The Role of Modularity in Primary THA - Is There One?

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Introduction

Modularity or multi-piece stems are becoming commonplace in hip revision surgery with virtually all implant companies offering one version or another. The role of modularity would therefore seem to be firmly established for revision, but what of primary cases? This study is a follow-up to previous work with a further ten years of cases reviewed. The real question we face does the benefit of modularity pay higher dividends than the potential risk factors. We believe this review will provide guidance for others surgeons to aid in their decision making process.

Two Remaining Significant Problems in THA

The Role of Modularity in THR

Modular means that the stem has 2 or more parts which can be joined. Does that mean any stem with a modular head is a modular stem? Not in today’s definition. This poster is limited to the femoral side and includes two or more modular parts.

Two Remaining Significant Problems in THA

955 (S-Rom®) primary cases in a combined series performed by two surgeons at separate centers. 2-17 year follow-up (mean 11.5 yrs.)

HC: 517 cases (278 females/239 males) mean age 55; 162 CDH; Mod. Watson-Jones approach; 26 lost to follow-up; 28mm head (1986 stem design)

LK: 438 cases (237 females/201 males) mean age 68; 38 lost to follow-up (patient pts./ relocation of practice); 32mm head (1986 stem design); Posterior approach

Material

S-Rom® Evolution

Modular Heads

Examples of problems:

Poly Wear

• F delay too long before revision
• poly wear thru & cup damage

Poly wear

• Fractured greater trochanter through osteolytic cyst
• 2 hck ope
• 3 compression screws

Unsupported Stems Will Fail Regardless of Fixation/Design

(cement/cementless/modular)

Helpful to cut revisions

Sleeves

Constrained liner - 28mm

Steel: Slot in neck made to vary scaffolds to mechanical failure

Skirt on neck made from passing distally. HA Sleeve: 114 currently being reviewed. Will this function as well ?

Ostelysis

HC: Distal to sleeve - 2, 2 primaries; 1 revision. LK: Distal to the sleeve

Micro-wear debris: HA in both cases. 1 stem removed/ new stem inserted

Ha: 1 frail/2 revision. LK: 2 new stems

Notes: 5 pts. Required onlay grafting for significant progressive end of stem pain (+15mm dia. stems)

Dislocations

HC: 6 total; 3 closed reductions; 2 open reductions; 1 stem removed/ new stem inserted

Lk: 5 total; 2 closed reductions; 3 open reductions (constrained sockets).

Note: routinely takes intra-operative x-rays/ generally results in fine-tuning of fit.

Stem Revisions

HC: 5 total; 1 for aseptic loosening; 2 late sepsis; 2 early bone fractures.

LK: 4 total; 6 for aseptic loosening; 4 late sepsis.

Lessons Learned

HC: Small dia. head greater wear problems; Routine now 32mm c.c. head; Large/active males metal-metal bearings; Neutral liner; Smaller incision; type C bone (cement stem)

Lk: 36mm ceramic head wireless poly; + 4mm lateral offset poly (for increased poly thickness & offset); Hand reaming (better feel for bone); Neutral liner; Routine posterior capsule closure (added security). Smaller incision (average 7cm); type C bone (does not use S-Rom, uses a taper cementless stem).

Since the advent of the S-Rom® (1984) prosthesis it has been clear that modular stems/sleeve approaches can be used to successfully address implant stability especially fit & fill problems.

Final Comments

The long-term results for this series has demonstrated the S-Rom stem to be safe and effective for primary THA. Initial concerns over fretting and fatigue failure of the modular junction has not been observed. The lack of aseptic loosening (1 stem) clearly demonstrates this design provides initial stability leading to long term fixation.

The main problem appears to be cup/liner related and lack of distal lysis suggest the porous sleeve does act as a barrier to migrating poly debris.

We continue to use and recommend this device.