Reviewer’s report

Title: Improved Technique of Mitomycin C Application May Decrease the Encapsulated Cyst Incidence Following Ahmed Glaucoma Valve Implantation in Refractory Glaucoma Patients

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Reviewer: Alex Spratt

Reviewer’s report:

The authors describe a retrospective analysis of a modification of their technique for applying mitomycin-c (MMC) to the surgical quadrant of the eye during Ahmed tube implantation.

Background

Paragraph 1

Change ‘the effective’ to ‘an effective’

Are refs 1, 5, 6 appropriate supporting references for the efficacy of Ahmed implants? Are they superior papers to the Ahmed data from the Ahmed versus Baerveldt Study or Ahmed Baerveldt Comparison Study?

Reference 4 is inadequate to cite as supporting evidence for the use of MMC in tubes. This paper is a retrospective review of use of MMC in Ahmed tubes in a paediatric population and describes poorer surgical outcomes in the group that received MMC. The authors should either cite primary sources that support the point they are trying to make or it would be reasonable to cite the Cochrane review on this topic:

http://summaries.cochrane.org/CD004918/aqueous-shunts-for-glaucoma

Also there are a few publications on coating Ahmed implants with MMC. This is a sufficiently similar concept to what is being described that some discussion of these papers would be useful in the introduction.

Leading on from the Cochrane review findings, which did not find good evidence to support the use of MMC in tube surgery, many (perhaps most) surgeons around the world do not use MMC during Ahmed tube surgery. Thus it risks being misleading to describe its use as the traditional technique. If by traditional the authors mean the commonest then perhaps the commonest thing to do with MMC is to leave it in the bottle and not use it at all during Ahmed surgery. It would be better to say they compared technique A and technique B.

Patients and methods

Paragraph 1
I’m not sure that a retrospective chart review represents ‘recruitment’.

The authors need to clarify if ALL the patients that met the inclusion/exclusion criteria and had surgery between Oct 2008 and January 2013 were included for analysis. If any not included state they must state why so that the reader can be clear if this represents a potential source of bias. Were any surgical notes or hospital charts missing or was the data 100% complete?

Surgical techniques and MMC application

Paragraph 1

“Different surgical technique was used based on surgeon discretion.”

This isn’t enough detail. Did the single surgeon (XZ) change his technique halfway through the time period over which results are drawn? If he changed his technique so the 41 eyes receiving traditional technique were consecutive operations and 38 eyes receiving new technique were also consecutive please state this as this would be reassuring to the reader that this source of bias is somewhat reduced. If surgeon changed technique intermittently throughout the time period being studied this should be stated with some explanation as to how and why the surgeon decided which technique he would use for each case.

200ml of BSS seems like a lot. Is this correct and is there a reason why the surgeons irrigate using BSS rather than water or saline?

How was decision to use ST or IT quadrant made? Given these are different quadrants it isn’t true to say the same technique was used.

Why ligate the tube? The valved design of the Ahmed prevents the need for routine ligation. Please explain this for the reader.

Do the authors think that varying concentration and duration of MMC application may be the main reason for different effect? Some explanation as to how surgeons decided what concentration and duration of MMC application is needed in this section.

Evaluation criteria

Were these determined a priori? If so this should be stated.

Results

Paragraph 2

Figure 2 does not add clarity to the presentation of results over the same data in table 2.

Paragraph 3

Figure 3 is not the clearest way to present data on medication usage. Could this
be incorporated in table 2 so the reader can see the extent to which the post-op IOPs in table 2 may be affected by supplemental medication usage?

Paragraph 5

I was interested to see that the complications of over drainage (flat AC, choroidal effusion and hypotony maculopathy) were more common in the group that had an MMC soaked piece of cotton wrapped around the plate. This is reasonable supporting evidence that the different technique may indeed be responsible for some clinical effect. Unfortunately an increased complication rate is not an improvement, so again I think the techniques should be called ‘technique a’ and ‘technique b’ with the reader allowed to make their own mind up as to which precise balance of surgical success and complications is preferable.

It would be interesting to know if Fisher’s exact test would consider the 9 complications of over drainage versus 2 in the ‘traditional’ technique arm to approach statistical significance.

Please also state when these complications of over drainage occurred. Were they before or after the ligating suture dissolved or was lasered? Can the authors comment on what they believe the reasons for over drainage were given that the Ahmed implant is valved to prevent over drainage. Is it possible that the valve mechanism was damaged directly by MMC or by the increased handling of the implant associated with the wrapping of the implant by the surgeon?

Results should include some description of MMC concentration and duration between the 2 groups. Presumably this would have been recorded in the operative notes so should be available for analysis. This could be the main reason for the results presented.

Discussion

Paragraph 6

I’m not sure the last sentence is necessary. It’s difficult to imagine a larger study with fewer patients.

The discussion needs some comment as to the limitations of non-randomisation introducing bias and different MMC concentrations and times making comparisons limited.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests