

- [4] Vandoni RE, Cuttai JF, Wicky S, Suter M. CT-guided methylene-blue labelling before thoracoscopic resection of pulmonary nodules. Eur J Cardiothorac Surg 1998;14:265-70.
- [5] Wilhelms L, Boutros C, Goldfarb MA. VATS intraoperative tattooing to facilitate solitary pulmonary nodule resection. J Cardiothorac Surg 2008;3:13.
- [6] Okumura T, Kondo H, Suzuki K, Asamura H, Kobayashi T, Kaneko M et al. Fluoroscopy-assisted thoracoscopic surgery after computed tomography-guided bronchoscopy barium marking. Ann Thorac Surg 2001;71:439-42.
- [7] Moon SW, Wang YP, Jo KH, Kwack MS, Kim SW, Kwon OK et al. Fluoroscopy-aided thoracoscopic resection of pulmonary nodule localized with contrast media. Ann Thorac Surg 1999;68:1815-20.
- [8] Ciriaco P, Negri G, Puglisi A, Nicoletti R, Del Maschio A, Zannini P. Video-assisted thoracoscopic surgery for pulmonary nodules: rationale for preoperative computed tomography-guided hookwire localization. Eur J Cardiothorac Surg 2004;25:429-33.
- [9] Sortini D, Feo C, Maravegias K, Carcoforo P, Pozza E, Liboni A et al. Intrathoracoscopic localization techniques. Review literature. Surg Endosc 2006;20:1341-7.
- [10] Sakiyama S, Kondo K, Matsuoka H, Yoshida M, Miyoshi T, Yoshida S et al. Fatal air embolism during computed tomography-guided pulmonary marking with a hook-type marker. J Thorac Cardiovasc Surg 2003;126:1207-9.

eComment. Criticism on a new marking technique for lung nodules identification

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We have read with interest the paper by Kawada and colleagues focusing on the preoperative marking of small lung nodules resectable by thoracoscopic wedge resection [1]. As the authors underline, various marking procedures for localization have been already described. However, each one of these techniques is affected by different disadvantages [2]. When a preoperative marker is needed, we usually use the percutaneous CT-guided hook-wire placement method. We are conscious that this procedure is affected by possible complications such as pneumothorax, haemothorax, air embolism, and the disadvantages of an additional radiation exposure. In our experience with hook-wire placement, we only observed pneumothorax, usually low entity. However, chest tube placement is always required to avoid tension pneumothorax during mechanical ventilation at the subsequent surgical operation. Therefore, we think that the first advantage of the intrathoracic stamping method proposed by Kawada and colleagues is avoidance of the risks associated with visceral pleural puncture. The second possible advantage we identify in this method is that the use of an opaque marker lying on the skin, instead of a percutaneous hook-wire, reduces the possibility of accidental marker removal before surgery, and allows placement one or two days before operation. Lastly, although we do not have experience with the stamping method, we think that, in the event of adhesions, thoracoscopic pleural debridement could be performed

more easily without a hook-wire inside the chest cavity. We identified as a possible disadvantage, the need to place the patient in the same position during CT scan and surgery, with the risk of dye spreading inside the pleural cavity, hence losing marking precision. In conclusion, we congratulate the authors who have described this new method. More data should be useful to definitively confirm its utility and safety.

Conflict of interest: none declared

References

- [1] Kawada M, Okubo T, Poudel S, Suzuki Y, Kawarada Y, Kitashiro S et al. A new marking technique for peripheral lung nodules avoiding pleural puncture: the intra-thoracic stamping method. Interact CardioVasc Thorac Surg 2013;16:381-3.
- [2] Sortini D, Feo C, Maravegias K, Caecoforo P, Pozza E, Liboni A et al. Intrathoracoscopic localization techniques. Review of literature. Surg Endosc 2006;20:1341-7

eReply. Re: Criticism on a new marking technique for lung nodules identification

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We thank Baisi et al. for their favourable eComment on our article [1, 2]. We think that the first advantage of the intrathoracic stamping method is the avoidance of a pleural puncture or placement of the chest tube before operation. It is possible that an opaque marker lying on the skin is placed several days before operation, as they mentioned. In the case of dye spreading inside the pleural cavity, hence losing marking precision, we make the marking on the stamp of the visceral pleura using a needle with an attached thread. The greatest disadvantage is the position gap between the tumour and the marking because of surgical positions, needle insertion angles, and respiratory movements. In our experience, the stamped marking is within 1 cm of the lesion in all cases and so further study is necessary.

Conflict of interest: none declared

References

- [1] Kawada M, Okubo T, Poudel S, Suzuki Y, Kawarada Y, Kitashiro S et al. A new marking technique for peripheral lung nodules avoiding pleural puncture: the intra-thoracic stamping method. Interact CardioVasc Thorac Surg 2013;16:381-3.
- [2] Baisi A, Raveglia F, Cioffi U. eComment. Criticism on a new marking technique for lung nodules identification. Interact CardioVasc Thorac Surg 2013;16:383.