

Patient Survey of Weight-Bearing and Physical Activity After In Situ Pinning for Slipped Capital Femoral Epiphysis

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Abstract

Patients with slipped capital femoral epiphysis (SCFE) are often instructed to use crutches and restrict their activities after surgery. In the retrospective study reported here, we determined actual duration of crutch use and activity restriction in patients with SCFE treated with in situ pinning. Forty-three patients (mean age, 14.1 years) responded to a questionnaire. Four patients (9%) never used crutches, and 29 patients (67%) used crutches for 4 weeks or less. Three patients (7%) never restricted their activity, and 29 patients (67%) had resumed full activities, including sports, by 6 months. None of the patients had any postoperative complications. Although these results suggest that early resumption of activities, which would be beneficial to these typically obese patients, is possible without detrimental effects, further investigation is needed before an algorithm for postoperative rehabilitation can be presented.

Slipped capital femoral epiphysis (SCFE) is one of the most common hip disorders in adolescents. It is about 2.5 times more prevalent in boys than girls and occurs most commonly in obese, African American children. Patients usually present with diffuse pain, most often in the hip, medial thigh, or knee, and decreased range of hip motion, especially internal rotation. Acute trauma, endocrine disorders, and shear stresses resulting from obesity have each been implicated as possible causes of SCFE.^{1,2}

Clinically, SCFE is observed as a displacement of the capital physis in relation to the femoral neck. The epiphysis and metaphysis detach because of perichondrial ring instability and weakening. As a result, the femoral neck moves upward and outward, while the femoral head rotates downward.

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Without treatment, epiphyseal slippage does not resolve and commonly progresses. Therefore, immediate treatment is recommended. The patient is made non-weight-bearing to decrease the chance of further slippage until brought to the operating room. Several corrective surgical techniques are available to the surgeon. The current standard of care is in situ pinning. Under the guidance of fluoroscopy, this technique involves inserting 1 cannulated hip pin (occasionally 2 pins) perpendicular to the physis. In this manner, the epiphyseal plate is stabilized, with further slippage prevented. The ultimate goal is early physeal closure. Complications may arise, including, most frequently, avascular necrosis and chondrolysis.³

Current literature suggests that postoperative crutch use is recommended, at least until the patient is pain free.³ Duration of crutch use varies according to the individual surgeon's preferences. However, through clinical observation, it had been noted that most patients discontinue crutch use shortly after surgery and return to normal activities, including participation in contact sports. In 1963, Wilson and colleagues⁴ suggested that patients should not return to contact sports until closure of the physis. More recent literature makes little mention of patients returning to sports but instead points out that patients should be kept non-weight-bearing until they are pain free.⁵

An expeditious return to sports is especially advantageous for patients with SCFE, as most are obese and would benefit from early return to exercise. We suspect that a significant number of patients return to all activities, including sports, earlier than recommended and certainly before complete closure of the physis, without further injury to the joint.

In the study reported here, we determined duration of postoperative crutch use and activity restriction in a group of patients with SCFE treated with in situ pinning.

MATERIALS AND METHODS

In this retrospective, Institutional Review Board–approved study, charts of 61 patients with SCFE, treated between January 1, 2000, and December 31, 2003, were reviewed.

Patients with metabolic bone disorders, neuromuscular diseases, preinjury disabilities, or prior surgery for SCFE were excluded. All patients had in situ percutaneous fixation with a single cannulated hip pin. After surgery, they were instructed to (a) ambulate with partial weight-bearing with crutches and progress to full weight-bearing as tolerated and (b) restrict activity as dictated by pain.

Table I. Duration of Postoperative Crutch Use

	Never	≤2	Duration (weeks)			
			>2 to 4	>4 to 6	>6 to 8	>8 to 12
Males	2	9	9	4	3	1
Females	2	4	3	3	3	0
Total	4	13	12	7	6	1

Table II. Duration of Postoperative Activity Restriction

	Never	≤4	Duration (weeks)		
			>4 to 12	>12 to 24	>24
Males	3	1	7	8	9
Females	0	1	5	4	5
Total	3	2	12	12	14

Patients were contacted by telephone in October 2004. Verbal consent was obtained before their completing a questionnaire regarding duration of postoperative use of crutches and activity restriction. Fifteen patients could not be contacted and were excluded from the study.

