

Chronic macular oedema as a late MIRAgel-related complication

Chung Shen Chean¹, Christina S Lim¹, Hardeep-Singh Mudhar², Evangelos Lokovitis¹, Raghavan Sampath¹

¹ Department of Ophthalmology, University Hospitals of Leicester NHS Trust, Infirmary Square, Leicester, United Kingdom. LE1 5WW

² National Specialist Ophthalmic Pathology Service (NSOPS), Department of Histopathology, Royal Hallamshire Hospital, Sheffield, UK, S10 2JF

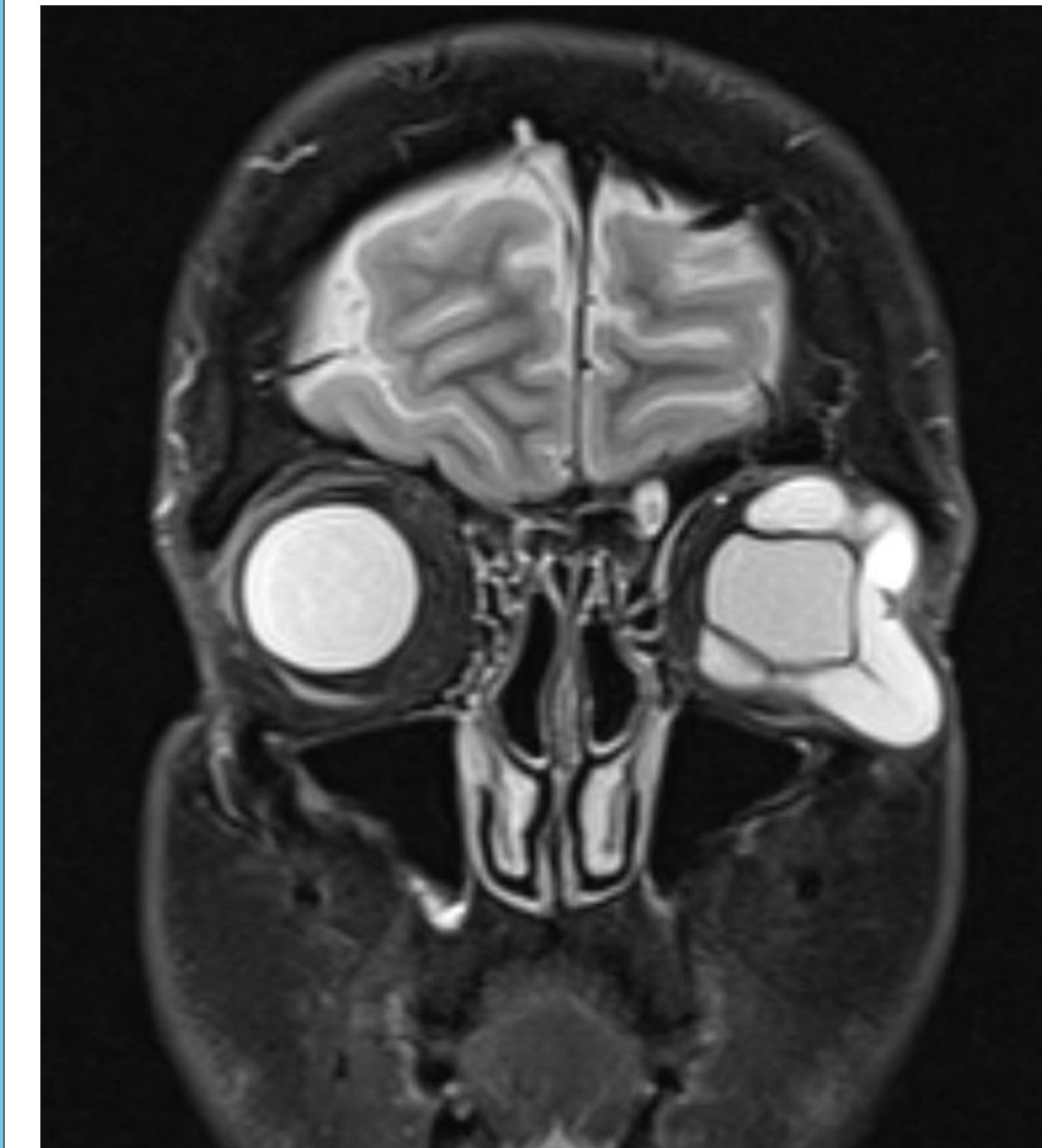
Background

- MIRAgel® (MIRA, Waltham, MA) is a hydrogel scleral buckle first introduced in 1979 as an alternative to silicone explants for the treatment of rhegmatogenous retinal detachments.
- Reports of MIRAgel undergoing hydrolytic degradation causing globe compression, strabismus, ptosis, scleral erosion, conjunctivitis, infection, cosmetic issues, difficult to completely excise it surgically due to its friable nature.
- Use has been discontinued
- We would like to report a unique case of chronic macular oedema due to MIRAgel

