

# Tumor Track Seeding Following Lung Fiducial Marker Placement: A New Complication and suggestion of a peripheral approach.

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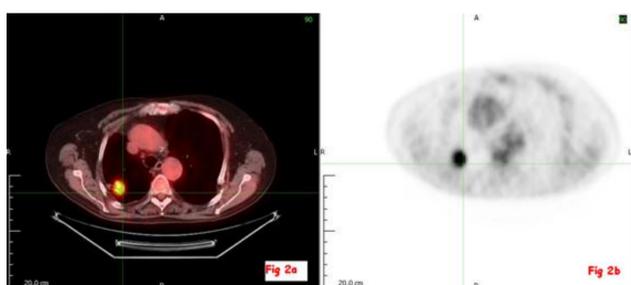
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## Introduction

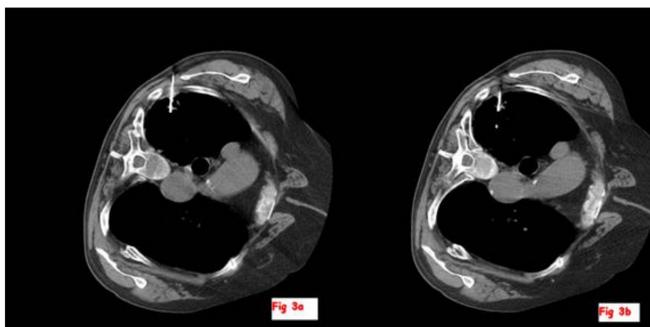
Lung cancer is the leading cause of cancer-related deaths in the United States. Amongst all treatment options for non-small cell lung cancer, stereotactic radiosurgery such as Cyberknife® is emerging as treatment option for patients who are medically unfit to undergo lung tumor resection or for those whose tumor is unresectable. For precise tumor ablation, the Cyberknife® may require fiducial marker placement in or near the target tumor. Placing these reference points may lead to several complications, such as pneumothorax and hemorrhage. In this case study, we report a complication not previously described: the appearance of new metastatic focus along the track of the fiducial marker.

## Case

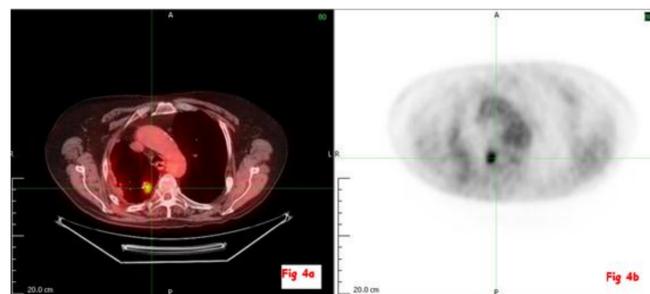
A 65-year-old male with 100-pack year smoking history initially presented with increasing shortness of breath and was diagnosed with non-small cell lung carcinoma.



It was decided that stereotactic body radiotherapy with Cyberknife would be preferable as the next step in lieu of irradiation with conventional external beam technique. Following this, a CT guided re-biopsy of right upper lobe lung nodule and gold fiducial marker placement was requested and performed.



Therapy proceeded without incident. However, follow-up PET/CT demonstrated a new, smaller lesion adjacent to the medially located fiducial marker. This mass showed increased metabolic activity and interval growth.



Presumptive diagnosis of tumor progression at the site of fiducial marker was made. No biopsy was requested and the already placed fiducials were used for further treatment plans.

## Conclusions

Cyberknife® stereotactic radiosurgery is emerging as a new option for patients with unresectable disease and is an effective treatment for non-small cell lung cancer. Although tumor seeding may be more common than once thought, implantation metastasis is rare and should not be a contraindication to fiducial marker placement. However, in light of this previously unrecorded complication, current techniques for the insertion of fiducial markers should consider a peripheral approach to avoid tracking of malignant cells and the possibility of the formation of new disease foci. Also, since tumor seeding is a potentially fatal complication, special care should be taken to use as small a gauge needle as possible to minimize this risk.

## References

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