RESULTS

Forty-six patients (30 males, 16 females) were contacted by telephone. Three patients (2 males, 1 female) refused to participate. Of the 43 patients (47 hips) included in the study (mean age, 14.1 years; range, 10-20 years), 4 (9.2%), all males, had bilateral involvement. Two of these 4 had pinning of both hips at the same time. All patients had mild or moderate slips.

Mean age of the males was 15.2 years (range, 11-20 years), and mean age of the females was 13.1 years (range, 10-17 years). Table I shows the frequency distribution for duration of postoperative crutch use for the males, the females, and the entire group. Twenty-six of the males used crutches, and 2 did not. Thirteen of the females used crutches, and 2 did not. For the 4 patients who had not used crutches, absence of pain was the reason given in all cases. Twenty-nine (67%) of the 43 patients used crutches for 4 weeks or less. Sixteen males and 12 females used crutches continuously; 10 males and 1 female used them intermittently. No relationship was found between intermittent use of crutches and early discontinuation. Reasons given for discontinued crutch use were physician recommendation (22 cases) and patient feeling fine (17 cases).

Table II shows the frequency distribution for duration of postoperative activity restriction for the males, the females, and the entire group. Of the 28 males, 25 restricted their activity after surgery, and 3 did not. Two of these 3 did not use crutches. All the females, including those who did not use crutches, restricted their activity after surgery. Twenty-nine (67%) of the patients resumed full activities, including sports, by 6 months.

For all the cases, no perioperative or postoperative complications were reported at latest follow-up, and additional surgery was not required for slip worsening.

DISCUSSION

Patients' duration of ambulation with crutches and activity restriction after in situ pinning for SCFE was not previously examined. Several studies^{4,6} indicated that patients usually are kept non-weight-bearing for a minimum of 6 weeks and are told to restrict their activities until the physis has closed.

In the present study, patients were not instructed to be non-weight-bearing after surgery. In fact, 4 patients never used crutches and did not have any untoward effects. In addition, 13 patients ambulated with crutches for 2 weeks or less, and most had discontinued using them by 4 weeks. Duration of activity restriction varied, but most patients had resumed their activities within 6 months after surgery. These patients did not wait for epiphyseal fusion, as has been advocated in the past. Furthermore, 3 males returned to their normal sports and other activities within 1 to 2 days after surgery without any complications.

Although the number of patients who resumed their activity immediately after surgery was small, the fact that some patients did this suggests we need to question the age-old idea of restricting activity after SCFE surgery. Being able to safely permit early resumption of activity in this patient population would allow these typically obese patients to try to lose weight to relieve the excessive pressure on their hip joints and possibly to avoid a slip on the contralateral side. Further investigation is required before we can present an algorithm for postoperative rehabilitation.

AUTHOR'S DISCLOSURE STATEMENT AND ACKNOWLEDGEMENT

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COMMENTARY

The fear of slip progression or other more catastrophic complications, in a child with a stable slipped capital femoral epiphysis after in situ fixation, has typically meant that most surgeons recommend activity limitation after surgery. This usually entails non-weight bearing with crutches for the first 4 to 6 weeks after the initial surgery and avoidance of physical activities such as running and sports until physeal closure. This physeal closure may often take 1 to 3 years. Many of these children are obese, and physical activity, begun as soon as possible, would be a benefit to them. So the prolonged time for physeal closure is problematic in regard to physical activity recommendations in obese children. However, it is the anecdotal experience of most pediatric orthopedic surgeons that many children abandon their crutches after a few days, and many of them

walk in without any aids for their first postoperative check at 4 to 6 weeks. It is also believed that many children, despite counseling to the contrary, participate in contact and even collision sports after in situ fixation.

In this study by Anand and Chorney, the authors retrospectively query children regarding their activity level after in situ fixation of the slipped epiphysis. As suspected, about half (17 of 39) of the children stopped using their crutches before being told to do so by the treating physician, and 67% of the children resumed full activities, including sports, within 6 months of the surgery. Most importantly, there were no complications, and no child required further surgery.

The issue of activity limitation after in situ fixation needs to be reconsidered, since this study found no slip progression or catastrophic failure of the single screw in these children. This is potentially very good news for these typically obese patients, who would definitely benefit from physical activity in an attempt to reduce their body weight and prevent the significant long-term complications that can arise from childhood obesity. As Anand and Chorney note, further investigation in larger series is needed before concrete changes in activity can be truly recommended.

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