Intravitreal Anti-VEGF Therapies

Anti-VEGF Current Therapies

- Bevacizumab
- Ranibizumab
  - PDS vs monthly injections
- Aflibercept
- Brolucizumab
- Faricimab
  - Extended interval treatment

PDS, Port Delivery System with ranibizumab.

Bevacizumab (Avastin)

Rosenfeld PJ, et al. *Ophthalmic Surg Lasers Imaging*. 2005;36(4):331.

Optical Coherence Tomography Findings After an Intravitreal Injection of Bevacizumab (Avastin®) for Neovascular Age-Related Macular Degeneration

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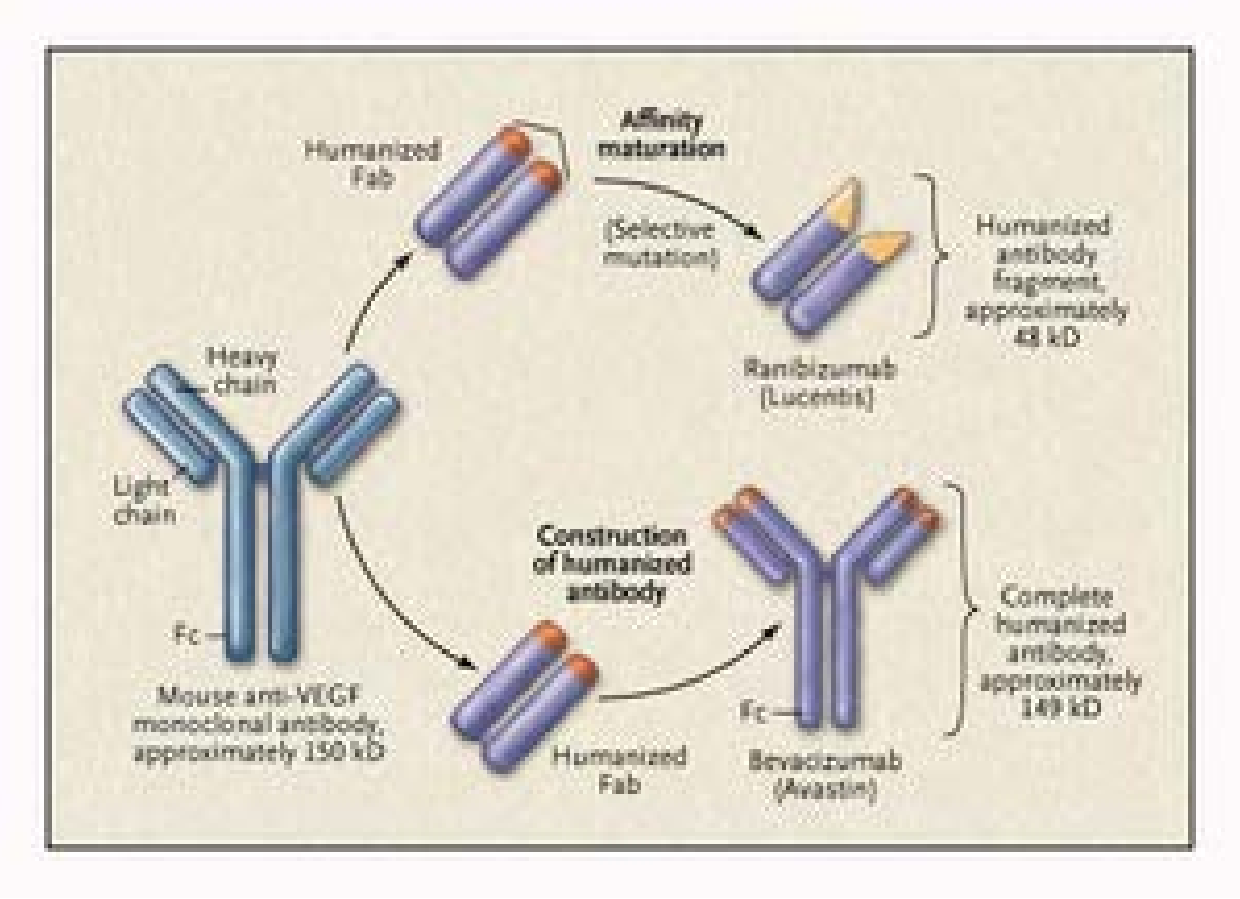
Abstract. To determine whether intravitreal bevacizumab could improve optical coherence tomography and visual acuity outcomes in a patient with neovascular age-related macular degeneration who was responding poorly to pegaptanib therapy, an intravitreal injection of bevacizumab (1.0 mg) was given. Within 1 week, optical coherence tomography revealed resolution of the subretinal fluid, resulting in a normal-appearing age-related macular degeneration who are losing vision secondary to macular neovascularization. **[Ophthalmic Surg Lasers Imaging 2005;36:331-335.]**

INTRODUCTION

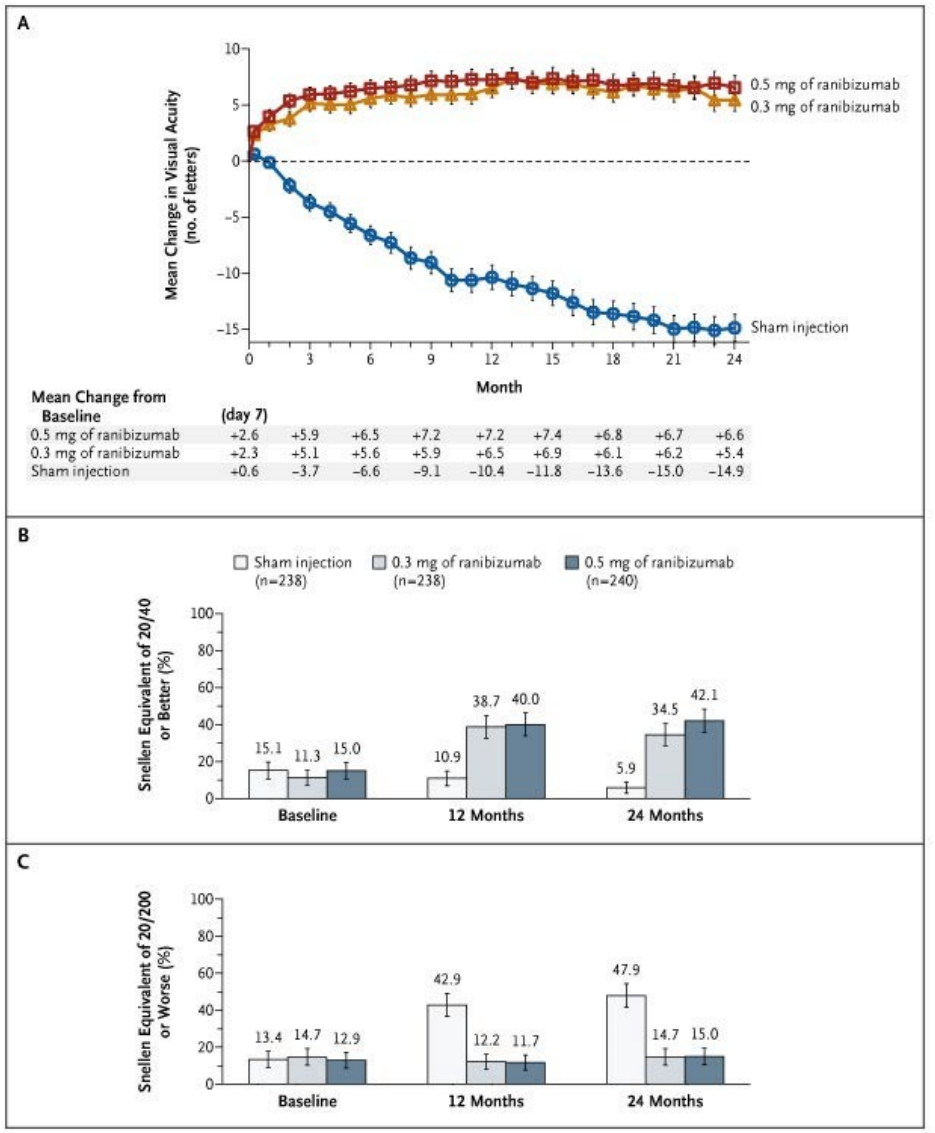
Vascular endothelial growth factor (VEGF) has been implicated as the major angiogenic stimulus responsible for neovascularization in age-related macular degeneration (AMD).[1,2] Inhibition of VEGF using intravitreal injections of pegaptanib sodium (Macugen; Eyetech Pharmaceuticals, Inc., New York, NY) was superior to sham-treated controls in a Phase II/III trial, but the average patient treated with pegaptanib still lost vision.[3] Ranibizumab (Lucentis; Genentech Inc., San Francisco, CA) is another inhibitor of VEGF designed specifically for ophthalmology and is currently in Phase III clinical trials for neovascular AMD.[4] Ranibizumab is derived from a larger molecule known as bevacizumab (Avastin; Genentech Inc.), which was designed as an intravenous anti-angiogenic drug for oncology.[5]

Bevacizumab is approved for the treatment of metastatic colorectal cancer, and a study using off-label intravenous bevacizumab for neovascular AMD showed

Ranibizumab (Lucentis)



Steinbrock R, et al. *N Engl J Med*. 2006;355(14):1409.

