Display of US of the hip in the new born infant

At birth the femoral head is not yet ossified (not yet turned to calcified bone) and it is still possible to look at it structure with ultrasound (US) imaging.

A number of children when born will have a relative dysplasia of their hip(s) and a secondary dysplasia of their acetabulum (CDH). If treated early enough many of these children can be made to develop in a more normal manner by simple interventions such as by the wearing of ‘double’ nappies or ‘kicking’ splints. The forces abduction of the hip promotes the acetabular development and improves the coverage of the femoral head.

Long term untreated acetabular dysplasia is a cause of early development of osteoarthritis and is a recognised aetiology for hip replacement in a young person. If the condition is recognised late but before degenerative changes set in then corrective surgery can be undertaken; but with its known morbidity and even occasionally mortality.

The ability to screen for CDH at birth is based on US screening. Imaging of the hip is taken and the position is assessed. From these measurements it can be determined whether the hip is normal or not.

Hip screening, which was originally pioneered in Coventry, is now only limited to patients with a suspicion of CDH from clinical examination. The service has been reduced due to the lack of trained personnel to interrupt the images.

We wish to automate the interpretation of the hip US image and to give a measure that can be used clinically to serve as a guide to when to undertake the different clinical interventions.

We have access to a large number of scans both normal and abnormal to analyse and from this we hope to produce a computer based model for image interpretation.

The initial study will be to indentify the clinical landmark automatically and then to compare normal and abnormal before field testing the application.

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