

Jet Stream Injury From Triamcinolone Acetonide Leading To Perifoveal Tear

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Abstract Managing iatrogenic hole in peri-foveal area in the most unexpected mannerwhile planning for macular hole surgery has been a daunting task for the surgeon leaving a big dilemma to peel or not to peel, to go ahead with endo-laser or tamponade or just to abandon the surgery. We report a case of 68 year old female who encountered spontaneous closure of iatrogenic peri-foveal hole formed by triamcinolone crystal plug hitting the peri-foveal area just before ILM staining.

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Keywords: Iatrogenic Macular Hole; Peri-fovealHole ; Spontaneous Closure

Case Report

A 68-year-old female presented to us with complaints of gradual diminution of vision in left eye since 1 year. Patient gave history of undergoing macular hole surgery in OD few months ago. Best-corrected visual acuity (BCVA) was 20/40 in OD and 20/80 in OS with unremarkable anterior segment findings. Fundus examination revealed a closed macular hole in OD and grade 4 macular hole (620um base diameter) in OS (Figure 1A) which was confirmed on ocular coherence tomography (OCT) (Figure 1B). Patient was advised to undergo macular hole surgery [Pars plane vitrectomy (PPV) with brilliant blue dye assisted internal limiting membrane (ILM) peeling + SF6 (sulfur hexafluoride) injection] for left eye. Intra - operatively triamcinolone acetonide (TA) was injected to assist complete vitrectomy. However the same cannula that was used for injecting TA was provided by the assistant to inject brilliant blue dye. While injecting the dye for staining ILM, a small plug of crystals of TA came out forcefully from the tip of the cannula and hit perifoveal

retina, forming a tear/ laceration in the retina approximately one third of disc diameter (DD) size and approx. 845 um temporal to fovea along with haemorrhage and edema (Figure 2A, 2B). Pressure tamponade was given by raising the IOP. Conventional ILM peeling was completed around the macular hole & the iatrogenic hole extending up-to the arcade and passive suction of fluid & blood was done from the wound with help of flute needle. Surgery was completed with air -fluid exchange and SF6 as endotamponade. Face down position for 10 hours per day was advised for 1 week. Post operatively day 1, on fundus examination macular hole was present along with peri-foveal iatrogenic hole, oedema&haemorrhage. On subsequent follow up after 2 months BCVA was 20/40 OU and fundus examination revealed type 1 closure of macular hole and type 2 closure of iatrogenic peri-foveal hole (Figure 3A) with minimal scarring on OCT (Figure 3B). The iatrogenic peri-foveal hole remained closed on successive follow-ups.

