



आरोग्यम् सुख सम्पदा



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**HEALTH HAZARDS OF TOBACCO
CHEWING REQUIRING SURGICAL
INTERVENTION**

TOBACCO = NICOTINE



NICOTINE = ADDICTION

Tobacco is an agricultural product & 'Nicotine' is a drug found in tobacco which is highly addictive.



Tobacco can be consumed in the forms of smoking, chewing, dipping or sniffing



How is Tobacco Used?



Cigarettes



Beedis



Pan Masala



Snuff

- Tobacco in some cases used as a pesticide and in the form of nicotine tart rate used in some medicine. Tobacco consumed directly is dangerous



- Many people use smokeless tobacco products, such as snuff and chewing tobacco in the form of gutkha, khaini, mawa, pan masala
- Tobacco contains more than 4000 toxic chemicals & 60 carcinogens



- Chewing is one of the oldest methods of consuming tobacco
- Most farmers grew a little for their own use, or traded with neighbours who grew it. Commercial sales became important in the late 19th century as major tobacco companies started advertising the product
- In earlier 19th century tobacco chewing was popularized as an alternative to smoking but research has proven this to be wrong



- People who use smokeless tobacco (snuff or chewing tobacco) have increased risks of cancers of the mouth, esophagus and pancreas



EFFECTS OF TOBACCO CHEWING

- Risk of oral cancer runs the highest with chewing and snuff products
- Nicotine is very addictive in nature and can increase blood pressure, heart rate and can cause arteriosclerosis paving way for heart attacks and stroke
- Chewing or dipping has adverse consequences on the reproductive health of a person

EFFECTS OF TOBACCO CHEWING cont..



- Snuff has large amounts of **sugar** in it. Sweeteners are added to improve the taste because tobacco, in its elemental forms is very bitter i.e GUDAKU used in Chhattisgarh
- Consequently, this extraordinary amount of sugar intake leads to diseases of gums so much so that the gums tend to lose their retaining power for teeth leading to **periodontal diseases**
- Research has proven that tobacco can have elements of **cyanide** in it

EFFECTS OF TOBACCO CHEWING Cont...

- Smokeless tobacco has abrasives. These abrasives stem from ingredients contained in the tobacco leaves. It wears and tears the sensitive and fleshy surfaces in the oral cavity and the protective layers of the teeth causing the nicotine to attain a more direct access and seeps directly in blood capillaries



EFFECTS OF TOBACCO CHEWING Cont...

- Smokeless tobacco also has high proportions of salt in it. This is another disastrous factor of it and has negative consequences for kidney, bladder and blood pressure

World Scenario of All Cancer Cases

– GLOBOCAN 2012 estimates

- *14.1 million new cancer cases*
- *8.2 million cancer deaths*
- *32.6 million people living with cancer (within 5 years of diagnosis) worldwide*

– In Developing countries

- *57% (8 million) of new cancer cases*
- *65% (5.3 million) of the cancer deaths*
- *48% (15.6 million) of the 5-year prevalent cancer cases occurred in developing regions*

World Scenario Of HNC

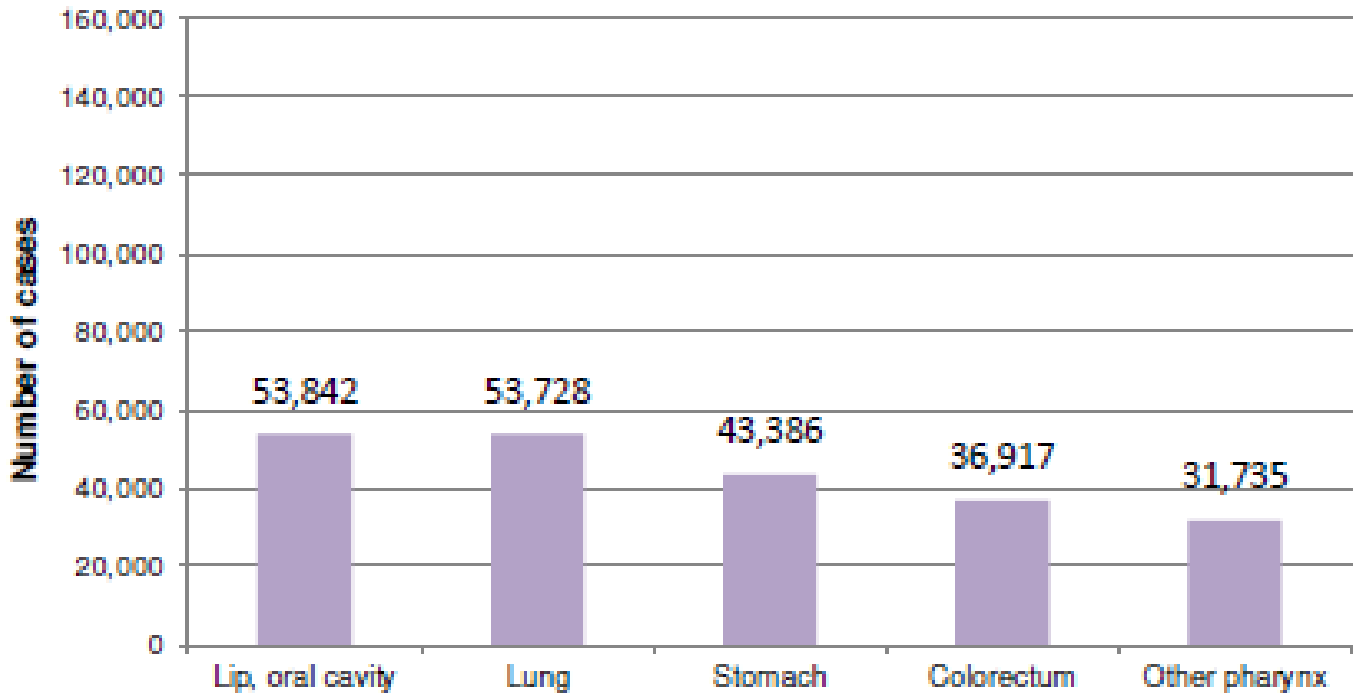
- Global Incidence of all HNC is estimated between 400,000 and 600,000 new cases/year
- Mortality rate : 223,000 - 300,000 deaths /year

