

Lord SM, Barnsley L, et al. Percutaneous Radio-Frequency Neurotomy for Chronic Cervical Zygapophyseal-Joint Pain. NEJM 1996;335:1721-6.

Design: Randomized Controlled Trial

Population/sample size/setting:

- 24 patients (9 men, 15 women, mean age 44) with more than 3 months of neck pain following motor vehicle accident, referred to tertiary care center research unit in Australia
- Eligible patients had not experienced relief of pain with conventional therapies, which included NSAID, TENS, acupuncture, opioids, chiropractic, exercise, heat, and traction
- Selected if zygapophyseal joint confirmed as source of pain by complete relief following injection of local anesthetic but not following injection of saline
 - o 54 patients were screened with injections
 - o Three injections, guided by an image intensifier, were given in a random order on three separate occasions in which patient and physician were blinded: one of lidocaine, one of bupivacaine, and one of saline
 - o Patient was considered to be confirmed only if the patient reported complete relief of pain with the anesthetic injections and no relief of pain with saline
- C2-3 joint pain excluded because of technical difficulty of applying treatment; painful levels at C3-4 to C6-7 were included

Main outcome measures:

- Randomized to active treatment with radio-frequency (RF) neurotomy at 80° C (n=12) or sham treatment (placement of electrode at affected joint but temperature maintained at 37° C, n=12)
- Patient & surgeon blinded to assignment until end of study
- Baseline evaluations included their pain on a 100 point Visual Analogue Scale (VAS) and the reporting of four common activities (e.g. driving, returning to work, vacuuming) which were affected by neck pain and which were of greatest importance to recover functionally
- Patients were contacted by telephone twice after the procedures: once at 3-5 days, and again at 2-3 weeks; a formal interview was done at 3 months
 - o Patients were asked to rate pain on the VAS and to report whether the four daily activities which had been affected at baseline had been successfully recovered
 - o Treatment was considered successful only if the neck pain was reduced to 0 to 5 on the 100 point scale and if all four activities had been restored (waived if pain outside the neck interfered with these activities)
 - o The patients were asked to contact the investigators when their pain had returned to 50% of the pretreatment level

- Time to recurrence of pain to 50% of preoperative level) had median of 263 days in active treatment group and 8 days in sham procedure group
- At 27 weeks, 7 patients in active treatment group and 1 patient in sham treatment group were pain-free
- 5 patients in active treatment group had persistent numbness or dysesthesias in skin overlying coagulated nerves, but none rated these as troublesome
- Second procedures done on 5 patients in each group: 4/5 in control group who had active treatment as second procedure had complete pain relief, but 3/5 in active group who failed first procedure also had no relief after second procedure
 - o Two patients in the RF group who had no relief of pain were subsequently found to have pain arising from adjacent levels

Authors' conclusions:

- RF neurotomy more effective than placebo in relieving facet joint pain
- Results apply only to stringently selected patients (relief with diagnostic blocks with both short and long-acting anesthetic and not saline) and when technique is exacting
- Placebo response is complex and inconsistent

Comments:

- The criteria for inclusion appear to be extremely, if not unrealistically stringent: complete relief from anesthetic injection and no relief from saline injection
 - o At least some placebo response is expected from most injection procedures; excluding patients who exhibit any such response will result in an unusual patient population which may not be representative of patients for whom RF could be considered as a treatment option
 - o It is surprising that 24 patients out of the 54 who were screened actually met the screening criteria
 - o In part, the screening criteria were so exacting because the authors wanted to have a small number of patients subjected to a sham procedure which involves many of the risks of RF, such as radiation exposure and risk of infection
- A treatment effect of RF nevertheless does seem to be shown, with a minority of patients experiencing relief for more than one year, but second procedures are likely to be required for many who respond to the initial RF operation

Assessment: Methodologically a carefully done study whose application as evidence is limited by size of the patient sample; it is adequate for some evidence that RF relieves pain and restores function in patients whose neck pain arises from the facet joint