Revision hip surgery poses many challenges to the orthopaedic surgeon. From implant fixation to addressing bone loss, a total hip system is needed that can accommodate these special circumstances.

The Echelon Revision Hip System is one of the most comprehensive collections of revision femoral implants ever assembled. Updated and innovative designs build on proven clinical concepts to provide a simple and flexible solution to difficult problems. Porous and cemented femoral components are available to address varying indications. Calcar buildups address bone loss issues usually found in revision situations.

A straightforward surgical technique is applied with easy-to-use instruments that provide accurate and reproducible results. Sharp, precise reamers are used prior to precision ground broaches for careful preparation of the femoral canal.

A series of cases are presented demonstrating how the Echelon Revision Hip System can be used to address a variety of difficult clinical challenges.
SHOULDER RELIEF — The lateral shoulder is rounded to minimize the risk of fracturing the greater trochanter during stem insertion.

LATERAL PROXIMAL FLARE — Echelon has a 3° proximal anterior/posterior flare to improve proximal fill, without preventing implant seating.

DISTAL FLUTES — The Echelon system offers distal flutes to increase rotational stability.

DISTAL SLOT — The distal slot eases stem insertion, reduces the risk of fracture, and reduces distal stem stiffness.

DISTAL BULLET TIP — The bullet tip reduces the stress between the distal implant tip and the bone to minimize end of stem thigh pain.

SIZE RANGE — Echelon porous stems are offered in 1 mm increments to minimize bone removal and provide optimum canal fill.

POROUS COATING — RoughCoat™ porous coating increases the friction between the implant and bone, improving implant stability and providing a porous surface for bone ingrowth.

DRIVING PLATFORM — The Echelon implants feature a threaded driving platform with an elliptical slot for rotational and axial implant control during insertion.

NECK GEOMETRY — Circulotrapezoidal neck provides increased range of motion compared to a circular neck of the same strength.

COLLAR OPTIONS — A standard collar and two calcar platforms are available to match the implant to the proximal defect.
DOUBLE TAPER PROXIMAL GEOMETRY — Limits shear stresses and promotes compressive stress transfer between the cement and implant.

PROXIMAL A/P GROOVE — Increases rotational stability without increasing cement stresses.

TRAPEZOIDAL DISTAL CROSS SECTION — Improves resistance to rotation.

NECK GEOMETRY — Circulotrapezoidal neck provides increased range of motion compared to a circular neck of the same strength.

COLLAR OPTIONS — A standard collar and two calcar platforms are available to match the implant to the proximal defect.

Echelon Implants are made from Cobalt Chromium material.

An optimized 12/14 taper is used to lock the modular head to the stem.
FEMALE, AGE 74

PRE-OP CONDITION
• Aseptic loosening of femoral prosthesis

SOLUTION
• Porous Straight Stem with standard collar

POST-OP CONDITION
• Joint function restored
• Good fixation of femoral implant
MALE, AGE 69

PRE-OP CONDITION
• Failed cemented total hip

SOLUTION
• Porous Straight Stem with standard collar
• InterFit® Cup

POST-OP CONDITION
• No thigh pain even with large diameter stem
**Case 3**

**Female, Age 46**

**Pre-op Condition**
- Loose, painful stem
- No bone ingrowth upon retrieval

**Solution**
- Porous Straight Stem with standard collar

**Post-op Condition**
- Good clinical outcome
- No cortical thinning
- No thigh pain

*Case submitted by Dr. Robert Barrack*
MALE, AGE 78

PRE-OP CONDITION
- THA following post-traumatic AVN in 1975
- Socket revised with high hip center in 1991
- Broken acetabular screw
- Massive acetabular osteolysis

SOLUTION
- Porous Straight Stem with standard collar
- Contour™ Reconstruction Ring

POST-OP CONDITION
- Acetabular osteolytic lesion filled with cancellous allograft
- Strut over distal canal perforation and well position revision total hip
- Some leg length restored and more normal femoral offset restored

Case submitted by Dr. Richard Sanders
MALE, AGE 53

PRE-OP CONDITION
• Failed cemented broken hip
• Hip nearly ankylosed
• Loss of calcar to osteolysis

SOLUTION
• Porous Straight Stem with +15 mm calcar build-up
• InterFit® Cup

POST-OP CONDITION
• Leg length and offset restored with significant improvement in motion

Case submitted by Dr. James Harkess
MALE, AGE 44

PRE-OP CONDITION
• Implant ingrown but severe thigh pain

SOLUTION
• Porous Straight Stem with +15 mm calcar build-up

POST-OP CONDITION
• No limp
• Slight activity-related thigh pain which resolved by 1 year post-op

Case submitted by Dr. Robert Barrack
FEMALE, AGE 87

PRE-OP CONDITION
• Pain, decreased function
• 18 years after first THR
• Significant peri-prosthetic osteolysis of the femur with migration of the acetabular component and subsidence of the femoral implant

