

June 14 , 2013

Dear Editor,

Please find enclosed the edited manuscript in Word format (file name: 2712-review.doc).

Title: *Learning curve of transumbilical suture-suspension single-incision laparoscopic cholecystectomy*

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Name of Journal: *World Journal of Gastroenterology*

ESPS Manuscript NO: 3682

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

1 Format has been updated

Yes, we have updated the format according to the guidelines for Brief Articles.

2 Revision has been made according to the suggestions of the four reviewers:

(1) Respond to reviewer (No.02411099): Thanks for raising these important questions. In this study, one-way ANOVA followed by bonferroni's test were performed among multiple statistical comparisons of the operation time. The advantage of bonferroni's test method is that it is simple and conservative to control type I error in multiple comparisons.

There was something wrong with our expression of the selection criteria. We have made some adjustments in the revised manuscript. The following criteria: 1) clinical diagnosis of symptomatic gallstones, gallbladder polyps, with acute cholecystitis (but less than 72 hours) and 2) ability to tolerate the procedure without a functional failure in important organs including the lungs, heart, liver and kidneys.

We are very sorry for our negligence of missing detailed statement of suture-suspension. In fact, we have described the suspension process in previous

published manuscripts (we have cited this reference in the revised manuscript). In operation, two sutures were placed through the tissues on the bottom of the gallbladder and the muscular layer of the ampulla to expose the cystic duct and the gallbladder triangle. The first suture using a straight needle was inserted through the right 7th intercostal space in the anterior axillary line, and the seromuscular layer of the bottom was punctured and retracted toward the anterior abdominal wall. Hartmann's pouch (ampulla) was punctured and retracted using the second suture to expose Calot's triangle. In addition, we were perplexed as to how to handle intra-operative bile leakage when the gallbladder was suspended by the sutures. Firstly, we placed the suspension sutures into the seromuscular layer to avoid perforation of the cyst wall, but this was inevitable sometimes. Subsequently, we found that this technique was useful as long as evacuating and repeated rinsing were conducted, and no acute complications occurred in these cases, including some cases of acute cholecystitis.

Generally speaking, these resected gallbladders can be successfully pulled out of the umbilical incision. However, in case of some patients with stones larger than 2cm, we have to enlarge the fascial incision with curved forceps, and sometimes clamp the stone into small fragments while pulling out the resected gallbladder. In addition, endobag were used in some complicated cases with acute cholecystitis.

Before this study, we had performed nearly 1500 cases of three-port laparoscopic cholecystectomy (TPLC) in our department. There were indeed several cases of intra-operative artery bleeding (about 0.6%) or post-operative bile leakage (about 0.3%) occurring in the TPLC group, but mostly in these patients with acute cholecystitis or peritoneal adhesions. We found that it would be more dangerous to perform SILC than TPLC in these complicated patients because of limited operating vision and interference between the equipments. We therefore carried out SILC in selected patients to minimize the risks of complications. As a result, no major post-operative complications occurred except for one case of delayed bile leakage in group 8, which was treated by ultrasound-guided puncture and drainage.

In addition, we have performed more than 600 cases of SILC till now, and published some papers on this and in World Journal of Gastroenterology - Pan MX, Jiang ZS, Cheng Y, Xu XP, Zhang Z, Qin JS, He GL, Xu TC, Zhou CJ, Liu HY, Gao Y. Single-incision vs three-port laparoscopic cholecystectomy: prospective randomized study. World J Gastroenterol. 2013 Jan 21;19(3):394-8. In the world journal of gastroenterology-Yuan Cheng, Ze-Sheng Jiang, Xiao-Ping Xu, Zhi Zhang, Ting-cheng Xu, Chen-Jie Zhou, Jia-Sheng Qin, Guo-lin He, Yi Gao, Ming-Xin Pan Laparoendoscopic single-site cholecystectomy versus three-port laparoscopic cholecystectomy: A large-scale retrospective study. World J Gastroenterol. 2013 (accepted, manuscript number :2712) and in the Chinese literature (Jiang ZS, Cheng Y, Xu XP, Zhang Z, He GL, Xu TC, Zhou CJ, Qin JS, Liu HY, Gao Y, Pan MX. Comparison of operative techniques in single-incision laparoscopic cholecystectomy: suture-suspension versus three-device method. Zhong hua Yi Xue Za Zhi. 2013 Feb 5;93(6):455-8. We have made complete description of the eventual benefits of SILC, such as cosmesis, post-operative pain and cost analysis. As these cases in the present study were all from these studies, we did not repeat these results but just focus on learning curve.

(2) Respond to reviewer (No. 00057100): Thanks for your good praise for our study. We thought intra-operative management of the gallbladder and artery is critical for the safety in SILC. We found the harmonic scalpel is effective for occluding 3 mm blood vessels and dissecting tissues. In our experience, cystic arteries in the trial were cut using the harmonic scalpel, indicating the safety of this scalpel. Intra-operative management of the gallbladder is critical for the safety in SPLC. In addition, we were perplexed as to how to handle intra-operative bile leakage when the gallbladder was suspended by the sutures. Firstly, we placed the suspension sutures into the seromuscular layer to avoid perforation of the cyst wall, but this was inevitable sometimes. Subsequently, we found that this technique was useful as long as evacuating and repeated rinsing were conducted, and no acute complications occurred in these cases during the procedure.

(3) Respond to reviewer (No. 00057868): Thanks for pointing out the important question. In fact, we have performed more than 600 cases of SILC till now. These cases in present

and previous studies were all from these cases. We have added these references in the revised manuscript.

(4) Respond to reviewer (No. 00057695): Thanks for your comments on our manuscript. As you said in the comment, this is a retrospective study and selection bias was hard to obviate. Initially, we found that it would be more dangerous to perform SILC than TPLC because of limited operating vision and interference between the equipments when operating through a single 2-cm incision. We therefore carried out SILC in selected patients to minimize the risks of complications as far as possible. Therefore, only those with symptomatic gallstones, gallbladder polyps, and with or without acute cholecystitis (less than 72 hours) would be considered to undergo SILC. As the diagnosis of gallbladder cystadenoma was very difficult especially when the lesion was very small, we actually made a mistake in the selection criteria and the diagnosis of gallbladder cystadenoma was made by post-operative pathology. In addition, we agree with the reviewer that the length of hospital stay is not affected by the learning curve and we omitted it from the parameters. At last, these typographical errors, spelling mistakes and the abbreviation were all revised. Thanks for your attention.

3 References and typesetting were corrected

Yes, we have checked all the references cited, giving both PMID and DOI.

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

Sincerely yours



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