

Peer Review File

Article information: <http://dx.doi.org/10.21037/atm-20-8000>

Review Comments A

- (1) **Comment 1:** Why are only type II - IV hiatal hernia included, when Type 1 is more common and account for majority of HH.

Reply1: We have added include criteria of HH in our text as advised (see Page 8, Line 2-3)

Changes in the text: Type I HH patients with typical reflux symptoms (see below) will also be included.

- (2) **Comment 2:** Why the "or" in the statement "and/or GERD on HRM and 24h pH monitoring ". If patient has GERD detected on these studies does not necessarily mean patient has HH.

Reply 2: We have modified our text as advised (see Page 7, Line 22; Page 8, Line 1-2)

Changes in the text: HH (type II/III/IV) with or without gastroesophageal reflux disease (GERD) that is diagnosed by gastroscopy, high-resolution esophageal manometry, and 24-hour esophageal pH monitoring.

- (3) **Comment 3:** HH and GERD are common in obese patients, esp those with morbid obesity which alone is a risk factor. Will bariatric / morbidly obese patients be included or excluded in the study.

Reply 3: We have added include criteria of HH in our text as advised (see Page 8, Line 9-10)

Changes in the text: Bariatric and morbidly obese patients will also be included.

- (4) **Comment 4:** TLSA approached described in Fig 3. From the description, I am uncertain what type of fundoplication was performed. 180 or 270 degree wrap? Is

the left side of the fundus sutured to the anterior esophagus or the left crus, or both? And you mentioned that the right side of the fundus is only sutured to the right crus, is it not sutured to the right side of the esophagus because of attempt to avoid the vagus nerve?

Reply 4: The degree of fundoplication should be based on the results of esophageal manometry and pH monitoring tests. And the left side of the gastric fundus should suture to the anterior esophagus and the left crus of diaphragm. Meanwhile, the right side of the gastric fundus should also suture to the right crus of diaphragm and the right side of the esophagus. We have modified our text as advised with red color (see Figure 3)

Changes in the text: (f) The fundus of the stomach is rotated through the posterior of the abdominal part of the esophagus to the right front of the esophagus, intermittently sutured with non-absorbable thread, and **fixed with the right crus of the diaphragm and the right side of the esophagus. The left side of the gastric fundus is also sutured to the anterior esophagus and the left crus of the diaphragm; this avoids vagus nerve injury.** Finally, the surgeon completes the fundoplication and inserts abdominal drainage tubes. **However, the degree of fundoplication should be based on the results of esophageal manometry and pH monitoring tests.**

(5) **Comment 5:** In both groups of patients, is patch placement routine? Or only in large hernias > 5cm. It is not mentioned in Fig 4 description of TBSA.

Reply 5: The patch is not placement routine. We will insert the patch if the hiatal hernias larger than 5 cm or diaphragm on both sides are weak. So, we have modified our text as advised with red color (see Figure 4)

Changes in the text: (d) Both sides of the crus of the diaphragm are intermittently sutured with non-absorbable thread to reconstruct the esophageal hiatus with a diameter of about 1.5 cm. **Then, the surgeon inserts the patch if the hiatal hernia is**

larger than 5 cm or the diaphragm on both sides is weak, and fixes it on the crus of the diaphragm.

(6) **Comment 6:** What type of fundoplication is performed in TBSA? Is the right side of the fundus sutured to the esophagus or only to the right crus?

Reply 6: The degree of fundoplication in TBSA should be performed based on the results of esophageal manometry and pH monitoring tests. And the right side of the fundus should suture to the right crus of the diaphragm and the esophagus. We have modified our text as advised with red color (See figure 4)

Changes in the text: Finally, the fundus of the stomach is rotated through the posterior of the abdominal part of the esophagus to the right front of the esophagus, and it is intermittently sutured and fixed with the right crus of the diaphragm and the esophagus. The left side of the gastric fundus is also sutured to the anterior esophagus and the left crus of the diaphragm. Thus, the fundoplication is completed and the abdominal drainage tubes are inserted. However, the degree of fundoplication should be based on the results of esophageal manometry and pH monitoring tests.

(7) **Comment 7:** Is the GIQLI score recorded before operation also?

