Radiotherapy Guideline for Oropharyngeal Cancer

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RT indication

- Definitive RT/CCRT
  - Early stage for organ-preservation strategy; clinically inoperable status, including poor performance status(ECOG >2)/poor surgical candidate, or locally advanced inoperable stage
- Adjuvant RT/CCRT
  - Radiotherapy alone: pT1-2 and one minor risk factor, such as perineural invasion, lymphovascular invasion, one positive lymph nodes, and close surgical margin(< 5mm)
  - CCRT : ≧T3, multiple positive lymph nodes, one major risk: ECS or positive surgical margin, two minor risk factors mentioned above

Simulation and immobilization

- CT-based simulation (preferring 1.5-3 mm slice thickness with contrast) is required.
- Patients may be simulated with a supine position
- Immobilization devices
  - Thermoplastic mask with headrest

Field design and treatment volume

- **3D-CRT/IMRT treatment planning, IMRT is preferred in order to minimize dose to critical structures, especially the parotid glands**
  - Gross tumor volume (GTV, PTV-H): primary gross tumor and enlarged lymph nodes; or CTV-TB: primary and nodal tumor bed
  - Clinical target volume one (CTV, PTV-M/L): depend on the tumor location; suspected subclinical spread area and nodal stations at risk

Dose prescriptions

- GTV (PTV-H): 66 to 76 Gy in 2.0 to 2.2 Gy per fraction
- CTV-TB: 60-70 Gy in 2.0 to 2.2 Gy per fraction
- CTV (PTV-M/L): 45 to 60 Gy in 1.8 to 2.0 Gy per fraction

Constraints for organ at risk

- Spinal cord: Dmax<50 Gy

- Chiasm/optic nerves: Dmax< 50 Gy
- Brainstem: Dmax< 60 Gy
- Eyes (globe): Dmean<35 Gy, Dmax<54 Gy
- Lens: Dmax<7 Gy
- Inner ear/cochlea: Dmax< 45 Gy
- Parotid gland(s): Dmean< 30Gy
- Larynx: Dmean< 44 Gy
- TMJ: Dmax< 70 Gy

Reference

- NCCN Practice Guidelines in Oncology, 2023
- Perez and Brady's : Principles and Practice of Radiation Oncology, 7th ed, 2018
- Eric K. Hansen, Handbook of Evidence-Based Radiation Oncology