

Anterior cervical discectomy and fusion outcome

[Anterior cervical discectomy and fusion](#) (ACDF) has demonstrated good results in terms of pain relief and patient satisfaction ¹⁾.

Several groups report their results of [Anterior cervical discectomy and fusion](#) (ACDF) using different techniques: [allograft](#), [autograft](#), [cages](#) with different designs and [anterior cervical plates](#) dynamic or not, with as most important outcome that the use of autograft is superior to allograft and that the postoperative neck-pain after surgery is relieved quicker after ACDF ^{2) 3) 4) 5)}.

It has been considered as the golden standard for this kind of surgery. However, ACDF has not been proven to be better than [anterior cervical discectomy](#) without fusion (ACD) ⁶⁾.

Sagittal alignment

Sagittal profiles of the spinal cord have been hypothesized to influence loads on spinal tissue and influence outcome after spinal surgery ^{7) 8)}. It is believed that ACDF surgery maintains sagittal alignment superiorly to ACD surgery, which should result in a better outcome after surgery and thus on the long term in less disability for the patients. Studies on sagittal alignment in the cervical spine have mainly focused on laminoplasty or arthroplasty ^{9) 10)} showing a proper radiological position on the short term. Despite these radiological findings, clinically there has been no significant improvement in outcome on the longer term ¹¹⁾. Moreover, it has also been published that single-level procedures may lead to a local kyphosis, but do not influence the sagittal alignment as much as multi-level surgery ¹²⁾.

Although, initially the postoperative outcome is good in more than 90% of the patients, the outcome score on the longer term gradually decreased as the follow up time after surgery increased in a subgroup of the patients. Patients who are doing well after surgery are found without a significant difference at all time points, however patients with moderate to severe complaints can be found increasingly in time after surgery. The increase of complaints at the time of the survey may be the result of ongoing degenerative effects. Only a few studies have been published focusing on a long follow-up period after cervical spine procedures compared to ACDF and therefore it is hard to address the ongoing degenerative effects in the cervical spine ¹³⁾.

Case series

see [Anterior cervical discectomy and fusion case series](#).

1)

Alrawi MF, Khalil NM, Mitchell P, Hughes SP. The value of neurophysiological and imaging studies in predicting outcome in the surgical treatment of cervical radiculopathy. *Eur Spine J.* 2007 Apr;16(4):495-500. Epub 2006 Aug 30. PubMed PMID: 16944228; PubMed Central PMCID: PMC2229822.

2)

Baskin DS, Ryan P, Sonntag V, Westmark R, Widmayer MA. A prospective, randomized, controlled cervical fusion study using recombinant human bone morphogenetic protein-2 with the CORNERSTONE-SR allograft ring and the ATLANTIS anterior cervical plate. *Spine (Phila Pa 1976).* 2003 Jun 15;28(12):1219-24; discussion 1225. PubMed PMID: 12811263.

3)

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disc disease using autograft, allograft, or xenograft: a randomized study with radiostereometric and clinical follow-up assessment. *Spine (Phila Pa 1976)*. 2000 Aug 1;25(15):1908-16. PubMed PMID: 10908933.

4)

Madawi AA, Powell M, Crockard HA. Biocompatible osteoconductive polymer versus iliac graft. A prospective comparative study for the evaluation of fusion pattern after anterior cervical discectomy. *Spine (Phila Pa 1976)*. 1996 Sep 15;21(18):2123-9; discussion 2129-30. PubMed PMID: 8893437.

5)

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6)

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8) 10)

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9) 12)

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11)

Pickett GE, Mitsis DK, Sekhon LH, Sears WR, Duggal N. Effects of a cervical disc prosthesis on segmental and cervical spine alignment. *Neurosurg Focus*. 2004 Sep 15;17(3):E5. PubMed PMID: 15636561.

13)

Nandoe Tewarie RD, Bartels RH, Peul WC. Long-term outcome after anterior cervical discectomy without fusion. *Eur Spine J*. 2007 Sep;16(9):1411-6. Epub 2007 Jan 30. PubMed PMID: 17262184; PubMed Central PMCID: PMC2200758.

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Last update: **2018/01/25 12:23**

