The future of BHR°

Brian Austin and Tim Band
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BIRMINGHAM HIP® Resurfacing

Worldwide market leader with over 60,000 implanted

Material specification established from proven heritage

Bone conserving design is beneficial for young patients who might need a revision procedure later in life

Independent global clinical results demonstrate excellent survivorship to 8 years and provide evidence for patients and payers
30+ years benign clinical history

Cast to specification of 30 year plus benign clinical history

Cast - 30 year plus benign clinical history
‘As Cast’ material has higher wear resistance

The ‘As Cast’ material, in its high carbon form, has superior wear resistance due to a hard second phase – Large Block Carbides.

It is these carbides that prevent adhesive wear from taking place in the ‘dry running’ start-up phase of motion and thus reduce the potential for wear.
Conventional THA vs. Resurfacing

Bone conserving design is beneficial for young patients who might need a revision procedure later in life.
Survivorship – global results

<table>
<thead>
<tr>
<th>Author</th>
<th>Site</th>
<th>$n$</th>
<th>Survival</th>
<th>Follow Up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>McMinn et al</td>
<td>Birmingham</td>
<td>1626</td>
<td>98.40%</td>
<td>60 (minimum)</td>
</tr>
<tr>
<td>Shimmin et al</td>
<td>Melbourne</td>
<td>231</td>
<td>99.14%</td>
<td>33 (25-52)</td>
</tr>
<tr>
<td>Ebied et al</td>
<td>Liverpool</td>
<td>100</td>
<td>99.00%</td>
<td>17 (mean)</td>
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<tr>
<td>De Smet et al</td>
<td>Ghent</td>
<td>200</td>
<td>99.50%</td>
<td>6-42</td>
</tr>
<tr>
<td>Treacy et al</td>
<td>Birmingham</td>
<td>144</td>
<td>98.00%</td>
<td>60 (minimum)</td>
</tr>
<tr>
<td>Oswestry Worldwide</td>
<td>140 surgeons</td>
<td>3374</td>
<td>96.30%</td>
<td>60 (maximum)</td>
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</tbody>
</table>
“Unlike conventional total hips, the younger the resurfacing patient the lower the revision rate”
The future of BHR

BHR product development plan

Summary of technical developments
BHR 2mm line extension

Doubled product offering – strongest competitive advantage. Provides greater inter-operative flexibility to the surgeon.

<table>
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<th>Current range</th>
<th>New range</th>
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**Implant Size Chart**

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<tr>
<th>HEAD SIZE</th>
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<th>OEP ASIA CUP</th>
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**BIRMINGHAM HIP® Resurfacing**

**Smith & Nephew**
New BHR™ Modular Heads & Sleeves
New BHR° Modular Heads & Sleeves

• Provides greater inter-operative flexibility to the surgeon for more effective treatment for patient.

• Significant reduction in inventory
Novel texturing for Acetabular fixation
Novel texturing for Acetabular fixation

Porosity 30% +/-10%

Ti Fines

1 mm
Novel texturing for Acetabular fixation

- Novel technology unique to S&N
- Allow adoption and growth of MoM bearing technology in Japan (2nd largest market) where regulatory restrictions for HA limit market penetration
Instrument innovation

- Anti-notch device
- Dedicated instrument engineering resource
- Providing surgeons solutions for better outcomes for patients
- Maintaining leading competitive position
- Increasing value of the business through IP
Research strategies

To design & develop a device which allows surgery on those patients contra-indicated for resurfacing

Those features which effect the performance of MoM bearings – material, geometry, clearance & friction

To develop a new MoM Resurfacing device
The future of BHR™

Metal-on-metal/BHR technology development plans

Develop a new MoM Resurfacing device
What do we need?

- inflict minimal tissue trauma
- maintain joint geometry
- conserve bone stock
- achieve physiological bone loading
- and generate little or no wear debris

achieve physiological bone loading
- and generate little or no wear debris

What do we need?
How do we get there?

**Research Strategies**

The development and design is informed through:

- Inspiration
- the continued analysis of retrievals
- application of in-house proprietary manufacturing technologies
- extensive in vitro testing (friction & wear etc...)
- maintaining literature reviews
- competitor product analysis
- dedicated, focused Engineering & Research resource
Research strategies

The new MoM Resurfacing device will encompass:

- enhanced features (fixation, introduction etc..)
- tightened geometric specification
- low wear capacity to reduce debris (metal ions)
- innovative instruments providing surgeons better outcomes
The future of BHR

- Celebrate 10 years of global leadership position in MoM Resurfacing (no specification change to BHR)
- Exploit capabilities of dedicated MoM Engineering Team
- Exploit ‘State of the Art’ dedicated Research Facility
- Working with original Design Surgeons with >17 years of experience in resurfacing
- Continue to evolve new products and technologies from solid technology experience base
- Apply sensible ‘step wise’ approaches to release
- Maintaining our position as market leader through strategic innovation
We are smith&nephew