

Spinal dural arteriovenous fistula treatment

If you don't completely eliminate a [dural arteriovenous fistula](#) (spinal or intracranial) it will come back!

[Lumbar puncture](#) and [steroid](#) administration for the cases of SDAVF could aggravate the patient's neurological symptoms. Therefore, [lumbar puncture](#) and initiation of [immunotherapy](#) should be avoided until SDAVF is completely excluded in patients with suspected [myelitis](#) on spine MRI without gadolinium-enhancement, even if their neurological symptoms progress rapidly ¹⁾.

As spinal dural arteriovenous fistula can result in permanent [spinal cord injury](#), all patients require treatment, which consists of surgical or endovascular occlusion of the fistula.

There is an increasing tendency to treat spinal dural arteriovenous fistulas (SDAVFs) endovascularly despite the lack of clear evidence favoring embolization over surgery.

A [metaanalysis](#) using the [PRISMA](#) (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standard was performed. All the English literature from 2004 onward was evaluated. From each article that compared the 2 treatment modalities, the odds ratio (OR) was calculated. Combined ORs were calculated with Review Manager 5.3 of The Cochrane Collaboration.

A total of 35 studies harboring 1112 patients were assessed. Initial definitive fistula occlusion was observed in 588 of 609 surgical patients (96.6%; 95% confidence interval [CI], 94.8-97.8) vs 363 of 503 endovascularly treated patients (72.2%; 95% CI, 68.1-75.9; $P < .001$). The combined OR from 18 studies that assessed both treatment modalities (730 patients) was 6.15 (95% CI, 3.45-11.0) in favor of surgical treatment. Late recurrence (13 studies, 480 patients) revealed an OR of 3.15 (95% CI, 1.66-5.96; $P < .001$) in favor of surgery. In a subgroup, recurrence was reported in 10 of 22 patients (45%) treated with Onyx vs 8 of 35 (23%) treated with n-butyl-2-cyanoacrylate (OR, 2.51; 95% CI, 0.75-8.37; $P = .13$).

Although hampered by inclusion of poor quality studies, this meta-analysis shows a definite advantage of primary surgical treatment of SDAVF over endovascular treatment in initial failure rate and late recurrences. The often-used argument that endovascular techniques have improved and therefore outweigh surgery is not supported by this meta-analysis ²⁾.

A retrospective chart review of 27 adult patients with a diagnosis of SDAVF and who underwent treatment at Duke University Hospital between January 1, 1993 and December 31, 2012, compared the outcome measures by Aminoff-Logue score (ALS) in patients who underwent treatment with endovascular embolization versus surgical ligation of fistula.

10 patients underwent endovascular embolization (Onyx was used in 5 patients and NBCA in 5 patients) as the first line therapy. Seventeen patients underwent surgical ligation as initial therapeutic modality. Patients in both groups showed significant improvement in clinical status (ALS) after treatment. One patient in endovascular group developed spinal infarction due to accidental embolization of medullary artery. Three patients in embolization group had recurrence of fistula during the course of follow up requiring surgical ligation. Two patients in surgical group developed

local wound infection. None of the patients in surgical group had recurrence of fistula during the course of follow up.

Endovascular embolization and surgical ligation are effective treatment strategies for SDAVF. Surgical ligation may offer permanent cure without any recurrence. Endovascular approach is associated with higher incidence of recurrence, especially with use of onyx ³⁾.

Complications after surgery

There were only a few minor and transient complications after surgery: one neurological deterioration where venous **thrombosis** was suspected, one cerebrospinal fluid accumulation and, in one case a transient wound healing impairment. Two patients had to be operated on again. In one case with difficult localization of a fistula at the L5/S1 level, the fistula was still visible in the postoperative angiogram. In another patient, a spinal epidural haematoma occurred a few hours after surgery.

Recovery after surgical management was often incomplete because the diagnosis was established too late and the patient already presented with severe and long-lasting deficit. Thus, the main problem remains a diagnostic and not a surgical one. ⁴⁾.

1)

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2)

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3)

Gokhale S, Khan SA, McDonagh DL, Britz G. Comparison of surgical and endovascular approach in management of spinal dural arteriovenous fistulas: A single center experience of 27 patients. Surg Neurol Int. 2014 Jan 21;5:7. doi: 10.4103/2152-7806.125628. eCollection 2014. PubMed PMID: 24575322.

4)

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