中山醫學大學附設醫院 放射腫瘤科

Radiotherapy Guideline for Rectal Cancer

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)
檢閱後無異動	

RT indication

- **Neoadjuvant radiotherapy/chemoradiothe**
- **rapy**
  - Clinical T3-4, N0, M0
  - Clinical any T, N1-2
  - Resectable synchronous metastases
- **Adjuvant radiotherapy/chemoradiotherapy**
  - s/p transabdominal resection
    - Pathological T3, N0, M0
  - Pathological any T, N1-2
- **Positive surgical margin**
- **Unresectable/inoperable**

Simulation and immobilization

- CT-based simulation (maximum 5 mm slice thickness and preferring 2.5-3 mm slice thickness) is required.
- Patients may be simulated with a supine/ prone position
- Immobilization devices
  - Vacuum cushion
  - Body fix
- Positioning and other techniques to minimize the volume of small bowel in the fields should be encouraged.

Field design and treatment volume

- **2D treatment planning**
    - 4-field technique (AP/PA/right/left lateral)
    - 3-field technique (PA/ right/left lateral)
  - Superior ➔ the L4/L5 interspace—usually in the mid-L5 vertebral body.

- Distal
  - Preoperative ➔5 cm below palpable tumor
  - Postoperative ➔ 5 cm below the best estimate of the preoperative tumor bed and (if an APR has been performed) below the perineum.
- Anterior and posterior portals➔ at least a 1.5-cm margin on the pelvic brim.
- Lateral treatment portals
  - Anterior ➔ at least 4 cm anterior to the rectum
  - Posterior ➔ encompass the entire sacrum
    - A radiopaque marker should be placed at the posterior aspect of the anus to make certain that blocks in the posterior-inferior aspect of the portal do not impinge on targeted portions of anorectum

- **3D-CRT/IMRT treatment planning**
  - Initial CTV
    - Tumor bed or macroscopic disease with an approximately 2-cm margin in mesentery and within the course of the large bowel
    - Presacral space, perineum (for post-APR cases).
    - Internal iliac nodes, distal common iliac nodes.
    - The external iliac nodes should be covered for lesions extending to the dentate line/anal canal.
  - In general, the PTV is created by adding a margin of 1-1.5 cm to the CTV
- Boost➔ tumor or tumor bed with 2 cm margin

Dose prescriptions

- Pelvic portals/CTV ➔ 45-50 Gy in 25-28 fractions to the pelvis.
- Boost ➔ 5.4-9 Gy
- Short-course RT➔ 25 Gy in 5 fractions to rectal gross tumor

Constraints for organ at risk

- Bladder: V45 <50%
- Small intestine: V45 <195 cc
- Femoral head: V45 < 5%

Reference

- NCCN Practice Guidelines in Oncology, 2025
- Perez and Brady's : Principles and Practice of Radiation Oncology, 7th ed, 2018
- K.S. Clifford Chao. Practical Essentials of Intensity Modulated Radiation Therapy, 2nd ed, 2005
- Eric K. Hansen, Handbook of Evidence-Based Radiation Oncology, 2018

- Jane Dobbs, Ann Barrett. Practical Radiotherapy Planning, 4th ed, 2009