Spontaneous Closure of Macular Hole After Posterior Vitreous Detachment

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Abstract. Macular holes can be treated with surgically-induced vitreous detachment and gas tamponade. The authors report a case of a macular hole that closed spontaneously after the development of posterior vitreous detachment (PVD). Optical coherence tomography (OCT) revealed a small full-thickness macular hole with perifoveal cystic changes in a 25-year-old female with a central scotoma at her initial visit. There was no evidence of PVD. Five months later, PVD was observed and the macular hole disappeared. OCT performed three months later showed macular hole closure and resolution of the perifoveal cystic changes. The physiologic pit was restored in the fovea. OCT is useful to detect and monitor the morphologic changes of a macular hole. [Ophthalmic Surg Lasers 2000;31:245-247]

CASE REPORT

A 25-year-old woman, who had no history of ocular disease or trauma, had a central scotoma in her right eye. At the initial visit, her best-corrected visual acuity level was 20/20 in the right eye whose refraction was -0.5 dioptors. Ophthalmoscopic and biomicroscopic examinations revealed a macular hole one-fifth of a disc diameter in size (Figure 1). Epiretinal membrane-like reflex was seen in the perimacular area. No posterior vitreous detachment (PVD) was observed in her right eye. Vitreous liquefaction was evident bilaterally. OCT revealed a full-thickness macular hole with perifoveal cystic changes, which is consistent with a stage 3 hole (Figure 2). Because the macular hole was small and the patient had good vision, she was observed without treatment. After five months, slit-lamp biomicroscopy showed resolution of the macular hole and complete PVD (Figures 3, 4). OCT, performed three months later, showed closure of the macular hole and resolution of the perifoveal cystic changes. The normal foveal depression had been restored in the fovea (Figure 5).

DISCUSSION

Idiopathic macular holes are caused by tangential contraction of the premacular vitreous cortex. When PVD occurs during the initial stage of a macular hole, its progression to a full-thickness hole may be halted. However, once a full-thickness hole is formed, subsequent PVD usually does not promote macular hole
closure. Thus, patients with full-thickness macular holes usually undergo vitrectomy with gas tamponade.

In the present case, OCT revealed a full-thickness macular hole with perifoveal cystic changes at the initial examination. There was no evidence of PVD. The macular hole was diagnosed as a stage 3 hole according to the classification of Johnson and Gass. PVD was observed five months later. At that time, the macular hole was not observed. After another 3 months, OCT revealed macular hole closure and restoration of the physiologic reveal pit.

Guyer and associates reported that spontaneous macular hole closure occurred in 3 of 66 eyes (5%) with a stage 3 full-thickness hole after a mean follow-up of 4.3 years. The authors assumed that release of vitreous traction was responsible for reduction of the hole diameter and resolution of the subretinal fluid. Hikichi and colleagues observed spontaneous macular hole closure in 3 of 112 eyes (3%) during a mean follow-up of 5.7 years. PVD occurred during the period in 2 of the 3 eyes but not in the remaining 1 eye. In our case, complete PVD was noted when macular hole closure was found.

It is unclear why a macular hole was closed only by release of vitreous traction without gas tamponade. Lewis and associates reported a case of a 78-year-old man whose macular hole disappeared by proliferated epiretinal membrane and he had PVD. Because our case had a membranous reflex in the perimacular area, proliferated epiretinal cells may play a role for macular hole closure. Reddy and associates demonstrated good prognosis of macular microholes. Their visual acuity was relatively good despite the presence of a central scotoma. Microholes occasionally close spontaneously along with subsequent PVD. Our case is comparable to a macular microhole.

Small traumatic macular holes in young individuals may spontaneously seal even without PVD. In addition to the size of the holes, patient age appears to
affect spontaneous hole closure. Our case had three advantages for spontaneous sealing including young age, small size, and the presence of PVD.

A macular microhole can be expected to close spontaneously, especially when the patient is young and has PVD. OCT proved to be a valuable tool to providing cross-sectional images of the morphologic changes in macular holes.

REFERENCES