

# Radiotherapy Guideline for Oral Cavity Cancer

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## RT indication

- Definitive RT/CCRT
  - Clinically inoperable status, including poor performance status(ECOG >2)/poor surgical candidate, or locally advanced inoperable stage, such as T4
- 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 :  $\geq$  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/ VMAT/ Tomotherapy/ Radixact treatment planning**
  - 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-1, PTV-M): depend on the tumor location; suspected subclinical spread area and involved nodal stations
  - Clinical target volume two (CTV-2, PTV-L): regional uninvolved neck lymph 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-1 (PTV-M): 50 to 60 Gy in 1.8 to 2.0 Gy per fraction
- CTV-2 (PTV-L): 45 to 50 Gy in 1.8 to 2.0 Gy per fraction

### **Constraints for organ at risk**

- Spinal cord:  $D_{\max} < 50 \text{ Gy}$
- Chiasm/optic nerves:  $D_{\max} < 50 \text{ Gy}$
- Brainstem:  $D_{\max} < 60 \text{ Gy}$
- Eyes (globe):  $D_{\text{mean}} < 35 \text{ Gy}$ ,  $D_{\max} < 54 \text{ Gy}$
- Lens:  $D_{\max} < 7 \text{ Gy}$
- Inner ear/cochlea:  $D_{\max} < 45 \text{ Gy}$
- Parotid gland(s):  $D_{\text{mean}} < 30 \text{ Gy}$
- Larynx:  $D_{\text{mean}} < 44 \text{ Gy}$
- TMJ:  $D_{\max} < 70 \text{ Gy}$

### **Reference**

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