

Using the REDAPT[®] Revision Hip System to help achieve the goals of revision surgery

A panel of international expert faculty presented practical guidance to help overcome the challenges of medical and surgical management of revision hip surgery at the Hip Revision Masterclass. This summary highlights the goals and challenges of femoral and acetabular revision surgery, and solutions based on the clinical experience of several speakers.

Goals of revision surgery

- **Stability:** avoid re-revision by achieving stable bony fixation of acetabular and femoral components^{1,2}
- **Adaptability and reproducibility:** identify processes, tools and implants that enable reliable outcomes regardless of case complexity³

Challenges

- Difficult indications for revision eg, infection and dislocation⁴
- Good positioning of cup and stem, particularly in large defects, for strong fixation and stability while preserving existing bone stock^{4,5}
- Working with existing bone stock and avoiding subsidence^{4,5}
- Preparedness during surgery to adapt the planned approach and deal with unpredictable situations^{2,6}

Key discussion points

Stability: stem and cup

During his presentation entitled 'Modular vs monoblock (nonmodular) stems for revision THA', Dr Ran Schwarzkopf, from NYU Hospital for Joint Diseases, New York, USA, described that nonmodular stems offer improved fixation due to distal fixation, axial stability and enhanced fatigue performance compared to modular stems.¹

He supported this with data from his own clinical practice using the REDAPT[®] Revision Femoral Stem in 144 hips:¹ stable fixation was achieved in all patients, and at 1 year follow-up **the vast majority of stems showed minimal subsidence (<5mm), and no stems required revision due to subsidence.**⁷

In a later presentation entitled 'Managing large defects – too many moving parts?', Dr Schwarzkopf explained that the screw hole orientation of the REDAPT[®] Fully Porous Cup facilitates optimal fixation and locking screws are particularly effective for achieving fixation in dissociations when using distraction techniques.⁸

Adaptability and reproducibility: stem

In his presentation 'First clinical experience with a new cementless revision stem' Mr Sujith Konan from the University College London Hospitals, UK, explained that the goals of revision arthroplasty are the same for primary surgery: to achieve adequate leg length, reliable fixation and restore biomechanics. He explained that nonmodular titanium stems such as the REDAPT Revision Femoral Stem meet these goals, **achieving early, reliable and reproducible fixation, which aids early patient mobilisation, while promoting bone on-growth.**⁹

Both Mr Konan and Dr Schwarzkopf suggested that the REDAPT Revision Femoral Stem can be used for almost all revision cases.^{1,9} Dr Schwarzkopf emphasised that repeatedly using one system, which can be relied upon to achieve stable fixation regardless of the complexity of the case, enables surgeons to improve and refine their technique to achieve consistent outcomes.¹

Practical guidance for femoral revision

- To avoid intra-operative femur fracture during femoral stem insertion, apply consistent and gentle hammer blows, utilise the viscoelastic pause of the bone, determine progression as a team with the help of auditory feedback, and know when to stop.⁶
- Prophylactic cobalt-chrome cables are more effective at preventing femur crack propagation than polyethylene cables.⁵
- Undersized stems lead to subsidence. To determine the optimal size, measure and decide on the zone of conical fixation pre-operatively, and continue to assess during surgery with measurements, X-ray evidence and feel.¹⁰



REDAPT Revision
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Adaptability and reproducibility: cup

In 'Managing large defects – too many moving parts?', Dr Schwarzkopf also described the versatility of the REDAPT® Fully Porous Cup in aiding surgeons to achieve the best possible fixation. He championed the adaptability of modular assembly by detailing a case in which the **REDAPT Fully Porous Cup was used with a cage and liner to achieve the ideal implant selection for stability** in light of a pelvic discontinuity.⁸

During his presentation 'The hemispherical cup: the standard in acetabular revision', Mr Stephen Jones from University Hospital Llandough, South Glamorgan, UK, presented an algorithm to guide intra-operative selection of the most appropriate acetabular solution to achieve a stable fixation and reproducible results (Figure).²