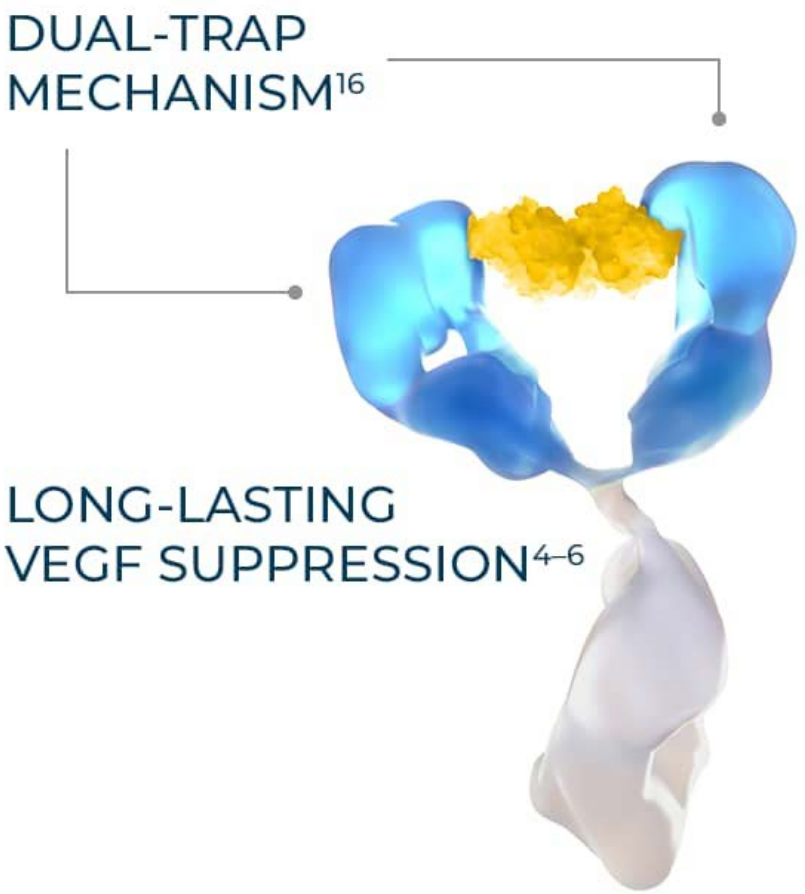


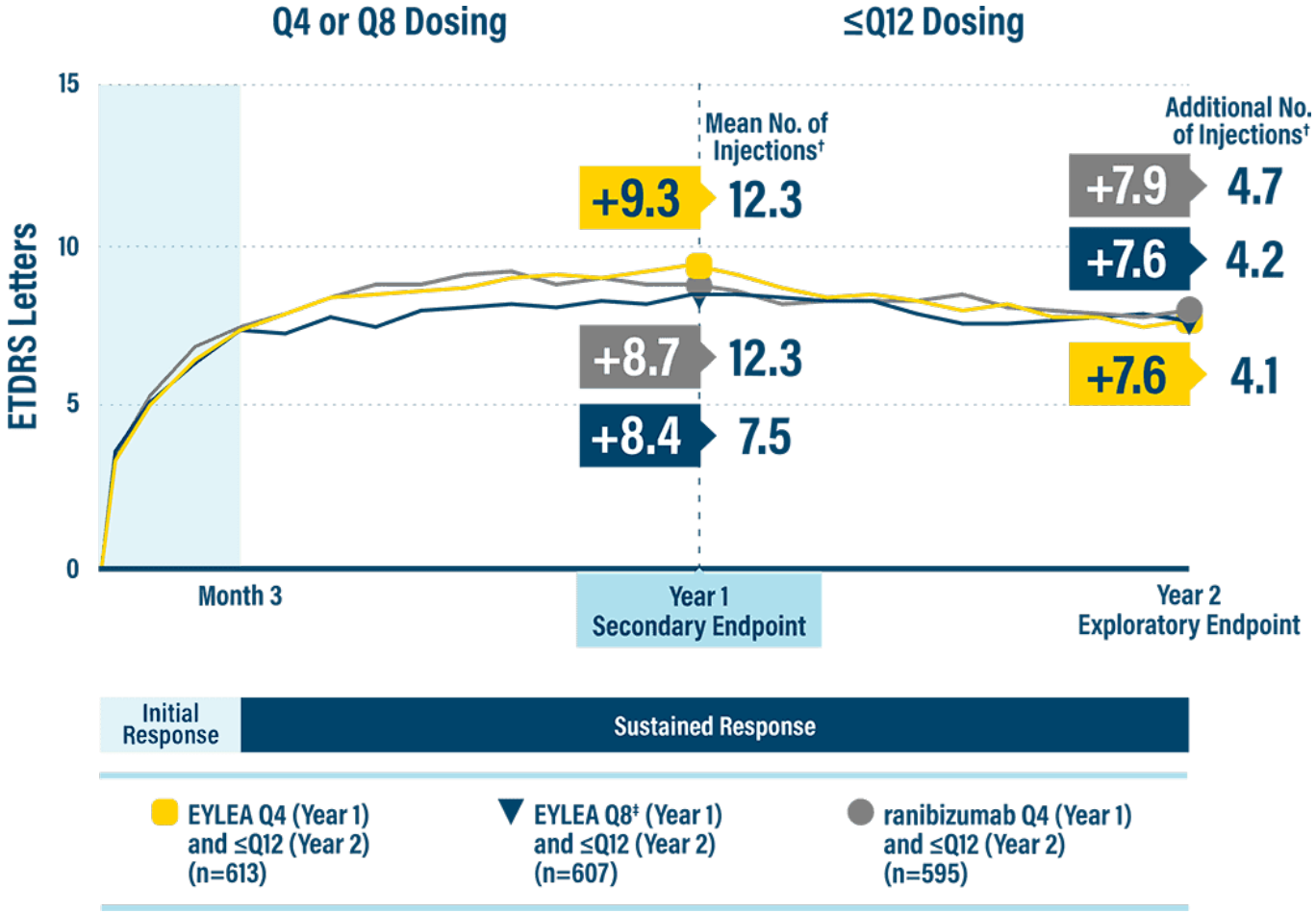
Mean Change from Baseline

	(day 7)								
0.5 mg of ranibizumab	+2.6	+5.9	+6.5	+7.2	+7.2	+7.4	+6.8	+6.7	+6.6
0.3 mg of ranibizumab	+2.3	+5.1	+5.6	+5.9	+6.5	+6.9	+6.1	+6.2	+5.4
