

# PROSPECTIVE EVALUATION OF IN SITU SCREW FIXATION FOR STABLE SLIPPED CAPITAL FEMORAL EPIPHYSIS

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## OBJECTIVES:

In situ screw fixation is the standard of care for the treatment of stable slipped capital femoral epiphysis (SCFE), however, recent studies recommend treatment of all slip-related cam deformity to prevent degenerative changes due to femoroacetabular impingement (FAI). The purpose of this study was to prospectively evaluate radiographic and patient reported outcomes after in situ screw fixation for SCFE with minimum 2-year follow-up.

## METHODS:

After obtaining IRB approval, we prospectively collected data on all consecutive SCFE patients who underwent in situ screw fixation at a single institution. Demographic information, Southwick slip angle (SSA) and alpha angle were recorded. The Hip disability and Osteoarthritis Outcome Score (HOOS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were collected. Basic descriptive statistics, the Mann-Whitney test, and correlation analysis was performed.

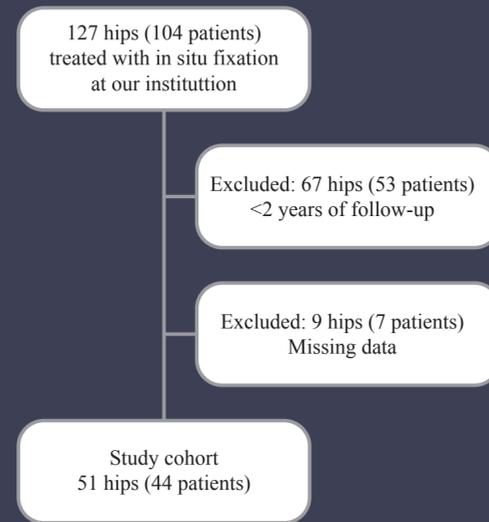


Figure: 7 year follow up of a stable moderate slip treated with in situ pinning.



Figure: 4 year follow up of a stable severe slip treated with in situ pinning, and subsequently an Imhauser procedure to correct residual deformity.

## Secondary procedure comparison

		No Reoperation (n=40)	Reoperation (n=11)	p value
BMI at index procedure	Mean±Std Dev.	30.1±9.3	27.2±5.2	0.689
	Range	17.5 to 53.9	18.5 to 34.5	
Severity	Mild	14 (35%)	0 (0%)	<0.001
	Moderate	20 (50%)	3 (27%)	
	Severe	6 (15%)	8 (73%)	
SSA (pre-operative)	Mean±Std Dev.	36.0±14.6	63.0±22.0	0.001
	Range	11 to 70	34 to 101	
SSA (most recent follow up)	Mean±Std Dev.	27.7±12.2	25±13.1	0.723
	Range	2 to 59	5 to 40	
Alpha angle (AP)(most recent follow up)	Mean±Std Dev.	80.0±22.0	100.1±17.5	0.012
	Range	37 to 120	69 to 126	
Alpha angle (frog)(most recent follow up)	Mean±Std Dev.	65.6±24.5	99.0±17.8	<0.001
	Range	38 to 124	74 to 136	
HOOS	Mean±Std Dev.	86.2±16.1	81.1±17.6	0.341
	Range	47.4 to 100	39.5 to 100	
WOMAC	Mean±Std Dev.	88.9±13.9	87.1±13.3	0.421
	Range	47.7 to 100	59.6 to 100	
mHHS	Mean±Std Dev.	84.2±15.2	84.9±16.8	0.93
	Range	52.8 to 100.1	59.4 to 100.1	
UCLA	Mean±Std Dev.	7.7±2.7	6.7±2.8	0.333
	Range	2 to 10	3 to 10	

## RESULTS:

Fifty-one hips in 44 patients with an average pre-op SSA of  $42.0^{\circ} \pm 19.8^{\circ}$  were studied. We observed one surgical complication of the index procedure, 1 case of avascular necrosis, and 2 hips with symptomatic osteoarthritis. Eleven hips went on to have a secondary procedure on average  $2.4 \pm 2.3$  years average after the index surgery. These were performed to correct residual deformity, limited hip range of motion, or symptomatic impingement. Our mean post-op HOOS and WOMAC scores were  $85.1 \pm 16.4$  and  $88.5 \pm 13.7$ , respectively. Severe slips were 15.1 times more likely to undergo a secondary procedure than mild and moderate slips ( $p=0.001$ ), however we found no correlation between slip severity and patient reported outcomes ( $p>0.6$ ).

## CONCLUSION:

With minimum 2-year follow-up, 22% of patients went on to require a secondary surgery after in situ screw fixation for SCFE. Patient reported outcomes did not correlate with slip severity ( $p>0.6$ ) and were not found to be significantly higher in SCFE patients that did not require a secondary procedure. Prophylactic treatment of all slip-related cam deformity was not found to be necessary in this prospective cohort with minimum 2-year follow-up. While in situ screw fixation can be used to safely treat mild to moderate slips, patients with moderate to severe slips may require secondary surgery.