Author’s response to reviews

Title: Impending Extrusion of Ex-PRESS Shunt Treated by Shunt-position Adjustment : a case report

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Reviewer 1

Overall I think that this is an interesting work was and it is worth publishing. I think that it is interesting due to two reasons: one is what you stress i.e. that it's possible to adjust the positioning of an extruding Express implant instead of removing it. The second one is that it offers occasion to review some of the commonest causes of Express malpositioning: thin sclera, incompletely filled anterior chamber and oblique insertion of the implant. Still I have some remarks and questions to address before publication:

1) Why if left eye is longer than right one the myopia far less in the left eye ? Is there any corneal problems (keratoconus, ectasia or similar) ? Or is it an index myopia due to more advanced cataract?

We appreciate the reviewer’s thoughtful comments. Preoperative BCVA was 20/200 in the right eye and 20/25 in the left eye, due to nuclear cataracts. So, even though the right eye had a shorter axial length, myopia was worse there than in the left eye, according to the difference in cataract severity.
2) In the timeline is stated that both eyes had visual acuity 20/20 before surgery. You should better explain why your choice was a combined surgery.

We appreciate the reviewer’s incisive observation. It was our mistake to state that the best-corrected visual acuity (BCVA) was 20/20 in both eyes. In fact, the preoperative BCVA was 20/200 in the right eye and 20/25 in the left eye, the difference due, again, to nuclear cataracts. So, we conducted combined surgery. We added this information to Page 4, lines 68-69.

3) It is not clear WHEN the problem with the Express positioning was noted: early after surgery or after some months, and if the latter is true, did you feel that a displacement had occurred, or simply that the extrusion was more likely due to scleral erosion?

We appreciate the reviewer’s comment. We noted that the Ex-RRESS shunt was implanted obliquely early after surgery. But we decided to observe carefully without surgical intervention, because the external plate of the shunt was covered well by the scleral flap, and there were no signs of extrusion. Seven (7) months postoperatively, we observed an impending extrusion sign that the external plate was prominent in the subconjunctival space, though it was covered by the scleral flap. So, we decided to perform surgical intervention at that time. We added this information to Page 4, lines 80-85.

4) My feeling is that the oblique direction of the implant and a quite anterior location, in an eye with a thin sclera and and an incompletely filled AC made your implant technique less "energetic" in fully pushing the Express through the sclera and so preventing the "spur" from completely entering the AC. The Express was consequently more unstable, it could rotate or move and cause erosion. A gonioscopic photo would have been very useful to assess the implant positioning and the cause of erosion.

We appreciate the reviewer’s consideration. As the reviewer noted, we performed gonioscopy routinely, but we did not take any gonioscopic photos. We are sorry that we cannot offer any such.

5) It is not completely clear why you performed two incisions in the sclera to adjust the implant position. As you cited in the discussion that is the approach some Authors use to easily remove
the Express (after rotating it to allow the spur displacement). Didn't you fear that two more incisions in a thin sclera would result in an unstable positioning? Perhaps it would have been useful to suture the incisions after repositioning.

We appreciate the reviewer’s thoughtful comment. As we mentioned in the manuscript, the shunt was fixed stronger than expected. So, to make sufficient space for easy adjustment, an incision was made in both lateral directions. After the shunt position adjustment, we checked the shunt positioning by multiple palpations with a sponge. The shunt positioning was good, and so we did not think that it would be unstable. Even so, and as the reviewer correctly states, it would have been more stable if we had sutured the incisions.

6) I think that in discussion or conclusions you should stress that the Express removal is always quite traumatic and in cases of impending erosion it impossible to try to reposition it instead of straightforward removal, taking care that the implant is perpendicular the limbus, parallel to the iris plane and well pushed in the anterior chamber so that the spur prevent further dislocation.

We appreciate the reviewer’s helpful suggestion. Accordingly, we added the relevant sentences to Page 8, lines 155-158.

7) pag. 11 line 142-143: it is not clear why "the more commonly the Express is used the more frequently this complication will occur." You should explain better or reformulate.

We appreciate the reviewer’s thoughtful comment. We had included this sentence to emphasize the fact that Ex-PRESS shunt implantation should be performed carefully to prevent that particular complication. Because we also note this in the Conclusion, we removed the sentence from Page 7 (lines 148-149).

8) pag. 10 lines 111-113: I cannot easily understand what "Ex-PRESS shunt surgery can be formulated" and "...compared with trabeculectomy in theologically..." mean. You should explain or reformulate.

We appreciate the reviewer’s comment. In trabeculectomy, the sizes of the fistula and corresponding iridectomy vary by operator preference. However, the size of the lumen of the Ex-PRESS shunt is standardized, and as such, it is possible to estimate the filtration amount. Also, Ex-PRESS shunt surgery does not require sclerectomy or iridectomy. Therefore, we stated that
Ex-PRESS shunt surgery can be formulated. We added relevant sentences to Page 6, lines 116-118.

Reviewer 2

- The malpositioning was noted intra-op, why repositioning was not performed then? - When was the repositioning performed after the initial operation? 7 months? (The paragraph was not too clear)

We appreciate the reviewer’s helpful input. We noted that the Ex-RRESS shunt was implanted obliquely early in the postoperative period. However, we decided only to observe carefully, without surgical intervention, because the external plate of the shunt was covered well by the scleral flap, and there was no sign of extrusion. Seven (7) months postoperatively, we observed an impending extrusion sign that the external plate was prominent in the subconjunctival space, though it was covered by the scleral flap. So, we decided to perform surgical intervention at that time. We added this information to Page 4, lines 80-85.

- P.5 Line 94: How to fix the spur firmly?

We appreciate the reviewer’s constructive question. As we noted in the manuscript, the shunt was fixed more strongly than expected. So, to make sufficient space for easy adjustment, an incision was made in both lateral directions. Then, the shunt was inserted perpendicularly to the limbus, parallel to the iris plane, and well pushed into the anterior chamber by forceps for firm fixation of the spur. The external plate was tight on the sclera. We checked the shunt positioning by multiple palpations with a sponge. The shunt positioning was good, and so we sutured the scleral flap. We added this information to Page 5, lines 96-98.