

## 1. Peer review file

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### Reviewer A

I would like to make a suggestion about the sentences of VAL mapping. VAL mapping requires preoperative bronchoscopy and the bronchoscopist needs sufficient understanding of bronchial anatomy and relative location between the tumor and resected line. Therefore, compared to finger palpation, it is difficult to perform this procedure at any institutions, requiring additional materials, skilled staff and higher cost of equipment. I recommend that such sentences about the disadvantages of VAL mapping is added.

Reply: Thank you for this insight. In accordance with your suggestion, I have added a section regarding the disadvantages of VAL-MAP (see lines 75-77):

“Moreover, when compared to finger palpation, VAL-MAP is difficult to perform at some institutions; the technique requires additional materials, skilled staff, and more expensive equipment.”

### Reviewer B

The Author suggests that finger palpation is a safer and more accurate technique for lung nodule localization, and therefore to be preferred to techniques as VAL-MAP. In fact, nodule palpation may be a useful and cheap technique to allow nodule localization of peripheral lesions during minimally invasive lung surgery, but similarly to VAL-MAP may have significant limitations in the definition of the deep resection margins of the nodule. Moreover, not all nodules may be in the reach of finger palpation.

In fact, new localization techniques still have to be developed to enhance the definition of the deep margins of the nodule. These issues had been examined in detail in the manuscript by Yanagiya et al., and therefore I do not feel that this letter to the Editor reaches enough priority to justify publication.

Reply: Yanagiya et al. reported that unsuccessful resection occurred in 8.2% of patients who underwent VAL-MAP. Based on that finding, the authors concluded that the requirement for deeper resection was one of the limitations of VAL-MAP for curative

pulmonary wedge resection. In this context and as you suggested, new localization techniques should be developed to enhance the definition of deep margins of the nodule. However, I think these issues had not been examined deliberately and no effective countermeasures were presented in the manuscript by Yanagiya et al.

Achieving an adequate surgical margin is the highest priority in cancer surgery in terms of curability. The finger palpation method has the following advantages. When a tumor is not palpable with one or two fingers, especially when it is far from the surface, the feasible countermeasures are: 1) to widen the wound so that the operator's hand can be inserted into the chest cavity, enabling more accurate palpation through which the cut line is reset; or 2) to change the surgical method to segmentectomy or lobectomy when it is difficult to obtain an adequate margin (when the tumor is in a more central location). Thus, finger palpation is a flexible method that allows changing the cut line or the surgical method to ensure curability, even when a tumor is not palpable with one or two fingers. On the other hand, the current VAL-MAP technique does not involve palpation; the operators must perform resection based on indirect information regarding the location of the tumor, even when it is deep, and uncertainty remains regarding curability. As this disadvantage has not been overcome, I believe that the finger palpation method is the most appropriate (or the first choice) for this type of lung cancer surgery. I have added this information to the manuscript (see lines 64-75).

My goal was not to criticize the new method but to identify the major disadvantages of the current VAL-MAP technique and to facilitate improvement of surgical methods and their validation through clinical trials. This letter was intended as a warning to the scientific community against the spread of this newly emerging technique that has not yet been fully validated; therefore, I believe that the arguments I have presented may contribute to improvement in clinical practice. I hope that this letter can provide an opportunity for the useful exchange of constructive viewpoints, especially when published in conjunction with a response from the authors.

## **Reviewer C**

**Comment 1:** Judgmental term such as failure or, in this case, unsuccess and permissive should be avoided. Whether an outcome is successful or unsuccessful depends on a control group which did not exist. I suggest revising the title.

**Reply:** Thank you for your comment. I have changed the title to "Virtual-assisted lung mapping: Is it actually better than finger palpation?" (see line 1).

Comment 2: The letter is too long and should be shortened substantially.

Reply: The journal guidelines for authors stipulates the word limit at 1,000 words max (excluding references, tables, and figures), thus the current form is suitable to the journal's format. However, it might have impressed the reviewer with its redundancy, therefore, we have reduced the text and had the manuscript checked by a native English speaker.

### **Reviewer D**

The author argues that finger palpation is more beneficial and provides more precise localization of tumors. While palpation is useful for superficial, solid nodules, the ability to palpate small, subsolid nodules, especially those deep to the surface, can be challenging and localization techniques can be very useful in these cases. Some of these nodules are difficult to palpate with 1 or 2 fingers through a port site but are palpable after the nodule has been resected. Would the author advocate performing a thoracotomy in these cases to palpate these nodules instead of a wedge resection using a localization technique?

Reply: Achieving an adequate surgical margin is the highest priority in cancer surgery in terms of curability. The finger palpation method has the following advantages. When a tumor is not palpable with one or two fingers, especially when it is far from the surface, the feasible countermeasures are: 1) to widen the wound so that the operator's hand can be inserted into the chest cavity, enabling more accurate palpation through which the cut line is reset; or 2) to change the surgical method to segmentectomy or lobectomy when it is difficult to obtain an adequate margin (when the tumor is in a more central location). Thus, finger palpation is a flexible method that allows changing the cut line or the surgical method to ensure curability, even when a tumor is not palpable with one or two fingers. On the other hand, the current VAL-MAP technique does not involve palpation; the operators must perform resection based on indirect information regarding the location of the tumor, even when it is deep, and uncertainty remains regarding curability. As this disadvantage has not been overcome, I believe that the finger palpation method is the most appropriate (or the first choice) for lung cancer surgery. I have added this information to the manuscript (see lines 64-75).

In the title, "lack of success" may be better than "unsuccess." What do the authors mean

by their title? Do they mean “permissive” or “permissible?”

Reply: Thank you for your comment. I have changed the title to “Virtual-assisted lung mapping: Is it actually better than finger palpation?” (see line 1).

On line 34 and 62, “at the cost of reducing the likelihood of curative resection” would be better than “at the cost of curativity.”

Reply: Thank you for your comment. I have revised the text in accordance with your suggestion. (see line 48 and 78).