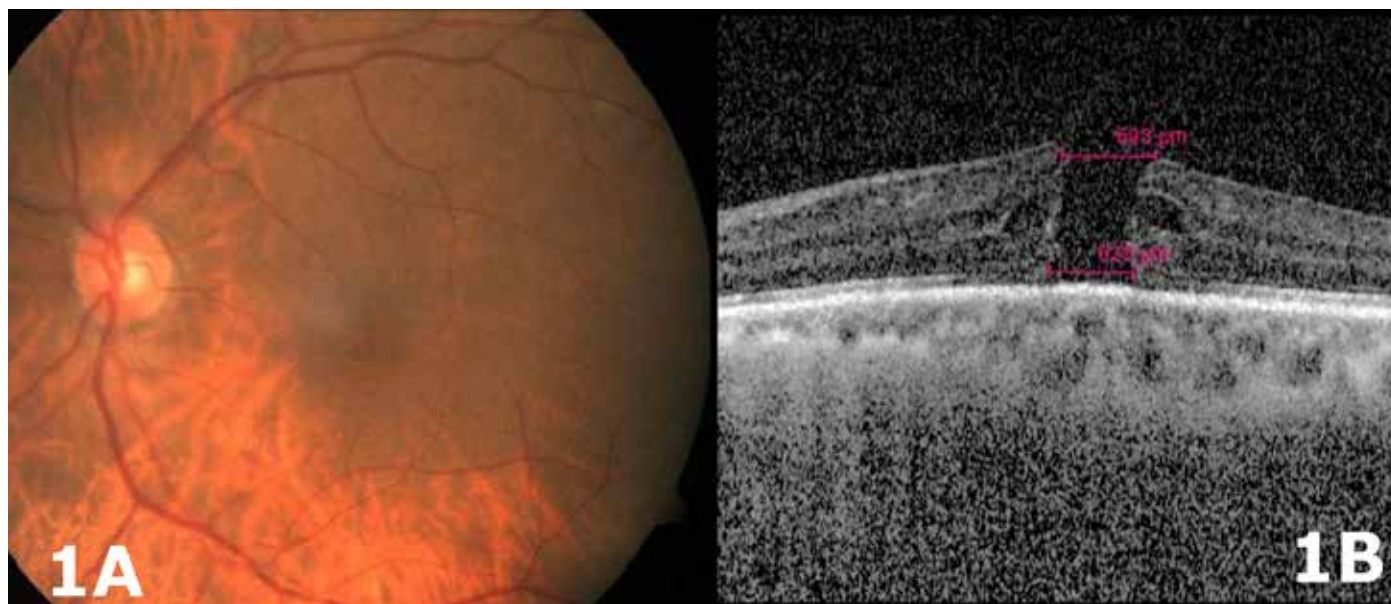


Figure 1: Fundus photo LE (A) & Optical coherence tomography (OCT) (B) showing the grade 4 full thickness macular hole.

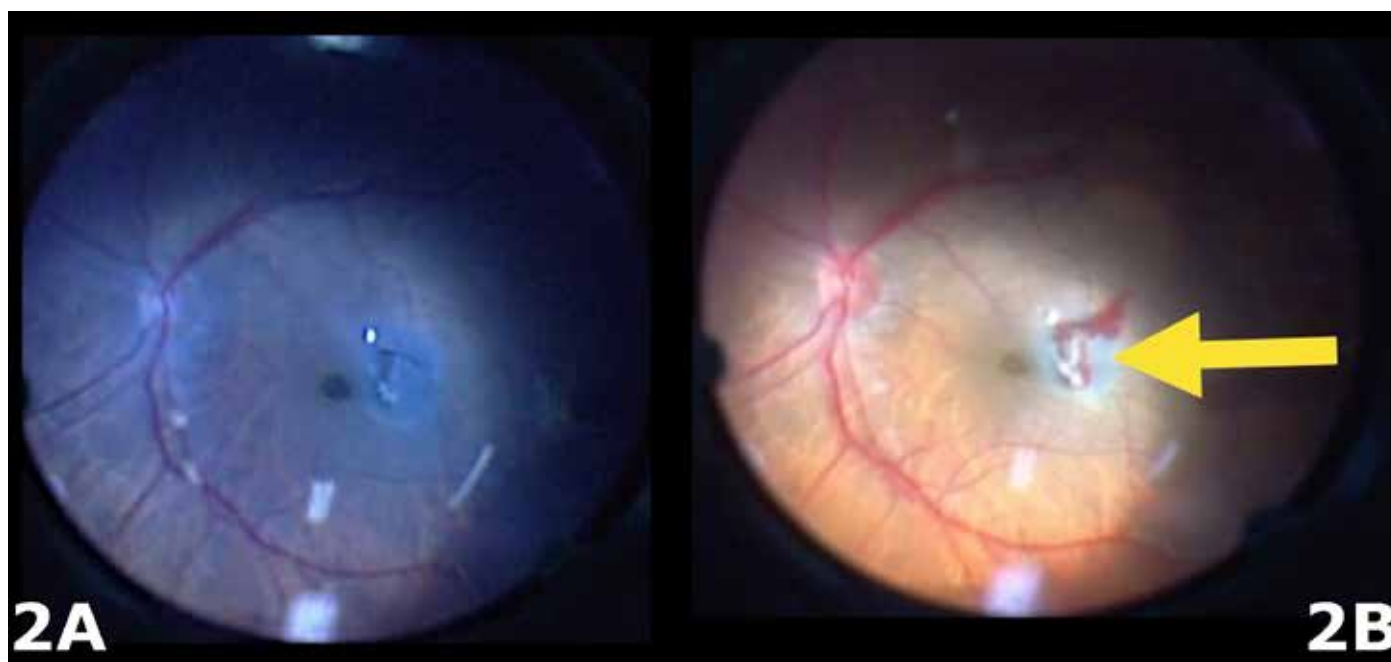


Figure 2: Fundus photo (LE) immediately after iatrogenic hit with TA particles (A) leading to peri-foveal hole & haemorrhage. (B) (Yellow arrow).

