Author's response to reviews

Title: Gastric cancer surgery: Billroth I or Billroth II for distal gastrectomy?

Authors:

ZhengGang Zhu (rjzhuzhenggang@hotmail.com)
Birendra K Sah (byahut@hotmail.com)
MingMin Chen (rjchenmingmin@hotmail.com)
Min Yan (rjyanmin@hotmail.com)

Version: 3 Date: 16 October 2009

Author's response to reviews: see over
Response to reviewer 1
Reviewer: Shigefumi Yoshino

Thank you very much for your valuable comments, I have responded to your all concerns one by one and resubmitted it for your consideration.

Comments
1. The authors said that the risk adjusted complication rate was 1.03 for the Billroth I group and 0.74 for Billroth II and this concerned poorer surgical outcome in the Billroth II group. The authors should show the relationship between the risk adjusted complication rate and postoperative complications. I guess all patients have individual risk adjusted complication rates so that 1.03 for the Billroth I and 0.74 for Billroth II are average points. The authors should investigate whether individual risk adjusted complication rates correlate well with postoperative complications or not by the statistical analysis. Indeed, the formula how to calculate the risk adjusted complication rate and the statistical analysis should be indicated in methods.

Reply:
No, the values, 1.03 for the Billroth II and 0.74 for Billroth I, are not the average of risk adjusted complication rate but are the ratio of Observed to Estimated complication rate. Therefore, now I have edited the manuscript in result section which reads like this:

“......the ratio of observed to estimated complication was 1.03 for the Billroth II group while it was only 0.74 in the Billroth I.”

I found that I made some mistake in explaining about the term “risk adjusted complication rate” in manuscript, therefore, it might have confused you on this issue. I do apologize for that and I have edited the manuscript.

Actually, we applied POSSUM to predict a morbidity rate using its standard equation. And the predicted morbidity rate by POSSUM is in fact the “risk adjusted morbidity rate”. After calculation of predicted morbidity number for each group, the
observed-to-predicted operative morbidity ratio (O: E ratio) was calculated separately for Billroth I and Billroth II to compare the surgical outcome between them. In general, an O: E ratio less than one implies a performance that was better than expected, and a ratio greater than one indicates a performance that was worse than expected.

For example, a predicted morbidity number was 30 for a group of 100 patients but the real observed morbidity number is 40. Then we take the ratio of observed-to-predicted operative morbidity number (O: E ratio = 40/30 = 1.33), which means the surgical outcome was worse in this group. Similarly, we take the ratio for other group. Then we compare the ratio between two groups. If the ratio of one group is higher than other one then it is considered that the surgical outcome of this group was poorer.

Therefore the comparison of complication rate can only be performed for different group of patients but not for a single patient. For example, if POSSUM predicts a patient who may have risk of 35% to have postoperative complication. But for a single patient, there are only two possibilities, either he has or he has not complication, which means either 0 or 1. But for a group of patients you can calculate the ratio by predicted number of complicated patients with observed number of complicated patients.

The POSSUM system was devised by an English Surgeon in 1991 by analyzing a large scale of patients. And after then this system was extensively used by surgeons of different countries. And now it is proved that this scoring system produced assessments for morbidity and mortality rates which did not significantly differ from observed rates. And there are also various articles which were published for gastric cancer (reference 18-19, in this manuscript). Therefore this manuscript was not intended to investigate whether the risk adjusted complication rates correlate with postoperative complications. We have already published paper on this issue before and we found that there is a good correlation of predicted complication rate with observed complication rate of gastric cancer surgery.
According to your suggestion, I have amended the explanation for POSSUM calculation in the manuscript and also provided appropriate references for it.

Comments

2. The number of tables should be arranged in order.

Reply:
Thank you for the suggestion we have rearranged the table.

Comments

3. NPO appears only once so the abbreviation is not necessary.

Reply:
Thank you for the suggestion, we have omitted it.

Finally, thanks a lot for your contribution. We very much appreciate for your constructive suggestion which helped us a lot to edit the manuscript for comfortable reading. We would be more than happy to clarify any questions you may have.
Response to reviewer 2
Reviewer: Motoki Ninomiya

Thank you very much for your valuable comments, I have responded to your all concerns and resubmitted it for your consideration.

Comments
Most important point is whether reconstruction after lymphadenectomy has strong relationship with postoperative complications as you showed in your manuscript. You answered to this question with showing theoretical explanation. I appreciate it as argument has advanced. But, it is difficult to explain the infectious complications were simply caused by pancreatitis or anastomotic leakage. For, the rate of infectious complications is much higher than those complications related to reconstruction. Why early postoperative complication rate is significantly higher with Group Bill.2. You are required to show another reason to reinforce your opinion. It is quite difficult to prove which reconstruction is preferable after gastrectomy as you mentioned in your manuscript. Retrospective study always has limitation as the difference of backgrounds lies.

