

## A Case of Traumatic Optic Neuropathy Due to Lateral Compression

Ravikumar C, Rajkamal Pandian D, Vijay Nivas A, Mathew Jackson I

Department of  
Otorhinolaryngology  
Tirunelveli Medical College  
Hospital, Palayamkottai,  
Tirunelveli, Tamil Nadu 627011

### For Correspondence

\*Dr Rajkamal Pandian,  
Email: rajkamalpandianent@  
yahoo.co.in

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### ABSTRACT

Traumatic optic neuropathy due to injury at the orbital apex is not uncommon. In this case report we present a case of traumatic optic neuropathy due to bony fragment of the lateral wall of the orbit impinging on the optic nerve which was successfully decompressed with open reduction and internal fixation.

### Key words:

Traumatic optic neuropathy, optic nerve decompression, orbital apex

### INTRODUCTION

Traumatic optic neuropathy is classified into direct and indirect injuries<sup>1</sup>. Treatment of indirect optic neuropathy is controversial. It is either high dose steroids or endoscopic decompression or both. Treatment of direct optic neuropathy is usually surgical. In this case there was a fractured segment compressing the lateral wall of the orbit and impinging on the optic nerve. The same was corrected by open reduction and internal fixation via lateral approach and the effectiveness of the procedure performed was monitored by closely following up the patient post-surgery.

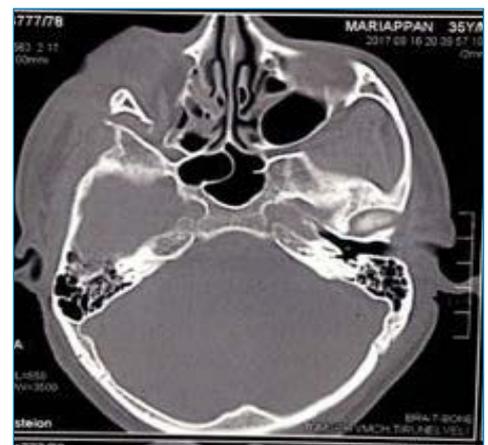
### CASE REPORT

A 23-year-old male patient presented with history of road traffic accident following which patient had complaints of reduced vision in the right eye, difficulty in opening the right eye and restricted right eyeball movements [Figure 1]. On ophthalmic examination he had periorbital contusion, ptosis, restricted extraocular movements and only perception of light in the right eye. The pre-operative CT scan revealed fracture of the zygoma and the lateral wall of the orbit with the fractured segment of the lateral wall of the orbit impinging into the orbital apex causing compression to the optic nerve [Figure 2a]

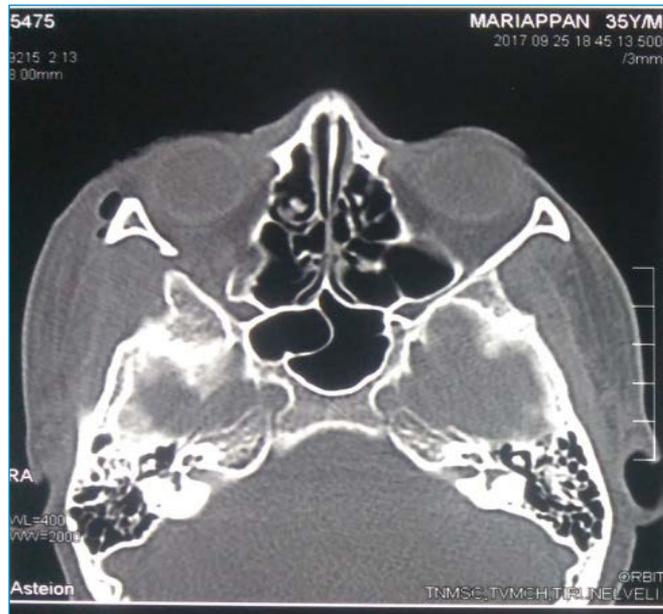
Figure 1 : Pre-operative image of the patient



Figure 2(a) : Pre-operative CT image showing the zygomatic fracture and the fractured segment of the lateral wall of the orbit impinging into the orbital apex causing compression to the optic nerve



