

Carcinoma of Tongue

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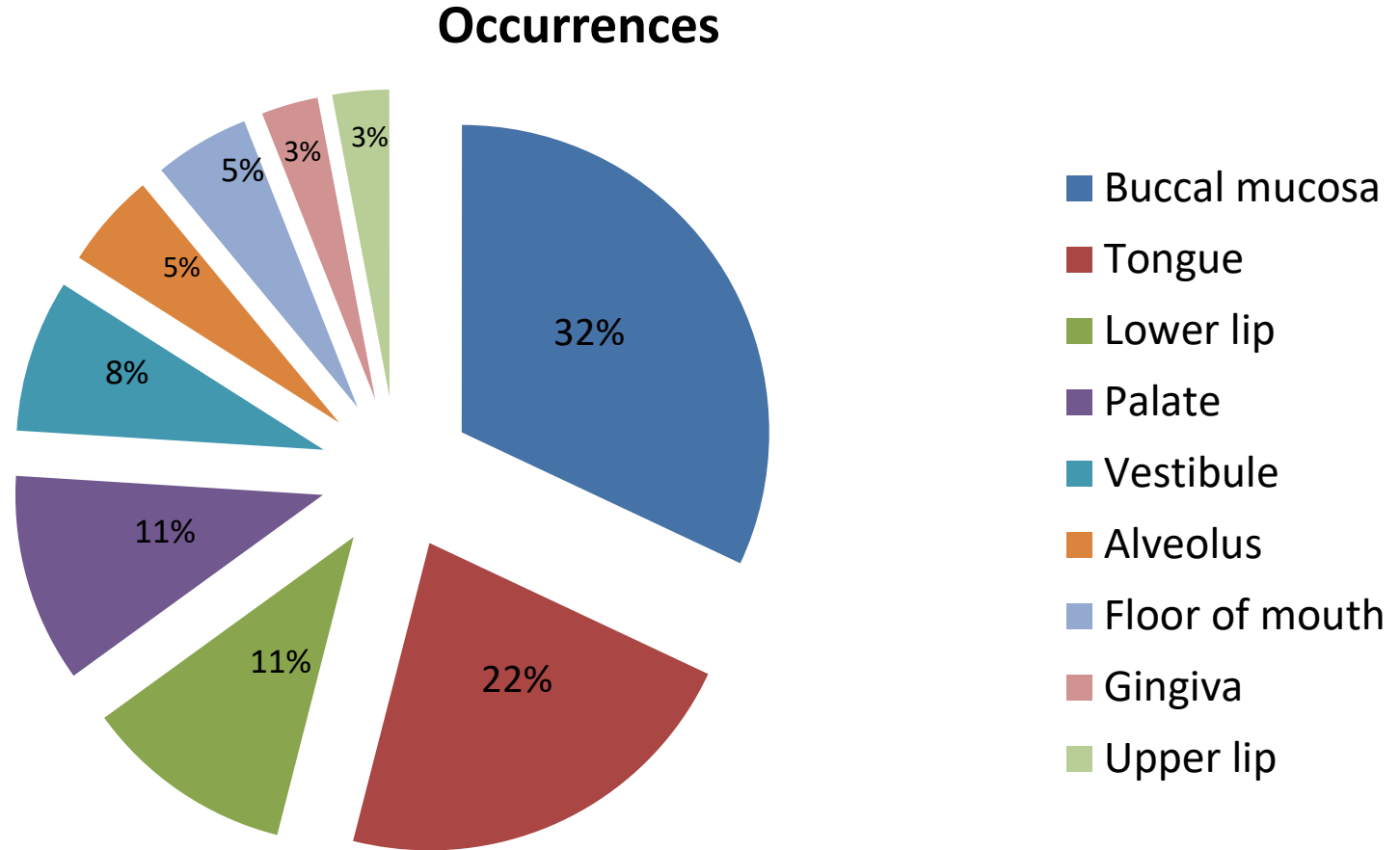
2nd YR POST GRADUATE

DEPARTMENT OF ENT

INTRODUCTION

- Oral carcinoma is fifth most common malignancy in head and neck globally.
- Oral cavity malignancies account for 20 per 100,000 population in India, out of which carcinoma tongue has a 4.6 in 100,000 and 1.8 in 100,000 incidence in males and females respectively.

Distribution of cancer in oral cavity



- Carcinoma of the tongue has a higher risk of metastases to the regional lymph nodes and subclinical nodal metastases are found up to 30 % of T1 and T2 .