Sham injection	+0.6	−3.7	−6.6	−9.1	−10.4	−11.8	−13.6	−15.0	−14.9

Rosenfeld PJ, et al. *N Engl J Med*. 2006;355(14):1419.

Aflibercept (Eylea)

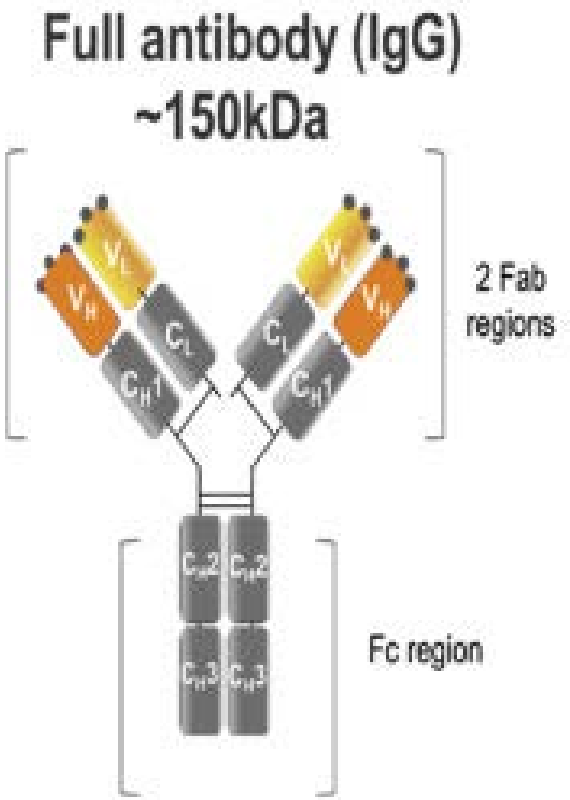




Schimdt-Erfueth U, et al. *Ophthalmology*. 2014;121(1):193.
Khurana RN, et al. *Am J Ophthalmol.* 2019;200:161.

