

Peer Review File

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#### <mark>Reviewer A</mark>

#### **Comment:**

The authors give an impression that current standard 4 arms or even 3 arm approach is suboptimal. In the discussion section the authors quote " However, some technical improvements are required before the robotic surgery can be considered a surgeon-friendly and patient-friendly surgical modality". This is an absolutely misguiding statement as the standard approach is very surgeon and patient friendly as > 90% surgeon use the standard port placement.

#### **Reply:**

I apologize for the inappropriate statement in the discussion section, as "However, some technical improvements are required before the robotic surgery can be considered a surgeon-friendly and patient-friendly surgical modality". This statement was deleted in the revised manuscript. I agree with the reviewer that the current standard robotic surgery for lung cancer has become satisfactory surgeon-friendly technique. We believe our technique has some potential advantages, as described in the Introduction section: our robotic procedure needs only three skin incisions, although conventional robotic surgery requires at least four skin incisions (usually 5 or 6 ports). In addition, using four arms sometimes result in interference between the arms and patient-side surgeons, particularly in patients with thin thorax. However, our method facilitates patient-side surgeon in cooperating surgery without interfered by robotic arms.

**Change:** We deleted the statement "However, some technical improvements are required before the robotic surgery can be considered a surgeon-friendly and patient-friendly surgical modality" (Line 168). Instead, we added the following description, as "However, conventional robotic surgery requires at least four skin incisions (usually 5 or 6 incisions).". (Line 170)

Reviewer B Comment:



TCR TRANSLATIONAL CANCER RESEARCH Advances clinical medicine toward the goal of improving patients' quality of life Interesting technique that starts from a reality, namely the conflicts between the assistant and one of the robotic arms.



### **Reply:**

Thank you for the important suggestion. We added details in the surgical procedures in the video legend.

#### Change:

We added the following explanation in the video legend: We used three robotic arms in the left-side surgery (No. 2-4 arms). The scope was set at No. 2 arm. This setting brings us wide space at anterior chest wall, facilitating patient-side surgeon in cooperating the surgery. During tracheobronchial lymph node dissection, patient-side surgeon effectively moves the left upper lobe toward the caudal direction. Da Vinci stapler is always driven by No. 3 arm in the left-side surgery during cutting the incomplete fissures and pulmonary bronchovasculatures. Note that patient-side surgeon actively assists in cutting the incomplete fissure and creating surgical view during hilar node dissection by pulling the upper lobe and elevating pulmonary artery. The partially mobilized tracheobronchial lymph nodes are pulled caudally between the pulmonary artery and the bronchus, and resected together with the let upper lobe (*en bloc* left upper lobectomy).

# Reviewer C

#### Comment 1:

Like any techniques and new technologies, the users adapt to find the best setup to do the operation. I find the setup interesting but have to wonder about its practicality and its advantages over 4- and 5-port techniques. The comparative analysis is very cursory only showing basically no different in pain levels between 15 "standard" cases and the 39 "3-port" cases. The other data analysis is actually not very useful.

#### Reply 1:

I agree with the reviewer's comment. I have described these issues in the limitation paragraph in the discussion section. We believe that our 3-incision robotic surgery can be reproduced by other surgeons in other institutions because the 3-incision robotic surgery was successfully accomplished by three authors in our institution (as



# TCR TRANSLATIONAL CANCER RESEARCH ADVANCES CLINICAL MEDICINE TOWARD THE GOAL OF IMPROVING PATIENTS' QUALITY OF LIFE described in the results section). However, we believe that multicenter study with more sample size is needed before the 3-incision robotic surgery achieves as a reliable



Change 1:

minimally incision robotic surgery.

I added the following description as a limitation in the discussion section: Although the 3-incision robotic surgery was successfully accomplished by three authors in this study, multicenter study with more sample size is needed before the 3-incision robotic surgery achieves as a reliable minimally incision robotic surgery. (Line 221-224).

## Comment 2:

One advantage of small air-seal trocar incisions (including the most inferior accessory port) is the ability to use CO2 insufflation for maximal intracavitary space for hindrance-free arm movements. Moreover, one major advantage of >3 arm port setup (one camera, three for instruments, one of which is used as assistant arm) is the avoid the need for a bedside surgeon/assistant. We adopt a 5-port technique (2 to 3 8-mm port, 1 to 2 12mm ports for stapler along the 7th intercostal space and 1 15mm port at 9th intercostal space that is to be extended for retrieval of the specimen). It is total endoscopic with full use of CO2 insufflation and the only bedside assistant is the surgical scrub technician (with a surgical resident trainee; our thoracic surgery residents perform docking and de-docking maneuvers but do not spend time at the bedside as assistant surgeon). The operating surgeon actually can perform the entire operation without an assistant surgeon.

# Reply 2:

Thank you for giving us the information regarding your robotic surgery. We congratulate for the robotic solo surgery procedure. We know that it remains controversial regarding the best robotic set up, such as the necessity of CO2 insufflation and the assistant arm (fourth arm). We previously used CO2 insufflation and the assistant arm. However, we felt that the current 3-incision method was easier for us possibly because we predominantly subjected Japanese female patients with small and thinner thorax.

#### Change 2:

Bacause standard 5-port robotic surgery has been already established, we deleted the statement, "However, some technical improvements are required before the robotic surgery can be considered a surgeon-friendly and patient-friendly surgical modality". (Line 168 in the discussion section). Instead, we added the following description, as "However, conventional robotic surgery requires at least four skin incisions (usually 5





