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LETTER

Surgical Outcomes of Cataract Surgery Following Rapid Glycemic Control During Preoperative Period [Letter]

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Dear editor

We read with great interest the recent article by Wang et al[1] examining surgical outcomes of cataract surgery following rapid preoperative glycemic control. The authors address an important and clinically relevant scenario: managing patients with poorly controlled type 2 diabetes who require visual rehabilitation. We commend the authors for highlighting the critical balance between glycemic optimization and surgical timing, a topic where definitive guidelines remain scarce.

While the study offers valuable data that advances our understanding of this complex clinical issue, we would be grateful for clarification on several methodological and statistical points to ensure optimal translation of the findings to clinical practice.

Timing of Diabetic Retinopathy Assessment

A central consideration in this study design involves the timing of the diabetic retinopathy (DR) assessment. The authors note that the degree of DR "could not be determined before surgery due to lens opacity" and was instead evaluated "at one week after cataract surgery".[1] Consequently, the DR severity grades presented in Table 1 (eg, 40.5% moderate-to-severe non-proliferative diabetic retinopathy [NPDR] in the rapid control group) represent postoperative findings rather than true preoperative baselines.

This timing presents an interpretive challenge in distinguishing between pre-existing severe retinopathy, unmasked by cataract removal, and acute progression potentially triggered by the rapid glycemic correction itself. The significantly higher rate of "retinopathy-associated complications"[1] in the rapid control group (11.7% vs 4.9%)[1] may partly reflect the burden of pre-existing disease in a chronically poorly controlled population (baseline HbA1c 9.9%),[1] rather than exclusively the effect of the 17-day rapid control period. While the authors attempted to mitigate this limitation through prophylactic photocoagulation in selected cases, the inability to establish true preoperative retinopathy grades remains a consideration when interpreting the results. Alternative approaches, such as B-scan ultrasonography or intraoperative wide-field imaging, might provide more definitive baseline data in future studies where dense cataracts preclude preoperative fundus assessment.

Clarification of Outcome Coding in Multivariate Analysis

We would appreciate clarification on how the outcome variable was coded in the regression model presented in Table 3. The analysis reports "moderate to severe NPDR" as having an odds ratio (OR) of 0.119 (95% confidence interval [CI] = 0.054–0.263, $P < 0.001$).[1] In standard statistical interpretation, an OR significantly less than 1.0 typically suggests a protective effect. However, this would appear to conflict with the descriptive statistics in Tables 1 and 2, where patients with moderate-to-severe NPDR demonstrated higher complication rates.

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One possible explanation is that the outcome variable may have been coded as "absence of complications" rather than "presence of complications". If this were the case, the OR of 0.119 would indicate that moderate-to-severe NPDR reduces the odds of not having complications, which is mathematically equivalent to an 8.4-fold increase ($1/0.119 \approx 8.4$)[1] in the odds of experiencing complications. This interpretation would align more closely with both clinical expectation and the descriptive findings. Could the authors kindly clarify the outcome variable coding in their mixed-effects model to help readers interpret these results accurately?

Consideration of Denominator Selection in Subgroup Analysis

Regarding the analysis of prophylactic intervention efficacy presented in Table 4,[1] we wonder whether the complication rates might be more informatively calculated using subgroup-specific denominators rather than the total cohort size. Currently, the table appears to report complications as a proportion of all 222 eyes in the rapid control group and all 162 eyes in the basic control group.

For example, in the rapid control group, 56 patients received intervention (25.3% of 222), among whom 1 developed complications, reported as "1 (0.5%)". However, expressing this as a proportion of the intervention subgroup would yield 1/56 = 1.8%. Similarly, among the 34 patients receiving intervention in the basic control group (21.0% of 162), 2 developed complications, which would be 2/34 = 5.9% rather than the reported 1.2%.[1]

We note there appears to be a minor discrepancy between the total intervention numbers in Table 1 (56 patients in rapid control group: 35 preoperative + 21 early postoperative) and Table 4 (55 patients).[1] This might warrant verification to ensure accuracy.

Using subgroup-specific denominators would provide a clearer assessment of the protective effect of timely intervention. The current presentation, while mathematically accurate when referencing the total cohort, may underestimate the apparent benefit of prophylactic treatment in preventing complications. We believe this adjustment would strengthen the authors' important finding that early intervention appears beneficial.

Statistical Power Considerations for Rare Complications

The authors conclude that rapid glycemic correction "did not increase the risk of endophthalmitis, hyphema or incision leakage".[1] While these findings are reassuring, we wonder if the study's sample size provides adequate power to detect differences in such rare events. With 384 eyes and assuming contemporary endophthalmitis rates of approximately 0.05% to 0.1% following phacoemulsification,[2] several thousand eyes would be required to detect meaningful differences between groups. The absence of these rare complications might therefore be best interpreted as insufficient evidence to detect a difference, rather than definitive evidence of safety equivalence.

Given that rapid glycemic control was associated with an adjusted OR of 6.525 (95% CI = 2.927–14.547, $P < 0.001$) for retinopathy-associated complications,[1] and considering previous evidence that rapid glycemic normalization can paradoxically worsen diabetic retinopathy,[3,4] the conclusion that it is "unnecessary to prolong the duration of glycemic control"[1] might benefit from slightly more cautious framing. The data persuasively demonstrate that cataract surgery can be performed successfully following short-term glycemic control, but the elevated risk of retinopathy-associated complications, even with prophylactic intervention, suggests that patient selection and close postoperative monitoring remain important.

Conclusion

The authors have made a valuable contribution to an area of considerable clinical importance. Their work demonstrates that cataract surgery following rapid glycemic control can achieve excellent visual outcomes with appropriate perioperative management. Future prospective studies with standardized preoperative imaging protocols, longer follow-up periods, and pre-specified HbA1c reduction rates may help establish evidence-based glycemic optimization strategies. Until then, individualized decision-making that weighs visual disability against diabetic stability, with careful attention to baseline retinopathy severity and availability of timely intervention, remains essential.

We appreciate the authors' rigorous approach to this challenging question and hope these observations might further strengthen the interpretation and clinical applicability of their important findings.

Disclosure

The authors report no conflicts of interest in this communication.

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