Letter to the Editor

Letter in response to “A prospective randomized comparison of neoprene vs thermoplast hand-based thumb spica splinting for trapeziometacarpal arthrosis”

Keywords: Orthotic Splint CMC Osteoarthritis

Dear Editor

We were interested to read the article A prospective randomized comparison of neoprene vs thermoplast hand-based thumb spica splinting for trapeziometacarpal arthrosis in volume 21 2013 issue of the Osteoarthritis and Cartilage. We always appreciate the time, effort, and dedication it takes to prepare such an article. As hand therapists, we eagerly read the article looking for any new research that may provide evidence of the efficacy of orthotic intervention for patients with thumb carpometacarpal (CMC) osteoarthritis (OA). This topic has had more research than many areas of our practice. This year Bani et al. found that a custom made CMC orthotic device produced decreased pain, increased grip and pinch strength, and increased hand function. They measured outcomes at baseline, 30, 60, and 90 days. Their outcomes included a visual analogue scale to assess pain, along with a disability of the arm, shoulder, and hand questionnaire (DASH) to assess function, and a dynamometer and pinch gauge were used to assess strength. In comparison, the Becker et al. study published in your journal had some methodological shortcomings that we feel need to be addressed.

Initially the authors performed a-priori sample size analysis using a two-tailed Student’s t test that estimated the need to evaluate 60 participants to detect a clinically relevant difference of 10 points in follow-up DASH scores between the two prospective cohorts at 90% power, and a significance level of 0.05. However when the authors were close to their target enrolment number of 60 subjects, approximately half of the study population had not returned for the 5–15 weeks evaluation and the target was raised to 120 patients. More than 43% of the subjects dropped out of the study. We do not know if they wore the orthoses, were happy with their orthotic device, or threw it away the day after they received it. This study had a very large drop out rate that was addressed by adding more subjects to the study as the study progressed. It was also reported that “additional radiological assessment was not considered necessary for the diagnoses” so the reader does not know what stage of OA of the subjects had and how the stage of OA could have influenced the results of the study.

The wearing schedule of the devices was not provided, so it would be difficult to reproduce this study. The follow up period of this trial was between 5 and 15 weeks that seems to be very limited and provides the reader with knowledge of only the short-term benefits of one orthotic device compared the other. In the Becker et al. study one person also received a night orthoses for carpal tunnel syndrome. This indicates one subject received more than one orthotic device, so it would be difficult to determine for which device he was answering the questionnaire.

In the Bani et al. study, participants that received the custom made orthotic device achieved a clinically and statistically significant difference of 13 points in their DASH score. None of the subjects in the Becker et al. study achieved a meaningful change in their reported DASH score indicating improved hand function. The authors note that many of the gathered DASH scores were not validly completed. They state, “Any DASH with four and five missing items …were analyzed”. A DASH is valid with up to three missing questions, otherwise the DASH is not to be scored. It is difficult to understand the authors’ conclusion that either orthosis reduced disability.

Finally, the study was not a crossover design so the subjects did not have the opportunity to compare one device to the other. It seems reasonable that most individuals would prefer a soft device to a hard device. We would certainly prefer to sit on a cushioned chair rather than a hard wooden chair. Sillem et al. also cited by Becker, found in their comparison of a custom and a prefabricated neoprene orthosis that patients preferred the neoprene 63% to custom 37%, as did Weiss et al. and Becker. Although comfort is important, the importance is in the choice of which orthosis fits the orthopaedic need of the patient seeking intervention. Should this need always be met due to only price or comfort? It is also questionable that price was a part of their advice to patients, when price was not a part of this study. Neoprene orthoses are rarely covered by insurance in an outpatient setting, creating more out of pocket cost for the person. Also noted, the Bani et al. study indicated that care was taken to ensure that the thumb was positioned to prevent dislocation of the upper end of the
metacarpal as they believed that the correct positioning of the thumb was important. So to conclude that there is minimum difference between the two splints seems to overstate the findings of the Becker et al. \textsuperscript{1} study. It should also be noted that there is moderate to high evidence that joint protection education and exercise intervention reduces pain and increases function in the treatment of individuals with CMC OA which can be readily addressed in the same therapy visit as a custom orthotic application.\textsuperscript{7}

Sincerely,
Kristin Valdes OTD, OT, CHT
Virginia H. O’Brien, OTD, OTR/L, CHT
Lisa M. Cyr, OTD, OTR/L, CHT

Author contributions
All authors contributed equally to this submission.

Conflict of interest
Nothing to disclose.

Acknowledgements
None.

References

K. Valdes
Department of Occupational Therapy, Rocky Mountain University of Health Professions, Provo, UT, USA

V. O’Brien
University of Minnesota Medical Center, Fairview, University Orthopaedics Therapy Center, USA

L. Cyr
Coastal Orthopaedics/Coastal Hand Therapy, Norwalk, CT, USA

* Address correspondence and reprint requests to: K. Valdes, 39 Shoreland Dr, Osprey, FL 34229, USA.
E-mail address: hotglassgal@comcast.net (K. Valdes).

27 November 2013