by twisting through 90°.}

8. Proximal component insertion
Remove the trial head and the trial proximal component. The distal component taper should be thoroughly rinsed and carefully dried to ensure that it is free from debris.

Take the definitive proximal component of the same measurement as the trial and using the impactor, insert it into the 'Morse' taper of the previously cleaned distal component. Be sure to observe the correct anteversion by aligning the reference line on the proximal component with the line previously made on the bone. Definitively impact the proximal component.

9. Locking the proximal component
Insert the locking screw of the right size for the proximal component used and tighten with the hexagonal screw driver. This locking screw provides extra anchoring for the distal and proximal components as well as to the 'Morse' taper.
10. Trial reduction
Attach the appropriate head trial to the definitive proximal component in situ and perform a trial reduction, assessing the stability of the hip, the length of the limb, the range of movement and any impingement on the acetabular cup. If the leg has been lengthened so that it cannot be managed easily with the available head options, consideration should be given to the other proximal component options.

Note: The trial head should be removed from the trial neck by twisting through 90°. The proximal component can be removed with the dedicated extractor.

11. Head impaction
Following the trial reduction, but before placing the definitive head on the stem, the stem taper should be thoroughly rinsed and carefully dried to ensure that it is free from debris. The head is then placed on the stem taper by twisting lightly and by applying axial manual pressure until it is seated firmly. The plastic head impactor is placed on the pole of the head and impacted with a light tap using a hammer in an axial direction.

Never use a metal hammer directly on the surface of the definitive head, only the plastic head impactor provided.

The hip can then be carefully reduced and closure performed using the surgeon’s preferred technique.

Description
The Revival™ Modular Revision Hip Stem is a modular stem manufactured from titanium alloy (Ti6Al4V ELI) with a proximal component, a distal component and a locking screw. The modular proximal component is available in four lengths (40mm, 50mm, 60mm, and 70mm) and two CCD angles (125° and 135°). The distal component is conical in shape and has longitudinal fins.

The modular design has four lengths (100mm, 160mm, 200mm, and 240mm) and eight diameters (14mm, 16mm, 17mm, 18mm, 19mm, 20mm, 22mm, and 24mm). The proximal and distal components are assembled using a ‘Morse’ taper 2° 51’ so that the proximal component can be dialed into position to achieve the anteversion required. The locking screw is used to hold the ‘Morse’ taper cone in place.

The Revival™ stem has a surface finish obtained by abrasion with corundum to increase the contact surface for cementless fixation. The device is intended to be used with Corin (12/14 taper) ceramic and CoCr modular heads.
Ordering information

**Proximal component**
- 12-0362540 125° L. 40mm
- 12-0362550 125° L. 50mm
- 12-0362560 125° L. 60mm
- 12-0362570 125° L. 70mm
- 12-0363540 135° L. 40mm
- 12-0363550 135° L. 50mm
- 12-0363560 135° L. 60mm
- 12-0363570 135° L. 70mm

**CoCr modular heads (12/14)**
from the Trinity™ acetabular system
- E321.428 Extra short -5.0mm 28mm
- E321.432 Extra short -6.0mm 32mm
- E321.436 Extra short -8.0mm 36mm
- E321.440 Extra short -8.0mm 40mm
- E321.028 Short -3.5mm 28mm
- E321.032 Short -4.0mm 32mm
- E321.036 Short -4.0mm 36mm
- E321.040 Short -4.0mm 40mm
- E321.128 Medium 0.0mm 28mm
- E321.132 Medium 0.0mm 32mm
- E321.136 Medium 0.0mm 36mm
- E321.140 Medium 0.0mm 40mm
- E321.228 Long +3.5mm 28mm
- E321.232 Long +4.0mm 32mm
- E321.236 Long +4.0mm 36mm
- E321.240 Long +4.0mm 40mm
- E321.328 Extra long +7.0mm 28mm
- E321.332 Extra long +7.0mm 32mm
- E321.336 Extra long +8.0mm 36mm
- E321.340 Extra long +8.0mm 40mm

**BIOLOX® delta ceramic modular heads (12/14)**
from the Trinity™ acetabular system
- 104.2800 Short -3.5mm 28mm
- 104.3200 Short -4.0mm 32mm
- 104.3600 Short -4.0mm 36mm
- 104.4000 Short -4.0mm 40mm
- 104.2805 Medium 0.0mm 28mm
- 104.3205 Medium 0.0mm 32mm
- 104.3605 Medium 0.0mm 36mm
- 104.4005 Medium 0.0mm 40mm
- 104.2810 Long +3.5mm 28mm
- 104.3210 Long +4.0mm 32mm
- 104.3610 Long +4.0mm 36mm
- 104.4010 Long +4.0mm 40mm
- 104.3215 Extra long +7.0mm 32mm
- 104.3615 Extra long +8.0mm 36mm
- 104.4015 Extra long +8.0mm 40mm

