Session 6: Component Implantation: Video Vignettes

Learning Objectives
Upon completion of this activity, participants should be able to:

1. Describe how to implant a variety of femoral components.

2. Describe how to implant a cementless acetabular component.

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How I Put In an Uncemented Acetabular Component

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Technical Pearls:

• Preoperatively plan location of hip center, abduction angle, version, and cup size.
• Conventionally ream to obtain 0.5 to 1.0 mm pressfit depending on cup design and bone quality.
• Use autologous bone graft for cystic defects.
• Clean any debris from bony surface.
• Impact socket with uniform blows to insert cup.
• Check cup position using bone/soft-tissue landmarks: sciatic notch, acetabular “tear-drop,” ischium, transverse acetabular ligament, medial wall.
• Use secondary screws if not satisfied with stability.
• Use trial liner during trial reduction to make sure there is stable, impingement-free functional range of motion. If not, change cup position.
• Use intraoperative radiograph if unsure prior to closure.
How I Put in an Uncemented Tapered Femoral Stem

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How I Put In a Fully Coated Femoral Stem

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The ideal femoral stem is easy to insert, has reproducible results, and is able to handle most revision situations. While no stem is appropriate for all revisions, extensively coated stems are appropriate to manage Type I through III defects where isthmic bone is available for fixation. The use of this stem is not appropriate in a Type IV defect where the metaphysis is nonsupportive and the diaphysis is not intact due to severe bone loss. In this situation, reliable distal fixation with an extensively coated stem is not possible and other alternatives should be sought. For most revisions however, the workhorse for femoral revision has been monoblock extensively coated stems.

To optimize results, careful preoperative planning should be done to ensure 4 to 6 cm of intimate endosteal contact or “scratch fit.” It is important to template the lateral as well as the AP film to assess femoral bow. Proper surgical technique is also important to achieve stable fixation in a revision situation. After implant removal, reaming proceeds until a tight fit over a 4 to 6 cm diaphyseal segment is obtained. Intraoperative x-rays are useful to confirm appropriate alignment, appropriate size, and complete cement removal. When using a straight stem, one under-reams by 0.5 mm. When using a curved stem, reaming is dependent on bone quality and length of the curved stem. In preparation for implanting a straight stem, one should insert a reamer the same diameter as the final implant to determine the amount of scratch fit that will occur. The reamer should “catch” or “hang up” at least 4 to 6 cm above the predetermined seating level. Stem impaction should be slow and methodical. The implant should advance with each blow. The surgeon should pause periodically to let the bone accommodate to the implant. Full impaction can take up to 5 minutes.

Excellent results have been reported using this type of implant with this surgical technique.1-3 Nonmodular extensively coated stems must be considered the gold standard for femoral revision of Type I through III femoral defects.
References:


How I Put In a Cemented Femoral Stem

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Evidence-Based Data for Stem Selection

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Introduction: There has been a significant shift to uncemented femoral components in primary total hip arthroplasty. Many designs have been reported to have excellent short- and long-term results.

Materials and Methods: A number of articles, although not prospective randomized studies, reporting the efficacy of these implants will be analyzed.

Results: Excellent long-term results have been reported in Charlie Engh’s patients. The initial series of 223 total hip arthroplasties using the fully coated AML stem (Johnson and Johnson Depuy, Warsaw, Indiana) showed a survivorship of 97.8% with revision for any reason as the end point.

Mallory reviewed 2000 consecutive tapered titanium uncemented stems. Using aseptic loosening as an end point, survivorship was 99.5% at 10 years and 99.1% at 15 yrs.

Capello and D’Antonio have also shown excellent long-term results with a hydroxyapatite proximal coating. Additionally, proximal femoral stress transfer was noted.

Min et al reviewed 98 cementless tapered wedge stems and showed no loosening at a mean follow-up of 7.7 years. Of these, 63% were in a neutral position, 21% in valgus,
and 16% in varus. There were no differences in Harris Hip Scores or thigh pain. It appeared that varus positioning did not lead to poor results in this series.

**Summary:** It appears from our literature that many uncemented designs offer excellent short, mid-term, and long-term results. Surgeons may feel fairly confident that a well-placed uncemented femoral component using modern technology has an excellent chance of long-term survival.

References:


Case Presentation & Discussion Panel
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Please note that not all article abstracts for this session were available at time of printing.