

Complications of Miragel

Pseudotumor

A 38-YEAR-OLD patient with myopia and an inferior temporal retinal detachment and multiple peripheral retinal holes in his right eye underwent an uneventful scleral buckling procedure using an encircling 907 (3 × 5 mm) Miragel (MIRA, Waltham, Mass) exoplane. Postoperatively, the retina was attached and central visual acuity was 20/20 OD.

Thirteen years later, the patient returned with double vision and a nonpainful, noninflamed right infraorbital swelling. A firm cylindrical mass protruded beneath the lateral aspect of the right lower eyelid (**Figure 1**). The retina was attached and visual acuity was 20/30 OD. The patient claimed that during the past few years, a hard mass lesion had developed under his right lower eyelid, causing progressive double vision.

On examination, inferior gaze in his right eye was limited. A firm, nontender, noninflamed mass could be palpated beneath the lower eyelid. Magnetic resonance imaging demonstrated the extent of enlargement of the encircling Miragel element (**Figure 2**). Using subconjunctival anesthesia, the buckling element was removed. The procedure was tedious because of fragmentation of the hydrogel material. Postoperatively, immediate cosmetic improvement was noted and diplopia was no longer experienced.

A comparison of the removed buckle with a new identically sized Miragel buckle demonstrated that the implanted buckle had swelled to 4.34 times its original cross-sectional area (**Figure 3**). The inferior temporal bulging of the Miragel buckle noted



Figure 1. Side profile of patient with a 15-mm firm, nonmotile, nonpainful right infraorbital protrusion.

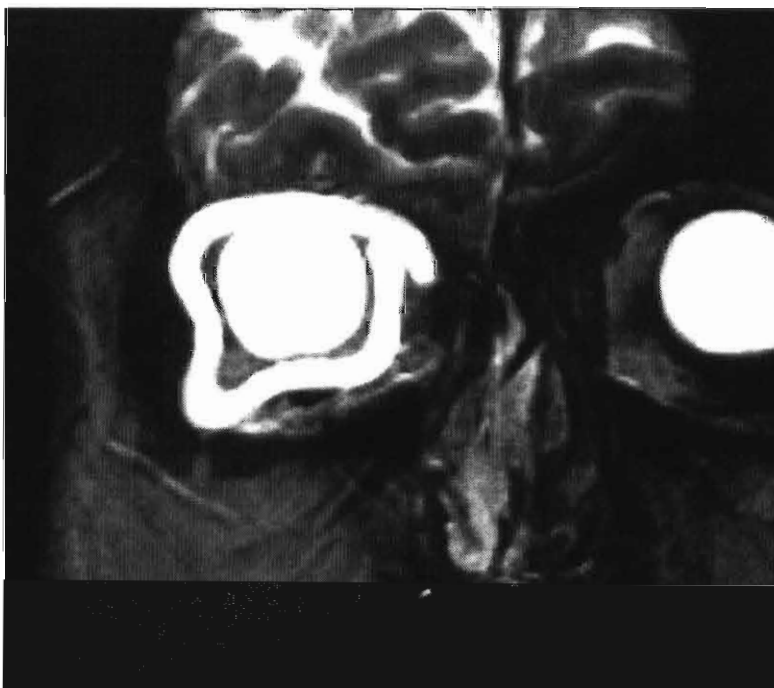


Figure 2. Coronal magnetic resonance image demonstrating Miragel element enlargement as the cause of the inferotemporal bulge.

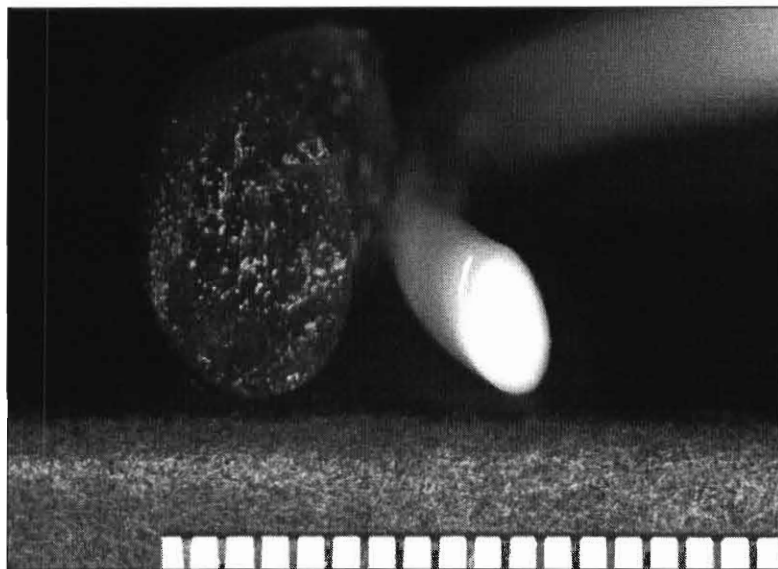


Figure 3. A cross-sectional comparison of a 5 × 3-mm Miragel explant prior to use (right) and a 9.7 × 6.7-mm explant removed 13 years later (left).

on magnetic resonance imaging indicates that there had also been an increase in the length of the element. This significant increase in volume might explain the patient's diplopia.

COMMENT

Complications following retinal detachment surgery may necessitate the removal of the scleral buckling element. Some of these complications have been attributed to the type of buckling material used. Scleral buckling material has evolved from autologous fascia lata

to nonabsorbable synthetic agents, such as polyethylene, silicone, and hydrogels.

Hydrogels are composed of a low-molecular-weight hydrophilic material that is water-permeable.¹ Hydrogel scleral buckling elements (Miragel) were introduced in 1979 and marketed to have an advantage over the silicone agents currently being used.² The degree of buckle swelling could be varied by altering the state of hydration. The softness and elasticity of Miragel were thought to minimize erosion, and its lack of dead spaces promised to prevent infection by allowing the absorption

and gradual release of antibiotics.³ Long-term complications related to the swelling properties of hydrogel explants have been reported. These problems have been attributed to erosion and migration, infection, granuloma formation, and fragmentation of the hydrogel material, resulting in particle retention on removal of the scleral buckling element.⁴

This case represents a complication that can occur as a result of the more than 4-fold volume expansion of the Miragel explant during a 13-year period. In this case, the profound increase in size of the explant caused restriction of extraocular movement and mimicked a periorbital mass lesion.

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