Author's response to reviews

Title: Laparoscopic versus Open Left Lateral Segmentectomy

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Author's response to reviews: see over
Dear Sir/Madam,

Re: Laparoscopic versus Open Left Lateral Segmentectomy  
MS: 1057265705253898

Further to the email received 05/05/09 we have addressed the reviewers’ comments in turn and amended the manuscript accordingly.

Reviewer: Peter Schemmer

1. The study of Carswell et al. is in accordance with the several lines of evidence demonstrating the benefits of the laparoscopic surgical methods. However, this work suffers the important limitation of a small sample size. Thus, although compatible with other studies, the authors may tone down their conclusions and generalizations. Furthermore, it’s not clear whether the study design was retrospective or prospective, and if prospective, was it designed as a randomised controlled trial (RCT)? If not, the authors have to declare how they managed to overcome selection-bias, especially in such a limited sample-size.

Given limitations of small sample size we have toned down our conclusion - see change to Abstract, conclusion (page 2, line 19) and Conclusion (page 15, lines 24-25).

This is a retrospective study – see amendment to Methods (page 4, lines 3-4).

We have included a comment with respect to potential selection-bias – see amendment to Methods (page 4, lines 13-15).

2. It’s not clearly stated what the reason of portal triad clamping in 50% of the cases in the open group was. In this regard, a comparison between postoperative transaminases would make sense.

The portal triad clamping in 50% of the cases in the open group was as a result of consultant preference. There was no significant difference in AST changes after LLS when the laparoscopic, open – portal triad clamping and open – no portal triad clamping group – see amendment to Results (page 8, lines 7-10).

3. Why was the skin closure in LG performed after the infiltration of Marcaine? Can it have any effect on the postoperative analgesic requirement? How frequent was shoulder pain in LG?

Skin closure in LG performed after infiltration of Marcain®, a local anaesthetic agent (see amendment page 6, line 9) which has a longer duration of action than other local anaesthetics. This was used in the patient group who did not receive/require epidural anaesthesia with the intention of optimising
postoperative analgesia. However this opinion is not supported by the literature (local anaesthetic infiltration for postoperative pain relief after laparoscopy: a qualitative and quantitative systematic review of intreaperitoneal, port-site infiltration and mesosalpinx block, Moiniche S, Jorgensen H, Wetterslev J, Berg Dahl J. Anesthesia & Analgesia 2000; 90(4): 899), see amendment page 12, lines 21-24 and ref 24 (page 20).

Unfortunately, formal assessment of pain scoring was not undertaken on this patient group and retrospectively we are unable to quantify frequency of shoulder pain.

4. Claiming that a laparoscopic liver surgery provides tangible benefits to both patients and hospital, it would make sense to do a cost-benefit analysis for better comparison between the two methods.

We agree that it would be of use to perform a cost-benefit analysis of open versus laparoscopic left lateral segmentectomy. However, it is not possible to perform this retrospectively as data is not available.

5. It would be wise to state the median follow-up time in both groups and to compare the group accordingly. This is especially important regarding the discussions about the risks of port site metastasis in laparoscopic oncologic surgery.

Whilst we agree the outcome data of these patient groups is of interest, the variation of pathologies combined with the small sample size negates comparison. We have included a comment summarising the follow-up data – see amendment page 9, lines 19-22.

6. The last two paragraphs of the discussion are irrelevant to the findings of this study and may be omitted.

We feel the last two paragraphs summarise the literature regarding the potential benefits of the laparoscopic vs open approach for malignant surgical resections and therefore, the underlying explanation for the progression of the laparoscopic surgical technique. They contextualise the data and as such we would be most grateful if you could reconsider their inclusion in the paper.
Reviewer: CN N Tang

**Major compulsory revisions**

1. The main drawback of this paper is the heterogeneity of pathologies in both treatment arms ranging from benign to malignant diseases despite all the cases underwent the same operations

We agree this is a limitation of any retrospective clinical study i.e. not randomised or case-controlled and is subsequently limited by the cases performed in this unit over this time period.

