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Radiotherapy Guideline for Bladder Cancer

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(2023.10 第八版)
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本版與上一版的差異:

(2025.12 第十版)	(2024.09 第九版)
Bladder preservation 定位 NCCN category 1 bladder-preserving chemoradiotherapy	**Bladder preservation 定位** EBRT 為治療選項之一
IMRT / IGRT IMRT + daily IGRT 為建議技術	**IMRT / IGRT** 未明確強調
Hypofractionation 55 Gy/20 fx 為具實證支持方案	**Hypofractionation** 列出但未強調
Concurrent chemotherapy 明確為 definitive RT 核心	**Concurrent chemotherapy** 概念性描述
Adjuvant RT 明確 NCCN category 2B 與適應症	**Adjuvant RT** 簡述
OAR 規範 納入 NCCN BL-H 原則	**OAR 規範** 僅 QUANTEC

1. Indications for Radiation Therapy

Radiation therapy (RT) is an established treatment modality in bladder cancer and is primarily used for bladder-preserving definitive treatment with concurrent chemoradiotherapy, as adjuvant therapy following radical cystectomy in selected high-risk patients, or for palliation of symptomatic local or metastatic disease.

Definitive bladder-preserving chemoradiotherapy is an NCCN category 1 option for patients with muscle-invasive bladder cancer (MIBC) who are suitable for bladder preservation or who are not candidates for radical cystectomy.

Adjuvant RT may be considered in selected patients with high-risk pathologic features after cystectomy, including pT3–4 disease, positive surgical margins, or pelvic lymph node involvement.

2. Candidates for Bladder-Preserving Chemoradiotherapy

Optimal candidates for bladder-preserving chemoradiotherapy include patients with solitary tumor, absence of extensive or multifocal carcinoma in situ (CIS), no moderate or severe hydronephrosis, negative or limited nodal disease, and adequate

baseline bladder function.

Patients with recurrent high-grade Ta/T1 disease after BCG who are unfit for or decline cystectomy may be considered for concurrent chemoradiotherapy.

3. Pretreatment Evaluation and TURBT

Maximal transurethral resection of bladder tumor (TURBT) should be performed when safely feasible prior to initiation of definitive RT or chemoradiotherapy to optimize local control.

4. Simulation and Treatment Technique

CT-based simulation is required. An empty bladder protocol is preferred for reproducibility; full bladder may be used for boost planning with image guidance. IMRT with daily IGRT is strongly recommended to minimize dose to organs at risk.

5. Target Volumes

The clinical target volume includes the whole bladder. Pelvic lymph nodes (hypogastric, obturator, internal/external iliac, presacral) should be included for muscle-invasive disease. Common iliac nodes are included when nodal disease is present.

6. Dose Prescription

Conventional fractionation is 1.8–2.0 Gy per fraction. Accepted definitive regimens include 64–66 Gy in conventional fractions or hypofractionation with 55 Gy in 20 fractions, which has demonstrated non-inferior survival and improved invasive local control.

Whole bladder doses of 39.6–50.4 Gy are followed by boost to 60–66 Gy. Postoperative high-risk areas may receive 54–60 Gy.

7. Concurrent Chemotherapy

Concurrent radiosensitizing chemotherapy is essential for definitive bladder preservation. Common regimens include cisplatin, 5-FU with mitomycin-C, or gemcitabine.

8. Adjuvant Radiation Therapy

Adjuvant pelvic RT may be considered after cystectomy for patients with pT3–4 disease, positive margins, or nodal involvement (NCCN category 2B). Typical pelvic doses are 45–50.4 Gy.

9. Palliative Radiation Therapy

RT provides effective palliation for hematuria, pain, or obstruction. Common regimens include 30 Gy in 10 fractions or 21 Gy in 3 fractions. Concurrent chemotherapy should be avoided with hypofractionated regimens exceeding 3 Gy per fraction.

10. Normal Tissue Dose Constraints

Normal tissue constraints should follow NCCN Principles of Radiation Management of Invasive Disease and QUANTEC recommendations.

Reference

1. NCCN Practice Guidelines in Oncology, 2025
2. Treatment of Non-Metastatic Muscle-Invasive Bladder Cancer (AUA/ASCO/ASTRO/SUO) – 2017/Amended 2024
3. Perez and Brady's : Principles and Practice of Radiation Oncology, 7th ed, 2018
4. Eric K. Hansen, Handbook of Evidence-Based Radiation Oncology
5. K.S. Clifford Chao. Practical Essentials of Intensity Modulated Radiation Therapy, 3rd ed, 2013