PERIACETABULAR OSTEOTOMY FOR HIP DYSPLASIA: PREOPERATIVE PREDICTORS OF OUTCOME

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INTRODUCTION

Uncorrected hip dysplasia leads to secondary osteoarthrosis and is the most common etiology hip osteoarthrosis treated by total hip arthroplasty in young patients. Periacetabular osteotomy now is established as an extremely effective treatment to delay and possibly prevent osteoarthrosis of the dysplastic hip. Many factors can be identified preoperatively that may affect outcome. Measurable factors include the degree of secondary osteoarthrosis, sphericity of the joint surfaces, severity of the acetabular dysplasia, and severity of any associated femoral deformities. The purpose of this study is to prospectively analyze these preoperative variables in a consecutive group of patients treated by periacetabular osteotomy to identify preoperative factors that may predict outcome.

MATERIALS AND METHODS

Ninety-five consecutive hips in 87 patients treated by periacetabular osteotomy for symptomatic hip dysplasia were studied prospectively. Patients were evaluated clinically and radiographically with an anteroposterior (AP) pelvis and a false profile view of the affected hip (fig 1a). Hips with limited motion, subluxation, secondary osteoarthrosis, or joint surfaces that appeared aspherical also had functional radiographic evaluation. Functional radiographs include an AP pelvis in maximum abduction and a false profile view with the hip flexed (fig 1b). These radiographs were taken to simulate the appearance of the hip after periacetabular osteotomy. The abduction view is intended to simulate the appearance of the hip with imiproved lateral coverage. The false-profile view in flexion is intended to simulate the appearance of the hip with improved anterior coverage (fig 1c).Of the 95 hips, 52 hips in 49 patients were studied for a minimum of 2 years after surgery. Thirty-six hips (69%) were in females and 16 hips (31%) were in males. Patients had a mean age of 35.1 +/- 8.1 years (range, 15.8-55.1 years). Mean followup was 5.4 +/- 2.6 years (range, 2.1 to 9.6 years).

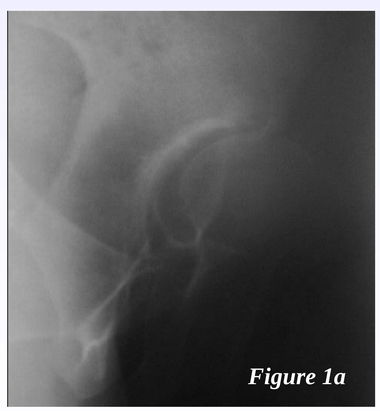


Figure 1a

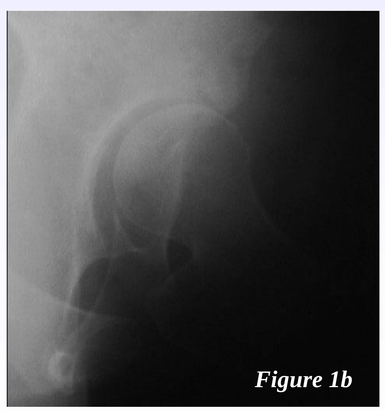


Figure 1b

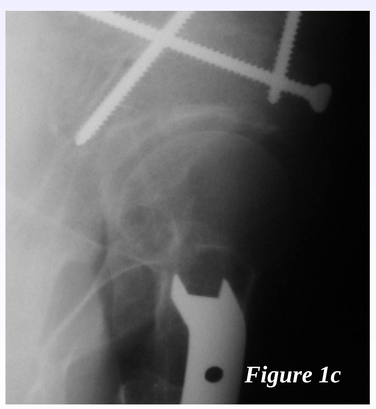


Figure 1c

RESULTS

Preoperatively, none of the hips were Tonnis Grade 0, 21 were Grade 1, 22 were Grade 2, eight were Grade 3 and one was Grade 4. The lateral center-edge angle averaged 4.2 +/- 9.5° (range, -21 - 24°) and the anterior center-edge angle averages 5.6 +/- 12.4° (range, -40 - 23°). Postoperatively, the lateral center-edge angle averaged 31 +/- 10.7° (range, 5 - 54°) and the anterior center-edge angle averaged 33.8 +/- 11.3° (range, 10 - 56°). Six of the 52 hips failed. None were Grade 0 or 1, four were Grade 2, one was Grade 3, and one was Grade 4 preoperatively. Of grades 1 and 2 hips, there were one of 40 failures in hips with spherical motion. Two of the four Grade 2 hips that failed had aspherical motion that could not be improved surgically. The remaining Grade 2 hip that failed had a false acetabulum. Only one of the eight Grade 3 hips failed and could be distinguished from the other Grade 3 hips. The seven other Grade 3 hips all showed the absence of localized narrowing on functional radiographs (Figs 2a - 2d). These seven of the eight hips with Grade 3 osteoarthrosis had stable cartilage space intervals develop despite very severe localized cartilage interval narrowing visible on the presenting AP or false profile radiographs of the hip in a neutral position. The only Grade 4 hip failed and was concentric but failed because it was worn out extensively at the time of surgery. Time to failure was within 2 years. Radiographic findings clearly predictive of impending failure were visible well within a year of surgery. There was no statistical significance between age, weight, severity of dysplasia or degree of femoral deformity and outcome.

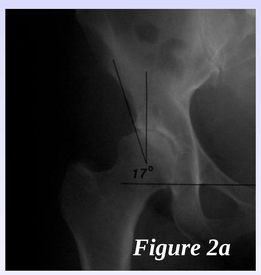


Figure 2a

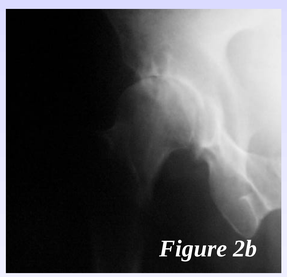


Figure 2b

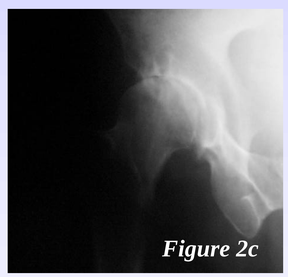
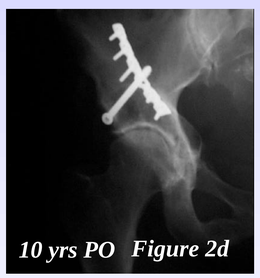


Figure 2c


10 yrs PO Figure 2d

CONCLUSION

Based on the current study, an excellent prognosis after periacetabular osteotomy can be anticipated for spherical hips with Grades 0 to 2 osteoarthrosis and a good prognosis after periacetabular osteotomy can be anticipated for spherical hips with Grade 3 osteoarthrosis provided that the appearance of the joint improves on functional radiographs. Aspherical hips represent special, high risk cases that need to be considered individually.

ACKNOLWEDGEMENTS

The study was funded in part by the AO/ASIF Foundation.
Neither author received financial interest regarding the topic of this manuscript