Periacetabular Osteotomies Lead to Improved Long-Term Patient-Reported Outcomes: A Systematic Review

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INTRODUCTION:
Periacetabular osteotomy (PAO) has demonstrated favorable outcomes for the treatment of hip dysplasia at short- and mid-term follow-up. The durability of these outcomes at long-term follow-up is still being established. The goal of this study was to conduct a comprehensive systematic review to assess the reoperation rates and long-term patient-reported outcomes of PAO for the treatment of hip dysplasia.
METHODS:
A systematic review of the literature was conducted in August 2023, with the keywords: (periacetabular osteotomy) AND (patient-reported) AND (outcomes) in PubMed, Cochrane, and Scopus. The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) criteria were used. Studies that reported patient-reported outcomes with a minimum mean of 10-year follow-up were included. Background information was recorded, including title, author, study design, level of evidence, patient demographics, radiographic information, patient-reported outcomes (PROs), and secondary surgeries.
RESULTS:
Eight studies covering 984 hips that underwent PAO between 1984 and 2014 were included (Figure 1). Five studies were level III evidence and three were level IV. The mean study follow-up periods ranged between 120.0-348.2 months. The mean ages ranged from 23.0 to 39.9 years at the time of surgery (Table 1). Secondary surgery rates ranged from 2.6-57.3% and conversion to total hip arthroplasty (THA) rates were 0-56% (Table 2). Risk factors for failure of PAO, defined as conversion to THA, radiographic progression of osteoarthritis or poor outcomes scores (Table 3), included increasing age at the time of surgery (4 studies), preoperative osteoarthritis (Tönnis Grade >1, 4 studies), and preoperative patient-reported scores (Postel score <15, 2 studies). All studies reported a significant improvement between preoperative and postoperative PROs. Mean modified Harris Hip Scores (mHHS) ranged from 61.9-83.0 preoperatively compared to 84.6-97.0 postoperatively (Figure 2). Mean Merle d'Aubigne-Postel scores ranged from 14.0-15.0 preoperatively and 16.0-17.0 postoperatively (Figure 3, Table 4).
DISCUSSION AND CONCLUSION: Patients who underwent PAO surgery for the treatment of hip dysplasia demonstrated significant improvement in PROs at minimum mean 10-year follow-up; however, there were variable rates of secondary surgeries. Risk factors associated with failure included advanced age, Tönnis Grade >1, and lower preoperative PROs. These findings provide important information on the durability of long-term outcomes for PAO.