ETIOPATHOGENESIS

- Tobacco abuse- dose dependent.(risk factor 4to5)
- Alcohol (risk factor 2)has synergistic effect(risk factor 15).
- In India tobacco chewing along with betel nut, lime contributes to 25 % of cancers in oral cavity.
- Pooling of carcinogen contaminated saliva in the oral cavity is the main cause in these patients.

Etiology

- Tobacco contains a number of known carcinogens, e.g. polynuclear aromatic hydrocarbons and nitrosamines which cause DNA damage leading to gene mutations.
- Oral tobacco is mixed with betel leaf, slated lime and areca nut to form a quid called 'paan'.
- The lime lowers the pH which accelerates the release of alkaloids from both the tobacco and areca nut.

- Alcohol causes DNA damage and gene mutation by a number of mechanisms.

These include:

- Alcohol act as a solvent increasing the cellular permeability of tobacco carcinogens through the mucosa .
- The immediate metabolite of ethanol is acetaldehyde and this have a locally damaging effect on cells.
- Chronic alcohol use up regulates enzymes of the cytochrome P450 system which result in the activation of pro-carcinogens into carcinogens.

- Alcohol also decreases the activity of DNA repair enzymes resulting in increased chromosomal damage
- Alcohol impairs immunity due to a reduction in T cell number, decreased mitogenic activity and macrophage activity.
- Alcohol is high in calories, which suppresses appetite in heavy drinkers. Metabolism is further damaged by liver disease resulting in nutritional deficiencies and therefore lowered resistance to cancer.

OTHER CAUSES

- Poor oral & dental hygiene.
- Chronic irritation from sharp tooth, oral sepsis, spices
- Syphilis.
- Vit. A deficiency
- Marijuana - increasing incidence of tongue cancer seen in western world .

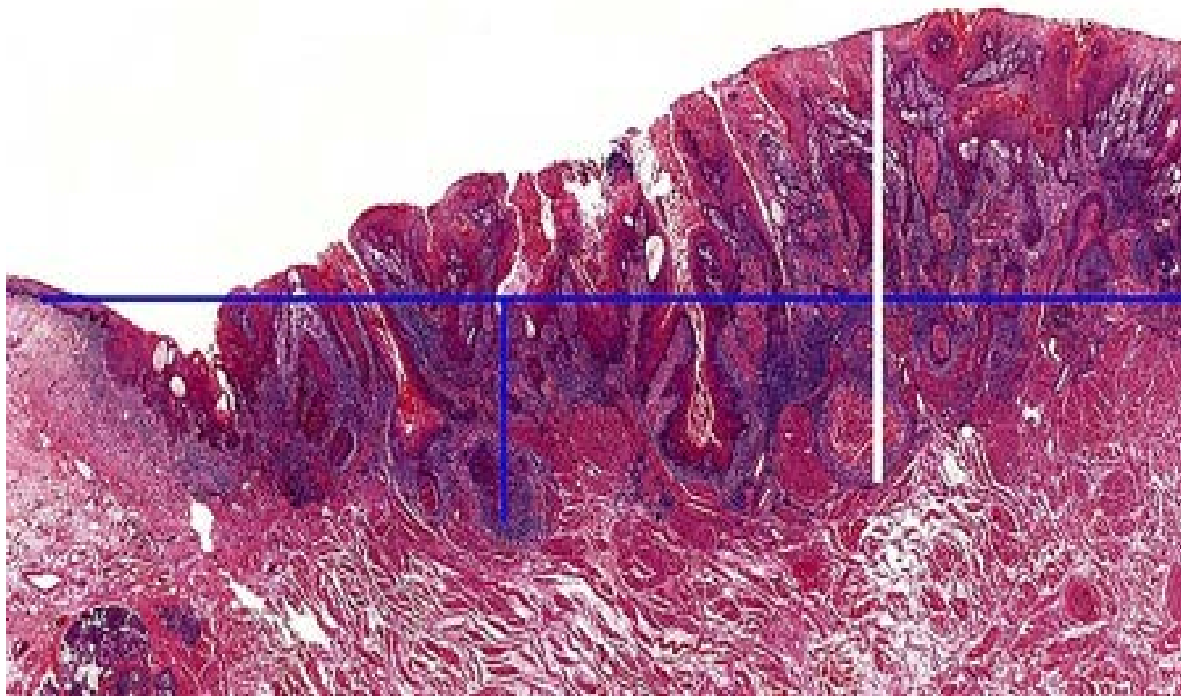
- HPV 16, 18, 31, 33, 35, 39 are associated with premalignant lesions and squamous cell Ca.
 - HPV 16 and 18 are the most common types associated with squamous cell carcinoma.
 - HPV bind to and inactivate tumour suppressor genes p53 and Rb.
- **Fresh fruit, vegetables, antioxidants, vitamins A, C and E are protective**

