Workers' Compensation, Return to Work, and Patient Satisfaction After Carpal Tunnel Decompression

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Abstract

In the study reported here, we assessed satisfaction and return to work in workers' compensation (WC) patients after carpal tunnel decompression. Eighty of the 362 patients who underwent surgery met the study criteria; 42 of the 80 were found for follow-up; 40 of the 42 participated in the telephone questionnaire; 15 (38%) of the 40 received WC; and 39 (98%) of the 40 returned to work. Mean age of the 40 respondents was 47 years, and mean follow-up was 29 months. WC involvement was not related to return to work and did not affect satisfaction with overall outcome but was related to dissatisfaction with job factors and timing of return to work.

Carpal tunnel syndrome (CTS) is one of the most commonly treated disorders of the upper extremity, with an estimated incidence of 0.1% and prevalence of 0.5% to 3.7% in the general population.[1-3] Surgical decompression of the carpal tunnel constitutes definitive treatment, with reported success rates of 70% to 90%, regardless of surgical technique.[4-9] Workers' compensation (WC) status, however, has been reported to negatively influence outcomes after carpal tunnel decompression (CTD), with higher rates of residual symptoms and prolonged work absence.[10-14] In a population-based study, Cheadle and colleagues[15] found employees with CTS 45% less likely to return to work than those with other work-related injuries.

In the United States, approximately $112 billion are spent annually on work disability, and 48% of workers who leave work for at least 5 months never return to the workforce.[16,17] Results from studies of work-related back injuries have shown that psychosocial and job factors rather than physical factors are better predictors of return to work.[18,19] Similar results have been reported in studies of workers with CTS.[11,12,20] Although WC and non-WC patients have reported similar levels of satisfaction with surgery, WC patients take longer to return to work and are less likely to return to work.[5,21]

In the study reported here, we evaluated return to work and patient satisfaction with surgical and job-related factors after primary CTD in both WC patients and non-WC patients.

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Materials and Methods

Patient Selection

After obtaining institutional Human Studies Committee approval, we retrospectively reviewed the patient records of a surgeon (Dr. Mackinnon) to identify patients who underwent primary CTD within a 5-year period (1994-1999). Patients (age, 18-65 years) who had unilateral or bilateral CTD and follow-up of at least 1 year were chosen for the study. In cases of bilateral CTD, records were reviewed after the second surgery. Exclusion criteria were surgical treatment for another diagnosis in the same upper extremity (ie, concomitant nerve compression, de Quervain tenosynovitis, trigger finger) and assumed exclusion from the workforce (ie, student, housewife, retiree). Of the 362 patients who had CTD performed within the study period, 80 met the study criteria.

Patient Demographics

Demographic data, including age, height, weight, smoking history, and WC status, were obtained from medical records. Presence of additional nerve compression syndromes of the upper extremity (eg, median nerve compression at forearm, cubital tunnel syndrome, thoracic outlet syndrome, cervical radiculopathy) was also noted. Forty-two of the 80 eligible patients had up-to-date telephone contact information, and 40 patients (26 women, 14 men) agreed to participate in the study. Mean age was 47 years (range, 32-63 years). Mean follow-up after surgery was 29 months (range, 15-58 months). Thirteen patients had surgery on the dominant hand, 12 on the nondominant hand, and 15 on both hands. Eleven patients (28%) were diagnosed with additional upper extremity nerve compression. Five patients (13%) had diabetes. Nine patients (23%) were smokers. Body mass index (BMI) was calculated by weight in kilograms (kg) divided by height in meters (m)

squared (BMI = kg/m^2).[22] Two patients were classified slender (BMI, <21); 4, normal (BMI, 21-25); 10, overweight (BMI, 25-30); and 24 (60%), obese (BMI, >30).

Fifteen patients (38%) were involved in a WC claim. Fourteen (93%) of these 15 patients returned to work after CTD. Fourteen patients (93%) had a lawyer involved in their WC claim. Eight (53%) of the 15 WC patients had been assigned a case manager. Nine (60%) of the 15 had received a settlement from their WC claim.

