

ANSWERING REVIEWERS



August 6, 2013

Dear Editor,

Please find enclosed the edited manuscript in Word format (file name: Manuscript -2013-08-07 -WJG (revised).doc).

Title: Full robot-assisted gastrectomy with intracorporeal robot-sewn anastomosis produce satisfying outcomes

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The manuscript has been improved according to the suggestions of reviewers:

1 Format has been updated

2 Revision has been made according to the suggestions of the reviewer

(1) ??

Reviewers:

A. Case-series (This study design)

1. This study is a case-series which have level III evidence. There is no statistical analysis in this study. It means that authors' conclusion is not a solid one. Thereafter, Authors' conclusion should be revised. For example, : Full robot-assisted gastrectomy with intracorporeal robot's hand sewn anastomosis: an optimal solution in minimal invasive surgery (In Title) : Its convenience and reliability in anastomosis for gastrectomy is confirmed in our study. Full Robotic hand sewn anastomosis may be an optimal solution in minimal invasive gastroectomy surgeries. (In Abstract) : - and it may be considered to be most minimal invasive gastric surgeries in current stage. (In Discussion)

Yes, the conclusion should be revised. For example, full robot-assisted gastrectomy with intracorporeal robot-sewn anastomosis can produce satisfying postoperative outcomes (In Title). Its convenience and reliability in anastomosis for gastrectomy is confirmed in our study. Full robot-sewn anastomosis may be a minimal invasive trend in Robotic Surgery for Gastric Cancer (In Abstract and Discussion).

2. In case of intracorporeal anastomosis, the word 'totally laparoscopic' was widely used. In case of extracorporeal anastomosis, the word 'laparoscopic assisted' was widely used. Thereafter, the word 'robot-assisted' means extracorporeal anastomosis. Revision of the title should be considered.

Yes, the title has been revised. For example, "Full robot-assisted gastrectomy with intracorporeal robot-sewn anastomosis"

3. This study have 3-heterogeneous group: total gastrectomy, distal gastrectomy and proximal gastrectomy. Thereafter, authors should show dependent factors of each group: construction time, complication, and so on.

The total number of cases is small and the complication rate is relative low. I think it is inappropriately to

further stratify the cases.

4. How about surgeon's learning curve? There would be differences between early period outcomes and late period outcomes of robot's hand sewn anastomosis. If authors show data of learning curve, the other data of this article could be more reliable.

Sorry, we can't provide the learning curve. Before this study, we have performed more than 100 cases of robotic-assisted gastrectomy including several cases of robot's hand sewn anastomosis. But on our experience, the learning curve is short. After several cases of practice, full robot hand-sewn anastomosis can be safely and rapidly performed by surgeons familiar with intracorporeal suturing and knot-tying techniques.

5. Postoperative complications are expected to be graded according to the Clavien-Dindo classification or CTCAE, and authors should define which grade of complication is thought as an event.

Yes, it's good suggestion. Clavien-Dindo classification has been added in edited manuscript.

6. Authors used endo-linear stapler for resection. Why authors chose robot's hand sewn anastomosis instead of stapler anastomosis after they used stapler for resection? Construction time of robot's hand sewn anastomosis is not short. In addition, stapler anastomosis is a familiar and safe method in open and laparoscopic gastrectomy. If authors have the reason which they choose robot's hand sewn anastomosis, they had better describe the reason.

Stapler anastomosis is a familiar and safe method in open and laparoscopic gastrectomy. And it is also the only way to achieve minimal invasive surgery for laparoscopic surgery by avoiding minilaparotomy for hand-sewn anastomosis. The benefits of robot's hand sewn anastomosis have been discussed in second paragraph of **Discussion** section. In addition, the purpose of this study is to evaluate the feasibility and safety of full robot's hand sewn anastomosis in the treatment of gastric cancer.

B. How about case-control study If authors could compare robot's hand sewn anastomosis and the other method, reliability and objectivity of this study is more increased. Dr. Jiang Zhi-Wei had experienced robotic-assisted laparoscopic gastrectomy. Thereafter, authors could compare robot's hand sewn anastomosis and robotic-assisted laparoscopic gastrectomy. 104 cases of robot's hand sewn anastomosis are not small cases. I hope that authors try to conduct a case-control study. If authors conduct a case-control study, this study would be more reliable study.

Yes, a case-control study is definitely more reliable study. We will conduct it in later time.

(2)??

Reviewers:

The authors reported the feasibility of full robot-assisted total gastrectomy using intracorporeal robot's hand sewn anastomosis in the treatment of gastric cancer. As the authors described, recent studies have reported that anastomosis after robotic gastrectomy was performed by extracorporeal hand-sewing sutures or intracorporeal stapler. In the discussion section, the authors referred their previous reported to show the advantage of intracorporeal robot's hand sewn anastomosis compared with the extracorporeal hand-sewing sutures. However, the advantage of intracorporeal robot's hand sewn anastomosis is unclear compared with the use of the intracorporeal stapler. The author should describe the advantage of intracorporeal robot's hand sewn anastomosis compared with the use of the intracorporeal stapler.

