

Virtual Bronchoscopic Navigation -Guided Dye Marking for Localization of Pulmonary Nodules

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Abstract

Background: Virtual Bronchoscopic Navigation(VBN)-guided dye marking is a useful localization method for small pulmonary nodules. This study evaluated the efficacy and safety of intraoperative VBN-guided dye marking.

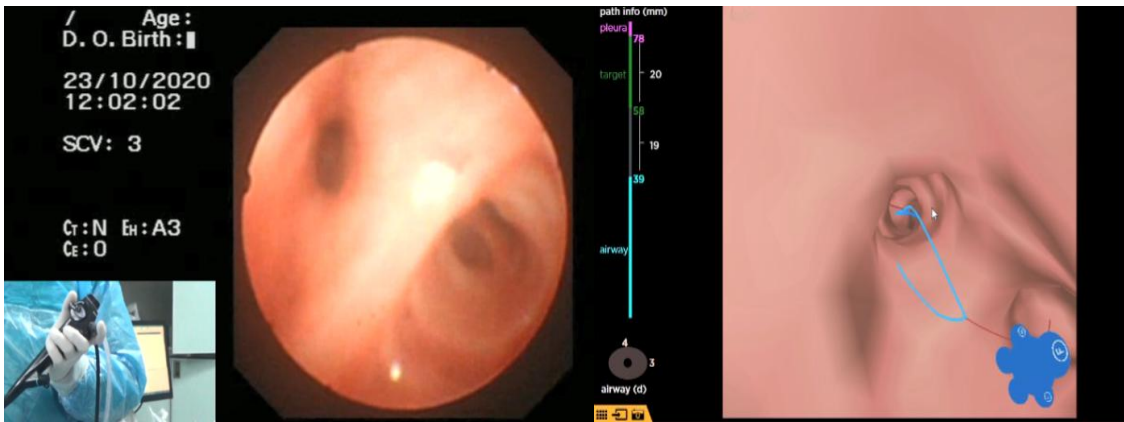
Methods: Patients who underwent full VBN-guided dye marking for small pulmonary nodules were investigated retrospectively. Efficacy was evaluated on the basis of the success rates of dye marking (visible dye mark) and nodule Localization (dye marking within 2cm of the nodule), and safety was evaluated on the basis of the rate of VBN related complications.

Results: Since 2020, VBN-guided dye marking was performed on 91 nodules in 86 patients, including 52 female and 34 male. Mean age 53.79 ± 11.78 years (median 55), mean diameter of lesions 8.9 ± 3.44 mm (median 8.5 mm). The location of pulmonary nodules was 17% in LB1, 14% in RB1 and 10% in RB2. Dyeing methods included 7 cases of Methylene blue and 83 cases of Indocyanine Green (ICG). The success rate of dye marking and it within 2cm of the nodule 96.7% (88/91). The reason of 3 cases failure: 1 case had too much staining dose (0.4ml), resulting in too large staining range, location of injection site >5cm away from pleura in 2 patients. There were no complications.

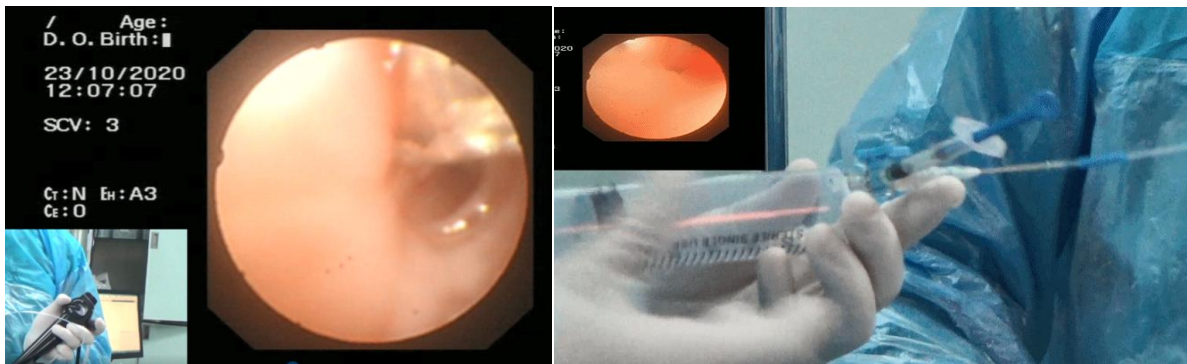
Conclusions: VBN-guided dye marking was effective and safe for the localization of small pulmonary nodules. Compare Methylene blue and ICG, ICG is more easy to distinguish nodules and dye marking.

VBN guided dye marking

① Lead bronchoscope to the injection site according to the planned pathway.



② Inject 0.2-0.3ml of dye into each injection site.



③ Detect location of lung lesions according to the staining points during procedure.