ETDRS, Early Treatment Diabetic Retinopathy Study.

Brolucizumab (Beovu)



Comprises only the antibody variable domains VL and VH that are responsible for binding to its target (joined by a short flexible linker peptide)

Fab, fragment antigen binding; Fc, fragment crystallizable; IgG, immunoglobulin G; kDa, 1000 daltons; scFv, single-chain variable fragment; VH, heavy chain variable domain; VL, light chain variable domain.

Nguyen QD, et al. *Ophthalmology*. 2020;127(7):963.

Brolucizumab (Beovu)

AMERICAN ACADEMY OF OPHTHALMOLOGY®

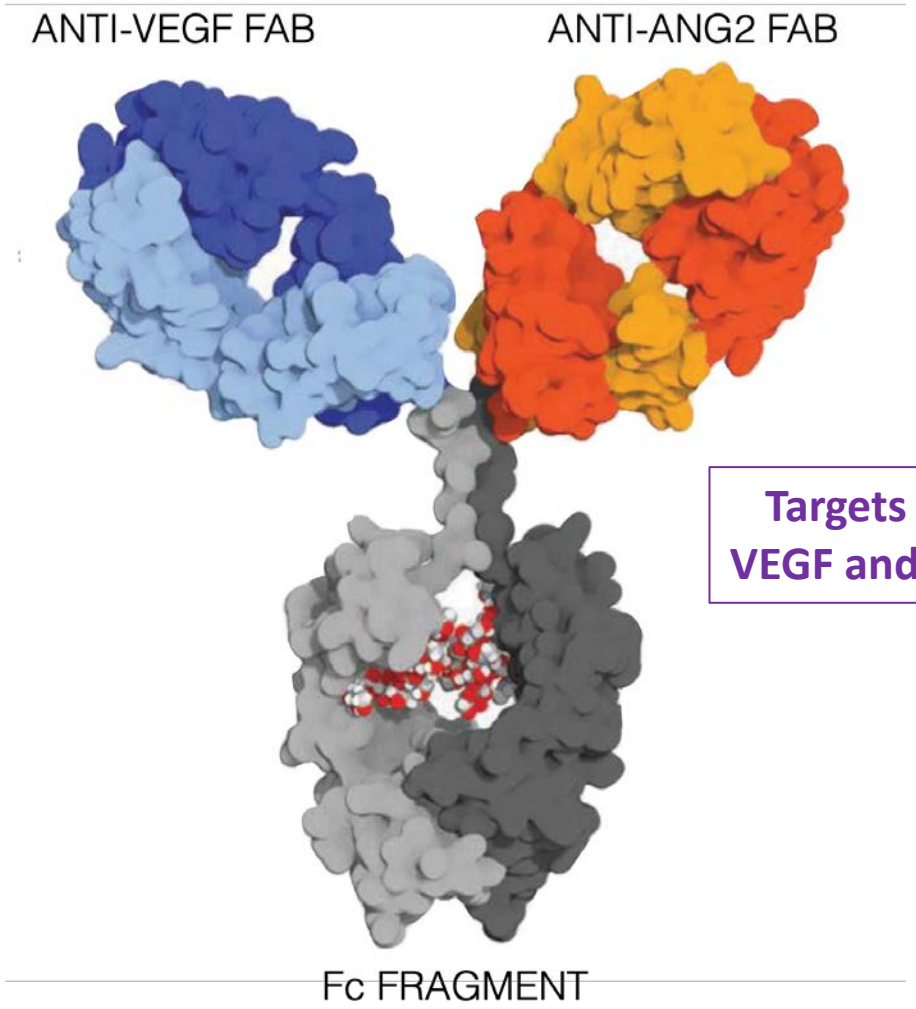
Risk of Inflammation, Retinal Vasculitis, and Retinal Occlusion–Related Events with Brolucizumab