Scenario of HNC in Asia

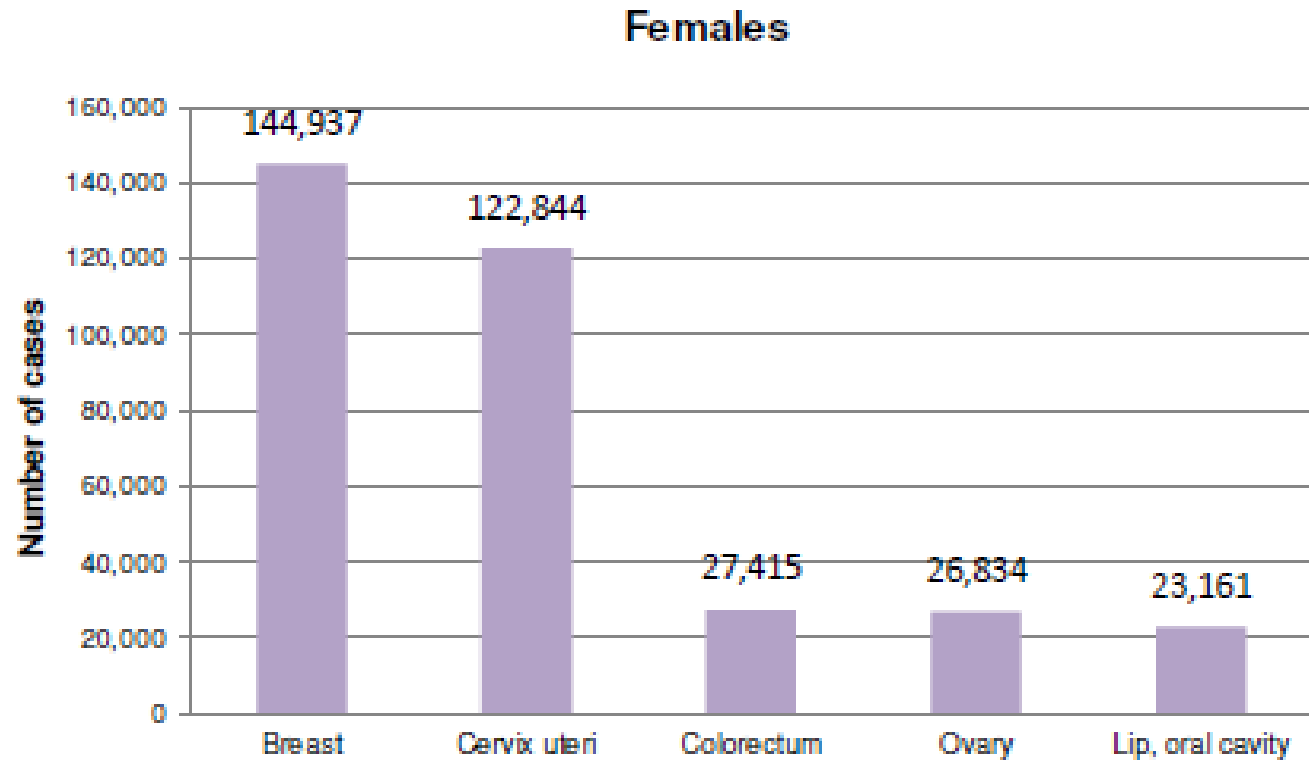
- South-Central Asia (India, Pakistan, Bangladesh, Iran, Afghanistan, and the Central Asian Republics): one fifth of the world's population
- HNC accounts for approximately 17% of all cancers and 25% of all cancers occurring in men
- In South-Central Asia, 80% of HNC in the oral cavity and oropharynx (Laryngeal and Nasopharyngeal cancers : one third to one half of all head and neck malignancies in world)

Cancer Incidence (India)

