

SPECIALISTS' CORNER



The Importance of Hip Surveillance in Cerebral Palsy

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Cerebral palsy (CP) is a descriptive term for a group of disorders affecting motor function as a result of non-progressive disturbances that occur in the developing brain. It is the leading cause of childhood disability worldwide, affecting nearly 3 in every 1000 live births. Over 17 million people are living with CP globally, all of which are at risk for hip dislocation. The severity of each individual's risk is directly related to severity of neurologic involvement and level of gross motor impairment. The overall resulting incidence of hip displacement in children with CP is estimated to be 35%. In the most severely affected children – those who are non-ambulatory – the risk of hip displacement exceeds 85%. Displacement has been associated with increased pain levels, impaired quality of life, functional impairment affecting ability to sit, stand or walk and difficulty with hygienic care.

Proactive surgical intervention for displaced hips in ambulatory children is universally accepted, as reduced hips provide a stable platform for walking. For non-ambulatory patients, maintaining hips in a reduced position allows for proper perineal care, sitting balance, maintaining the ability to perform standing transfers and possibly reducing the risk of developing neuromuscular scoliosis. Regardless of ambulatory status, well-reduced hips are associated with improved quality of life in all children with CP. As such, it is imperative to maintain located hips whenever possible.

There is growing evidence supporting the efficacy of systematic hip surveillance for children with CP to identify hips at risk, allowing for early surgical intervention and prevention of frank dislocation. Despite the recognized importance of hip surveillance by North American pediatric orthopaedic surgeons, surveillance efforts in the United States have been limited. In contrast, national and regional surveillance programs have been successfully incorporated in Australia, parts of Europe, and British Columbia as part of evidence-based care for children with CP. Both the Australian and Swedish protocols have demonstrated the ability of surveillance programs to

identify children at risk and prevent dislocations in their respective populations. However, the success of these models is dependent on the setting in which they are implemented. Each require the identification of all children with CP, universal access to surveillance, prompt access to orthopaedic surgeons and “buy in” from caregivers, providers and policymakers. Nevertheless, their outcomes are encouraging. In Sweden, the incidence of hip dislocations dropped from 9% to 0% after implementing their national surveillance program.

While the details of each surveillance schedule vary, each program largely considers age and ambulatory status in determining frequency of follow-up, as both are correlated with dislocation risk. The simplest and most successful program is that from Sweden. All children with CP are evaluated clinically every 6-12 months. Those that walk without limitations do not require radiographic surveillance, those that walk with mild limitation require radiographic evaluation at 2 and 6 years, and those that are moderately to severely limited require radiographs yearly through age 8 and less frequently through skeletal maturity. An individual’s surveillance schedule is subject to change based on previous radiographic findings identified with a supine AP pelvic radiograph (fig. 1) and any changes in clinical examination (i.e. decreased hip range of motion).



Figure 1. Example of a pelvic xray taken for hip surveillance with a right hip near-dislocation (subluxation)

As stated, there is currently no American protocol for hip surveillance. However, the American Academy of Cerebral Palsy and Developmental Medicine recently published their recommendations, and the Pediatric Orthopaedic Society of North America is currently undertaking efforts to develop an American surveillance program that could be implemented across a wide variety of providers throughout the United States. And while the burden of surveillance lies with the orthopaedic surgeon, pediatricians and family practitioners play a key role in early identification and referral to a pediatric orthopaedic surgeon with a special interest in CP so that hip surveillance may commence. Further, primary care providers caring for children with CP should include a hip examination in these children’s yearly physicals. Any reduction in hip abduction with the hips and knees in an extended position (fig. 3) and/or any increase in hip flexion contracture as evidenced by a positive Thomas test (fig. 2) compared to previous examinations warrants further investigation. This expedited hip exam is easily performed in any clinical setting and may result in earlier identification and appropriate treatment of a potentially painful, often debilitating hip dislocation.

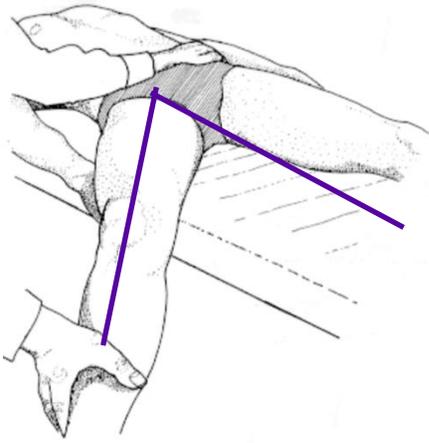


Figure 2. Hip abduction tested with hips and knees in an extended

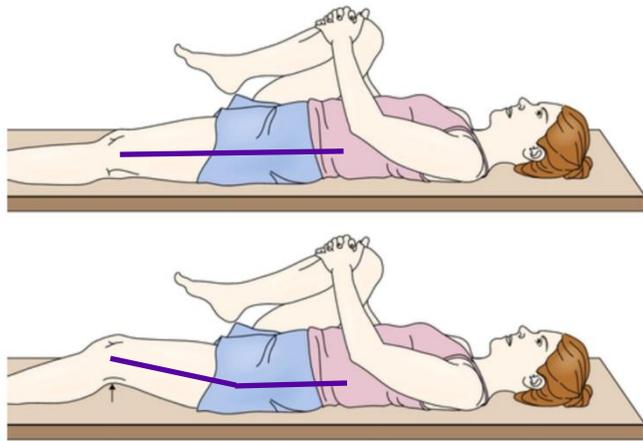


Figure 3. In flexing both hips and knees maximally, the examiner “levels” the pelvis. The examiner then allows one leg to drop toward the table, maintaining a level pelvis and revealing an underlying hip flexion contracture. Image 1 is a negative Thomas test, indicating no hip flexion contracture. Image 2 is a positive Thomas test, indicating a hip flexion contracture.