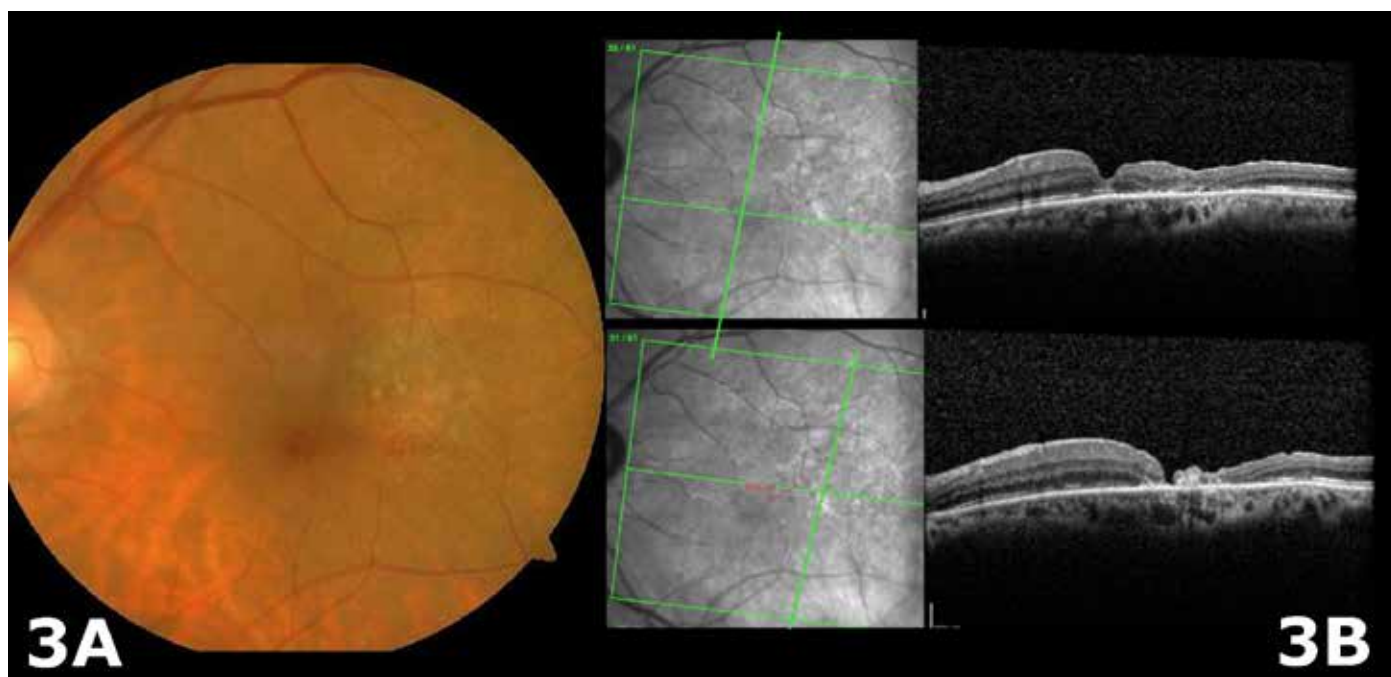


Figure 3: Fundus photo LE (A) & OCT (B) showing the spontaneous closure of the iatrogenic macular hole.

Discussion

Iatrogenic retinal breaks are an important complication of macular hole (MH) surgery.¹ Sjaarda et al first reported the distribution of iatrogenic retinal breaks (RBs) in MH surgery.² Of 181 MH eyes, they detected 10 (5.5%) iatrogenic RBs and 2 (1.1%) postoperative retinal detachment (RDs). The retinal breaks occurring during the surgery for macular disorders may be attributable to diverse causes of vitreous traction on the retina which may be due to vitreous incarceration into the sclerotomy site, inadvertent vitreous traction during instrument insertion, undue vitreous traction to the focal

area of vitreo-retinal adhesion, and induction of a PVD-related vitreous traction. Analysis of distribution pattern of retinal breaks showed that all breaks occurred in peripheral retina.³ If undetected or improperly managed these breaks may lead to postoperative retinal detachment (RD), requiring additional surgery.

Iatrogenic posterior pole breaks, though a rare complication in MH surgery can threaten the chances of visual recovery and may lead to permanent vision loss. Previous researchers have tried to close posterior pole holes with the help of

endo-laser⁴ with significant visual improvement, but we don't commend endo-lasers for posterior pole retinal holes < 1500um from foveola.⁴ In our scenario iatrogenic hole was located in peri-foveal macula.

Silicone oil tamponade is known to have a significant effect on the postoperative decrease in thickness of all retinal layers without significant change in visual outcomes compared to gas tamponade.⁵ In our case, formation of retinal break by triamcinolone crystal plug was a unique case scenario and have not been reported till now. We find ILM peeling with gas tamponade adequate in this condition. Rational behind removing the ILM around iatrogenic hole lie to the fact that ILM act as a scaffold for the proliferation of cellular components such as myofibroblasts, fibrocytes, and RPE cells. Glial cells migrate onto the surface of the ILM, creating a tangential contractile force. Surgical peeling of ILM, therefore removes the remaining cortical vitreous, which could exert residual tangential traction.⁶ Moreover ILM removal, with its trauma to the Muller cell end feet, may lead to a retinal glial cell proliferation response, which could paradoxically enhance hole contraction and repair.⁷

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