Case presentation

- 62-year-old male
- 6-week history of gradual enlarging firm painful ill-defined left lower lid mass with overlying erythema, marked conjunctival chemosis and progressive ophthalmoplegia.
- Past ocular history: Left eye retinal detachment scleral buckle surgery 28 years ago
- Visual acuity (VA): 0.04 LogMAR both eyes
- Normal pupillary examination & colour vision
- Exophthalmometry: 2mm left eye proptosis
- Intraocular pressure (IOP): 14mmHg both eyes
- Normal fundus

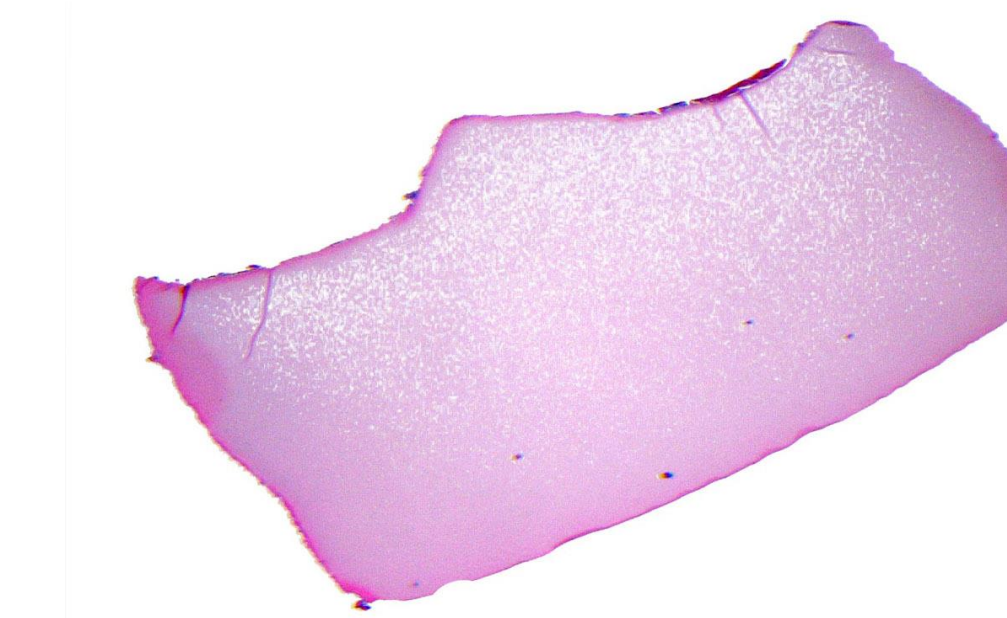
Investigations



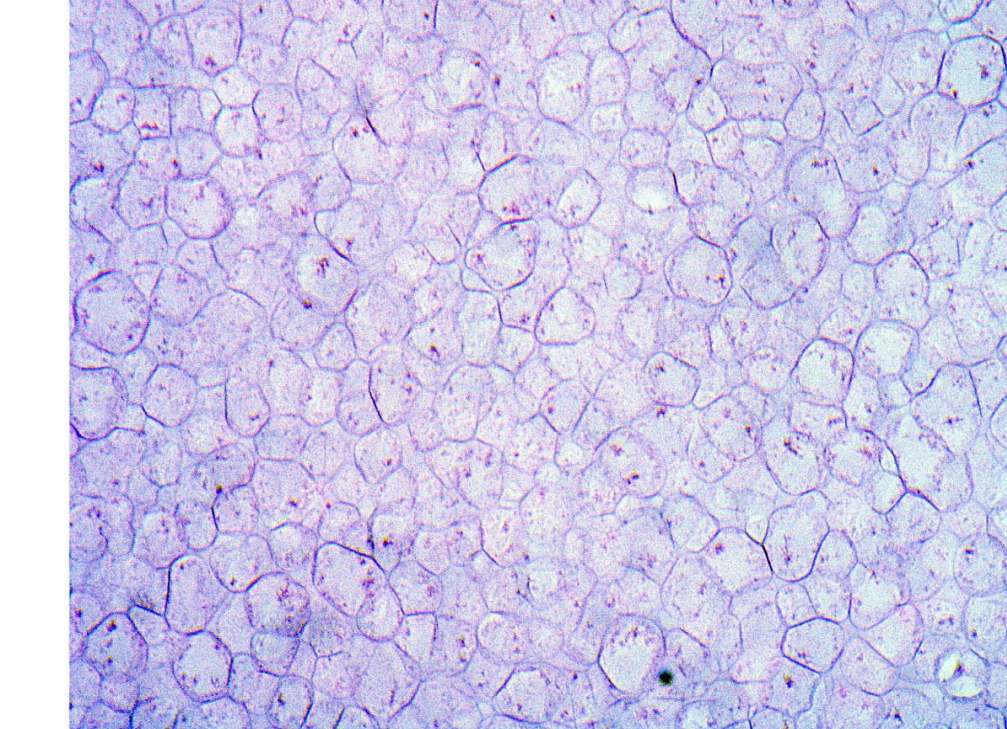
Urgent magnetic resonance imaging (MRI) of the orbits: a large, well-defined, tubular horseshoe-shaped lesion in the extraconal space of the left orbit sparing the medial portion of the orbit with globe distortion.

