

Eye



Letter to the Journal

Eye (2003) 17, 248–250. doi:10.1038/sj.eye.6700260

Miragel explant fragmentation 10 years after scleral buckling surgery

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Sir,

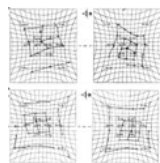
Long-term complications are known to be associated with hydrogel explants.^{1,2,3,4} We would like to present a patient with severely restricted eye movements 10 years following the use of Miragel explant (from MIRA, 87 Rumford Avenue, Waltham, MA 02454, USA).

Case report

A 66-year-old man had two scleral buckling surgeries for a right rhegmatogenous retinal detachment 10 years previously. He was referred for increasing binocular diplopia over the past 12 months.

On examination, his visual acuity was 6/18 OD and 6/12 OS. There was a large swelling over the superotemporal aspect of the right globe. On palpation, it was not possible to reach the posterior extent of this swelling. The eye was hypotropic and esotropic, and the extraocular movements were limited in all directions, especially abduction and elevation. Orthoptic assessment showed the deviation to be 8Δ esotropia, 4Δ L/R and 20Δ of excyclotorsion (see Lee's Chart, [Figure 1a](#)).

Figure 1.



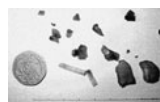
(a) Preop Lee's chart showing severely restricted extraocular movements. (b) Postop Lee's chart showing marked improvement in movements.

[Full figure and legend \(399K\)](#)

A provisional diagnosis of mechanical restriction was made, and we decided to explore and remove the surgical explant in the first instance.

At surgery, forced duction tests confirmed the diagnosis of mechanical restriction. It was found that the explant was covered by a thick fibrous capsule, and when the explant was exposed, it had a straw-colour, opalescent and gel-like appearance. It was not possible to purchase the explant with forceps as the material was extremely friable and tended to disintegrate. Eventually, we found that the best way to remove the surgical explant was to do so in a piece-meal fashion using a curette (see [Figure 2](#)). After the explant was removed, further excision and dissection of the fibrous tissue were carried out until the forced duction test gave satisfactory eye movements in all directions.

Figure 2.



Fragmentation of Miragel explant.

[Full figure and legend \(157K\)](#)

Two months postoperatively, the extraocular movements were almost full, and repeated orthoptic assessment showed that the excyclotorsion was reduced to 8 prism dioptres with minimal exotropia and hypotropia. The patient was then able to fuse images with the help of a Fresnel prism to correct the exotropia (see Lee's chart, [Figure 1b](#)).

Hydrogel explants were first introduced in 1979, but were later withdrawn in the 1990s. The initial enthusiasm for the use of this type of explant was for the following reasons:^{5,6} (1) The explants were soft and elastic and considered less likely to erode through the conjunctiva. (2) The explant did not contain any dead space, and this was thought to be important in minimising the risk of infection. (3) The explants could absorb and release antibiotics slowly. (4) The swelling from hydration could increase buckle height in the immediate postoperative period.

Miragel explants were subsequently withdrawn because of late complications.^{1,2,3,4} These include erosion into the globe, extrusion of the explants and progressive diplopia. The material had been shown to be structurally unstable and this led to excessive water absorption, swelling and disintegration.¹ This process must be a very slow one, as typically many of these complications only appear 7–10 years after the initial scleral buckle operation.^{1,2,3,4}

Comment

Using scissors and forceps in the conventional manner, the removal of Miragel may be difficult, as the explants disintegrate when grasped by instruments. In our patient, the explant was associated with massive periocular fibrosis and extensive dissection was required to free the globe from its mechanical restriction. Our case illustrated that the symptoms can be slowly progressive and that some complications tended to be delayed for many years. We may only be starting to see a number of these cases in this country, even though the explants were withdrawn some years ago. Where Miragel explants had been used extensively in the past, eye units should be aware of the possibility of late complications.

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Eye ISSN 0950-222X | EISSN 1476-5454

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