

## Retinal Pigment Epithelial Tears after Intraocular Bevacizumab (Avastin®) Injection for Neovascular Age-related Macular Degeneration

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### PURPOSE

To report a case series of retinal pigment epithelial (RPE) tears after off-label intraocular bevacizumab (Avastin) for neovascular age-related macular degeneration. Acute RPE tears are known to occur spontaneously in eyes with neovascular AMD, as well as following conventional laser and photodynamic therapy. This is the first case series describing RPE tears after intraocular Avastin injection.

### METHODS

This is a retrospective nonrandomized case series from 6 retina specialists located throughout continental United States (West coast, Midwest, East coast) and Europe. All study eyes underwent off-label intraocular Avastin injection for neovascular AMD within a 6-month period (October 2005 to March 2006). All eyes that developed RPE tears after intraocular Avastin injection for neovascular AMD were included in study. Serial fluorescein angiography and OCT were performed to document findings.

### RESULTS

There were 1,113 Avastin injections for 612 patients. 9 eyes (0.81%) in 9 patients (1.5%) developed RPE tears. 5 were white men and 4 were white women (5 right eyes, 4 left eyes). Mean age was 81.6 (range: 64-93). Mean interval from injections to RPE tears was 39 days (range: 4-118 days). Mean follow-up time was 90.2 days (range: 55-155 days). 8 eyes had subfoveal fibrovascular PED with occult neovascularization, and one had classic neovascularization without PED. Mean size of subfoveal lesion was 11.96 mm<sup>2</sup>(range: 4.48-25.6 mm<sup>2</sup>), and mean GLD was 4517 $\mu$  (range: 2980-7360 $\mu$ ). Dosages of Avastin were 1.25 mg in 0.05 ml for 5 eyes, and 2.50 mg in 0.1 ml for 4 eyes. 7 eyes developed RPE tears after 1 injection, and 2 after 2 injections. There was rapid decrease in submacular fluid and neovascular activity for all 9 eyes, sparing central fovea for 7 eyes. Mean pre-injection BCVA was 0.81 $\pm$ 0.32 LogMar (20/130), and mean post-RPE tear BCVA was 0.56 $\pm$ 0.24 LogMar (20/72), (P =0.09, Wilcoxin Signed Ranks).

### CONCLUSION

Post-Avastin RPE tears may develop with unknown cause mainly in eyes with a PED. A potential mechanism involves rapid decrease in submacular fluid and shrinkage of neovascular lesion after injection, leading to acute contraction and tearing of the RPE flap. Despite RPE tears, most affected eyes retained vision, mainly due to reduced submacular fluid and central foveal preservation over short term.

### PRE-AVASTIN CASE EXAMPLE

Pre-Avastin injection (A) color photograph, (B) red-free photograph, and (C) fluorescein angiogram show a subfoveal fibrovascular PED in left eye of this 78-year old woman.

#### POST-AVASTIN CASE EXAMPLE

Post-Avastin injection (A)red-free, (B)FA, and (C)OCT show RPE tear with nasal retraction of torn RPE flap in same eye. BCVA actually improved from 20/400 to 20/100 after injection, mainly due to decreased submacular fluid and central foveal preservation.