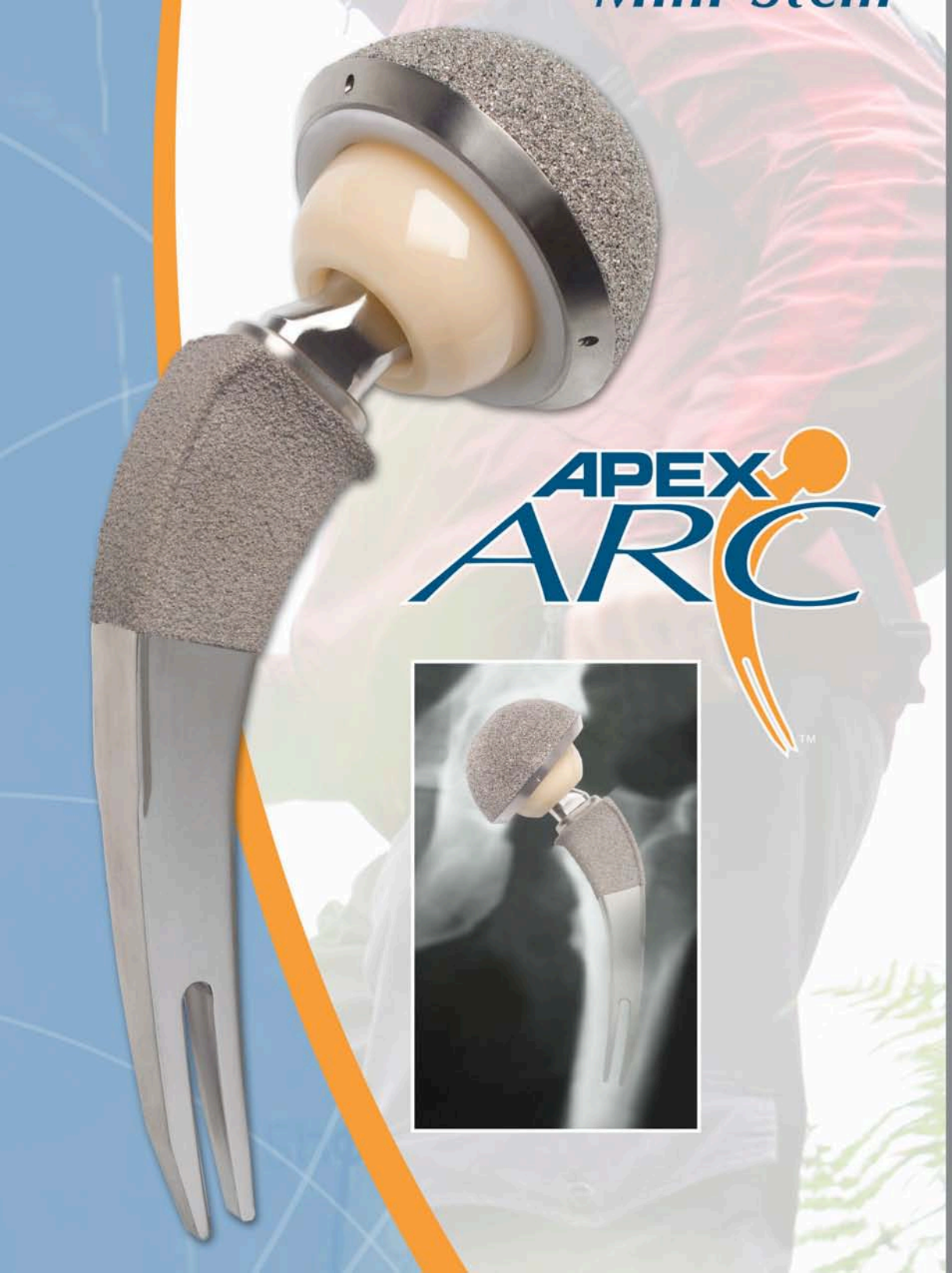


Tissue Sparing Implant for THA

Design Concept & Review
by Timothy McTighe, Dr. H.S. (hc),
Executive Director, JISRF
Chagrin Falls, Ohio 2009

Tissue Sparing Total Hip Stem

This is a partial record and review of the concept and development of this novel stem design. With the assistance of Omnilife science, Global Orthopaedic Technology and a number of surgeons this exciting concept has moved quickly from concept, development project to implantation of a truly tissue approach to THA.

From 2/2007 -2/2009 the process has moved from cadaver evaluations, intra-opertive evaluations, to successful implantation of our first stem a 22 year old female with AVN on 12/11/07.

Patent Pending

Tissue Sparing Implant Stem Design

My acknowledgment that this process has been a collective involvement.

This is a profession that allows one to be part of a collaboration of many that have made a difference to the betterment of mankind.

The concept of neck sparing stems is not new. Frederick R. Thompson, developed a device to treat neck fractures and in 1948 Philip Wiles implanted the first Thompson stem with a metal socket.

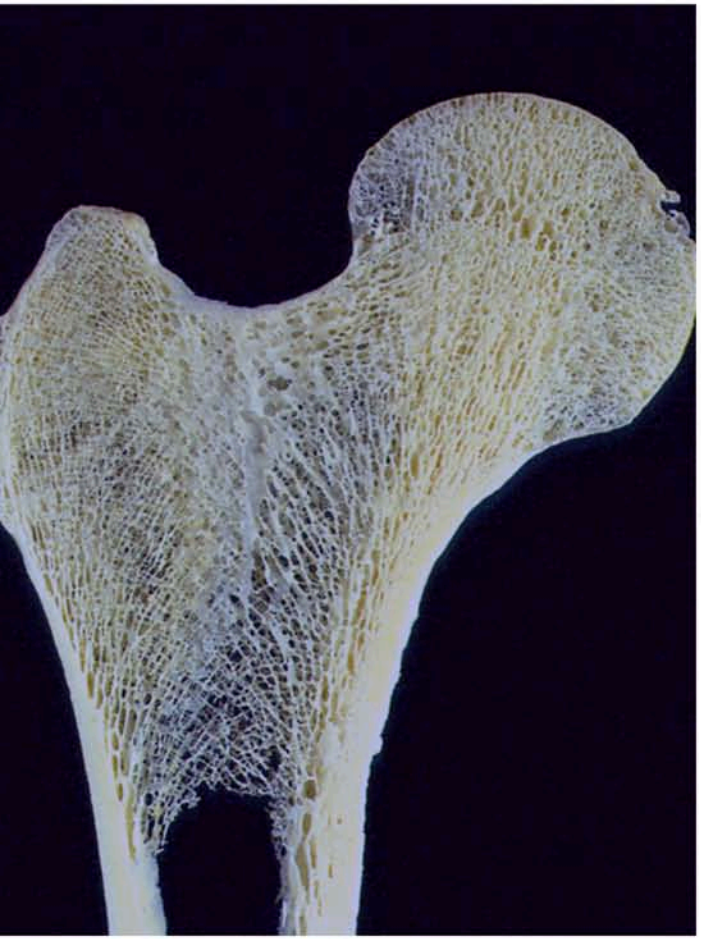
Freeman, Townley, Pipino and Whiteside have continued to advocate the use of neck sparing stems. Mechanical studies have clearly shown an early advantage to increased axial and torsional resistance with the intact femoral neck. The challenge has been to create a design that loads the medial calcar in compression maintaining the integrity of that bone structure.

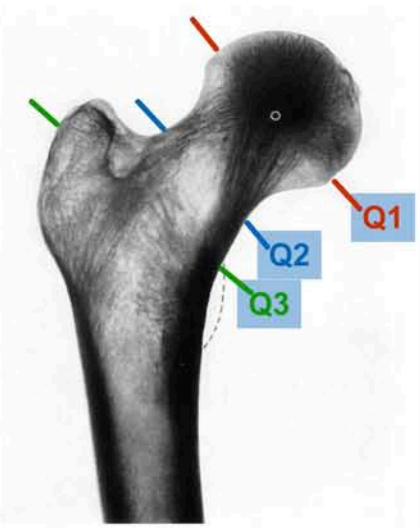
The Tissue Sparing Implant (MSA™ Stem & ARC™ Stem) has been conceived in an attempt to create a bone conservative stem allowing soft tissue sparing approaches to the hip, that would provide more reproducible results as compared to hip resurfacing and potentially be an alternative to conventional THA.

The stem is simple yet novel in design, reproducible in technique and provides for fine tuning of joint mechanics. The novel proximal conical flare improves proximal load transfer and the shape of the stem allows for immediate torsional and axial stability.

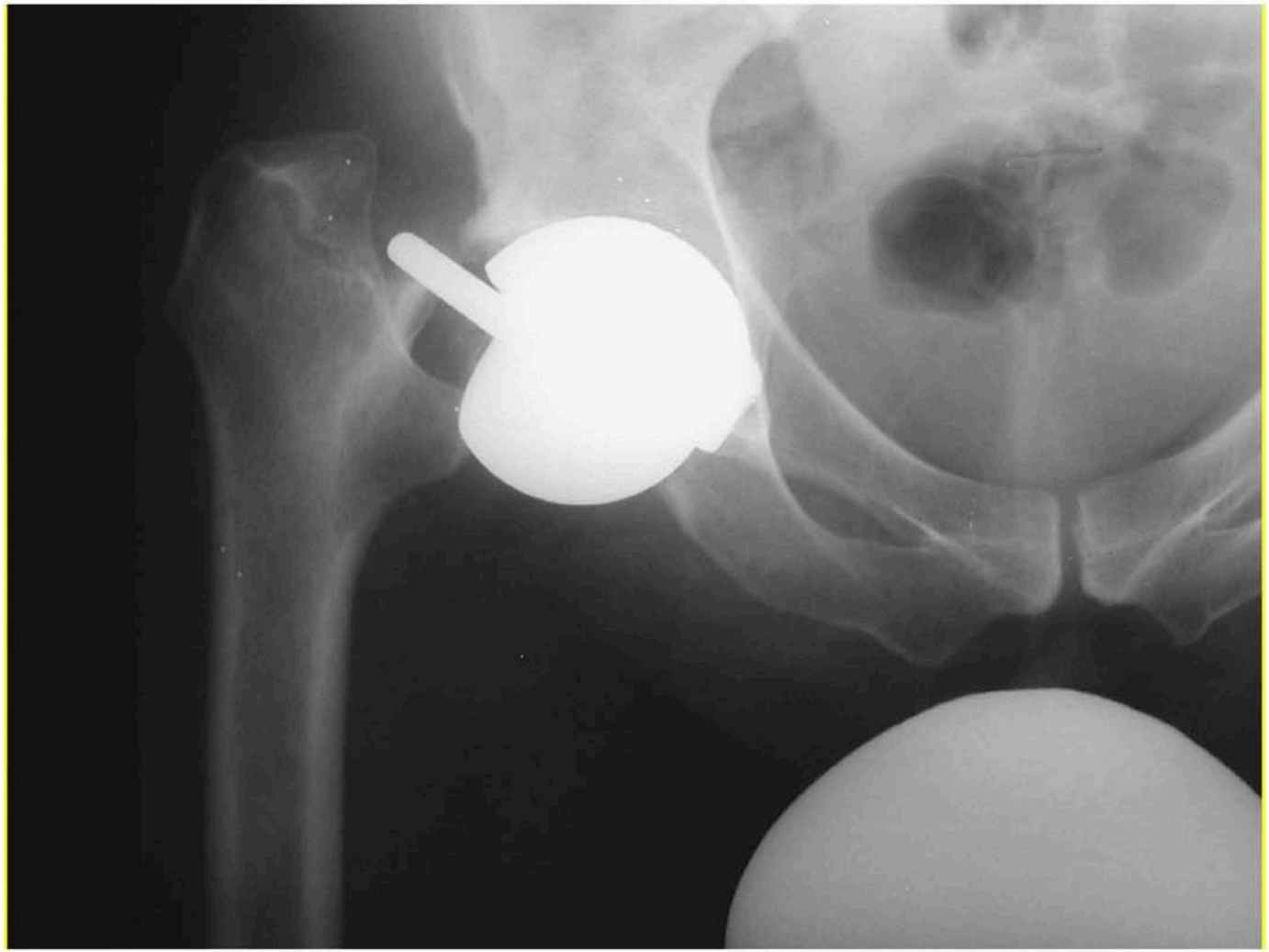
This is an exciting project that has provided significant encouragement at each step of development !

THA has done well but we can do better with regards to bone remodeling

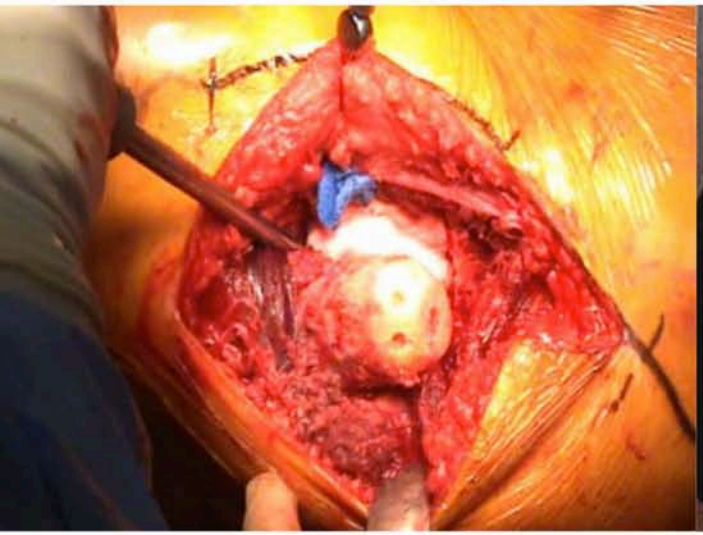


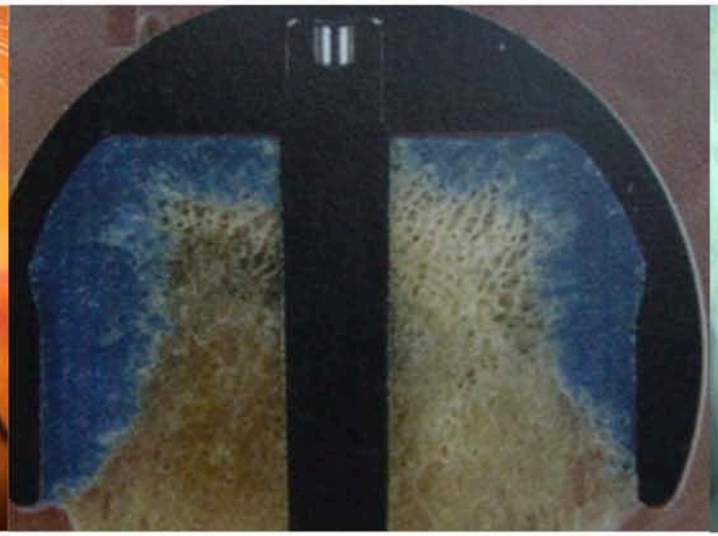


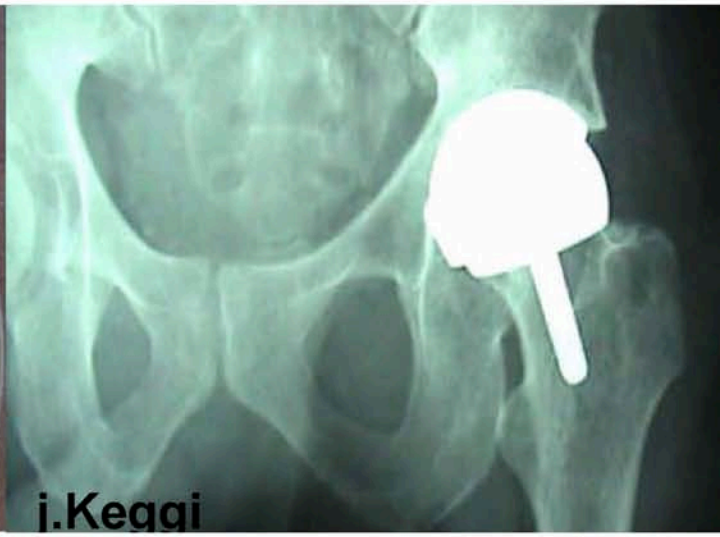
A design that takes into consideration bone remodeling patterns



