



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/jor](http://www.elsevier.com/locate/jor)

## Original Article

# Late recurrence of developmental dysplasia of the hip following Pavlik harness treatment until normal ultrasound appearance



Michael David<sup>a,\*</sup>, Curtis Robb<sup>b</sup>, Sandeep Jawanda<sup>b</sup>, Christopher Bache<sup>b</sup>, Christopher Bradish<sup>c</sup>

<sup>a</sup> Department of Paediatric Orthopaedics, Royal Orthopaedic Hospital, Birmingham B31 2AP, UK

<sup>b</sup> Department of Paediatric Orthopaedics, Birmingham Children's Hospital, Birmingham B4 6NH, UK

<sup>c</sup> Department of Paediatric Orthopaedics, Great Ormond Street Children's Hospital, London WC1N 3JH, UK

## ARTICLE INFO

## Article history:

Received 6 November 2013

Accepted 5 January 2014

Available online 22 January 2014

## Keywords:

DDH

Dysplasia

Recurrence

Ultrasound

Pavlik

## ABSTRACT

**Purpose:** Establish whether recurrent dysplasia once a dysplastic hip has been treated to ultrasonographic normality is possible.

**Methods:** 370 babies were referred to a hip ultrasound clinic from June 2005 to 2007 to assess for dysplasia. 96 dysplastic hips underwent appropriate treatment until normal hip morphology achieved on follow-up ultrasounds. Minimum further 12 months follow-up.

**Results:** 3 children (4%) developed late recurrence of dysplasia. Two required a plaster hip spica. One had an additional adductor tenotomy. One required late pelvic osteotomy.

**Conclusion:** This study highlights the need for long-term follow-up of dysplastic hips with an early pelvic X-ray at around six months.

Copyright © 2014, Professor P K Surendran Memorial Education Foundation. Publishing Services by Reed Elsevier India Pvt. Ltd. All rights reserved.

## 1. Introduction

The incidence of hip dysplasia, persistent on ultrasound assessment in babies aged 4–8 weeks, is 3–5 per 1000 births.<sup>1–5</sup> Early diagnosis and treatment can lead to a favourable outcome but neglected hip dysplasia can be devastating and often requires major surgery. The introduction of targeted ultrasound has led to a reduction, though not an abolition, of patients presenting with a late diagnosis.<sup>6</sup>

In the orthopaedic literature, prior to the advent of selective ultrasound screening, several authors postulated that a

form of late dysplasia may exist.<sup>7–9</sup> It has been argued that this may reflect the inaccuracies of clinical examination, pelvic rotation or the poor sensitivity and quality of hip radiographs.<sup>8,10–12</sup> However, it has also been suggested that there is a susceptible group of patients of polygenic aetiology with a risk of persistent acetabular dysplasia.<sup>13</sup> Length of follow-up period depends on whether we assume hips treated to 'normality' in the neonatal period with Pavlik harnesses develop normally thereafter, or whether a significant relapse risk exists. Since the advent of ultrasound screening programmes, a recent published report on Pavlik harness

\* Corresponding author. 'Ashiana', 35 Wrekin Road, Sutton Coldfield B73 5SU, UK. Tel.: +44 (0) 121 3556147, +44 (0) 7966 765712 (mobile). E-mail address: [michaeldavid@nhs.net](mailto:michaeldavid@nhs.net) (M. David).

treatment simply excluded late recurrence in their analysis and commentary.<sup>14</sup>

We undertook this study to determine whether babies treated successfully in Pavlik harness progress to recurrent dysplasia.

## 2. Methods

370 infants were retrospectively reviewed from an outpatient database at the Birmingham Children's Hospital from June 2005 until June 2007. Patients were referred either with a positive family history, breech presentation, another packaging disorder or clinical signs of instability. A review of all ultrasound images demonstrated 261 normal hips, 96 dysplastic hips in 76 children, and 32 patients were untraceable or failed to attend. All hips were clinically examined by the senior authors (CEB or CFB) and an ultrasound scan was performed by a musculoskeletal radiologist following the technique described by Harcke et al.<sup>15</sup> The ratio of femoral head cover was assessed according to the Morin<sup>16</sup> classification system with the transducer positioned laterally in a plane parallel to the long axis of the body with hip at 90° flexion. The first ultrasound was performed at a median average of 2 weeks of age (range 1–20). All hips were also assessed dynamically and repeat clinical and ultrasonographic examination was performed every 1–2 weeks for those babies with abnormal findings. For demonstration purposes, final ultrasound images were exported into JPEG format and alpha angles were calculated using ImageJ (version 1.47v 64-bit for Apple Macintosh, National Institutes of Health, USA).

