

comorbidities, age, and year of diagnosis, their study found that there are 28% to 39% reduced odds for women to receive surgical intervention for incident RRD compared with men. Again, although we do not know the statistical significance of the overall proportions, this was intriguing because the overall proportion of patients in the confirmatory diagnosis cohort who received surgical intervention for incident RRD appears similar at first glance (91.3% of women and 94.2% of men). Although it would be ideal to have more complete information from the insurance dataset, particularly regarding the diagnosing provider, this was a compelling study that we hope will spur continued discussion, further study, and ultimately changes to improve apparent gender disparities in treatment of ophthalmologic patients.

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ALL AUTHORS HAVE COMPLETED AND SUBMITTED THE ICMJE form for disclosure of potential conflicts of interest. Funding/Support: The Bascom Palmer Eye Institute received funding from National Institutes of Health, United States Core Grant P30EY014801, Department of Defense, United States Grant W81XWH-13-1-0048, and a Research to Prevent Blindness, United States Unrestricted Grant. Financial Disclosures: JS is a consultant for Alcon, Dorc, Oxurion, and Regeneron. NB is a consultant for Genentech. DC is a consultant for Genentech and receives research funding from Genentech and Bayer. MV and PV have no disclosures. All authors attest that they meet the current ICMJE criteria for authorship.

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Reply to Comment on: Sex Differences in the Repair of Retinal Detachments in the United States



EDITOR:

WE THANK VENINCASA *ET AL.* FOR THEIR THOUGHTFUL CORRESPONDENCE. The authors raise good points regarding the possibility of gender disparities in the type of initial provider evaluation and increased misdiagnosis for women.

Our study¹ was designed to evaluate the repair of rhegmatogenous retinal detachment (RRD), and thus we are unable to comment on trends in misdiagnosis and providers. This area certainly warrants further investigation with a study design dedicated to this purpose.

The authors pose questions regarding the methodology that, in part, relate to the limitations of claims data. This study was designed using similar methods for RRD repair evaluation published in top ophthalmology journals using a variety of large claims databases.^{2–6} *International Classification of Diseases, Ninth revision/Tenth revision* codes for RRD diagnosis/exclusion and RRD repair *Current Procedural Terminology* codes are as previously published.² In the procedure codes for laser barricade, we focused on presumed RRD diagnosis and did not include laser prophylaxis because this creates a more mixed population by potentially capturing tears or holes with fluid. We would rather err to missing patients with RRD than misclassifying as an RRD and then erroneously concluding the patient did not receive surgery. The authors note that a retina specialist saw only 21% of patients, but most of the billing providers (70%) were not known. Among providers that were known, 72% were retina specialists.

The rate of RRD repair after a single diagnosis of RRD is seemingly low; however, this rate resembles previously published rates in the published literature. Studies across databases consistently report a similar rate of incident RRD repair from a single diagnosis. It is unclear exactly why this occurs but may reflect a broader billing landscape with higher misdiagnosis rates. The low RRD repair rate for a single incident diagnosis further supports the mandate for a confirmatory RRD diagnosis, because this likely represents referral to a retina specialist. This study reports the results from the confirmed RRD 93% repair rate model.

The authors note that the difference of 91.3% compared with 94.2% “appears similar at first glance.” Viewed another way, women do not receive repair 8.7% of the time compared with men 5.8% of the time. The requested comparison for surgical repair rates is calculated using the manuscript’s information and is significantly different with $P < .00001$. We caution glancing at this type of data where the size effects may seem small, but when applied to a population can result in significant differences in healthcare delivery. If this effect were true in the United States the difference would equate to 781 women per year or 7,029 women during the study period that did not receive retinal detachment repair. Given these results, future study on this topic requires an adequately powered sample size to detect the difference; we estimate 2,500 subjects based on the RRD repair rates reported ($\alpha = 0.05$, $\beta = 0.8$). Thus, large databases serve as the most feasible way to conduct this type of research. Aside from statistical significance, this is clinically significant because the data show that insured women in the United States did not have a surgery billed for their confirmed RRD diagnosis as often as their male counterparts.

The hypothesis posed by these authors and discussed in our article—that women could have a disproportionate burden of potential confounders, such as less insurance coverage, socioeconomic status, or education—is an essential point for further investigation. Future studies from large datasets or multi-institutional studies will help shed light on the data we report. “Big data” has its limitations, but it provides strength in numbers from real-world population-level data to study topics like this that would otherwise be nearly impossible to evaluate from a single practice or institution. Code inclusion and exclusion criteria are debatable, the analysis is complex, but the premise is simple: if there were no gender difference in the repair of retinal detachments in the United States, then we would not expect to see a difference in the claims submitted. When we look at the largest outpatient claims database in the United States that represents one-third of the employed population, we find that insured women are less likely to receive surgery for a blinding emergency.

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