HR has its problems

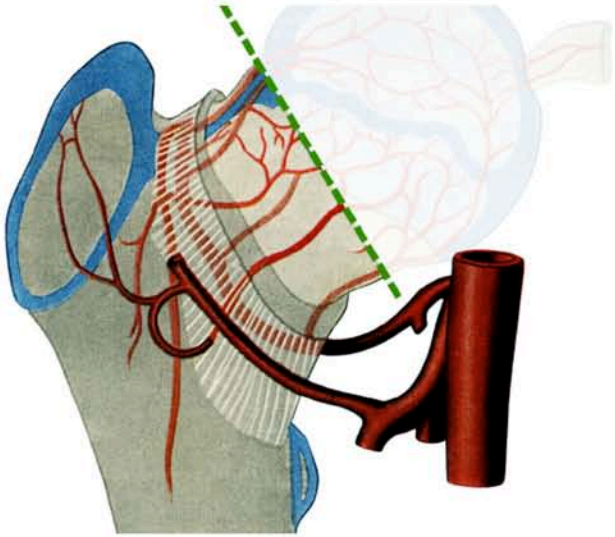


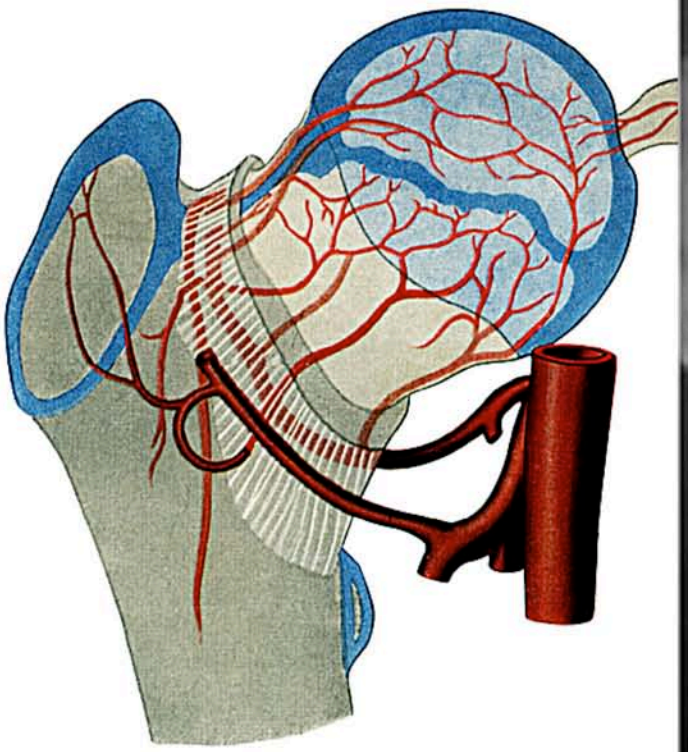




Not the most conservative approach to hip reconstruction

Blood supply at risk in posterior approach to hip resurfacing

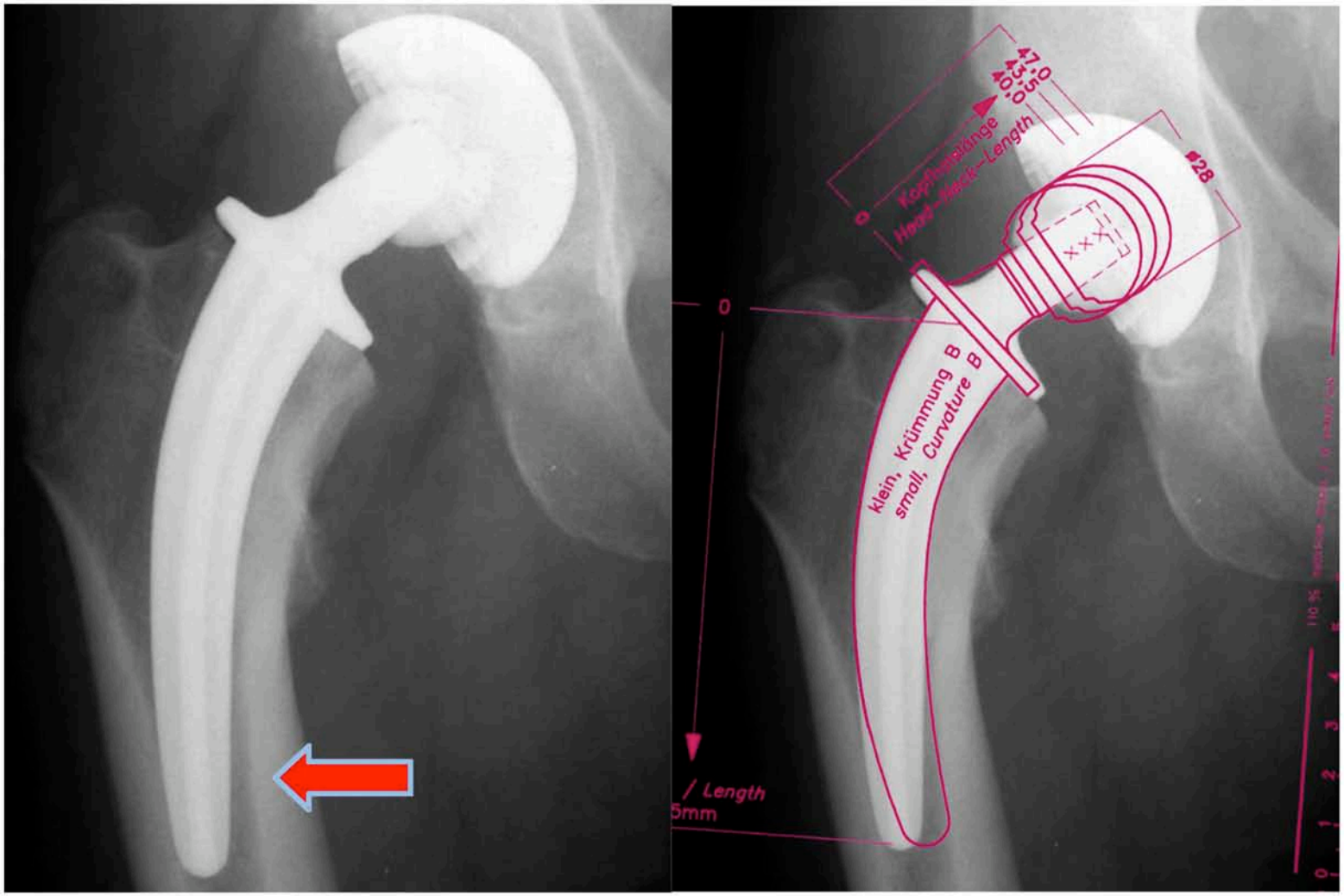




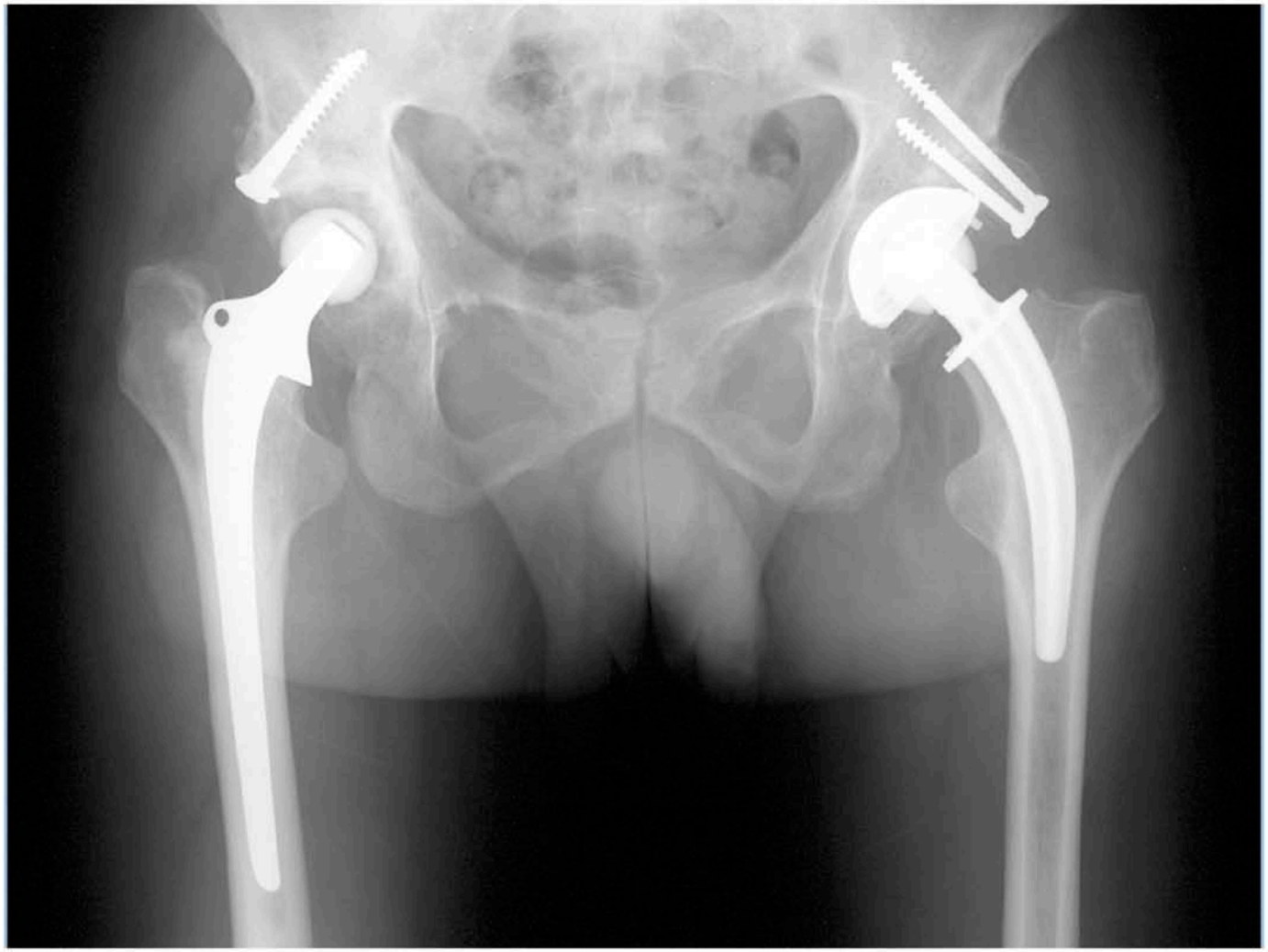
Neck sparing can reduce blood loss

Trend short stems

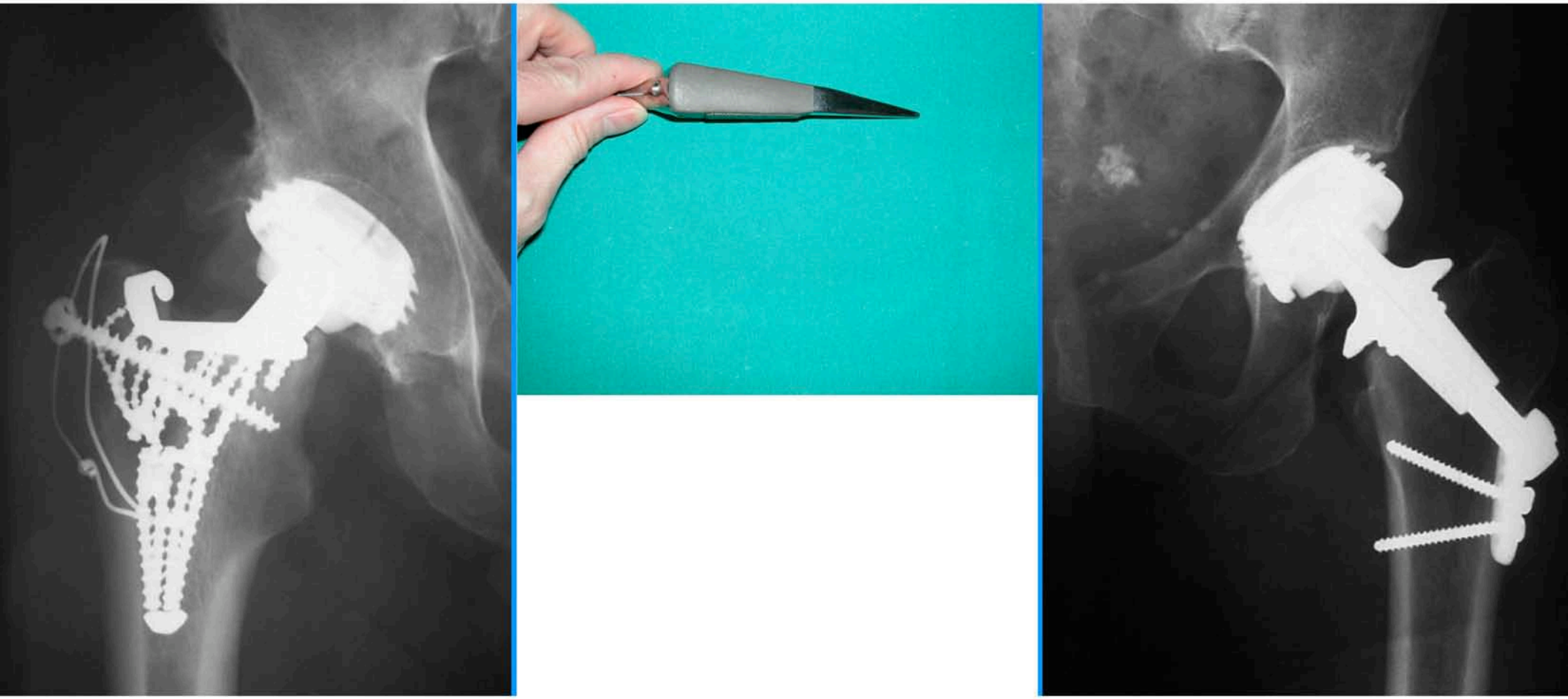
Papino short stem



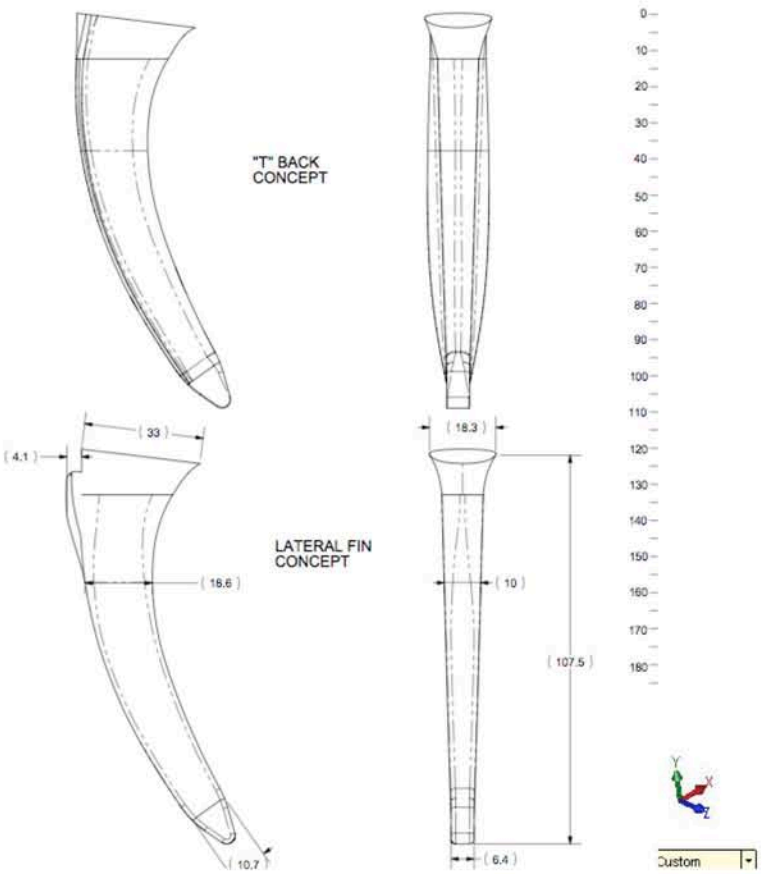
End stem contact can be a problem

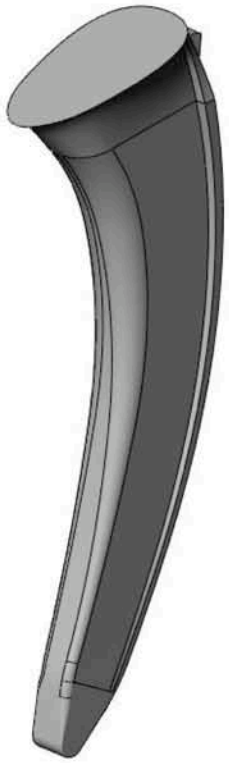


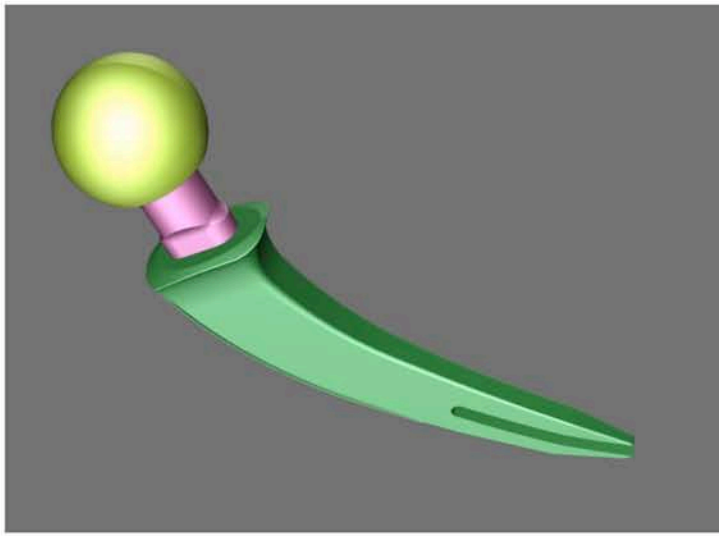
When it works it works well !



A varity of different short stem designs





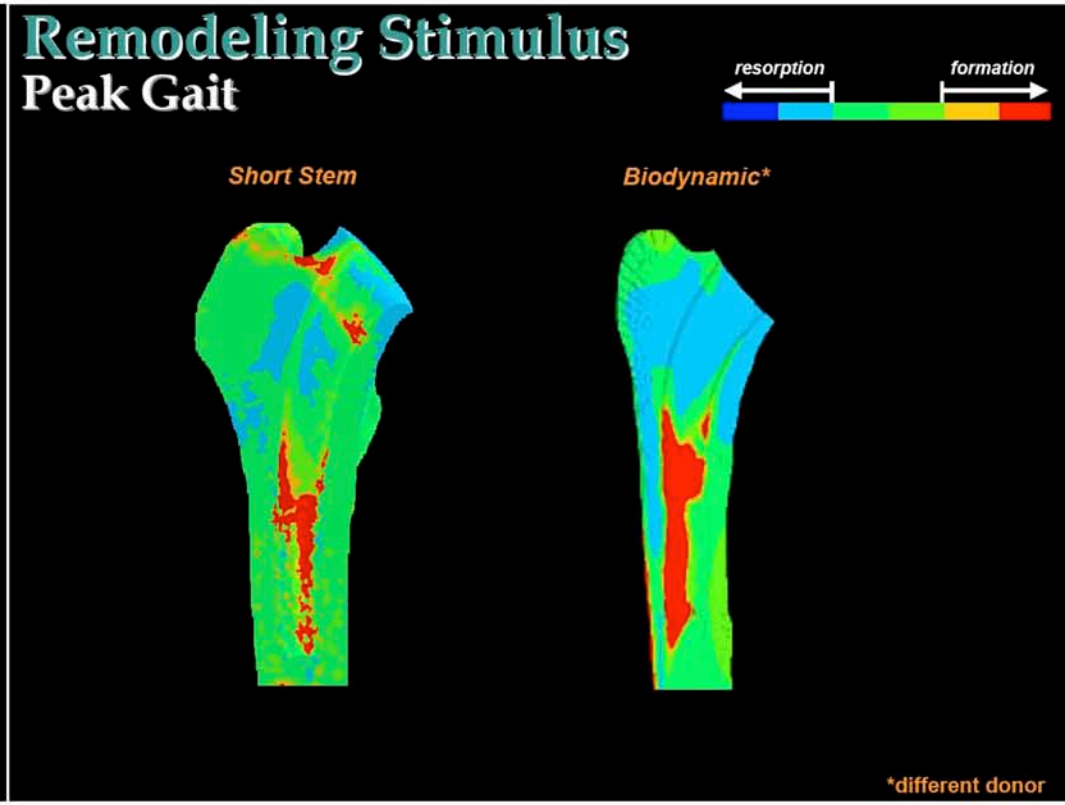


IFIDENTIAL

A new concept

A system of 5 stem sizes with simple instruments

Neck Sparing vs. conventional

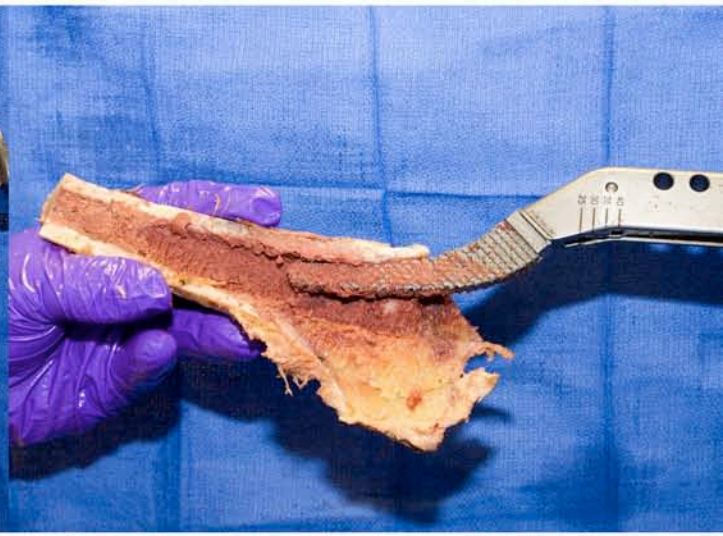


FEA modeling backs up our design

Prototype instruments developed

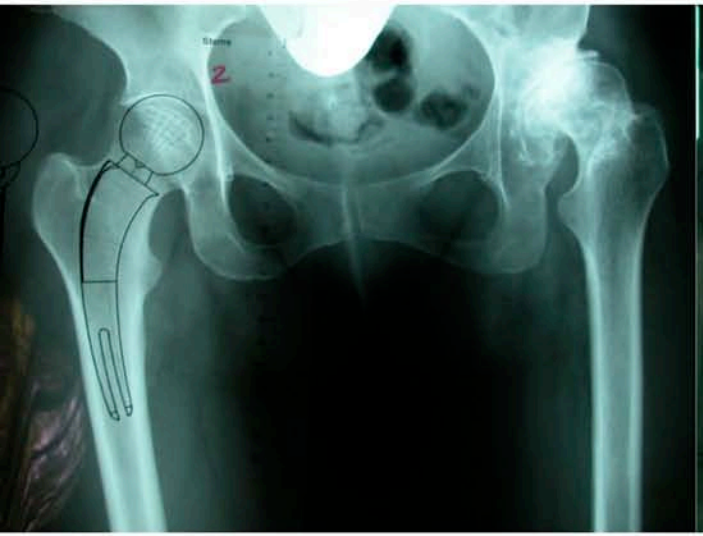
Cadaver workshops. K. Keggi, L. Keppler, J. Keggi

instruments & techniques developed

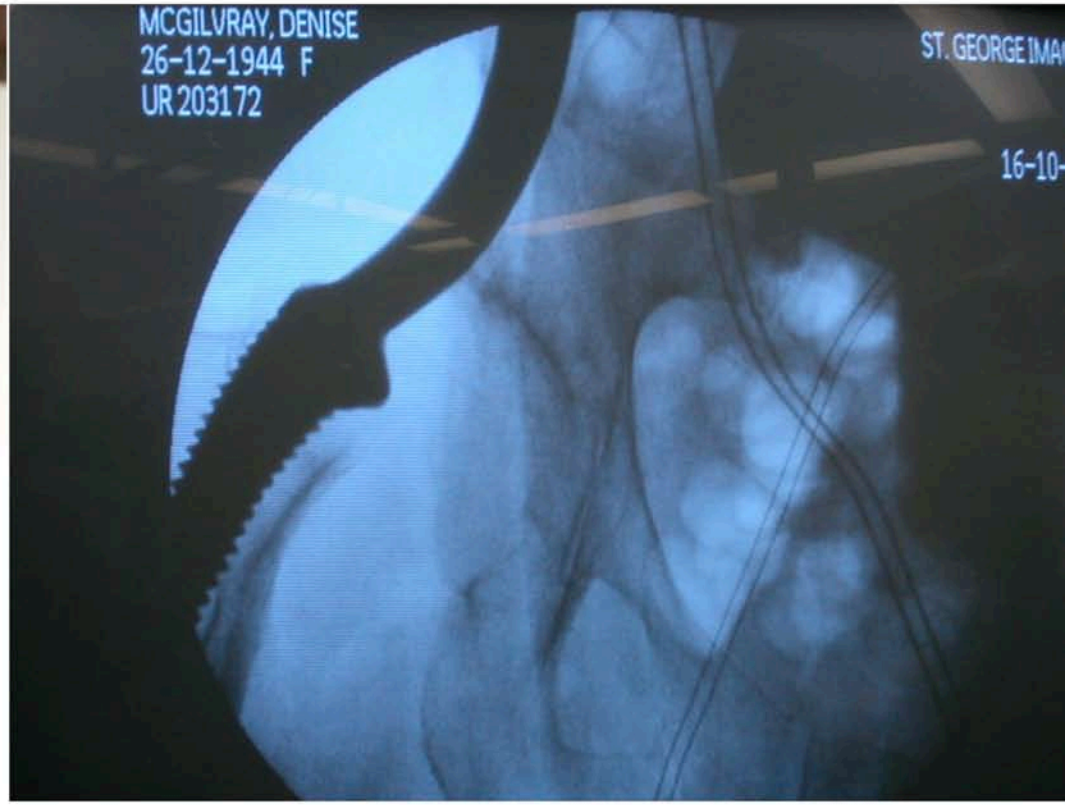


Instrument review

A team effort



Review of hundreds of x-rays



Technique, technique !

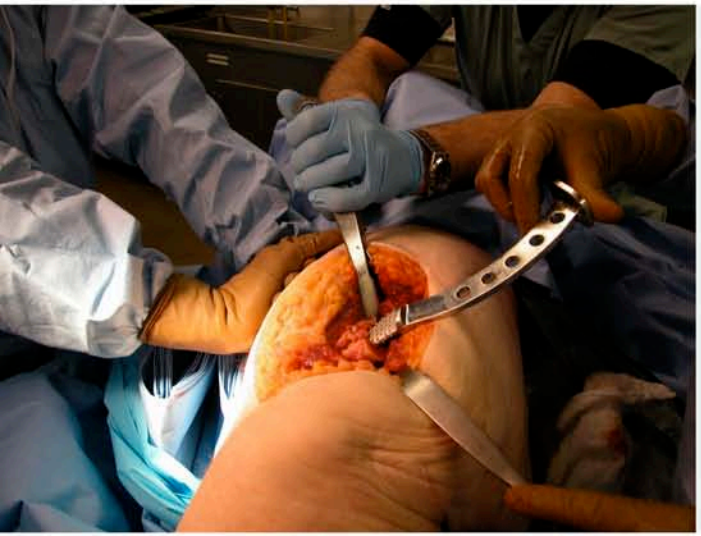
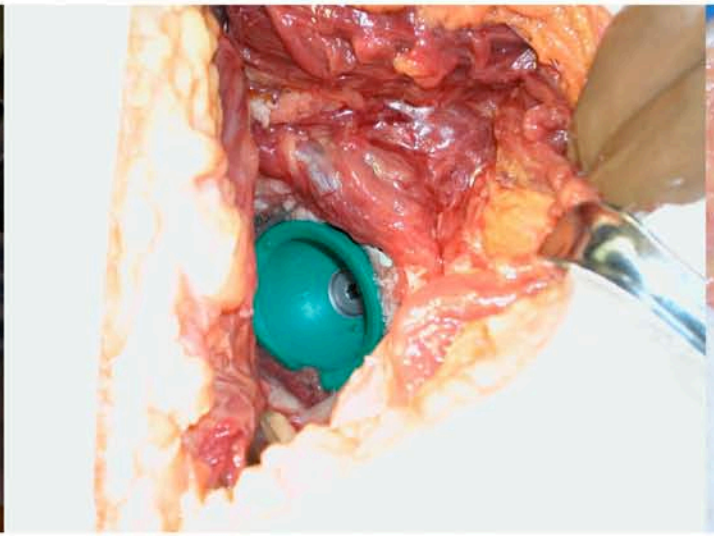
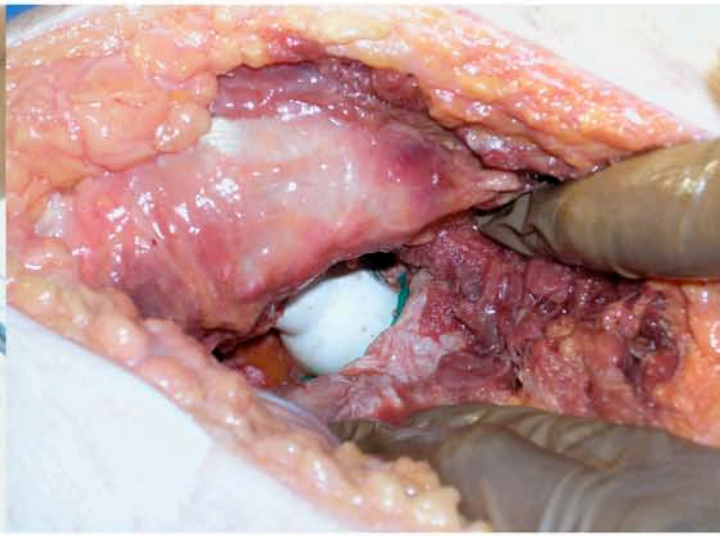
Normal leg position