Urgent incisional biopsy: multiple fragments of opaque grey-blue gelatinous material and histology confirmed acellular material of an expanded hydrogel retinal detachment encircling band

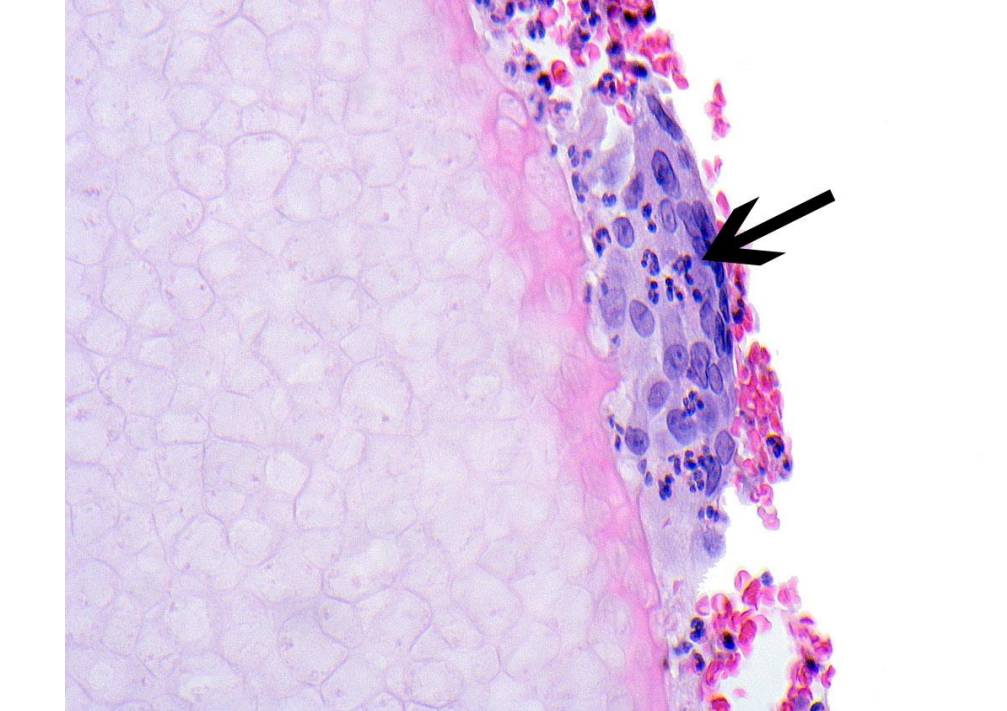
A



B



C



Histology

A-Low power haematoxylin and eosin (H&E) stained section showing amorphous material.

