



University of HUDDERSFIELD

University of Huddersfield Repository

Brown, L., Zhang, H. and Blunt, Liam

Investigation of a possible wear mechanism at the cement head interface in hip resurfacing arthroplasty

Original Citation

Brown, L., Zhang, H. and Blunt, Liam (2009) Investigation of a possible wear mechanism at the cement head interface in hip resurfacing arthroplasty. In: International Conference on Bioengineering and Biomaterials, 18 - 20 March 2009, ENSAM, Meknes, Morocco. (Submitted)

This version is available at <http://eprints.hud.ac.uk/3912/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>

Investigation of a possible wear mechanism at the cement head interface in hip resurfacing arthroplasty

Leigh T Brown^{*}, Hongyu Zhang, Liam A Blunt

¹ Centre for Precision Technologies, University of Huddersfield, Queensgate, Huddersfield, HD1 3DH, UK

^{*} Corresponding author: Centre for Precision Technologies, University of Huddersfield, Queensgate, Huddersfield, HD1 3DH, UK. Fax: +44 (0)1484 473917; Email: l.t.brown@hud.ac.uk

ABSTRACT

Hip resurfacing arthroplasty is the latest development in the use of prosthetic joints in treating disorders such as osteo-arthritis, rheumatoid arthritis and necrosis of the hip. The third generation of resurfacing components requires only initial shaping of the femoral head, removing minimal cortical bone, thus preserving bone stock, the rationale being, the ability to offer the procedure at an earlier stage in life, as the possibility of primary traditional THR is retained. The hard on hard bearing combinations employing low friction metal alloys serve to minimise wear at the head cup bearing interface. There have been reports of aseptic loosening of the femoral component (Nishii et al 2007) and with the minimal wear generated at the bearing interface. In this study the back side of the component which typically interfaces with PMMA bone cement has been investigated using techniques developed when investigating fretting wear of femoral stems used in the more traditional total hip replacement procedures through simulation.

Key words: Wear, femoral stem, simulation, resurfacing

Topic: Biometrology