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TITLE: Introducing a Novel Combined Acetabuloplasty and Chondroplasty Technique for the Treatment of Developmental Dysplasia of the Hip

BACKGROUND: The aim of the treatment of developmental dysplasia of the hip (DDH) is to maintain a concentric reduction. We describe a novel approach to treat DDH that involves improvement of cartilaginous acetabular coverage, involves the preservation of the secondary ossification center of the acetabulum, and is adjunctive to early open reduction.

METHODOLOGY: Thirty-nine children (40 hips) aged six to 18 months were included in the study. Open reduction with chondroplasty was performed during the same surgery. Patients were followed up for 15 years with both clinical and radiological assessments. At the final follow-up, all patients were graded as good or excellent according to Severin's classification.

RESULTS: The mean age at reduction was 11.9 months (range: 8-16). The mean preoperative acetabular index (AI) was 43.43 (range: 40-48). After the operation, mean AI decreased to 16.97 ($P < 0.0001$, 95% confidence interval (CI) = 16.24-17.70). AI improved significantly during growth (mean AI changes 13.50, $P < 0.0001$, 95% CI = 12.65-14.34). The mean lateral center-edge (CE) angle at skeletal maturity was 32.94° (SD = 4.16°). Mild avascular necrosis (AVN) was observed in two hips with involvement of the epiphysis and was of Kalamchi grade 1.

CONCLUSION: Chondroplasty in conjunction with open reduction can yield a concentric reduction with improved acetabular coverage that facilitates acetabular remodeling that is sustained until skeletal maturity. Prompt correction through this procedure may help to improve the development of the hip and lead to near normal function as demonstrated by improved mean AI and Severin scores at the last follow-up. With low complication and reoperation rates, this procedure could be considered as a surgical treatment option for DDH in patients between the age of six and 18 months.

KEYWORDS: hip, chondroplasty, early open reduction, acetabular coverage, developmental dysplasia of the hip