**Figure 2(b)** : Post-operative CT image after reduction of the fractured segment



### Treatment given

Under general anesthesia, horizontal incision made over the zygomatic prominence and fractured segment on the lateral wall of the orbit was reduced by open reduction [Figure 2b]. The patient was closely followed up for a period of 2 weeks following surgery for signs of improvement of his visual symptoms and extraocular movements [Figure 3]. The pre and post-operative ophthalmic findings are given in table 1

**Table 1:** Pre and post-operative ophthalmic findings

Clinical Parameters	Pre-operative findings	Post-operative findings
Visual acuity	Perception of Hand movements	1 <sup>st</sup> Post-Op Day – 6/60
		3 <sup>rd</sup> Post-Op day – 6/24
		5 <sup>th</sup> Post-Op day – 6/12
		2 <sup>nd</sup> week Post-Op – 6/6
Ptosis	Present	Absent
Extraocular movements	Restricted on all sides	Full
Pupil	3mm sluggishly reacting to light	Light reflex - Normal
Fundus	Absence of red glow	Normal

**Figure 3** : Images of the patient (post-op) showing full range of extraocular movements



### DISCUSSION

Traumatic optic neuropathy due to direct penetrating injuries to the optic nerve result in poor visual recovery. Indirect injury to the optic nerve occur due to transmitted forces and the most common site affected is the intracanalicular part of the optic nerve<sup>2</sup>. The rationale of endoscopic optic nerve decompression is to relieve the compression by removing part of the optic canal<sup>3</sup>. Prognostic factors influencing visual outcome

include time delay in treatment, degree of visual loss and computerized tomographic evidence of fracture<sup>4</sup>.

The treatment protocol for traumatic optic neuropathy is controversial. A meta-analysis revealed that both steroid and surgical decompression improved the progress of the patients<sup>5</sup>. The timing of surgery following traumatic optic neuropathy is not clearly defined. However, when complete visual loss is found soon after injury, earlier surgical intervention is recommended. When vision is better than light perception in the early period, conservative treatment is tried and surgery is advised when vision does not improve to 0.5 or better within 3 weeks<sup>6</sup>. Several studies report a better visual outcome in patients without orbital fractures than those with orbital fractures and also in patients with anterior fractures than in posterior fractures<sup>5</sup>. Better visual outcome is observed in patients with gradual vision loss than those with immediate blindness<sup>7</sup>.

Combined therapy with methylprednisolone and endoscopic nerve decompression should be advocated in patients who present within 7 days of injury. Endoscopic decompression is indicated when there is no treatment within 72 hours of methyl prednisolone therapy, progressive loss during steroid therapy or total blindness with computed tomographic evidence of optic nerve decompression<sup>4</sup>.

## CONCLUSION

Traumatic optic neuropathy is common now-a-days with increasing road traffic accidents occurring frequently in the current scenario. In most of the cases the site of lesion is the intracanalicular part of the optic nerve where there are fractures on the medial wall of

the orbit and the same is being corrected by endoscopic decompression. In this case, however there was fracture involving the zygomatic arch and the lateral wall of the orbit impinging on the optic nerve from the lateral aspect, for which zygoma fracture reduction was done by open reduction and internal fixation and the compression was relieved. Post-operative review of the patient showed marked improvement of his vision and very good improvement of all his visual ailments. Though there are various views regarding the need and timing of surgical decompression it is prudent to remember that surgical decompression is advised in the context of specific individual needs of the patient.

## CONFLICTS OF INTEREST

None.

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## Diabetic treatment over 15 years

The Veterans Administration Diabetes Trial (VADT) in patients who had longstanding uncontrolled type 2 diabetes did not find a "legacy effect" of fewer future cardiovascular events in the 15-year follow-up.

Compared with patients in the standard treatment group, those in the intensive glucose-lowering group had fewer cardiovascular events (a composite of myocardial infarction [MI], stroke, cardiovascular death, congestive heart failure, and amputation) at the 10-year follow-up, but this did not extend out to 15 years.

Researchers reported these latest findings from the VADT follow-up study (VADT-F) on June 24 here at the American Diabetes Association (ADA) 2018 Scientific Session