

# Preoperative CT hook-wire localisation

Thoracoscopic resection for ground-glass opacity pulmonary lesions: results from a prospective analysis

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More and more single pulmonary nodules (SPNs) especially those featured with ground glass opacity (GGO) are detected nowadays with the wide application of high resolution CT. Persistent GGO nodules always indicate the malignant or premalignant diseases like atypical adenoid hyperplasia (AAH), adenocarcinoma in situ or minimal invasive adenocarcinoma (MIA) which need surgical resection. However, pure or subsolid GGO lesions are hard to be palpated or recognized during thoracoscopic resection. On the other hand, preoperative CT-guided hook-wire localization has been widely used in video-assisted thoracic surgical resection for SPNs these years. So we designed the study to prospectively evaluate the application of preoperative CT-guided hook-wire localization for thoracoscopic resection of pure GGO nodules and mixed GGO lesions with a solid component less than 50%.

From April 2008 to June 2011, 87 patients including 25 males and 62 females with a mean age of  $55.23 \pm 10.00$  year old and 93 GGO lesions including

53 pure GGOs and 40 subsolid GGOs were enrolled. The mean size of these nodules was  $11.03 \pm 4.76 * 9.15 \pm 3.68$ mm. And the mean depth of the lesions (vertical distance from the nodule to pleural surface) was  $11.59 \pm 8.00$ mm. We performed 93 hook-wire localizations for all the nodules. The mean depth of needle insertion was  $26.80 \pm 1.18$ mm. And seventy-six needle localizations were near the lesion while seventeen procedures penetrated the lesion. The mean time of the procedure was  $15.36 \pm 5.10$  minutes. All hook-wire localizations were successful. There were sixteen asymptomatic hemorrhages and five pneumothoraxes which did not need clinical interventions. The complication rate was 22.58%. We successfully did ninety-three wedge resections and thirty-seven lobectomies. The mean duration of the wedge resection was  $15.14 \pm 2.65$  minutes. One operation was converted to thoracotomy because of the pleural adhesion. There were two complications including one alveolar pleural fistula case and one post-operative acataleptic thoracic hemorrhage case after lobectomies, which were both successfully managed by expectant treatment. And the patient with thoracic hemorrhage discharged from hospital 22 days after operation. The mean postoperative in-hospital time was 6.26 days. Final pathological results showed 29 invasive adenocarcinomas;



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26 adenocarcinomas in situ; 16 minimal invasive adenocarcinomas, 10 atypical adenoid hyperplasia and six alveolar epithelium hyperplasia and six inflammations.

Results in this study showed the usefulness and superiority of the hook-wire localization for pure and mixed GGO lesions in terms of its 100% successful localization and resection rate and low incidence of related complications. We think the need for preoperative hook-wire localization will remain as long as the application of video-assisted thoracic surgery for pulmonary lesions with dominant ground glass opacity features.

## RVOT stenting

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need for trans-annular patch (80%) this is not significantly different from our standard practice.

We feel that selective use of RVOT stenting can be a useful adjunct to the management of complex variants of Fallot's Tetralogy. The technique reduces the need for high risk neonatal surgery and results in the growth of diminutive pulmonary arteries.

a) RVOT stent at 10 days old: Weight 2.5 kg



b) 3 months later: Weight 5.5kg