Males

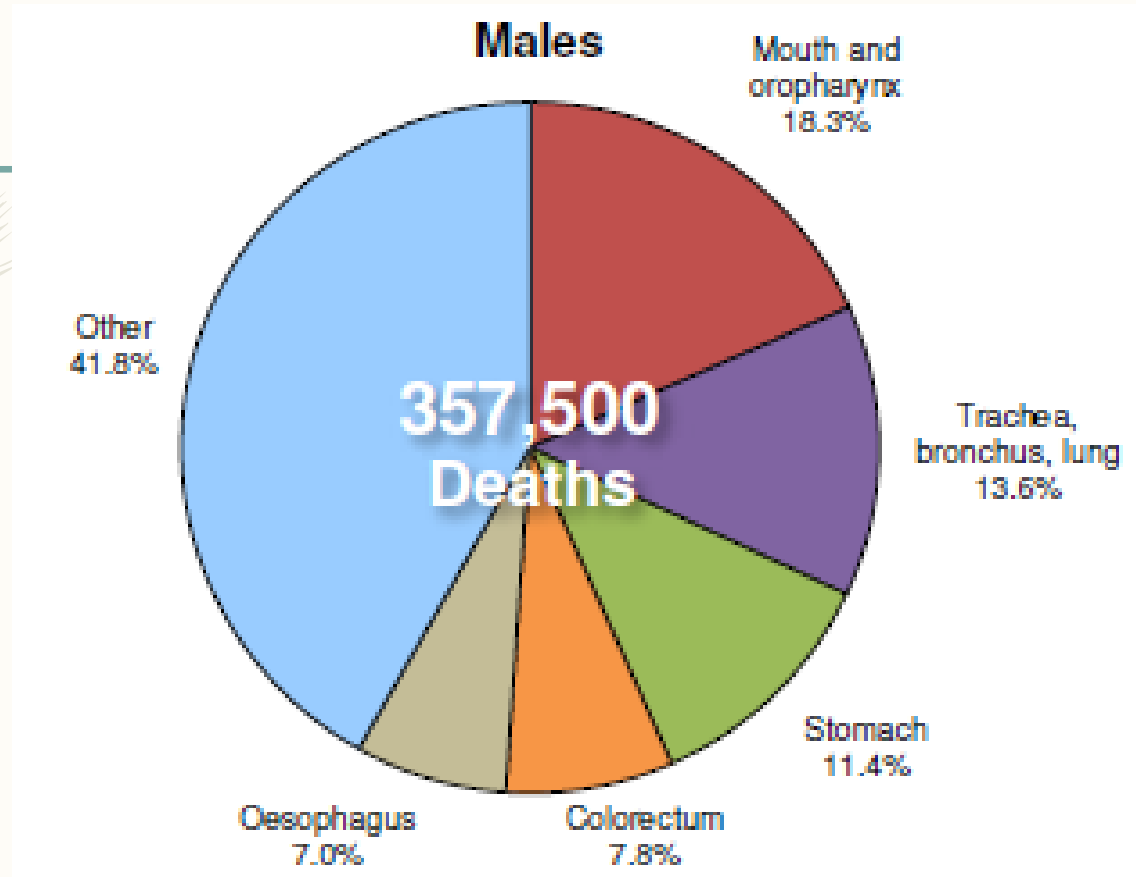


Cancer Incidence (India)

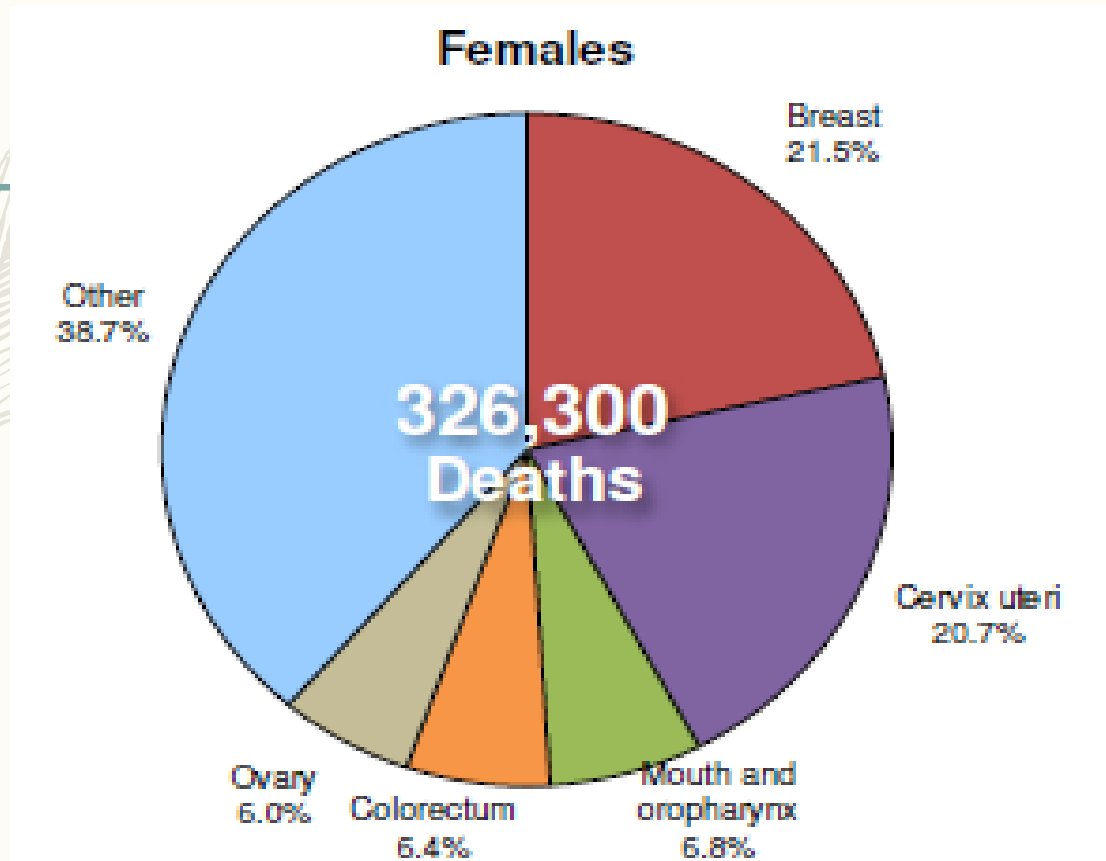


WHO-Cancer Country Profiles-2014

Cancer Mortality Profile –India



Cancer Mortality Profile –India



Etiology Of HNC

Tobacco:

- Risk of developing oral cancer is 5-9 times greater for smokers than for nonsmokers
- Risk multiplies to 17 times for heavy smokers (80 or more cigarettes/ day)



Etiology Of HNC

Smokeless tobacco

- Use of betel quid (pan), zarda, gutka, mawa and khaini- custom mixed are all dry mixtures of areca nut flakes, lime, tobacco power
- Moist snuff containing lime with tobacco, vegetable oil and water (Naswar)



Etiology of HNC

Excessive Alcohol Consumption

- Heavy drinkers who are also heavy smokers have 35 times increased risk of developing oral cancers in comparison to those who do not drink/ smoke



Etiology of HNC

Oral Hygiene & State of Dentition

- Brushing of teeth especially by young children and females with **“Gudakhu”**:
mixture of jaggery and tobacco



