In Situ Pinning for Slipped Capital Femoral Epiphysis: Conversion to Hip Arthroplasty and Patient Reported Outcomes at Long-Term 20 Years Follow Up

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INTRODUCTION: In-situ pinning is the standard of care for patients with slipped capital femoral epiphysis (SCFE). Previous studies have debated its role in treating unstable or severe slips, with some advocating for open reduction and internal fixation. Previous, short term follow up studies, have demonstrated varying outcomes following pinning and unclear relationships between slip characteristics and the need for additional surgery. In this study, we evaluated the long-term survival free of total hip arthroplasty (THA) and patient reported outcomes (PROs) after more than 20 years of follow up in patients that underwent in situ pinning for SCFE.

METHODS: We conducted a retrospective review of our institutional cohort of patients treated with in-situ pinning for SCFE at a single, tertiary referral center. Medical records were reviewed for patient demographics, slip stability (Loder criteria), severity (Southwick classification), and need for reconstructive surgery. Validated PROs were collected, including the HOOS, SF-12, VAS for pain and stiffness, UCLA Score, and mHHS.

RESULTS: A total of 127 patients (130 hips) were identified. Mean follow-up was 22.2 years (range 3.0-47.7). Conversion to THA occurred in 32 hips (24.6%) at latest follow up. Higher slip severity was significantly associated with higher odds of THA (OR=1.982, p=0.027), while slip stability was not predictive of conversion to THA (p=0.879). Kaplan-Meier analysis demonstrated a mean survivorship to THA of 28.03 years (SE=1.88). At latest follow-up, mean VAS pain score was 2.4 (SD=2.7), VAS stiffness score was 2.0 (SD=2.4), UCLA activity score was 5.0 (SD=2.3), SF-12 physical was 47.1 (SD=10.7), SF-12 mental was 54.7 (SD=9.1), mHHS was 81.3 (SD=15.7), and HOOS-12 was 83.0 (SD=17.4).

DISCUSSION AND CONCLUSION: In our cohort at more than 20 years of follow-up, we observed 75.4% survivorship free from THA following in-situ pinning for SCFE. Severe slips were twice as likely to be converted to THA compared to mild slips, highlighting the clinical significance of slip severity. Contrary to prior literature, mild slips were not associated with increased odds of conversion to THA. PROs indicate that in the long term, SCFE patients after in situ pinning have mild pain and stiffness, preserved physical functioning, and are able to maintain moderate activity levels.