



Case report

Topical steroids: A non-surgical approach for recurrent macular holes[☆]Gerardo Gonzalez-Saldivar, Verena Juncal, David Chow^{*}

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ABSTRACT

Purpose: Report a case of a recurrent macular hole which completely resolved with a non-surgical approach with steroid drops.

Observations: While traction is considered the mayor contributor to full thickness macular hole formation, retinal hydration as that in cystoid macular edema also plays an important role.

Conclusions and Importance: Topical corticosteroid drops can be considered as an alternative therapy for small recurrent macular holes that lack tractional components and have an appearance of cystoid changes on the edges of the hole.

1. Introduction

Macular hole (MH) is a full thickness anatomical defect of the retina at the fovea. Its prevalence ranges from 0.2% to 0.7% in general population and tends to increase with age. Macular holes were once considered to be untreatable, it was not until vitrectomy and gas tamponade were proposed as a surgical repair option achieving a closure in 58% of cases.¹ Retinal surgeons have since been refining novel surgical techniques for MH surgery with the current gold-standard of pars-plana vitrectomy (PPV), internal limiting membrane (ILM) peeling, and gas tamponade. With these technique, a MH closure of 85%–90% is achieved.²

Recurrent MH incidence varies between 8% and 40%, and its positively correlated with MH size and the absence of subretinal fluid at the edges of the MH.³ Recurrent MH, where there is no apparent anteroposterior or tangential vitreoretinal traction, raises the question regarding its pathogenesis. Cystoid macular edema (CME) with subsequent Müller cell lysing and retina weakening has been considered to play an important role.⁴ We aim to report a case of a recurrent MH and its closure after medical treatment.

2. Case report

A 76-year-old male was evaluated in our retina department for a central scotoma in his right eye (OD). His past medical record was unremarkable. His past ophthalmic history revealed high myope, a cataract extraction and intraocular lens implantation in both eyes (OU),

and pars plana vitrectomy (PPV) with internal limiting membrane (ILM) peeling for myopic full-thickness macular hole (FTMH) closure OD in June 2016 (18 months before current appointment).

On referral, visual acuity was 20/80 in the right eye (OD) and 20/30 in the left eye (OS). Anterior segment examination for both eyes was normal. Fundus examination OS showed a tilted optic disc and myopic degeneration changes. OD presented with the previously mentioned findings as well as a recurrent small FTMH. Optical coherence tomography (OCT) scans confirmed a small 70- μ m diameter FTMH with perilesional cystoid macular edema (CME) (Fig. 1).

At this time, we started treatment with topical prednisolone 1.0%, 4 times per day in the OD. Four weeks later, his visual acuity had improved to 20/60 in the OD with complete closure of the macular hole and resolution of the CME (Fig. 2). Prednisolone 1.0% was gradually tapered by one drop a week over the next month until total discontinuation with maintained closure of the hole.

3. Discussion

We report a case of a small 70- μ m recurrent FTMH observed 18 months after PPV and ILM peeling which resolved with steroid drops. The majority of FTMH are believed to be caused by tractional forces, either perpendicular to the retinal surface (vitreous anteroposterior traction), or tangentially to the retinal surface (vitreous cortex tangential traction).¹ In our patient, a previous vitrectomy using triamcinolone and 0.05% indocyanine green dye, confirmed complete removal of both hyaloid and ILM. Clinical examination and SD-OCT confirmed the

[☆] We report a case of a recurrent macular hole which occurred 18 months after pars plana vitrectomy and internal limiting membrane peeling that was resolved with a non-surgical approach with steroid drops.

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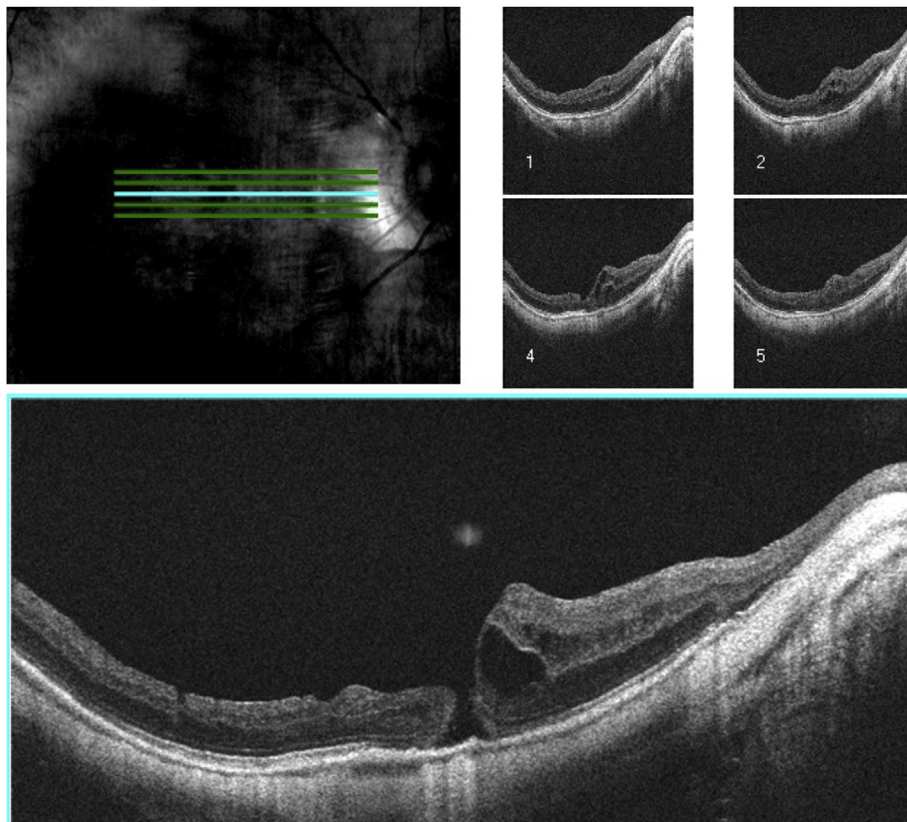


