



Emergency Medical Abstracts



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Point-of-care ocular ultrasound for the diagnosis of retinal detachment: a systematic review and meta-analysis

Gottlieb M, Holladay D, Peksa GD. *Acad Emerg Med.* 2019;26(8):931-939.

SUMMARY:

- Point-of-care ocular ultrasound (POCUS) for retinal detachment (RD) is an intriguing option when there is no good alternative available in community EDs. The presence of an on-call ophthalmologist is exceedingly rare, and it is not reasonable to transfer most patients with symptoms that might indicate RD to a facility with ophthalmology. To date, the literature on the predictive ability of POCUS for RD has been generally supportive, with a few exceptions. However, previous studies have been hampered by small numbers of true positives.
- In this very well written systematic review and meta-analysis, the authors review all published prospective and randomized trials using POCUS in and out of the ED. They assess the risk of bias for each study along multiple dimensions including patient-selection bias, index-test bias, reference-standard bias, flow, and timing bias.
- Ultimately, the authors found 11 studies with 844 total patients; all were prospective observational studies (no RCTs), and most were at fairly low risk for bias, as assessed. The prevalence of RD varied widely, from 7% to 53%.
- Five studies were conducted in EDs and were performed primarily by emergency physicians with a linear probe.
- Overall, the authors found ultrasound to be 94% sensitive and 96% specific. When ultrasound was performed by EPs, these values were slightly lower, at 92% sensitive and 91% specific. The authors note that a previous review has found even higher sensitivity and specificity, but it was performed in 2012. Among the individual trials, the earlier ones have 100% sensitivity and often 100% specificity, whereas the 3 newer trials have substantially lower values. Although clear conclusions cannot be drawn, these results may suggest that those early trials may have been subject to some publication bias.
- Many aspects must be considered, including publication bias and the training of POCUS operators. One notable consideration relates to which RDs are missed by ultrasound: most RDs are actually fairly easy to diagnose through history and physical, for example, if the patient had flashes or floaters, then went blind or had a field cut. Although such large RDs are easy to diagnose with POCUS, ultrasound may not be necessary because diagnosis could be determined on the basis of history and physical. This is an example of spectrum bias. Conversely, subtle RDs with subtle symptoms might have very subtle ultrasound findings and be more likely to be missed, which would substantially decrease enthusiasm for POCUS. However, this meta-analysis does not provide such information. In addition, there is a physician training issue. The authors note that eye complaints are common, perhaps as often as 1 in 30 or 40 patients, but RD affects 1 in 5-15,000 ED patients, far fewer than 1 per year. In this context, how should skills be maintained? Would it be better to train ultrasound technologists to perform this examination?

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EDITOR'S COMMENTARY: *This is a well-conducted and exceptionally well-written meta-analysis that demonstrates relatively higher sensitivity and specificity of POCUS, even when this technique is used for ED patients by ED providers. There are residual concerns that POCUS might not be sufficient for patients with subtle signs and symptoms, so physicians should remain cautious.*