Tissue Sparing Implant for THA

Design Concept & Review
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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 Omnlife 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-operative 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 & ARCTM 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 variety of different short stem designs
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!
Non rotated hip/ incorrect femoral offset
Internal rotation reflects actual curve.

$20^\circ$ 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
A new approach to tissue sparing THA
Tissue Sparing Implant Design
TSI™ Book
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