



Time for a New Hip?

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ATA 2013 – Session ST-6

My goal for today?

Teach you about hip replacement

Why me?

- ❖ Specialized in Orthopedics
- ❖ Work directly with FR surgeons & implant manufacturers on EN translation projects

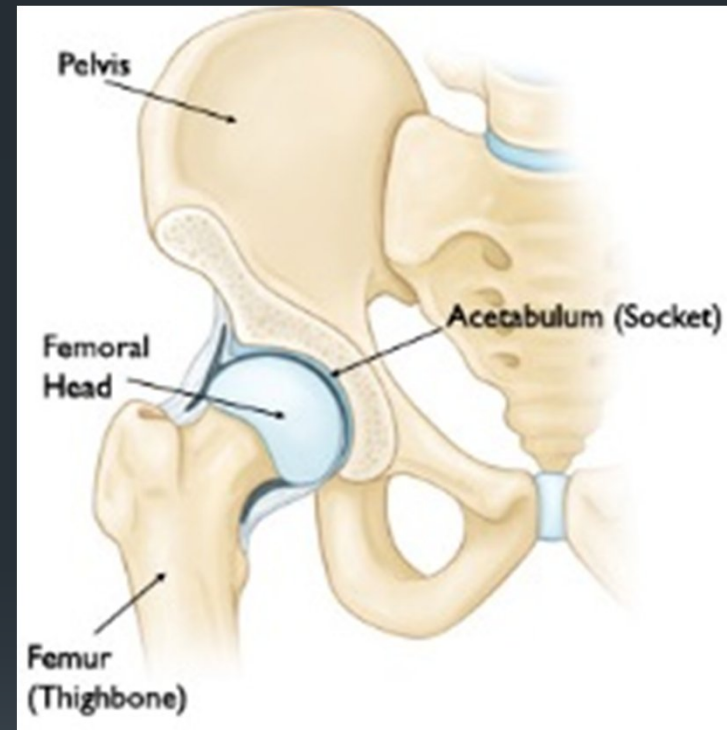
Agenda

- Hip Anatomy
- Total Hip Replacement
- Indications
- Implants
- Materials & Manufacturing
- Surgical Procedure
- Outcomes
- Hot Topics
- Research Strategies

Key terms → will appear in this box during presentation

Hip Anatomy

- Ball and socket joint
- Femoral head = ball
 - Femur (shaft)
- Acetabulum = socket
 - Part of pelvis
- Cartilage
- Synovial fluid
- Joint capsule



Key term → acetabulum (EN) = cotyle (FR)

Total Hip Replacement (THR)

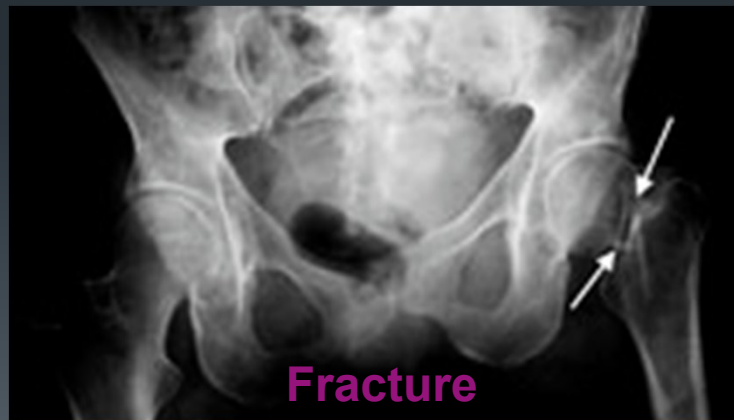
- Also known as Total Hip Arthroplasty (THA)
- Arthroplasty:
 - Surgical reconstruction or replacement of malformed or diseased joint
- First performed in 1960 by Sir John Charnley
- > 285,000 THR performed each year in USA
- Both sides of the joint replaced
 - Femoral stem / head
 - Acetabular cup / liner



Key term → primary THR (EN) = PTH première intention (FR)

Indications for THR

- Osteoarthritis
- Avascular necrosis (osteonecrosis) of hip
 - Femoral head blood supply disrupted
- Congenital hip dysplasia
- Fracture of femur or acetabulum
 - Older patients or trauma



Key term → hip osteoarthritis (EN) = coxarthrose (FR)

Implants – Femur side

- One-piece stem/neck + head
- Modular
 - Stem
 - Neck (with taper)
 - Head
- Various sizes
 - Stem diameter
 - Head diameter
- Various shapes
 - Straight
 - Anatomical



Key term → femoral stem (EN) = tige fémorale (FR)
Key term → taper (EN) = cône (FR)

