**Ritting AW, Leger R, O’Malley MP, and et al. Duration of Postoperative Dressing After Mini-Open Carpal Tunnel Release: A Prospective, Randomized Trial. J Hand Surg Am. 2012; 37(1):3-8.**

**PMID: 22133704**

**Critique author:** Linda Metzger

**Date:** 2-18-16

**Design:** Randomized controlled trial

**Objective:** To compare the short-term clinical outcomes in patients who receive a postoperative bulky dressing that is replaced by an adhesive strip 48 to 72 hours after carpal tunnel release (CTR) surgery to patients who maintain the initial bulky dressing until the first postoperative visit at approximately 2 weeks.

**Population /sample size/setting:**

* A total of 94 consecutive patients (mean age 45.5 years, 73 females, 21 males) undergoing unilateral CTR were recruited from the Department of Orthopedic Surgery at the University of Connecticut Health Center between May 2009 and October 2010.
* The 94 patients were randomly assigned to one of 2 groups: group A (n = 45) postoperatively wore a bulky dressing for 2 to 3 days (short-term); group B (n = 49) postoperatively wore a bulky dressing for 2 weeks (long-term).
* Inclusion criteria included adults with carpal tunnel syndrome (CTS).
* Exclusion criteria included previous surgery for CTS, or ipsilateral hand, arm, or shoulder surgery with continued symptoms.

**Methods/Interventions/Outcome Measures:**

* Study design was a prospective, randomized, controlled, single-blind study. A randomized number table for 2 treatment groups was computer generated, and subjects were consecutively randomized after consenting and completing the demographic and preoperative measures. Baseline information was collected regarding patient age, gender, body mass index (BMI), hand dominance, systemic and ipsilateral upper extremity comorbidities, nicotine use, work history, and prior treatments.
* All patients completed preoperative (baseline) testing which included wrist range of motion and grip, tip pinch, 3-point pinch, and lateral pinch strength. These objective tests were the study’s secondary outcome measures. Subjective evaluation included the Levine-Katz questionnaire and served as the primary outcome measure. These outcomes were assessed again at 2 weeks and at 6 to 12 weeks postoperatively using a goniometer, a hand dynamometer, and a pinch meter by 1 of 2 occupational therapists who were blinded to the protocol. The occupational therapists also evaluated wound healing in a blinded manner based on a qualitative assessment as either a pristine wound or a wound with any erythema, dehiscence, or drainage.
* All CTR surgeries were performed by the same senior surgeon who performed unilateral, mini-open CTR on all the 94 patients in this study through a 1.0- to1.5-cm incision under tourniquet control.
* The bulky dressing applied after surgery consisted of medicated gauze and a 5 X 5 cm cotton gauze cover over the incision, followed by application of cast padding and an elastic roller bandage. No patients were splinted, and all patients were encouraged to move their fingers beginning immediately after surgery. Patients in Group A were instructed to remove their dressing at 48 to 72 hours after surgery and replace it with an adhesive strip. Patients were instructed to keep the wound dry until it was seen at the first postoperative visit approximately 9 to 14 days after surgery. Subjects in group B were instructed to keep their postoperative dressing on until the first follow-up visit at approximately 2 weeks after surgery.
* Patients could not be blinded to their treatment assignments.
* Sample size power calculations were conducted. Power analysis indicated that for a *P* value of 0.05 with 95% confidence to show a difference in the Levine-Katz questionnaire, 44 subjects in each group were necessary.

**Results:**

* Participants ranged from 19 to 81 years of age with a mean of 45.5 years. The BMIs ranged from 18.9 to 52.6 kg/m2, with a mean of 33.5 kg/m2. Overall, 60% of patients (56 out of 94) undergoing CTR in this study met criteria for obesity (BMI > 25).
* All 94 patients completed the first follow-up assessments at 9 to 14 days, but only 66 patients returned again for the second follow-up testing between 6 and 12 weeks postoperatively. Thirty patients in group A (early bandage removal) and 36 patients in group B (long-term bandage) completed the second follow-up assessments. Fifteen patients in Group A and 13 patients in Group B failed to complete the second follow-up assessments.
* For the primary outcome, within group comparisons showed significant improvement in the Levine-Katz total scores for the participants between the preoperative mean scores, the initial follow-up mean scores, and the second follow-up mean scores for both groups.