Etiology Of HNC

Human Papilloma Virus (HPV):
HPV 16 and HPV 18



Etiology of HNC

- Radiation
- Genetic Factors
- Gastro esophageal reflux disease



Etiology of HNC

- Oral cavity lichen planus, in specific is erosive form
- Iron deficiency anemia in combination with dysphagia and postcricoid webs (Plummer-Vinson syndrome) is associated with a high risk for development of carcinoma of the oral cavity, oropharynx and esophagus



Etiology of HNC

- Immuno suppression appears to predispose some individuals to an enhanced risk for oral cancers
- In some of the young AIDS patients oral carcinomas have even been documented



Etiology of HNC

- Sharp tooth causing chronic irritation of mucosa



Premalignant Conditions of Oral Carcinoma

- Leukoplakia- 3.6% and 17.5% malignant transformation rate
- Erythroplakias- 51% of lesions have been shown to demonstrate invasive (SCC), with 40% demonstrating carcinoma in situ
- Sub mucosal fibrosis has a malignant transformation rate of about 7%
- Lichen planus



Molecular Progression Model of HNSCC

Normal squamous mucosa



Squamous hyperplasia



Dysplasia



Carcinoma in situ



Invasive carcinoma

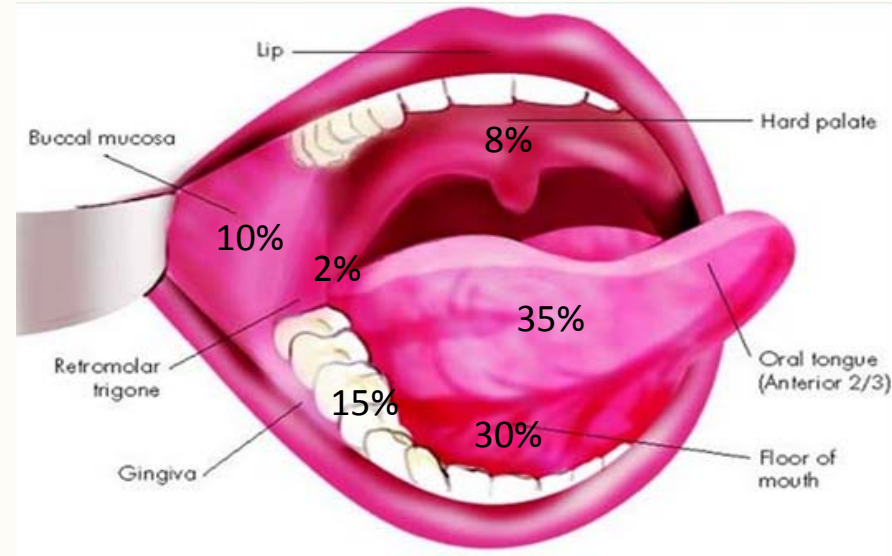


Metastasis



SITES OF ORAL CAVITY

- Tongue 35%
- Floor of mouth 30%
- Lower alveolus 15%
- Buccal mucosa 10%
- Upper alveolus/ hard palate 8%
- RMT 2%
- Lips (as a whole)
 - lower 93%
 - upper 5%
 - commissure 2%



Common Symptoms Caused By HNC

- Disfigurement
- Difficulty in breathing
- Difficulty in mastication and swallowing
- Compromised speech
- Dry mouth
- Reduced mouth opening
- Pain
- Neck nodes
- Referred pain





Staging Of The Disease

- American joint committee on cancer (TNM classification 2010)
 - **T_x** Primary tumor cannot be assessed
 - **T₀** No evidence of the primary tumor
 - **T₁** ≤ 2 cm in greatest dimension
 - **T₂** 2-4cm in greatest dimension
 - **T₃** > 4 cm in greatest dimension



STAGING OF THE DISEASE

Cont...

- **T4a**

- Oral cavity invades through cortical bone, into deep muscles of tongue, maxillary sinus or skin


- **T4b**

- Involves masticator space, pterygoid plates, skull base and /or encases ICA

Nodal Staging

- **Nx** Regional lymph nodes can not be assessed
- **N0** No regional lymph node metastasis
- **N1** Metastasis in a single ipsilateral lymph node ≤ 3 cm in greatest dimension
- **N2a** Metastasis in a single ipsilateral LN >3 cm but <6 cm in greatest dimension
- **N2b** Metastasis in multiple ipsilateral LNs none >6 cm
- **N2c** Metastasis in bilateral or contralateral LNs none more than 6cm in greatest dimension
- **N3** Metastasis in a LN >6 cm in greatest dimension

METASTASIS

- 
- **Mx** Cannot be assessed
 - **M0** No distant metastasis
 - **M1** Distant metastasis present

TREATMENT

- Goal :
 - To eradicate primary tumor and LN metastasis
 - To maintain function and cosmetic reconstruction
- Factors affecting choice of treatment
 - Tumor factor
 - Patient factor
 - Resource factor

