

## Chiari Osteotomy - A Salvage Surgery for Acetabular Augmentation in Developmental Dysplasia of the Hip with Arthrogyrosis

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### INTRODUCTION:

Chiari osteotomy, used as a salvage procedure for non-concentrically reduced hips, involves a supra-acetabular medial displacement pelvic osteotomy, aim to enhance femoral head coverage by enlarging the capacity of an inadequate acetabular roof.[1] Arthrogyrosis, a condition characterized by multiple joint contractures, affects the hips in 55-90% of patients. Hip reduction can be complicated by recurrent deformities stemming from peri-articular fibrosis and a thickened joint capsule.[2]

### REPORT:

A 10-year-old girl diagnosed with arthrogyrosis and right developmental dysplasia of the hip (DDH) since birth. Despite underwent open reduction, acetabular repositioning, and femoral vara derotational surgery, she continued to experience persistent right hip subluxation. She exhibited bilateral hip abductor muscle weakness, along with a fixed flexion deformity of 10° and a globally reduced range of motion in both hips.

A Chiari osteotomy was performed with the intention of increasing acetabular coverage and enhancing her ambulation. Anterior approach via bikini incision used and a series of osteotomies were made to reposition the acetabulum with the first cut started just proximal to the joint capsule and angled upwards at 7–10°. The leg was abducted by 45° and pushed against the acetabulum, achieving the desired medial displacement. The osteotomy was secured with two K-wires followed by 6.5 mm cannulated partially threaded screws.

The surgical procedure yielded a successful outcome with a united osteotomy site. The patient's remaining challenge was to diligently work on strengthening her hip abductor muscles to improve her mobility and overall function.



2 (A)

2 (B)

2 (C)

**Figure 1:** Pre-operative pelvic X-ray of patient at 10-year-old (anterior-posterior view) showing bilateral hip subluxation, poor acetabular coverage and non-concentrically reduced.

**Figure 2:** 10° upward osteotomy angle from the lateral to medial direction while avoiding the sacroiliac joint (A). K-wire inserted to secure the osteotomy site after the medial displacement of the right acetabulum (B), followed by the insertion of two 6.5mm cannulated screws (C).

### CONCLUSION:

Every effort should be made to attain a concentric reduction of the hip in cases of DDH. However, when all available methods have been exhausted, Chiari osteotomy can serve as a preferred salvage procedure for non-concentric hip in patients over 10 years old.

### REFERENCES:

1. Zenz, P. and W. Schwägerl, *Chiari Osteotomy of the Hip*. 2014. p. 2335-2342.
2. Stilli, S., et al., *Management of hip contractures and dislocations in arthrogyrosis*. Musculoskeletal surgery, 2012. **96**: p. 17-21.