Non rotated hip/ incorrect femoral offset

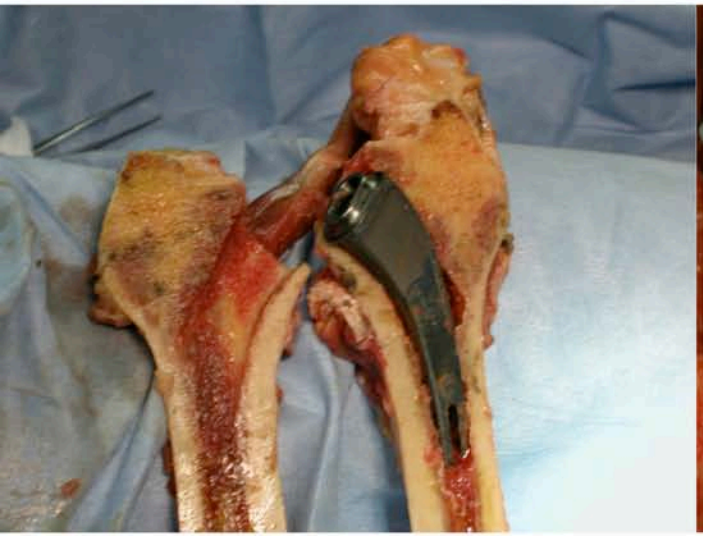
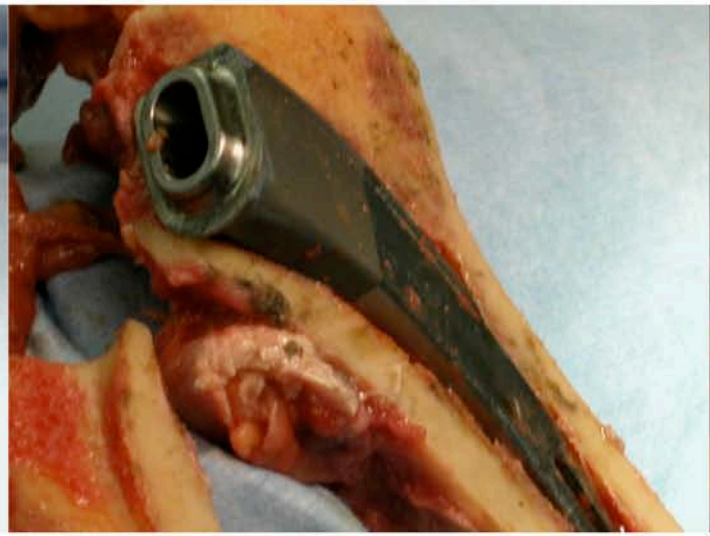
Internal rotation reflects actual curv

20° internal rotation reflects proper offset.

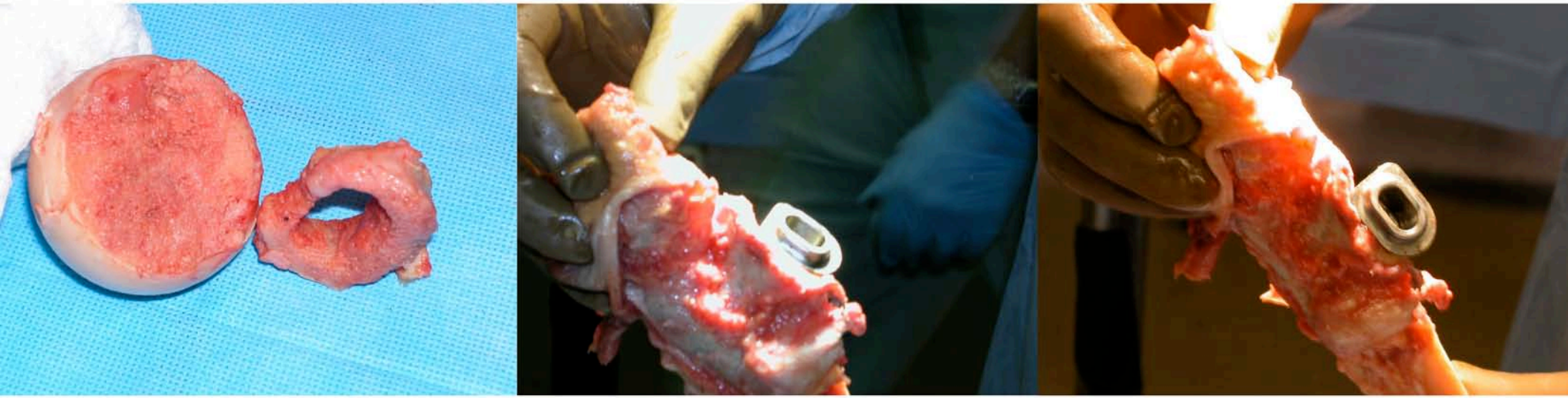
More cadaver work with Sam Sydney

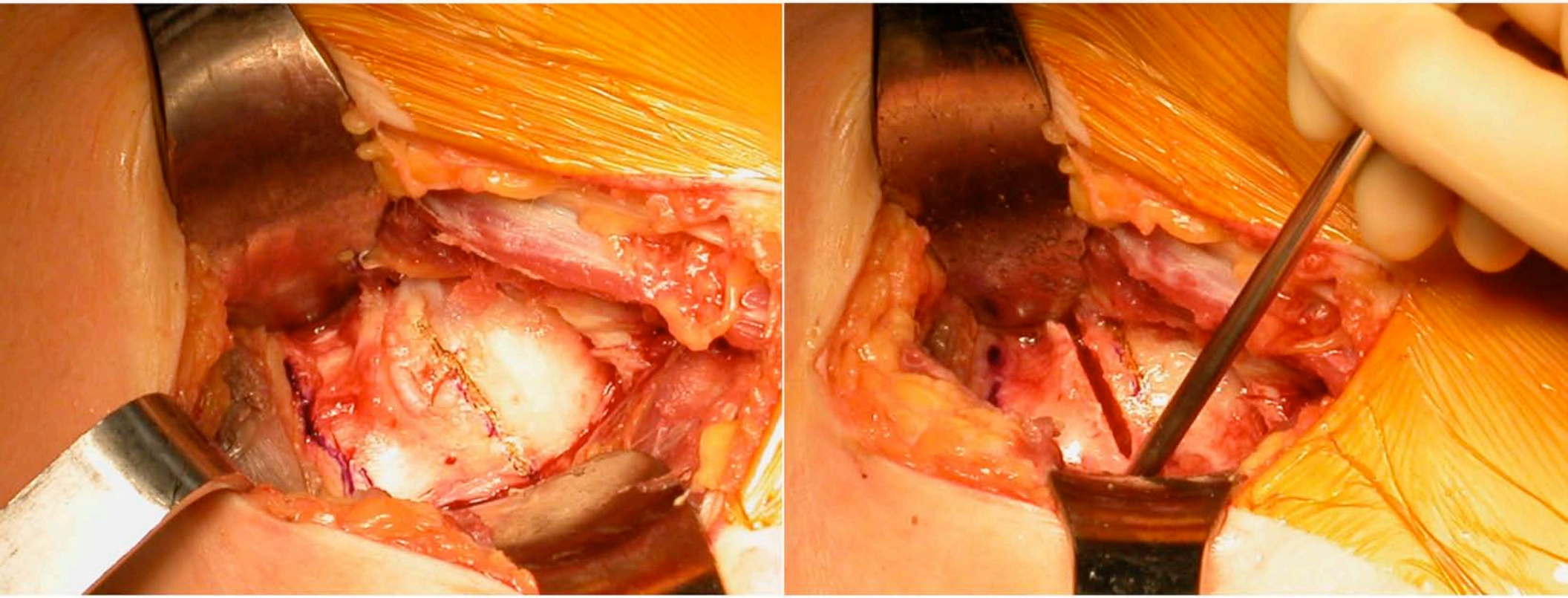
Posterior approach

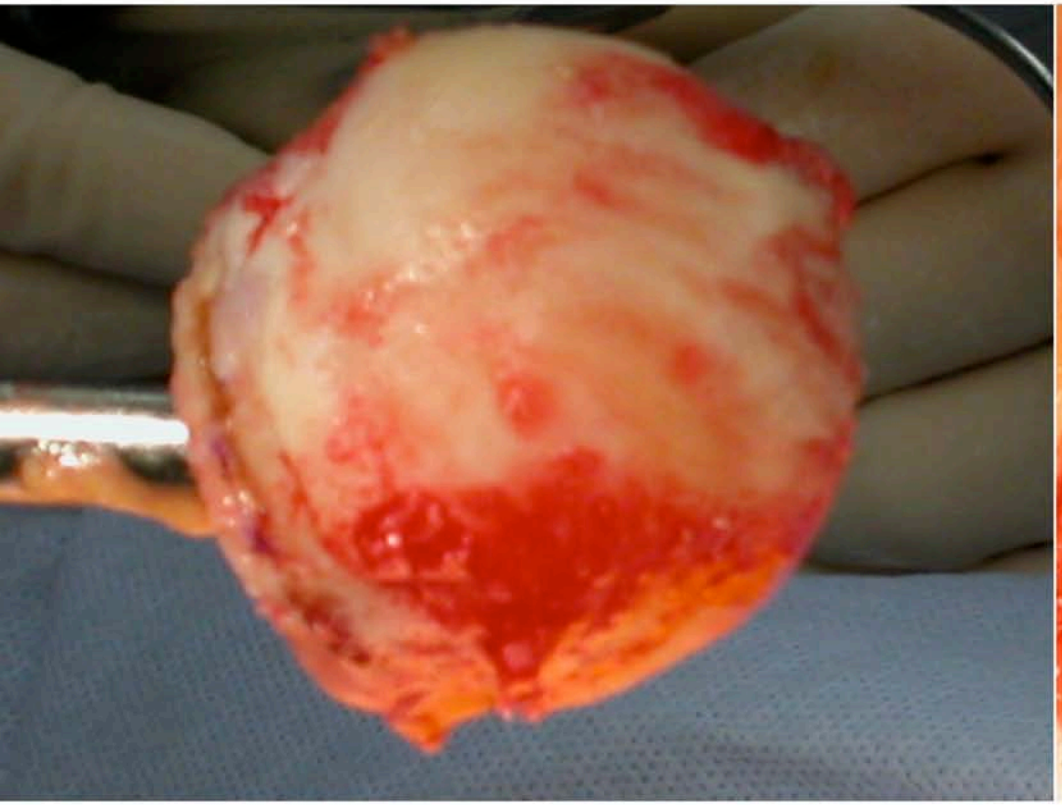
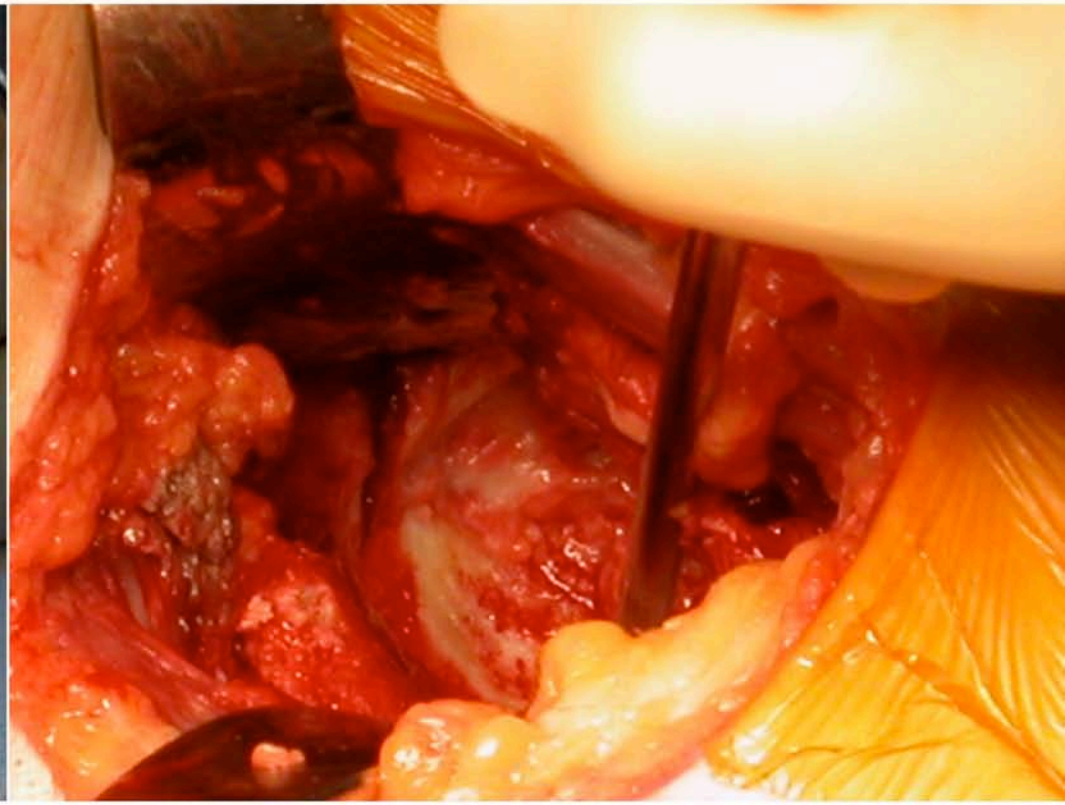