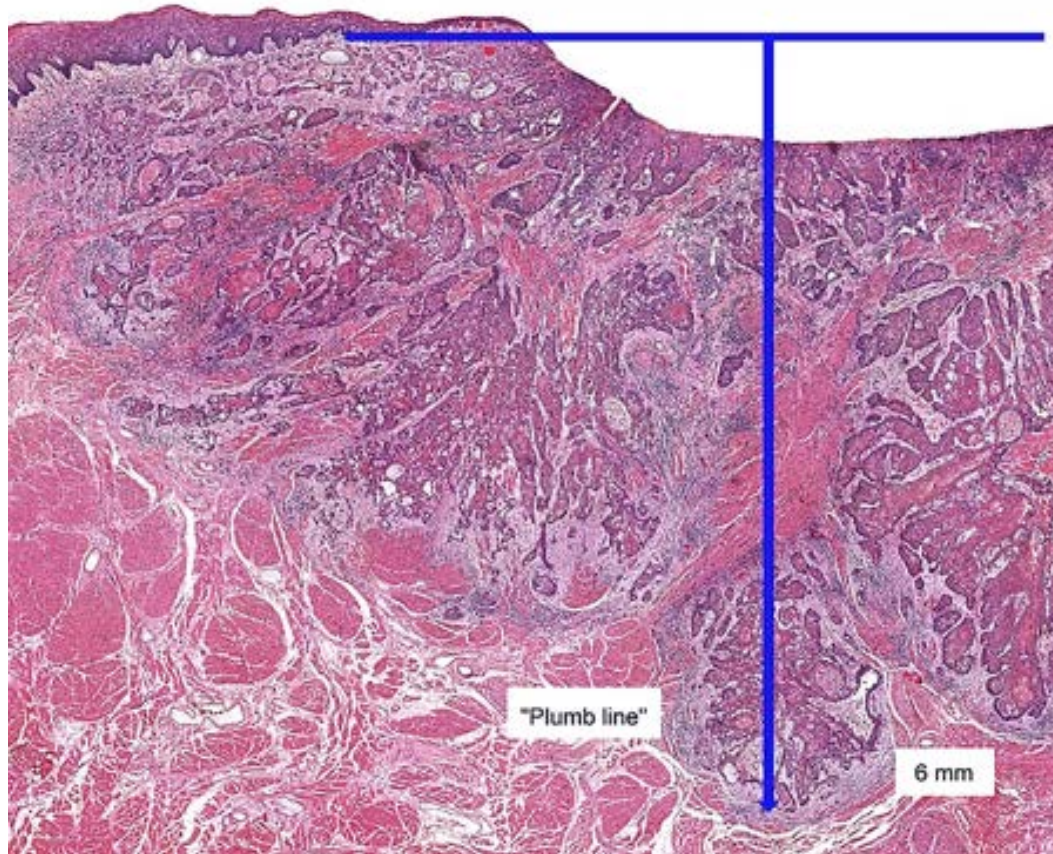
Site:

1. Lateral border of the anterior 2/3 of tongue - 25% each side.
2. Tip of tongue - 10%
3. Dorsum of tongue- 10%
4. Posterior 1/3 - 20%
5. Ventral surface of tongue - 5%
6. Tonsilolingual sulcus - 5%

Pathological relevance to surgeons

- Pathologically, Depth of infiltration is measured from the level of the **basement membrane** of the closest adjacent normal mucosa.
- A “**plumb line**” is dropped from this plane to the deepest point of tumor invasion





Prognostic factors

- Primary tumor-depth of infiltration
 - perineural infiltration
- Nodes – volume
 - extranodal extension

Extranodal Extension (ENE)

- Pathological ENE is defined as extension of metastatic carcinoma from within a lymph node through the **fibrous capsule** and into the surrounding connective tissue, regardless of the presence of stromal reaction.
- Metastatic carcinoma that stretches the capsule but **does not** breach it does not constitute ENE

Premalignant lesions

- High Risk Lesions:
 - Erythroplakia
 - Chronic Hyperplastic Candidiasis
- Moderate Risk Lesions:
 - Oral submucous fibrosis
 - Syphilitic glossitis
 - Sideropenic dysphagia (Paterson – Kelly Syndrome)
- Low Risk:
 - Oral lichen planus
 - Discoid lupus erythematosus
 - Discoid keratosis congenita

Leukoplakia:

- Oral leukoplakia is defined by the WHO as “a white patch or plaque that **cannot** be scrapped off and also characterized clinically or pathologically as any other disease”.



