Author's response to reviews

Title: Bleeding complications in cholecystectomy: register study of over 22 000 cholecystectomies in Finland

Authors:

Satu Suuronen (satu.t.suuronen@gmail.com)
Antti Kivivuori (antti.kivivuori@esshp.fi)
Jarno Tuimala (ituimala@gmail.com)
Hannu Paajanen (hannu.paaajanen@kuh.fi)

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Comments and response. The revision is labeled red font.

Reviewer 1:
Interesting study on blood component transfusions use in cholecystectomy. However as explained by authors it has some limitations because of the register-based nature of the study. Another limitation is the lack of a stratification of severity (flegmonous, necrotizing, perforated...). The authors should write something about the lack of the stratification. this is true. We had no access to each hospital patient records or severity data. (page 5, line 129).

Reviewer 2:
The paper is based on a large cohort of patients undergoing cholecystectomy, with data on blood transfusions as surrogate measure for bleeding. The size of the study is very impressing, the methods adequate and the paper well-written. Nevertheless, the conclusions that can be draw are very limited. The only real conclusion is that the bleeding in open cholecystectomy is greater than in laparoscopic cholecystectomy. This is not very surprising and does not provide anything new. We agree, but very few data has been published focusing blood/component transfusions and their costs in gallbladder surgery.

Major compulsory revisions

The paper would be improved if the figures on transfusions following cholecystectomy would be related to something else. What is the transfusion in the whole population? Would it be possible to provide a ratio of observed to expected ratio of transfusions, adjusting for gender and age? Do the authors have data on transfusions for other benign conditions, e.g. hernia surgery or gynecologic surgery? We do not have data of transfusion rates in whole population in Finland. Same bleeding register has been used earlier (ref 20), and now we added into the text some previous data concerning other general surgery (page 9, line 278). This ref 20 also included age- and sex-related figures.
Minor essential revisions

In the second sentence under results in the abstract, LC and OC seems to be mixed up (more transfusions in the LC group than the OC group). True, now corrected (page 2, line 40)

Reviewer 3:

This is a retrospective study of cholecystectomies (open and laparoscopic) in Finland using register data to assess the differences of blood transfusion rates between OC and LC.

Line 1: Title is too long. now shortened

Line 40-41: Higher in the OC-group than in the LC-group. corrected

Major: Conversion rate? conversions could not be identified from the data due to the lack of a separate procedure code for conversion in NCSP. The register was constructed for bleeding episodes and use of blood products, and unfortunately rate of conversions was not recorded (said in the Discussion, page 10. line 297).

Old data: 2007 (8 years ago) true, but this was the coverage of register, same holds still true in Finland

Line 58: erase ?somewhat? erased

Line 67: erase overwhelming bleeding and put in e.g bleeding complications. done

Line 72-73: Based on what? Patients with CBD injuries would probably argue that their complications are the most serious ones? right, now said more softly.

Line 75: ...era corrected

Line 76-79: Rephrase sentence done

Line 89-91: Figure 1 was not enclosed for review? we enclose it again

Major: the VOK registry needs to be explained (inclusion, exclusion etc). This is now said more accurately (page 4, line 93.)

Perhaps not that much detail regarding the fact that it is no longer in use. How do you link data from the NIHW registry to the bleeding registry? we don't know, maybe impossibly to link?

Bott registers needs to be explained. What about validity? validity was tested by audit tests performed by hospital’s contact persons (ref 18).

Line 96-99: What about the separate registry ? elaborate, explain! The reader does not understand this.now explained: VOK register was started in 2002 and continually updated between 2002 and 2011.

Cholecystectomies were collected between 2002-2007.

Line 102-107: Shorten the info on NOMESCO. done
Line 110-112: This is a major flaw of the manuscript: conversions can not be part of the OC group since you will get a selection bias based on the fact that patients in the LC group that needs blood transfusion due to massive hemorrhage will go into the OC group. The conclusions about whether LC or OC have the highest amount of blood transfusions are therefore hard to interpret. This fact is noted by the authors in the discussion section. we admit this 100%, but our register data cannot solve this! would need re-evaluation of all files in each hospital. (said in discussion, page 10, line 297)

Why can’t you use: Diagnose code: ZXK00 Conversion from percutaneous endoscopic surgery to open surgery see above

Line 113-115 Rehrase sentence shortened

Line 118-156: The methods section needs to be shortened. I suggest that you erase line 118-156. Preparing blood transfusion bags is not of interest to the reader. erased

Line 180: Figure 2? included

Line 187: CBD exploration? Why? Is this the method of choice to intraoperatively deal with CBD stones? yes, in open procedures

Line 224: I would not ask this question in the discussion. erased