"CLINICAL STUDY ON AGE AND SEX DISTRIBUTION AETIOLOGY MORPHOLOGY STAGING AND HISTOLOGY OF ORAL MALIGNANCIES IN TIRUNELVELI MEDICAL COLLEGE HOSPITAL"

A DISSERTATION SUBMITTED TO THE TAMILNADU

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In partial fulfillment of the requirement for the degree of

M.S. (GENERAL SURGERY)

BRANCH – I

Register No: 221711357

DEPARTMENT OF GENERAL SURGERY

TIRUNELVELI MEDICAL COLLEGE

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PROF. Dr. S.VINOTHKUMAR, M.S.,
Associate Professor of General Surgery
Tirunelveli Medical College,
Tirunelveli

Date:

Place:

CERTIFICATE BY THE HEAD OF THE DEPARTMENT

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PROF. Dr. D. ALEX ARTHUR EDWARDS, M.S.,
Professor and HOD of General Surgery
Tirunelveli Medical College,
Tirunelveli

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Dr. S.M. KANNAN M. S, M. Ch (Uro)
DEAN
Tirunelveli Medical College
Tirunelveli

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Date:
Place: Tirunelveli

Dr. M.KARTHIKEYAN
Postgraduate Student,
Register No: 221711357
M.S.General Surgery,
Department of General Surgery,
Tirunelveli Medical College,
Tirunelveli.

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INSTITUTIONAL RESEARCH ETHICS COMMITTEE
TIRUNELVELI, STATE OF TAMILNADU, SOUTH INDIA PIN 627011
91-462-2572733-EXT; 91-462-2572944; 91-462-2579785; 91-462-2572611-16
Online@tvmc.ac.in, irec@tvmc.ac.in, www.tvmc.ac.in

CERTIFICATE OF REGISTRATION & APPROVAL OF THE TIREC REF NO:1151/GS/2017

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Dear Dr.M.KARTHIKEYAN, MBBS, The Tirunelveli Medical College Institutional Ethics Committee (TIREC) reviewed and discussed your application during The IEC meeting held on 27.10.2017.

THE FOLLOWING DOCUMENTS WERE REVIEWED AND APPROVED

1.	TIREC Application Form	☐
2.	Study Protocol	☐
3.	Department Research Committee Approval	☐
4.	Patient Information Document and Consent Form in English and Vernacular Language	☐
5.	Investigator's Brochure	☐
6.	Proposed Methods for Patient Accrual Proposed	☐
7.	Curriculum Vitae of The Principal Investigator	☐
8.	Insurance /Compensation Policy	☐
9.	Investigator's Agreement with Sponsor	☐
10.	Investigator's Undertaking	☐
11.	DCGI/DGFT approval	☐
12.	Clinical Trial Agreement (CTA)	☐
13.	Memorandum of Understanding (MOU)/Material Transfer Agreement (MTA)	☐
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1. The approval is valid for a period of 2 year/s or duration of project whichever is later
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Registrar, TIREC
Tirunelveli Medical College, Tirunelveli – 627011
State of Tamilnadu, South India

Dr.J.SureshDurai, MD
Member Secretary, TIREC
Tirunelveli Medical College, Tirunelveli – 627011
State of Tamilnadu, South India

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This is to certify that this dissertation work titled **"CLINICAL STUDY ON AGE AND SEX DISTRIBUTION AETIOLOGY MORPHOLOGY STAGING AND HISTOLOGY OF ORAL MALIGNANCIES IN TIRUNELVELI MEDICAL COLLEGE HOSPITAL"** of the candidate **Dr. M.KARTHIKEYAN** with registration Number **221711357** for the award of **M.S.** Degree in the branch of **GENERAL SURGERY.** I personally verified the urkund.com website for the purpose of plagiarism check. I found that the uploaded thesis file contains from introduction to conclusion pages and result shows 8 **Percentage** of plagiarism in the dissertation.

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INTRODUCTION

Oral malignancy is the sixth most common cancer worldwide and comprises 30% of all head and neck cancers. Oral cavity is the portion of aerodigestive tract from the vermillion border of the lips to the junction of hard and soft palate and the circumvallate papillae of the tongue. Anatomically this region includes lips, buccal mucosa, gingiva, floor of mouth, anterior 2/3rd of the tongue, hard palate and retromolar trigone. There has been an increase in the incidence in oral cancer in India, and this attributed to increased consumption of tobacco, alcohol and other carcinogenic products. Although there is a significant improvement in chemotherapy, Radiotherapy and surgical techniques, the disease is challenging in advanced stage.

AIM AND OBJECTIVE OF THE STUDY

To estimate and analyse the mean age, sex, anatomical subsite, etiology, morphological characters, stage at presentation and histology of oral malignancies.

REVIEW OF LITERATURE

SURGICAL ANATOMY OF ORAL CAVITY AND PHYSIOLOGY:

Oral cavity extends from the vermillion border of the lip to the junction between hard and soft palate superiorly, to circumvallate papillae of the tongue inferiorly and to the anterior tonsillar pillars laterally. The slit like space between the lips and cheeks and teeth/gingiva is the vestibule of the mouth. The floor is made up of mylohyoid muscle and the roof is the hard palate. Oral cavity is divided into seven anatomical subsites

1. Lips
2. Upper and lower alveolus
3. Anterior 2/3rd of the tongue limited by circumvallate papillae
4. Retromolar trigone, which overlies the ascending rami of the mandible behind the last molar tooth.
5. Floor of the mouth\
6. Buccal mucosa – lines the cheek, inner aspect of lip which includes upper and lower bucco-alveolar gutters
7. Hard palate

Cheek and Lips

The substance of lips and cheek consists of facial muscle and fat. The parotid duct opens on the inner surface of the cheek opposite to the crown of the upper second molar tooth. Except the teeth, the entire vestibule is lined by mucous membrane. The lips are fleshy folds, lined externally by skin and internally by mucous membrane. Each lip is composed of

(a) skin

(b) the orbicularis oris muscle

(c) the submucosa containing mucous labial glands and blood vessels

(d) mucous membrane.

The cheeks are fleshy flaps, forming a large part of each side of the face. Each cheek is composed of

(a) skin

(b) superficial fascia containing some facial muscles, the parotid duct, mucous glands, vessels and nerves

(c) the buccinator covered by buccopharyngeal fascia pierced by the parotid duct

(d) submucosa with mucous buccal glands

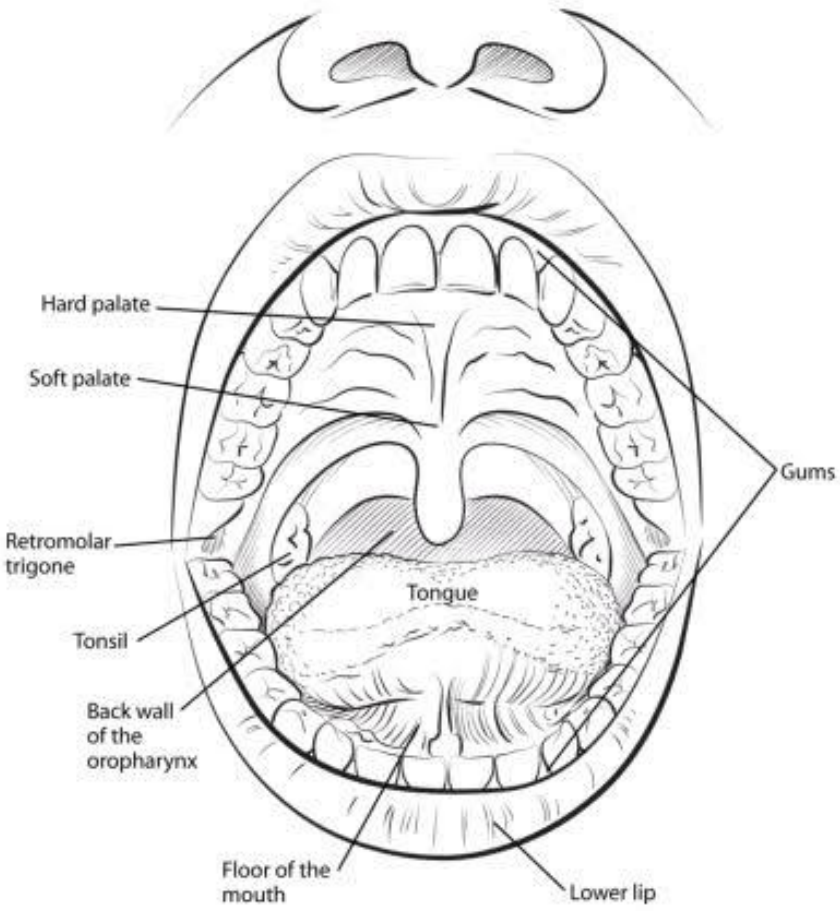
(e) mucous membrane.

Gums

Gums (Gingivae) are the soft tissues which envelop the alveolar processes of the upper and lower jaws and surrounding the necks of the teeth. They are composed of dense fibrous tissue covered by stratified squamous epithelium.

Hard Palate

The anterior two third is formed by the palatine processes of the maxillae, and its posterior one third by the horizontal plates of the palatine bones.