Implants – Acetabulum side

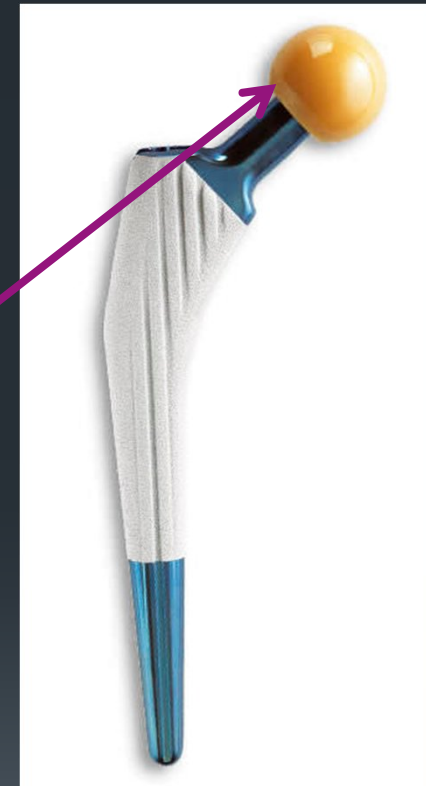
- Cup + Liner
- Various sizes
 - Diameter
- Various cup models
 - Standard
 - Constrained
 - Dual Mobility
 - Pegs / spikes



Key term → acetabular cup (EN) = cotyle or cupule (FR)

Materials & Manufacturing

- Femoral stem and neck
 - Titanium or Cobalt-Chrome alloy
 - One-piece cast or machined from blank
 - Microscopically roughened surface
 - About 6" long
 - +/- coating
- Femoral head
 - Cobalt-Chrome alloy or Ceramic
 - Mirror-polish surface finish



Key term → cobalt-chrome (EN) = chrome-cobalt (FR)

Materials & Manufacturing

- Acetabular cup
 - Ti or Co/Cr alloy or Polyethylene
 - Machined
 - +/- coating
- Acetabular liner
 - Machined
 - UHMWPE or Ceramic (CeramTec BIOLOX® *delta / forte*)
 - Mirror-polish surface finish



Key term → liner or insert (EN) = insert (FR)

Bearings

- Two moving parts joined together to create a mobile joint
 - Acetabular liner
 - Femoral head
- Hard bearing surface
 - Metal or ceramic
- Soft bearing surface
 - Polyethylene



Key term → bearing (EN) = couple de frottement (FR)

Bearing options

Hard-on-Soft

- Conventional bearing
- Metal or ceramic head + polyethylene liner
- Now using highly cross-linked PE → better wear resistance

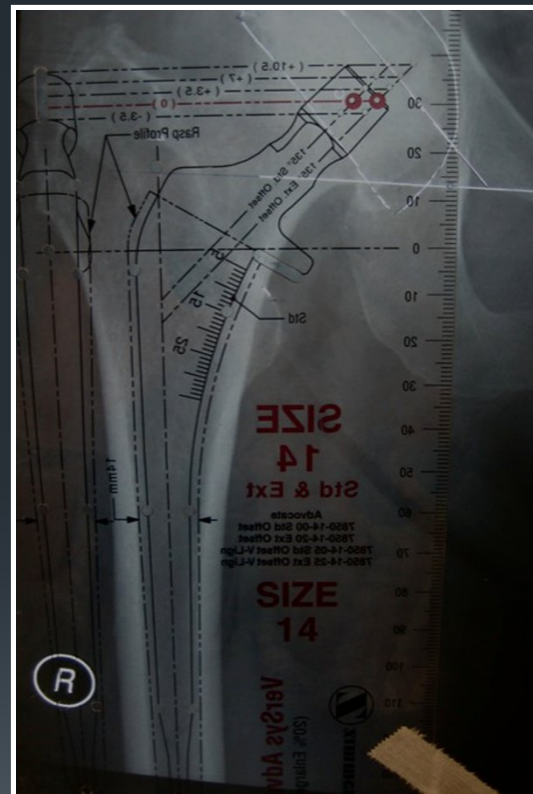


Hard-on-Hard

- Metal head + metal liner
 - Good outcomes initially
 - Recent problems due to metal debris in blood stream
- Ceramic head + ceramic liner
 - Very low friction → high wear resistance
 - Very expensive & brittle
 - *The Squeaking Hip*

Preoperative planning

- X-ray templates used to estimate component sizes
 - Femoral stem
 - Acetabular cup



Key term → templates (EN) = calques (FR)

Surgical Procedure

- Approach
 - Posterior, lateral, anterior or anterolateral
- Incision
 - Traditional or Minimally Invasive Surgery (MIS)
- Dislocate hip joint, cut out femoral head
- Ream acetabulum, hollow out femoral shaft
- Use trial components to verify size
- Insert chosen implants, reduce joint
- Close incision

Key term → reaming (EN) = alésage ou fraisage (FR)

Key term → trials (EN) = fantômes ou essais (FR)

Surgical procedure

Bloodless THR video:

<http://www.youtube.com/watch?v=Mv5O2J1jf2o>

Outcomes of THR

- Greatest surgical advance in 2nd half of 20th century
- 80% chance of hip replacement lasting 20 years
- Potential complications:
 - Osteolysis & loosening (up to 20%)
 - Fracture (usually after fall)
 - Periprosthetic infection (1% rate)
 - Dislocation
 - Leg length inequality