Stem Fit size #2



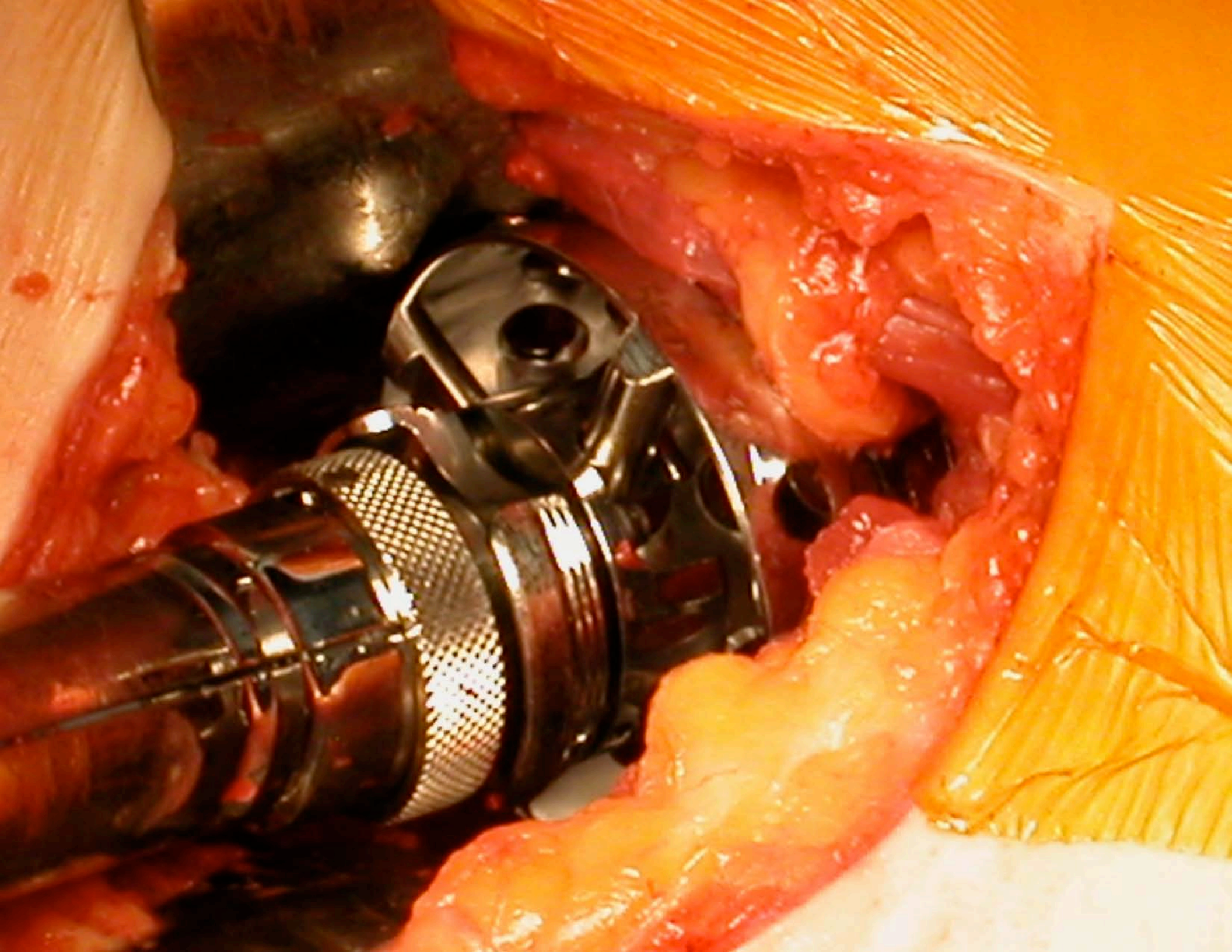
Head neck resection/ preserving lateral structures

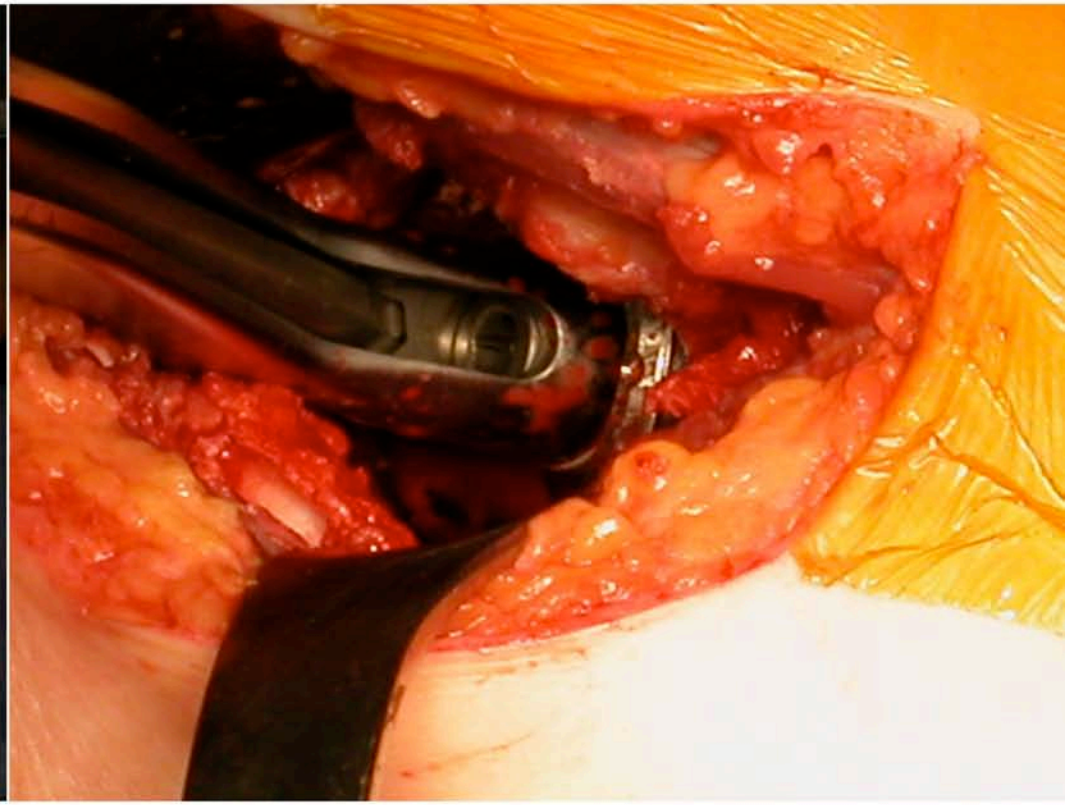


Anterior approach J. Keggi

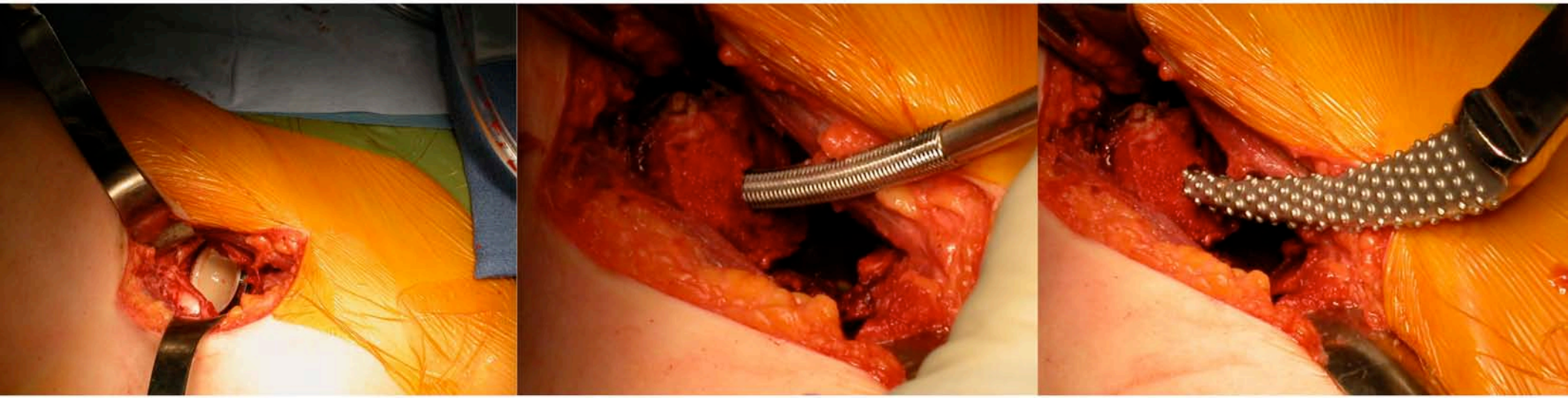



Head resection & socket exposure

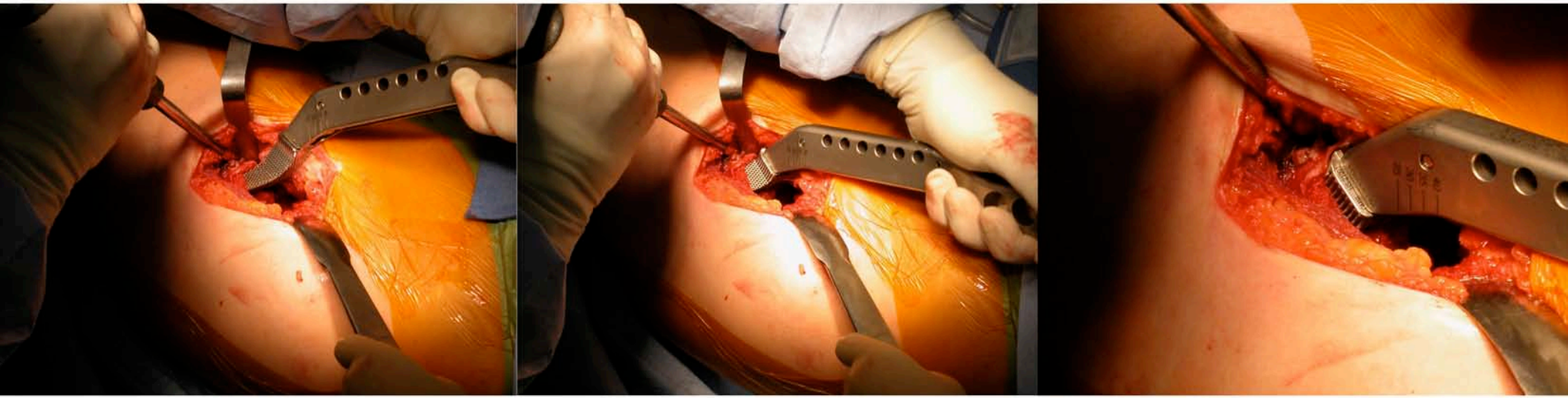




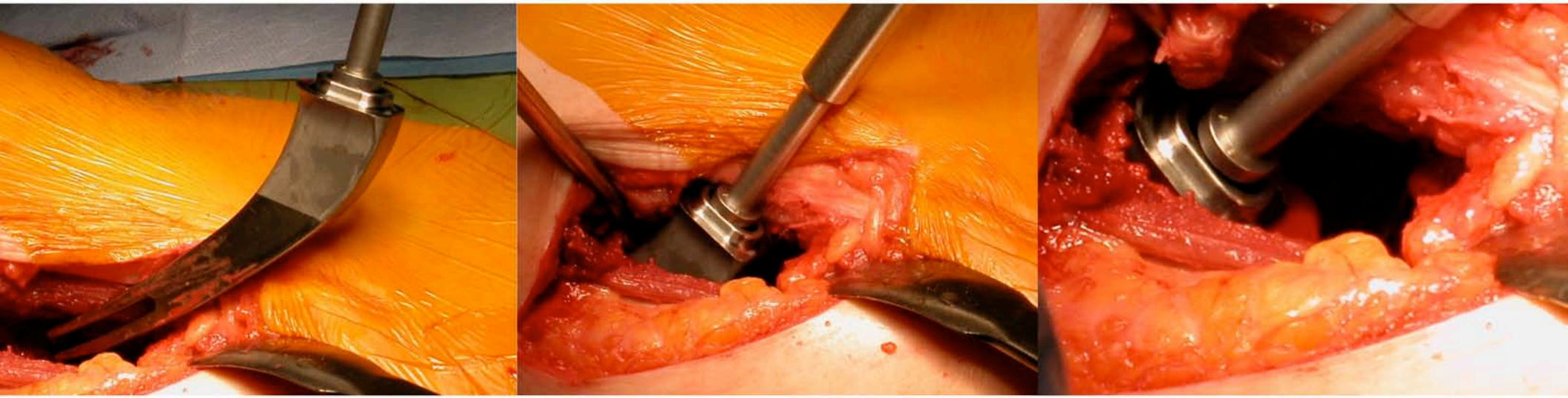
Cup insertion no problem with neck sparing approach