Post Hoc Review of HAWK and HARRIER

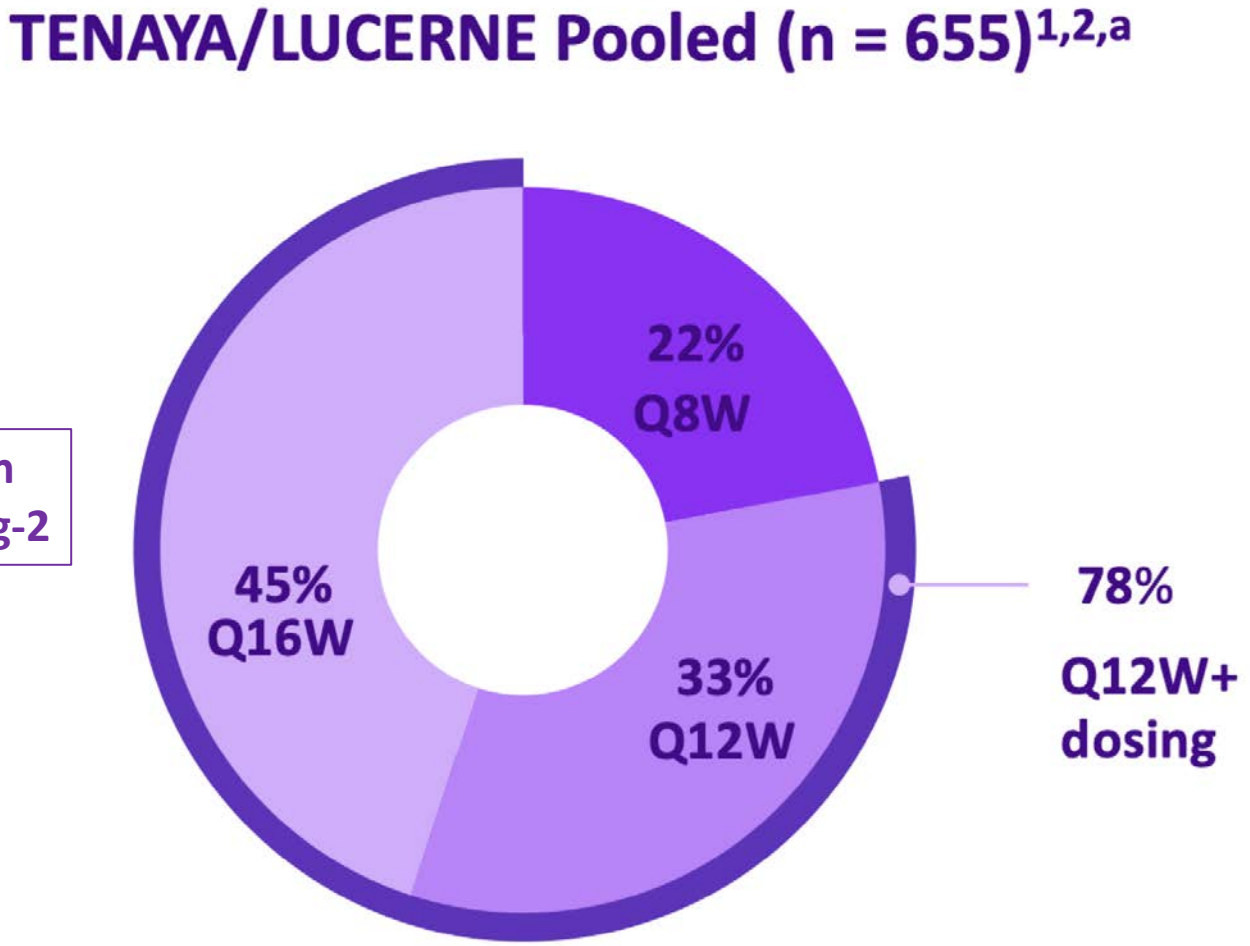
Jordi Monés, MD, PhD,[1] Sunil K. Srivastava, MD,[2] Glenn J. Jaffe, MD,[3] Ramin Tadayoni, MD, PhD,[4,5] Thomas A. Albini, MD,[6] Peter K. Kaiser, MD,[2] Frank G. Holz, MD,[7] Jean-Francois Korobelnik, MD,[8,9] Ivana K. Kim, MD,[10] Christian Pruente, MD,[11,12,13] Timothy G. Murray, MD, MBA,[14] Jeffrey S. Heier, MD[15]

Monés J, et al. *Ophthalmology*. 2020;128(7):1050.