TREATMENT GOAL

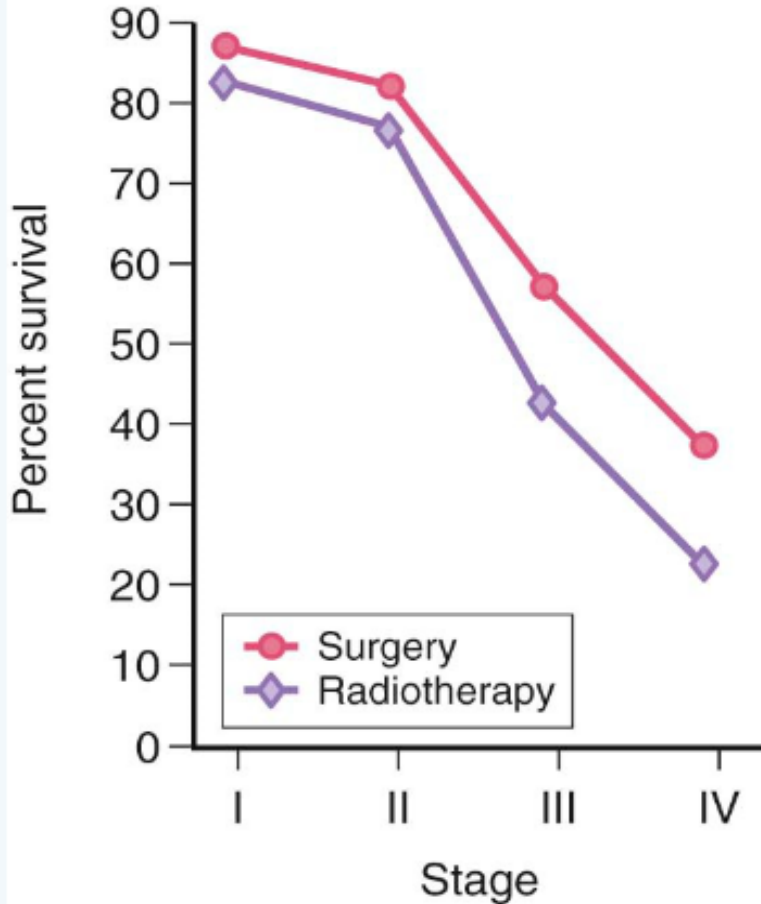
- Cure of cancer
- Prevention or restoration of form and function
- Avoid or minimize sequelae of treatment
- Prevent second primary cancers

TREATMENT MODALITIES

- Surgery
- Radiotherapy
- Chemotherapy
- Combined modalities



Survival with single modality treatment



Choice of treatment depends upon:

- Site
- Location
- Stage
- Histology
- Node status

and also

- Complications
- Compliance
- Convenience
- Cost
- Competence

SURGICAL MARGINS

- UK Royal College of Pathologists' guidelines
- Clear margins : histological clearance >5mm
- Close margins : 1-5 mm
- Positive margin: <1mm
- Incidence higher in oral cavity cancer compared to other tumor sites potentially due to complex anatomy and 3D resection needed

CARCINOMA OF LIP

Lower lip 93%

Upper lip 5%

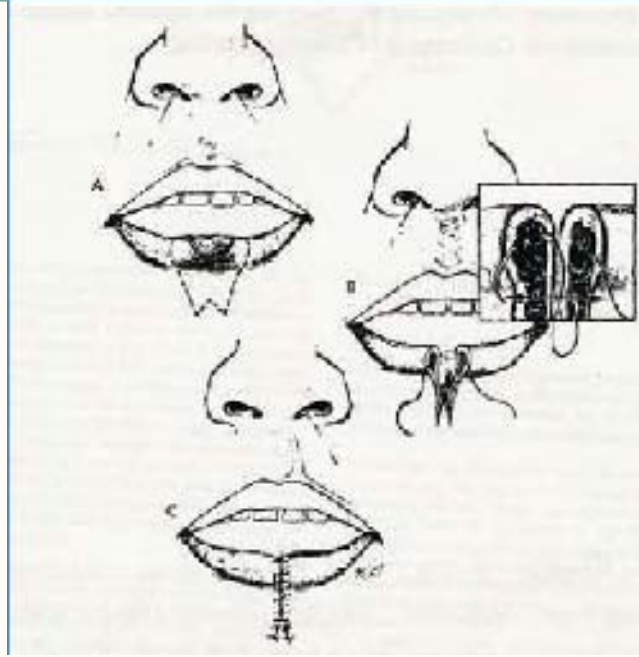
Commissure 2%



- Reconstruction of carcinoma commissure

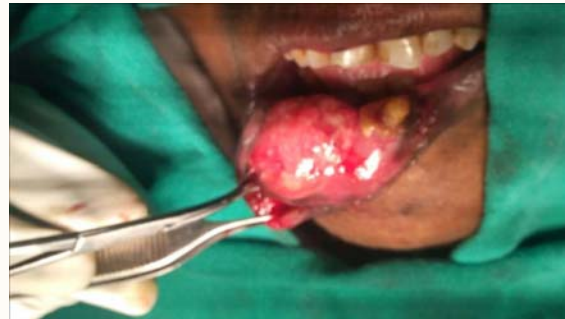


Carcinoma of lower lip



CARCINOMA OF LOWER LIP

- SCC of lower lip
- Larger lesions would require reconstruction
- Reconstruction with buccal mucosal flap