Clinical forms of Leukoplakia

Homogenous



Non Homogenous



Malignant Transformation Potential

- Overall - 1 – 5%
- Homogenous - 0%
- Non Homogenous - 26%

Erythroplakia:

- Any lesion of the oral mucosa that presents as a bright red plaque which cannot be characterized clinically or pathologically
- lesions are irregular in outline and separated from normal mucosa
- Incidence of malignant changes is 17 times higher than leucoplakia



- Chronic Hyperplastic candidiasis:
 - -Produces dense plaques of leukoplakia
 - **High incidence of malignant transformation**
 - Believed to be invasion of *Candida Albicans*



Oral submucous fibrosis

- Progressive disease with fibrous bands beneath the mucosa → contracture → limited mouth opening → restricted tongue movement.
- Epithelium also shows dysplasia
- Mainly associated with areca nut usage than tobacco.



SPREAD

- **Direct:** to surrounding structures like floor of mouth, gums and mandible.
- **Lymphatic:** (rapid, early & very common)
- Perineural spread → leads to direct spread along cranial nerves.
- Angioinvasion → Distant metastasis.

CLINICAL FEATURES

- Painless long standing ulcer → Later becomes painful d/t infection or lingual nerve involvement
 - bleeds to touch
 - Induration present more than the ulcer area
 - Edge may be raised and everted.
- Excessive salivation: due to pain and inability to swallow
- Ankyloglossia: inability to protrude tongue with deviation to the affected side due to infiltration of muscles of the tongue, XI cranial nerve and / or floor of mouth.

- Dysphagia
- Dysarthria
- Halitosis
- Referred Ootalgia
- Palpable Neck nodes

INVESTIGATIONS

- All lesions of the tongue and floor of mouth that last for longer than two to three weeks require biopsy to confirm the diagnosis.
- Similarly, all areas of leukoplakia and erythroplakia require a biopsy / excision(toluidine blue).
- FNAC of suspicious/enlarged/palpable lymphnodes.

- **CECT scan** – for primary , cervical metastasis and infiltration of mandible.
- **MRI** – investigation of choice for imaging soft tissue infiltration and to detect perineural invasion.
- X-ray chest –for pulmonary metastasis.
- Routine investigation and immunological screening.

- Positron emission tomography (PET) is useful in improving the detection of distant metastasis in cases with large tumor volume and also for recurrent disease.

TNM Classification

- TX-Primary tumor cannot be assessed
- Tis-Carcinoma in situ
- T1-Tumor ≤ 2 cm, ≤ 5 mm depth of invasion (DOI) (DOI is depth of invasion and not tumor thickness)
- T2-Tumor ≤ 2 cm, DOI > 5 mm and ≤ 10 mm **or** tumor > 2 cm but ≤ 4 cm, and ≤ 10 mm DOI
- T3-Tumor > 4 cm or any tumor > 10 mm DOI
- T4- involvement of floor of mouth.

Reference –Head and Neck cancers – major changes in American Joint Committee on Cancer ,8th Edition ,January 2017.



T1Lesion



T2 LESION



T3 LESION



T4 LESION

REGIONAL LYMPH NODES PATHOLOGIC CATEGORY CRITERIA

- Nx- Regional lymph nodes cannot be assessed
- N0-No regional lymph node metastasis
- N1- Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension and ENE-negative

- N2a- Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension and **ENE-positive**;
Or More than 3 cm but not more than 6 cm in greatest dimension and ENE-negative;
- N2b- Metastases in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension and ENE-negative;
- N2c- Metastasis in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension, ENE-negative

- N3a- Metastasis in a lymph node more than 6 cm in greatest dimension and ENE-negative;
- N3b-Metastasis in a single ipsilateral lymph node more than 3 cm in greatest dimension and **ENE-positive; (or)**

Metastasis in multiple ipsilateral, contralateral, or bilateral lymph nodes, with any **ENE-positive**

DISTANT METASTASIS

- Mx – can not be assessed
- M0 – no detectable distant metastasis
- M1 – distant metastasis present

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1, T2	N1	M0
	T3	N0, N1	M0
Stage IVA	T1, T2, T3	N2	M0
	T4a	N0, N1, N2	M0
Stage IVB	Any T	N3	M0
	T4b	Any N	M0
Stage IVC	Any T	Any N	M1

Types of TNM STAGING

- cTNM – clinical
- pTNM- pathological
- rTNM-(recurrent)
- RTNM-(residual)

Treatment- EARLY STAGE

- Stage 1 and 2- T1,N0,M0
-T2,N0,M0
- SINGLE MODALITY TREATMENT:
 - 1) Surgery: Wide local excision (1.5 to 2cm unstretched normal mucosa all around the tumour) and Selective Neck Dissection (level I to III) OR

2) Teleradiotherapy + Brachytherapy

- total of 6000 to 7000rads in a period of 6 to 7 weeks.