Tongue

The tongue is essentially a mass of muscle covered by mucous membrane with midline, sulcus separating the two muscular halves. The main bulk is made up of Genioglossus muscle with some longitudinal and transverse intrinsic muscle fibres. Two sets of muscles extrinsic, intrinsic are present. The tongue practically fills the oral cavity proper except in its posterior portion. The posterior part of the tongue is connected with hyoid bone by Hyoglossi, Genioglossi muscles and the Hyoglossal membrane. The inferior surface is connected with the mandible by the mucous membrane, which is reflected over the floor of mouth to the lingual surface of the gum. There are projections of the corium over the anterior two third of the dorsum of the tongue called papillae. The various types of papillae are

- circumvallate,
- fungiform
- filiform papillae.

Lymphatic Drainage

Lymphatic drainage is mainly to the submental, submandibular Lymph nodes in the suprahyoid region. It also drains into upper deep cervical lymph nodes especially the jugulo omohyoid. The lymph from the lower lip, the anterior part of the alveolus, anterior part of the floor of the mouth and anterior third of

tongue drain into the submental lymph nodes. The remaining part of the oral cavity and middle third of the tongue drains into submandibular group and the upper deep cervical and to some extent into the submental lymph nodes. The tip of the tongue drains bilaterally to the submental lymph nodes. The rest of the anterior two thirds drain unilaterally through the floor of the mouth into the submandibular nodes. There is some overlap across the midline. The posterior one third drains bilaterally into the jugulo omohyoid nodes. It is noted that the lymph from the tongue ultimately reaches the jugulo omohyoid nodes. The cervical nodes are described under various levels.

Level I: Includes nodes within the submental and submandibular triangle.

Ia: Nodes in the submental triangle bounded by the anterior bellies of digastric and deep by the mylohyoid.

Ib: Nodes in the submandibular triangle bounded by the anterior and posterior bellies of digastric and the body of the mandible.

Level II: Includes nodes extending from the subdigastric area to the carotid bifurcation and nodes surrounding the spinal accessory nerve from jugular foramen to posterior border of sternocleidomastoid muscle.

IIa: Nodes in the region anterior to the spinal accessory nerve.

IIb: Nodes in the region posterior to the spinal accessory nerve.

Level III: Includes nodes principally along the jugular veins between the carotid and its bifurcation, posterior border of sternocleidomastoid muscle and omohyoid muscle.

Level IV: Includes nodes below omohyoid muscle above the level of clavicle between carotid vessels anteriorly and mylohyoid muscle posteriorly.

Level V: Includes nodes in the posterior cervical triangle bounded by the posterior border of the sternocleidomastoid, the clavicle and the anterior border of the trapezius.

Level VI: Includes nodes in the anterior triangle of necks bounded by the anterior borders of the sternocleidomastoid extending from the hyoid to the suprasternal notch.

Blood supply of the oral cavity

All the parts of the oral cavity are supplied by the three branches of the external carotid artery.

- The facial artery, a branch of external carotid artery supplies the cheek.

- The lingual artery, a branch of external carotid artery supplies the tongue.
- Blood supply of the palate is from the greater palatine artery, a branch of maxillary artery which emerges from the greater palatine foramen and passes around the palate.

Nerve supply of the oral cavity

Sensory supply to the mucous membrane of the cheek comes from the trigeminal nerve above by maxillary division and below by the mandibular division. The mucous membrane and the muscles of the tongue have entirely separate nerve supply. The anterior two thirds of the tongue is supplied by the lingual nerve whose trigeminal component mediates the common sensibility and whose chorda tympani component mediates taste.

All the muscles of tongue, intrinsic and extrinsic are supplied by the hypoglossal nerve (except the palatoglossus which is supplied by pharyngeal plexus).

PHYSIOLOGY

1. Mastication

As the seat of the dental apparatus it serves to masticate the food and prepare it for digestion. Mastication is performed not by the isolated action of particular teeth or a particular jaw but by the combined activity and integration of the component parts as one unit.

2. Speech

With the pharynx it forms the resonator for speech.

3. Respiration

It also assists in respiration. However, this is abnormally accentuated in mouth breathing.

4. Taste

This harbour the organs of taste.

5. Absorption

Absorption through the mucous membrane is very rapid, its non corneated epithelium being much more permeable than the epithelium of the skin. This fact is utilized in the topical administration for systemic action of drugs in the oral cavity, particularly in the region of the floor of the mouth and under the tongue.

ETIOLOGY

Oral cancer represents a multiplicity of diseases.

Tobacco

The relation between tobacco exposure and disease development has been clearly demonstrated. A clear dose response relationship has been identified with greater risk being directly proportional to intensity and duration of exposure. Users of smokeless tobacco have four times increased risk of oral cavity carcinoma.

Smoking

The risk of malignancy is 6 times than that of non-smokers. The risk increases with the number of years of smoking and number of cigarettes smoked per day.

Betel nut and Tobacco chewing

Chewing dried and cured tobacco with betel nuts and lime is highly irritant to oral mucosa.

Alcohol

Alcohol is another strong independent risk factor for oral cancer with multiplicative effect from combined exposure with tobacco. Indirectly vitamin deficiency and poor detoxifying capability due to alcohol induced liver dysfunction may promote carcinogenesis.

Diet and Nutrition

The Plummer Vinson syndrome has been associated with increased risk of oral malignancy. Recent studies suggest Vitamin A, C and carotenoids may be protective against epithelial cancers. High dietary consumption of fruits and vegetables has been found to provide protective effect.

Genetic

The over expression of p53 gene in the cancer of oral cavity has been correlated with smoking and drinking. The p53 gene may be used in future as a potential tumour marker and may help in identifying patients who are at risk for cancer development.

Viral

Another possible etiologic agent for carcinogenesis is Human Papilloma Virus (HPV) an epitheliotropic DNA virus. HPV 16 and 18 are implicated in 15% to 20% of oral cancers.

AIDS

Squamous cell carcinoma of upper aerodigestive tract appears to be common and aggressive in patients with AIDS as in other immunodeficiency states. Oral and pharyngeal manifestations of Kaposi sarcoma are common in HIV positive patients.

Solar exposure

Exposure to sunlight has been implicated in the carcinoma of lip in susceptible population.

Dentition

Poor dentition may be associated with cancer of oral cavity.

PREMALIGNANT LESIONS

Lesions considered to carry a definite risk of malignant change

- Leucoplakia
- Erythroplakia
- Chronic hyperplastic candidiasis

Conditions that are not themselves premalignant but which are associated with a higher than normal incidence of oral cancer

- Oral submucous fibrosis
- Syphilitic glossitis
- Sideropenic dysphagia

Oral conditions about which there is still some doubt as to whether

their association with oral cancer is causal or casual

- Oral lichen planus
- Discoid lupus erythematosus
- Dyskeratosis congenita

Leukoplakia

WHO has defined leukoplakia as ‘any white patch or plaque that cannot be characterized clinically or pathologically as any other disease. Oral leukoplakia is the most precancerous lesion of the oral cavity.

Erythroplakia

Erythroplakia is defined as ‘any lesion of the oral mucosa that presents as bright red velvety plaques that cannot be characterized clinically or pathologically as any other recognisable condition’. The incidence of malignant change in erythroplakias is 17 – fold higher than in leucoplakia.

Chronic hyperplastic candidiasis

In this, dense chalky plaques of keratin are formed. There may be an immunological defect that allows the *Candida albicans* to invade the epithelium and may render the patient susceptible to malignant change.

Oral submucous fibrosis

Oral submucous fibrosis is a progressive disease in which fibrous bands form beneath the oral mucosa.

Syphilitic glossitis

The syphilitic infection produces an interstitial glossitis with an endarteritis which results in atrophy of the overlying epithelium.

Sideropenic dysphagia

The sideropenic dysphagia leads to epithelial atrophy, which in itself is excessively vulnerable to carcinogenic irritants.

Oral lichen planus

In erosive or atrophic lichen planus, there is a risk of malignant transformation.

Discoid lupus erythematosus

This consists of circumscribed, elevated, white patches surrounded by a telangiectatic halo.

Dyskeratosis congenita

This syndrome is characterized by reticular atrophy of the skin with pigmentation, nail dystrophy and oral leukoplakia.

PATHOLOGY

MACROSCOPIC APPEARANCE

Oral cancers generally refer to squamous cell carcinoma of oral mucosal origin. More than 90% of cancers of oral cavity are squamous cell carcinomas. Squamous cell carcinomas are described as either exophytic or ulcerative or a mixture of both ie, ulceroproliferative.

1. Proliferative type

The exophytic type is less common and carries a better prognosis. This is a soft fleshy mass has more superficial involvement and deep infiltration of mucosal tissues occurs in advanced stages.

2. Superficial plaque type

Finely granular shallow ulceration that creeps slowly over large areas of mucosa with no invasive tendency. This occurs in patients with wide intraoral pigmentation or melanoplakia.

3. Ulcerative Type

This is seen as an ulcer with heaped up edges and bleeds easily. This excavation is hard and infiltrates the surrounding structures and usually has a high histological grade.