Reply 7: Yes, we also record GIQLI score before surgery. However, postoperative 1-year GIQLI score is our research primary endpoint. In addition, we also record 3,6,18,24,36 months GIQLI score after surgery in order to better analyze our research endpoint. We have modified our text as advised (see Page 11, Line 2-3 and Page 15 Line 14-15)

Changes in the text:

1. The primary outcome of this study is the postoperative one-year gastrointestinal quality of life index (GIQLI). (see Page 11, Line 2-3)
2. The time points of follow-up are 3, 6, 12, 18, 24, and 36 months. (see Page 15, Line 14-15)

(8) **Comment 8:** The included patients will have HH of various sizes big and small, and some with patch and some without patch repair. Will the results be comparable between the TLSA and TBSA groups. Is there plan for subgroup analysis later or stratification by size/ presence of patch etc. If yes, then would the numbers within each group may potentially be too small for comparison

Reply 8: I agree with the reviewer suggestion and I also think this is a constructive comment for me. Due to the small sample and the study is mainly about the surgical approach, whether application of patch is not the focus of this study. However, subgroup analysis of patch repair or not will be performed in our subsequent clinical trials later to further verify surgical efficacy.

Changes in the text: No changes in the text.

Review Comments B

(1) **Comment 1:** Please be sure to be sure when to evaluate your primary and secondary endpoints. Shouldn't the endpoint be set, for example One-year GIQLI or Three-year gallstone incidence?

Reply 1: We have modified in our text as advised (see Page 11, Line 2-3; Page 11, Line 9-11; Page 11, Line 16-17)

Changes in the text:

1. The primary outcome of this study is the postoperative one-year gastrointestinal quality of life index (GIQLI) (see Page 11, Line 2-3)
2. The efficacy evaluation index comprises the postoperative 3-year incidence of gallstones; the incidence of gastric emptying disorders within 1 year after surgery; the gastrointestinal function recovery time; blood glucose and serum lipid levels within 3 years after surgery (see Page 11, Line 9-11)
3. the results of objective evaluations within 3 years (see Page 11, Line 16-17)

(2) **Comment 2:** In very severe cases of hiatal hernia (type 3 or 4), esophageal manometry and pH monitoring tests may not be possible due to the difficulty in catheter placement. In that case, I think it should be included in the exclusion

criteria.

Reply 2: We have modified in our text as advised (see Page 9, Line 5-7)

Changes in the text: Patients with severe hiatal hernia (Type III and Type IV) who cannot undergo esophageal manometry and pH monitoring tests because of difficulty in catheter placement.

(3) Comment 3: Previous cholecystectomy surgery should also be included in the exclusion criteria.

Reply 3: We have modified in our text as advised (see Page 9, Line 20)

Changes in the text: Patients with a past history of cholecystectomy.

(4) Comment 4: From what is described in the figure legend, the surgery that the authors will perform is partial fundoplication, especially posterior partial fundoplication (Toupet). The type and degree of fundoplication must be clearly specified in the protocol. And please explain why partial fundoplications, not Nissen fundoplications.

Reply 4: In both TLSA and TBSA, the degree of fundoplication should be performed based on the results of esophageal manometry and pH monitoring tests. Partial fundoplication and total fundoplication are both allow performed in our research. And we have modified in our text (see figure 3 and figure 4)

Changes in the text: The degree of fundoplication should be based on the results of esophageal manometry and pH monitoring tests.

(5) Comment 5: Even in the TBSA group, if the vagus nerve is well preserved, there is a possibility that there is no difference from the TLSA group in almost all results. So, in the TLSA group's surgical record, it is necessary to record how much the hepatic branch was preserved or cut. So, I suggest the authors prepare to conduct a subgroup analysis which may be required in the future.

Reply 5: Thank you for reviewer detailed suggestions, and I agree with that if the vagus nerve is well preserved, patients can also have a good life quality after

received TBSA. However, due to the vagus nerve trunk and its branches are located in the lesser omentum. During the TBSA operation process we need to incised the lesser omentum, although we can easily protect the vagus nerve trunk well, the small branch of vagus nerve within lesser omentum are usually not visible. Therefore, it is difficult to achieve complete non-injury after incised the lesser omentum. However, TLSA can avoid to incised lesser omentum, we just need a small incision about 2–3 cm in diameter is made above the bifurcation between the anterior vagal trunk and the hepatic branch of the vagus nerve so that it can better to protect vagus nerve and its branches. But we lack a directly index to quantify the extent of vagus nerve injury, so this is also our research limitation. Therefore, we will further study by conducting subsequent clinical trial in the future.

Changes in the text: No changes in the text.