B-Higher power H&E showing bubbly basophilic material

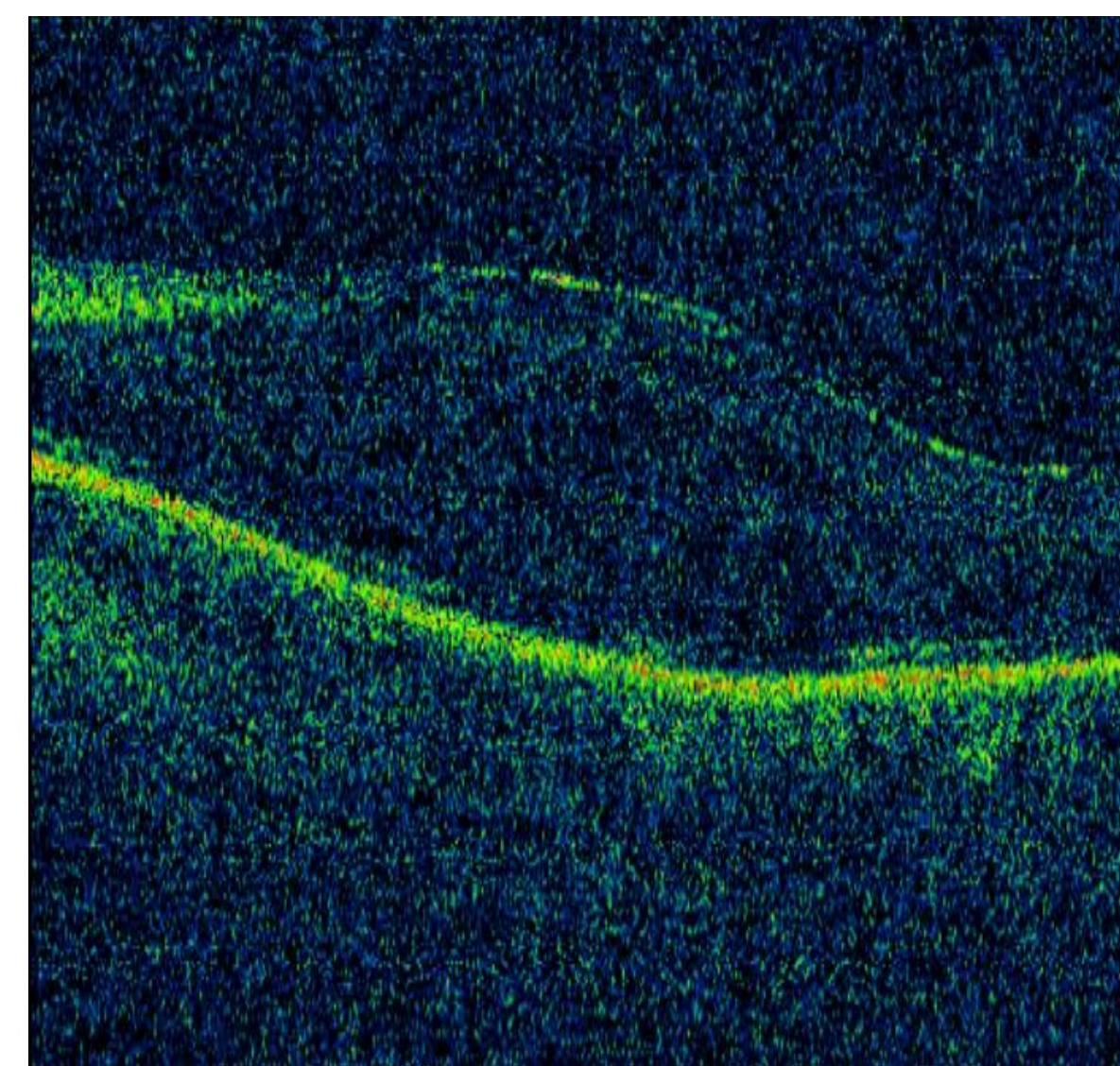
C-Higher power H&E showing foreign body giant cells on the surface of the material (arrow).

Intervention and Outcome (1)