HISTOPATHOLOGY

Squamous cell carcinoma

Columns of epithelial cells infiltrate the dermis and in sections, it appears as though it got separated from the rest of the growth. In the centre of these masses, the same process of keratinisation goes on as occurs formally on the surface. The cells become converted into structures, hyaline masses of keratin which stain brightly with eosin and are identical with horny material on the surface of the skin. Hence this is called Epidermoid carcinoma. These hyaline masses are often called as “Cell nests” or “Epithelial pearls”.

The outer cells of the pearls are often arranged in a concentric manner. The unchanged cells show the prickle cell appearance, characteristic of epidermoid carcinoma. The presence of epithelial pearls is a sign of differentiation and of good prognostic value. In secondary nodes the appearances may be similar to those in the primary tumour.

Basaloid squamous cell carcinoma

It is an aggressive form of squamous cell carcinoma.

Verrucous carcinoma

It is an uncommon variant of squamous cell carcinoma and represents less than 5% of all oral cancers. It is considered as a low-

grade malignancy and metastasizes rarely. Radiation induced anaplastic transformation has been reported in multiple studies. This is the only malignancy where local excision is sufficient.

METHODS OF SPREAD

LOCAL SPREAD

It extends to the adjacent structures by direct infiltration. It can extend into the retromolar area, alveolus and may infiltrate and ulcerate the skin.

LYMPHATIC SPREAD

The first group of nodes to be affected from the buccal mucosa carcinoma is the submandibular node. From these nodes, when the disease advances, spread occurs to the upper deep cervical nodes. Very rarely spread occurs to the nodes in the posterior triangle. This occurs only in very advanced stage of the disease. The oral cancer as a whole is confined to the organ of origin for a long time, before it disseminates to the lymph nodes which drain the part.

PATTERN OF LYMPH NODE SPREAD

The head and neck lymphatic network is divided into superficial and deep layers separated by the deep cervical fascia. The superficial lymphatics drain into suboccipital, preauricular and postauricular, and external jugular lymph nodes. Deep cervical lymph nodes primarily drain

the mucosa of the upper aerodigestive tract. These lymph nodes include the submental, prevascular facial, and submandibular group located in the submental and submandibular triangles. Deep jugular lymph nodes include the jugulodigastric, jugulo-omohyoid, and supraclavicular group of lymph nodes adjacent to the internal jugular vein.

Lymph nodes in the posterior triangle of the neck include the accessory chain located along the spinal accessory nerve and the transverse cervical chain in the floor of the posterior triangle. The standardized description of regional node metastasis divides the lymph nodes in the lateral aspect of the neck into five nodal groups or levels. In addition, lymph nodes in the central compartment of the neck are assigned level VI, and those in the anterior superior mediastinum are assigned level VII. Each subgroup of lymph nodes serve as the primary echelon from a specific site in the head and neck region. Thus, the location of a palpable metastatic lymph node often indicates the likely source of a primary tumor.

HAEMATOGENOUS SPREAD

This may occur from invasion of the blood vessels by the primary tumour or lymph nodal secondaries, to the distant organs. The most common site of distant metastasis is the lung followed by liver and bone.

CLINICAL FEATURES AND DIAGNOSIS

The valid points which should be brought into mind while examining a patient with oral malignancies are:

- All head and neck patients should undergo a comprehensive history and physical examination. Specific questions should be asked about mouth ulceration, dysphagia, odynophagia, dysarthria, facial numbness, weight loss, referred otalgia, and trismus.
- Changes in a previously well-fitted denture should also raise suspicion. An accurate history about tobacco and alcohol use should be solicited as well as the patient's functional status and comorbidities. These factors play an important role for devising an appropriate treatment plan and the patient's likelihood of completing it.
- The physical examination evaluates the size and character of the oral cavity lesion, including its thickness, its degree of infiltration (endophytic or exophytic), and its potential involvement with adjacent structures and pathways of spread.
- Firm palpation should be performed to assess degree of fixation or invasion to the mandible or maxilla.
- Upon palpation if a lesion that bleeds easily should raise suspicion of malignancy.

- Beyond the index mass, cranial nerve deficits or paresthesias should be documented, regional lymphadenopathy palpated, and synchronous cancers sought.
- Grossly compromised teeth that are unlikely to survive radiation therapy should be evaluated for extraction.
- Conversely, loose teeth at the tumor site should be retained, as premature removal opens dental sockets and facilitates implantation into the mandibular canal. Surgical access to the lesion should be considered, as well as potential pedicled and microvascular reconstruction options.
- Any suspicious lesion should be biopsied to confirm malignancy. A fine-needle aspiration of suspicious neck lymphadenopathy also is useful for diagnosis and staging.

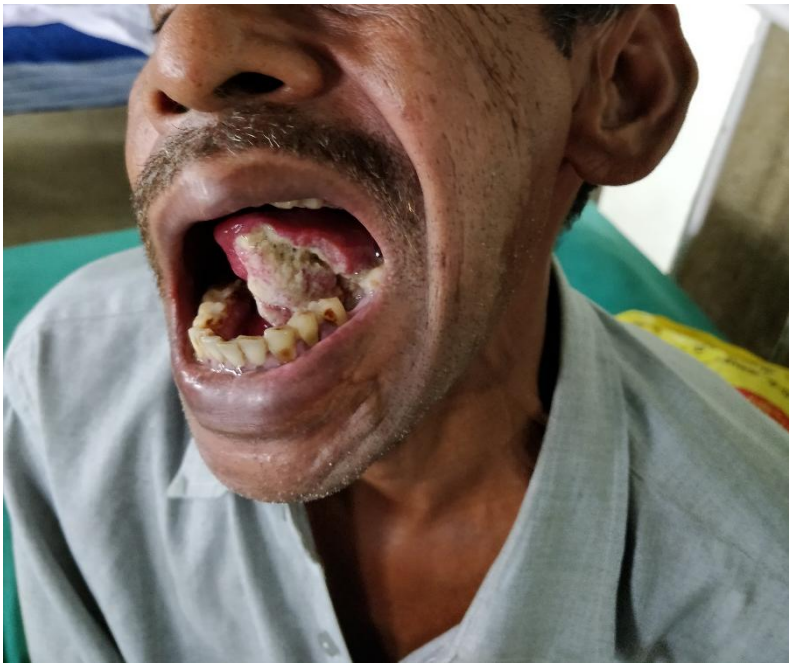
TONGUE

The majority of tongue cancers occur in the middle third of the lateral margins extending in the course of disease on to the ventral aspect and floor of mouth. Often the growth is exophytic with areas of ulceration. It may occur as an ulcer in the depths of a fissure or as an area of superficial ulceration with infiltration into the underlying muscle. Excessive salivation, Foetor oris, Ankyloglossia are the other symptoms. Pain is a late symptom due to involvement of lingual nerve.

Lymph node metastasis is common and present as lump in the neck. Partial glossectomy with healing by secondary intention, primary closure, skin grafting, or free flap reconstruction is the accepted treatment Early-stage tumors have a good prognosis (70% to 80% 3-year survival for stages I and II and 40% to 50% for stage III and IV disease), while advanced lesions require combined modality treatment. A small subset of oral tongue cancer occurs in patients younger than 40 years of age with no known risk factors; these cancers appear to be more aggressive and therefore warrant more aggressive therapy. Speech and swallowing rehabilitation are essential for good postoperative function.

THE FLOOR OF THE MOUTH

Approximately 10% to 15% of oral cavity cancers occur in the floor of the mouth. The lesion usually starts as an indurated mass which soon ulcerates. At an early stage the tongue and lingual aspect of the mandible becomes involved. This leads to slurring of speech. Advanced lesions present with pain, bleeding and foul breath. Approximately 50% of patients will present with cervical metastasis, which, as with other oral cavity sites, is a predictor of poor prognosis. Spread to submandibular and jugulodigastric nodes occur and may be bilateral. Deep tongue muscle and mandible involvement is frequently seen, requiring partial glossectomy and marginal or segmental mandibulectomy with free flap reconstruction to obtain clean margins. Bilateral cervical metastasis is not uncommon. Overall 5-year survival rates range from 30% to 70%, with stages I and II approaching 70% to 80% and stage IV disease being less than 50%.



THE BUCCAL MUCOSA

Buccal mucosa cancers represent 5% of oral cavity cancers. Tobacco smoking, alcohol use, smokeless tobacco use, and betel nut use have been associated with buccal cancers. The region near the lower third molar is a common site for buccal cancers, and patients may present with trismus due to involvement of the pterygoid muscles. Patient usually notices an ulcer or swelling at the angle of the mouth or inside the cheek. May or may not have foul smelling discharge. May present with trismus with deep infiltration into the buccinator muscle. The overlying skin of the cheek becomes involved and finally ulcerates forming an orocutaneous fistula. Few come for secondary lymph node enlargement. Squamous cell carcinoma mostly arises at the commisure or along the occlusal plane. Cervical metastases may be common (50%) and are associated with a poor prognosis. Wide local excision is the treatment of choice, and a possible marginal mandibulectomy may be necessary to obtain clear margins. Verrucous carcinoma occurs as a proliferative exophytic lesion with minimal deep invasion and induration. The lesion presents as a soft white velvety area mimicking benign hyperplasia. Lymph node metastasis is rare.

