Visual outcomes comparing surgical techniques for management of severe idiopathic intracranial hypertension

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CRD summary
This review compared surgical techniques for managing vision loss in severe idiopathic intracranial hypertension that was unresponsive to medical treatment. The author concluded that with the exception of optic nerve sheath decompression there was limited evidence on the effect of other surgical interventions. This was a poorly reported review and the conclusions may not be reliable.

Authors' objectives
To compare surgical techniques for managing vision loss in severe idiopathic intracranial hypertension that was unresponsive to medical treatment.

Searching
MEDLINE was searched. Search terms were reported. WEB of Science Citation Index and reference lists of retrieved articles were searched for additional articles. Studies of optic nerve sheath decompression were excluded if they were not written in English.

Study selection
Case series or individual case reports, with vision data available for patients receiving lumboperitoneal shunts, ventriculoperitoneal shunts, intracranial venous sinus stents and optic nerve sheath decompression (the last excluding individual case reports or series of less than 10 patients) were eligible for inclusion in the review. Individual cases and small series of non-pediatric patients were included if they focused on stents and cerebrospinal fluid diversion techniques. Articles of summary data only and cases involving secondary causes of increased intracranial pressure were excluded. Visual outcome was based upon definitions supplied by the investigators. Where no outcome definition was supplied, other reported changes were recorded; these included headaches and papilledema. Where reported, most patients were female with a mean age between 30 to 33.6 years (range six to 72 years). The interventions of interest were not all primary procedures. The mean follow up was between 11.8 and 57.2 months (range zero to 278 months).

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data were extracted as percentage changes, using six-month follow up data where available. The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
Data were summarised in narrative form. For optic nerve sheath decompression, data were reported to show an aggregate of patient experience. For other surgical procedures, the cumulative experience was reported. Differences could be examined in the tables and text.

Results of the review
The number of included studies could not be verified due to the absence of tabulated data relating to lumboperitoneal shunts (see below). The number of included patients was 344.

Optic nerve sheath decompression (252 patients; 423 eyes): Data from seven retrospective case series (optic nerve sheath decompression was the primary surgery in 90% of cases) showed an overall vision improvement of 80% (339
eyes). In a subgroup of 18 chronic patients, an improvement of 66% (21 eyes) was noted.

**Intracranial venous sinus stents (17 patients):** Vision was improved or resolved in 47% of patients (n=8). Eight patients had resolution of papilledema (47.1%) and one was improved (5.9%). Headaches were resolved in eight patients (47.1%).

**Ventriculoperitoneal shunts (31 patients):** Vision was improved in 38.7% of patients (n=12). There were 17 reported cases of resolved papilledema, and headaches were resolved or improved in 2 patients.

**Lumboperitoneal shunts (44 patients):** Vision signs and symptoms were resolved in 44.6% of patients (n=20). Papilledema was resolved in 10 patients (22.7%) and improved in seven patients (15.9%). Headaches were resolved in eight patients (18.2%) and improved in 12 patients (27.3%). The paper did not present a table of results for lumboperitoneal shunts; a table of response to chemotherapy in optic pathway gliomas was available in its place.

According to the summary table, visual worsening was present in 0% of patients after ventriculoperitoneal and optic nerve sheath decompression, approximately 6% after stent placement, and approximately 5% after lumboperitoneal shunt placement. However, the text stated that 11% of patients had worse visual acuity or visual field after optic nerve sheath decompression.

**Authors' conclusions**
With the exception of optic nerve sheath decompression, there was limited evidence on the effect of surgical interventions for the management of vision loss in severe idiopathic intracranial hypertension.

**CRD commentary**
The review question was clear and supported by defined inclusion criteria for all aspects except for participants. The search strategy was based largely on one database, language restrictions were applied and there appeared to be no attempt to retrieve unpublished material, which meant that relevant studies may have been missed and language and publication biases could not be ruled out. There was no assessment of study quality and no details supplied on how the review process was conducted, which meant that the reliability of the included studies and their assessment was unclear. The author's conclusion reflected the limited evidence presented. Some acknowledgement was given to several limitations in the design and data collection procedures in the included studies. However, this was a poorly reported review and the conclusions may not be reliable.

**Implications of the review for practice and research**
**Practice:** The authors stated that optic nerve sheath decompression may be the preferred treatment of choice in managing vision loss in severe idiopathic intracranial hypertension in patients resistant to medical therapy.

**Research:** The authors stated that in the absence of prospective randomised clinical trials further case series should provide information on pre- and post-operative visual function and optic disc appearance, using recommended functional measures.

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