Key term → loosening (EN) = descellement (FR)
Key term → dislocation (EN) = luxation (FR)

Revision of THR

- More complicated than primary THR
 - Existing components must be extracted
 - Cement must be removed if present
- Special revision-specific components needed
 - Longer femoral stem
 - Acetabular reconstruction cage (i.e. Kerboull cross)
 - Extraction hammer / slap hammer



Key term → revision (EN) = reprise ou 2e intention (FR)
Key term → slap hammer (EN) = masselotte (FR)

Hot topics – Partial Hip Replacement

- Only one side replaced
 - Acetabulum intact
 - Bipolar femoral head/cup
 - Smooth surfaces
- Patient with femoral neck fracture
- Also known as
 - Bipolar hip replacement
 - Hemiarthroplasty



Key term → bipolar cup (EN) = cupule intermédiaire (FR)

Hot topics – Hip Resurfacing

- Mostly for younger patients
 - Floyd Landis – 2006 TdF winner
- Acetabulum replaced
- Femur head resurfaced only
 - Femur “cap”
- Metal-on-metal bearing
- Spares femoral head & neck bone for future surgery



Key term → hip resurfacing (EN) = resurfaçage (FR)

Hot topics – Metal-on-Metal

- MoM expected to have long life
- FDA issued patient advisory for metal-metal hip implants in Feb 2011
- Patients have ↑ serum cobalt levels & pseudotumors
- DePuy ASR litigation
 - THR system
 - Hip resurfacing system
- Recalled in Aug 2010 due to abnormally high revision rate
- >10,000 lawsuits in federal and state courts

Key terms → serum cobalt levels (EN) = cobaltécémie (FR)

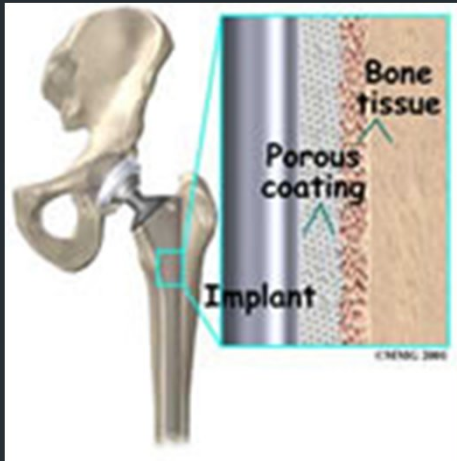
Bonus topic – Cemented implants

- Original design
- Implant is not coated
 - Mostly femoral stems
- Bone cement added
 - Instant, secure fixation
 - Immediate weight bearing
 - Faster rehab and healing
- Used in older patients
 - Lower quality bone



Key term → cemented (EN) = avec ciment (FR)

Bonus topic – Cementless implants



- Developed in 1980s
 - Mostly acetabular cups
- Implant is coated
 - Porous Ti and/or Hydroxyapatite (HAP)
- Requires precise implant fit
 - Press-fit design +/- additional fixation
- Bone grows into implant over time
- Used in younger patients
 - Good quality bone
 - Longer healing time

Key term → cementless (EN) = sans ciment (FR)

Key term → press-fit (EN) = press-fit (FR)

Research strategies - Overview

- 1) Take 30-60 min before starting TR to understand product and procedure
 - Find similar product sold by US-based company
 - Read product brochures & surgical technique
 - Watch video of procedure on YouTube

Research strategies - Overview

2) Extract key terms from source text and find target equivalent

- RCO/OTSR abstracts & papers (2011 to present)
 - *Revue de Chirurgie orthopédique*
 - Orthopaedics & Traumatology: Surgery & Research
- Surgical instrument catalogues
- *Petit lexique d'orthopédie, anglais-français*
 - C. Farcot, E. Bros-Brann; Sauramps Médical (2000)

Research strategies - Overview

- 3) Translate and send any unsolved queries to customer (with photos is possible)
 - Ask for photos of instrumentation / components
- 4) Finalize and send for review
 - Linguistic
 - Technical

Research strategies - Example

→ ProZ query “queue de cochon”

- Context: surgery report for treatment of femur fracture
- *Confection d'un avant-trou **à la queue de cochon***

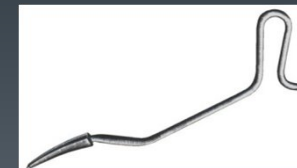
1) Eliminate possibilities based on context

- Pig tail catheter

2) Find other FR occurrences of term in same context

- *L'abord du sommet trochantérien avec une pointe carrée (droite ou en « queue de cochon »)*
- This is probably an awl that is not straight

3) Look through surgical instrument catalogues to find picture of bone awl that is not straight



Key terms → bone awl (EN) = pointe carrée (FR)

What you've learned today...

- Why a hip replacement is performed
 - Indications
- How a hip replacement is performed
- What types of implants are used
 - Femoral stem, acetabular cup
 - Bearing options
- Outcomes and potential complications of THR
- Some hot topics in THR
- Difference between cemented & cementless
- Key terms and primary research strategies

Any questions?

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