2. During the study period from 2002-2006, 43 left lateral sectionectomies were performed in author’s institution. More than half of the cases were excluded from analysis due to various reasons. Despite the author has mentioned exclusions were decided to allow a more accurate comparison of operative time and outcome, the heterogeneity of pathologies in both treatment groups would also affect the final outcome analysis

We agree with this statement and have addressed this issue in the discussion section – see page 10, lines 23-25 and page 11 lines 1-6

3. In addition, it would be better for readers to understand how many cases with what reasons were excluded in each treatment approach

We have included this information using an attrition diagram – see amendments page 4, lines 7-8 and page 23

4. As previously described, patients with synchronous operations were excluded from analysis, but why the case with open conversion due to adherence to stomach requiring wedge resection of stomach was not excluded?

Cases were included on an intention to treat basis (see amendment page 4, lines 4-5).

5. In the discussion part, it has been shown to have an increased risk of cardiac arrhythmias and gas emboli when pneumoperitoneum was maintained at 16mmHg in animal studies; however what would be the reason behind the pressures were maintained at 15-20mmHg in author’s institution despite there had not been any clinical incidents

Gas embolism is one of the most feared complications of laparoscopic surgery. Although the animal studies are of extreme importance, to date there is no human data with respect to the risk of cardiac arrhythmias and gas emboli with pneumoperitoneum at any mmHg. In fact, a review of laparoscopic liver resections (Gagner et al.2) suggests the incidence to be 0.3%. In this unit, the
laparoscopic liver surgeon believes increased intra-abdominal pressure at laparoscopy may reduce blood loss and improve visualisation of the operative field without increasing risk of gas emboli – see amendment to Discussion page 11, lines 24-25 and page 12, lines 1-3.

Minor essential revisions

1. Regarding the technical part, was the CUSA being used in laparoscopic approach as in open operation? And what would be the reason behind why portal clamping was just intermittently applied in open resection but not in laparoscopic arm?

Yes, the CUSA is occasionally used in the laparoscopic approach as in the open operation – to reflect this see amendment (page 6, lines 1-2).

The portal triad clamping in 50% of the cases in the open group was as a result of consultant preference. There was no significant difference in AST changes after LLS when the laparoscopic, open – portal triad clamping and open – no portal triad clamping group – see amendment to Results (page 8, lines 7-10).

2. It would be better to report the amount of operative blood loss in both treatment arms instead of comparing the need of blood transfusion as this could be related to underlying condition rather than the treatment approach.

We agree, unfortunately in this retrospective study operative blood loss was not recorded in all cases and therefore not included as an outcome of the study.

3. All of the lap group patients with malignancy (n=6) suffered from colorectal liver met whereas only two patients in the open group suffered from colorectal liver met, 1 had HCC and the other one suffered from leiomyosarcoma. Although statistically both groups of patient had similar resection margins, when analyzing the 2 colorectal metastasis in the open group, one of them had margin >20mm while the other had involved resection margin.

We appreciate this comment is a direct result of the small sample size of this study with a wide variation in size of resection margin noted in the open group. In order to increase transparency with respect to this, raw data is included in tabulated format (see table 3, page 27).

4. The difference of size and weight of lesion might be due to referral/selection bias. Patients having smaller lesion were referred to the
laparoscopic surgeon while those patients with larger lesions were referred to other open surgeons.

The surgeon performing the laparoscopic liver resections in this series also performed open liver surgery during this time period. Comparative cases were referred to all surgeons involved in the study and discussed at the liver multi-disciplinary meeting pre-operatively – for clarification see amendment (page 4, lines 13-15).

5. The operative time was similar in both groups of patients; in fact, the authors also included the first few lap patients who were indeed still in their learning curve phase. Similarly, a few patients in open group were performed by trainees supervised by consultants. Direct comparison might not be accurate as it might think.

We agree with this comment and tried to address this issue in the Discussion (page 12, lines 8-9, 11, 15-16).

**Editorial concerns**

Ethics – this is a retrospective cohort study and as such did not require ethical approval.

Authors’ contributions – amendment to include an authors’ contributions section see page 16, lines 14-22.

Revise “Background” section of abstract to give wider context for study – amendment see page 2, lines 3-5.

Manuscript style – journal style re-reviewed and figures attached in pdf format.

Should any further information be required please do not hesitate to contact me.

Best wishes,

Kirstin Carswell