Peer Review File
Factors affecting changes in the intraocular pressure after phacoemulsification surgery

Reviewer 1
I appreciate the opportunity to review this interesting and well-written paper. This is a useful and timely research paper, assessing the changes of IOP after phacoemulsification surgery. Overall, as I read the manuscript, I found some areas in which I would have appreciated greater clarity. I believe the paper could be further strengthened by added information about:

Comment
1. My concern is the limited number of samples used to conduct the study, please clarify the limitations and bias.
Response: We have highlighted the limitations of the study in the manuscript as suggested by the reviewer. We have stated that “The study was not without its limitations. This was a clinic based study; hence, the results may have limited generalizability. Furthermore, we included only individuals with normal IOP in the current analysis. Thus, some of the estimates may not be similar in patients with ocular hypertension. In addition, we had follow-up data for the first three weeks; the long terms changes in IOP have not been assessed by the present study.”

2. Under methods section, I found myself wondering about some of the details of the methods used. Especially in statistical analysis. By locating and reading the earlier publication on this work referenced in the manuscript, some of the questions I had were answered. However, I think it is unlikely that most readers would take the time to search out the companion publication. Without doing so, the validity of the approach taken may be questioned. I suggest expanding the description of the methods in this paper. (Why choose these statistical models?)
Response: We appreciate the reviewer’s comment. As suggested by the reviewer, we have added additional description with references in the manuscript. We have stated “The ordinary regression model will consider each data point as separate. However, in the random effects model, we can account for the fact that multiple observations come from the same individual, and the multiple observations in the same individual are correlated. Thus, these models account for between- and within-individual correlation and are a useful alternative for longitudinal data with time varying variables. 22, 23 We built the models in the following sequence: 1) null model with no variables; 2) univariate models; and 3) multivariate models with explanatory variables and potential confounders (grade of cataract, age, and sex).”

3. Under discussion, the authors stated that the PD ratio was the single most important factor associated with the changes in post-operative IOP over three weeks post-surgery. Please explain it in a more specific way. Why and How to predict? And how about IOP changes over one week post-surgery? There is not enough discussion on the anterior chamber parameters associated with the IOP in post-surgery.
Response: We thank the reviewer for the comment. We have added the prediction of IOP with the PD ratio and time. We have added the details of prediction in the results “In the unifactorial random effects models, we found that there was an increase in the IOP on day one post-operatively (0.678, 95% confidence intervals [CI]: -0.023, 1.379) compared with the
pre-operative levels, even though this change was not statistically significant. However, there was a significant reduction in the IOP in the second (-1.338, 95% CI: -2.051, -0.625) and third visits (-1.756, 95% CI: -2.478, -1.033) compared with pre-operative levels. This relation was maintained even after adjusting for potential confounders (Table 2 – Models I, II, and III).”
We have also added information on PD ratio “Further each unit increase in the pre-operative PD ratio was associated with an increase in the mean IOP by 1.289 mm of Hg (95% CI: 0.906, 1.671). After adjusting for other potential confounders, we found that there was an interaction between visit and the pre-operative PD ratio. Thus, even though the mean IOP increased significantly with a unit increase in the pre-operative PD ratio (1.839, 95% CI: 1.334, 2.343), the mean reduction was significantly higher with a per unit increase in the PD ratio in visit two (-0.886, 95% CI: -1.439, -0.332) and three (-0.866, 95% CI: -1.428, -0.304) respectively compared with visit one.”
We have included discussion on anterior chamber parameters post-surgery. We have stated “As discussed earlier, phacoemulsification is known to reduce IOP in cataract patients (with or without glaucoma). 2, 12, 15 A proposed hypothesis for this reduction is facilitation of aqueous flow due to changes in the angle. 21, 24, 28 The effect on the ciliary body is another potential reason for the reduction in aqueous humour. 21, 29 As observed in our data, the reduction in IOP was not significantly associated with changes in ACD or the width of the temporal angle. Though many authors have found no association between ACD and IOP, others have found an association between them. 11, 12, 30 Kashiwagi and colleagues reported that the ACD increased and IOP decreased significantly in patients in whom the pre-operative ACD was shallow. 31 However, Altan and co-workers found that there was no association between the decrease in IOP, and ACD or the iridocorneal angle. 11”

4. Please rephrase conclusions section to present a more cautious and specific overview of the results, keeping in mind the heterogeneity of the studies.
Response: We appreciate the reviewer’s concern. We have stated “After accounting for potential confounders, we found that the PD ratio appears to be an important factor associated with the changes in post-operative IOP. Even though, the mean IOP is higher in individuals with a high PD ratio, the reduction is significantly faster on days 15 and 21 in these individuals.”

5. Please revise your figures (Table 2 and Table 3). The information was too complicated to present a clear overview of the results, please emphasize the necessary part.
Response: We have added the p values in the table to highlight the significant parameters. We have removed the Rho values and AIC values from the tables.

Reviewer: 2
Well-written paper and clearly understandable, but it does not include sufficient new data.
Response: We thank the reviewer for the kind comments. We have highlighted that we have used advanced method of analysis. We performed a longitudinal analysis of changes in the ocular parameters and IOP over a period of three weeks post-surgery. Thus, we accounted for the longitudinal changes of the ACD, axial length, and the angles.

Reviewer: 3
Comments to the Author
There are well known randomized controlled studies that show predictive value of the CPD ratio for IOP reduction after cataract surgery, which is mandatory for glaucoma patient.

**Response:** We thank the reviewer for the comment. We have highlighted that we have used advanced method of analysis. We performed a longitudinal analysis of changes in the ocular parameters and IOP over a period of three weeks post-surgery. Thus, we accounted for the longitudinal changes of the ACD, axial length, and the angles.