SCIENTIFIC ARTICLE

Five-Year Follow-Up of Carpal Tunnel Release in Patients Over Age 65

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Purpose In 2005, a prospective clinical trial with a 6-month follow-up demonstrated the efficacy of carpal tunnel release in patients 65 years and older and showed that age is not a contraindication to surgery. The purpose of this study was to determine whether there was any further improvement, maintenance of results, or recurrence of carpal tunnel symptoms 5 years after surgery.

Methods We contacted all 66 patients (with a total of 92 hands involved) from the original study to be enrolled for re-evaluation. Of the original cohort, 12 were unavailable because of death or severe neurologic impairment. Of the remaining 54 patients, 19 agreed to participate in this follow-up study of their 29 hands. For the 5-year follow-up, patients underwent a repeat history and physical examination with particular emphasis on the status of their hands over the past 5 years. The Michigan Hand Outcome Questionnaire was again used to determine overall hand function, activities of daily living, work performance, pain, aesthetics, and satisfaction with hand function.

Results The mean age of patients available for 5-year follow-up was 78 ± 3 years. The patients maintained their symptom improvement, demonstrating no significant difference between the 6-month and 5-year follow-up data; their physical findings, except for grip strength, were likewise unchanged. The patients also retained their improved 2-point discrimination. Scar tenderness decreased over the 5 years. The Michigan Hand Outcome Questionnaire confirmed the fact that initial postoperative improvement in all parameters persisted at least 5 years. One patient underwent repeat carpal tunnel release of 1 hand for recurrent symptoms. Overall, 94% of patients were either very or completely satisfied with their results.

Conclusions Patients who were 65 years of age or older at the time of surgery maintained their clinical improvement for at least 5 years after surgery. *(J Hand Surg 2010;35A:207–211. © 2010 Published by Elsevier Inc. on behalf of the American Society for Surgery of the Hand.)*

Type of study/level of evidence Therapeutic IV.

Key words Carpal tunnel release, patients over age 65.

In 2005, a prospective clinical outcomes trial examined the efficacy of carpal tunnel release (CTR) in 66 patients aged 65 years and older diagnosed with carpal tunnel syndrome between February 1, 2000, and October 12, 2001.[1] The results of the study demonstrated that patients aged 65 years and older can have significant relief of symptoms and improvement in hand performance

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from CTR. Advanced age alone should not be a contraindication to performing CTR.

Whereas other studies have confirmed these findings,[2–4] there are very few 5-year follow-up reports of CTR in the literature, and, to our knowledge, none that focused on older patients. This study re-examined the same cohort 5 years after limited incision CTR in patients originally aged 65 years or older, to see whether there was further improvement, maintenance of results, or recurrence of carpal tunnel symptoms.

MATERIALS AND METHODS

After we obtained approval from the institutional review board of the treating facility, we identified 54 of the 66 patients (92 hands) who completed the original study as eligible for contact through a feasibility search; 12 patients either had died or experienced dementia severe enough to preclude participation in the study. The 54 eligible patients were contacted for participation in the 5-year follow-up study and 19 participated (29 hands). Each of these patients had already undergone a thorough history and physical examination before surgery and at 6 months after surgery. For the 5-year follow-up, the 19 patients each underwent a repeat history and physical examination with particular emphasis on the status of their hands over the past 5 years.

Of the 19 patients, 10 were men. A total of 29 hands were studied: 14 right hands and 15 left hands. Ten patients had undergone surgery on both hands, whereas 4 had had surgery on the right hand and 5 had had surgery on the left hand. The distribution of gender and hand studied was the same as in the original study.

Each patient was evaluated in the same fashion as in the original study.[1] Symptoms such as paresthesias, numbness, day pain, night pain, and nocturnal numbness were rated on a scale of 1 to 5 (none, mild, moderate, severe, and very severe). In addition, hand performance was assessed again using the Michigan Hand Outcomes Questionnaire (MHQ). This questionnaire evaluates overall hand function, activities of daily living, work performance, pain, aesthetics, and satisfaction with hand function in both hands, with higher scores indicating better hand performance and lower scores indicating poorer hand performance. In the pain score, the higher scores indicated more pain, whereas the lower scores indicated less pain.

The physical examination included Tinel's sign, Phalen's sign, median nerve compression test, 2-point discrimination, grip and pinch strength measurements, and the notation of the presence or absence of thenar muscle atrophy. We did not perform nerve conduction studies. The same certified hand therapists as before repeated quantitative sensory testing using a sensory device (the Pressure Specified Sensory Device; NK Biotechnical Corp., Minneapolis, MN) to measure 2-point discrimination.

At 6 months postoperatively and 5 years postoperatively, patients rated their satisfaction with the results of the surgery on a scale of 1 to 5 (dissatisfied, neutral, somewhat satisfied, very satisfied, and completely satisfied).

Variables of interest for study participants were summarized using appropriate descriptive statistics. For purposes of analysis, each hand was considered separately. Means and standard deviations were used for numerical variables, and proportions were used for categorical variables. If a numerical variable was highly skewed, the median and range were used instead. We compared means from baseline with preoperative, 6-month, and 5-year follow-up for continuous variables using paired Student's *t*-test. If the difference in continuous variable was highly skewed, the paired Wilcoxon's signed rank test was used instead. McNemar's test was used to compare percentages for categorical variables. p Values less than .05 indicated statistically significant effects.

RESULTS

Demographics

The mean age of the patients who participated in the 5-year follow-up was 78 years (±3 y). This compares with a mean age of 74 years (±6 y) for all patients in the original study. We compared 6-month follow-up data from the 19 patients with the aggregate 6-month follow-up data for all 66 patients. Analysis of the demographic characteristics and outcomes data showed no significant difference between the 29-hand subgroup and the complete 92-hand group for any parameter. All of the remaining results compare the 5-year results of the 29 hands with the 6-month and preoperative data of the same 29 hands.

Hand symptoms

For the entire group at 6-month and 5-year follow-up, all symptoms decreased significantly in severity ($p < .001$; Fig. 1). At that time, paresthesias, numbness, day and night pains, and nocturnal numbness were relieved completely in 84%, 70%, 83%, 89%, and 83% of hands, respectively. At a minimum of 5 years after surgery, symptoms were relieved completely (rated as a 1 on a 1 to 5 scale) in 76%, 86%, 90%, 83%, and 72% of hands with no important difference in any single parameter between the time frames. Numbness was the