Surgical Procedure

Classic open CTD, with intravenous (IV) regional anesthetic block, was performed on all patients. In most cases, bretylium (1.5 mg/kg lean body weight) was included in the IV regional anesthetic for preemptive action against the sympathetic nervous system. The tourniquet was maintained at 250 mm Hg, and in most cases a double tourniquet was placed on the upper arm, but a forearm tourniquet was occasionally used in obese patients. Tourniquet time was 22 minutes when bretylium was used or 18 minutes when bretylium was not used. A 2- to 3-cm curvilinear incision made about 6 mm ulnar to the thenar crease was ended a few millimeters distal to the transverse wrist crease—providing an incision well ulnar to the palmar cutaneous branch of the median nerve and ulnar to the median nerve proper. When more exposure was necessary, a zigzag incision was extended proximally across the wrist. The dissection continued through the soft tissue, and the fatty tissue was retracted to expose the proximal portion of the flexor retinaculum and the distal portion of the antebrachial fascia. A No. 15 blade was used to release the flexor retinaculum along the ulnar side extending distally to the fat around the superficial arch. The antebrachial fascia was released under direct vision, and in some cases the incision was extended proximally above the wrist to ensure an adequate release of the antebrachial fascia. The tourniquet was then deflated, and hemostasis was achieved. Bupivacaine was injected in the incision region, and the incision was closed with interrupted 4-0 nylon sutures. A bulky dressing was applied to keep the wrist in a neutral position. The dressing was removed 2 or 3 days after surgery, and the patient was instructed in range-of-motion exercises for the fingers, wrist, and arm. The patient was instructed to use a wrist splint in the neutral position at night for 3 weeks for comfort. The sutures were removed 12 to 14 days after the surgery.

Telephone Questionnaire

A person not previously involved in the patients' care contacted the study subjects by telephone. After obtaining verbal consent from patients, the interviewer administered a 5- to 10-minute verbal questionnaire. Subjects were asked questions regarding return to work after surgery (including time between surgery and return to work), assignment of work restrictions, and job changes. Subjects who did not return to work, had work restrictions, or changed jobs were asked whether these were related to their surgery.

Subjects were asked about their satisfaction with time to return to work, overall outcome of surgery, and individuals involved in their case (surgeon, employer, supervisor, and, as applicable, case manager and lawyer). Each item was rated on a 4-point scale (*very satisfied, satisfied, dissatisfied, very dissatisfied*). Overall job satisfaction was also rated on this scale. Subjects who had received a WC settlement for their CTS were asked to rate their satisfaction with the settlement.

Data Analysis

A χ^2 test or a Fisher exact test was used to compare WC and non-WC patients' responses regarding patient factors (eg, obesity, smoking, diabetes), time to return to work, and satisfaction ratings. A *t* test was used to compare the

Table I. Patient Factors and Workers' Compensation (WC) Involvement

	WC	Non-WC	*P*
Demographic Variables			
Sex			0.86
Male	5	9	
Female	10	16	
Age in years, mean (range)	46 (33-63)	47 (32-60)	0.77
Body mass index			1.0
<19.9 (slender)	0	2	
20-24.9 (normal)	2	2	
25-29.9 (overweight)	4	6	
>30 (obese)	9	15	
Number of smokers	3	6	1.0
Comorbid Conditions			
Diabetes	0	3	0.28
Other upper extremity nerve compression	2	9	0.12
Bilateral Carpal Tunnel Decompression	11	4	0.0005

Table II. Workers' Compensation (WC) Involvement and Return to Work

Return to Work	WC (n = 15)	Non-WC (n = 25)	Total (N = 40)	*P*
Returned to work	14	25	39 (98%)	.38
Part-time	2	0	2 (5%)	
Full-time	12	25	37 (93%)	
Returned to work within 1 month	7	20	27 (68%)	.03

Table III. Workers' Compensation (WC) and Pateint Dissatisfaction

Patients Dissatisfied or Very Dissatisfied With …	No. Patients (%)		*P*
	WC	Non-WC	
Outcome of surgery	2 (13%)	2 (8%)	.2907
Surgeon	0	0	
Job	3 (20%)	0	.0461
Employer	7 (47%)	0	.0006
Supervisor	7 (47%)	0	.0008
Time to return to work	4 (27%)	0	.0046

groups' mean ages. All data analyses were conducted with Statistica 99 (StatSoft Incorporated, Tulsa, Okla).

Results

Patient Factors and WC Involvement

WC and non-WC patients did not differ on any of the demographic factors (age, sex, BMI, smoking) or potentially confounding factors (diabetes, other upper extremity nerve compression). Significantly more WC patients than non-WC patients had bilateral CTD ($P = .0005$) (Table I).