**Proximal filling component**
- 12-0372540 125° L. 40mm
- 12-0372550 125° L. 50mm
- 12-0372560 125° L. 60mm
- 12-0372570 125° L. 70mm
- 12-0373540 135° L. 40mm
- 12-0373550 135° L. 50mm
- 12-0373560 135° L. 60mm
- 12-0373570 135° L. 70mm

**Locking screw**
- 12-0376140 L. 40mm
- 12-0376150 L. 50mm
- 12-0376160 L. 60mm
- 12-0376170 L. 70mm

**Distal component**
- 12-0373914 L. 100mm Dia 14mm
- 12-0373916 L. 100mm Dia 16mm
- 12-0373918 L. 100mm Dia 18mm
- 12-0373920 L. 100mm Dia 20mm
- 12-0373922 L. 100mm Dia 22mm
- 12-0374014 L. 160mm Dia. 14mm
- 12-0374016 L. 160mm Dia. 16mm
- 12-0374017 L. 160mm Dia. 17mm
- 12-0374018 L. 160mm Dia. 18mm
- 12-0374019 L. 160mm Dia. 19mm
- 12-0374020 L. 160mm Dia. 20mm
- 12-0374022 L. 160mm Dia. 22mm
- 12-0374024 L. 160mm Dia. 24mm* **
- 12-0375014 L. 200mm Dia. 14mm
- 12-0375016 L. 200mm Dia. 16mm
- 12-0375017 L. 200mm Dia. 17mm
- 12-0375018 L. 200mm Dia. 18mm
- 12-0375019 L. 200mm Dia. 19mm
- 12-0375020 L. 200mm Dia. 20mm
- 12-0375022 L. 200mm Dia. 22mm
- 12-0375024 L. 200mm Dia. 24mm* **
- 12-0376014 L. 240mm Dia. 14mm
- 12-0376016 L. 240mm Dia. 16mm
- 12-0376017 L. 240mm Dia. 17mm
- 12-0376018 L. 240mm Dia. 18mm
- 12-0376019 L. 240mm Dia. 19mm
- 12-0376020 L. 240mm Dia. 20mm
- 12-0376022 L. 240mm Dia. 22mm
- 12-0376024 L. 240mm Dia. 24mm* **

**Proximal filling component**
- 12-0372540 125° L. 40mm
- 12-0372550 125° L. 50mm
- 12-0372560 125° L. 60mm
- 12-0372570 125° L. 70mm
- 12-0373540 135° L. 40mm
- 12-0373550 135° L. 50mm
- 12-0373560 135° L. 60mm
- 12-0373570 135° L. 70mm

**Proximal filling component**

* only on request  ** not available in US
The Revival™ Modular Revision Hip Stem is indicated in revision surgery of femoral components, following failure of primary cemented or un-cemented prosthesis. The indications for the Revival™ Modular Revision Hip Stem include:

- Non-inflammatory degenerative joint disease including primary and secondary osteoarthritis
- Aseptic necrosis of the femoral head
- Rheumatoid arthritis
- Correction of functional deformity
- Treatment of non-union and femoral neck fractures
- Treatment of traumatic dislocations of the hip
- Failures of osteotomy
- Treatment of arthrodesis
- The Revival™ Modular Revision Stem is indicated for cementless, single use only.

**Indications**

**Contraindications**

- Osteoporosis;
- Patient suffering from neurological disorders, unable to follow directions;
- Systemic disorders and / or metabolic problems that lead to a progressive deterioration of bone support;
- Osteomalacia;
- Distant foci of infection in the body that could spread to the implant site;
- Vascular insufficiency, muscular atrophy, neuromuscular diseases;
- Incomplete or insufficient presence of soft tissue around the hip joint;
- Skeletal immaturity
- Uncorrectable deformity

**Sizing guide**

**Proximal component**

<table>
<thead>
<tr>
<th>CCD (degrees)</th>
<th>Length 1 (mm)</th>
<th>Length 2 (mm)</th>
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<th>Distal stem length (mm)</th>
<th>Stem diameter (mm)</th>
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<tr>
<td>100 (straight)</td>
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<tr>
<td>160 (straight)</td>
<td>14 16 17 18 19</td>
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<tr>
<td>200 (3° anatomical pro-curvature)</td>
<td>14 16 17 18 19 20 22 24**</td>
</tr>
<tr>
<td>240 (3° anatomical pro-curvature)</td>
<td>14 16 17 18 19 20 22 24**</td>
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**Distal component**

**CCD (degrees)**

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<td>200 (3° anatomical pro-curvature)</td>
<td>14 16 17 18 19 20 22 24**</td>
</tr>
<tr>
<td>240 (3° anatomical pro-curvature)</td>
<td>14 16 17 18 19 20 22 24**</td>
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</tbody>
</table>

**Not available in US**
Reference

1. “Società italiana riprotesizzazione-GIR” grades II, III and IV and Paposky grades II and III