UP Journal of Ophthalmology
An Official Journal of Uttar Pradesh State Ophthalmological Society, UPSOS
(Northern Ophthalmological Society, NOS)

CASE REPORT
p-ISSN: 2319-2062
DOI: 10.56692/upjo.2024120307

Post Trabeculectomy Visual Loss: Is it Wipe-Out?

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ABSTRACT

Glaucoma filtration surgery in advanced glaucoma poses a significant challenge as it is associated with the rare risk of visual loss which is known as 'wipe-out' phenomenon. Our case had severe visual loss after trabeculectomy with cataract extraction for advanced primary angle closure glaucoma, which gradually recovered partially. Advanced visual field defect, high IOP in preoperative and immediate postoperative period, pallor of the neuro retinal rim pallor, and peribulbar anaesthesia were the plausible factors in our patient. This case highlights the rare but important complication of 'wipe-out', its risk factors, and further preventive measures in advanced glaucoma.

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Dates:
Received : 30 Oct. 2024
Accepted : 19 Nov. 2024
Published : 25 Nov. 2024

Key Words
Advanced glaucoma; wipe-out; snuff syndrome; trabeculectomy; visual loss

How to Cite:
Jain V. K., Saraswati, Maroof L.
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UPJO 2024; 12(3):17-19

INTRODUCTION

The wipe-out phenomenon has been defined as unexplained visual field loss including fixation accompanied by loss of central visual acuity after trabeculectomy in advanced glaucoma patients.[1]This is a rare but dreaded concern among glaucoma surgeons as there might be the chances of irreversible visual loss.

The reported incidence of this entity has varied from 0 to as high as 14% in various series.[2,3]However, one of the largest retrospective series by Costa et al. reported the incidence of 0.95% in their review of 508 trabeculectomies[1] Though it is an irreversible neuronal loss, but there might be reversible ganglion cell dysfunction before axonal loss which might recover after the removal of stimulus.[4]

Herein, We report this uncommon complication of 'wipe-out' after uneventful trabeculectomy with cataract extraction which was partially reversible. This report will highlight the risk factors associated with our case and review of literature regarding the Wipe-out phenomenon.

CASE REPORT

A 60-year-old male underwent uneventful right eye trabeculectomy with adjunctive MMC (0.02% for 3 minutes) and phacoemulsification with intraocular lens implantation in view of co-existing cataract. He was diagnosed bilateral primary angle closure glaucoma 2 years back. Earlier, he had bilateral papilledema in his both eyes before neurosurgical intervention for left vestibular schwannoma with hydrocephalus. Pre-operatively right eye intraocular pressure (IOP) was 32 mm Hg with maximal antiglaucoma medications whereas left eye IOP was 18 mm Hg on one antiglaucoma medication. On routine examination, patient complained of headache, and blurring of vision in both eyes. Patient had left sided lagophthalmos due to post- excision VII nerve palsy for which permanent paramedian tarsorrhaphy has already been done. His best-corrected-visual-acuity was 20/40 in right eye and 20/32 in left eye. His first recorded IOP was 38 mm Hg in right eye and 22 mm Hg in left eye, by Goldmann applanation tonometry. On gonioscopy, none of the angle structures were visible in 3 quadrants of both eyes. The fundus examination showed cup disc ratio of 0.6 with pallor of

neuro retinal rim suggestive of post papilledema partial optic atrophy in both eyes. He also had signs of mild non-proliferative diabetic retinopathy and focal arteriolar narrowing suggestive early hypertensive retinopathy changes in both eyes. Visual field examination (Humphrey Field Analyzer, Carl Zeiss Meditec, Dublin) 24-2 and 10-2 of right eye showed severe defects (Figure 1). The macula threshold

