

## Bilateral reversible macular edema following road traffic collision

Road traffic collisions involving rapid deceleration and shearing forces have been reported to result in retinal abnormalities. However, to our knowledge, no reports of bilateral macular edema after road traffic collision, without other ocular or peripheral injuries, exist in the literature.<sup>1-7</sup> This case report is the first of its kind to highlight this potential, but rare, consequence of such trauma.

We reviewed the case notes of a 76-year-old male with no ocular or medical history who presented to the eye emergency department with bilateral central blurred vision, which developed in the half hour after a road traffic collision. The front passenger side of his vehicle had been struck by another car travelling at around 50 miles/hour. He had been wearing his seatbelt, but his vehicle did not have an airbag.

On examination there was no evidence of ocular or periorbital trauma and no head, torso, or peripheral limb injuries. Visual acuity was 6/60 OD and 6/36 OS. Pupils were equal and reactive with no relative afferent pupillary defect. Visual field testing revealed bilateral central

scotomata. Anterior segments were unremarkable and intraocular pressures were 16 mm Hg bilaterally. Fundoscopy showed bilateral macular edema, confirmed on optical coherence tomography (OCT; Fig. 1A-D). There was a single fundal hemorrhage inferotemporally on the left, but no cotton wool spots or retinal vessel abnormalities. He was commenced on guttae ketorolac 0.5%, 3 times a day. Review 2 weeks later confirmed vision 6/9 OU and macular edema had resolved (Fig. 1E, Fig. 1F). He has since been under review for 1 year and macular edema has not recurred.

After a road traffic collision, this patient had profound, bilateral, rapid visual deterioration, which resolved within 2 weeks. Importantly, there were no associated ocular injuries. There are numerous reports of retinal abnormalities after trauma, but our case is distinct from each of these. Other cases include those of Purtscher retinopathy, a vaso-occlusive, hemorrhagic vasculopathy after trauma, although this is usually associated with gross fundal findings such as hemorrhages and cotton wool spots, which were not present in our case.<sup>1</sup>

Likewise, the phenomenon of whiplash maculopathy from shearing forces and subsequent vitreoretinal traction has been described with extension-flexion movements of the neck induced by trauma, although visual loss in this

