Title: Surgical factors affecting oculocardiac reflex during strabismus surgery

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Reviewer: Robert Arnold

Reviewer's report:
Summary of Paper: Pediatric strabismus surgery patients with IV atropine, plus adult strabismus patients without atropine are grouped together with OCR partly defined as beats-per-minute difference and also as percent difference. OCR defined as 20% HR drop with various EOM stimuli on first and subsequent EOM in the case.

Modifications made: introduction- influence of tensions 50gm, 200 gm, 400 gm and 600 gram noted. Surgeon "gentle uniform tension" in each procedure. In discussion In this study, we hooked the muscle persistently until observing maximal recovery of decreased heart rate comparing with baseline heart rate. Thus, the duration of tension was variable at each surgeries. (should be surgical case). Conclusions: Surgeon needs to be more careful while operating first extraocular muscle in strabismus surgery. Macihda reference added.

Table 4 gives percentages of heart rate (EXCELLENT).

Major Comments:

Thanks to the authors for addressing tension on muscles. Now, I am more encouraged about this study than my first review, though a second issue is more important- the atropine. The good news- is that re-analysis of the data will yield even better conclusions.

Page 8, line 90: The surgeon manipulated the extraocular muscle gently with uniformed tension in each of procedures…. Should be "Though a tension gauge was not employed, The surgeon manipulated the extraocular muscle gently with uniformed tension in each of procedures.
All pediatric patients less than 18 got pre-op moderate-dose IV atropine—perhaps a variable amount of time before actual EOM tension. This group with atropine likely has different OCR than those who did not get atropine. Mean age 11±9 with OCR is older than those who did not have OCR—was this just because they did not get atropine? This indicates that some probably were adults. How many did not get atropine? It may be helpful to analyze a sub-set who did receive atropine.

In discussion, page 12, line 173 "An intravenous anticholinergic agent was used as a premedication in pediatric surgeries, therefore, we could not conclude on a possible preventive effect of premedication on OCR." Since you did not separate results based on those with, or without atropine, you have not fully analyzed one of the known, most-important variables related to oculocardiac reflex. It IS in your data, and re-analysis likely will give you an even-better paper.

Results page 11(of PDF) lines 147-153 (author line number) : This is not needed. By defining OCR as 20% drop, it is obvious that the amount of bradycardia in those meeting the definition will be significantly more than those not meeting the definition.

Page 11, line 158: This is also not needed. The baseline HR was significantly associated with the occurrence of OCR (OR = 0.97, p < 0.01). If OCR was uniformly defined as a percent change, even over a range of patient ages and weights, a finding like this would be impressive. However, since absolute heart rate was used, the younger patients with higher baseline heart rates with exactly the same percent change in heart rate would be expected to have more heart rate drop than older-heavier patients with lower baseline heart rates. Another factor could substantially influence this—the impact of pre-operative atropine in the younger, lighter pediatric patients. For patients with fairly complete atropine block, the baseline HR and the OCR HR may be high, whereas for patients with minimal atropine impact, there would be lower baseline HR and more profound OCR.

Page 11, line 158 and Table 6. Please clarify if your definition "first operated muscle" is a) which EOM, b) what type of surgery resect versus recess, or c) the degree of OCR at the first EOM operated. Is this similar to your description in line 141 page 10? If you define as "c",...
then patients with initial profound OCR are more likely to have more profound OCR on their subsequent EOM surgery.

In discussion, page 13, lines 196-200, Machida using uniform EOM tension withgout atropine evaluated tension, and recovery for OCR- this should be included in this paragraph.

Table 4: EXCELLENT. However, I now think it is best to also separate out those with pre-op atropine (Many kids) from those who did not get pre-op atropine. And this would make a very helpful Figure plotting percent heart rate (y axis) with baseline and each intervention. A similar graph could be generated for first muscle and second muscle with baseline%, traction, adrenergic and cut. This could lead to a more robust conclusion: The most profound OCR is seen during EOM traction, then adrenergic phase and finally cutting the muscle.

Minor Comments:
Page 13, line 213 thsuis
Page 14 line 220 surgeries. (should be surgical cases).
These [The] variability of traction could affect incidence of OCR during surgery. We performed the surgery, routinely without the manipulation [measurement] of traction force.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.
Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.
Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.
No
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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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