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The Effectiveness of Compression Gloves for Reducing Hand Edema

Colleen Pastunink
Western Michigan University

Ryan Steele
Western Michigan University

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Case

Sally is a 72-year-old Caucasian female. She is 8 weeks post left Cerebral Vascular Accident (CVA) which resulted in left hemiparesis and expressive aphasia. She has now been discharged to home and is to attend outpatient therapy twice per week for 12 weeks. Prior to her stroke, Sally was independent in all self-care activities and was very socially active in her community. During an initial occupational therapy evaluation, therapists report that Sally is independent in all transfers and ambulates with the use of a quad cane. Circumferential measurements were taken during evaluation of the right upper extremity secondary to the observation of significant edema. Therapists hope through the use of compression gloves, hand edema will be reduced, therefore, improving functional use of the right upper extremity.

1 Ask: Research Question

Is using a compression glove an effective treatment for hand edema?

2a Acquire: Search Terms

Patient/Client group: Patients with Hand Edema **I**ntervention: Compression Gloves **C**omparison: Compression Glove, Compression Bandages, Placebo Glove **O**utcome: Reduction in Edema

2b Acquire: Selected Articles

Hammond et al. (2016): A systematic review of the effects of compression gloves on hand symptoms and function in rheumatoid arthritis (RA) and hand osteoarthritis (HOA).

Gustaffson et al. (2016): A single-N (ABC) design that studied the efficacy of compression gloves (C) in maintaining edema reductions post stroke (CVA) after first compression bandaging (B).

Harris et al. (2011): A randomized controlled trail (RCT) that examined the effects of compression gloves at reducing the complications secondary to distal radius fractures (DRF).

3a Appraise: Study Quality

Hammond et al. (2016): Level I Evidence. Small sample size consistent across each of the four studies, ranging from (N=8-24; total N=74). Most of the studies carried a high risk of Type I or II errors. Findings may not be relevant to modern practice due to lack of recent research and ever-changing treatment protocols and production of compression gloves.

Gustaffson et al. (2016): Level III Evidence. Single-N design. Due to the nature of this design and lack of internal validity, it does not allow for strong conclusions to be drawn.

Harris et al. (2011): Level II Evidence. Good sample size (N=48). Shows longitudinal evidence of changes over weeks and months.

3b Appraise: Study Results

The findings of these studies suggest that use of compression gloves to treat edema is conflicting. Depending on the diagnosis, compression gloves may improve, maintain, or fail to maintain improvements in edema of the hands. Hammond et al. (2016) found that small, significant reductions in PIP joint circumference resulted from the night use of compression gloves in patients with RA. While studying clients experiencing post-CVA edema, Gustaffson et al. (2016) concluded that clients were unable to maintain the initial reduction in edema provided by compression bandages with the use of compression gloves. They did not, however, return to the baseline measurements of edema. Harris et al. (2011) reported that client's using compression gloves, in conjunction with standard post-operative dressings after DRF surgical repair, experienced significantly less edema throughout the immobilization period.

4 Apply: Conclusions for Practice

Overall, mixed research findings offer marginally promising results along with implications for future research. Findings are hampered by lack of recent research, minimal variance in glove material and manufacturers, changes in treatment protocol and generally small sample sizes. Although studies showed a reduction in PIP joint circumference after the night use of compression gloves for RA, it was not paired with reductions in finger stiffness or improvements in flexion and dexterity, suggesting that this research may not be clinically significant. Ill-fitting, off-the-shelf gloves may be the reasoning behind conflicting results; custom gloves that extend above the wrist to the forearm may offer better outcomes for reducing and maintaining hand edema. Significant reductions in edema and complications following DRF and lowered incidence of Carpal Tunnel Syndrome and Complex Regional Pain syndrome, suggest that compression gloves may be more beneficial for certain diagnoses and more research should be conducted.

References:

Hammond, A., Jones, V., and Prior, Y. (2016). The effects of compression gloves on hand function in rheumatoid arthritis and hand osteoarthritis: A systematic review. *Clinical Rehabilitation, 30(3),* 213-224. DOI: 10.1177/0269215515578296

Gustafsson, L., Patterson, E., Marshall, K., Bennett, S., and Bower, K. (2016). Efficacy of compression gloves in maintaining edema reductions after application of compression bandaging to the stroke-affected upper limb. *American Journal of Occupational Therapy, 70(2).* http://dx.doi.org/10.5014/ajot.2016.017939

Harris, L. C., Cole, A. L., Monroe, P. C., Chancey, J. A., and Shuler, M. S. (2011). Compression glove may reduce complications secondary to distal radius fracture. *Journal of Hand Therapy, 24(4),* 383-384

Conflicting research shows that the effectiveness of compression gloves for the treatment of hand edema remains unclear.

College of Health and Human Services
Department of Occupational Therapy
Western Michigan University