



Case Study

MULTIMODAL AYURVEDA MANAGEMENT OF BILATERAL TRAUMATIC GLAUCOMATOUS OPTIC NEUROPATHY

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ABSTRACT

Traumatic glaucomatous optic neuropathy is a challenging condition characterised by progressive retinal ganglion cell loss following ocular injury, often leading to irreversible vision impairment. In this article, we present a case of bilateral traumatic glaucomatous optic neuropathy in post-surgical patient (prior glaucoma and cataract surgery) managed through a multimodal Ayurvedic approach. The treatment protocol comprised systemic *Shodana* in form of *Virechana*, *Shamana Aushadi*, *Chakshushya Rasayana* and local ocular therapies. following *Virechana*, the patient demonstrated marked reduction in intraocular pressure, significant improvement in ocular symptoms (redness, watering) and subjective visual enhancement. Subsequent *Rasayana* and local therapies were instituted to support optic nerve health and prevent further neurodegeneration. This case illustrates the potential of integrative ayurvedic management to achieve IOP control, symptom relief, and neuroprotective effects in traumatic glaucoma which further warrants a better approach to vision restoration in glaucoma.

INTRODUCTION

Glaucoma is a progressive optic neuropathy characterised by the loss of retinal ganglion cells and their axons, leading to irreversible visual field defects and ultimately blindness if left untreated.^[1] While elevated IOP remains the primary modifiable risk factor, glaucomatous damage is now recognised as multifactorial, involving bio-mechanical stress at the optic nerve head, vascular dysregulation, oxidative stress, excitotoxicity, and neuro-inflammation. Traumatic glaucoma, a subset of secondary glaucoma, arises following the ocular injury- blunt or penetrating- and encompasses diverse mechanisms including angle recession, trabecular meshwork damage, hyphema, inflammation and lens-related complications.^[2]

The pathophysiology of traumatic glaucomatous optic neuropathy combines these mechanical and inflammatory insults with the chronic

neurodegenerative processes seen in primary glaucoma, making it particularly challenging to manage.^[3] Conventional management of traumatic glaucoma focuses on identifying and addressing the underlying mechanism while lowering IOP through topical medications, laser procedures, or surgery. However, despite successful IOP control, a significant portion of patients continue to experience progressive vision field loss, underscoring the need for adjunctive neuroprotective strategies. Modern medicine has yet to establish clinically effective neuroprotective agents for glaucoma, prompting growing interest in traditional systems that offer holistic, multi-targeted approaches.

Ayurveda, the traditional Indian system of medicine, conceptualizes glaucoma under the spectrum of *Adhimantha*, attributing the condition to vitiation of *Vata* and *Pitta doshas*, often post *Abhigatha* leading to obstruction of ocular channels (*Srotorodha*) and degeneration of neural structures. Ayurvedic management employs a stepwise approach beginning with *Shodana* to eliminate accumulated toxins and reduce IOP, followed by *Shamana* and *Rasayana* to restore oxidative stress, and support optic nerve function.

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This case report presents a patient with bilateral traumatic glaucomatous optic neuropathy, post glaucoma and cataract surgery, managed through a multimodal Ayurvedic protocol. The treatment sequence- initiated with *Virechana*, followed by *Rasayana* and local ocular therapies- resulted in marked IOP reduction, resolution of inflammatory signs (redness, watering) and subjective visual

improvement. Beyond IOP control, this approach aims to provide neuroprotective support to preserve remaining vision in a condition where conventional options are limited. Through this case, we explore the potential of ayurvedic management in traumatic glaucoma, emphasizing its role in symptom relief, IOP modulation, and optic nerve preservation.