The Levine–Katz scores also indicated that there were no significant differences between groups A and B at either follow-up visit.

* For the secondary outcomes of range of motion and grip and pinch strength, there were no significant differences between groups preoperatively, except grip strength was significantly higher in group A and pronation was higher in group B. At the first follow-up, 3-point pinch strength was greater in group A, whereas in group B there was still greater pronation, consistent with preoperative data. At the second follow-up, the only significantly different parameter between study groups was increased grip strength in group A which was consistent with preoperative findings.
* This study found no significant difference in wound healing between the 2 groups.
* There were no complications or infections in either study group at the final postoperative evaluation.

**Authors’ conclusions:**

* This study found no significant difference in wound healing or complications between the 2 groups. The Levine–Katz scores showed that there were no significant differences between groups A and B at either follow-up visit. Applying an adhesive strip at 48 to 72 hours postoperatively did not lead to wound-healing complications.
* There were some significant differences in some outcome measures, such as group A final grip strength and group B 2-week pronation, but these differences were also present preoperatively. Therefore, it is not known whether these were true differences from treatment methods.
* A strength of the study was its ideal design which was conducted in a prospective, randomized, and blinded manner using a validated outcome measure. A second strength of the study was that a single surgeon performed all surgeries with a single technique, thus minimizing any technical variation.
* The study can be generalized to the broader community because of its lack of stringent exclusion criteria and because patients with pathology ubiquitous in the community, such as inflammatory diseases, diabetes mellitus, a broad BMI range, and comorbidities of the ipsilateral extremity were included.
* One weakness of the study was that a preoperative clinical difference (grip strength) was present that should have been normalized by the randomization process, but was not.
* A possible source of error in this study was patient-related factors such as inappropriate removal of the dressing. All patients self-reported compliance, but this was not monitored.
* The study did not evaluate patients’ reaction to the bulky dressing. Asking patients about how they felt when wearing the dressing would have been beneficial.

**Comments:**

* This study supports the conclusion that removal of a bulky dressing after mini-open CTR and replacement with an adhesive strip at 48 to 72 hours causes no wound complications and results in equal short-term clinical and subjective outcome measures compared with using a bulky dressing for 2 weeks. No statistically significant differences between the 2 groups were observed for the primary outcome measure at either follow-up time point.
* Strengths of this study included outcomes assessor blinding, independent observations, an adequate sample size and power, blinded evaluation of wound healing, registered on clinicaltrials.gov, and primary outcome clearly designated.
* Analysis data on differences between groups in demographic characteristics were not given, and so it is unknown if the groups differed significantly in any of the demographic characteristics.
* Monitoring patients’ compliance with wearing the bulky dressing for 2 weeks in Group B would have contributed to our confidence in the study’s internal validity.
* Since baseline functional scores on grip strength were significantly different between the groups, it reduces our confidence in the outcome measurements or results for this parameter. This baseline imbalance may influence outcome, since now differences in outcome cannot be assumed to be due only to the treatment intervention. This imbalance can also bias statistical tests, and introduce chance bias. An additional analysis should have been performed correcting for this imbalance.
* The study did not evaluate patients’ length of time it took them to return to work. Asking patients when they returned to work would have been beneficial information.
* One weakness of the study was that different hand therapists measured postoperative outcomes. Although blinded to randomization, the heterogeneity in their measurements could be a source for error.
* In addition, a better quantitative grading system rather than a qualitative assessment of wound healing could have been used that would have better identified subtle differences between wounds.
* Another weakness of the study was the large 30% (28 patients) drop-out rate among participants at the 3-month follow-up. Both groups had an equal number of patients lost to follow-up, which was probably due to similar reasons, such as clinical improvement.
* Sample size calculations determined that 44 subjects were needed in each group. The sample sizes for each group were adequate at the 2-week follow-up (45 and 49), but they were too small (30 and 36) at the 3 month follow-up. Thus the study was adequately powered at the first follow-up, but lacked adequate power to detect a significant difference in the primary outcome measure at the second follow-up. Therefore, the results from the second follow-up are inconclusive because the study was underpowered at that time point.

**Assessment*:***

This adequate study provides some evidence that removal of a bulky dressing after mini-open CTR and replacement with an adhesive strip at 48 to 72 hours causes no wound complications and results in equal short-term (2-week) clinical and subjective outcome measures compared with using a bulky dressing for 2 weeks.