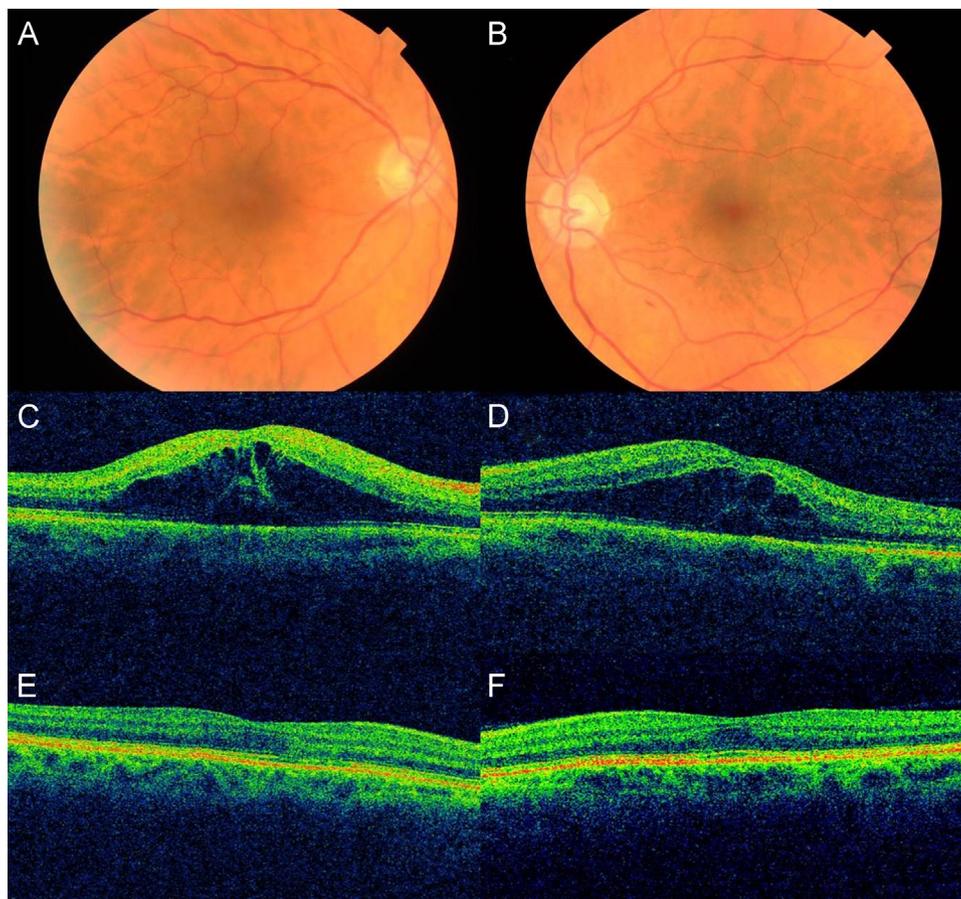


Fig. 1—(A, B) Right and left fundus photographs at presentation, (C, D) right and left optical coherence tomography (OCT) images at presentation, and (E, F) right and left OCT images at follow-up 2 weeks later.

entity is usually subtle rather than gross, as in our patient.<sup>2,3</sup> Furthermore, whiplash maculopathy has been associated with OCT appearances of a hyperreflective lesion at the vitreoretinal interface, rather than the macular edema we observed.<sup>3,4</sup> A case report by Parsons et al.<sup>5</sup> described an association between a severe whiplash injury and serous retinal pigment epithelial detachments and retinoschisis most likely attributable to a shearing mechanism, although in this case the patient's injuries were so extensive they led to death.

Previous cases of traumatic retinal angiopathy have also been described, although these were invariably unilateral and less significant visual deterioration was manifest.<sup>4</sup> Macular edema has been reported in cases after minor head trauma (with normal Glasgow Coma Score) and after blunt ocular trauma, as in commotio retinae; however, our patient had no evidence of head or systemic trauma, and commotio retinae is characterized by retinal pallor, which our patient did not display.<sup>6,7</sup>

Cases bearing resemblance to our patient have been described; however, the pattern of macular thickening was different in these cases and 1 case did suffer minor ocular trauma and concussion.<sup>8</sup> Airbag deployment in road traffic accidents has also been associated with retinal findings such as cotton wool spots, subretinal fluid, and impending macular hole, along with persistent central visual disturbance, which again were not seen in our case presentation.<sup>9</sup>

In summary, the clinical presentation and ocular findings noted in our case appear distinct from other such ophthalmic manifestations of trauma, making this a unique and instructive report. A discussion of the potential pathophysiology of the bilateral macular edema in this case is difficult given the absence of fundus fluorescein angiography. However, given the rapidity of resolution of the edema and lack of recurrence over 1 year of follow-up, it was believed to be unethical to undertake fundus fluorescein angiography. In other cases of retinal trauma, the manifestations are postulated to be a combination of localized microcirculatory insufficiency caused by localized endothelial damage, coagulation, and

complement activation caused by raised intraluminal pressure secondary to factors such as seat belt compression, systemic coagulopathy, and traumatic posterior vitreous detachment at the macula.<sup>3</sup> We are unable to make such assertions in this case. However, ophthalmologists should still be aware of such scenarios of rapid, bilateral visual loss after indirect trauma, as well as the subsequent good prognosis for visual improvement.

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## Corneal stromal damage through the eyelid after tightening using intense focused ultrasound

Intense focused ultrasound (IFUS) tightening is a new procedure that claims to lift, tighten, and tone skin by regenerating collagen using thermal coagulation. Therefore, it is generally used for lifting the eyebrow, eyelid, lax submental (beneath the chin), and neck tissues. IFUS tightening theoretically uses ultrasound technology and bypasses the skin surface without injury to deliver energy to the deepest layers of the skin. This technique acts

differently from conventional lasers that target the outer skin layers. Because of this characteristic, most dermatologists and cosmetic surgeons tend to overlook protective devices for surface organs, such as the cornea or conjunctivae. No reports to date have included ocular surface side effects after IFUS tightening. We report the first case diagnosed with a newly developed astigmatism caused by subepithelial opacity after IFUS tightening.

A 50-year-old female visited the eye clinic with blurred vision in both eyes for 3 weeks. She had received IFUS tightening without corneal protection devices around the eyelid areas of both eyes. Her initial uncorrected right eye