Table 1: Understanding the pathophysiology

<i>Srotorodha</i> (channel obstruction)	Impaired aqueous outflow through trabecular meshwork; angle recession
<i>Netra Gaurava</i> (heaviness/pressure)	Elevated IOP
<i>Dhatu Kshaya</i> (tissue degeneration)	Retinal ganglion cell loss, optic nerve atrophy
<i>Vata Prakopa</i> (neuro degeneration)	Axonal transport disruption, mitochondrial dysfunction.
<i>Abhighatajanya</i>	Blunt trauma- recession + steroid exposure- secondary glaucoma- chronic IOP elevation- disrupts lens metabolism- oxidative stress- cataract

Table 2: Timeline

Date/eye involved	Right eye	Left eye
2020-04-05	Blunt trauma	Normal
	Steroid exposure	Quiet
2020-09-15	1. Redness, watering and pain 2. IOP - 44mmhg 3. Started on timolol eye drops	Quiet IOP-12mmhg
2023-08-07	Posterior subcapsular cataract surgery done. IOP -32mmhg	Quiet IOP-11mmhg
2025-07-15	Not regular with eye drops IOP- 42mmhg	Watering and redness present IOP-22mmhg
2025-7-20	Planned for <i>Virechana</i> , <i>Netra Seka*</i> and <i>Bidalaka</i>	Planned for <i>Virechana</i> , <i>Netra Seka</i> and <i>Bidalaka</i>
2025-08-02	Symptomatically improved and IOP- 12mmhg	Watering and redness reduced IOP - 11mmhg

Case Report

A 42-year-old male patient reported a history of blunt trauma to the right eye while playing football, following which he developed sudden redness, watering, and pain in the affected eye. On examination at the initial presentation, he was diagnosed with raised IOP and was started on topical steroids. During subsequent follow-up visits, he was found to have persistent elevated IOP and was therefore initiated on anti-glaucoma medications. He continued prolonged use of these medications and experienced progressive diminution of visual activity in the right eye. After 2 years, he was diagnosed with steroid-induced cataract in the right eye and underwent cataract surgery.

Following this, over the next 2 years, he gradually developed redness, pain and watering in the left eye as well. On routine ophthalmic examination, he

found to have raised IOP in both eyes and was advised anti-glaucoma medications bilaterally. In view of the chronicity of symptoms, prolonged medication use, and progressive visual complaints, the patient being well aware of the consequences that happened to his right eye and sought a better alternative to maintain visual acuity, and therefore sought an ayurvedic opinion for further management.

Systemic Examination

Blood pressure: 130/80 mm of hg.

General condition: Moderate, afebrile

Respiratory system: Respiratory rate: 20 /min, normal vesicular breath sounds.

Cardiovascular system: S1, S2 heard. No added sounds.

Central nervous system: Conscious, oriented to time, place and person.

Slit Lamp Examination**Table 3: Slit Lamp Examination**

Right Eye	Left Eye
Conjunctival congestion	No congestion
Mild lacrimation	No lacrimation
Incomplete eyelid closure	Complete eye closure
Corneal haze due to edema	Clear cornea
IOP (Applanation tonometer) - 25mmhg lens- PCIOL	IOP (Applanation tonometer) - 30mmhg Lens – Iris Shadow

Visual Acuity**Table 4**

	Without glasses		Pin hole	
	Distant Vision	Near Vision	Distant Vision	Near Vision
Both eyes	6/12	N6	6/12	N6
Right eye	6/36	N9	6/36	N9
Left eye	6/12	N6	6/12	N6

Ophthalmoscopy

Red glow was seen in both eyes

Background – clear, no opacities.

