

Suboccipital Decompressive Craniectomy for cerebellar infarction

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Unlike the situation with [supratentorial masses](#) causing [herniation](#), there are several reports of patients in a deep [coma](#) from direct [brainstem compression](#) who were operated upon quickly and made useful recovery.

Guidelines

[Guidelines](#) from the [American Heart Association](#)/Stroke Council's Scientific Statement Oversight Committee from 2014 recommended [suboccipital decompressive craniectomy](#) (SDC) with dural expansion to be performed in deteriorating patients with cerebellar infarction failing maximal medical therapy ¹⁾.

However, no good-quality evidence is available to support this surgical practice, and the surgical timing and technique both remain controversial ²⁾.

Evidence

The evidence favoring suboccipital decompressive craniectomy in space-occupying [cerebellar infarctions](#) stems predominantly from retrospective, monocentric, uncontrolled studies. ³⁾

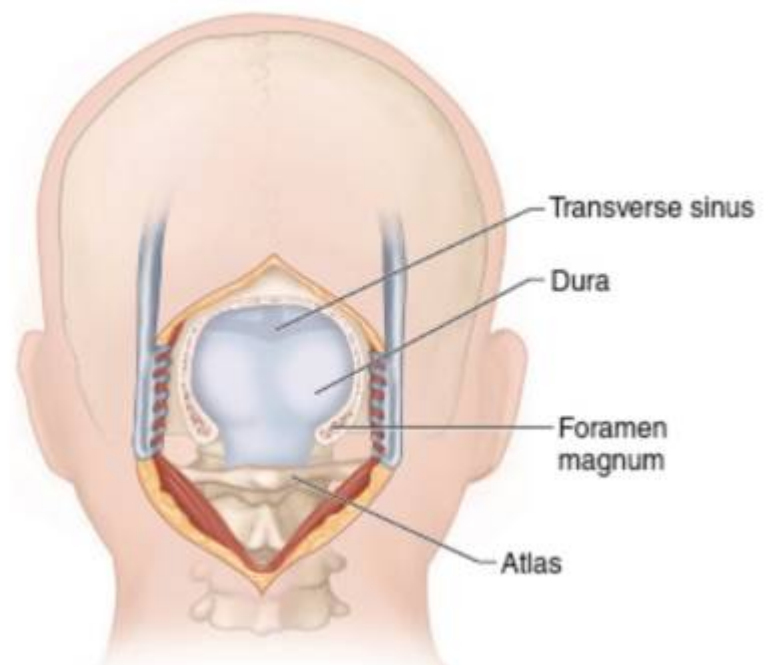
Large multicenter RCTs are lacking for this situation probably due to the well-known devastating effects of [brainstem compression](#) and [hydrocephalus](#).

Timing

Criteria for patient selection and the timing of the operation are not yet established, although there are several reports that DSC is effective

For Suyama et al. early [suboccipital decompressive craniectomy](#) should be considered for treating [cerebellar infarction](#) in patients with [GCS](#) 13 or worse. A poor prognosis is inevitable in patients whose [infarction](#) is combined with other locations than the [cerebellum](#) but in those who already have [obstructive hydrocephalus](#) at the time of surgery ⁴⁾.

Technique



The operation of choice is a [suboccipital decompression](#) to include enlargement of the [foramen magnum](#). The dura is then opened and the [cerebellar infarction tissue](#) usually exudes “like toothpaste” and is easily aspirated. Avoid using [ventricular drainage](#) alone as this may cause [upward cerebellar herniation](#) and does not relieve the direct [brainstem compression](#).

The patient is positioned [prone](#) on [chest rolls](#) with the [head](#) in a [Mayfield](#) head-holder or in a [horseshoe headrest](#). Flex the [neck](#) to open the interspace between the [occiput](#) and posterior arch of [C1](#). The [shoulders](#) is retracted inferiorly with [adhesive tape](#). A midline [skin incision](#) from [inion](#) to $\approx$ [C2 spinous process](#) is made.

Open the [dura](#) in a “Y” shaped incision, and excise the triangular top flap.

Necrosectomy appears to be a suitable alternative, achieving comparable mortality and functional outcomes. Further trials are necessary to evaluate which surgical technique is more beneficial ⁵⁾.

Systematic Review and Meta-Analysis

Suboccipital decompressive craniectomy (SDC) for cerebellar infarction has been traditionally performed with minimal high-quality evidence. The aim of a systematic review and meta-analysis from the UBC Hospital, Vancouver, was to investigate the impact of SDC on functional outcomes, mortality, and adverse events in patients with cerebellar infarctions.

A systematic review and meta-analysis in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and MetaAnalyses) guidelines. The primary outcome was the proportion of patients with a moderate-severe disability after SDC. Secondary outcomes included mortality and adverse events. A sensitivity analysis was conducted to examine the roles of age, preoperative neurologic status, external ventricular drain insertion, and debridement of infarcted tissue on SDC outcomes.

Eleven studies (with 283 patients) met the inclusion criteria. The pooled event rate for moderate-severe disability was 28% (95% confidence interval [CI], 20%-37%) and for mortality, it was 20% (95% CI, 12%-31%). The estimated overall rate of adverse events for SDC was 23% (95% CI, 14%-35%). Sensitivity analysis found less mortality with mean age <60 years, higher rates of concomitant external ventricular drain insertion, and debridement of infarcted tissue. Several factors were identified for heterogeneity between studies, including follow-up time, outcomes scale, extent of infarction, and other neuroimaging features.

The best available evidence for SDC is based on retrospective observational studies. SDC for cerebellar infarction is associated with better outcomes compared with decompressive surgery for hemispheric infarctions. Lack of standardized reporting methods for SDC is a considerable drawback to the development of a better understanding of the impact of this surgery on patient outcomes ⁶⁾.

Outcomes

cerebellar infarction and associated brain edema due to brainstem compression or obstructive hydrocephalus cause consciousness disturbance. In such cases, the mortality rate is reported to be 84% ⁷⁾ when decompressive suboccipital craniectomy (DSC) is not performed

The best available evidence for Suboccipital Decompressive Craniectomy is based on retrospective observational studies. SDC for cerebellar infarction is associated with better outcomes compared with decompressive surgery for hemispheric infarctions. Lack of standardized reporting methods for SDC is a considerable drawback to the development of a better understanding of the impact of this surgery on patient outcomes ⁸⁾.

A poor prognosis is inevitable in patients whose infarction is combined with other locations than the [cerebellum](#) but in those who already have [obstructive hydrocephalus](#) at the time of surgery ⁹⁾.

[Brainstem infarction](#) and bilateral [cerebellar infarction](#) were associated with unfavorable outcome ¹⁰⁾.

Favorable clinical outcomes including [overall survival](#) can be expected after preventive [Suboccipital Decompressive Craniectomy](#) in patients with a volume ratio between 0.25 and 0.33 and the absence of [brainstem infarction](#). Among these patients, preventive [Suboccipital Decompressive Craniectomy](#) might be better than the best medical treatment alone ¹¹⁾.

Case series

[Suboccipital Decompressive Craniectomy for cerebellar infarction Case series.](#)

Case reports

[Suboccipital Decompressive Craniectomy for cerebellar infarction Case reports.](#)

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