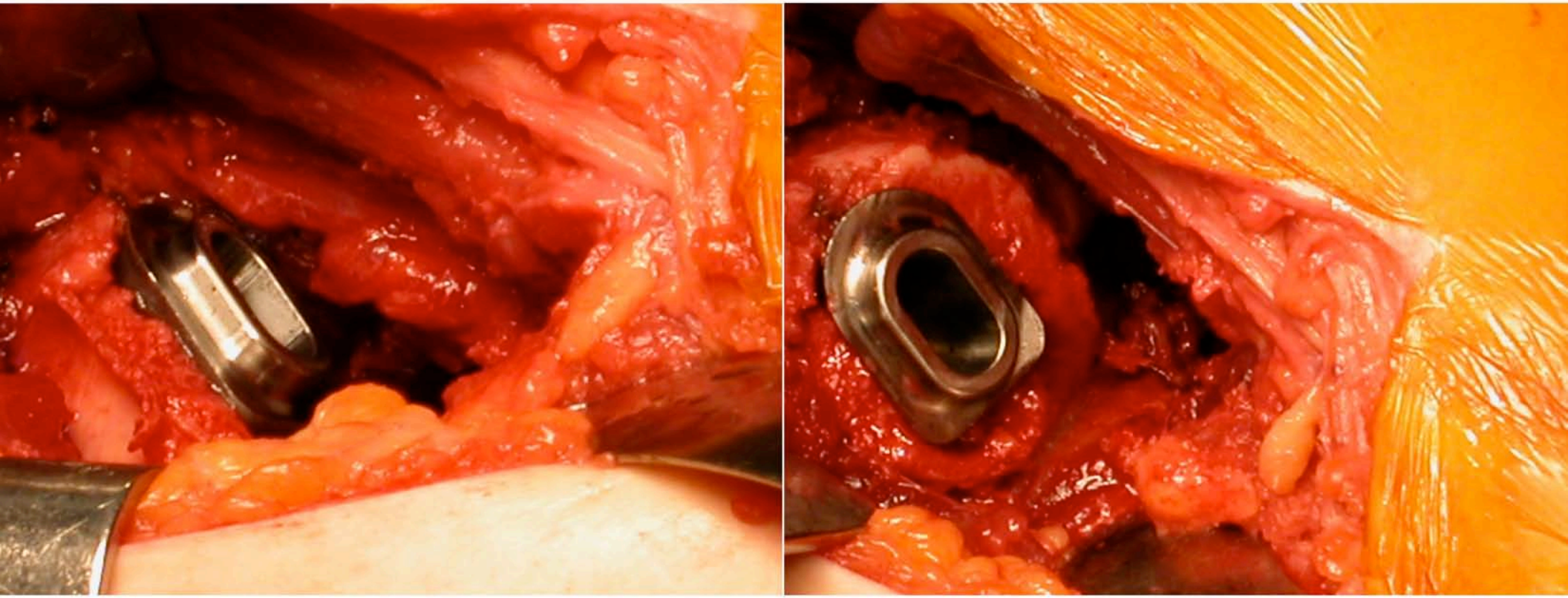
Cup in place then canal preparation



Femoral Rasp

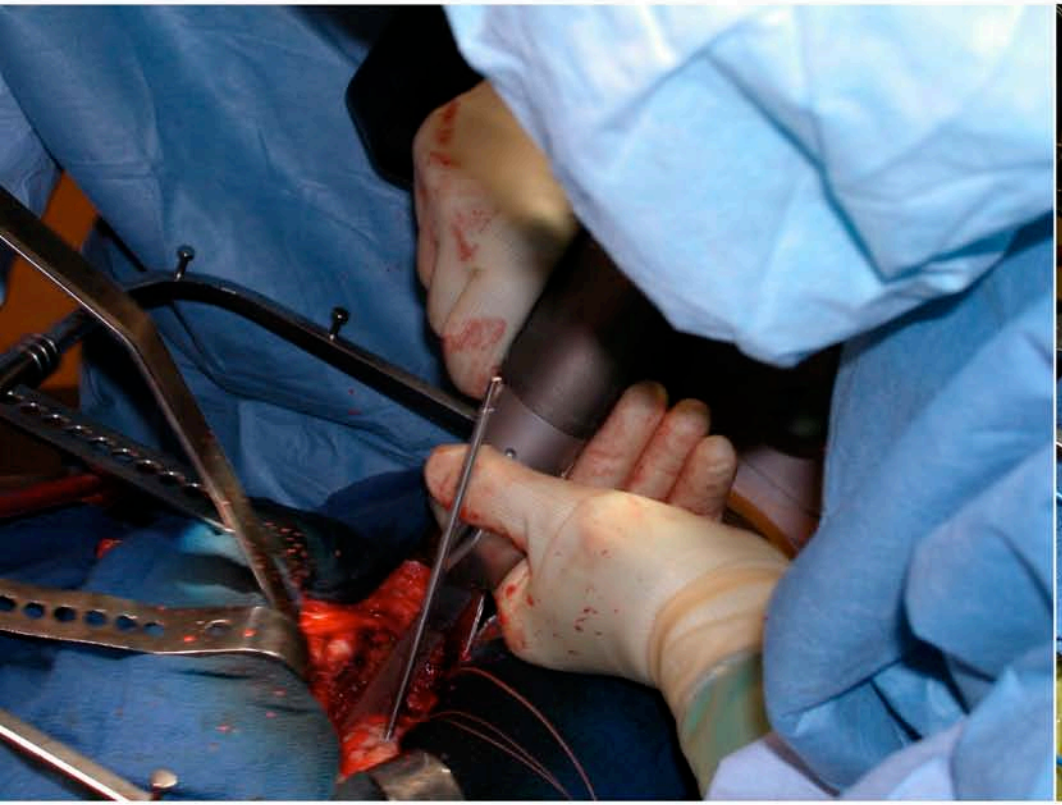


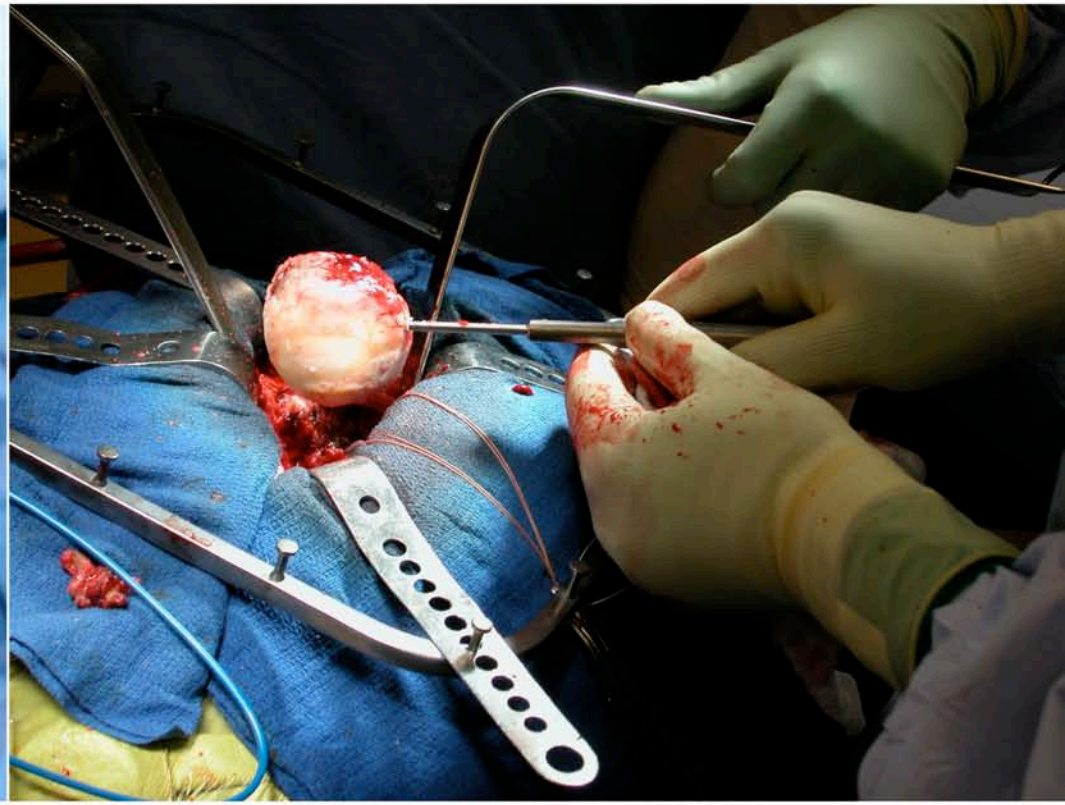
Trial stem insertion



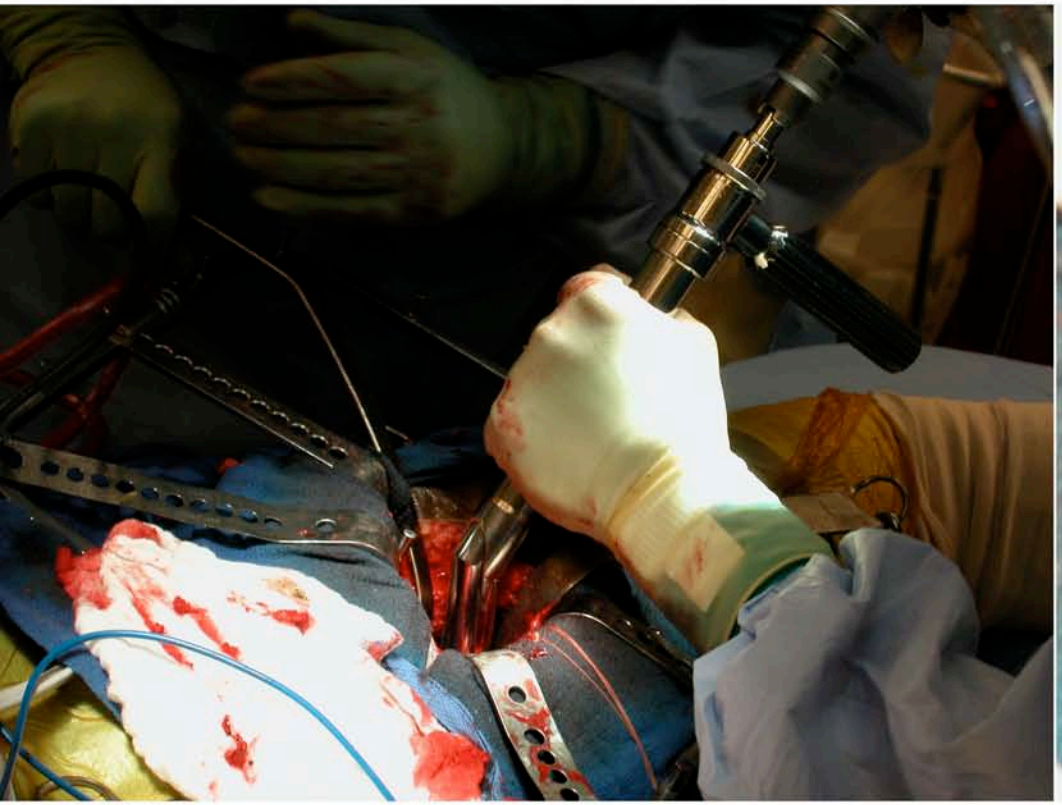
Trial Stem inserted

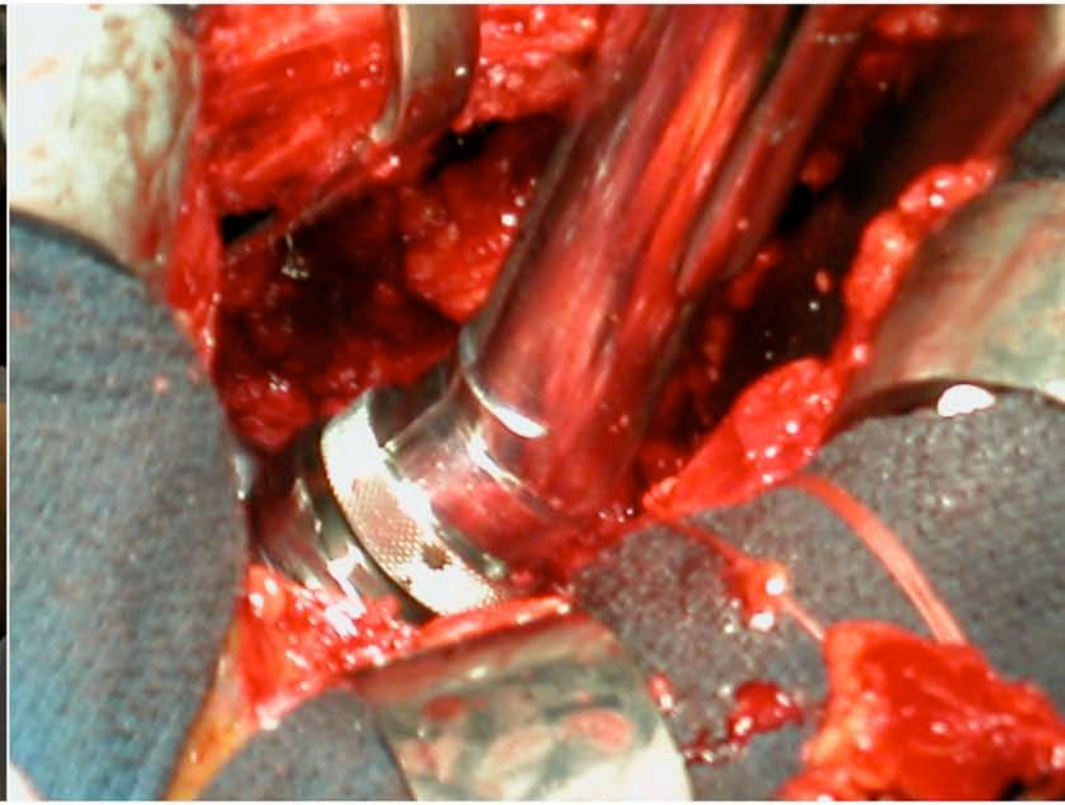
D. Stulberg/ instruments/ posterior approach



