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氏名	太田 賢吾
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学位論文の題名	<p>Transarterial Fiducial Marker Placement for Image-guided Proton Therapy for Malignant Liver Tumors (肝臓に対して画像ガイド下陽子線治療のための経動脈的マーカー留置術の報告)</p> <p>Cardiovascular and interventional radiology 2015 Oct;38(5):1288-93</p>
論文審査担当者	主査： 竹山 廣光 副査： 城 卓志, 芝本 雄太

Abstract

The aim of this study is to analyze the technical and clinical success rates and safety of transarterial fiducial marker placement for image-guided proton therapy for malignant liver tumors. Fifty-five patients underwent this procedure as an interventional treatment. Five patients had 2 tumors, and 4 tumors required 2 markers each, so the total number of procedures was 64. The 60 tumors consisted of 46 hepatocellular carcinomas and 14 liver metastases. Five-mm-long straight microcoils of 0.018 inches in diameter were used as fiducial markers and placed in appropriate positions for each tumor. We assessed the technical and clinical success rates of transarterial fiducial marker placement, as well as the complications associated with it. Technical success was defined as the successful delivery and placement of the fiducial coil, and clinical success was defined as the completion of proton therapy. All 64 fiducial coils were successfully installed, so the technical success rate was 100 % (64/64). Fifty-four patients underwent proton therapy without coil migration. In one patient, proton therapy was not performed because of obstructive jaundice due to bile duct invasion by hepatocellular carcinoma. Thus, the clinical success rate was 98 % (54/55). Slight bleeding was observed in one case, but it was stopped immediately and then observed. None of the patients developed hepatic infarctions due to fiducial marker migration. Transarterial fiducial marker placement appears to be a useful and safe procedure for proton therapy for malignant liver tumors.