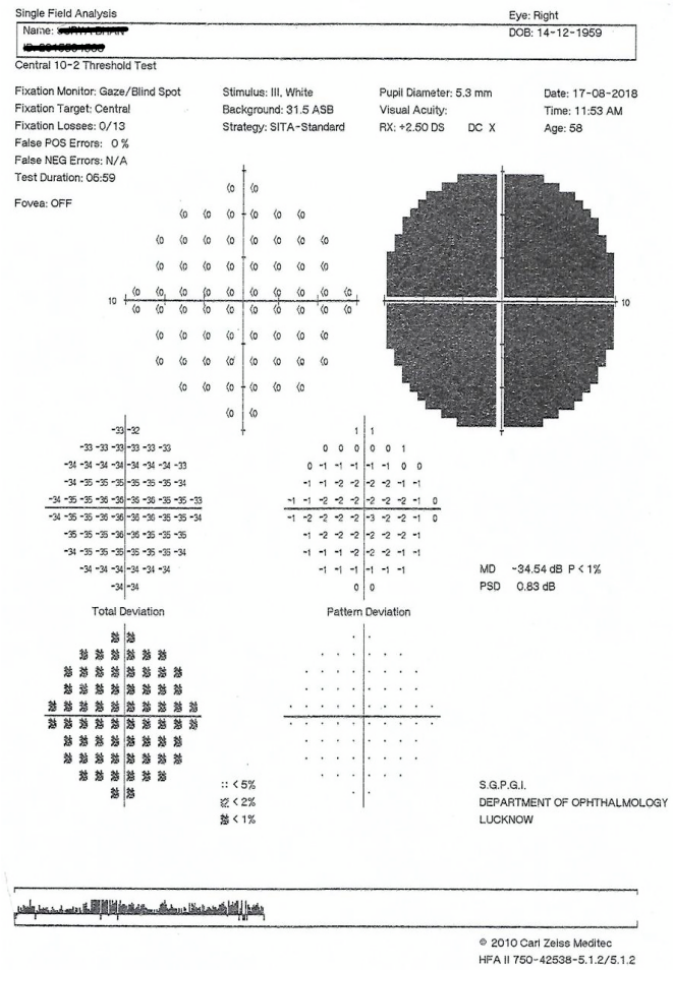

Figure 1. Humphrey visual field printout of right eye of patient showing advanced visual field defect on central 10-2 field.

of right eye showed reduction of sensitivity up to single digit of dB in superior area of visual field whereas central fixation points are moderately depressed in superior part (Figure 2). Visual field of left eye could not be obtained due to the tarsorrhaphy. Laser peripheral iridotomy has already been done to prevent pupillary block in both eyes.

On 1st postoperative day, he had unexplained vision loss in his right eye (hand-movement- close-to-face) with IOP of 34 mm Hg, deep anterior chamber, diffuse and shallow bleb. After bleb massage, patient IOP lowered to 8 mm Hg with

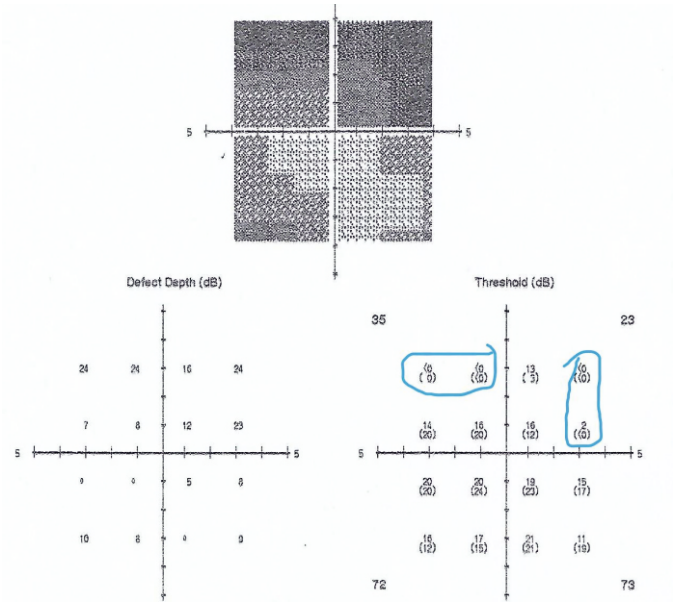

Figure 2. Visual field print-out of Macula threshold showing reduced sensitivity in single digit in superior left sided quadrant and right sided peripheral points in superior right quadrant (blue circle), with moderately depressed sensitivity in central fixation points superiorly.

