

# Clinical Policy: Optic Nerve Decompression Surgery

Reference Number: OC.UM.CP.0009

Date of Last Revision: 11/2022

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## Description

Optic nerve (ON) sheath decompression involves direct decompression (fenestration) of the ON sheaths just behind the globe. The approach and technique for an ON sheath fenestration varies. This policy describes the medical necessity requirements for ON decompression surgery.

## Policy/Criteria

- I. It is the policy of health plans affiliated with Envolve Vision, Inc.<sup>®</sup> (Envolve) that ON sheath decompression surgery is **medically necessary** for treatment of the following conditions:
  - A. Papilledema accompanying idiopathic intracranial hypertension (IIH), cerebral venous sinus thrombosis, or intracranial tumors causing intracranial pressure elevation from decreased cerebrospinal fluid outflow with either of the following:
    1. Visual function that is severely impaired or continues to deteriorate, despite aggressive medical management (e.g., Diamox, furosemide, and corticosteroids);
    2. Incapacitating headaches;
  - B. Traumatic optic neuropathy (TON) with radiologic evidence of any of the following:
    1. Optic canal fracture with impingement of the ON by a fracture fragment;
    2. Intraneural edema;
    3. Sheath hematoma;
  - C. Facial fibrous dysplasia, and either of the following:
    1. Cystic degenerations and optic canal narrowing. If intent is prophylactic, risk of ON damage is clearly explained;
    2. Vision loss.
- II. It is the policy of health plans affiliated with Envolve that there is insufficient evidence in the published peer-reviewed literature to support the use of ON sheath decompression surgery for the treatment of nonarteritic anterior ischemic optic neuropathy (NAION).

## Background

ON sheath decompression surgery is typically performed in instances of papilledema due to idiopathic intracranial hypertension (IIH), cerebral venous sinus thrombosis, or intracranial tumors causing intracranial pressure elevation from decreased cerebrospinal fluid outflow in which the main symptom is rapid and/or progressive vision loss rather than headache. The effect is normally limited to the ipsilateral ON, although occasionally the procedure appears to have a filtration effect, resulting in improvements in headaches and contralateral disc edema as well.

### *Idiopathic Intracranial Hypertension*

Idiopathic intracranial hypertension (IIH), also known as pseudotumor cerebri, is a disorder defined by clinical criteria that include symptoms and signs isolated to those produced by increased intracranial pressure (e.g., headache, papilledema, vision loss), elevated intracranial pressure with normal cerebrospinal fluid composition, and no other cause of intracranial

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hypertension evident on neuroimaging or other evaluations.<sup>17</sup> The incidence of IIH in the general population is thought to be about 1-2 per 100,000. In obese, young females between the ages of 15-44, the incidence of IIH is higher (4-21 per 100,000). IIH occurs in men and children as well, but with substantially lower frequency. Weight is a risk factor for men but is less prevalent than in women and is not usually a factor in prepubertal children.<sup>20</sup> Many individuals suffer from intractable, disabling headaches, and there is a risk of severe, permanent vision loss. Recommendations for the treatment of IIH are limited due to a lack of randomized controlled trials. In addition, the natural history of untreated IIH is uncertain.

The goals of treatment are to detect and prevent vision loss, reduce intracranial pressure, and relieve headache. Medical treatment consists of first line treatment with Diamox (acetazolamide), which inhibits choroid plexus carbonic anhydrase and reduces cerebrospinal fluid production by 50 to 60%. Furosemide (Lasix<sup>®</sup>) and corticosteroids can be added. Surgery is reserved for patients whose visual function is severely impaired or continues to deteriorate despite aggressive medical management. Those who suffer incapacitating headaches may also be candidates for surgery.

Two main surgical options include ON sheath decompression and cerebrospinal fluid (CSF) shunting. The overall rate of visual improvement seems to be equivalent across both surgical treatment modalities and an individualized approach is recommended when choosing a surgical procedure.<sup>20</sup> In one of the largest case studies, ON sheath decompression stabilized or improved visual acuity in 94 % of patients and visual fields in 88% of patients. Visual function is greatly improved in patients with acute rather than chronic papilledema. Thus, in patients with significant visual loss, waiting a prolonged period for a response to medical therapy may not be warranted. ON sheath decompression also may improve visual function in patients with progressive visual loss despite a functioning shunt. Optic nerve sheath fenestration (ONSF) has been shown to be effective for the treatment of papilledema due to cerebral venous thrombosis (CVT) after the failure of medical treatment, including anti-coagulation medication.

*Traumatic Optic Neuropathy*

Traumatic optic neuropathy (TON) is an important cause of severe visual loss following blunt or penetrating head trauma. Following the initial insult, ON swelling within the ON canal or compression by bone fragments are thought to result in secondary retinal ganglion cell loss. ON decompression with steroids or surgical interventions, or both, have been advocated to improve visual prognosis in TON.

A 2013 Cochrane Review of surgical treatment for TON concluded there is not enough evidence that surgical decompression of the ON provides any additional benefit beyond conservative management, citing a lack of randomized controlled trials (RCTs), and a wide range of surgical techniques that make comparisons difficult.<sup>10</sup> Given that it would be quite difficult to conduct an adequately powered RCT of surgical ON decompression for TON, the authors' state ON decompression for TON should be assessed on a case by case basis, taking risks of surgery into consideration.<sup>10</sup> A 2015 review of TON investigation and management included 14 articles regarding treatment for TON.<sup>1</sup> The authors noted that studies investigating ON decompression for TON are largely small and retrospective, with one larger study- the International Optic Nerve Trauma Study- comprised of 133 patients. Across the studies reviewed, improvement after ON

