Spontaneous Closure of a Myopic Macular Hole in a Vitrectomized Eye

Vitrektomize Gözde Miyopik Makuler Holun Spontan Kapanması

Süleyman KARAMAN[1]
V. Levent KARABAŞ[2]
Berna ÖZKAN[3]
Nurşen YÜKSEL[4]

1- Uzm. Dr., Ağrı Devlet Hastanesi, Ağrı
2- Doç. Dr., Kocaeli Üniversitesi Tıp Fakültesi Göz Hastalıkları Anabilim Dalı, Kocaeli
3- Yard. Doç. Dr., Kocaeli Üniversitesi Tıp Fakültesi Göz Hastalıkları Anabilim Dalı, Kocaeli
4- Prof. Dr., Kocaeli Üniversitesi Tıp Fakültesi Göz Hastalıkları Anabilim Dalı, Kocaeli

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Yazışma Adresi / Correspondence Adress:
E-mail: suleymankaraman2001@yahoo.com

Phone: 0505 852 1009

ABSTRACT

Macular hole is characterized by full thickness anatomic defect at the fovea leading to loss of central vision. The majority of macular holes are idiopathic with smaller proportion being secondary to trauma, inflammation, or high myopia. Our aim is to present a formation of macular hole in a degenerative myopic case, who had prior vitrectomy.

Key words: Macular hole, myopic eyes

ÖZ

Makuler hole, merkezi görme kaybına neden olan tam kat anatomik defekt ile karakterizedir. Makuler hole coğunlukla idiyopatik olmakla birlikte, travma, enflamasyon ve yüksek miyopiye sekonder gelişebilir. Amacımız vitrektomize, dejeneratif mıyopisi olan olguda makuler hole oluşumu ve spontan kapanmasını sunmaktır.

Anahtar kelimeler: Makula deliği, myopi

INTRODUCTION

Macular hole is characterized by full thickness anatomic defect at the fovea leading to loss of central vision. The majority of macular holes are idiopathic with smaller proportion being secondary to trauma, inflammation, or high myopia. Optical Coherence Tomography and ultrasound imaging suggest that idiopathic macular holes (IMH) are initiated during perifoveal posterior vitreous detachment (PVD) as a consequence of anteroposterior and dynamic vitreomacular traction (VMT). Tangential traction of the perifoveal vitreus cortex results in a foveal dehiscence that progress from foveolar detachment to full thickness IMH. On the other hand, the abnormal growth of the posterior wall of myopic eyes may lead to progressive scleral ectasia of the globe known as posterior staphyloma, which can be associated with full thickness macular hole with or without retinoschisis. Treatment of macular hole is pars plana vitrectomy (PPV) with internal limiting membrane peeling.[1-3]

Our aim is to present a formation of macular hole in a degenerative myopic case, who had prior vitrectomy.

CASE

A 50 years old female patient was referred to our clinic for dropped nucleus in the right eye. We performed PPV, and because the patient had degenerative myopia we did not implant intraocular lens. Her visual acuity was 0.4, intraocular pressure was 14mmHg in her visit 1 year after the surgery. She was aphakic and degenerative myopic changes in fundus. Her axial diameter measurement was 32.02mm.

Her visual acuity decreased to 0.3 in her visit at 4 years after the surgery. Fundus examination revealed macular hole, which was also confirmed with OCT (SD-OCT;Heidelberg Engineering Inc. Dossenheim, Germany). It was a 146μ wide full thickness macular hole (Figure 1). The patient was rescheduled for a follow up visit 5 weeks later. At follow up visit we found that the hole was spontaneously closed. (Figure 2)

DISCUSSION

Macular hole formation in a myopic eye is usually associated with posterior staphyloma. It has been postulated that highly myopic eyes with posterior staphyloma could be affected by macular hole exactly as occurs in emmetropic eyes. In deeper posterior staphyloma, which often extends within the temporal vascular arcades, centripedal vector forces exerted toward the center of the eyeball are greater than in eyes with flat posterior staphyloma. As a consequence, since the relative inelastic inner retina tends to resist the anteroposterior traction exerted by the staphyloma and macular hole might form.[4-5-6] The treatment for myopic macular hole repair is PPV with gas or oil tamponade. Procedures such as episcleral posterior buckling, suprachoroidal buckling, and scleral shortening procedures might be added if needed. Our patient had a previous PPV. Absence vitreomacular traction might be one of the reasons for spontaneous closure of the macular hole.

