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RESEARCH

## VIDEO CASE

# Surgical treatment of acute subretinal hemorrhage

 Cumali Degirmenci,  Kubra Sincar

Department of Ophthalmology, Ege University Faculty of Medicine, Izmir, Türkiye

**A**cute submacular hemorrhage is a serious vision-threatening condition. The most common causes are age-related macular degeneration and polypoidal choroidal vasculopathy, but it may also develop due to retinal macroaneurysm, pathologic myopia, and trauma. When subretinal hemorrhage is left untreated, the visual prognosis is very poor. There are various treatment options for subretinal hemorrhage. These include manual removal of subretinal hemorrhage, subretinal tissue plasminogen activator (tPA) administration, and intravitreal tPA administration.<sup>[1-4]</sup>

In this video, we demonstrate the surgical management of a patient who received subretinal tPA after vitrectomy. The patient was a 72-year-old male patient. He presented 2 days ago with sudden visual loss. He was taking anti-hypertensives and acetylsalicylic acid. On examination, visual acuity was hand movements in the right eye and 7/10 in the left eye. No significant cataract was observed. Anterior segment examination revealed a grade 1 nuclear cataract. Posterior segment examination revealed subretinal hemorrhage extending beyond the arches in the right eye and drusen in the left eye. The patient's anticoagulant therapy was discontinued before the injection (Fig. 1). After pars plana vitrectomy was performed

under local anesthesia with 25 gauge ports, 0.1 mL of tPA at a concentration of 10 µg/0.1 mL was administered into the subretinal area in 2 different points with a 41 gauge cannula at the most prominent location of the hemorrhage. Air injection was not performed along with subretinal tPA injection. Surgery was terminated by leaving air as an endotamponade. The patient was positioned supine for 2 h following the injection and then placed in a prone position for 24 h. At 1 week post-operatively, the hemorrhage had largely resolved, visual acuity had improved to 4/10, and intraocular pressure was normal (Fig. 2).

There is no consensus on the optimal treatment of subretinal hemorrhage because concomitant macular pathologies and the duration of hemorrhage may influence treatment choice and outcomes.<sup>[4]</sup> Techniques such as vitrectomy and removal of hemorrhage directly from the subretinal space have been found to be ineffective. In the past few years, intravitreal/subretinal injection of tPA with simultaneous non-expandable gas tamponade has become the preferred method.<sup>[5]</sup> This video demonstrates pars plana vitrectomy combined with subretinal tPA injection in a patient with subretinal hemorrhage due to neovascular age-related macular degeneration.



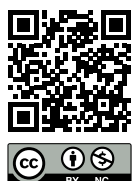
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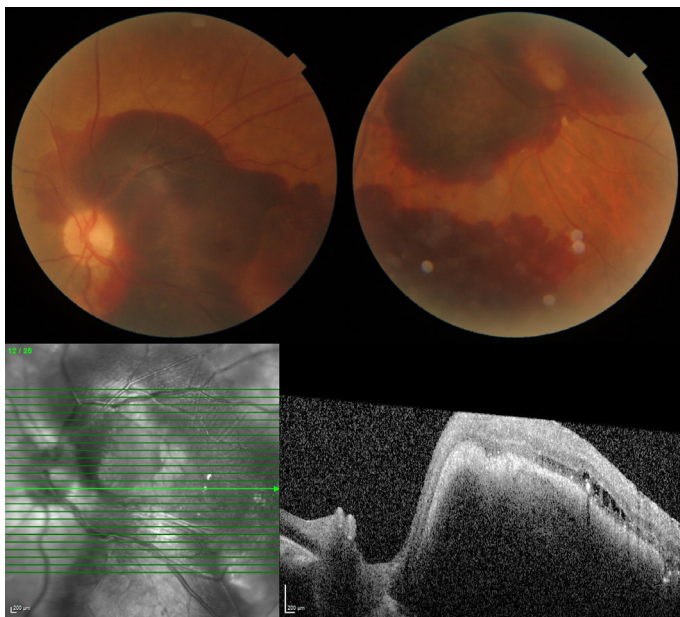
**Correspondence:** Cumali Degirmenci, M.D. Department of Ophthalmology, Ege University Faculty of Medicine, Izmir, Türkiye

**E-mail:** cudedegirmenci@yahoo.com

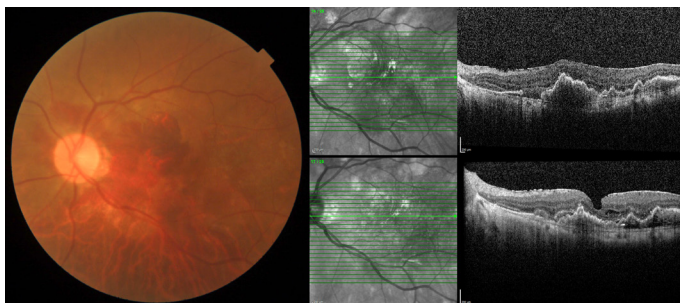
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**Fig. 1.** Pre-operative fundus photo and optic coherence tomography.



**Fig. 2.** Post-operative fundus photo and optic coherence tomography.

[Video 1.](#) *Pars plana vitrectomy combined with subretinal tPA injection in a patient with subretinal hemorrhage due to neovascular age-related macular degeneration.*

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