



Surgery for cervical radiculopathy followed by physiotherapy may resolve symptoms faster than physiotherapy alone, but with few differences at two years

Synopsis

Summary of: Engquist M, Löfgren H, Öberg B, Holtz A, Peolsson A, Söderlund A, et al. Surgery versus nonsurgical treatment of cervical radiculopathy: a prospective, randomized study comparing surgery plus physiotherapy with physiotherapy alone with a 2-year follow-up. *Spine* 2013;20:1715-1722.

Question: Does surgery for patients with cervical radiculopathy followed by physiotherapy result in larger long-term improvements in self-reported disability when compared with a physiotherapy program alone? **Design:** A randomised, controlled trial with concealed allocation and 24 months of follow up. **Setting:** Three Swedish spinal centres. **Participants:** Men and women between 18 and 65 years of age with pain (with or without sensory and motor deficit) in one or both arms indicating nerve root involvement caused by disc herniation with or without osteophytes, or a stenosis caused by osteophytes, confirmed by magnetic resonance imaging. Symptom duration was between eight weeks and five years, and involved one or two symptomatic disc levels. Key exclusion criteria included obvious myelopathy, and previous surgery to the cervical spine. Randomisation allocated 35 to the surgery plus physiotherapy group and 33 to the physiotherapy group. **Interventions:** Both groups received an individualised physiotherapy program, which included general/specific exercises and pain-coping strategies, provided twice a week at the clinic for at least three months, in addition to daily home exercises. In addition, the surgery group received an anterior cervical decompression and fusion (ACDF). **Outcome measures:** Primary outcome was the Neck Disability Index at 24 months. Secondary measures were pain intensity in the neck and arm (0 to

100 visual analogue scale) and global assessment of change. **Results:** A total of 63 patients completed the 24-month follow up (n = 31 surgery and n = 32 physiotherapy). Five patients allocated to physiotherapy had surgery during the study period. There was no difference in reduction in Neck Disability Index scores between the groups at 12 months or 24 months: surgery plus physiotherapy 14.2 (95% CI, 5.6 to 22.7) versus physiotherapy 11.5 (95% CI, 3.0 to 19.9). Over 24 months there was a difference in favour of the surgical group in neck pain intensity ($p = 0.039$) with a mean difference at 12 months of 18.4 (95% CI, 3.2 to 30.8), but not for arm pain intensity ($p = 0.580$) or for the proportion of patients rating their symptoms as 'better/much better' ($p = 0.28$). **Conclusion:** Surgery for cervical radiculopathy followed by physiotherapy resulted in a more-rapid improvement in neck pain than a physiotherapy program alone, but after 24 months there were few differences between the groups. Thus, a comprehensive physiotherapy program should be tried before surgery for patients with cervical radiculopathy.

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Commentary

People presenting to physiotherapists with cervical radiculopathy frequently ask for an opinion as to whether they should consider surgery or pursue conservative management. General opinion is that recovery usually occurs with time and conservative management, but surgery is likely to relieve symptoms more rapidly (albeit with some risks). Evidence for this opinion is weak, which is confirmed in a recent systematic review.¹ Engquist and colleagues have strengthened this evidence in finding that surgery plus physiotherapy results in a more-rapid improvement than physiotherapy alone over the first several months, but in the longer term (two years), the outcomes become very similar. However, Engquist et al recognise a limitation in recruitment, which clinicians should consider when offering advice. The people who declined to enter the trial had a shorter history, higher pain levels and wanted surgery. Based on previous research, the authors hypothesised that a better outcome might have been achieved in the surgical group with the inclusion of these people.

The novelty in this trial was the comparison of surgery plus a three-month structured physiotherapy program versus the physiotherapy program alone. Others have compared surgery alone against a conservative approach or natural recovery. An extensive

physiotherapy program is not always the norm following surgery. Yet, the authors offer an interesting comparison between their results and those of Hermansen et al² who reported on long-term surgical outcomes. As expected, surgery reduced pain but the notable difference was that surgery alone did not result in as much improvement in disability as the surgery plus physiotherapy or physiotherapy alone did in this trial. Symptomatic relief is important, but quality of life is also dependant on functional ability. Further research is required to investigate and confirm the benefits of a comprehensive post-surgical rehabilitation program as found in this trial by Engquist and colleagues.

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References

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2. Hermansen A, et al. *Spine*. 2011;36:919-925.

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