Peer Review File

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Reviewer A: The authors described about the association between suture angle and operative outcomes in retroperitoneal laparoscopic partial nephrectomy (RLPN). Renorrhaphy in laparoscopic partial nephrectomy is the most important step to prevent postsurgical complications; therefore, this is an interesting topic. I think this study is worthwhile for publication, however, contains some problems. The authors need to address them, and these are detailed below.

Comment 1: How many surgeons performed RLPNs in the present prospective study? Additionally, how many cases did these surgeons experience RLPNs? The authors should describe these informations in "Patients and methods".
Reply 1: Three surgeons (Dr. Shao, Dr. Hua and Dr. Wang) performed the RLPNs in present study and each had experience of more than 300 cases of partial nephrectomy.
Changes in the text: We've added above information in the text (see Page 5, line 12).

Comment 2: In the present study, RLPNs were performed using 4 ports. The authors describe "Ports B (12 mm for right side or 5 mm for left side") and … (Page 6 Line 15). Why different trocar was chosen by laterality? I want the authors to briefly write the reason in the manuscript.
Reply 2: The alterable size of Port B is due to the fact that the surgeon is right-handed, and the large-size Trocar on the right side is more convenient to put in the large instruments like Hem-o-lok clamp. For left tumors, Port D is 12mm and is large enough for most of the surgical instruments if right-handed. For right tumors, Port D is on the left side and thus we'd like to introduce larger Port B.
Changes in the text: We've added above information in the text (see Page 6, line 13).

Comment 3: Whether the CSA could be achieved or not was evaluated using tiny angle-adjustable device during actual RLPNs. It is hard to imagine how to intraoperatively measure the suture angle. If possible, I want the authors to insert a photo during actual surgery as Figure or Supplemental figure.
Reply 3: This tiny angle-adjustable device is a modified bulldog with a mark of 30°near the junction. During the operation we can pull the bulldog open and use this device to measure whether the suture angle could reach CSA (< 30°). If we reach the mark, it represents the suture angle is more than 30°. As showed in following figures.

Comment 4: The authors described about complications in Page 10 Line 16-19. I think that the rate of postoperative hemorrhage in the present study was relatively high. I want to know the reason of hemorrhage (AV fistula, laceration of sutured parenchyma…). Was the complication rate in cases who achieved comfortable suture angle different from that in cases who did not achieve comfortable suture angle. The authors should also describe about them.
Reply 4: In some early cases of T1b tumors, postoperative bleeding cases were most due to the lack of tight suture of the defect. One case was diagnosed with AV fistula requiring intervention. Others required transfusion and strict bed rest with no further treatment. Additionally, with the maturity of suture technology, bleeding has become less and less nowadays.
There was no difference in the complication rate in CSA and non-CSA cases in present study (described in Discussion part, see Page 14 Line 6 and Page 15 Line 4).

Comment 5: Comfortable suture angle was defined using laparoscopic surgery simulator. And the authors described “angles of 15°or 30°required less suture time and were more comfortable to achieve by the surgeon” (Page 11 Line 1-2). I easily understood that suture time of 15°and 30°was shorter than that of 45°and 60°using Supplementary Table 1. However, I did not understand about “comfort value”. The authors should describe how to analyze “comfort value” in “Patients and methods”.
Reply 5: The comfort value is based on 0-10 points to evaluate whether it is comfortable and convenient to complete the suture procedures at this suture angle. As Supplementary Table 1 showed, 15°and 30° required less suture time. And in these two suture angles, the surgeons felt more comfortable to accomplish the suture.

Comment 6: The authors described “achieving the CSA was more difficult for upper polar (72.73%) and lower polar (71.43%)” (Page 15 Line 4-5). Is there a possibility which a rate of achieving the CSA becomes higher in RLPN for tumor at upper or lower pole, if the port position is changed as like RLPN for anterior tumor. The authors should discuss about this point.
Reply 6: Thanks for the suggestions of port change for polar tumors. We did try to adjust the position of the port up and down. For upper polar tumors, the ports were about 1-2cm higher than the lower polar tumors. However, little effect was observed on the achievement rate of CSA due to the limited adjustment up and down.
On the other hand, we’re conducting pre-operative imaging and software aiming to help surgeons better place the trocars and get the CSA which may be more interesting and helpful.

Changes in the text: We've modified our text as advised (see Page 16, line 6-8).

Comment 7: The authors described "the multivariate analyses showed the only tumor location and RNS were independent factors the may influence the successful performance of CSA" (Page 15 Line 18-29). I agree the association between clamping time or suture time and RNS, because higher RNS indicates more complicated tumor. However, I am not able to understand about the association between RNS and the rate of achieving the CSA. The authors should discuss about it.
Reply 7: The RNS is complicated and incorporates many aspects. In our study, the radius (reflecting size) and exophytic/endophytic properties did not affect the rate of CSA success as showed in Table 4, but factors related to tumor location (nearness to the sinus, anterior/posterior, and relationship to the polar lines) did correlate. Compared with anterior tumors, lower and upper polar tumors received less CSA rate. Additionally, upper polar tumors on the medial side were more difficult to get CSA as discussed in Page 16, Line 12. The upper medial tumors indicated more nearness to the sinus and got higher RNS. But more cases should be taken in and further analysis should be performed to confirm these.

Reviewer B: The authors demonstrated that the CSA could be used to ease the suture process on laparoscopic partial nephrectomy. The manuscript is well written and figures are beautiful. I have several minor comments.

Comment 1: Regarding the measurement of CSA, I cannot understand the necessity of Plane TP. It seems that CSA can be defined by the angle of Plane T and Line N.
Reply 1: Indeed, Plane TP is less important. But it will become more convenient to suture when Line N parallel to Plane TP.

Comment 2: Please indicate Line N in Figure 3.
Reply 2: Line N indicated the needle holder. We have modified Figure 3 and added the "Line N".
Changes in the text: Figure 3 was added "Line N".

Comment 3: I have no idea why it is difficult to achieve CSA for upper pole tumor. According to Figure 3 Plane T and Line N would be parallel for upper pole tumor.
Reply 3: As our discussed in Page 16, Line 12, upper polar tumors are considered easy to handle and convenient to get CSA. At first, we were also puzzled by this result. We then carefully reviewed our data and found that in all 6 cases in which the attempt to achieve the CSA failed, the tumor was on the medial side of the upper

pole. The mobility of upper polar tumors on the medial side is limited by the hilar structure. The defect in this part was often facing head and inside. Thus, Plane T and Line N were not easy to align to get the CSA. So, if the tumor in upper polar and on the medial side, we should pay mor attention. The entire kidney should be isolated to increase the freedom for position change, and to get CSA.

Comment 4: It seems that achieving CSA depends on the location of ports. I'd like to see the discussion on the modification of port's locations for upper or lower pole tumors.
Reply 4: Port's location is one of the most important factors affecting the CSA rate. But other factors like position change and freedom of the kidney also matter. Just as Reviewer A suggested, port position may influence the CSA rate. Honestly, the ports were about 1cm higher for upper polar tumors than that for lower polar tumors. However, little effect was seen on the achievement rate of CSA due to the limited adjustment up and down.

Reviewer C: A good job but I don't see much feasibility in clinical practice