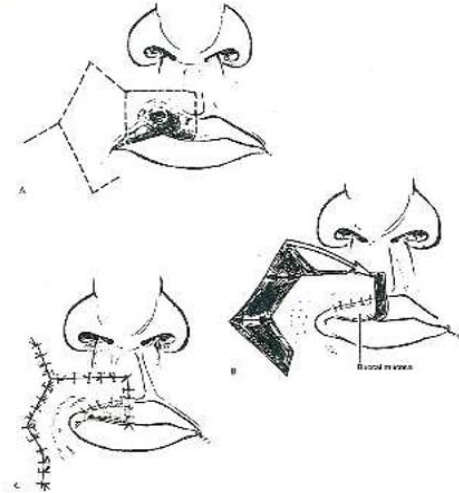
Carcinoma Of Upper Lip

- Rare 2%
- Estalander flap



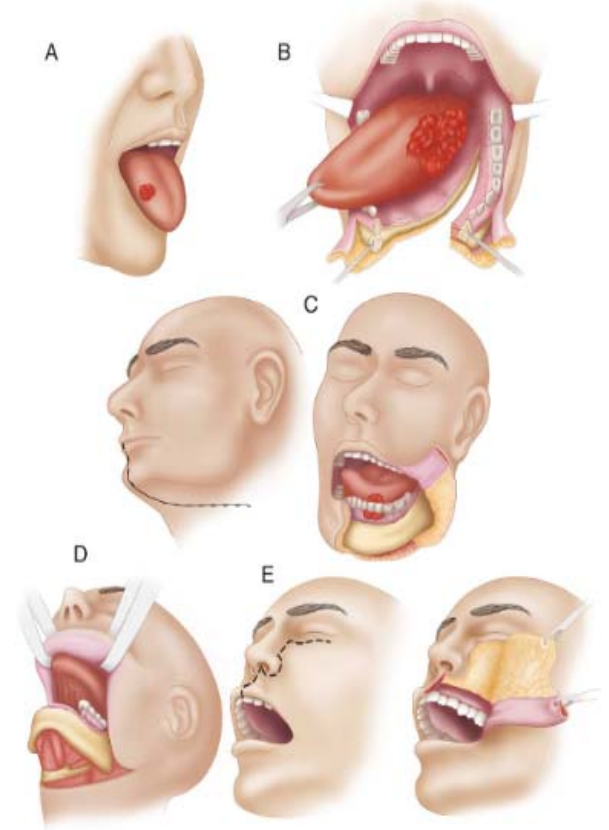
Reconstruction Of LIP Post Excision

- Karapandzic flap
- Nasolabial transposition flap
- Radial forearm free flap



Surgical Approaches

- A. Peroral
- B. Mandibulotomy
- C. Lower cheek flap
- D. Visor flap
- E. Upper cheek flap



Carcinoma of Buccal Mucosa



Ca buccal mucosa T3 N1 M0

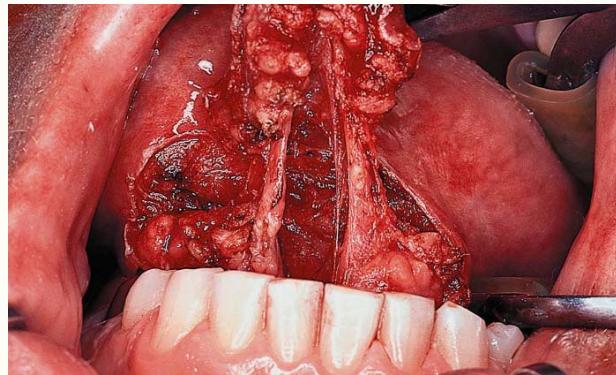
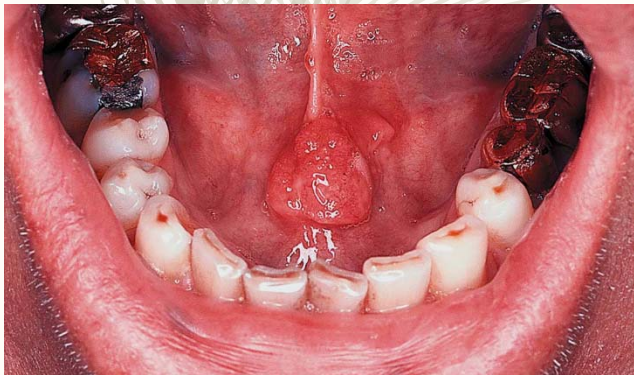


Excision with wide margin
and supra omohyoid neck
dissection



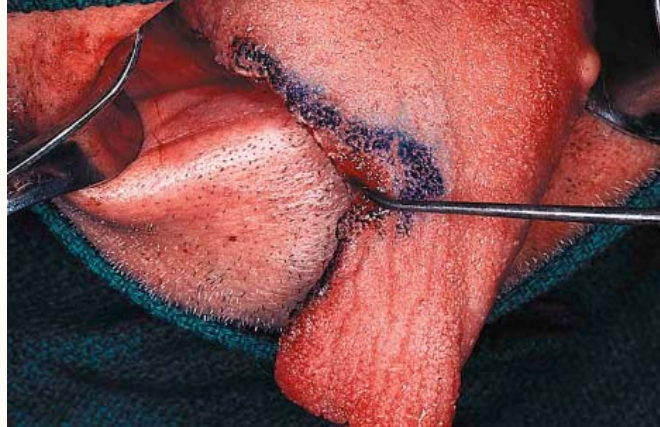
Carcinoma Floor of Mouth

- Carcinoma of floor
- Wide excision done along with reconstruction using full thickness skin grafting
- Gives good aesthetics and function



Carcinoma Tongue

- Partial glossectomy
- Wedge excision



Carcinoma Tongue

- Hemiglossectomy with modified neck dissection



Carcinoma Tongue

- Advanced stage T4
- Restricted mobility of tongue with involvement of floor of mouth
- Palliative management with chemo radiotherapy

