Idiopathic intracranial hypertension surgery

- Pulsatile Tinnitus as the Primary Symptom in IIH: A Distinct Clinical Entity
- PROACTIVE EXTERNAL LUMBAR DRAINAGE USE IN PEDIATRIC IDIOPATHIC INTRACRANIAL HYPERTENSION AND PROPOSAL OF A NEW TREATMENT ALGORITHM
- Factors influencing the efficacy of surgical repair for spontaneous middle cranial fossa CSF leaks: a systematic review and meta-analyses
- Diagnostic efficacy of radionuclide scintigraphy in detecting lumboperitoneal shunt obstructions in idiopathic hydrocephalus and intracranial hypertension
- Non-Invasive Detection of Recurrent Intracranial Pressure via Optical Coherence Tomography: A Case Report
- Treatment and Monitoring of Idiopathic Intracranial Hypertension
- Atraumatic Cranial CSF Leaks
- Fulminant Idiopathic Intracranial Hypertension-Clinical Characteristics and Continuous Drainage as a Novel Treatment Approach

Systematic reviews

Prospective studies on the surgical options for Idiopathic intracranial hypertension (IIH) are scant and no evidence-based guidelines for the surgical management of medically refractory IIH have been established. A search in Cochrane Library, MEDLINE and EMBASE from 1 January 1985 to 19 April 2019 for controlled or observational studies on the surgical treatment of IIH (defined in accordance with the modified Dandy or the modified Friedman criteria) in adults yielded 109 admissible studies. Venous sinus stenting (VSS) improved papilledema, visual fields and headaches in 87.1%, 72.7%, and 72.1% of the patients respectively, with a 2.3% severe complication rate and 11.3% failure rate. Cerebrospinal fluid shunt techniques diminished papilledema, visual field deterioration, and headaches in 78.9%, 66.8%, and 69.8% of the cases and are associated with a 9.4 severe complication rate and a 43.4% failure rate. Optic nerve sheath fenestration ameliorated papilledema, visual field defects and headaches in 90.5, 65.2%, and 49.3% of patients. The severe complication rate was 2.2% and the failure rate was 9.4%. This is currently the largest systematic review for the available operative modalities for IIH. VSS provided the best results in headache resolution and visual outcomes, with low failure rates and a very favorable complication profile. In light of this, Venous sinus stenting ought to be regarded as the first-line surgical modality for the treatment of medically refractory IIH [1)].

Indications

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Techniques

1. **CSF Diversion Procedures**:

    1. **Ventriculoperitoneal (VP) Shunt**: A VP shunt involves placing a catheter in the brain's

ventricles to drain excess cerebrospinal fluid (CSF) into the abdominal cavity. This helps reduce intracranial pressure and manage symptoms.
2. **Lumboperitoneal (LP) Shunt**: A LP shunt involves placing a catheter in the lumbar region of the spine to drain CSF into the abdominal cavity. This is often used when ventriculoperitoneal shunts are not feasible or effective.

2. **Optic Nerve Sheath Fenestration**:

1. This procedure involves making a small incision in the optic nerve sheath to relieve pressure on the optic nerve. It is typically considered when there is severe or progressive vision loss due to elevated ICP.

3. **Decompressive Surgery**:

1. In rare cases, decompressive surgery to relieve pressure on the brain may be considered, particularly if there are structural abnormalities contributing to increased ICP.

4. **Endovascular Procedures**:

1. For patients with secondary causes of IIH, such as internal jugular vein stenosis, endovascular interventions like stenting may be considered to alleviate the underlying cause of increased ICP.

Preoperative Considerations:

- **Assessment**: Thorough evaluation of the patient's overall health, the severity of IIH, and the potential benefits and risks of surgery. - **Multidisciplinary Approach**: Coordination between neurologists, neurosurgeons, ophthalmologists, and other specialists to ensure comprehensive care.

Postoperative Care:

- **Monitoring**: Close monitoring for complications, such as infections or shunt malfunction, and regular follow-up to assess the effectiveness of the surgery in managing symptoms and reducing ICP. - **Rehabilitation**: Depending on the surgical procedure, postoperative care may include physical therapy or other rehabilitative measures.

Summary:

Surgical intervention for IIH is typically reserved for cases where medical management has failed, and the patient has persistent or severe symptoms, including visual impairment or chronic elevated intracranial pressure. The choice of surgical procedure depends on the individual patient's condition and the underlying cause of IIH. Regular monitoring and follow-up are essential to ensure successful outcomes and address any potential complications.

Idiopathic intracranial hypertension patients may require surgical management when maximal medical treatment has failed.

Controversy still exists about which is the preferred initial surgical treatment for IIH. Emerging procedures include venous sinus stenting in cases with venous sinus stenosis, and bariatric surgery for weight loss. Cranial (suboccipital or subtemporal) decompression was a more popular surgical

procedure in the past, but can still have a role in selected cases with impaired cerebrospinal flow dynamics (e.g. Chiari malformation) or after multiple failed conventional surgical procedures [2].

Venous sinus stenting ought to be regarded as the first-line surgical modality for the treatment of medically refractory IIH [3].

The election will likely be based on local expertise until well designed, multicentered clinical trials clarify which intervention best suits a particular patient [4].

The visual outcomes of these procedures are favorable, though they tend to be associated with a high rate of complication and failure. Recent trials suggest that venous sinus stenting offers both comparable rates of efficacy - with improved papilledema in 97% of patients, resolved headache in 83%, and improved visual acuity in 78% - and improved safety and reliability relative to older surgical techniques.

Patients whose sight is threatened by medically refractory IIH must often consider invasive procedures to control their disease. Venous sinus stenting may offer equal efficacy and lower failure and complication rates than traditional surgical approaches such as optic nerve sheath fenestration and Cerebrospinal fluid shunt.

Several surgical treatment modalities, including lumboperitoneal shunt or ventriculoperitoneal shunt surgery, subtemporal decompression, endovascular venous sinus stenting, optic nerve decompression (OND), were used in the management of idiopathic intracranial hypertension (IIH). Each surgical technique has different advantages and disadvantages. Endoscopic OND is rarely used in the management of IIH. There are only forteen reported cases [5].

Cerebrospinal fluid shunt procedures

The most commonly performed surgical treatments for IIH are Cerebrospinal fluid shunt procedures (e.g. ventriculo- and lumboperitoneal shunts).

Lumboperitoneal shunt

see Lumboperitoneal shunt for idiopathic intracranial hypertension

Ventriculoperitoneal shunt

see Ventriculoperitoneal shunt for idiopathic intracranial hypertension

Transverse sinus stenting

see Transverse sinus stenting for idiopathic intracranial hypertension.

Optic nerve sheath fenestration

see Optic nerve sheath fenestration.

Subtemporal decompression

see Subtemporal decompression.

References

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