Vessels –No abnormalities detected

Macula – No abnormalities detected

Course of Treatment**Table 5: Course of Treatment**

S.No	Procedure	Medicine	Dose	Duration	Date
1.	<i>Agnideepana</i> and <i>Amapachana</i>	1. <i>Chitrakadi vati</i> 2. <i>Agnitundi vati</i> twice a day before. 3. <i>Shunti churna</i> - 1tsp with warm water before.	2-0-2 bf	3 days	20/07/25 to 22/07/25
2.	<i>Sarvanga abhyanga</i> and <i>Bashpa sweda</i>	<i>Mahanarayan Taila</i>	Quantity sufficient	3 days	23/07/25 to 25/07/25
3.	<i>Virechana</i>	<i>Ichhabedi rasa</i> and <i>Triphala kashaya</i>	2 tablets with 100ml <i>Triphala kashaya</i>	1 day	26/7/25
4.	<i>Seka</i>	<i>Triphala + Yastimadhu</i>	Quantity sufficient	7days	20/7/25-26/7/25
5.	<i>Bidalaka</i>	<i>Triphala + Yastimadhu + Vasa Churna + Nimba Churna</i>	Quantity sufficient	7days	20/7/25-26/7/25
6.	<i>Shamana oushada</i>	1. <i>Chandanadi anjana</i> 2. Tablet. <i>Gokshura Punarnavadi Guggulu</i> 2bd 3. Tab. <i>Iclear d10</i>	1. 1 drop twice a day 2. Two tablets twice a day 3. 1 drop twice a day	7days	20/7/25-26/7/25 26/7/25-1/8/25- <i>Samsarjana kala</i>

RESULTS**Table 6**

	Right eye		Left eye	
Glaucoma System Scale Item. ^[4]	Before treatment	After treatment	Before treatment	After treatment
SYMP-6				
Feeling of something in eye	4	2	3	1
Burning/smarting/stinging	2	0	4	2
Tearing	2	0	2	0
Itching	0	0	1	0
Soreness/tiredness	1	0	2	1
Dryness	4	2	3	1
FUNC-4				
Blurry/dim vision	4	3	3	2
Hard to see in daylight	4	3	3	2
Hard to see in darkness	4	3	3	2
Intra-ocular pressure	25mmhg	12mmhg	30mmhg	11mmhg
Visual acuity	6/36	6/24	6/12	6/9

DISCUSSION**Discussion on *Nidana***

In this case of bilateral traumatic glaucomatous optic neuropathy, the *Nidana* can be classified into two categories: *Agantuja* (traumatic), *Nija* (endogenous) *Nidana*. The primary *Nidana* in this case was *Abhigataja* (ocular trauma) to the right eye, which initiated a cascade of events leading to secondary glaucoma in right eye, chronic inflammation and altered aqueous dynamics accelerated cataract formation associated with eventual involvement of the left eye through shared pathophysiological mechanisms (sub-clinical angle changes), from an ayurvedic perspective, trauma causes *Abhigatajanya vata-pitta prakopa*, *Pitta* vitiation causes inflammation (redness, watering, burning and elevated IOP)

Srotorodha (channel obstruction) develops in *Netravaha Srotas*, impairing aqueous flow. This understanding led to choosing *Virechana* as the primary *Shodana*, as its results in *Srotoshodana* (in this case, *Netra gaurava* correlating with high IOP). By eliminating vitiated *Pitta* and clearing obstructed channels, *Virechana* directly addressed the core pathogenesis of *Adhimantha*. Beyond trauma, the patient exhibited signs of chronic *Vata-pitta* vitiation. *Vata* predominance is associated with optic nerve

degeneration, visual field constriction, ocular dryness, and variable intraocular pressure, whereas *Pitta* predominance manifests as redness, excessive watering, burning sensation, and acute spikes in intraocular pressure. The presence of these imbalances, even in the fellow eye, suggested that the disease had progressed beyond a purely localised traumatic process to a systemic dosha-driven pathology, this supported the decision to employ systemic *Shodana* rather than relying solely on local therapies. Additionally, the patient's history of medication discontinuation likely exacerbated *Vata* aggravation (irregular treatment = *Vishama chikitsa*) leading to Intra-ocular pressure rebound and worsening symptoms. This reinforced the need for a stabilising, long-term *Shamana* and *Rasayana* protocol post-*Virechana*.