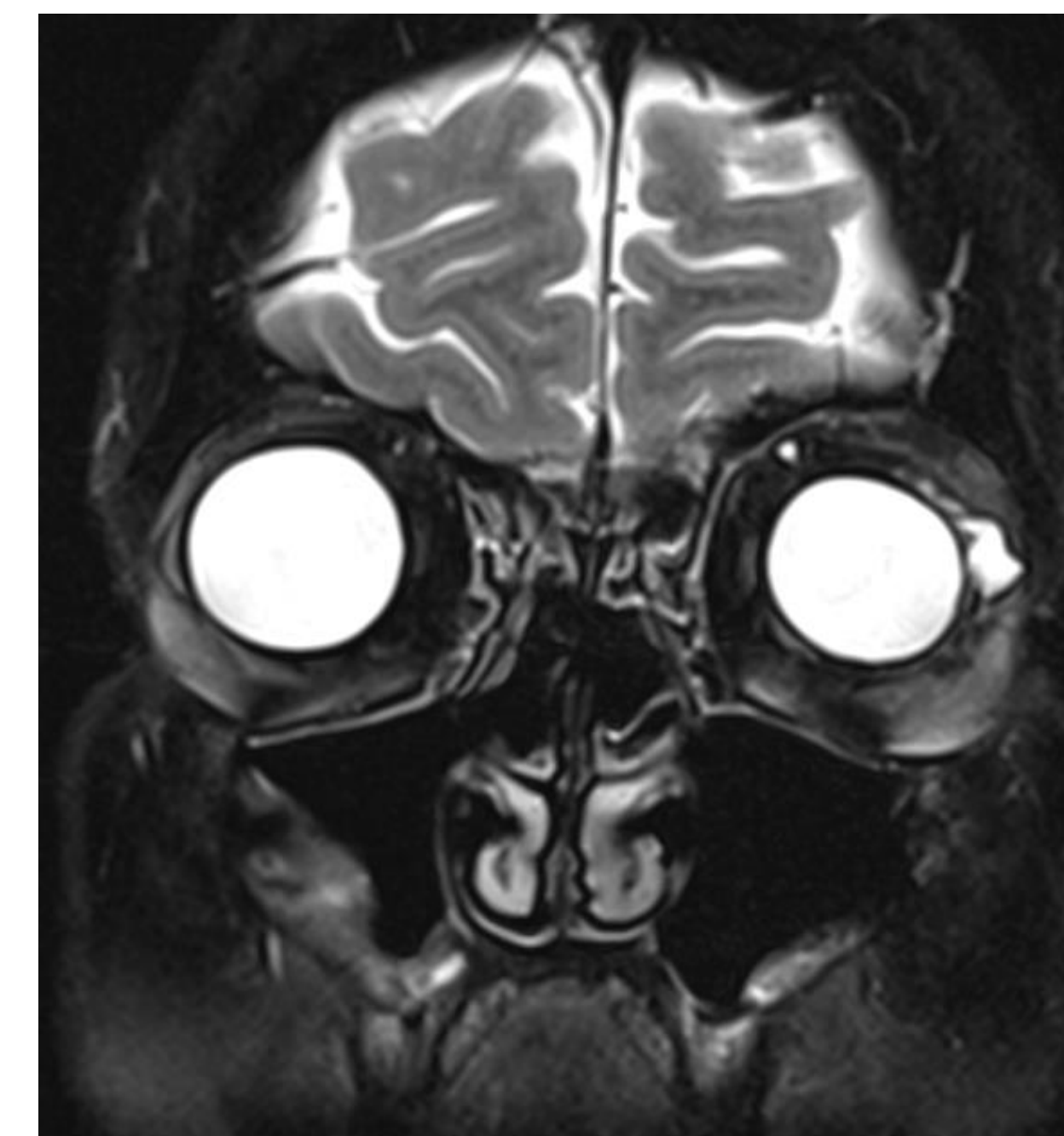
- Surgical excision: A subconjunctival incision on the left lower lid and further blunt dissection to expose the hydrogel capsule. With gentle use of suction, the gelatinous friable hydrogel buckle was removed (same technique was used for the lateral and superior quadrants), taking care not to cause scleral rupture or perforation.
- Outcome: No intraoperative complication, transient hypotony at week-1, complete resolution of symptoms, full extraocular motility, no signs of inflammation or infection.
- Patient was subsequently discharged.

One year later

- Referred back due to reduced vision left eye- VA: 0.02 LogMAR on the RE and 0.96 on the LE.
- Left eye posterior subcapsular cataract and macular oedema which persisted despite two sub-Tenon triamcinolone injections.



Optical coherence tomography (OCT) Macula showing left eye macular oedema



Repeat MRI orbits showing a cystic elevation above the left lateral rectus (a remnant of exposed hydrogel explant).

Intervention and Outcome (2)

- Underwent further surgical excision of the remaining hydrogel explant
- Macular oedema settled well with no recurrence after complete excision of the explant
- Patient had left eye cataract surgery with good visual outcomes.

Conclusion

- Our case is the first to describe macular oedema as one of the complications related to MIRAgel remnants.
- It can resolve upon complete removal of the explant.
- Postoperative inflammation should raise suspicion of remaining explant fragments

References

1. Ho PC, Chan IM, Refojo MF, Tolentino FI. The MAI hydrophilic implant for scleral buckling: A review. *Ophthalmic Surg.* 1984;15(6):511-515.
2. Crama N, Klevering BJ. The removal of hydrogel explants: An analysis of 467 consecutive cases. *Ophthalmology.* 2016;123(1):32-38. doi: 10.1016/j.opthta.2015.08.018 [doi].