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decompression ranged from 27 to 82%, potentially reflecting the poorly defined indications for surgery. The authors argue that surgery should be reserved for instances in which “there is radiological evidence of optic canal fracture (and impingement of ON by fracture fragment), intraneural edema or an ON sheath hematoma.”<sup>1</sup>

*Facial Fibrous Dysplasia*

Fibrous dysplasia (FD) is a rare condition involving non-malignant overgrowth of bone; approximately 20% of FD cases involve craniofacial bones. Surgery has been the primary form of management of compression of the optic nerve due to FD, although there is no clear agreement on timing of surgery or in which circumstances the surgery is most beneficial.<sup>6</sup> McCune-Albright syndrome (MAS) is a very rare condition that accounts for about 3% of all FD cases and presents as polyostotic FD (involving multiple bones/foci of disease), café-au-lait skin macules, and precocious puberty.<sup>2</sup> Studies have shown that narrowing of the optic canal in MAS is not directly correlated with vision loss, and that acute visual loss is related to aneurysmal bone cysts and mucocoeles.<sup>2</sup> However, ideal operative management of craniofacial dysplasia in MAS has not been established due to its rarity. Due to the risks of postoperative complications, which occur in 50% of patients, prophylactic surgery to prevent vision loss is only indicated in cases with aneurysmal bone cysts and mucocoeles.<sup>2</sup> Otherwise, surgery to decompress the ON is reserved for cases of FD with established vision loss.<sup>2</sup>

*Nonarteritic Anterior Ischemic Optic Neuropathy*

NAION is the most common form of ischemic optic neuropathy. It is an idiopathic, ischemic insult of the ON head characterized by acute, monocular, painless visual loss with optic disc swelling.<sup>18</sup> Visual function can be impaired through decreased central visual acuity or peripheral field loss, or both. The typical presentation is sudden onset of painless monocular vision loss, often upon awakening.

ON sheath decompression surgery was reported in 1989 to be of benefit to patients with NAION. The presumed mechanism of action in ON decompression surgery revolved around restoration of impaired blood flow to the ON through reduction of the pressure around the nerve. Initial results of uncontrolled studies suggested that ON sheath decompression was a promising treatment of progressive visual loss in patients with NAION. Other investigators who evaluated this surgical procedure reported varying degrees of success. To resolve the controversy over the effectiveness of ON decompression for NAION, the National Eye Institute sponsored the Ischemic Optic Neuropathy Decompression Trial, a multicenter, randomized controlled clinical trial of ON decompression surgery for patients with NAION.<sup>5,8</sup> The study found no benefit from surgery in NAION patients with progressive visual loss; in fact, significantly more patients in the surgery group had progressive loss of vision than patients who received only careful follow-up. The investigators concluded that ON decompression surgery is not an effective treatment for NAION and, in fact, may increase the risk of progressive visual loss in NAION patients. The trial was stopped early because the surgery was not helping the participants more than careful follow-up alone. Pain and double vision were harms experienced by some participants in the surgery group at one week after the surgery. The trial investigators reported that continued enrollment would be unlikely to produce results in favor of surgery.

**Coding Implications**

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CPT <sup>®</sup> Codes	Description
67570	Optic nerve decompression (e.g., incision or fenestration of optic nerve sheath)

### ICD-10-CM Diagnosis Codes that Support Coverage Criteria

+ Indicates a code requiring an additional character

ICD-10-CM Code	Description
G93.2	Benign intracranial hypertension
H47.021	Hemorrhage in optic nerve sheath, right eye
H47.022	Hemorrhage in optic nerve sheath, left eye
H47.11	Papilledema associated with increased intracranial pressure
I67.6	Nonpyogenic thrombosis of intracranial venous system
M85.08	Fibrous dysplasia (monostotic), other site
M85.09	Fibrous dysplasia (monostotic), multiple sites
Q78.1	Polyostotic fibrous dysplasia
S04.011A	Injury of optic nerve, right eye, initial encounter
S04.011D	Injury of optic nerve, right eye, subsequent encounter
S04.011S	Injury of optic nerve, right eye, sequela
S04.112A	Injury of optic nerve, left eye, initial encounter
S04.112D	Injury of optic nerve, left eye, subsequent encounter
S04.112S	Injury of optic nerve, left eye, sequela

Reviews, Revisions, and Approvals	Revision Date	Approval Date
Policy adopted from Health Net NMP353 ON Decompression Surgery	08/16	09/16
Reclassified TON as medically necessary with certain criteria; added facial fibrous dysplasia as a medically necessary indication, and updated related background information and codes.	09/17	09/17
References reviewed and updated.	08/18	08/18
References reviewed and updated. Specialist review.	07/19	08/19
References reviewed and updated.	07/20	08/20
Revised language in II from “investigational” to “insufficient evidence to support...” References reviewed, updated and reformatted. Changed “review date” in the header to “date of last revision” and “date” in the revision log header to “revision date.” Replaced member with member/enrollee.	08/21	08/21

Reviews, Revisions, and Approvals	Revision Date	Approval Date
Annual review. References reviewed and updated. Specialist review. Background updated with no clinical significance.	07/22	07/22
Annual Review; Policy CP.MP.128 adopted by Envolve Vision as OC.UM.CP.0009; Added nonpyogenic thrombosis of intracranial venous system as a medical necessity indication; Removed diagnosis code H47.019 due to unspecified eye; Updated References.	11/2022	11/2022

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### **Important Reminder**

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Envolve Vision, Inc., or any of such health plan’s affiliates, as applicable.

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This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of member/enrollees. This clinical policy is not intended to recommend treatment for member/enrollees. Member/enrollees should consult with their treating physician in connection with diagnosis and treatment decisions.

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**Note: For Medicaid member/enrollees**, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

**Note: For Medicare member/enrollees**, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at <http://www.cms.gov> for additional information.

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