

<i>Title of study:</i> Study of Hip Geometry (SHIG)	<i>REC reference number:</i> 09/H1307/105	<i>Number of participants recruited:</i> 29
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<i>Date study commenced:</i> September 1st 2010	<i>Date study ended:</i> November 1st 2014	
PUBLICATION OF RESEARCH		
<p>Publication of the results of this study is currently limited to the following location: <u>Groves, Dawn (2015) Geometric Variances in Hip Osteoarthritis and Tribology of the Natural Hip. PhD thesis, University of Leeds.</u></p> <p>This can be accessed from the University of Leeds library and electronically from White Rose Etheses Online (http://etheses.whiterose.ac.uk/10415/) from November 1st 2016.</p>		
AIM OF THE STUDY		
<p>The human hip is a ball-and-socket joint and variations in the geometry of the femoral head (ball) and acetabulum (socket) affects how the ball and socket articulate with each other. It is thought that any variations in geometry causing changes to the contact and friction between the two joint surfaces could influence the onset and progression of osteoarthritis (OA). This study used high-resolution magnetic resonance imaging (MRI) scans to examine and compare the shape of the hip joint in a group of patients with hip OA with an age-matched asymptomatic control group.</p>		
SUMMARY OF THE RESULTS		
<p>Fourteen patients aged 50 years and over waiting for a total hip replacement due to OA, and fifteen patients of a similar age with no hip pain had an MRI scan at the Leeds Musculoskeletal Biomedical Research Unit, Chapel Allerton hospital, Leeds. The MRI data was analysed using a combination of two-dimensional (2D) measurements and three-dimensional (3D) models. All 2D measurements of hip shape and orientation taken from the scans were within the reported normal ranges for adults. However, it was noted that in general, the acetabulum socket of the control group participants was facing forwards to a greater degree than those of the OA group and additionally, the acetabulum provided greater coverage of the femoral head in this group. The 3D models were analysed visually and by using computational methods, and this showed that the overall shape of the hip in the OA group was less symmetrical than that of the control group. The main characteristics observed in the OA study group were flattening of the femoral head, extra bone growth (osteophytes) around the femoral head, and a smaller gap between the two joint surfaces. The majority of these changes probably occurred as a result of the OA disease process. A slow recruitment rate resulted in only a small number of participants entering the study, however, the principal aim of this study, which was to examine the shape of the hip joint in patients diagnosed with OA of the hip was achieved.</p>		