WC Involvement and Return to Work

After CTD, 39 (98%) of 40 patients returned to work, either full-time (37 patients) or part-time (2 patients). The 2 part-time workers received WC. One WC patient did not return to work for reasons unrelated to CTS. Thirteen patients (33%) returned to work with CTD-related restrictions. Need for work restrictions did not significantly affect time to return to work. Twenty-seven patients (68%) returned to work within 1 month after surgery. WC involvement was associated with longer time (>1 month) to return to work ($P = .03$) (Table II).

WC Involvement and Patient Satisfaction

Most patients were satisfied with the overall outcome of their CTD; only 4 patients (10%) reported being dissatisfied. There was no significant relationship between WC involvement and reported overall satisfaction. All patients were satisfied (n = 9) or very satisfied (n = 31) with their surgeon. WC involvement, however, was significantly associated with dissatisfaction regarding job, employer, supervisor, and time to return to work (Table III). Most workers were satisfied with their lawyers (64%) and case managers (75%). The majority (78%) of WC recipients were also satisfied with their settlements.

Discussion

In this study, only 1 patient did not return to work after primary CTD, and the reason was unrelated to CTS or surgery. Therefore, in this sample of post-CTD patients, WC involvement did not prevent patients from returning to work. However, other authors have reported significantly worse post-CTD return-to-work rates in WC recipients. Higgs and colleagues[11] reported 15% unemployment in WC patients (vs only 4% in non-WC patients) at 3.5-year follow-up. In a prospective community-based study, Katz and colleagues[21] found that 18% of WC patients (vs <7% of non-WC patients) were not working 30 months after CTD. Baldwin and colleagues[23] found that 40% of injured workers who initially returned to work eventually left the workforce because of their injury, and 11% made multiple attempts to return to work before quitting. The investigators also found that workers who received job accommodations (reduced hours, light work) were less likely to experience multiple work absences. In our study, one third of patients initially returned to work with restrictions, which may have improved employment outcomes.

Although our WC patients successfully returned to work, time to return to work was slightly longer for them than for our non-WC patients. Time to return to work has varied considerably among studies, and many authors have reported delayed return to work for WC recipients.[10,13,24,25] Possible explanations for the variation in time to return to work include surgeon preference and differences in study populations, surgical techniques, postoperative protocols, and availability of modified duty among employers. Surgical technique, however, seems not to alter the underlying pattern of longer time to return to work in WC patients.[4] In a randomized, prospective trial of open versus endoscopic CTD, Agee and colleagues[4] found that WC recipients in both surgical groups took 2 to 3 times longer to return to work.

In our study, WC involvement did not negatively influence patients' reported overall satisfaction with primary CTD. Only 5% of WC and non-WC patients were not satisfied with their surgery. Brown and colleagues[5] reported similarly high levels (84%-89%) of patient satisfaction 3 months after CTD. Katz and colleagues[21] reported slightly lower satisfaction levels but no significant differences between WC and non-WC patients.

Although our WC patients were satisfied with their overall outcome and surgeon, they were significantly more likely than non-WC patients to be dissatisfied with their job, employer, supervisor, and time to return to work. These results, combined with the finding that WC patients also return to work more slowly, suggest that work-related factors may affect return to work after CTD.

The workplace may play an important role in worker attitudes and job satisfaction, which can affect return to work for a work-related condition. Interest and cooperation from employers in return-to-work strategies have been shown to positively influence disability duration.[26] Availability of "job modifications" (eg, less physically and cognitively demanding positions, shorter working hours, rest periods, machinery adjustments, decreased output demands) can positively affect return to work.[27]

Although the small sample size of our study limits the power of its results, our findings support previous investigators' findings that WC patients are satisfied with their surgical outcome after CTD.[5,21] As patients who had surgery for additional upper extremity nerve compression were excluded from our study, our study subjects were not negatively affected by other surgical outcomes. Previous reports of poor results with WC patients may be related to inclusion of patients with concomitant nerve compression or tendonitis at other sites. These patients may have unrealistic expectations of complete symptom relief from all sites after CTD and as a result may view their surgery as having "failed." Although the WC patients in our study successfully returned to work, their responses regarding job-related satisfaction suggest that work factors play a key role in the complex dynamics of return to work.

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The authors report no actual or potential conflict of interest in relation to this article.

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