



## 2010 Annual Meeting Podium Presentations

### Adult Reconstruction Hip 1: Metal-on-Metal Implants

#### **\*A Review of 585 Serum Metal Ion Results Post Hip Resurfacing: Cup Design and Position is Critical**

Podium No: 006

Tuesday, March 09, 2010

02:06 PM - 02:12 PM

Location: Morial Convention Center  
Room 265

**David Langton** Gateshead United Kingdom

Simon Jameson Middlesbrough United Kingdom

Thomas Joyce, PhD

Narendra Ramisetty, MBBS, AFRCS Stockton On Tees United Kingdom

Koen Aime DeSmet, MD Gent Belgium

Antoni Nargol, FRCS Yarm United Kingdom

Moderator(s):

Douglas A Dennis, MD Denver CO

Thomas P Schmalzried, MD Los Angeles CA

Size, design and position of resurfacing cups are critical factors leading to metal ion release

Definitive cup position for the reduction of blood metal ion levels has yet to be established.

Samples for serum metal ion levels are taken routinely from patients under the care of the two senior authors of this paper. Both are high volume experienced hip resurfacing surgeons. Metal ion results from two centres from patients with unilateral joints were correlated to size and orientation of femoral and acetabular components, UCLA activity score, age, time post surgery and post operative femoral head/neck ratios. EBRA software was used to assess cup inclination and anteversion on standing radiographs. 3 devices were studied.

There were 585 results in total. Only femoral size and cup inclination/anteversion were found to effect ion levels. In all devices, metal ion levels were inversely related to femoral size ( $p < 0.05$ ). The device providing the smallest acetabular coverage arc was associated with the highest metal ion levels. Consistent throughout the implants, lowest ion levels were associated with cups with radiological inclination of 40-50° and anteversion 10-20°. We used recognised biomechanical data to calculate the position of the articular contact patch in the standing position of each patient and related it to the cup rim (CPR distance). There was a highly significant inverse correlation between CPR distance and metal ion levels ( $p < 0.001$ ). (see diag) with a 50% chance of ion levels  $> 30\mu\text{g/L}$  when  $\text{CPR} < 5\text{mm}$ .

The greater the coverage angle provided by the acetabular component, the greater the tolerance to suboptimal position. Cup inclination/anteversion angles of 45/15+/-5° were associated with low ion levels in all devices.

A \* to the left of the title indicates the FDA has not cleared the drug or device for the described purpose.

An alphabetical listing of disclosures will be available at a later time.

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6300 North River Road Rosemont, Illinois 60018-4262 Phone 847.823.7186 Fax 847.823.8125

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