

# Indirect optic nerve injury

≈ 5% of [head trauma](#) patients manifest an associated [injury](#) to some portion of the [visual system](#). Approximately 0.5–1.5% of head trauma patients will sustain indirect injury (as opposed to [penetrating trauma](#)) to the [optic nerve](#), most often from an ipsilateral blow to the [head](#) (usually [frontal](#), occasionally [temporal](#), rarely [occipital](#)).

The intracanalicular segment is the most common one damaged with closed head injuries. Fundusoscopic abnormalities visible on initial exam indicates anterior injuries (injury to the intraocular segment ([optic disc](#)) or the 10–15 mm of the intraorbital segment immediately behind the globe where the [central retinal artery](#) is contained within the [optic nerve](#)), whereas posterior injuries (occurring posterior to this but anterior to the [chiasm](#)) takes 4–8 weeks to show signs of disc pallor and loss of the retinal nerve fiber layer.

[Visual loss](#) due to [optic nerve](#) injury after [closed traumatic brain injury](#) constitutes a formidable diagnostic and therapeutic challenge for the clinician. Assessment must be made of the site of optic nerve injury, and this is often difficult in the patient with an altered level of consciousness. A decision regarding optic nerve decompression must be formulated, yet the literature is confusing with regard to operative indications.

If [conscious](#): serial quantification of [vision](#) in each [eye](#) is important <sup>1)</sup>.

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Care must be taken to avoid [optic nerve injury](#) caused by the retraction and/or the heat of the drill when doing [ophthalmic artery aneurysm surgery](#) <sup>2)</sup>.

## Treatment

[Optic nerve decompression](#) has been advocated for [indirect optic nerve injury](#); however, the results are not clearly better than expectant management with the exception that documented delayed [visual loss](#) appears to be a strong indication for surgery. The [transtethmoidal approach](#) is the accepted route and is usually done within 1–3 weeks from the trauma. use of “megadose steroids” may be appropriate as an adjunct to diagnosis and treatment.

<sup>1)</sup>

Kline LB, Morawetz RB, Swaid SN. Indirect injury of the optic nerve. Neurosurgery. 1984 Jun;14(6):756-64. PubMed PMID: 6462414.

<sup>2)</sup>

Kumon Y, Sakaki S, Kohno K, Ohta S, Ohue S, Oka Y. Asymptomatic, unruptured carotid-ophthalmic artery aneurysms: angiographical differentiation of each type, operative results, and indications. Surg Neurol. 1997 Nov;48(5):465-72. PubMed PMID: 9352810.

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