Fig. 1. Recurrent 70- μ m diameter FTMH with perilesional cystoid macular edema. Absence of traditional tractional forces and the bridging phenomenon are evident.

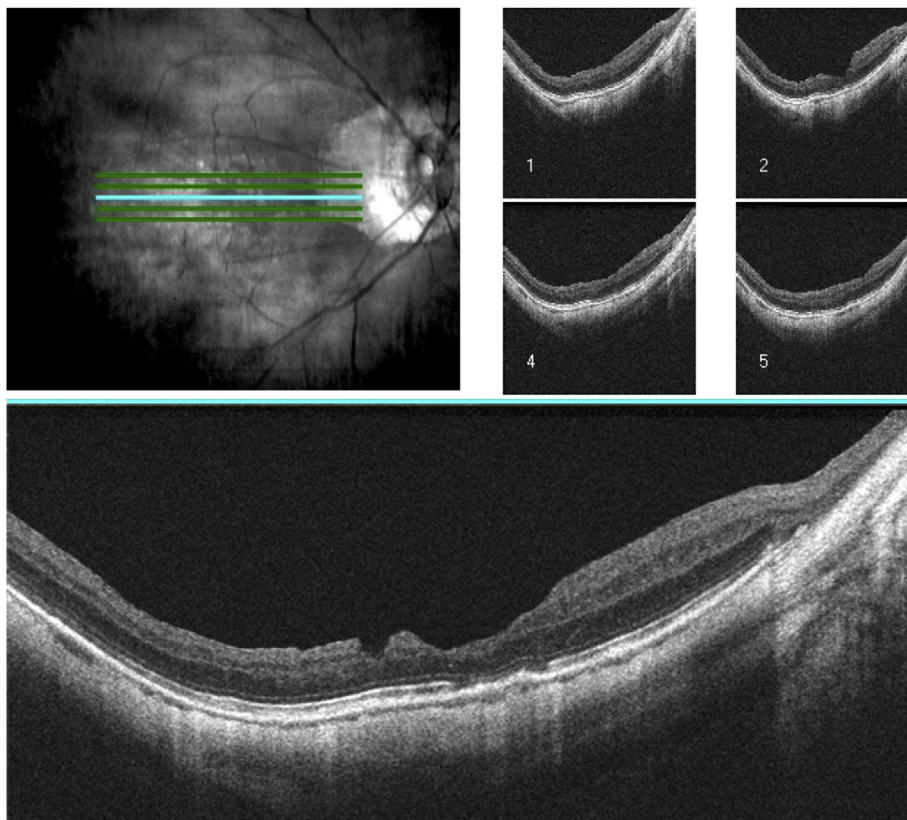


Fig. 2. Complete closure of the macular hole and resolution of the cystoid macular edema.

absence of any postoperative ERM, consequently traction was not felt to play a role in the formation of the recurrent hole.

Another theory that could explain the development of the recurrent FTMH in our patient is the development of CME. CME induces mechanical forces and biochemical changes, along with blood-retina barrier breakdown. During this process, Müller cells become swollen and are eventually lysed, resulting in extracellular fluid accumulation at the inner and outer retinal layers. Müller cell lysing has been shown to reduce retinal stiffness, which predisposes to FTMH formation.⁵ Although few publications have documented the closure of primary FTMH secondary to CME with topical steroids,^{5,6} to our knowledge only one case of recurrent FTMH closure has been reported.⁴ Clinical examination and SD-OCT confirmed the absence of traditional tractional forces such as epiretinal membrane or vitreomacular traction, as well as the bridging phenomenon, which is considered to be the leading mechanism process for spontaneous FTMH closure.⁷ CME was speculated to be playing the main role in pathogenesis, reason why topical steroids were initiated.

Although we do think CME was likely the cause of the recurrent macular hole, we were unable to identify any of the typical causes for CME to have occurred such as cataract extraction, uveitis or diabetic macular edema.⁴ Topical corticosteroid therapy QID alone over a 1-month period was able to allow dehydration of the intraretinal fluid to the point where apposition of the FTMH edges occurred with subsequent closure of the defect. This supports the idea that even though tractional forces are the main contributor in the pathogenesis of FTMH, other factors such as CME can contribute to the pathogenic background. Remission of these contributing factors with topical corticosteroids, we feel, is a reasonable option to try in very small FTMH, especially in the absence of traditional tractional forces.

4. Conclusions

Topical corticosteroid therapy can result in closure of very small

FTMH that lack typical tractional components and have an appearance of cystoid changes on the edges of the hole.

Statement of informed consent

The consent to publish was not required in this case as the images provided do not reveal the identity of the patient.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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