Discussion on *Samprapti*

Proposed Modern Pathophysiological- Ayurvedic Correlation of Traumatic Glaucoma

Flowchart 1

Blunt ocular trauma → structural angle injury → impaired aqueous outflow → raised IOP → optic nerve damage → progressive visual dysfunction

Table 7

Blunt Ocular Trauma	Abhighata (Ocular Injury)
Mechanical compression and globe deformation	<i>Vata Prakopa</i> (Dosha aggravation following trauma)
Angle recession/ ciliary body–trabecular meshwork injury	<i>Rakta–Pitta Kshobha</i> (acute tissue injury and inflammatory response)
Trabecular meshwork and Schlemm's canal dysfunction	<i>Srotodushti</i> (structural/functional disturbance of channels)
Reduced aqueous humour outflow	<i>Rasavaha & Raktavaha Srotorodha</i> (impaired channel flow)
Persistent elevation of intraocular pressure (IOP)	<i>Vata Avarana</i> with <i>Dhatukshaya</i> (conceptual correlation with altered flow and tissue depletion)
Chronic optic nerve head stress, ischemia and axonal loss	<i>Majja Dhatu Kshaya/ Drishti Nadi Dushti</i> (conceptual correlation with progressive neural tissue involvement)
Retinalganglion cell degeneration→ progressive visual field loss	<i>Drishti Bala Kshaya</i> (progressive reduction in visual function)

Traumatic Glaucoma

Discussion on Treatment

The treatment protocol was designed to address each layer of the *Nidana* systematically:

Phase 1: *Virechana*- classical indication in *Adhimantha*^[5] (especially *Pittaja* and *Raktaja* types) with elevated IOP, redness and inflammation, the dramatic response validates the Ayurvedic principle that *Shodana* is essential in acute or decompensated *Adhimantha* to break the cycle of dosha vitiation and *Srotorodha*. Modern glaucoma management often focuses solely on IOP lowering without addressing underlying inflammation or metabolic dysfunction; *Virechana* appears to target both.

Phase 2: *Netra kriyakalpa* reduces the local inflammatory mediators from ocular surface, reduces local pitta, and provides mild IOP-lowering effect through improved aqueous outflow, also improves the local micro-circulation, the observation seen in this case post treatment validates the efficacy of these therapies in reducing localised discomfort

Phase 3: *Anjana* acts like local *Rasayana* to nourish corneal and conjunctival tissues, reduce chronic inflammation, and support ocular surface health. *Shamana Oushadhis* such as *Gokshura* and *Punarnava* possess diuretic, *Pitta-Kapha* pacifying properties that may help support aqueous humor outflow and thereby aid in the management of glaucoma. *Guggulu* possesses *Srotoshodhana* (channel-cleansing) and *Lekhana* (scraping) properties, which help reduce metabolic waste accumulation and improve ocular microcirculation. Additionally, *Triphala*, *Haridra* (*Curcuma longa*), and *Pippali* (*Piper longum*) exhibit antioxidant, immunomodulatory, and neuroprotective activities that may protect retinal ganglion cells from oxidative stress and support optic nerve health in glaucoma.^[6] This phase reflects the ayurvedic principle

that *Shodana* alone is insufficient in chronic, degenerative conditions; it must be followed by *Rasayana* to rebuild tissues and prevent recurrence

CONCLUSION

This case highlights the potential role of an individualized Ayurvedic approach based on *Nidana*, *Samprapti*, and *Chikitsa Sutra* in the management of traumatic glaucomatous optic neuropathy. The observed reduction in intraocular pressure, symptomatic improvement, and sustained clinical stability following *Virechana*, supported by *Rasayana* therapy and local ocular procedures, suggest that a multimodal Ayurvedic regimen may address both intraocular pressure control and neuroprotection. The findings also emphasize the importance of systemic *Shodhana* in traumatic glaucoma, alongside local therapies. Although limited to a single case, this report supports the potential of integrating Ayurvedic interventions with modern diagnostic and monitoring strategies and underscores the need for well-designed clinical studies to further evaluate their efficacy and safety in glaucoma management.

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