Early-stage disease may be associated with cure rates in the 60% to 70% range, while advanced tumors have survival of approximately 40%. Local-regional recurrence is a significant problem. Survival may be improved with postoperative radiation. The surgical defect may be reconstructed with local advancement flaps (e.g., tongue) or may require free flap reconstruction.

THE HARD PALATE AND MAXILLARY ALVEOLAR RIDGE

Hard palate SCCs represent approximately 0.5% of all oral cavity cancers in the United States. Cancer of palate is common where reverse smoking is practiced. They present as sessile swelling which ulcerate late. Late symptoms are nasal obstruction, discharge or bleeding and dental symptoms such as painful or loose teeth, ill-fitting dentures, oroantral fistula or failure of an extraction socket to heal.

Cancers of the hard palate and gingiva are treated with wide local excision. Tumors within close proximity to or involving bone and large tumors may require partial palatectomy or maxillectomy to obtain clear margins. Bony defects are best reconstructed with a palatal prosthesis.

LIP

Lower lip is most commonly affected. The lesion is situated usually to one side of the midline. It can present as nodule or ulcer with bleeding and offensive discharge or neck lump. Cancer of the lip accounts for approximately 25% to 30% of oral cavity cancers, with greater than 90% being SCC and greater than 90% occurring on the lower lip. Smoking and sun exposure are major risk factors. Surgery is the treatment of choice for small lesions, with the exception of commissure lesions, which may be better treated with radiation. Cure rates approaching 90% are achievable for early lesions, with more advanced lesions having a 5-year survival of less than 50%. Nodal metastases are associated with large primary tumors; tumors of the upper lip and commissure, as well as perineural spread along the mental nerve, portend a poorer prognosis. neck dissection for clinically limited (nonpalpable)

THE GINGIVA AND ALVEOLAR RIDGE

The patient comes with swelling on the gum, bleeding on mastication, ulceration around the teeth, ill-fitting dentures, history of tooth extraction and subsequent failure of the socket to heal and trismus in advanced stage.

RETROMOLAR TRIGONE

It can present as pain referred to external auditory canal or preauricular area or trismus.

INVESTIGATIONS

1. BIOPSY

Biopsy plays a main diagnostic tool in oral malignancies. It is always done on any doubtful or obvious malignant lesions of the oral cavity. Positive biopsy confirms malignancy but a negative malignancy does not exclude malignancy

Procedure

It is preferable to do biopsy under General Anesthesia, so that a good bit of normal tissue at the margin of growth can easily be taken without discomfort to the patient. Some authors feel that injection of local anaesthetic causes dissemination of malignant cells. To obviate risk of dissemination Lignocaine jelly is used topically. Biopsy is taken with sharp instrument. An allis forceps is put over margin of the growth and a eleven blade knife is used to cut around it and remove a bit of adjoining normal mucosa along with margin of the lesion. Area selected for biopsy must be free from necrotic tissue. Specimen must be immediately immersed in 3% formalin solution.

2. FINE NEEDLE ASPIRATION CYTOLOGY

FNAC of the neck nodes after giving antibiotics

Role of FNAC is

1. Staging the disease.
2. Establishing the diagnosis of any recurrent disease in the lymph node or as a nodule.

3. RADIOLOGY

The use of complementary imaging modalities is a crucial adjunct to the physical exam in evaluating oral cavity lesions for staging and treatment planning, especially with regards to bone invasion.

X–ray mandible defines mandibular invasion. An orthopantomogram gives better delineation of any bone involvement.

4. CT SCAN

Value of CT in intraoral tumours is more limited for evaluation of antral tumours and pterygoid regions. CT scan can be used to predict perineural and vascular invasion by oral malignancy. CT brings out some of the lymph nodes not palpable clinically. To evaluate the primary lesion, a Dental and contrast soft tissue computed tomography (CT) scan are indicated.

Dental CT scans provide finer detail and enable three-dimensional modelling of the bony regions that is useful for reconstruction. A standard CT scan is also valuable for evaluating lesions that arise from the palate

or alveolar ridge, capturing tumor extension into adjacent areas superiorly or posteriorly. Coronal cuts provide an excellent sense of extension through palatal foramina as well as mandibular height when evaluating the need for marginal or segmental mandibulectomy. While CT is good for cortical bone involvement, magnetic resonance imaging (MRI) is preferred for medullary bone extension as well as soft tissue invasion (such as into the masticator or parapharyngeal spaces).

To evaluate the neck for regional lymph node involvement a contrast CT scan should be performed. Enlarged nodes, rounded nodes, and the presence of central necrosis are suggestive of metastatic spread. For the evaluation of distant metastases, positron emission tomography/computed tomography (PET/CT) may be useful for advanced cancer stage. If this shows evidence of PET uptake in the lungs, then a chest CT should be done for further evaluation.

5. Routine hemogram, chest radiograph, ultra sound abdomen and liver function test

6. Blood VDRL

7. Dental consultation

8. Laryngoscopy,

9. Bronchoscopy,

10. Esophagoscopy for more accurate assessment in certain cases and for presence of another primary.

CLINICAL STAGING AND HISTOLOGICAL GRADING

After clinical examination and appropriate imaging and biopsy it is usually possible to accurately stage the patient without the need for any further endoscopy. In the past, panendoscopy (i.e., direct laryngoscopy, bronchoscopy, and esophagoscopy) was routinely performed to exclude the possibility of a synchronous cancer. However, with advances in imaging and flexible endoscopy, most institutions now reserve bronchoscopy and esophagoscopy for cases with worrisome imaging or with symptoms such as hemoptysis or odynophagia.

The current American Joint Committee on Cancer (AJCC) staging system for oral cavity cancer defines the tumor as follows

- T stage is largely defined by the size of the lesion.
- For lip cancer, T4 disease specifies tumor involving cortical bone, the inferior alveolar nerve, the floor of mouth, or the skin of the face.
- For other oral cavity subsites, T4a disease signifies surgically resectable disease, with involvement of adjacent structures or the skin of the face.
- T4b disease, however, suggests massive, surgically unresectable disease, with involvement of the masticator space, pterygoid plates, skull base, or internal carotid artery encasement.

- The N stage is defined by the size of the lymph nodes as well as the number of lymph nodes involved.

TNM Staging for Oral Cavity Carcinoma

Primary tumour

TX Unable to assess primary tumour

T0 No evidence of primary tumour

Tis Carcinoma in situ

T1 Tumour is < 2 cm in greatest dimension

T2 Tumour > 2 cm and < 4 cm in greatest dimension

T3 Tumour > 4 cm in greatest dimension

T4 (lip) Primary tumour invading cortical bone, inferior alveolar nerve, floor of mouth, or skin of face (e.g., nose or chin)

T4a (oral) Tumour invades adjacent structures (e.g., cortical bone, into deep tongue musculature, maxillary sinus) or skin of face

T4b (oral) Tumour invades masticator space, pterygoid plates, or skull base and/or encases the internal carotid artery

Regional lymphadenopathy

NX Unable to assess regional lymph nodes

N0 No evidence of regional metastasis

N1 Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension

N2a Metastasis in a single ipsilateral lymph node, > 3cm and < 6 cm

N2b Metastasis in multiple ipsilateral lymph nodes, all nodes < 6 cm

N2c Metastasis in bilateral or contralateral lymph nodes, all nodes < 6 cm

N3 Metastasis in a lymph node > 6 cm in greatest dimension

Distant metastases

MX Unable to assess for distant metastases

M0 No distant metastases

M1 Distant metastases

STAGE GROUPING

STAGE I: T1N0M0

STAGE II: T2N0M0

STAGE III: T3N0M0

T1T2T3 with N1M0

STAGE IV: T4 any N, M

N2 any T, M

M1 any T, N

HISTOLOGICAL GRADING

GRADE I - well differentiated

GRADE II - moderately differentiated

GRADE III - poorly differentiated

TREATMENT MODALITIES

Treating the patient with oral malignancy is complex. Each specific site of disease, the extent of disease and the pathologic findings dictate the appropriate surgical procedure, radiation fields, dose and fractionation and indications for chemotherapy. Early cancer is adequately treated by surgery alone, provided the resection margins are tumour free.

Early stage (I and II) oral carcinoma can be treated with surgery or radiation. Five-year survival rates are similar for both modalities. In advanced stage (III and IV), a combination of surgery and radiation therapy provides the best survival rate although this increases complication and morbidity. Induction chemotherapy followed by surgery with or without postoperative radiotherapy is optimum multidisciplinary therapy.

Ca oral cavity: According to NCCN – National Comprehensive Cancer Network guidelines

- T1 – 2, N0 Excision of primary tumour ± unilateral or bilateral selective neck dissection OR Ext. beam RT ± Brachytherapy
- T3, N0 Excision of primary and reconstruction and unilateral or bilateral selective neck dissection followed by RT or CT / RT
- T1 – 3, N1-3, T4, Any N Surgery – Excision of primary, Ipsilateral or bilateral neck dissection Reconstruction as indicated followed by RT or CT / RT. Unresectable CT + RT

PRINCIPLES OF SURGERY

Available surgical procedures for primary include

- wide excision,
- complete oral resection,
- complete oral resection with Hemimandibulectomy, Maxillectomy and Hemiglossectomy. Margins of surgical resection vary from site to site. Positive surgical margin carries poor prognosis and should be avoided by frozen section / histopathology of close or doubtful margin.