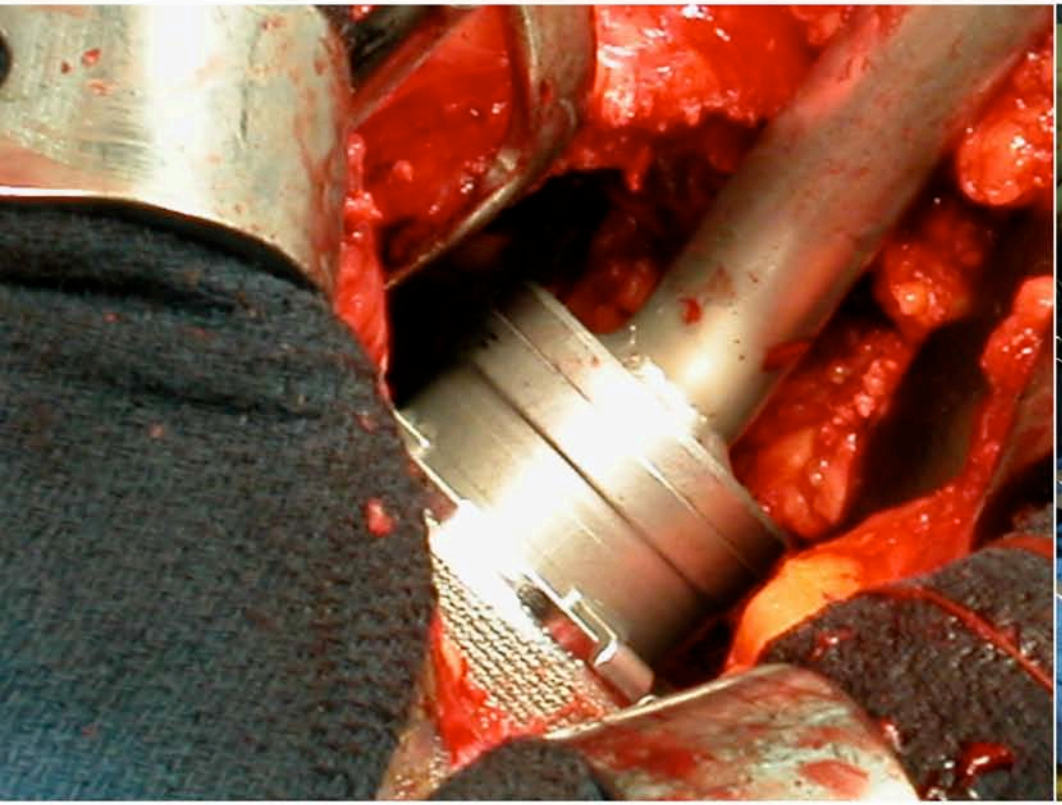


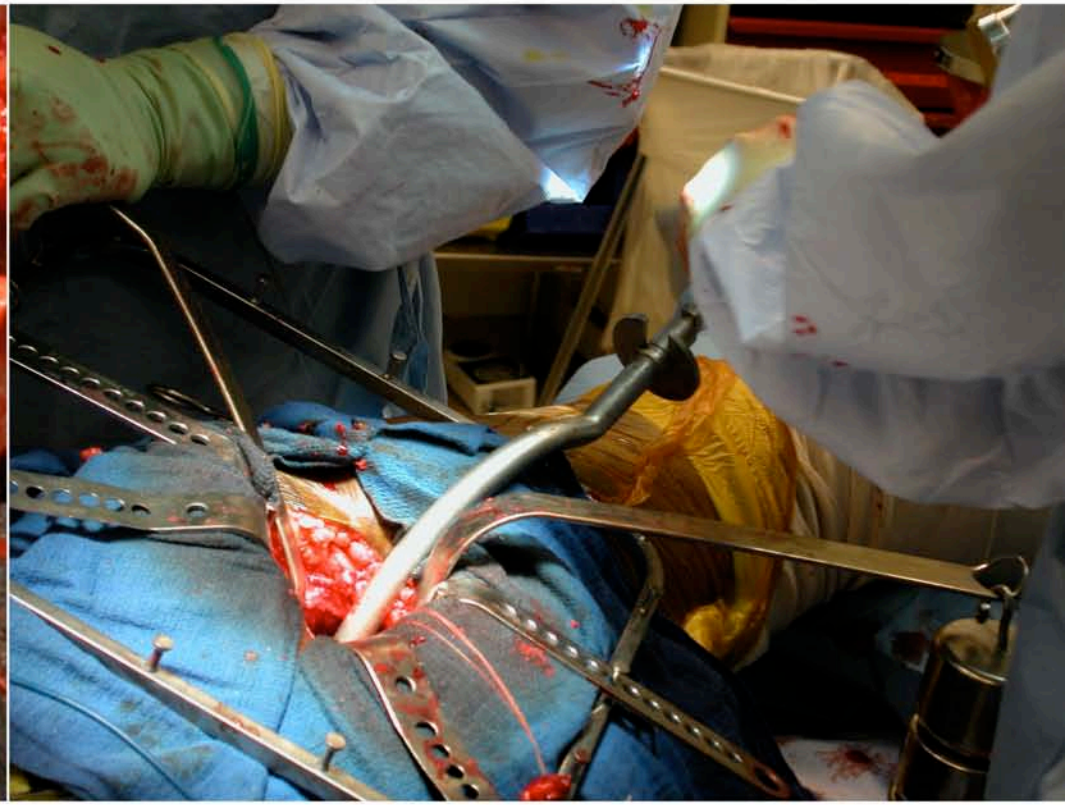
High neck resection



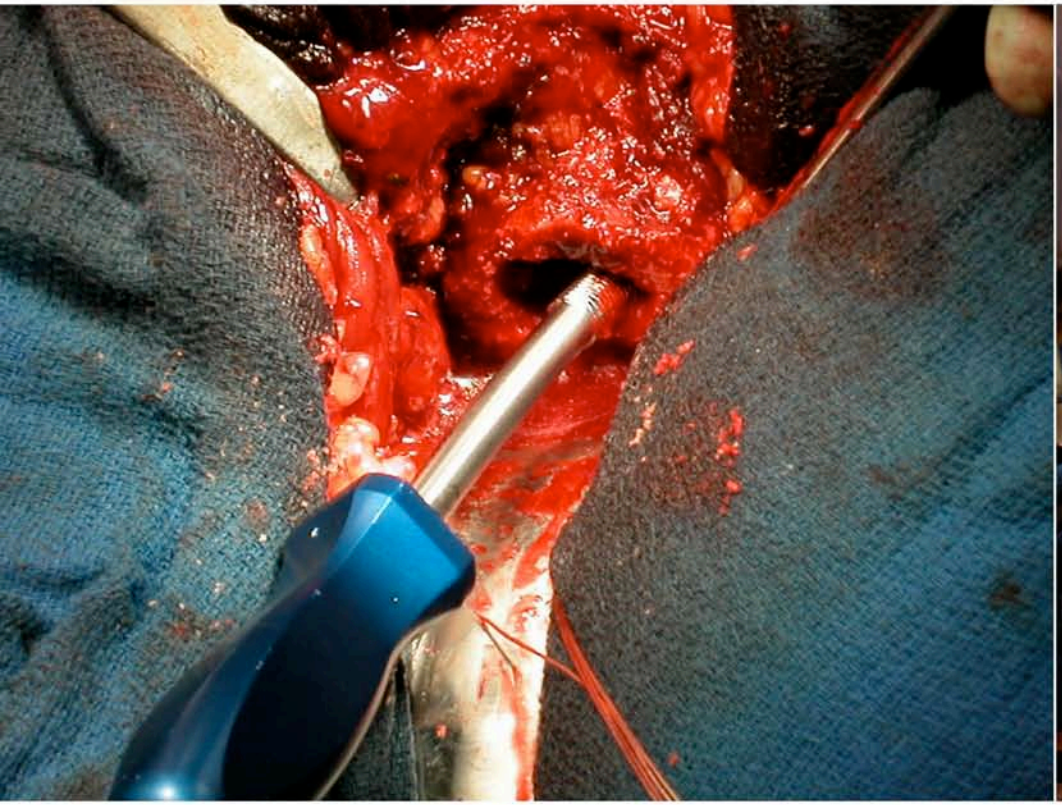


Reaming socket no problem



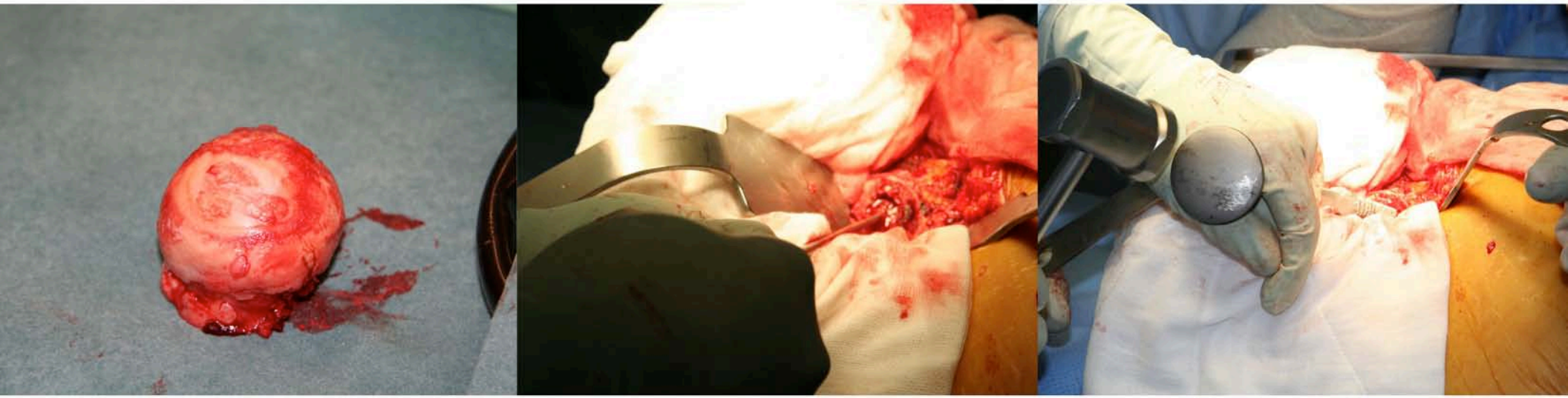


Socket insertion no problem

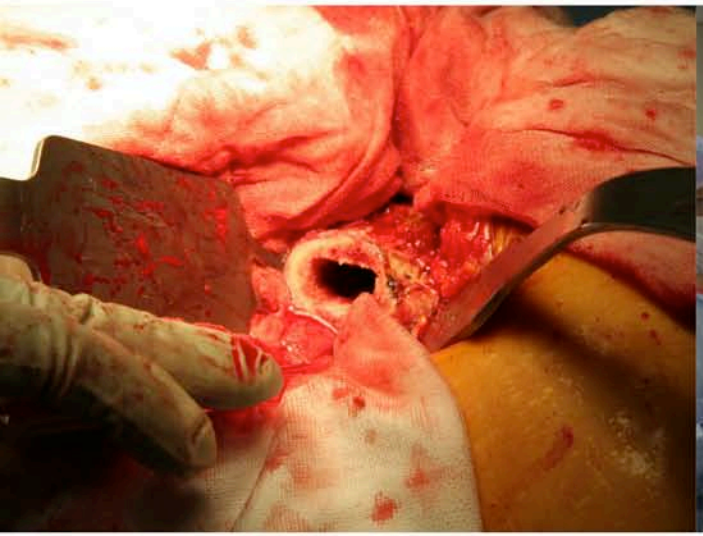
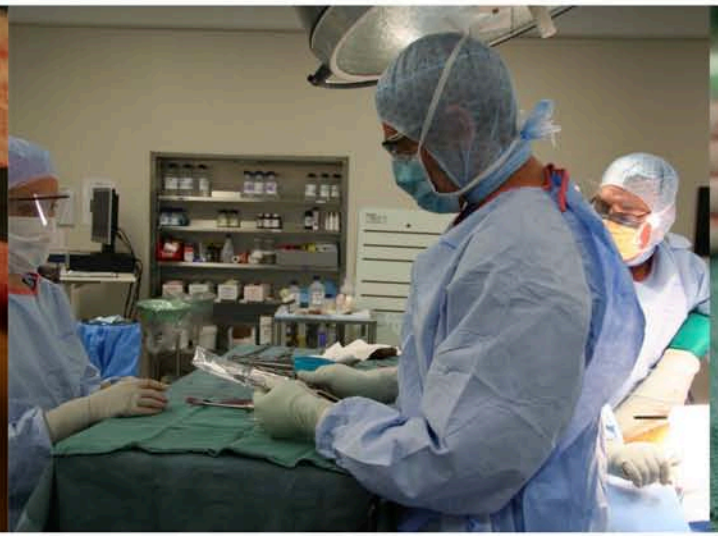
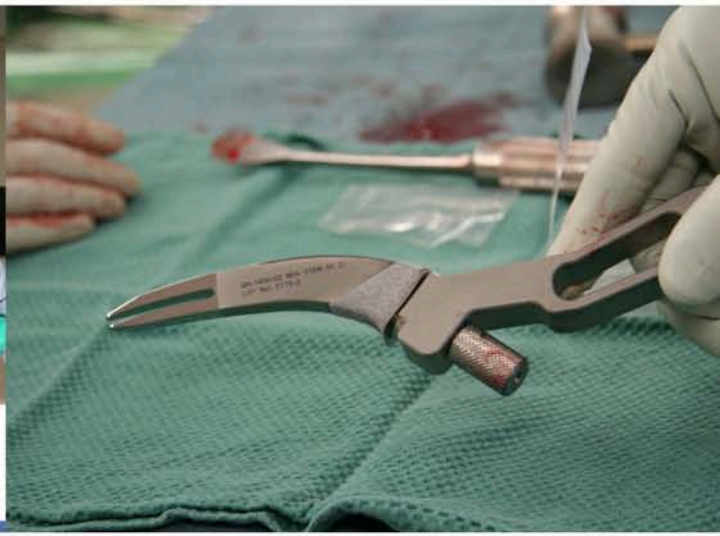


