

## Macula-Off Retinal Detachment Identified on Bedside Ultrasound

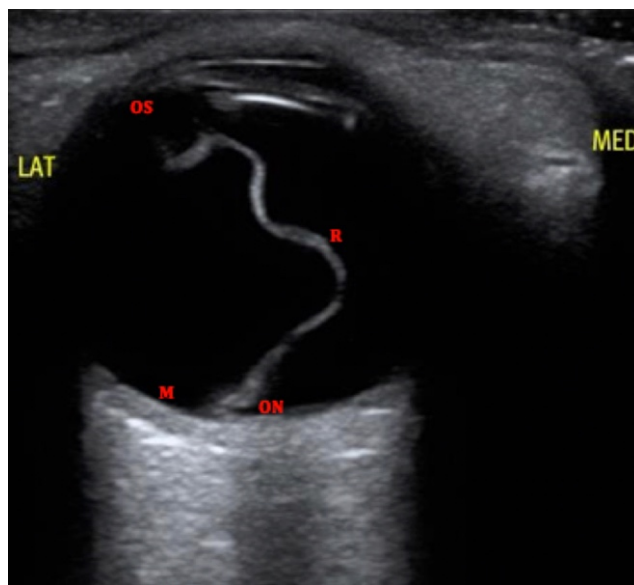
Colin Prather, MD\* and Bryson Hicks, MD\*

\*Oregon Health & Sciences University, Department of Emergency Medicine, Portland, OR

Correspondence should be addressed to Colin Prather, MD at [ecprather@gmail.com](mailto:ecprather@gmail.com)

Submitted: June 22, 2018; Accepted: September 9, 2018; Electronically Published: April 15, 2019; <https://doi.org/10.21980/J8WP8K>

Copyright: © 2019 Prather, et al. This is an open access article distributed in accordance with the terms of the Creative Commons Attribution (CC BY 4.0) License. See: <http://creativecommons.org/licenses/by/4.0/>



**History of present illness:** A previously healthy 53-year-old male presented with complaints of right-sided vision loss, which he described as a “curtain being drawn” across his vision from medial to lateral. There was no preceding trauma, no pain in the eye, and the patient denied seeing flashers or floaters. Visual acuity was intact only to light perception, with the rest of the external ocular exam unremarkable.

**Significant findings** Point-of-care ultrasound was performed, demonstrating a free-floating, serpiginous, hyperechoic membrane (R) tethered at the optic nerve (ON) and ora serrata (OS), but detached at the macula (M) lateral to the optic nerve. This is diagnostic for macula-off retinal detachment. It can be differentiated from macula-on retinal detachment, in which the hyperechoic retina would appear attached posteriorly at the location of the macula just lateral to the optic nerve. Ophthalmology was consulted, agreed with the diagnosis of macula-off retinal detachment, and took the patient to the OR for laser photocoagulation.

**Discussion:** The bedside ocular ultrasound exam is easily taught and performed, and can help guide clinical

decision-making for patients with visual disturbances.<sup>1</sup> For patients who present to the emergency department with ocular complaints such as vision loss or eye pain, it can help identify conditions that require emergent ophthalmologic consultation or transfer to a hospital with access to ophthalmology. This can be particularly helpful for patients in whom direct funduscopy does not provide a definitive diagnosis.

Multiple studies have demonstrated good sensitivity and specificity for accurately identifying retinal detachments with point of care ultrasound using a linear array probe.<sup>2,3</sup> However, challenges in diagnosis arise when differentiating retinal detachment from posterior vitreous detachment and vitreous hemorrhage. Detachment of the vitreous membrane also appears as a thin hyperechoic membrane in the posterior vitreous chamber, but can be differentiated from retinal detachment that has a thicker more hyperechoic appearance. Detection of vitreous detachment often requires increasing the gain setting to visualize. The retina also attaches the optic nerve, whereas the vitreous membrane does not. Correct differentiation of retinal detachment from vitreous detachment and other ocular pathologies can guide the need for emergent ophthalmology consultation for macula-on retinal detachment, versus close outpatient follow up for vitreous detachment or macula-off retinal detachment.<sup>1,4-8</sup>

**Topics:** Macula off, retinal detachment, point of care ultrasound.

#### References:

1. Baker N, Amini R, Situ-LaCasse E, Acuna J, Nuno T, Stolz U, et al. Can emergency physicians accurately distinguish retinal detachment from posterior vitreous detachment with point-of-care ocular ultrasound? *Am J Emerg Med.* 2018;36(5):774-776. doi: 10.1016/j.ajem.2017.10.010
2. Shiner Z, Chan L, Orlinsky M. Use of ocular ultrasound for the evaluation of retinal detachment. *J Emerg Med.* 2011;40(1):53-57. doi: 10.1016/j.jemermed.2009.06.001
3. Jacobsen B, Lahham S, Lahham S, Patel A, Spann S, Fox JC. Retrospective review of ocular point-of-care ultrasound for detection of retinal detachment. *West J Emerg Med.* 2016;17(2):196-200. doi: 10.5811/westjem.2015.12.28711
4. Lyon M, Von Kuenssberg Jenle D. Ocular. In: Ma OJ, Mateer JR, Reardon RF, Join SA. *Ma and Mateer's Emergency Ultrasound.* New York, NY: McGraw-Hill. 2008:569-586.
5. Kahn A, Kahn AL, Corinaldi CA, Benitez FL, Fox PC. Retinal detachment diagnosed by bedside ultrasound in the emergency department. *Cal J Emerg Med.* 2005;1(3):47-51.
6. Woo M, Hect N, Hurley B, Stitt D, Thiruganasambandamoorthy, V. Test characteristics of point-of-care ultrasonography for the diagnosis of acute posterior ocular pathology. *Can J Ophthalmol.* 2016;51(5):336-341. doi: 10.1016/j.jcjo.2016.03.020
7. De La Hoz Polo M, Torramilans Lluís A, Pozuelo Segura O, Anguera Bosque A, Esmerado Appiani, Caminal Mitjana J. Ocular ultrasonography focused on the posterior eye segment: what radiologists should know. *Insights Imaging.* 2016;7(3):351-364. doi: 10.1007/s13244-016-0471-z
8. Schott M, Pierog J, Williams S. Pitfalls in the Use of Ocular Ultrasound for Evaluation of Acute Vision Loss. *J Emerg Med.* 2013;44(6):1136-1139. doi: 10.1016/j.jemermed.2012.11.079