Primary reconstruction of surgical defects with well vascularized flaps should be done in most cases. This allows prompt healing, early resumption of function, effective rehabilitation and shorter hospital stay.

Advantages

Many cancers of oral cavity are amenable to surgical excision per orally. Surgical treatment is preferred in patients with advanced tumour and those with mandible invasion. Requires less time and provides fewer long-term sequelae.

Disadvantages

- Potential risk of anaesthesia.
- Functional disabilities.

Mandible involvement

Invasion of mandible is not radiocurable and can spread perineurally via inferior alveolar nerve. Direct invasion required hemimandibulectomy. Tumours approaching but not invading need marginal mandibulectomy.

Cervical Node Metastasis

When palpable nodes are present in the neck the decision to proceed with therapy may be made on purely clinical grounds. Palpable nodes require surgical therapy in some form of neck dissection, usually performed in continuity with the tumour. High

incidence of occult cervical metastases, even with small primary tumour and increased incidence of extracapsular spread in cases with palpable adenopathy provides a logical basis for treatment of the neck in a preclinical stage.

Neck Dissection can be

- Radical Neck Dissection – Crile
- Modified Radical Neck dissection
- Functional Neck dissection
- Selective Neck dissection

Nodal metastases are associated with a 50% decrease in survival. Disease of the neck can be treated effectively with surgery and/or radiation. Limited disease (single node) with no extracapsular spread may be treated with single modality therapy, while more advanced disease may require combination therapy.

Traditionally, surgery of the neck consists of one of the following types of neck dissections:

- R*adical neck dissection* (RND),
- *Modified radical neck dissection* (MRND),
- *Selective neck dissection* (SND).

The RND consists of removal of all cervical lymph nodes in levels I to V, the sternocleidomastoid muscle, the internal jugular vein, and the

spinal accessory nerve. The limits of the dissection are the inferior border of the mandible superiorly, the clavicle inferiorly, the trapezius posteriorly, the lateral border of the sternohyoid muscle anteriorly, and the deep cervical fascia overlying the levator scapulae and the scalene muscles deeply. In an attempt to decrease postoperative morbidity, the MRND was designed.

It is similar to the RND but involves preservation of the spinal accessory nerve, internal jugular vein, and/or the sternocleidomastoid muscle. A selective neck dissection involves removal of limited cervical lymph node groups (levels I–III [a *supraomohyoid neck dissection*], levels II–IV [a *lateral neck dissection*], levels II–V, VII, and postoccipital and retroauricular nodes [a *posterolateral neck dissection*]), along with preservation of the spinal accessory nerve, internal jugular vein, and sternocleidomastoid muscle. The type of selective neck dissection performed depends on the site and histology of the primary tumor and the most common routes of lymphatic spread. A supraomohyoid neck dissection is performed for clinically limited (nonpalpable) spread from oral cavity cancers.

For tongue, In addition to the size of the primary and histologic grade, tumor thickness also has prognostic significance for local-regional recurrence, with lesions greater than 4 mm having a 40% to 50% incidence of nodal metastasis. For tumors of 4 mm or greater thickness,

an ipsilateral supraomohyoid neck dissection (levels I–III) is recommended for management of the neck. There are some data that suggest that a level IV dissection may be warranted due to the presence of skip metastasis; however, this is usually done for patients' metastasis in levels I to III.

Surgery in advanced Disease

Most efficient method is single stage reconstruction at the time of ablative surgery. Enormous advance in reconstructive techniques have affected mainly the efficiency of therapy in restoring the patient to reasonable function and appearance rapidly. The various flaps used in reconstructive method are

- Tongue flap
- Nasolabial flap
- Forehead flap – McGregor
- Bilobed forehead and scalp – Narayanan's flap
- Delto pectoral flap – Bakamjian
- Pectoralis major myocutaneous flap
- Trapezius myocutaneous flap
- Sternomastoid flap
- Lattismus dorsi flap
- Free flaps

Flaps are tissue consisting of entire thickness of skin with variable amount of underlying tissue. With a network of blood vessels, arterial, capillary and venous and it is the effectiveness of the circulation through this network in perfusing the tissues of the flap determines its survival. The defect in the donor area can be closed by direct suturing or with split skin graft.

Fore head flap

The hairless skin of fore head is used mainly for covering intra oral defects. In females, it is also used for outer skin cover. It is laterally based from lateral border of eyebrow to the anterior margin of pinna, curving across the forehead. It is based on superficial temporal artery anterior branch. Flap is raised in the plane between pericranium and the aponeurosis, dissecting in the loose areolar tissue. Return of the bridge segment and in setting is done after about days when the flap gained vascularity from the local tissue.

Deltopectoral flap

This is an axial pattern flap based on first three or four perforating branches of Internal mammary artery. These arteries emerge from corresponding intercostal space close to the lateral border of sternum. They extend as far as the deltopectoral groove. It is usually used to cover extra oral defect, when the exposed bridge

segment is tubed in order to eliminate raw surface. It is sometimes used for covering intra oral defect.

Pectoralis major flap

Based on pectoral branch of acromio thoracic artery and its associated veins. Pectoral myocutaneous flap is tailored from below and medial to nipple. Adequate size of skin, subcutaneous tissue and pectoralis muscle is raised with muscle pedicle measuring almost similar to the breadth of the island skin. This is tunnelled through the lower neck incision, beneath the neck skin and brought into the mouth to cover the intra oral mucous membrane defect.

- Bilobar Narayanan's flap – forehead and scalp – is used for lining and cover in males.
- The pectoralis major myocutaneous flap for lining and deltopectoral flap for cover in females is used frequently.

PRINCIPLES OF RADIOTHERAPY

Cancers of oral cavity are of particular importance to radiation oncologist. They have an active role in early and advanced disease. The intent of irradiation of head and neck is to ensure a long term and permanent locoregional tumour control. Radiotherapy offers many head and neck cancer patients a valid alternative to mutilating surgical procedure and very often a better quality of life than after functional conservation surgery. Radiotherapy causes destruction of neoplastic disease at both primary site and nearby microscopic extensions. RT includes multifield techniques, rotational therapy, shrinking field techniques and electron and brachy boost techniques. In addition, radiation sensitizers and protectors, hyperthermia, newer fractionation schedules are increasingly being used.

Fractionation is the division of a dose of radiation into relatively small doses given over certain number of days. Fractionation allows time for the repair of sublethal damage of normal tissues between fractions, but it can also lead to repopulation of the tumour cells to progress from one stage of the cell cycle to another between fractions. Because tumour cells are more susceptible to the killing effects of ionizing radiation tumour cells spared during one fraction may in time be more susceptible during the next or subsequent fractions. In addition, number of hypoxic

tumour cells may decrease between successive fractions owing to reoxygenation.

Advantages

- Major surgery is avoidable.
- No tissues are removed and hence no functional or cosmetic effect.
- Elective irradiation of lymph nodes can be included with little added morbidity whereas a surgeon should adopt a ‘wait and see’ policy or proceed with elective neck dissection.
- The surgical salvage of an irradiation failure is more likely to succeed than the salvage of a surgical failure.
- When irradiation is unsuccessful in treating a primary lesion, the cancer always recurs in the centre of the original lesion. But surgical recurrences are more likely to occur at the margins of the resection in or near the suture line. It is difficult to distinguish the normal surgical scar from recurrent disease and diagnosis of recurrence is often delayed.
- The total cost of radiation therapy is usually less than surgery. Multiple primary lesions can be simultaneously encompassed.

Principles

1. The volume of primary tumour site which requires high dose of radiation must include a margin outside all cancer cells and is comparable to that which must be removed surgically.
2. Anatomic sites of actual or likely spread of cancer such as regional lymph nodes are frequently included in continuity with the primary tumour. Post-operative radiation after removal of all grossly detectable
3. disease in a dose of 4500 – 6000 cGy result in very high frequency of tumour control with few detectable sequelae.
4. The standard radiation treatment regimen for head and neck cancer consists of 5 daily treatment fractions per week given for 5 to 7 continuous weeks. The daily dose per fraction is 180 cGY to 225 cGY.

Technique

1. External Beam Radiotherapy (XRT)

- XRT as sole treatment with curative intent and in clinically positive nodes. 70 – 75 Gy to the tumour, 65 – 70 Gy to the clinically positive nodes, Elective neck node irradiation 40 – 50 Gy
- XRT with brachy therapy

- XRT to tumour and primary nodes is started with a dose of 45 – 50 Gy followed by an interstitial implant (1 – 2 weeks later) with iridium wires with a delivery dose of 25 – 30 Gy.
- XRT followed by surgery 50 Gy are given to the tumour site and neck nodes
- XRT preceded by surgery
- When local resection is sufficient, no postoperative irradiation is given except in T4 where a dose of 60 Gy reduces risk of local recurrence. When there are positive nodes, 50 Gy is sufficient to control the neck nodes but may be increased to 60 Gy when there is capsular rupture or perineural spread or tumour spillage is suspected.