Table 1 shows the difference at the type of resection between two groups, Bill.1 and Bill.2. Palliative gastrectomy occupies 12.6% for Group Bill.2 in spite of 4.3% for Group Bill.2. The difference of stage exists between two groups. That might be one factor which causes the difference of postoperative complications.

Generally speaking, far-advanced cases tend to induce various kinds of postoperative complications more. Anyway, it is preferable for you to show some articles which insist Bill. 2 are superior to Bill.1 from the point of postoperative complications including anastomotic leakage or pancreatitis.

Reply:
Yes, I totally agree with the point that there are various aspects which may affect the postoperative complications after gastric cancer surgery rather than one single factor. Various unknown factors including immunological and postoperative inflammatory response syndromes plays crucial but still unknown role in determining the outcome of a surgery. But it is simply impossible to standardize all factors in a single study. We did our best to control many factors, and therefore we applied POSSUM system so that the patients' factor and surgical extent could be controlled. However, we also agree that even POSSUM system is not enough to control all the factors. Therefore, at the present context we can only have some result based on available data.
Though it is difficult to prove it from a single study, however, we honestly presented what we observed in our centre. **Moreover, the result of this manuscript is neither the decisive one nor the single explanation for disparity of complication rate between Billroth I and Billroth II.** Through this study, we wanted to draw attention of surgeons working in this field and **the motive behind this presentation is to stimulate more research in future so that we may get a definitive answer for this issue in future.**

You may notice that among infectious complications, **the intraabdominal infection is the main causes which elevated the complication rate of Billroth II, and as we know that intraabdominal infection may induce pulmonary infection or multiple site infection, if it is not controlled.** As we stated in our previous letter that we trust that a simpler method certainly provides a better surgical outcome and **we do believe that a less surgical insult is required to perform Billroth I than Billroth II. It may not be that the infectious complications were simply caused by pancreatitis or anastomotic leakage, but certainly higher the surgical insult or complexity of a surgery the higher will be risk of having more complication rate including the infectious complication rate.**

You mentioned that the postoperative complication rate might have been affected by different type of resection (radical or palliative). **Therefore, to control the effect of different type of resection on postoperative complication, we calculated the complication rate separately for radical and palliative gastrectomy.** The complication rate of Billroth II was significantly higher than Billroth I in group of patients who underwent standard radical gastrectomy but not in the patients who underwent palliative gastrectomy. **We amended a separate table to clarify this issue. Therefore, we can conclude that type of resection did not affect the result of this study.**

I do agree in principal that patients with advanced tumor are prone to different types of complications, however it may not be the only factor, because this is also not the case for all patients. We did calculate the difference in malignancy status between Billroth I and Billroth II group and we found that **there was no significant difference of malignancy status between two groups. (p=0.316). But the complication rate was significantly**
higher in Billroth II group than Billroth I group even after controlling the malignancy status (p<0.001). I have amended these statements in manuscript.

I am little bit confused by your comments in last paragraph, which reads:

“…..Anyway, it is preferable for you to show some articles which insist Bill. 2 are superior to Bill.1 from the point of postoperative complications including anastomotic leakage or pancreatitis.”

I assume you may have mistyped Billroth 2 instead of Billroth I. Did you mean to ask us to amend more reference article which insists Billroth I are superior to Billroth II?

If so, then honestly we can say that there is lack of articles on this particular topic (comparison of postoperative complication rate between Bill 1 and Bill 2) in literature and this is also one of reason that we very enthusiastically presented this article for your kind consideration. Please kindly review it and we would be happy to clarify your questions on our capability.

Finally, thanks a lot for your contribution. We very much appreciate for your constructive suggestion which helped us a lot to edit the manuscript for comfortable reading.
Response to reviewer 3
Reviewer: Jianhui Cai

Thank you very much for your valuable comments.

Comments
The POSSUM system should be described in detail in the manuscript, so that the readers could better understand.

Reply:
Thank you very much for your kind suggestion. I have amended the explanation on POSSUM system and also provided appropriate references for it.

Finally, thanks a lot for your contribution. We very much appreciate for your constructive suggestion which helped us a lot to edit the manuscript for comfortable reading. We have amended reasonable data to clarify the issue, and we would be more than happy if you kindly raise any concern you may have.