

independent variables were included for multivariate analysis commensurate with the study sample size ($n = 77$), ensuring that the validity of logistic regression analysis was not compromised.

We agree with the second valid concern raised regarding the apparent marginal clinically significant benefit in epithelial healing time in favor of allogenic simple limbal epithelial transplantation (alloSLET) due to a low odds ratio (OR) of 0.966 ($P = .001$).

In order to validate this, we reanalyzed the data using survival analysis with Cox proportional hazard regression. Epithelial healing occurred 9.289 (95% confidence interval [CI], 4.004-21.552; $P = 0.001$) times faster with alloSLET than compared to amniotic membrane grafting (AMG), significantly strengthening the outcome of the study beyond the earlier reported marginal benefit.

In addition, to further highlight the early benefit of alloSLET, we converted the continuous variable of time to epithelial healing to ordinal categorical variable for logistic regression analysis based on the cutoff point of 30 days, the time of first follow-up at which healing was assessed postoperatively following removal of the bandage contact lens. The odds of complete epithelial healing occurring at 30 days in the alloSLET group was 6.063 (95% CI, 1.935-18.994; $P = .002$) times more than the AMG group.

We sincerely believe that the innovative approach of alloSLET significantly benefits eyes with severe acute chemical injuries, as highlighted by the statistical analysis.

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



EDITOR:

WE CONGRATULATE CALLAWAY AND ASSOCIATES¹ ON their groundbreaking study, which used a large-scale insurance claim database to investigate for possible gender disparities with respect to the treatment of rhegmatogenous retinal detachments (RRDs). In their work, they provide evidence that women are less likely than men to receive surgical intervention for RRD. There were a couple of is-

issues and questions we were hoping the authors could address regarding the study methodology and its limitations.

First, it is striking that, in the full cohort, the percentage of patients who received surgical repair for an incident RRD was only 63.1%, including only 58.2% of women and 66.8% of men. When the inclusion criteria required a second confirmatory RRD diagnosis by an ophthalmologist, 93.1% of patients received surgery, including 91.3% of women and 94.2% of men, which is more in line with what would be expected of a retinal detachment diagnosis. Moreover, only 21% of patients received an examination from a retinal specialist, which may limit the applicability of the full cohort analysis, as one would presume that a retinal specialist would be the individual performing the surgery. Perhaps many of these cases coded as retinal detachment were found to be an alternative diagnosis once examined by an ophthalmologist. As you mention, this may explain why the percentage receiving surgical repair is at a higher, more comfortable level in this cohort.

Second, while the difference in surgical repair rates for the full (model 1) cohort was reported and statistical analysis was reported in both their article and Table 1 in their article, this difference was not reported for the confirmatory diagnosis (model 2) cohort. Did these statistically significant differences remain within the confirmatory diagnosis model? Given the large difference in surgical repair rates between models 1 and 2, and the fact that 70.6% of patients had an unknown diagnosing provider in model 1, it seems likely that a large number of these initial diagnoses were performed by nonophthalmologic/optometric clinicians. Nevertheless, the authors found a numerically larger gender disparity in surgical repair rates in model 1 compared with model 2—is it possible that in addition to visualizing a trend where women are less likely to receive surgery for an incident RRD, we are also seeing a trend of misdiagnosis (possibly by nonophthalmologists/optometrists, although it is impossible to say for sure) of incident RRD in women compared with men?

Finally, there should be caution in interpreting the study results. The insurance claims database includes >350 carriers, each with different, unknown coverage, copayment, and deductible policies that may directly influence a patient's ability to have surgery. It is probably impossible to parse out each individual carrier, but this should be acknowledged as a possible confounder if women and men differ in their insurance plans. The Current Procedural Terminology (CPT) codes for laser retinopexy can differ, and it is unclear from the methods if the authors captured all possible codes. For example, CPT 67105 specifies repair of retinal detachment via photocoagulation, whereas CPT 67145 refers to prophylaxis of retinal detachment via photocoagulation.

Regardless of the means of diagnosis (full cohort, confirmatory diagnosis, with laterality, or confirmatory diagnosis with laterality) and when controlling for ocular

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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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.