diffuse and moderately elevated bleb area (Figure 3). The

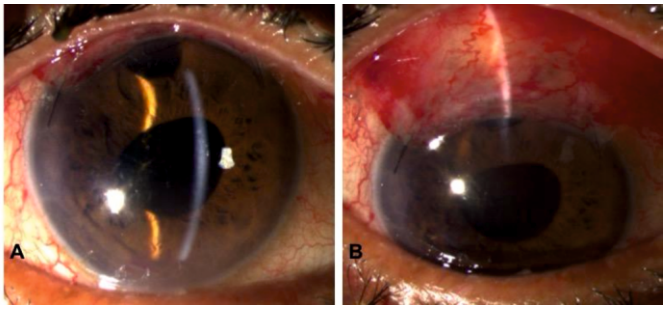

Figure 3. Slit lamp photograph of patient showing formed anterior chamber with intraocular lens in situ (A) and in downgaze showing diffuse and moderately elevated bleb on 1st postoperative day of combined trabeculectomy with phacoemulsification with intraocular lens implantation.

fundus examination did not show any abnormality other than the pre-operative finding. The suspicion of wipe-out phenomenon arose and the counselling of patient was done. Patient was treated with postoperative regime consisted of topical moxifloxacin (0.5%) and prednisolone acetate (1%) 6 times per day. After 1 month, patient gained visual acuity of 20/135 in his right eye with IOP of 16 mm Hg in his right eye.

DISCUSSION

The "Wipe-out" phenomenon or "Snuff syndrome" has been associated with multiple risk factors like older age, advanced

visual field defects, macular split fixation on visual fields.[1] Sudden hypotony during surgery may cause optic nerve haemorrhage that may affect optic nerve perfusion pressure to the already compromised optic nerve vasculature[5] Postoperative high IOP may also affect the already compromised optic nerve head.[1,6] Similarly, retrobulbar and peribulbar anaesthesia could also affect the optic nerve vasculature either mechanically, or possibly ischemic especially with adrenaline.[7]

In our case the advanced visual field defect on central 10-2 was the risk factor in which mean deviation was -34 dB. Pale neuro-retinal rim also contributed to the already compromised optic disc. It has also been shown as a risk factor in a prospective series of 33 patients by Abdelrahman et al.[8]They reported 2 cases of 'wipe-out' with no identifiable cause and both shared the pallor of neuro-retinal rim. Our case had pallor of neuro-retinal rim explained by post-papilledema optic atrophy. Peribulbar anaesthesia could also have contributed to the 'wipe-out' in already compromised glaucomatous optic disc.

Similar to a report by Muhsen et al., we also noticed visual recovery in our patient after 6 weeks of surgery.[6] Glaucomatous optic neuropathy represents the neuronal loss within the optic nerve which developed after the initial insult like mechanical, hypoxia, ischemia and secondary cascade of events that involved excitotoxic glutamate pathway, free radical generation leading to apoptosis.[9] However, several experimental studies have shown that the retinal ganglion cells might suffer reversible dysfunction before the final apoptosis.[4,10]In our case the primary insult might be the high IOP in preoperative as well as immediate postoperative period causing the stasis of axoplasmic flow and altered optic nerve microcirculation further causing reversible dysfunction which recovered gradually after maintaining the target IOP.

In conclusion, proper counselling, strong suspicion in cases of pale neuro-retinal rim, perioperative IOP control, and modification of anaesthesia technique are the few measures need to be taken to avoid 'Wipe-out' phenomenon while planning for filtering surgery. Finally, the visual recovery is also possible in these cases.

Acknowledgement: None

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