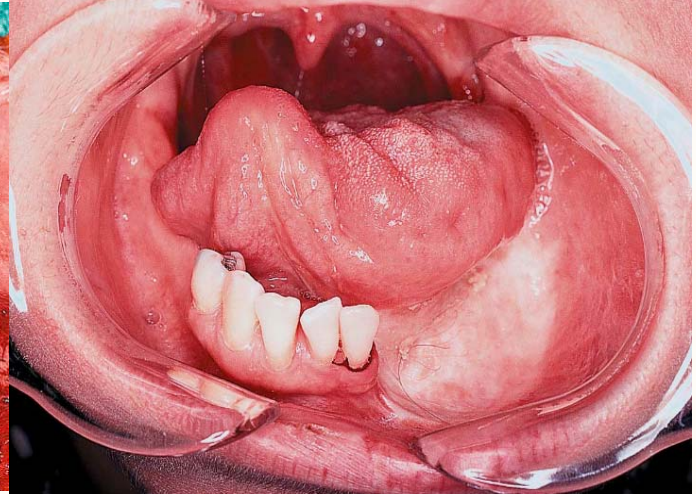
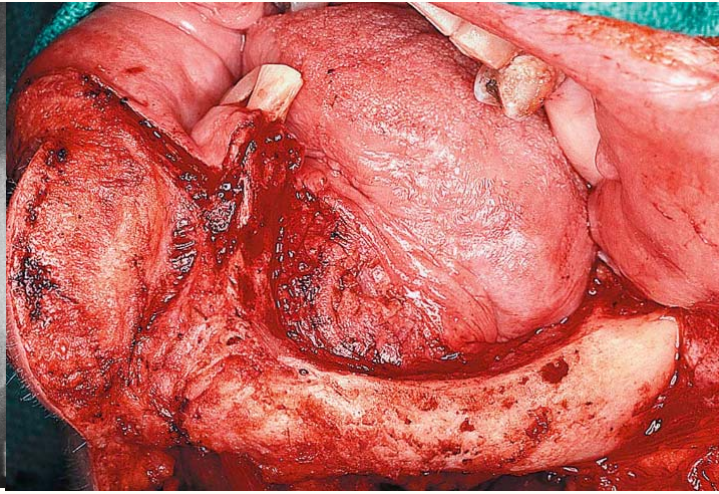
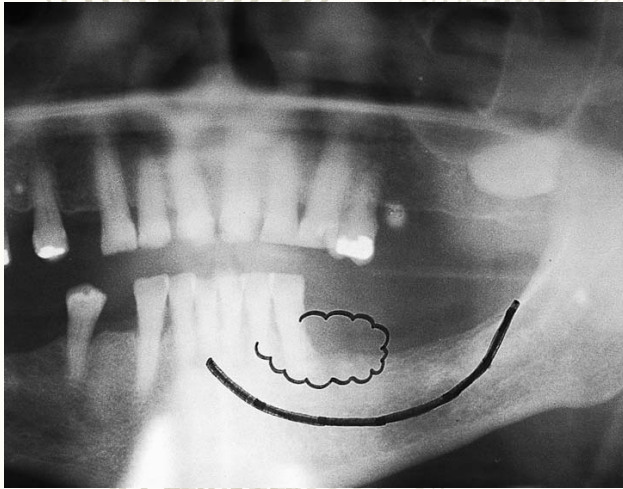


Carcinoma of Lower Alveolus

- Involvement of lower alveolus would require bony margins to be cleared
- Marginal mandibulectomy
- Segmental mandibulectomy
- Hemi mandibulectomy



