

By Timothy McTighe, Dr. H.S (hc) Executive Director





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Disclosure

JISRF is a 501 c3 Non-Profit Foundation (1971)

JISRF is dependent on outside funding to support many of its activities.

Since 1971 JISRF has received funding from +30 commercial affiliations.

JISRF has stock investments in a number of commercial affiliations.

Executive Director: McTighe has vested interest in CDD, LLC; J&J; Signature Orthopaedics, Ltd; Omnilife; and has royalty interest in CDD, LLC

Intent

To make JISRF available as a resource to all within the orthopaedic community. www.jisrf.org





Historical Review of THA Conservative Cementless Implants

Museum at the

Surgeons

Royal College of

Modern-day conservative implant designs for THA started in Europe with the introduction of the Thrust Plate in 1978. Similar to the Philip Wiles Hip Replacement from 1938.



Thrust Plate 1978 Arnold H. Huggler & Hilaire A. C. Jacob







Little Know Work Neck Sparing Stem Design from Brazil

João de Azevedo Lage (born In December 3rd, 1920 and died In July 25th, 2001)





Lafayette de Azevedo Lage, MD (Son) Second generation orthopaedic surgeon

"Lage Prosthesis" 1956 as Endo to Bi-Polor to THA His son Lafayette stopped using the device in May 2001

Many Stems are still functioning today!





Two Significant Designers that impacted and influenced designs of short stem.Pipino (1979)&Morrey (1982)



Pipino first presented the femoral neckconserving **Biodynamic™** hip prosthesis (Howmedica/Stryker Orthopaedics) for cementless fixation in 1979.

c.c. material with sintered beads



In 1982, B. F. Morrey from Mayo Clinic in Rochester, Minnesota, United States, designed a short (60 mm), double-tapered titanium alloy proximal femoral stem with a modular head.

Titanium alloy with proximal fiber mesh pads.





Influx of Short Stems "Lack of Classification System"









The growing interest in the Anterior Approach has also influenced the development of short stem designs.



K. Keggi Experience 40 + years

Dual incision for 30+ years Helpful with heavy patients for femoral canal preparation and insertion of modular stems.

All short stems designs including neck preserving can be done with a single anterior incision. J. Keggi





Potential Advantages of Short Stems

- •Preservation of Tissue (Hard & Soft)
- •Less Blood Loss
- •Reduced Thigh Pain (end of stem)
- •Easier Stem Preparation and Insertion
- •Reduced OR Time
- •Reduced Hospital Time (Now being done as outpatients in selective centers.)
- Reduced Instrumentation
- •Reduced Stem Inventory (sizing)
- Reduced Rehabilitation
- •Easier Explanation if Necessary
- •Easier Revision (conversion to Primary Stem length)
- •Overall Reduction in Health Care cost
- 1. OR time reduced
- 2. Less inventory
- 3. Less instruments (trays cost on average \$250 per tray to recycle)



Short Curved Neck Preserving Stems Saves significant bone





JISRF Stem Classification System

The Joint Implant Surgery and Research Foundation (JISRF) has developed and advocated a stem classification system by primary **stabilization contact regions** to help identify, differentiate, and catalog stems for total hip replacements.



4. Conventional Metaphyseal/Diaphyseal Stabilized

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Head-Stabilized (JISRF Classification 1a. & 1b.)

Head-stabilizing reconstruction are classified as either hip resurfacing or mid-head resection (e.g., Birmingham Mid Head Replacement (BMHR).



Neck-Stabilized Procedures

"Why Resect the Neck," 1986 JBJS

Michael Freeman was the first to advocate (internationally) for sparing the neck in hip arthroplasty.



Conventional stem length in both a cementless and cemented style.

Significant advantages in biomechanical benefits: Reduction of both torsional and axial moments.



Short Curved Neck-Sparing Stem (JISRF Classification 2a.)

ZONE 1

ZONE 7

ZONE 3,4 & 5



MSATM by Global, Au 2007





TSI[™] by Signature Orthopaedics, Ltd. 2013 (Global)



Nanos[™] Neck Preserving Stem By Smith & Nephew, International



Promise Neck Preserving Stem Permedica Manufacturing (Italy) International



Corin Mini Hip™ International 2008 & U.S. 2010





Short Lateral Flare Engaging Stem (JISRF Classification 2.b)

This is the only neck-preserving lateral flare short stem on the market. Most lateral flare stems are metaphyseal stabilized styles.

High neck resection makes stem insertion difficult due to the bulky style of the stem.

Relies on metaphyseal fit and fill for stability.















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Neck Plugs or Neck Replacement Implants (JISRF Classification 2c)

Several modified neck-sparing designs have recently been introduced that are only inserted into the femoral neck region. These have been referred to as "neck plugs or neck replacement" and are limited to international clinical experience. They appear to be a hybrid design between the short curved neck-sparing stem and the mid-head device by McMinn (BMHR).



CUT Femoral Neck Mixed results by different investigators Sterns 5yr = 98% Ender 5 yr. = 89% Ishaque 8 yr = 49.6%



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(4)

Primoris

JISRF

Trials underway





TSI™ Neck Replacement In Development

Haring 56 patients at 5 yrs. = 97% Luger 28 hips at 3 yrs = 1 aseptic loosening





Silent Hip

BOA presentation 2009 141 hips 97% at 3 yrs Waller 15 hips all had ASR Bearings 6 ASR MoM cup revisions



Short Metaphyseal Tapered Stabilized Stems (JISRF Classification 3a)

Short metaphyseal stabilized stems comprise the largest segment of short stems in the United States, compared with the neck-stabilized stems that dominate the European market.

The first generation of short stems in the United States were truncated conventional tapered stems.



4.50

Fitmore Hip Stem

The Taperloc®



Metha® Short Stem

The Mayo[®] Conservative Stem





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Bulky or Fit and Fill Stems (JISRF Classification 3b.)



Conventional Cementless Stems (JISRF Classification 4)







Summary



Caution:

The growing interest in the Direct Anterior Approach has had a significant impact on the development of short stem technology.

The availability of short stem technology has made the Direct Anterior Approach more user friendly.

The trend with the anterior approach is to get the patient moving quicker. Some short stem designs have less surface contact area than others or conventional stems and could lead to increased aseptic loosening.





Conclusion

Our experience with **Short Curved Neck Preserving Stems** has been a positive experience, however, there is a short but definitive learning curve in achieving stabilization in the femoral neck. We do not recommend trying new designs (short stems) in the process of learning the Direct Anterior Approach.

Once you learn your short stem there is no doubt that the short stem design will make the Direct Anterior Approach easier and more reproducible.

The broad **category** of **short stems** actually encompasses **several subtypes**. The JISRF classification is recommended as a means to accurately assess the clinical performance of these subgroups. **Thank You**

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