The weakness of intracorporeal stapler anastomosis has been discussed in second paragraph of **Discussion** section. Various methods have been established to facilitate intracorporeal anastomosis²⁹⁻³¹. However, this laparoscopic method, especially in esophagojejunal anastomosis, presented many technical problems including

exposure difficulty, impossibility of reinforced suturing, diameter variation of esophagus and weak point in double stapling³³⁻³⁵. Due to the technical difficulty of laparoscopic anastomosis and concern regarding anastomotic complications by using staple method^{26,27,36}, many surgeons still prefer extracorporeal reconstruction^{37,38}. Since articulating instruments of the robotic device may provide complete wrist dexterity, allowing fine control with precision when it comes to the intracorporeal suture, robot-sewn anastomosis in robotic gastric cancer surgery could avoid minilaparotomy and additional laparoscopic techniques, provide surgeons with as much relief from the risk of anastomotic complications as hand sewing does²⁶⁻²⁸.

(3)??

Reviewers:

Xin-Xin and colleagues present their prospective experience with full robotic-assisted gastrectomy. They performed 104 successful operations ranging from distal gastrectomy with intracorporeal gastroduodenostomies or gastrojejunostomies to total gastrectomy with esophagojejunostomy. The average surgical time was 272 minutes and blood loss was 81 cc. Patients averaged 6.2 days in hospital. There were no postoperative complications related to anastomosis although a patient was readmitted for intra-abdominal infection and another required reoperation for jejunal afferent loop obstruction. The authors conclude that robotic gastrectomy with intracorporeal anastomosis is feasible and safe.

Critique

1. The original cohort was 110 patients. Two of these patients were not resectable, but the other 4 are reported to have been converted to laparotomy or to have had an extracorporeal anastomosis via mini-laparotomy in the figure. These conversions need to be discussed in detail. Why were they converted? Are there any lessons to be learned from these cases? Did any of these patients have complications?

These conversions have been discussed in **Results** section and Flow Diagram. Gastrectomy can't be performed due to late stage (n=2); Convert to laparotomy because of uncontrollable hemorrhage (n=1) and difficult exposure (n=1); extra-corporeal anastomosis (minilaparotomy) to make sure adequate tumor margin (n=2).

2. Why did the readmitted patient develop intraoperative infection? Did you exclude an anastomotic leak by imaging? If it was excluded, may it have been a sealed leak?

Postoperative complications are shown in Table 3. with Clavien-Dindo classification. 1 patient who underwent distal gastrectomy with gastroduodenostomies was readmitted for the intra-abdominal infection after surgery. She was treated by abdominal puncture and drainage and was recovered by conservative treatment for several days. We didn't exclude an anastomotic leak by imaging. It was unlikely a sealed leak. Another one patient was detected as anastomotic duodenal stump leak, which was confirmed by fistula imaging. The patient was treated by continuous irrigation drainage for 12 days, and fully recovered.

3. The average BMI is 22. Do the authors have any experience with patients who had higher BMI values? Did you perform robotic gastrectomy on any patient who was obese?

Admittedly, obese patient is difficult for laparoscopic surgery, as well as robotic gastrectomy. The reason why 1 obese patient converted to laparotomy was due to difficult exposure. Especially for gastrectomy, the greater omentums of obese patients are very thickening, which can prevent necessary exposure. Recently, by experience accumulation, for obese patients we first cut off the greater omentum from stomach and transverse colon simultaneously, and put aside to make better exposure.

4. The authors mention their experience with gastrectomy using mini-laparotomy for anastomoses. Can you

compare the data and outcomes in the robotic patients with those patients? What objective difference does the fully robotic approach have versus laparoscopic gastrectomy with mini-laparotomy?

Before this clinical trial, we have performed more than 100 cases of robotic-assisted laparoscopic gastrectomy with minilaparotomy for anastomosis⁵⁰. There are no significant differences in relation to average operation time, amount of bleeding and clinicopathological features. Anastomosis leakages were detected in 3 patient with mini-laparotomy, while only 1 patient with full robotic approach. According our experience., the poor healing rate of incision was significant reduced via fully robotic approach.

5. Although the two patients are mentioned because of readmission and jejunal obstruction, the table indicates that there were also two patients with prolonged ileus and another patient listed under pulmonary edema or infection. These cases should be referred to in the results.

Clavien-Dindo classification has been added in edited manuscript. Postoperative complications are shown in Table 3.

In general, the manuscript is well-written and appears to support that robotic gastrectomy is feasible and safe. It does not tell us whether it is advantageous compared to open or laparoscopic procedures. In addition, it appears that the group had a low BMI and it is not clear if the robotic approach would be a successful in a group of patients with characteristics that varied more widely. ?

Yes, we can't tell whether it is absolutely advantageous compared to open or laparoscopic procedures. But, at least the length of skin incision has been definitely reduced via intracorporeal robot-sewn method compared to open or minilaparotomy procedure. Many technical problems including exposure difficulty, impossibility of reinforced suturing, diameter variation of esophagus and weak point in double stapling have been resolved via intracorporeal robot-sewn method compared to laparoscopic staple procedures.

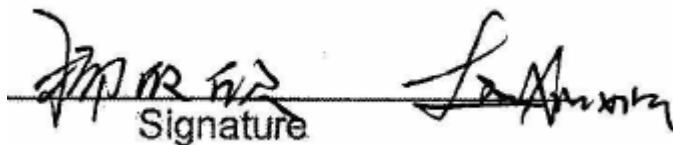
The superiority of this study was that the group had a low BMI. As we know, obesity is associated with increased postoperative morbidity and a higher conversion rate. In our study, few patient has high BMI. If enrolled more obese patient, the failure cases who convert to laparotomy or extra-corporeal anstomosis would be more.

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3 References and typesetting were corrected

Thank you again for publishing our manuscript in the *World Journal of Gastroenterology*.

Sincerely yours,



Signature

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