Hip Dislocation in Children: Predicting Treatment Success

Physical Therapy in Baton Rouge for Pediatric

Sixty years ago, Dr. Arnold Pavlik designed a special harness for the treatment of developmental dysplasia of the hip (DDH). It is still in use today as the number one choice for this condition in babies.

Developmental dysplasia of the hip is a common disorder affecting infants and young children. In this condition there is a disruption in the normal relationship between the head of the femur (thigh bone) and the acetabulum (hip socket). DDH can affect one or both hips. It can be mild to severe. In mild cases called unstable hip dysplasia, the hip is in the joint but easily dislocated. More involved cases are partially dislocated or completely dislocated. A partial dislocation is called subluxation.

Studies show that the Pavlik harness is successful in reducing hips that are already dislocated (but can be put back into the socket), hips that can be dislocated with certain positions, and subluxated hips 61 to 99 per cent of the time. The harness treatment is easy and inexpensive.

The harness holds the child's hips in a flexed and abducted (legs apart) position. This places the round head of the femur (thigh bone) right in the hip socket. The contact and pressure help form a deeper, more stable hip joint. And best of all for the parents, the harness does not have to be removed for diapering.

In this study, two groups of infants ages birth to three months with developmental dysplasia of the hip (DDH) were treated with the Pavlik harness. Children in group one had DDH in both hips. This is referred to as bilateral DDH. Children in group two had unilateral (one-sided) DDH. The purpose of the study was to see if children with DDH have a worse outcome when treated with the Pavlik harness compared to children with only one hip affected who are treated in the same way.

Previous studies have shown other factors to be predictive of treatment failure with the harness. Those factors include putting the harness on wrong, not using the harness as described (all day, everyday), positive family history of developmental dysplasia of the hip, and breech position (feet or bottom first) at birth. Starting treatment too late is also a risk factor. And children whose hips don't reduce or relocate at the time of diagnosis are less likely to be helped by the harness.

So, is having bilateral DDH yet another factor that predicts failure with conservative (nonoperative) treatment? The results of this study suggest no. The 29 children in group one (bilateral DDH) had equal results to the 38 children in group two. Treatment with a Pavlik harness was the same for both groups. Criteria for being in the study was the same, too: DDH in one or both hips that could be relocated or reduced. No one who had a hip that wouldn't go back into the socket was allowed in the study. Ultrasound imaging was used to diagnose DDH, confirm reducibility, and monitor results over time.

The children in both groups were supposed to wear the Pavlik harness at all times except for bathing. Parents or a family member brought the children into the clinic once a week to check their progress and make sure the harness was being used properly. Not enough hip abduction could result in dislocation. Too much hip abduction can cut off the blood supply to the head of the femur causing a condition called avascular necrosis (death of bone from lack of blood supply). The acceptable position between 35 and 75 degrees of hip abduction is called the safety zone.

As mentioned, analysis of the results showed that there was no difference in success or failure rates between
the two groups. Successful results were achieved in both groups on average between three and four months. The failure rate was slightly more than half for both groups -- 58 to 59 per cent of the children in both groups were not helped by the harness. The harness was worn until X-rays and sonographs showed a stable, mature hip position without the harness. Full hip range of motion was present and the hip did not slide out of the joint when tested. Those who failed treatment with the harness went on to have surgery.

The authors concludes that bilateral hip dislocations associated with developmental dysplasia of the hip does not increase the risk of treatment failure using the Pavlik harness. Families can expect to use the harness for a period of time that is equal to two times the age of the child. For example, if the child is two months old, then treatment will likely last four months. Age used in the calculation is the age of the child when the harness was first applied. There's some evidence that treatment takes a little longer when both hips are dislocated, but further study is needed to confirm this idea.

Previous studies have suggested that bilateral involvement is more severe and that this risk factor contributes to poor treatment results. The selection of patients in this study included fully dislocated hips in all patients. Results were equally poor in both groups (only a 41 per cent success rate) -- far below the average reported by other studies. The authors suggest the poor overall outcomes in this study are because all of the hips were fully dislocated (not in the socket but easily dislocated and not subluxed) and the harness was used much longer without measurable results than the recommended three weeks when treatment should be reassessed and surgery considered.