Crawford F, Atkins D, et al. Steroid injection for heel pain: evidence of short-term effectiveness. A randomized controlled trial. Rheumatology 1999:38:974-977.

Design: Randomized clinical trial

Study question: Does a steroid injection reduce plantar heel pain in the short and intermediate term? Does a tibial nerve block at the time of injection have beneficial effects?

Population/sample size/setting:

- 106 patients (69 women, 37 men, mean age 57) treated for heel pain at the University of York in the UK
- Eligibility criteria were pain and tenderness centered on the medial tubercle of the calcaneum on weight bearing which resolved after activity
- Exclusion criteria were pregnancy, age under 18, steroid injection for heel pain in the past six months, receiving anticoagulants, and inability to give consent

Interventions:

- Randomization was to one of 4 injection groups into the medial aspect of the heel pad
    - 25 mg prednisolone acetate with 1 ml of 2% lidocaine (A, n=27)
    - 25 mg prednisolone acetate with 1 ml of 2% lidocaine given after a tibial nerve block (B, n=26)
    - 2 ml of 1% lidocaine (C, n=27)
    - 2 ml of 1% lidocaine after a tibial nerve block (D, n=26)
- Injections were done with white dressing tape to mask the syringe contents from the physician and patient

Outcomes:

- Pain scores were assessed at 1, 3, and 6 months after the injection
- Baseline VAS pain scores were very similar between the 4 groups: A=5.6, B=5.5, C=5.5, D=5.8
- The only statistically significant difference in pain scores were observed at 1 month, when group A had a VAS of 2.9, B=4.5, C=4.0, D=5.3
- The tibial nerve block did not affect pain scores
- At 3 months, the group VAS ranged from 3.1 to 3.7 with no statistically significant group differences; at 6 months there were also no group differences
- There was a high attrition rate as the study progressed; at 1 month, 4% of patients had been lost to followup, but at 3 months 25% had been lost and at 6 months 48% of patients had been lost to followup, with no differences between group attrition
- At the end of the trial, 28% of the trial population reported having heel pain

- Patient characteristics such as age, BMI, and duration of pain prior to treatment was not associated with pain outcomes

Authors' conclusions:

- Plantar injection of 25 mg prednisolone acetate is beneficial in alleviating heel pain at one month, but not at 3 or 6 months
- Tibial nerve block does not improve the response to injections
- It was not possible to identify any features such as BMI or duration of heel pain which was associated with a good or poor outcome
- The high attrition reduces the power of the study to detect treatment effect differences at 3 and 6 months, but the effects of steroid injection appear to be transient

Comments:

- The authors seem to conclude that weight loss does not benefit heel pain, but in the six months of the study, weight loss was not reported; only baseline BMI was measured and this did not affect the response to the steroid or lidocaine injections
- The duration of symptoms varied from 1 to 120 months; a minimum duration of symptoms was not an entry criterion, but probably should have been
- It is likely that the inclusion criteria were tailored to create a study of patients who would ordinarily be diagnosed with plantar fasciitis, but "plantar heel pain" is the condition named by the authors
- Attrition was not associated with the treatment group, and the numbers of patients in each group at the end of the study should have been about equal, but the actual numbers of patients in each group is not reported
- The p values in Table 2, in which all four groups are compared, only make sense if they were from analysis of variance (ANOVA), and there is insufficient information to interpret them
    - At 1 month after injection, p=0.02, meaning that at least one of the group means is different from the others; with ANOVA, a post hoc analysis would define which group was different from the others
    - It is likely that the mean for group A is less than for the other three groups, but this has to be guessed at, since 2.9 is the lowest pain score among the four groups
    - However, both groups A and B had steroid injection; group B had a tibial nerve block and group A did not
    - Group B has a pain score of 4.5, which is slightly higher than group C, which had local anesthetic alone
    - It is by no means certain that the overall mean for the steroid groups are lower than for the local anesthetic groups alone

    - For the groups (C and D) which had local anesthetic without steroid, the pain scores at 1 month were higher with the tibial nerve block than without the blocks
- Therefore, even at one month, the benefits of steroid injection are not convincing
- No functional scores are reported
- Plantar stretching exercises, which are likely to be beneficial in plantar heel pain, are a part of usual clinical practice, but were not done in this study

Assessment: Inadequate for evidence that a steroid injection of 25 mg prednisone acetate reduces plantar heel pain either in the short or the intermediate term