Faricimab (Vabysmo)



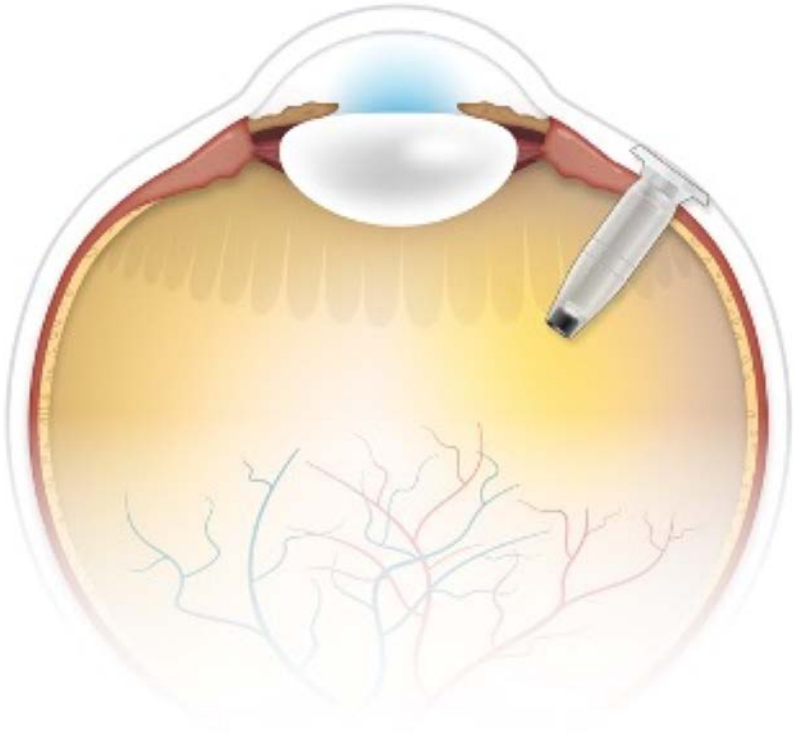
Targets both VEGF and Ang-2

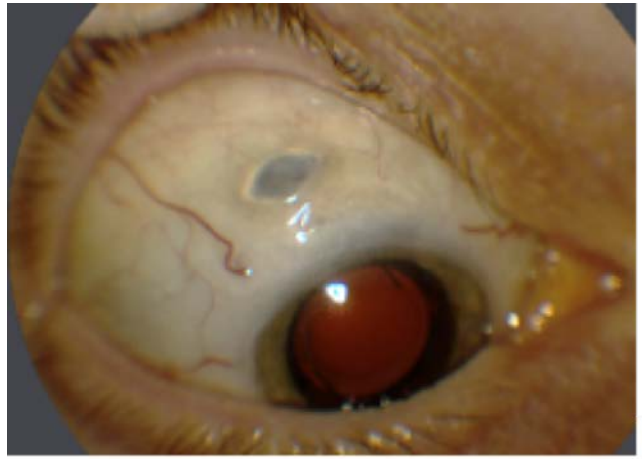


Huang N, et al. *Retina Today*. 2019;14(4):20.

Heier JS, et al. *Lancet*. 2022;339(10326):729.

Port Delivery System With Ranibizumab (Susvimo)