Advantages

1. Centripetal shrinkage of tumour.
2. Sterilizes lymphatics.
3. Allows adequate clearance.
4. Advantage in the posteriorly placed or ill-defined primary that would make surgical exposure difficult. Functional disability (speech/ deglutition) is also less.

Disadvantages

- Tumours that have deep invasion or are large (T3, T4) are less responsive to XRT.
- Second course of XRT cannot be considered.
- Salvage surgery for radiation failure is associated with lower survival and high morbidity.
- Side effects of irradiation like xerostomia, mucositis and osteoradionecrosis.
- Long treatment time of 5 – 7 weeks can be a burden.

2. Brachy Therapy

Indicated in well-defined and accessible T1 and T2 tumour

Advantage

- Conservative treatment

- Well defined volume of radiation

Indications

1. Tumour control

Small tumours T1 – T2 are equally well controlled by radio therapy or surgery.

2. Pre surgical

A dose of 50 Gy is delivered to the primary tumour and regional nodes with double aim to reduce the tumour size and effect cell kill to facilitate ease of surgery.

3. Post-surgical

In complete resection (upto 60 – 70 Gy dose) is given, depending on the stage and grade of tumour. When elective neck dissection is first done, radio therapy is given depending upon the histological grade.

4. Elective treatment of clinically negative nodes

If a high rate of relapse is expected in neck nodes more than 90% of the cases can be prevented by delivery of 40 - 50 Gy to the neck.

5. Relapsing tumour after surgery

When salvage surgery is not feasible salvage radiation therapy can be tried, although often with poor outcome due to tumour load, poor vascularization and patients' general condition.

6. Palliation

When tumour is considered surgically or radiotherapeutically incurable, a few high dose fractions are given in order to reduce symptoms such as pain and bleeding.

Side effects of Radio therapy

Early

- Mucositis
- Dry mouth
- Loss of taste

- Dysphagia,
- Dyspnoea
- Erythema and Epidermolysis

Late

a) Soft tissue necrosis, Flap dehiscence

b) Osteoradionecrosis of mandible. This is predisposed by increased dose delivery to the mandible, mandibular parts not covered by healing mucosa and dental extraction within 10 days of brachytherapy.

c) Hypothyroidism

PROGNOSTIC FACTORS

While the TNM staging system accurately predicts overall survival, there are many other pathological factors which have been shown to affect outcome.

- Besides grade, the most important histologic feature in oral cavity SCC is depth of invasion. Lesions that are thin and superficially invasive have a low risk of regional lymph node metastasis and are highly curable.
- In contrast, thicker lesions pose a high risk of occult neck lymphadenopathy and merit neck dissection Current evidence supports a thickness of 4 mm or greater to be an independent predictor of cervical metastasis. The incidence

of lymph node metastasis and survival in relation to the thickness of the primary lesions for T1 and T2 oral cavity squamous cell carcinoma. Therefore, such lesions warrant elective neck dissection, even if nothing is detected on examination or imaging.

- While it is not practical to know the exact depth prior to resection, palpation of the primary lesion can provide a gross indicator of depth; staging the neck dissection after initial tumor resection (and surgical pathology results are confirmed) may be feasible. Alternatively, the primary tumor may be resected and the depth of invasion measured on frozen section thus guiding decision making with respect to elective neck dissection.
- Other unfavourable factors include perineural invasion, infiltrative borders (compared to pushing borders), lymphovascular invasion, and bone invasion.
- Positive or close (<5 mm) margins are also a poor prognostic factor.
- Occult neck metastasis was the main independent predictor of overall, disease-free, and recurrence-free survival (RFS); its presence increased mortality by a factor of five.

- Additionally, positive margins were a predictor for decreased RFS, while greater than 2 mm depth of invasion was the main predictor for failure in the neck.
- Distant metastasis is not uncommon in patients with oral cavity cancer, with a 5-year rate of 10%.
- This incidence rises to 21% for patients who develop locoregional recurrence, emphasizing the importance for completeness of initial resection and treatment of this aggressive disease.
- In addition, the risk of a second primary tumor diagnosed with a head and neck cancer is approximately 14%.
- For oral cavity primaries, the most common second malignancy is a head and neck cancer.

PRINCIPLES OF CHEMOTHERAPY

Patient with disseminated head and neck cancers usually die within 6 months. Several agents measurably shrink recurrent or disseminated head and neck cancers. Responses to CT are influenced by tumour grade and extent.

Advanced squamous cell cancer of head and neck were treated with bleomycin, oncovin, mitomycin C and methotrexate (BOMM)

for 10 weeks. Partial and non responders received Adriamycin, cisplatin and cyclophosphamide (APC).

Chemotherapy may be administered as

1) Single agent

Cisplatin / 5 – FU / Methotrexate / Bleomycin are the single most effective agents

2) Combination CT

The most effective combination regimen to date is cisplatin and 5 – fluorouracil

Other combinations are

- 5FU / Hydroxyurea
- Cisplatin / Paclitaxel
- Carboplatin / Infusional 5FU
- Cefuximab

3) Post-operative adjuvant CT

No proven effect on disease free survival In Adjuvant chemotherapy for advanced head and neck squamous carcinoma, Head and neck contracts program, Potomac, administering chemotherapy post operatively in patients with head and neck cancer fail to demonstrate significant clinical outcome, but distant metastasis rates may be reduced.

4) Preoperative Neoadjuvant CT

Chemotherapy combined with irradiation produced improvement in median or overall survival in comparison to irradiation alone. Recent trials of chemotherapy used preoperatively in the treatment of head and neck cancer has not yielded decreased recurrence rates or increased overall survival rates in comparison to surgery alone, but they do appear to have prolonged the disease-free interval following definitive surgery.

Various drugs used for chemotherapy are

Cisplatin

Dose: 50 – 100 mg / m2 BSA IV every 3 weeks

5 – FU

Dose: 800 – 1000 mg / m2 BSA, IV, 3 – 5 days cycle every 28 days

Methotrexate

Dose: 2.5 - 5 mg daily, po; or 40 mg / m2 IV weekly with Leucoverin

Vincristine

Dose: 2 – 10 mg / m2 BSA, every 3 weeks

Cyclophoshamide

Dose: 10 – 15 mg / kg IV every 2 – 3 weeks

Mitomycin

Dose: 1.5 mg / m2 IV weekly

Bleomycin

Dose: 10 – 20 mg / m2 IV once or twice weekly

MATERIALS AND METHODS

- This study was conducted at Tirunelveli Medical College and Hospital from July 2017 to August 2019.
- Patients attending the general surgery OPD were evaluated and studied.
- No specific criteria were used among the oral cancers.
- Under this study, all malignant neoplasm of lip, cheek, alveolus, tongue, floor of mouth and hard palate were included.
- A careful recording of history symptoms, etiological factors and complications of oral cancers was elicited.
- A through clinical examination of the primary metastasis was also done and staged in TNM staging.
- All the patients were subjected to wedge biopsy of the lesion and histopathology examination of the specimen was carried out to assess the native and histological grading of the tumour.

OBSERVATION AND ANALYSIS:

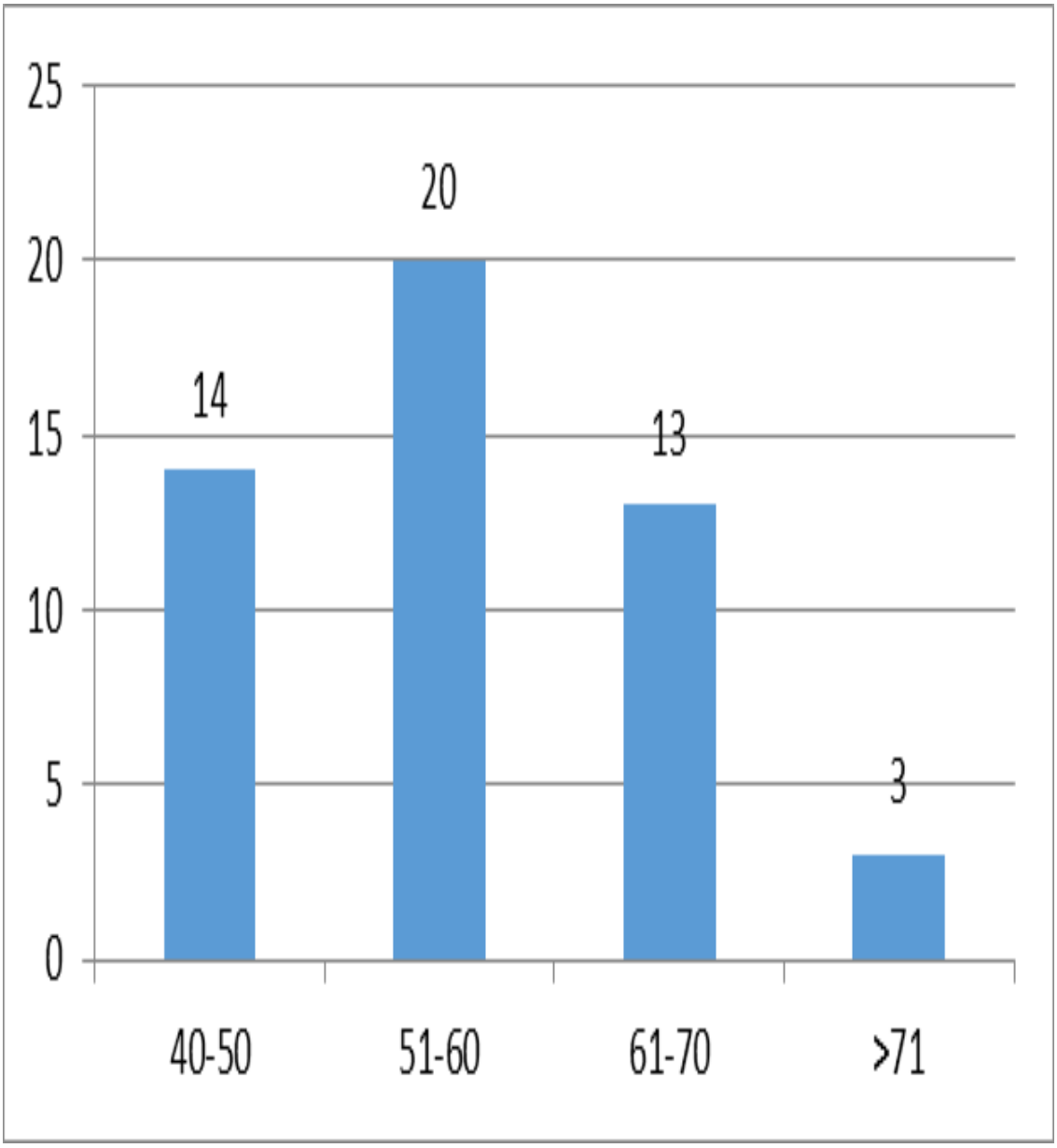
A total of 50 patients who attended General Surgery OPD in Tirunelveli medical college and hospital from July 2017-August 2019 were included in this study.

AGE WISE DISTRIBUTION:

Table-1

Age group	Frequency	Percentage
40-50	14	28.0%
51-60	20	40.0%
61-70	13	26.0%
>71	3	6.0%

Figure-1



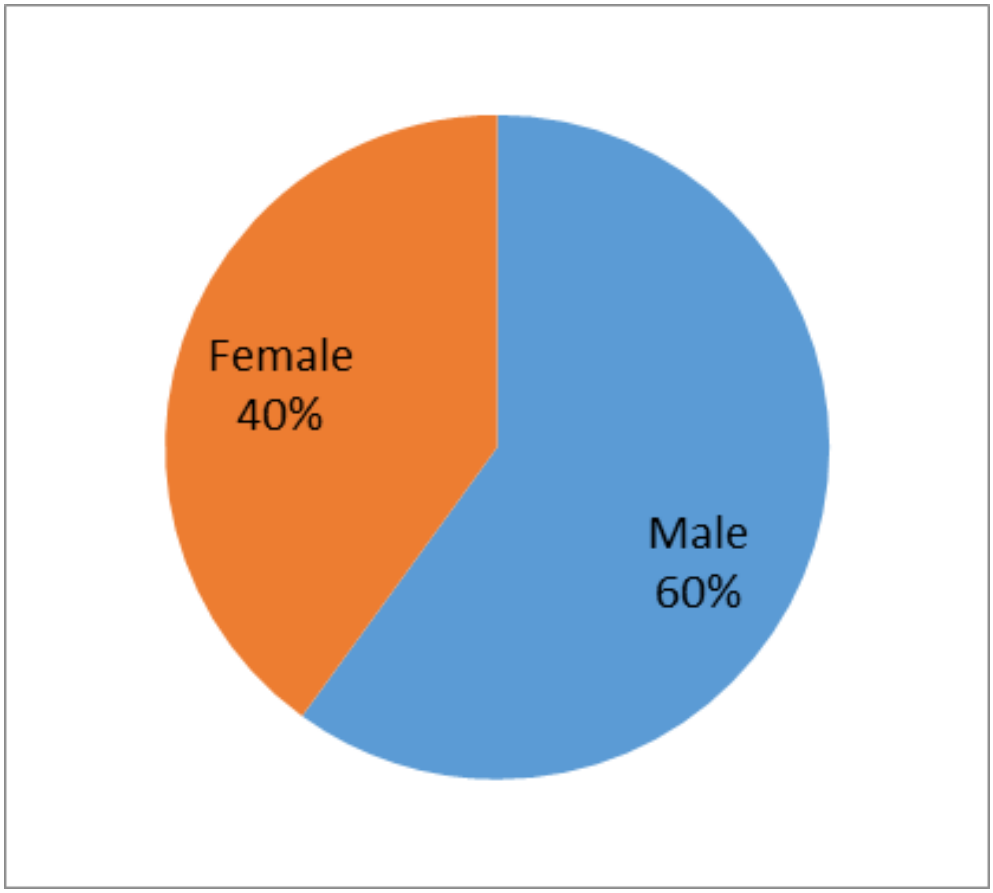
As shown in the figure 6th decade is the most common age group affected which amounted to 40%.

SEX WISE DISTRIBUTION:

Table-2

Gender	Frequency	Percentage
Male	30	60.0%
Female	20	40.0%

Figure-2

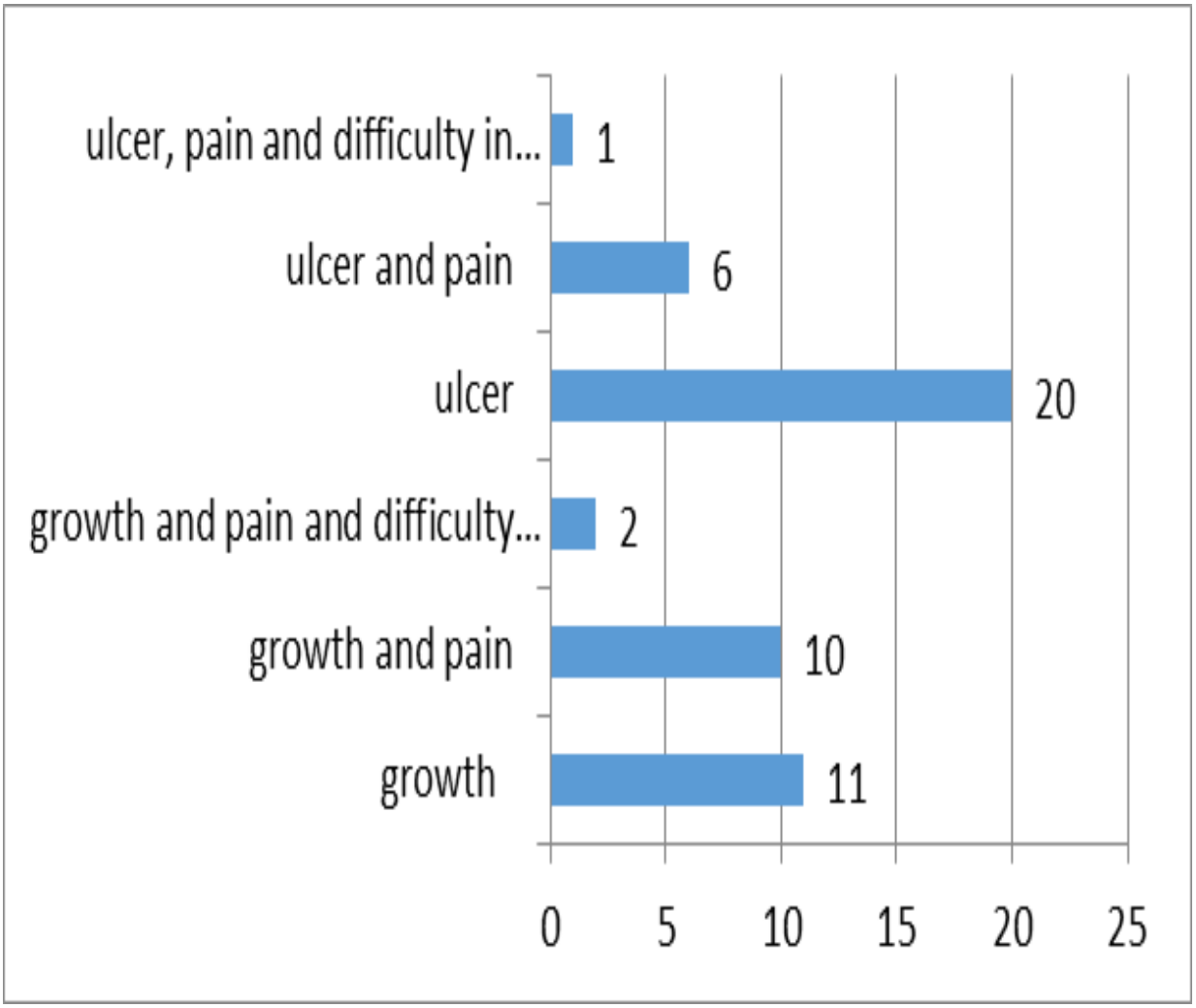


There is a male predominance in the study group with the male female ratio 3:2.