SOLUTION
• Porous Straight Stem with +15 mm calcar build-up
• InterFit® Cup

POST-OP CONDITION
• Substantially improved
• Limb length restored
• Distal cortical window used to remove the distal cement
• Morselized allograft was used to reconstruct the acetabulum

Case submitted by Dr. James Waddell
MALE, AGE 53

PRE-OP CONDITION
• Hemi-arthroplasty with aseptic loosening

SOLUTION
• Porous Bowed Stem with standard collar
• Reflection Cup

POST-OP CONDITION
• Good clinical outcome
• No complications

Case submitted by Dr. John McCutchen
FEMALE, AGE 45

PRE-OP CONDITION
- Thigh pain
- Minimally ingrown patch porous coated stem
- Massive pelvic lysis

SOLUTION
- Porous Bowed Stem with +15 mm calcar build-up

POST-OP CONDITION
- Good clinical outcome
- Implant coronal slot closed
- No thigh pain

Case submitted by Dr. Robert Barrack
FEMALE, AGE 64

PRE-OP CONDITION
- Debonded stem
- Well-fixed cement

SOLUTION
- Porous Bowed Stem with +15 mm calcar build-up
- Extended trochanteric osteotomy used to remove cement

POST-OP CONDITION
- Fully ambulatory at 1.5 years with no assistive devices

Case submitted by Dr. Robert Barrack
FEMALE, AGE 58

PRE-OP CONDITION
• Gross loosening of stem with thin lateral cortex

SOLUTION
• Porous Bowed Stem with +15 mm calcar build-up
• Extended osteotomy performed and reinforced with strut graft

POST-OP CONDITION
• Good ambulation at 1 year
• Cane only on long walks

Case submitted by Dr. Robert Barrack
**Case 12**

**MALE, AGE 34**

**PRE-OP CONDITION**
- Failed revision total hip with marked subsidence
- 4 cm of limb shortening
- Retroversion of acetabular component
- Marked Trendelenburg limp

**SOLUTION**
- Porous Bowed Stem with +30 mm calcar buildup
- InterFit® Cup

**POST-OP CONDITION**
- Leg length restored
- Walks without support
- No limp

*Case submitted by Dr. James Harkess*
FEMALE, AGE 84

PRE-OP CONDITION
• Revision of hybrid hip

SOLUTION
• Cemented, 175 mm stem with standard collar
• InterFit® Cup

POST-OP CONDITION
• Restoration of joint function

Case submitted by Dr. John McCutchen
FEMALE, AGE 74

PRE-OP CONDITION
• Revision of precoat stem due to aseptic loosening

SOLUTION
• Cemented, 225 mm stem with standard collar

POST-OP CONDITION
• Good post operative outcome with no complications

Case submitted by Dr. John McCutchen
Case 15

**FEMALE, AGE 79**

**PRE-OP CONDITION**
- 17 years post-op primary THA
- Pain with ambulation for 3 years

**SOLUTION**
- Cemented, 225 mm stem with standard collar
- Contour Reconstruction Ring

**POST-OP CONDITION**
- Proximal femoral allograft securely fixed with implant
- Good ambulation

Case submitted by Dr. James Guyton
REFLECTION®

ACETABULAR OPTIONS
Reflection® acetabular shells and liners offer the perfect complement to the Echelon system. Available in a variety of options, each Reflection® shell has a polished inner surface and uses the MicroStable® liner locking mechanism which securely hold a variety of liner choices.

FEMORAL HEAD OPTIONS
Cobalt Chrome and Zirconia femoral heads precisely fit the 12/14 taper on the Echelon Primary stem. Smith & Nephew femoral heads offer an additional 19 mm of adjustment to ensure proper joint tension.

RENOVATION®

IMPLANT REMOVAL SYSTEM
The Renovation Implant Removal System provides a complete yet concise set of instrumentation required for implant and cement removal.

A variety of instruments are provided for the removal of acetabular and femoral implants, along with the fragmentation and removal of bone cement:

- Instruments are made from a strong 455 stainless steel to withstand repeated strikes.
- Large injection molded Radel® handles provide easy and secure handling during surgery.
- Clear, bright, silk-screened names are located on the instrument handles for easy identification.
- A marker on the impaction cap indicates the direction of the cutting blade when tool is concealed in the distal femur.
- Depth marks are laser-etched on femoral instruments to gauge distance into distal femur.
- Femoral instrument lengths are tailored to work in the proximal or distal femur.

ACCESORY
- Reflection® Hemisphere cup
- InterFit® Peripheral buildup cup
- Zirconia femoral head
- Cobalt Chrome femoral head
- Reflection® acetabular shell

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Cerclage cables have many applications during orthopaedic surgery. In total hip arthroplasty, cables can be used to prophylactically cerclage the proximal femur to reduce the incidence of proximal femur fracture. Cerclage cables can also be used to repair femoral shaft fractures, to attach allograft cortical onlay strut grafts, and to reattach the greater trochanter after osteotomy.

Our Ries Cable System consists of 1.6 mm and 2.0 mm diameter cobalt-chrome cables and swages. The swages crimp the cable to retain cable position and tension.