

Long-term use of a splint at night reduces pain and disability in people with osteoarthritis at the base of the thumb

Synopsis

Summary of: Rannou F, Dimet J, Boutron I, Baron G, Fayad F, Mace Y et al (2009) Splint for base-of-thumb osteoarthritis: a randomized trial. *Ann Intern Med* 150: 661–669. [Prepared by Mark Elkins, CAP Editor.]

Question: Does use of a splint at night improve pain and disability in people with osteoarthritis at the base of the thumb (OABT)? **Design:** Randomised, controlled trial with concealed allocation. **Setting:** Two tertiary hospitals in France. **Participants:** Patients were recruited from tertiary clinics or private practices. Inclusion criteria were pain at the base of the thumb 30 mm or greater on a visual analogue scale (VAS) from 0 (no pain) to 100 mm, age 45–75 years, radiographic evidence of OABT, and either trapeziometacarpal joint enlargement or closure of the first web. Post-traumatic osteoarthritis, inflammatory and crystal arthritis, neurological conditions, trauma, surgery and collagen diseases were exclusion criteria. Randomisation of 112 participants allotted 57 to the intervention group and 55 to a control group. **Interventions:** Both groups received usual care, at the discretion of the general practitioner or rheumatologist. In addition, a rigid splint was custom made for participants in the intervention group by an occupational therapist. It covered the base of the thumb and the thenar eminence but not the wrist. These participants were advised

to wear it at night for one year, and encouraged to contact the therapist if they felt the splint needed adjustment, if pain increased while wearing the splint, or if they had adverse effects, eg, skin erosion. **Outcome measures:** The primary outcome was the change in pain on the VAS at one month. Secondary outcome measures were disability at one month, and pain and disability at twelve months. Disability was measured with Cochin Hand Functional Scale from 0 (low disability) to 90, and on another VAS (100 mm = high perceived disability). Participants also rated their perceived global improvement and underwent clinical and radiological measures: pinch strength, pain during pinch, thumb mobility, closure of the first web, and blinded assessment of radiological progression of osteoarthritis. **Results:** 98 (87%) participants completed the study. No significant between-group differences in any outcomes were observed at one month. At 12 months, however, the intervention group showed significantly greater reductions in pain (by 14 mm, 95% CI 5 to 23), in Cochin scores (by 6 points, 95% CI 2 to 11), and in perceived disability (by 13 mm, 95% CI 4 to 22). The groups did not significantly differ on the remaining secondary outcomes. **Conclusion:** For patients with OABT, night splinting had no effect on pain and disability at 1 month but both improved at 12 months.

Commentary

Osteoarthritis at the base of the thumb is particularly common in women (Swigart et al 1999), and is associated with symptoms of pain, stiffness, and weakness at the base of the thumb (Wajon et al 2005). Not only do these impairments have the potential to limit task performance, but they also restrict participation in hobbies, sports, and many activities of daily living.

Current conservative intervention aims to assist individuals in managing their symptoms through the use of splints, exercises, and joint protection advice. Initially, patients are encouraged to wear their splints for 12–18 hours per day, but certainly at night and during performance of aggravating activities. As symptoms improve, they are advised to alter their wearing schedule accordingly.

While there have been a number of clinical trials comparing two different splinting techniques for carpometacarpal joint OA (Wajon and Ada 2005, Swigart et al 1999), this study is the first RCT to compare a rigid splint with a control group that has not received a 'placebo' splint.

The trial is well designed and reported, satisfying all the validity criteria on the PEDro scale (de Morton 2009), apart from those related to blinding. It is unfortunate that the assessment of pinch strength and web closure was not blinded, as this would have been simple to achieve.

The study found no difference in the improvement in pain between groups at one month. Clinically, this would appear to be surprising, but may be explained by the splint-wearing schedule. Patients were advised to wear their splints only at night, and may have continued to perform potentially aggravating activities, unsupported, during the day. As Rannou suggests, night-time-only use may result in the benefit of splinting taking longer to detect.

Significant improvements in pain and reduction in disability were identified at 12 months in the splinting group. These findings should encourage therapists to advise their patients to persevere with splinting, at least at night, for the long term to achieve ongoing symptom relief.

Anne Wajon

*Hand Therapy at Hornsby,
and Pacific Hand Therapy Services*

References

- de Morton NA (2009) *Aust J Physiother* 55: 129–133.
- Swigart C et al (1999) *J Hand Surg* 24: 86–91.
- Wajon A and Ada L (2005) *Aust J Physiother* 51: 245–249.
- Wajon A et al (2005) *Cochrane Database of Systematic Reviews* DOI: 10.1002/14651858. CD004631.pub2.