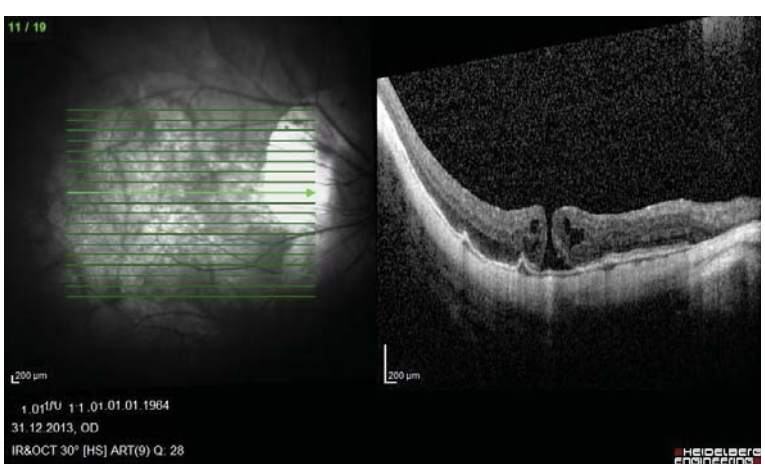

Figure 1. *Full thickness macular hole formation including inner segment/outer segment junction at the photoreceptor layer 4 years after initial PPV(31.12.13)*

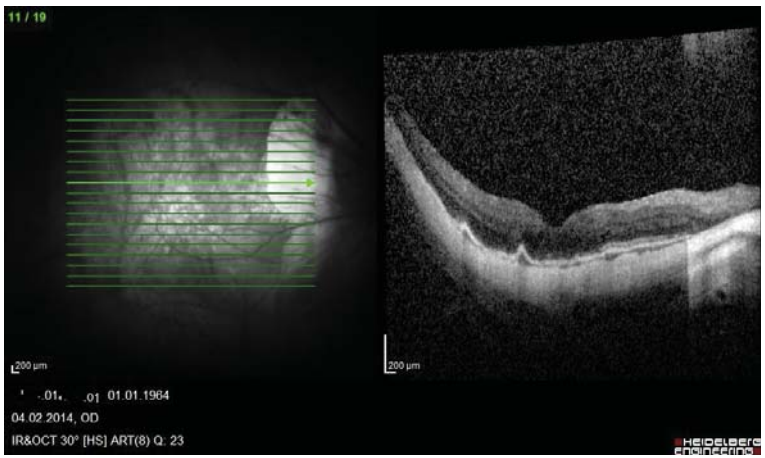

Figure 2. *OCT of the patient performed 1 month after diagnosing macular hole which was spontaneously closed (04.02.14)*

Clinicopathological reports on idiopathic and myopic macular holes that have been closed by vitrectomy have suggested that Muller cells and astrocytes are the most likely candidates for the repair of such macular holes.'[7]

A centripetally tractive action produced by the extension and/or proliferation of the Muller cells towards the center of a macular hole might lead to adhesion of other disrupted retinal layers, including the IS/OS junction. The connection by Muller cells might induce the recovery of the foveal detachment, by

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pressing the elevated tissue to the retinal pigment epithelium. This process would facilitate the photoreceptor activation and the IS/OS junction restoration.[8]

Other than vitreomacular traction tangential forces play a role in formation of the macular hole. Presence of tangential forces might be the reason for the macular hole in our patient. Spontaneous closure of myopic macular holes could occur. However, its mechanism is not clear yet. As we mentioned before, absence of VMT might helped this spontaneous closure. It has been shown that retina pigment epithelium and glial cell proliferation occur in spontaneously closed macular holes.[9]The other factors(lack of ERM and posterior hyaloid traction) that might be related with spontaneous closure of macular holes are younger patient age and smaller sized holes.[10-11] Yu at al. reported the small size of the macular hole in the current case might be one cause. It has been reported that in both emmetropic and highly myopic eyes, small macular holes were more likely to be closed after surgical treatment.[12]

Our case, conforming to the literature regarding the risks and development of macular hole, includes all components such as myopia, female gender and age. Besides, lack of ERM and posterior hyaloid traction - both of which play a role in hole development - renders the case attracted.

Lack of residual posterior hyaloid and/or epiretinal membrane causing a traction in OCT slices along with the patient being already vitrectomized favor the hole in question to develop on a myopic fundus basis. Spontaneous closure of the hole in our case looks more related to size rather than glial and RPE proliferation when the age is taken into account. Besides, it can also be related to muller cell mediated restoration.

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