

# 1. Definition

Oral cancer is a type of cancer that develops in any part of the mouth (oral cavity) or oropharynx (the part of the throat at the back of the mouth). It involves the uncontrolled growth of abnormal cells that can invade nearby tissues and, in advanced stages, spread (metastasize) to other parts of the body.

## 2. Types of Oral Cancer

The majority are **squamous cell carcinomas** because the lining of the mouth and oropharynx is composed of squamous epithelium.

Other, less common types include:

- **Verrucous carcinoma** (slow-growing variant of squamous cell carcinoma)
- **Minor salivary gland carcinomas**
- **Lymphomas** (if lymphoid tissue in tonsils is affected)
- **Melanomas** (rare in the mouth)
- **Sarcomas** (cancers of connective tissue in the oral cavity)

## 3. Common Sites

- Lips (especially the lower lip)
- Tongue (lateral borders, ventral surface)
- Floor of the mouth
- Buccal mucosa (inner cheek lining)
- Hard palate
- Gingiva (gums)
- Oropharynx (tonsillar area, base of tongue, soft palate)

## 4. Risk Factors

1. **Tobacco use** (smoked or smokeless): Cigarettes, cigars, pipes, chewing tobacco, betel quid, gutkha
2. **Alcohol consumption**: Especially when combined with tobacco, the risk increases significantly
3. **Human Papillomavirus (HPV) infection**: HPV-16 and HPV-18 are linked to oropharyngeal cancers
4. **Prolonged sun exposure**: Linked to lip cancer
5. **Poor oral hygiene** and **chronic irritation** from sharp teeth or ill-fitting dentures
6. **Dietary factors**: Low intake of fruits and vegetables (antioxidant deficiency)
7. **Weakened immune system**
8. **Genetic predisposition**
9. **Occupational hazards**: Exposure to certain chemicals, wood dust, or asbestos

## 5. Signs and Symptoms

Early stages are often painless, making early detection challenging. Common symptoms include:

- Persistent **mouth ulcers** that do not heal within 2 weeks
- **White patches** (leukoplakia) or **red patches** (erythroplakia) in the mouth
- Lump, thickening, or rough spot inside the mouth
- Persistent **sore throat** or feeling that something is stuck in the throat
- **Difficulty chewing, swallowing, or speaking**
- Loose teeth or ill-fitting dentures due to jaw bone involvement
- **Pain or numbness** in the tongue or other areas of the mouth
- Unexplained **bleeding** in the mouth
- Swelling in the jaw or neck (due to lymph node involvement)
- **Hoarseness** or voice changes (if affecting the oropharynx)

## 6. Staging

Oral cancer staging is usually done using the **TNM system**:

- **T (Tumor size)**: T1 (<2 cm), T2 (2–4 cm), T3 (>4 cm), T4 (invades adjacent structures)
- **N (Node involvement)**: N0 (no nodes), N1–N3 (increasing size and number of lymph nodes affected)
- **M (Metastasis)**: M0 (no distant spread), M1 (distant metastasis present)

Stages range from **Stage 0 (carcinoma in situ)** to **Stage IV** (advanced spread).

## 7. Diagnosis

- **Physical examination** of oral cavity and neck
- **Biopsy** (gold standard) – incisional or excisional biopsy
- **Imaging studies**:
  - CT scan / MRI – assess tumor extent
  - PET scan – detect metastasis
  - Ultrasound – for lymph nodes
- **HPV testing** (for oropharyngeal cancers)
- **Histopathological examination** to confirm cancer type

## 8. Treatment Options

Treatment depends on stage, location, and patient's health:

### a. Surgery

- Wide local excision of tumor
- Neck dissection if lymph nodes are involved
- Reconstructive surgery to restore function and appearance

## **b. Radiation Therapy**

- External beam radiation
- Brachytherapy (internal radiation) – in selected cases

## **c. Chemotherapy**

- Cisplatin, 5-FU, carboplatin, etc., usually in combination with radiation (chemoradiotherapy)

## **d. Targeted Therapy**

- EGFR inhibitors (e.g., cetuximab)

## **e. Immunotherapy**

- PD-1 inhibitors (e.g., pembrolizumab, nivolumab) for advanced/recurrent cases

# **9. Complications**

- Difficulty speaking, swallowing, or eating after treatment
- Altered appearance (facial disfigurement)
- Dry mouth (xerostomia) from radiation
- Loss of taste sensation
- Recurrence of cancer
- Spread to other organs (lungs, bones)

# **10. Prevention**

- Avoid tobacco in any form
- Limit alcohol consumption
- Practice safe sex (reduce HPV risk)

- Use lip protection against UV rays
- Maintain good oral hygiene and have regular dental check-ups
- Eat a diet rich in fruits and vegetables
- Treat dental issues promptly to avoid chronic irritation

## **11. Prognosis**

- Early detection leads to high survival rates (5-year survival >80% for localized disease)
- Advanced stages have lower survival rates due to spread and recurrence
- HPV-positive oropharyngeal cancers generally have a better prognosis than HPV-negative cancers