Femoral canal preparation

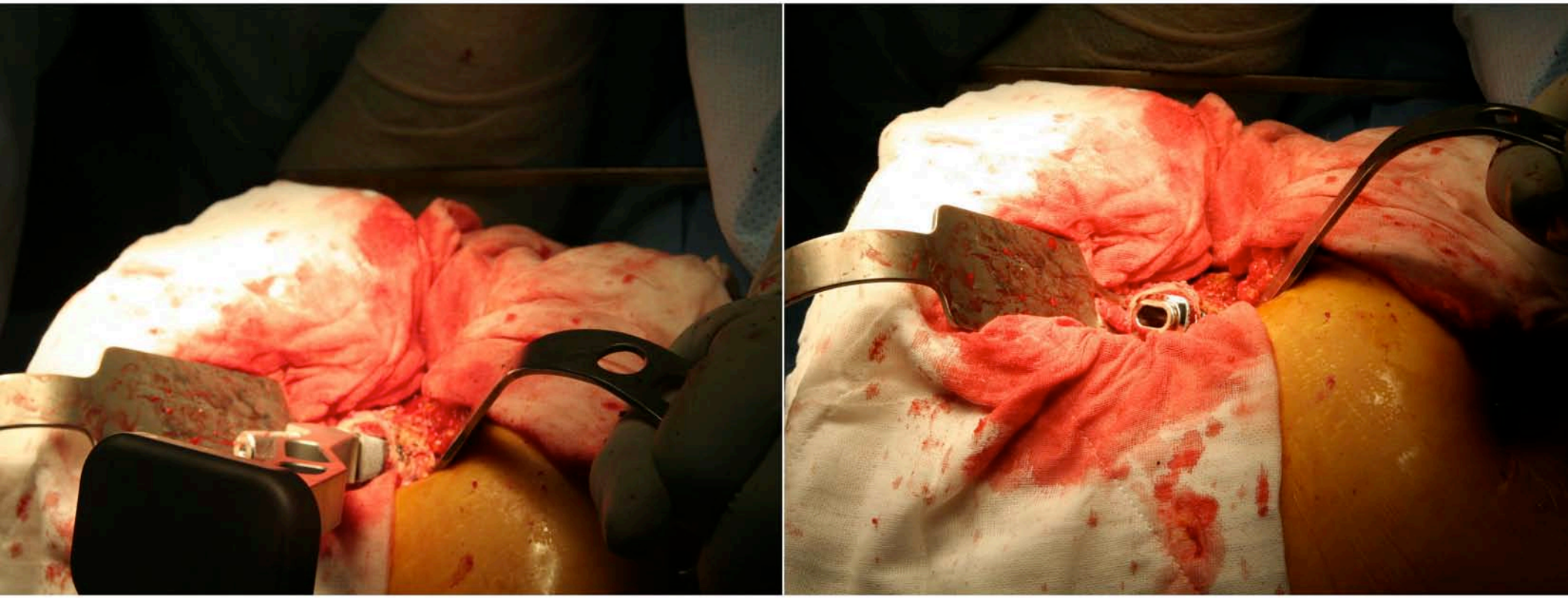
Trial stem in place with cup



Stem implantation in Australia by I. Woodgate

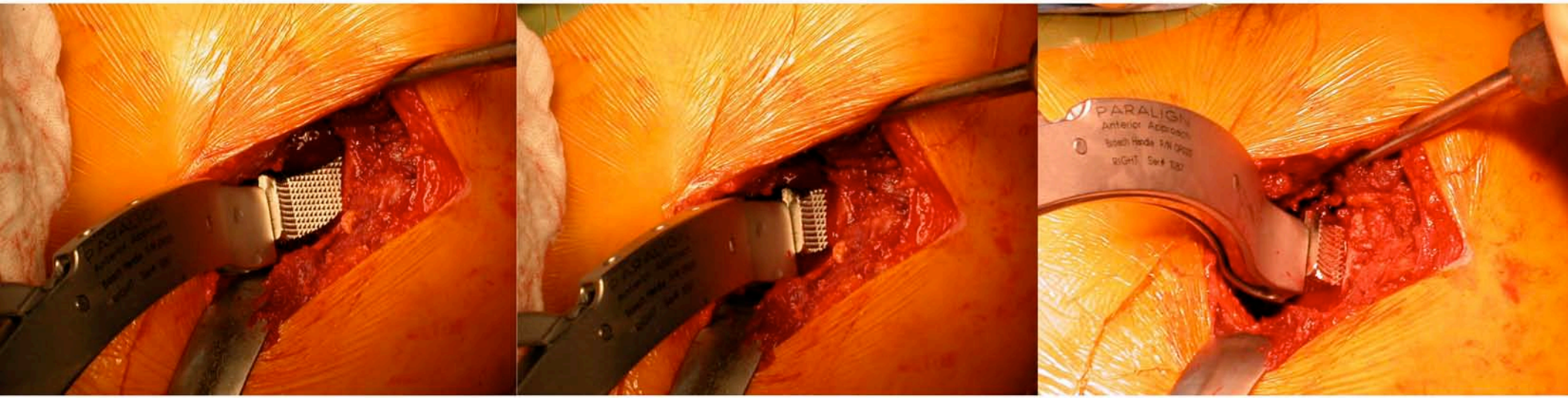




First stem implanted 12/07

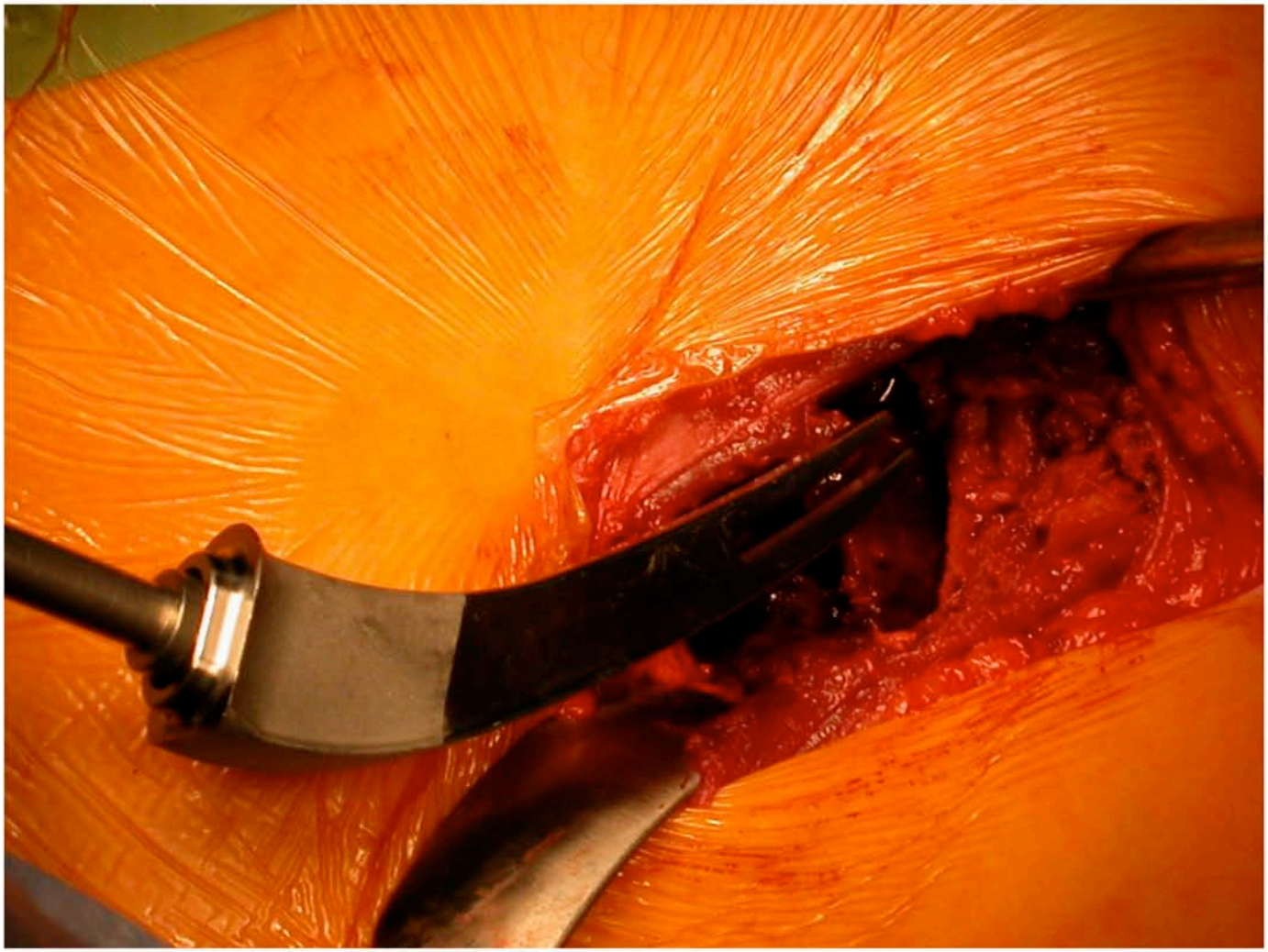


Stem insertion

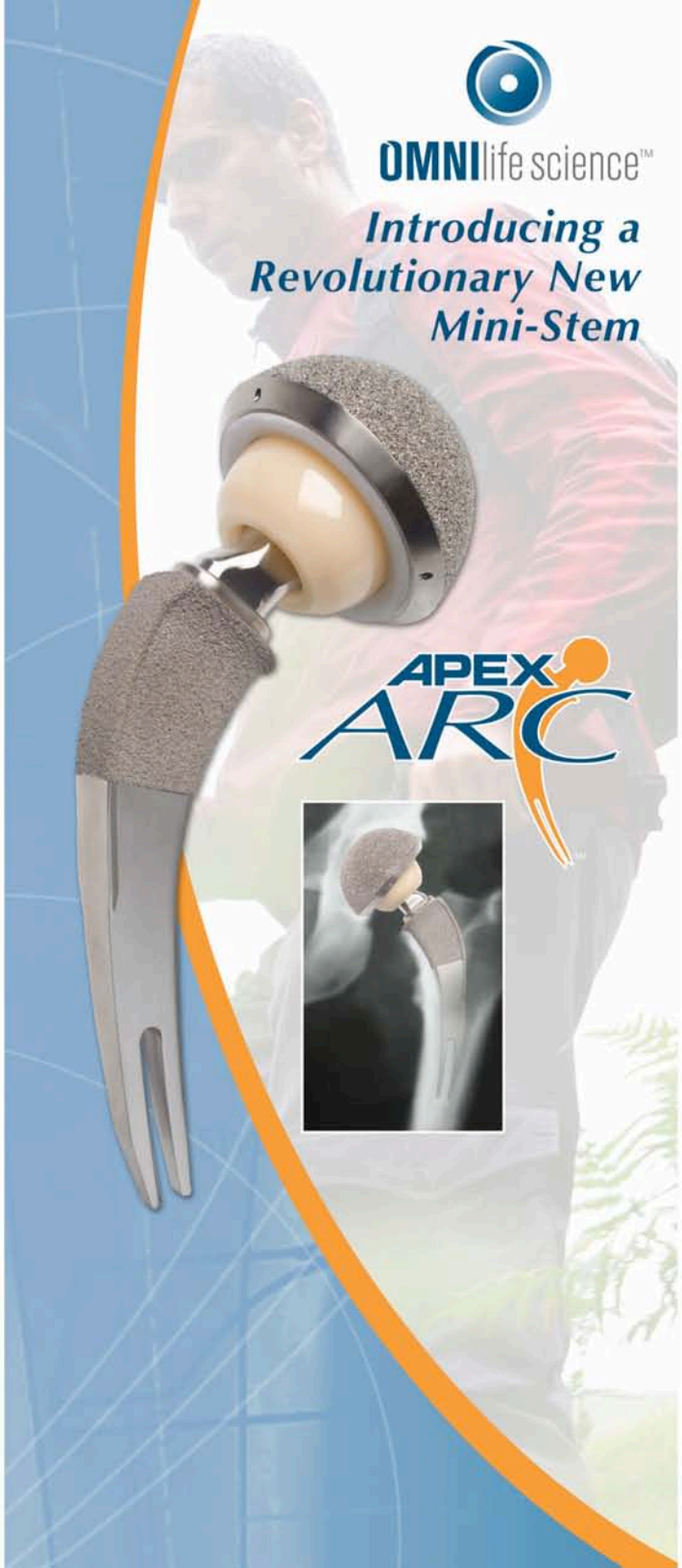
Stem in place notice tap neck for ease of retrievability

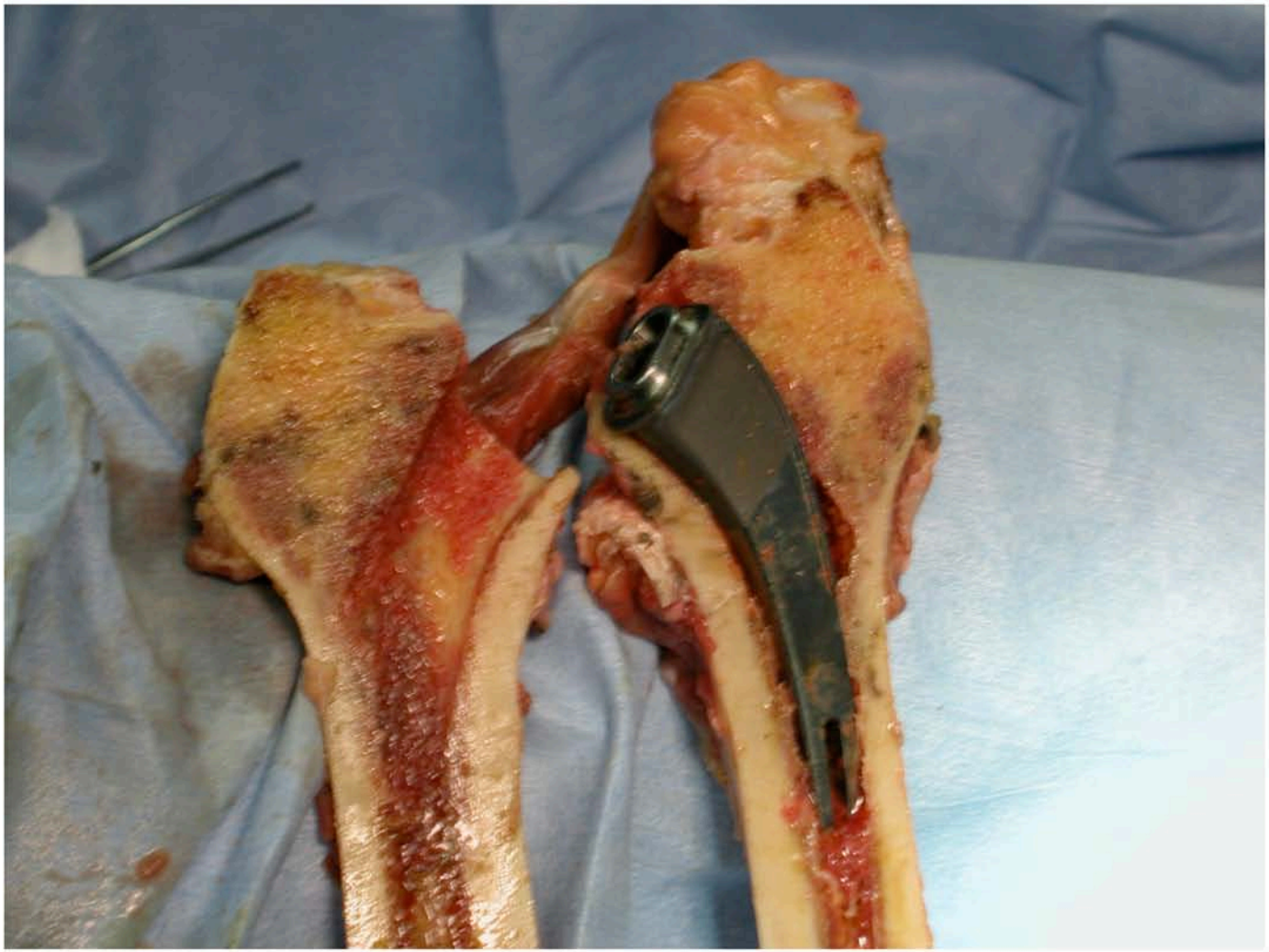


Anterior approach curved rasp handle J. Keggi & T. Kennon

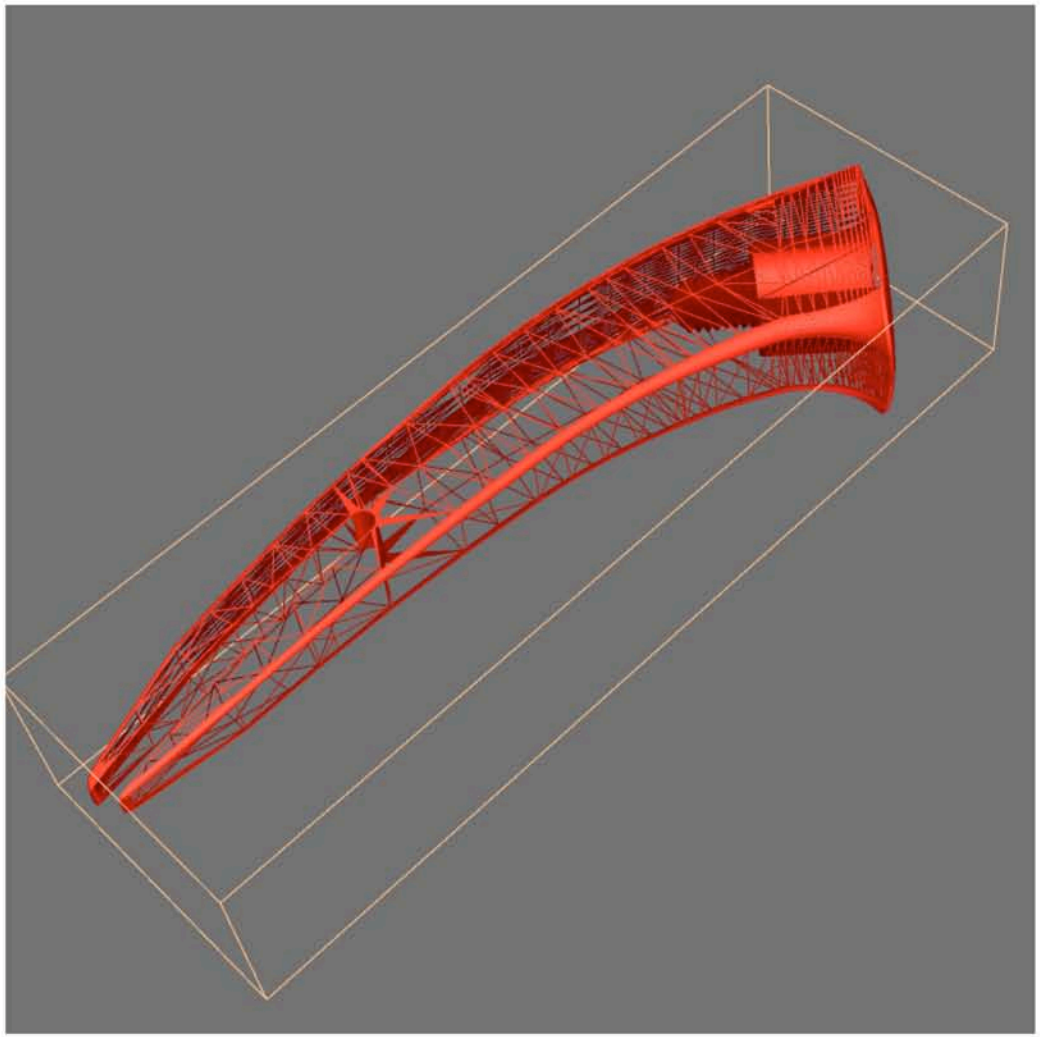


Trial stem insertion


OMNIlife science™
Introducing a Revolutionary New Mini-Stem
APEX ARC



A new approach to tissue sparing THA



Tissue Sparing Implant Design


JISRF

TSI™ Book

Timothy McTighe, Dr. H.S. (hc)
Executive Director
Joint Implant Surgery & Research Foundation, Chagrin Falls, Ohio www.jisrf.org