

中山醫學大學附設醫院 放射腫瘤科

Radiotherapy Guideline for Hepatic Cell Carcinoma

修訂日期
(2023.10 第八版)
(2024.09 第九版)
(2025.12 第十版)

本版與上一版的差異：

(2025.12 第十版)	(2024.09 第九版)
RT indication 補充 medically inoperable、不適合其他 locoregional therapy，並強化 MDT 決策語言	RT indication 僅敘述 RT 可用於 unresectable disease
Simulation & Planning 補充 IGRT 與 motion management（when indicated）為標準治療考量	Simulation & Planning CT-based planning with conformal blocking
Target Volume 納入 SBRT，並說明 margin 應考量 setup error 與 organ motion	Target Volume 僅提及 3D-RT / IMRT 之 GTV/CTV/PTV
Dose & Fractionation 明確 SBRT 為優先選項（若 OAR constraints 可達成），其他分次為替代方案	Dose & Fractionation SBRT / hypofractionation 並列建議

RT indication

Radiotherapy (RT) is an established locoregional treatment option for patients with hepatocellular carcinoma who have unresectable disease, are medically inoperable, or are not suitable candidates for other locoregional therapies, and should be considered within a multidisciplinary team framework, in accordance with NCCN Hepatocellular Carcinoma Guidelines (Version 2.2025).

Simulation and immobilization

CT-based simulation and treatment planning with appropriate immobilization, conformal blocking, and image-guided radiotherapy (IGRT)

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are considered standard of care for EBRT. Motion management strategies should be considered when clinically indicated.

Field design and treatment volume

Target volumes for 3D-RT, IMRT, and SBRT should be delineated based on GTV, CTV, and PTV concepts. Margin design should account for setup uncertainty and organ motion, consistent with image-guided radiotherapy principles.

Dose prescriptions

Depending on tumor size, location, liver function, and proximity to organs at risk, stereotactic body radiotherapy (SBRT) is recommended when normal organ constraints can be met. Hypofractionated or conventional fractionation may be used when SBRT is not appropriate, in accordance with NCCN Principles of Radiation Therapy.

Regimen	Dose	Notes
SBRT	40–60 Gy in 3–5 fractions	Preferred if dose constraints met
Hypofractionation	37.5–72 Gy in 10–15 fractions	Acceptable alternative
Conventional fractionation	50–66 Gy in 25–33 fractions	For patients unsuitable for SBRT

Constraints for organ at risk

Normal organ dose responses from the QUANTEC project.

Reference

1. NCCN Clinical Practice Guidelines in Oncology, 2025
2. External Beam Radiation Therapy for Primary Liver Cancers (ASTRO) – 2021

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3. Perez and Brady's Principles and Practice of Radiation Oncology, 7th ed, 2018
4. Eric K. Hansen, Handbook of Evidence-Based Radiation Oncology