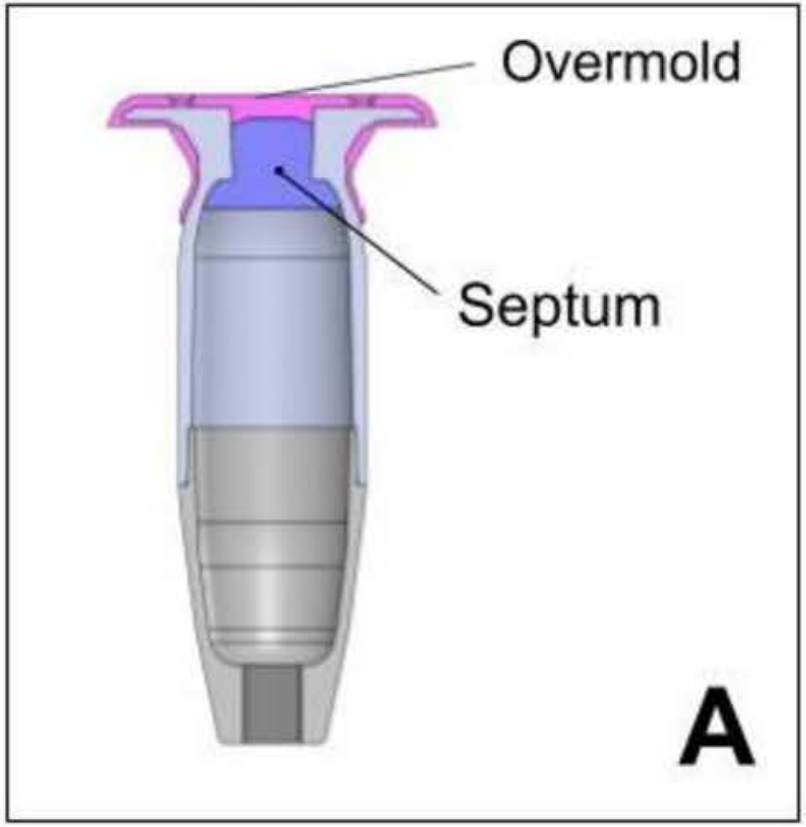




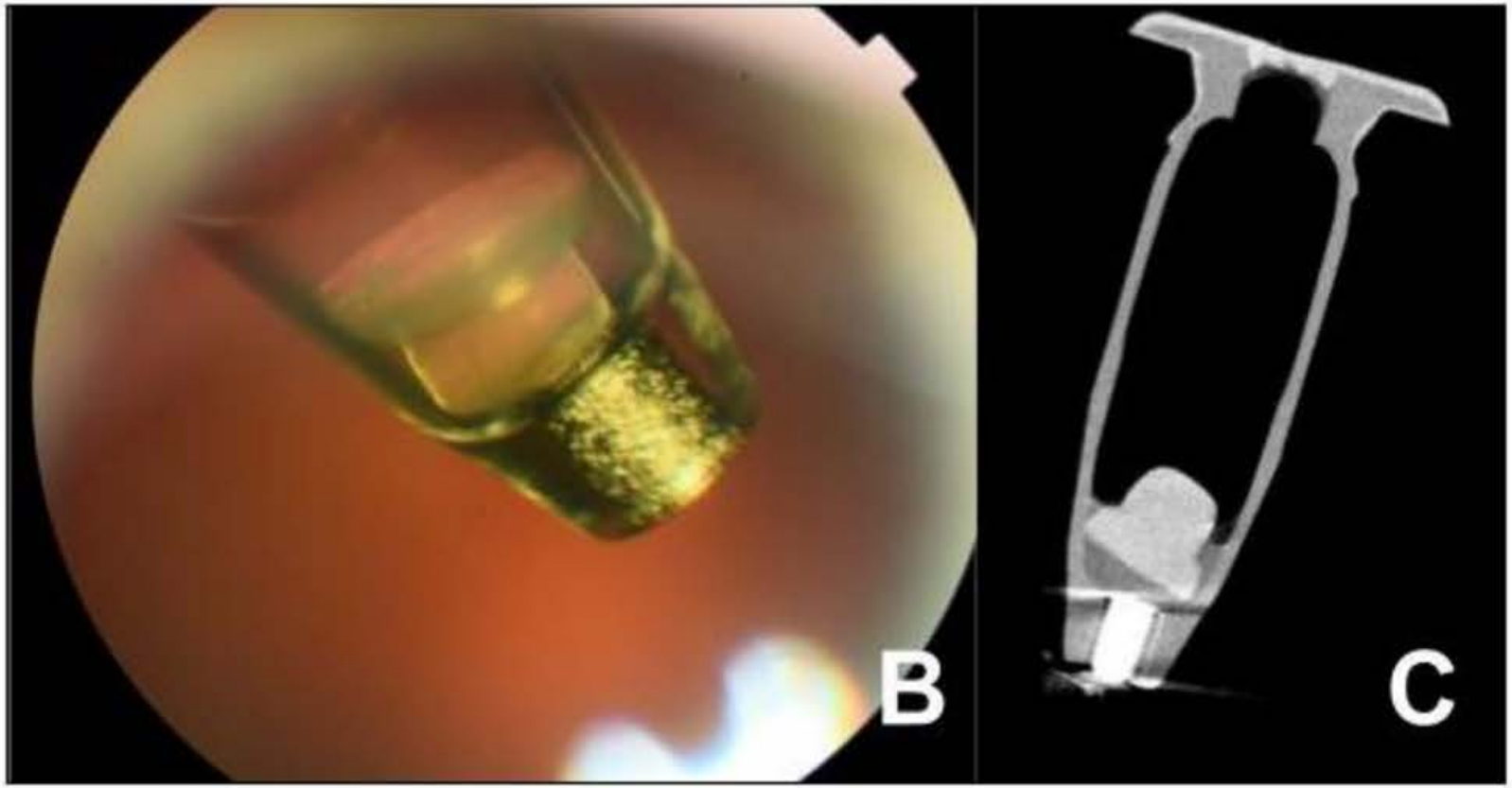
Holekamp MN, et al. *Ophthalmology*. 2022;129(3):295.

Septum Dislodgement

Normal position of the Septum in PDS



Septum dislodgement



Dosing Strategies

- As needed (PRN)
  - With monthly follow-up
- Monthly
- Every other month
- Treat and Extend (T&E)