Marginal Mandibulectomy

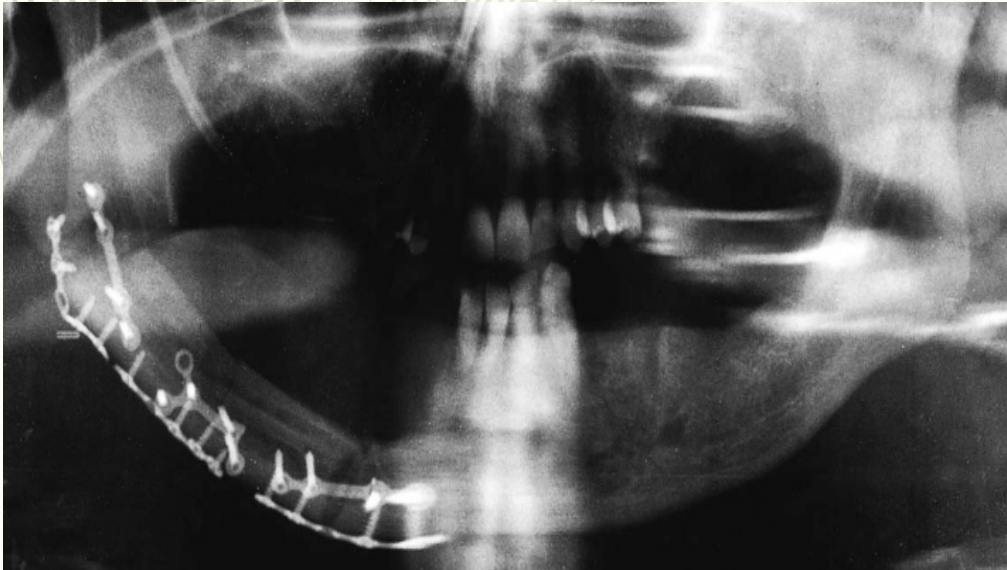


Segmental Mandibulectomy

– Hemi Mandibulectomy



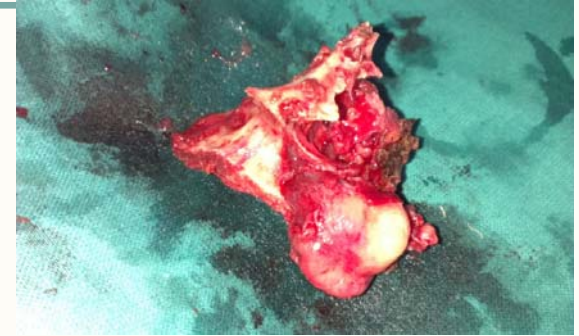
Fibula Free Flap Reconstruction



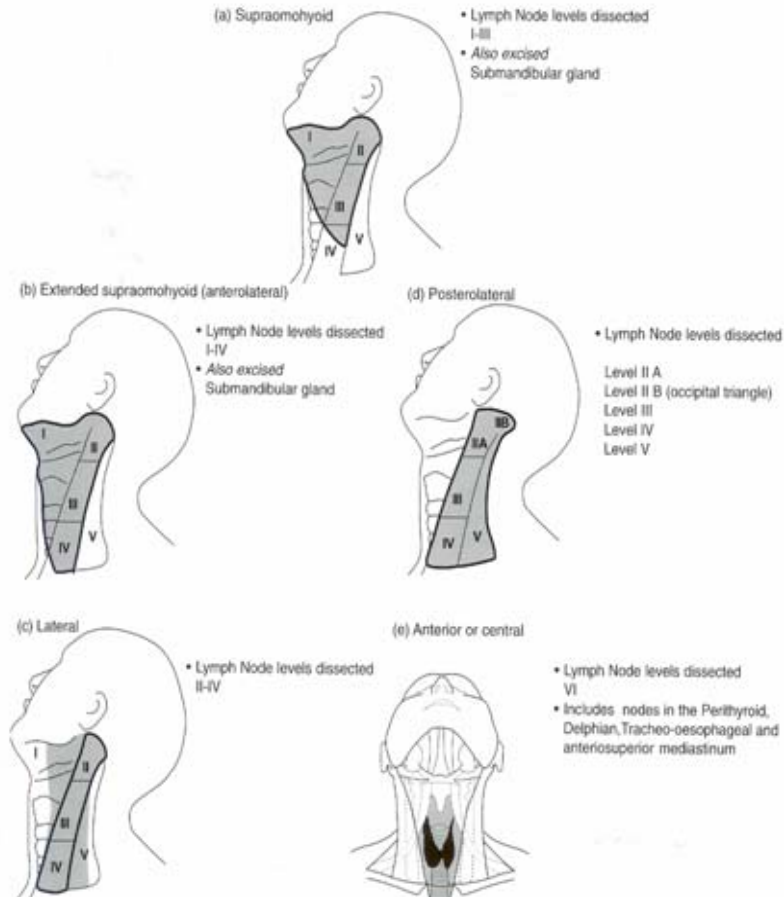
Post Op 3 Months

Carcinoma of Hard Palate

- Resection of the hard palate would require a maxillectomy associated with it.



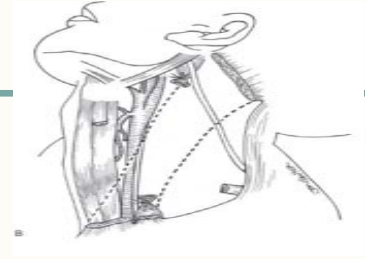
Neck Node Management



Selective neck dissection

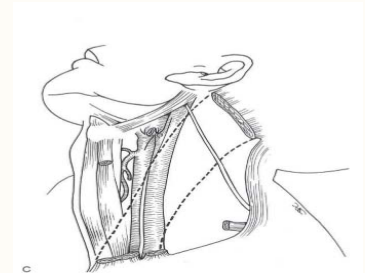
Modified RND Type 1
Only spinal accessory nerve preserved

Resected SCM, IJV

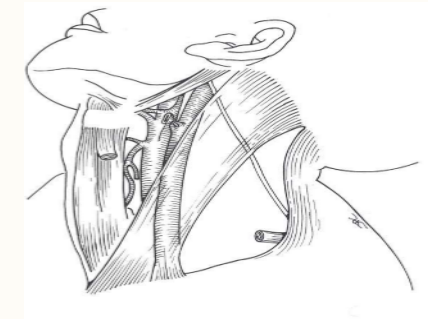


Modified RND Type 2
spinal accessory nerve and IJV preserved

Resected SCM



Modified RND Type 3
spinal accessory nerve, IJV and SCM preserved



Standard Post Op Radiotherapy Guidelines

Indications for postoperative radiotherapy and chemoradiotherapy

Advantages and disadvantages of postoperative radiation therapy

Primary tumor factors

- Locally advanced T3 or T4 lesions
- High-grade histology
- Presence of perineural or vascular invasion
- Concern with respect to the adequacy of the procedure irrespective of the histological status of the surgical margins
- Infiltrating rather than pushing borders of the tumor
- *Positive or close margins of surgical resection

Cervical nodal factors

- N stage higher than N1
- Surgical contamination (e.g., excisional or incisional biopsy) prior to definitive surgery
- *Presence of gross extracapsular extension

*Chemoradiation therapy is recommended for these high-risk features.

Advantages

- No treatment-related delay in surgery
- No limitations to the dose of radiation
- Allows complete surgical, histopathological and biological evaluation of the tumor and lymph nodes
- Residual microscopic disease can be effectively sterilized with improved local and/or regional control


Disadvantages

- Potential for delay in initiation of radiation therapy if recovery from surgery is complicated by fistula or other wound problems
- Scarring and vascular modifications from surgery may decrease tissue oxygenation and thus adversely affect radiation tumor cell kill

Factors Predicting Positive Margin

- Large tumour
- Perineural spread
- Vascular permeation
- Noncohesive invasive front
- Cervical metastasis

RADIOTHERAPY

- 
- Applications
 - Radical : early tongue, floor of mouth cancer
 - Palliative : advanced; total control not possible: 20gy x5 daily fractions x 1 week
 - Combined therapy
 - Preoperative
 - Postoperative

PROGNOSIS

- Location/thickness/depth of primary tumor
- Staging
- Type of histology
- Grading
- Presence of perineural spread
- Mandibular invasion
- LN extension (Level, size, extracapsular)
- Molecular markers (?)



What Happens After Treatment?

- Speech and Swallowing Therapy
- Follow-up tests
- Preventive measure
- Watch for new symptoms
- General health considerations

Summary

- The main problem of oral cancer is **early detection**
- Surgery is still the most important modality in management of oral cancer
- Better understanding of molecular biology of HNSCC.
- Proper **multidisciplinary team** with tumor board will go a long way in treating these patients which affects vital functions along with aesthetic considerations
- **Preventive measures and awareness programs** are paramount to control cases of oral cancer



THANK YOU