Author’s response to reviews

Title: The role of the laparoscopic approach in the surgical management of acute adhesive small bowel obstruction

Authors:
Enric Sebastian-Valverde (esebastian@parcdesalutmar.cat)
Ignasi Poves (97015@parcdesalutmar.cat)
Estela Membrilla-Fernández (94934@parcdesalutmar.cat)
María José Pons-Fragero (91281@parcdesalutmar.cat)
Luís Grande (94336@parcdesalutmar.cat)

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We thank the Editor for the opportunity to revise and resubmit. We hope that our manuscript is now suitable for publication in BMC Surgery.

We have made some minor grammatical modifications to improve the understanding and we have responded to each of the reviewer’s points as follows. The changes according to the reviewer’s comments have been highlighted with red in the manuscript document for an easy identification. All authors have approved the final draft.

Reviewer 1:
“Although the laparoscopic and open surgery groups of the present retrospective study, (patients in the laparoscopic group are younger, have fewer previous abdominal operations, have lower ASA grade and have less complex adhesions), and although the conversion rate is high (38.5%), the study gives 'laparoscopic management of ASBO is feasible, effective and safe. The laparoscopic approach improves postoperative outcomes and functional recovery, and should be considered in patients in whom simple adhesion is suspected. Patient selection is the strongest key factor for having success' message”.
The authors would like to thank the reviewer for time dedicated and for the comments about our manuscript.

Reviewer 2:
“It is an interesting clinical study concerning a large cohort of patients. I suggest to discuss the value of pre-operative CT in assessing contra-indication to a laparoscopic treatment, usually represented by ischemic lesions of intestinal loops, peritoneal effusion, secondary vascular lesions, free air inside the peritoneum, secondary pleural effusion, etc. These elements can be deduced by the personal experience of the Authors, or found through a bibliographic research”.
We appreciate the comments and we agree with the reviewer about the great value of the preoperative CT scan in assessing contra/indications in the management of acute adhesive small bowel obstruction. However, we think that a specific study should be done to assess the value of CT scan and other preoperative factors in the surgical management of adhesive small bowel obstruction. In our study, the main objective was to compare the postoperative outcomes between open and laparoscopic approach, for this reason, we did not include a variable referring to CT scan.

Reviewer 3:
“Title is very interesting, but unfortunately, the paper is not able to answer the question presented in the title, therefore authors should consider new title for the manuscript”.
According to the reviewer’s consideration, we have changed the title: The role of the laparoscopic approach in the surgical management of acute adhesive small bowel obstruction.

“Abstract is self-explanatory and main results are clearly presented. I would recommend to omit reporting of poor quality outcomes (PQO) in the abstract, because the term is not standard and requires explanation”.
We thank the reviewer for the comment, and according to the reviewer’s recommendation, we have omitted the “poor quality outcomes” variable in the abstract.

“Methods: Direct comparison of the two groups may lead to false interpretations due to selection bias. This is somehow compensated by doing multivariate analysis and by subgroup analysis in patients with single band adhesion without intestinal resection. Was surgeons experience in open surgery registered? Were there any surgeons in training performing these operations?”
Yes, the surgeon’s experience in open surgery was registered. The rates are presented in table 2. The advanced laparoscopic experience in open surgery was 13.1% versus 59% in the laparoscopic group (p<0.001). The center where this study has been conducted is a hospital with a surgery residency program. Some of the patients were operated by surgeons in training.

“Results: Although the rate of severe complications was low in the laparoscopic group, it would be informative to show reasons for and findings of reoperations and mortality in the both groups. Were there any missed bowel injuries in these patients? Did any of patients requiring reoperation die? Please show this data on tables 2 and 4.
We thank the reviewer for these recommendations.
There were 5 reoperations in the laparoscopic group and 16 in the open group. Evisceration was the most frequent cause of reoperation. 3 patients underwent reoperation due to missed bowel injuries (2 in open group and 1 in laparoscopic). 4 reoperated patients died (2 haemorrhage, 1 evisceration, 1 anastomotic leak). We have added the information about reoperation in Results section (line 139-140)
and we have created a new table (new Table 3) with the causes of reoperation in both groups.

