Outcomes of Anterior Cruciate Ligament Reconstruction in Patients With Workers' Compensation Claims

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Summary: A general perception exists that outcomes of orthopaedic procedures in patient's with Workers' Compensation claims fare worse than those of patients without such claims. We retrospectively reviewed the outcomes of anterior cruciate ligament (ACL) reconstruction in patients who have Workers' Compensation claims. This minimum 2-year follow-up study analyzed the occupational, functional, and objective results of patients who underwent arthroscopic-assisted anterior cruciate ligament (ACL) reconstruction. Twenty-two patients with Workers' Compensation claims representing 5% of patients who underwent ACL reconstruction at our institution between 1987 and 1995 were included in the current study. All reconstructions were performed by the senior author (B.R.B.) using arthroscopic-assisted techniques (single and double-incision) with bone–patellar tendon–bone autografts followed by an accelerated rehabilitation protocol. Postoperative follow-up physical examinations revealed a negative anterior drawer in 19 patients (91%), a negative Lachman in 15 patients (68%), and a negative pivot shift in 21 patients (96%). The KT-1000 arthrometric evaluation at follow-up showed a mean maximum manual difference of 1.9 mm with 15 patients (68%) having a maximum manual difference of ≤3 mm and 7 patients (32%) from 3 to 5 mm. The mean postoperative scores for the Hospital for Special Surgery scoring scale was 86, Noyes Sports activity scale 81, Noyes ADL score 36, Noyes Problem with Sports 75, Noyes Sports Function score 87, Lysholm score 82, and the Tegner score 5.9. The Noyes Occupational rating system increased from preoperative 48 to 60 postoperatively and the Noyes Job Title rating system score remained at 5 after surgery. Functional testing revealed mean deficits of no more than 9% between the reconstructed and normal knees. SF-36 testing revealed significantly higher scores in the Role Physical and General Health categories and a significantly lower score in the Mental Health category when compared with United States norms. Subjective evaluation revealed that 95% of the patients would undergo a similar procedure if faced with a similar injury to the contralateral knee in the future. The results of the current study show that ACL reconstruction leads to predictable functional and occupational results in those patients with work-related injuries. All of our patients were able to return to work. The hypothesis that Workers' Compensation compromises the results of ACL reconstruction was not observed in this study. **Key Words:** ACL reconstruction—Workers' Compensation claims.

"The employer shall provide and pay for all the necessary first aid, medical and surgical services, and all the necessary medical, surgical, and hospital services thereafter incurred, limited, however, to that which is reasonably required to cure or relieve from the effects of the accidental injury. . ." [The General and Permanent Laws of Illinois 305/8 Amount of Compensation-Nonfatal Cases.]

The sports medicine literature is replete with information documenting the success of anterior cruciate ligament (ACL) reconstruction with respect to stabilization of the ACL-deficient knee, the return to preinjury levels of athletic activity, and patient satisfaction.[1-16] Most of the studies analyze the young, active patient who typically is injured during an athletic event. Previous work from our own institution has had

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predictable results following ACL reconstruction for both double-incision (DI) and endoscopic ACL reconstruction using patellar tendon autograft at short-term and intermediate follow-up evaluations, as well as middle aged patients who undergo ACL reconstruction.[2-5,12]

There is a subpopulation of ACL-deficient patients who are injured during work activities. Evidence in the literature on spine and upper extremity injuries shows that patients with Workers' Compensation claims have a much slower rehabilitative period with less predictable results.[17-26] We have previously reviewed the results of open distal clavicle resection and noted a significant difference in the subjective results, but not objective results in comparison Workers' Compensation versus non–Workers' Compensation patients.[27] Unfortunately, these patients often have secondary issues that cloud the orthopaedic management and eventual outcomes from their initial work-related injury. There is little information in the literature concerning the outcome for patients who undergo ACL reconstruction secondary to work-related injuries.

The purpose of the current study was to investigate the results of ACL reconstruction in patients with Workers' Compensation claims. Our perception before this study was that the Workers' Compensation population appeared to respond well to ACL reconstructive surgery in contrast to our observations of surgery about the shoulder region. Our goal was to challenge the notion that Workers' Compensation in itself comprises the results of ACL reconstruction. Clinical, functional, and objective analyses were performed as well as occupational scoring to test our hypothesis.

MATERIALS AND METHODS

The study group included patients with Workers' Compensation claims who underwent endoscopic or arthroscopic-assisted ACL reconstruction using patellar tendon autograft performed by the senior author (B.R.B.) between January 1987 and December 1995. Patients were selected for ACL reconstruction based on their preinjury activity level, desire to return to that level, and postinjury symptoms of instability. No patients were excluded from having an ACL reconstruction based upon their Workers' Compensation status. The patients were identified from a computerized data base maintained by the senior author at Rush-Presbyterian-St. Luke's Medical Center. During this time period, a total of 449 ACL reconstructions were performed. Twenty-two reconstructions were performed in 22 patients with Workers' Compensation claims. Inclusionary criteria for the current study included patients who underwent ACL reconstruction and who had a Workers' Compensation claim. Exclusionary criteria for the current study included patients with less than 2 years of minimal follow-up, bilateral reconstructions, multiligament reconstruction, allograft ACL reconstruction or revision ACL reconstruction. All 22 patients comprising the study group were personally evaluated and none were lost to follow-up. Historical controls based on our previously reported results of DI and single-incision ACL reconstructions were used for comparison.

Surgical Technique and Rehabilitation

Before October 1991, patients underwent a DI arthroscopic-assisted technique without extra-articular augmentation as described by Bach et al.[2] Thereafter, a single-incision endoscopic procedure as described by Hardin et al. was performed.[28] Regardless of the operative technique employed, the principles of graft harvesting, adequate notch preparation, tunnel placement, graft orientation, and rigid interference screw fixation with the knee in extension were used for all patients. Surgery was delayed until patients had regained near normal range of motion and had minimal or no knee effusion. This study group included both types of procedures as our previously reported studies showed no significant differences between the techniques.[3-5]

Postoperative physical therapy was started immediately after surgery with gait training, straight leg raising, prone heel hangs, and range of motion exercises. The DI group patients were progressed to full weight bearing by 6 weeks, whereas the endoscopic group patients were allowed immediate full weight bearing following surgery. Both groups used a hinged knee brace for 6 weeks after surgery. A formal rehabilitation program was instituted during the first postoperative week. This program allowed stationary bicycling by week 2, stairsteppers by weeks 4 to 6, straight ahead jogging by weeks 12 to 16, and gradual return to sports by 4 to 6 months. A custom orthosis was used from 6 weeks to 6 months for activities of daily living and was used for sports from 6 months to 1 year postoperatively.

Questionnaire

A detailed questionnaire was developed so that the modified Tegner, Lysholm, Hospital for Special Surgery, Noyes Sports Activity, Noyes Sports Function, Noyes Cincinnati, Noyes Occupational rating (Table 1), and Noyes Job Title (Tables 2 and 3) rating scales could subsequently be determined.[29-33] All question-