Functional treatment superior to cast immobilisation for complete ruptures of the lateral ligaments of the ankle

Synopsis


Question: Is cast immobilisation more effective than functional treatment of Grade III ruptures of the lateral ankle ligaments? Design: Randomised controlled trial. Setting: Emergency department of a hospital in Spain. Patients: Men and women who were treated consecutively for their ankle injuries. Inclusion criteria were closed physeal cartilage, age under 35 years, Grade III rupture without previous or associated injuries, and habitually practising some sport. Patients were randomised into immobilisation (n = 69) or functional treatment (n = 71) groups. Interventions: The immobilisation group received immobilisation with a below-knee plaster cast and elevation of the foot. After two days, weight bearing was allowed and the plaster was taken off after 21 days, which was followed by proprioceptive training of a 15 min session on a tilt board twice daily for 15 days. The functional treatment group received strapping for the first two days, and weight bearing and strapping until the 17th day, which was followed by the same 15 days of proprioceptive exercises as the first group. Outcomes: Outcomes were assessed at three, six and 12 months, and included reduction in talar tilt, subjective functional instability, pain, swelling, stiffness, re-injury rate, sporting level, and time before returning to sport. Main results: Twelve patients in the immobilisation group and seven patients in the functional treatment group were lost during the 12-month follow-up period. The difference in relative reduction in talar tilt was statistically significant and in favour of the functional treatment group compared with the immobilisation group both at six and 12 months. The functional treatment group showed statistically significantly greater improvements compared with the immobilisation group with regard to the percentage of patients with symptoms (pain, swelling, stiffness, and subjective instability) at three and six months, and with regard to earlier and better return to physical activity. No statistically significant inter-group differences were found for these outcomes at 12 months. Conclusion: Functional treatment is associated with a more rapid recovery than cast immobilisation in patients with Grade III ruptures of the lateral ankle ligaments.

Commentary

The study by Ardèvol et al arouses interest because it seems to investigate “old fashioned” therapy. Although the study was only recently published (2002), recruitment took place between 1994 and 1999. It seems likely that the inclusion criterion of Grade III sprains necessitated a rather long recruitment period, running the risk of publishing a trial that no longer reflects current practice. Currently, cast immobilisation for ankle sprains is considered out of date, based on a number of trials and reviews. But is that really true? When the researchers prepared their trial, probably in 1992/1993, few trials were available, and none of them gave sufficient data to show whether cast was inferior over functional treatment (Gronmark et al 1980, Hedges and Anwar 1980, Roycroft and Mantgani 1983). Around the start of the trial, a study by Eiff et al (1994) was published, which provides more information, but is somewhat smaller. The main question is, did the study by Ardèvol et al add to the available evidence? This question can be answered by performing a meta-analysis (random effects model) on the two outcome measures that are quite often measured in physiotherapy practice, eg functional instability and pain. The following results can be shown.

Looking at functional instability, Eiff and Ardèvol present data that are more or less in agreement (odds ratios: Ardèvol 0.23, 95% CI 0.11 to 0.52, Eiff 0.61, 95% CI 0.18 to 2.13). The pooled estimate of the odds ratio for functional instability is 0.33 (95% CI 0.14 to 0.83). This shows that the effectiveness of functional treatment is prominent in the short term. In the intermediate and long term, no effectiveness can be shown as yet.

On pain, more study data are available (Hedges and Anwar 1980). The pooled data show short term effects (OR 0.42, 95% CI 0.24 to 0.75) and intermediate term effects (OR 0.46, 95% CI 0.23 to 0.92). On both accounts it is the Ardevol study that adds enough power to reach significance.

The downside is that in the long term, no study reaches an effect. To be absolutely sure that functional treatment is effective in the intermediate term, a trial with at least 324 participants (alpha 0.05 and 1-beta 80%) would be necessary.

So, although seemingly out of date, the Ardèvol trial adds to the evidence in a meaningful way. The data before their study were insufficient to scientifically refute cast immobilisation as a treatment approach for ankle sprains.

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References