TREATMENT -Advanced Stage

- Stage III - T1,2,3 N1 M0
T3 N0 M0
- Stage IV –T1,2,3 N2,3 M0
T4 N0 M0

COMBINED MODALITY TREATMENT:

Surgery +Postoperative Chemoradiation

1)Wide local excision with Reconstruction + Radical neck dissection followed by post operative Chemoradiation.

- Reconstruction:
- Pectoralis Major Myocutaneous FLAP-
PEDICAL flap
 - Forearm free flap
 - Fibular free flap, if mandible is also excised.
- Chemoradiation:
- radiation 5000 to 6000 rads for 5 days/week.
- On 6th day – chemotherapy

Management of neck nodes:

- Clinically node negative :
 - Cervical nodes may have occult metastasis upto 30% even if clinically node negative
 - Hence Selective Neck dissection “Supraomohyoid dissection” (levels 1,2,3) as a sampling procedure to be done.
 - If nodes are positive – completion neck dissection or radiation therapy given.
- Clinically node positive:- radical neck dissection .

SURGERY

- Advantages:
 - Short period treatment
 - Control of margins
 - Specimen available for HPE/ DOI
 - Helps in planning adjuvant treatment
 - No radiation sequelae
- Disadvantages:
 - Tissue and functional loss
 - Disfigurement
 - Bleeding & infection

Rehabilitation

- Swallowing Therapy
- Speech Therapy
- Jaw stretching exercise after radiotherapy.

Radiotherapy

RT & surgery have equal success in early lesion. RT can be given:

- Brachytherapy
- Tele therapy – EBRT
- Combination therapy
- RT help in organ preservtion but long term complication are significant

- Post operative RT is preferred over pre operative because of effect on wound healing
- Per operative RT: inoperable, unfit for surgery & down staging
- Post RT is indicated in patients with
 - T3/T4 primary
 - positive surgical margins
 - perineural, perilymphatic vascular invasion
 - microscopic gross residual tumor
 - extra capsular spread

- Disadvantage – no specimen for HPE
- Altered taste, xerostomia and the protracted nature of treatment course.
- Requires at least 6 weeks of treatment.
- Osteonecrosis of mandible.
- Newer technique of IMRT and brachytherapy reduces above side effects.
- ADVANTAGE- Provide better functional result with speech .

CHEMOTHERAPY

-As an adjuvant to RT

- Palliative
 - Recurrence
 - Metastatic disease
- Drugs: Cisplatin, MTX, 5FU

Follow up

- Every 2 months- for 6 months
- 3 monthly- upto 2 years
- 6 monthly-upto 5 years
- Yearly – after 5 years

Look for-

-Recurrence ,

-2nd primary

-Hypothyroidism due to postop radiotherapy

-Rehabilitation

Predictors of Poor prognosis:

Past

- Increasing tumor thickness(>4mm)
- Poorly differentiated
- High grade tumors
- Perineural,Vascular and lymphatic invasion.
- DNA ploidy status such as aneuploid carry worst prognosis
- Verrucous Ca has better prognosis

Latest

- Depth of infiltration
- Perineural,Vascular and lymphatic invasion
- Human papilloma virus

PROGNOSIS

- Stage 1: 80 – 90 %
- Stage 2: 70 – 80 %
- Stage 3: 30 – 50 %
- Stage 4: 20 – 30 %

PREVENTION

- Primary prevention is better.
- Secondary prevention:
 - Cancer screening regularly for early detection
 - Regular follow up to decrease morbidity.

THANK YOU

Examination

- General EXAMINATION :
- Examination of oral cavity:
 - Site ,size,margins,
 - Colour , texture,
 - mobility of tongue

- **Homogenous:**

Uniform flat appearance that may exhibit shallow cracks and has a smooth, plaque like, wrinkled or corrugated surface with a consistent texture throughout



Non Homogenous (speckled

- A predominantly white or white and red lesion (erythroleukoplakia).
- Area of redness and ulceration
- Irregularly flat, nodular thickening and exophytic
- Nodular lesions have raised, rounded red and or white excrescences

