**Author’s response to reviews**

**Title:** Robotic versus Laparoscopic Gastrectomy for Gastric Cancer: A Systematic Review and Updated Meta-analysis

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Andrea Coratti (Reviewer 1):
The subject of the present study is not so innovative, but is interesting and has a clinical relevance. The methodology of meta-analysis is correct and well conducted. The interesting and useful subgroups analysis was conducted for type of gastrectomy (total and distal gastrectomy) and for BMI (obese vs. not-obese patients). However, I have a methodological observation.

①The cut-off to define obese or not-obese patients is fixed at 25, but it seems too low. It may be useful to do the subgroups analysis using a higher cut-off (i.e. BMI 30). In this manner the authors may achieve a better definition of two subgroups, a better selection of really obese patients, and probably more interesting results.

Answer: Despite the World Health Organization’s definition of obesity being a BMI over 30 kg/m², we used 25 kg/m² as our cutoff because the average BMI for Asian people, where have a higher incidence of gastric carcinoma, is lower than the BMI for non-Asian people, especially when compared to Western populations. Besides, there was no studies compared obese and non-
obese patients using 30 kg/m2 as cutoff [1, 2]. We have changed “obese” into “overweight” in our revised paper to avoid ambiguity.

② The results of this meta-analysis confirm other data published in literature. I suggest, if it is possible with available data in selected papers, some additional evaluations. (1) The conversion rate in open surgery (especially in obese patients). (2) The number of extra and intra-corporeally anastomoses (especially in TG).

Answer: We agree such evaluations are important. We have added the comparison of the conversion rate. As showed in Table 1, three studies did not report the information of conversion, two studies excluded the conversion cases, whereas another nine researches had no conversion. The pooled data based four studies, which reported conversion cases, showed similar conversion rates between groups (RR = 0.88, 95 % CI: 0.36 ~ 2.17, P = 0.78). However, studies reported the clinical data of extra and intra-corporeally anastomoses are limited. We failed to clarify this issue.

③ The discussion is correct and balanced.

Answer: we have corrected some mistake and balanced the revised paper.

④ To check in the text: (1) Page 6, line 37/38: Italy in not in East Asia. (2) Page 6, line 41/42: 4 studies "9" stars. (3) Page 8, line 8/9: "For distal gastrectomy/DG)" is probably "For total gastrectomy/TG)"

Answer: We thank you so much for the reviewers` careful examination for the paper. We have corrected these mistakes in our revised paper.

Luigi Bonavina (Reviewer 2):
The authors have performed a systematic review and meta-analysis comparing robotic and laparoscopic gastrectomy for cancer. Overall the work is well done, meaningful and useful conclusions. I would suggest to adding a reference for the Newcastle-Ottawa Quality Assessment Scale described in the methods section, sub-heading "data extraction and quality assessment".

Answer: We have added a reference (link) for the Newcastle-Ottawa Quality Assessment Scale into the revised paper.

Marco Petrillo (Reviewer 3):
The paper by Chen et al. provides a meta-analysis and systematic revision comparing the safety and efficacy of robotic versus laparoscopic gastrectomy for gastric cancer. To date, very few studies have provided a comprehensive and accurate point of view on this specific issue. For those reasons, the paper appears of very high originality and scientific relevance. On the other hand, some criticisms have to be raised: General points:

① As recently reported, all systematic revision should be written according with PRISMA guidelines. Interestingly, the entire manuscript respects the PRISMA checklist thus supporting the quality of the provided meta-analysis, but we recommend to the authors to specify in the text that the study was conducted according with PRISMA guidelines.
Answer: The choice of the articles included in this review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA). We have added this statement into the revised paper.

② In the Discussion Section some points for future developments must be provided. As the authors know, new robotic platforms are now available. In particular, Da Vinci Xi is progressively replacing Si system with the primary aim to reduce surgical time allowing with articulating arms multi-quadrant surgery. Therefore, we suggest to the authors to briefly introduce this point in the Discussion section.
Answer: Thank you for the suggestion. The docking time was between 20 min to 60 min as reported [3-6]. In our study, we found RG had longer operation times than LG by 49 minutes, which suggested the ‘true’ time spent on operations was similar or even shorter than LG. Furthermore, with popularization of the new robotic surgical system, the operation time is expected to shorten. Several studies have reported the da Vinci Xi robotic platform is more user-friendly, has easy installation in rectal and nephritic surgery [7, 8]. Thus, we argued RG is technical feasible in the view of operation time. We have added the comments in the revised paper.

③ As reported in the Results section, in obese patients robotic approach seems to provide all the well-known benefits without increased surgical time. Therefore, we suggest to emphasizing these findings in the discussion section.
Answer: In our study, the overall mean operation times of RG and LG were similar in the obese subgroups, contrasting with those in the non-obese subgroups, which implied RG to be superior to LG when used on obese patients. However, the impact of RG on recovery of the obese patient compared to LG needs further research due to now the relatively small sample size. We have discussed this in the revised paper.

④English language should be improved.
Answer: The revised paper has been polished by a native English speaking expert.

Riccardo Rosati (Reviewer 4):
The article is written in poor English. It is a meta-analysis made on the basis of non-randomized clinical trials, mainly on retrospective series with a limited number of patients enrolled. Those studies have no details on the patient selection for minimally invasive access and considering that the majority of them derive from Eastern series with a high prevalence of early stage disease, no main conclusion can be drawn. Clinical stage in relation with type of operation is not clear in the studies considered from the authors. Also there is not a clear distinction between total and subtotal gastrectomy, so the differences in indications and results among the two proposed technique is not clear.

Answer: The revised paper has been polished by a native English speaking expert. Our research included the maximal amount of samples (a total of 1830 patients) who experienced RG about oncologic outcomes, postoperative outcome, intraoperative effects, and costs, as well as the largest published literature (19 studies). We believe such a research would contribute a more objective and comprehensive assessment for the current RG surgical status. Selection bias was one of the most important limitations in our researches. However, as no RCT was available to be included in the meta-analysis, selection biases are inevitable in surgical abstention which should be carefully interpreted. Furthermore, East Asia has the highest prevalence of gastric cancer, while gastric cancer is relative uncommon in the Western countries. It’s reasonable that the mainstay of included studies came from East Asia rather than Western countries. Although the homogeneity test for the continuous variables exhibited substantial heterogeneity due to the inherent flaws of a retrospective study, the uneven surgical skills of the different surgeons as well as regional differences, etc. In Eastern Asian countries, particularly Korea, Japan, some area of China, the proportion of early gastric cancer has increased as a result of the improved
surveillance of gastric cancer in these regions [9, 10]. On the other hand, although increasing evidence continues to show no difference between patients undergoing open or laparoscopic surgery for oncologic outcomes, the Japanese Gastric Cancer Association classified minimal invasive surgery as investigational treatment and only recommended early gastric cancer patients to receive minimal invasive surgery, because RCTs, which support the minimal invasive gastrectomy to the use for advanced stage cancer, are still limited [11]. Therefore, the cases in our studies, especially these from Eastern Asian, were mainly early stage disease. The distinction among total, subtotal and distal gastrectomy is clear in the surgical extent. For surgeons in the East, radical distal gastrectomy for middle and distal gastric cancer is popular [11], while the distal subtotal is preferred in the West [12]. Thus we cataloged distal gastrectomy and subtotal gastrectomy as a subgroup in comparison with total gastrectomy, though it would result in some bias. But it also brings some interesting results due to the expansion of sample size.

References


