



A NEW AID IN THE DIAGNOSIS OF CONGENITAL DISLOCATION OF THE HIP

COWIE, GH., BOGUES, BA., Kernohan, G., & MOLLAN, RAB. (1983). A NEW AID IN THE DIAGNOSIS OF CONGENITAL DISLOCATION OF THE HIP. *JOURNAL OF BONE AND JOINT SURGERY-BRITISH VOLUME*, 65(5), 656.

[Link to publication record in Ulster University Research Portal](#)

Published in:
JOURNAL OF BONE AND JOINT SURGERY-BRITISH VOLUME

Publication Status:
Published (in print/issue): 01/01/1983

Document Version
Publisher's PDF, also known as Version of record

General rights

The copyright and moral rights to the output are retained by the output author(s), unless otherwise stated by the document licence.

Unless otherwise stated, users are permitted to download a copy of the output for personal study or non-commercial research and are permitted to freely distribute the URL of the output. They are not permitted to alter, reproduce, distribute or make any commercial use of the output without obtaining the permission of the author(s).

If the document is licenced under Creative Commons, the rights of users of the documents can be found at <https://creativecommons.org/share-your-work/licenses/>.

Take down policy

The Research Portal is Ulster University's institutional repository that provides access to Ulster's research outputs. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact pure-support@ulster.ac.uk

PROCEEDINGS AND REPORTS OF UNIVERSITIES, COLLEGES, COUNCILS, ASSOCIATIONS AND SOCIETIES

GREAT BRITAIN

BRITISH ORTHOPAEDIC RESEARCH SOCIETY

A meeting of the British Orthopaedic Research Society was held at Charing Cross Hospital on March 4, 1983, with the President, Professor R. G. Burwell, in the chair.

SCIENTIFIC PAPERS

A new aid in the diagnosis of congenital dislocation of the hip—*G. H. Cowie, B. A. Bogues, W. G. Kernohan and Professor R. A. B. Mollan* (Belfast) said that in a number of retrospective studies no decrease in the numbers of late (or missed) congenital dislocations of the hip had been shown despite adequate screening. The detection rate at birth depended on the experience of the examiner. In Belfast they had been developing a harmless, non-invasive method of detecting dislocating or subluxating hips which would provide an objective result. The method was based on the detection and analysis of the vibration-emission from neonatal hips during Ortolani's and Barlow's tests. Piezoelectric accelerometers attached to the skin detected the emission which was then amplified and recorded on magnetic tape. The emission was displayed by an ink-jet recorder to identify and isolate the various clunks and clicks. More sophisticated analysis was carried out on a spectrum analyser.

Four groups of children had been studied. Those with normal hips at birth, those referred with clicks, those with unstable hips at birth and those with a missed dislocation of the hip. The normal hips produced no significant vibration-emission. The clicks produced a high frequency signal which differed significantly from the low frequency signal of the clunk of neonatal instability and the low signal of a late dislocation being reduced at operation. Within the group referred with clicks a significant number had a low frequency signal similar to that of the unstable hip. These children subsequently developed a subluxation which required treatment.

This study had shown that it was possible to differentiate the click from the clunk in neonatal hips. It gave objective evidence for the first time that the click was not innocuous and indicated a group of children who might develop a subluxation in the first months of life.

The assessment of joint mobility in orthopaedic research—*J. C. T. Fairbank, P. B. Pynsent and H. Phillips* (Norwich) said that joint laxity was usually assessed by the criteria laid down by Carter and Wilkinson which relied on three out of five joints measured reaching a particular end point, and which were based on a study in young children up to the age of 12 years. In a study of pain in the adolescent knee and back Mr Fairbank and his co-workers had been unhappy in using these methods in older children, as considerable information was lost; dorsiflexion of the foot in particular was difficult to measure accurately. Accordingly, quantitative measurements of joint mobility had been made in the arms and legs of 446 adolescents aged between 13 and 18 years. In the upper limb abduction of

the thumb, extension of the middle finger and of the elbow been measured and in the lower limb rotation of the hip, tibia and extension of the knee had been recorded. They found that all the measurements were normally distributed except tibial rotation which was skewed; that all joints tended to become less mobile with age over the sample measured, the exception of abduction of the thumb; that girls tended more mobile than boys, except for rotation of the hip; extension of the finger where mobility was equal, and extension of the elbow where boys were more mobile; that extension of the elbow correlated poorly with the mobility of the other joints measured, probably because the elbow has a bony stop to extension; and that adolescents with low backpain had reduced mobility in the legs compared with pain-free controls, but arms were normal. They concluded that whilst the method of Carter and Wilkinson was excellent for the clinical measurement of joint hypermobility (except that extension of the elbow was unreliable) it was inappropriate for research purposes where quantitative measurements should be used, and also for the clinical assessment of joint hypomobility, which is important in sporting injuries and low backache, and has clinical implications in diabetes of juvenile onset.

"Dry joints" in divers: an explanation—*J. Pooley and Professor D. N. Walder* (Newcastle upon Tyne) said that divers often complained during compression of pain and limitation of movement in major joints, a condition known as "dry joints". Subjectively, the joints appeared to lack proper lubrication. One explanation was that on exposure to compressed air the concentration of nitrogen in the blood rose above that of the tissues, and synovial fluid was, therefore, drawn from the joint cavity into the capillaries by "gas-induced osmosis".

While studying the effect of exposure to compressed air on circulation in both bone marrow and skeletal muscle in a rabbit, using a xenon-133 clearance technique, it had been found that there was a transient increase in xenon-133 clearance during compression and a decrease, or cessation, of clearance beginning on decompression. As no change either in systemic blood pressure or in intraosseous pressure had been found, it was felt that these observed changes in xenon-133 clearance could be more easily attributed to osmotically induced changes in capillary uptake of the isotope than to changes in blood flow. This idea had been tested by changing the tonicity of the arterial blood entering one limb by injection of either hypertonic or hypotonic saline, while observing xenon-133 clearance from bone marrow and skeletal muscle. A transient increase in xenon-133 clearance from both these tissues occurred after hypertonic injection and a corresponding reduction, or cessation, after hypotonic injection. These findings supported the hypothesis that the changes in isotope clearance from bone marrow and skeletal muscle observed on compression and decompression occurred as a result of osmotically induced capillary uptake of the isotope. This was taken as evidence for "gas-induced osmosis" occurring *in vivo* and would support the mechanism proposed above to account for the occurrence of "dry joints" in divers.