Uncemented porous hemispherical cups such as the REDAPT Fully Porous Cup are highly successful in type 1 and 2 defects (Figure). For type 3 defects, reaming can achieve a hemispherical defect in approximately 1 in 4 cases, and a jumbo hemispherical cup can be used. For the remaining cases, a hemispherical cup/augment or hemispherical cup/cage combination may be used to achieve stable fixation (Figure). When a hemispherical cup is appropriate for a type 3 defect, Mr Jones highlighted that **the screw hole orientation in the REDAPT Fully Porous Cup facilitates optimal inferior screw fixation**.²

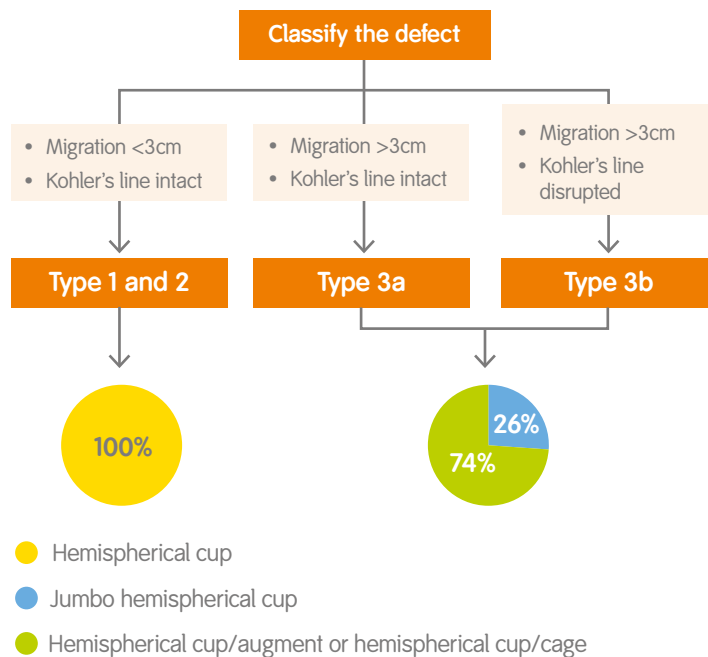


Figure. Mr Jones' algorithm for classifying and revising acetabular defects.²

Practical guidance for acetabular revision

- The revision system that will yield optimal stability may only become evident intra-operatively, so it is important to start surgery prepared with all the tools that might be needed to ensure success.²
- Developing a treatment algorithm based on defect classification promotes planning, correct tool selection and use of practiced techniques to achieve reproducible results:³
 - The appropriate revision solution is dependent on the type of defect, as illustrated in the Figure.²
 - Impaction alone can be insufficient to achieve stability: it is recommended to use 4–5 screws in the southern hemisphere to prevent rotation.⁸
 - Plans can and should be adapted intra-operatively: cups and screws should be placed in the best position for stability first, followed by placement of augment or cages if needed.⁸

Achieving the goals of revision surgery with the REDAPT® Revision Hip System

The Hip Revision Masterclass provided practical advice for achieving strong fixation and stability based on the clinical experience of the international expert faculty. Several speakers highlighted the reproducible results achieved using the REDAPT® Revision Femoral Stem, which achieves stable and reliable fixation in most patients, aids early mobilisation, and promotes bone on-growth.^{1,9} The REDAPT Fully Porous Cup also facilitates stability through adaptable modular assembly, supporting optimal fixation with its screw hole orientation design.⁸

Please click here www.smith-nephew.com/education to access further supporting material on the REDAPT Revision Hip System.

References

1. Schwarzkopf R. Modular vs monoblock (nonmodular) stems for revision THA. Oral presentation presented at: Hip Revision Masterclass, May 9–10, 2019. Berlin, Germany;
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8. Schwarzkopf R. Managing large defects – too many moving parts? Oral presentation presented at: Hip Revision Masterclass, May 9–10, 2019. Berlin, Germany;
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