

Section Editor: Steven F. Harwin, MD

The Use of the Lotus Position During Spica Cast Application for the Treatment of Developmental Dysplasia of the Hip: A Technical Note

Yaniv Keren, MD; Shadi Sadia, MD; Mark Eidelman, MD

Abstract: Closed reduction and application of a spica cast is a standard treatment in children younger than 18 months. Proper abduction and flexion is crucial during cast application. The surgeon, who usually stands holding the lower limbs, often finds this position cumbersome and difficult to control limb position. During the past 6 years, we have used the lotus (crossed legs) position for the surgeon to achieve better control on hip flexion and abduction, therefore minimizing possible complications such as osteonecrosis of the femoral head.



Figure: The lotus position during application of a spica cast.

Closed reduction and hip spica casting under general anesthesia is required for children with developmental dysplasia of the hip in the case of failed harness treatment or children older than 6 months. Below this age, harness treatment, such as that with a Pavlik harness, is the treatment of choice. For patients with an unreliable family or unfav-

orable social situation who are younger than 6 months, closed reduction and hip spica casting may also be the treatment of choice, because occasionally one cannot trust those families to comply with harness treatment.¹

The cast is applied with the hips held in approximately 100° of flexion and controlled abduction (usually

40°-50°)—the so-called human position.² The concept of the human position is widely accepted among pediatric orthopedic surgeons. However, correct application of a spica cast is not an easy task.³ One problem encountered during casting is the difficulty holding the legs in proper flexion and abduction. This is crucial because hip abduction angles >55° have been shown to be statistically associated with the development of osteonecrosis.⁴ The limb holder can lose reduction due to fatigue. This happens because traditionally the surgeon holds the limbs from the side or standing at the end of the table,

bending forward and stretching his arms to reach the spica table, which has to stay close to the anesthesiologist.

MATERIALS AND METHODS

During the past 6 years, we have performed this procedure with the surgeon sitting in the lotus position (crossed legs). From 2003 to 2009, we applied this method in 51 patients with developmental dysplasia of the hip.

SURGICAL TECHNIQUE

The surgeon holds the limbs while sitting on the operating table in front of the spica table (Figure). This position allows him to control the position of

Drs Keren and Eidelman are from the Department of Pediatric Orthopedic Surgery, and Dr Sadia is from the Department of Orthopedic Surgery B, Rambam Health Care Campus, Haifa, Israel.

Drs Keren, Sadia, and Eidelman have no relevant financial relationships to disclose.

Correspondence should be addressed to: Yaniv Keren, MD, Department of Pediatric Orthopedic Surgery, Rambam Health Care Campus, Bat Galim, Haifa, 31096, Israel (y_keren@rambam.health.gov.il).

doi: 10.3928/01477447-20110714-12

the limbs with much less effort compared to other positions. All casts were constructed to keep the children's hips in the human position.

RESULTS

In all cases, we achieved acceptable reduction of the hips. Only 2 patients had signs of mild osteonecrosis on postoperative radiographs. These patients were girls aged 6 and 8 months who had type 1 osteonecrosis according to Kalamchi and MacEwen.⁵ Abduction angles in those cases were within the safe range of 40° to 50°.

DISCUSSION

According to our experience, we recommend using the lotus position during application of a spica cast for developmental dysplasia of the hip. We believe that this position is more convenient and helps the

surgeon achieve precise abduction and flexion of the hips, which can lead to better treatment results with reduced complication rates. □

REFERENCES

1. Guille JT, Pizzutillo PD, MacEwen GD. Developmental dysplasia of the hip from birth to six months. *J Am Acad Orthop Surg.* 2000; 8(4):232-242.
2. Weinstein SL, Mubarak SJ, Wenger DR. Developmental hip dysplasia and dislocation: Part II. *Instr Course Lect.* 2004; (53):531-542.
3. Wenger DR, Rang M. *The Art and Practice of Children's Orthopaedics.* New York, NY: Raven Press; 1999.
4. Smith BG, Millis MB, Hey LA, Jaramillo D, Kasser JR. Postreduction computed tomography in developmental dislocation of the hip: part II: predictive value for outcome. *J Pediatr Orthop.* 1997; 17(5):631-636.
5. Kalamchi A, MacEwen GD. Avascular necrosis following treatment of congenital dislocation of the hip. *J Bone Joint Surg Am.* 1980; 62(6):876-888.