Professional Athlete Return to Sport following Hip Arthroscopy with Femoral Osteoplasty: No Association with Postoperative Alpha Angle

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INTRODUCTION:

The alpha angle has been been widely used in identifying cam morphology in symptomatic femoroacetabular impingement in the preoperative setting. Since its inception, its use has expanded to encompass intra- and postoperative assessment with the aims of guiding optimal cam resection and predicting outcomes after cam resection. Whether the alpha angle is a reliable operative metric and/or an accurate independent predictor of outcomes after femoral osteoplasty in hip arthroscopy remains debated, especially considering its lack of validation in the postoperative setting and the continued avoidable and substantial complication of femoral over-resection.

METHODS: Alpha angle was measured on available postoperative cross-table lateral or Dunn radiographs of professional or Olympic athletes who underwent femoral osteoplasty by the senior surgeon (MJP) between January 2009 and September 2018. Publicly available data was collected on included patients including level of competition, time to professional or Olympic competition after index surgery, career length after surgery, and level of play after surgery.

RESULTS: A total of 283 patients (327 hips) were included, comprised of 280 male and 47 female hips. The average age was 27.2±4.8 (18.7-53.5). Out of 22 different sports, hockey, baseball, and football were the most common sports represented. All hips (327, 100%) underwent femoral osteoplasty, with 302 (92%) hips undergoing concomitant acetabuloplasty. Mean postoperative alpha angle (degrees) was 51± (94-32). Eighty-one percent (265 hips, 232 athletes) returned to sport with a mean return to sport time length (months) of 8.3±5.9 (1.5-37.9). Of the 265 hips that returned, 246 (93%) returned to play in the next available season after hip arthroscopy. There was no difference in postoperative alpha angle, age, or career length prior to surgery between those who returned to sport and those who did not ($p>.05$ for all). No correlation was observed between time to return to sport and postoperative alpha angle ($r=.109$, $p=.085$). Odds ratio of not returning to sport was not significantly different between hips with postoperative angle <70 degrees and 70 degrees (OR 1.05, 95% CI .29-3.82).

DISCUSSION AND CONCLUSION: In our cohort of 238 (327 hips) professional and Olympic athletes, postoperative alpha angle was not a predictor of rate or timing of return to sport. This study provides valuable evidence that the alpha angle is not a reliable predictor of postoperative return to sport metrics in high-level athletes and that its utility as a primary metric in operative planning and the assessment of cam resection appropriateness should be subject to further scrutiny.