“According to data on tables 2 and 4, 31 patients in the laparoscopy group did not have single band adhesion or internal hernia without intestinal resection. Reoperation rate in these patients was 4 out of 31 (12.9%). Correspondingly, in the open surgery group the respective numbers were 11 out of 128 (8.6%). Also, in these patients there does not seem to be significant difference in complication rate 21 out of 31 (68%) and 93 out of 128 (73%). Also, numbers of PQt are significantly higher 9 out of 31 (29%) and 56 out of 128 (44%). According to these numbers it seems that the benefits of laparoscopy in ASBO may be limited to patients with single band adhesion or internal hernia without intestinal resection. These comparisons should also be included in the results, and discussed in the discussion”.

We agree with the reviewer. Among the patients that did not have single bands or internal hernias and/or without intestinal resection (31 in laparoscopic and 128 in open group) there were no differences in reoperation (12.9% vs 8.6%; p=0.495), complications (67.7% vs 72.7%; p=0.586) and PQt (29% vs 44.1%; p= 0.127). We have included the outcomes of these patients in Results section (line 166-171) and discussed in the Discussion section (line 237-239).

We think that these results might be explained due to the conversions. As explained in the article, converted patients have worse results. Conversions were more frequent in complex adhesions and in those patients who required intestinal resection; and as a consequence, presented more complications.

“Did Laparoscopy experience affect conversion, reoperation or complication rate among patients with laparoscopic approach? Comparison with adequate statistical testing should be presented, because in the end of the discussion it is stated "when performed by surgeons skilled in advanced laparoscopic surgery".

Laparoscopy experience affect conversion rate. The conversion rate among the experts was 26.1% compared to 56.1% in the non-experts (p = 0.007). Nevertheless, advanced laparoscopic experience was not associated with fewer reoperations (8.7% vs 3.1%; p = 0.643) nor fewer complications (41.3 vs 46.9%; p = 0.626) in laparoscopic group.

According to reviewer’s recommendation, we have added these results in Results section (line 145-148).

“Discussion: Discussion is too long. Some of the results are shown in the discussion for the first time. This data such as details of patients who died, reasons for conversion and comparison of converted patients vs. non-converted should be presented in the results only. Because laparoscopy is feasible only in minority of patients with ASBO, the selection of right patients for laparoscopy is the most important issue like authors state in the end of the conclusions in the abstract. In the discussion patient selection must be discussed and how this selection should be done”.

According to reviewer’s comment, we have shorten the discussion section. We have remove the paragraph referring to mortality from the Discussion section: “ASBO is associated with significant mortality, varying from 0.6% to 7% [6, 7, 20, 21]. Our mortality rate (6.5%) is within the accepted range. The mean age of the 17 patients who died was 80.5 years, 8 were ASA IV, 12 had complex adhesions and 6 required intestinal resection.”

We have added mortality information in Results section (line 149-153).

We have removed results about conversion in discussion section and we have added in Results section (line 141-145). We have added a new table comparing non-converted with converted patients (new table 4) in Results section. Discussion about conversion has been modified (line 231-233).
Reviewer 4:
This is an interesting and original article, with good statistical analysis.
Minor revision is necessary:
please comment the indication for surgery (ASBO has currently a non-operative management in first instance);
We appreciate the comments of the reviewer.
The indication for surgery in ASBO is considered when the non-operative management fails. We have added our management of ASBO in the Methods section (line 85-90) as explained below.

Which was the indication for EMERGENCY surgery (i.e. suspect of ischemia or non responsiveness to conservative treatment)?
According to the reviewer’s comment, we have changed the word emergency operations into urgent operations in the Methods section (Line 84) to avoid misunderstandings. We meant that scheduled surgeries were excluded. We did not separate urgent and emergent surgeries.

Please clarify the protocol for ASBO in your hospital: Do you put NG tube? Give Gastrografin? How long do you wait after non operative treatment to declare it’s failed?
Following the protocol of our centre, when an ASBO is suspected, a nasogastric tube is placed. If the suspected diagnosis of adhesions is supported by clinical and radiological data, once the stomach is empty, 100 ml of water soluble oral contrast is administered in those patients with previous abdominal operations. Those in whom oral contrast did not reach the colon in 24 hours were considered as a failure of the conservative management and surgical intervention is indicated.
We have added this explanation in Methods section (line 85-90).