For those patients in whom the hip was clinically unstable but reducible, a Pavlik harness was applied and continued until a normal clinical and ultrasound examination was achieved. It was left to the discretion of the consultant surgeon whether or not weaning was implemented. Stable hips with dysplasia were monitored initially and reassessed according to protocol within two weeks, with treatment escalated to a Pavlik harness if spontaneous improvement not observed. Double nappies were neither encouraged nor discouraged, as there is little evidence supporting its efficacy<sup>17,18</sup> and neither are direct complications reported. Ultimately the decision to nurse infants in double nappies during the “watch and wait” period was at parental discretion.

## 3. Results

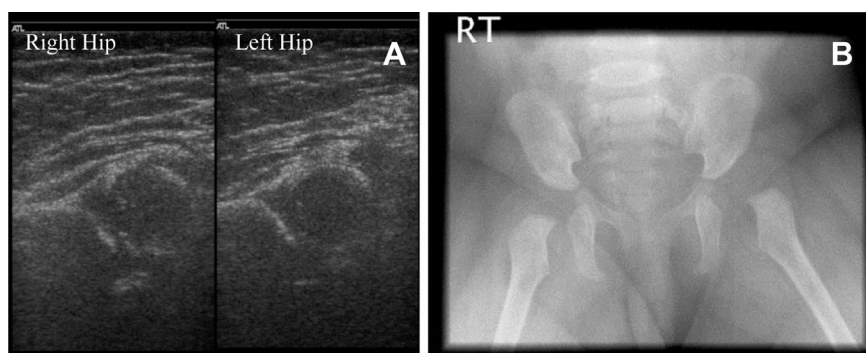
There were 96 dysplastic hips detected: 31 patients had dysplasia affecting the left hip, 25 the right, and 20 with bilateral pathology. Nineteen patients had a positive family history and 26 babies were breech presentations at birth. Initial treatment instigated; watch and wait 10%, Pavlik harness 78% and open reduction in 12%. More than half of the parents of children in the “watch and wait” group opted for double nappies (60%). If a Pavlik harness was used, it was first placed on the child at an average age of five weeks, and remained in the majority of patients for six weeks in total. 26% of patients were weaned. One patient developed a femoral nerve neuropraxia that resolved. Despite normal ultrasound findings on final follow-up ultrasound, further hip dysplasia was found in three patients:

### 3.1. Case 1

Third born female following a normal delivery. There was a positive family history with her elder sister requiring an open reduction. The first ultrasound was performed at 2 weeks of age. The femoral cover was assessed at 20% on both sides initially. Pavlik harness treatment was commenced at two weeks of age for a seven-week period. The final ultrasound can be seen (Fig. 1A) with more than 50% femoral head cover on both sides (alpha angles 62° on the left and 65° on the right). Following harness removal at nine weeks of age the patient was reviewed with radiographs at six months of age. This demonstrated a dysplastic left hip (Fig. 1B). She was then treated by EUA, arthrogram and hip spica for three months with a CT scan confirming adequate femoral head reduction.

### 3.2. Case 2

First-born Caucasian female delivered via caesarean section for breech presentation. The first ultrasound examination was performed at eight weeks of age when the hips were felt to be clinically stable. The ultrasound examination at this time showed 50% cover on both sides but both acetabulae were reported as shallow. The patient was placed in double nappies for 2 weeks following, which repeat ultrasound examination was normal (Fig. 2A). However, again at six months a pelvic radiograph demonstrated a dysplastic left hip, which was clinically dislocatable (Fig. 2B). The patient went on to have an



**Fig. 1 – (A) USS appearance before Pavlik harness removed in Case 1 with alpha angles > 60° bilaterally and femoral head coverage over 50%. (B) Pelvic radiograph at 6 months age, showing recurrent dysplasia on the left.**

Download English Version:

<https://daneshyari.com/en/article/3251686>

Download Persian Version:

<https://daneshyari.com/article/3251686>

[Daneshyari.com](https://daneshyari.com)