Table-3

Chief complaints	Frequency	Percentage
growth	11	22.0%
growth and pain	10	20.0%
growth and pain and difficulty in swallowing	2	4.0%
ulcer	20	40.0%
ulcer and pain	6	12.0%
ulcer, pain and difficulty in swallowing	1	2.0%

Figure-3

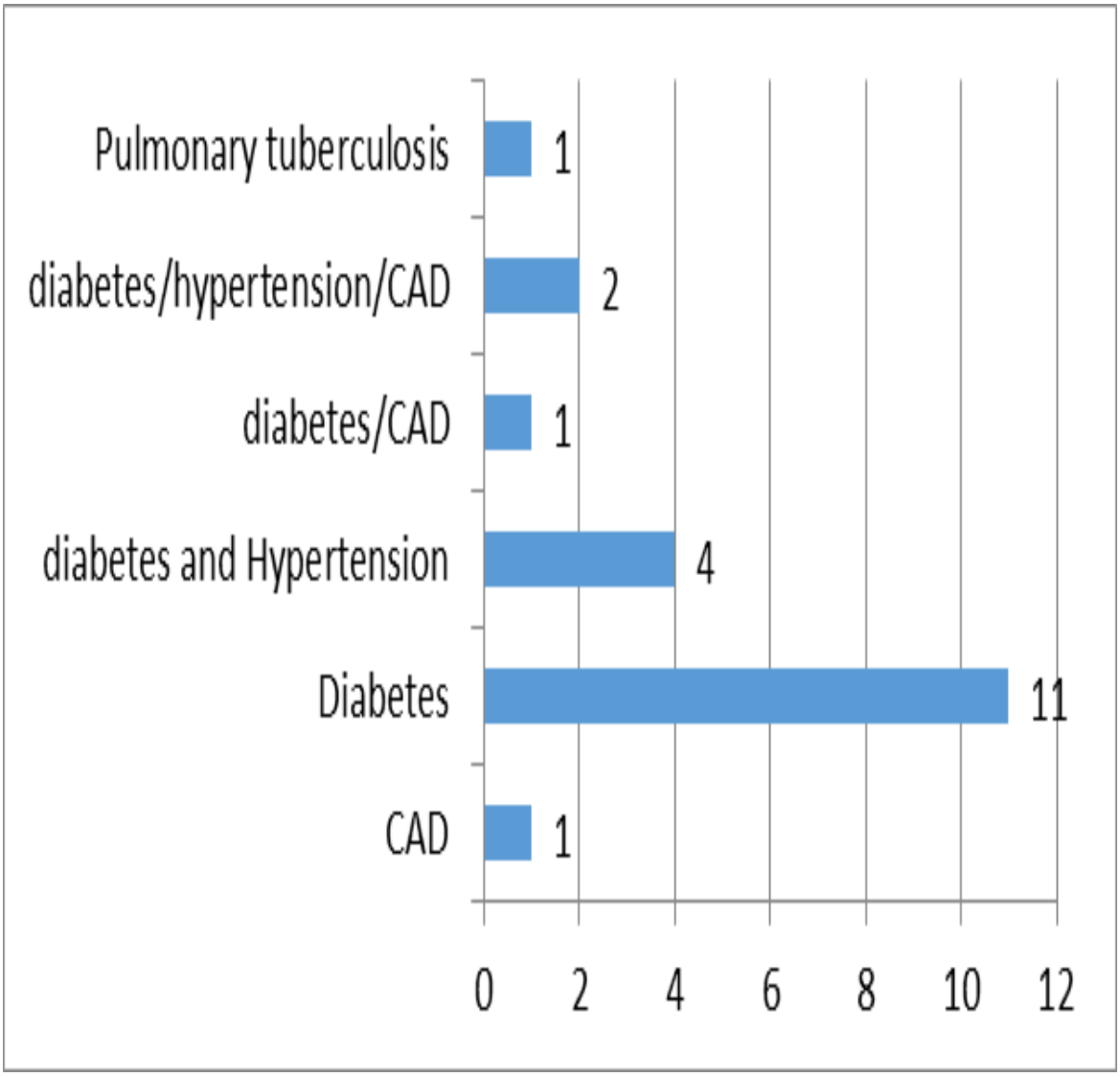


As shown above, Ulcer is the most common presentation. Most of the patients presented with more than one chief complaints.

Table-4

Past H/O	Frequency	%
CAD	1	2.0%
Diabetes	11	22.0%
diabetes and Hypertension	4	8.0%
diabetes/CAD	1	2.0%
diabetes/hypertension/CAD	2	4.0%
Pulmonary tuberculosis	1	2.0%
not significant	30	60.0%

Figure-4



Diabetes is found to be the most common co-morbid condition associated with oral malignancy but most of the patients presented with multiple co-morbidities.

Table-5

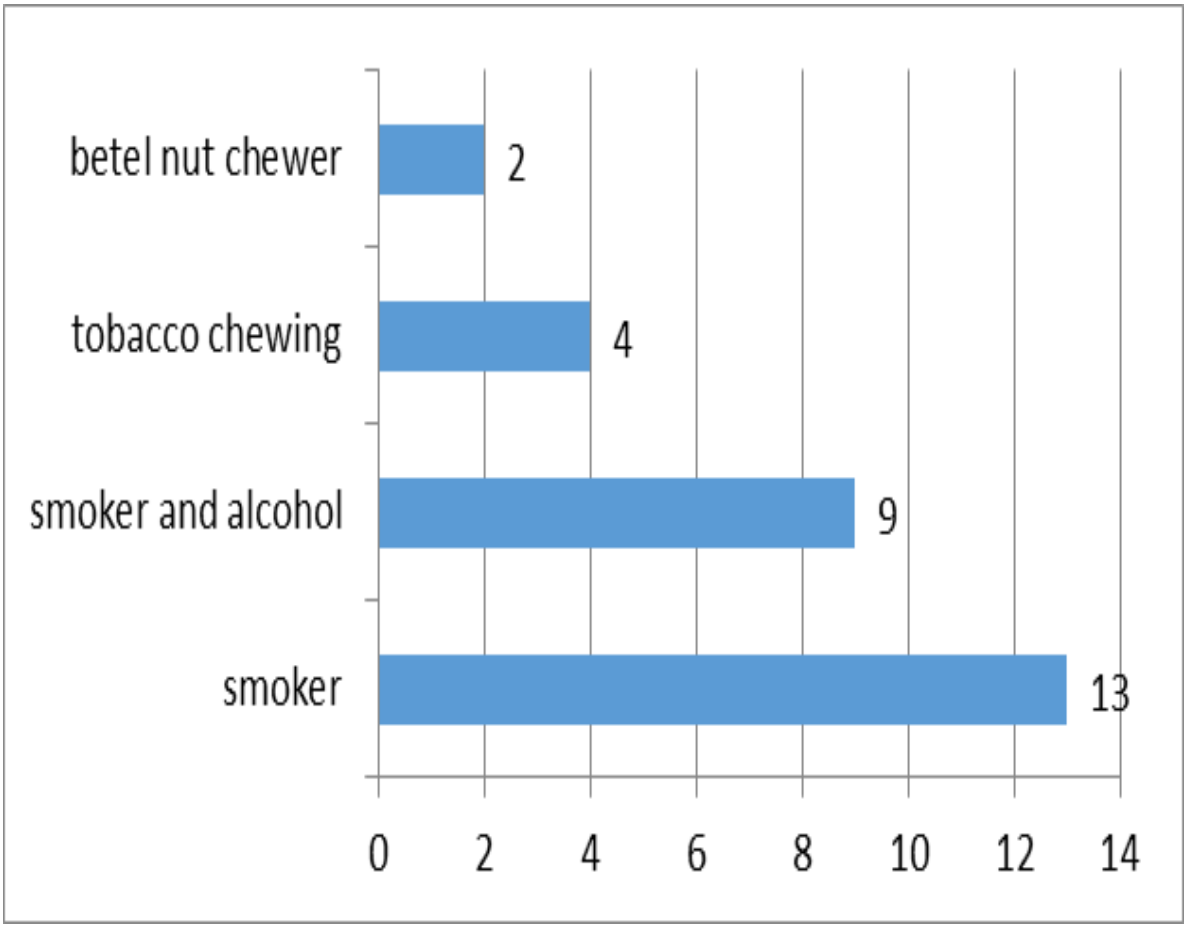
Family H/O	Frequency	Percentage
Ca breast in 2nd degree relative	1	2.0%
Ca stomach in 2nd degree relative	1	2.0%
Ca stomach in 3rd degree relative	1	2.0%
not significant	47	94.0%

Only 3 out of 50 patients had significant family history of carcinoma. None of the relatives of the patients included the study had prior history of oral malignancy

Table-6

Personal H/O	Frequency	Percentage
smoker	13	26.0%
smoker and alcohol	9	18.0%
tobacco chewing	4	8.0%
betel nut chewer	2	4.0%
not significant	22	44.0%

Figure-5

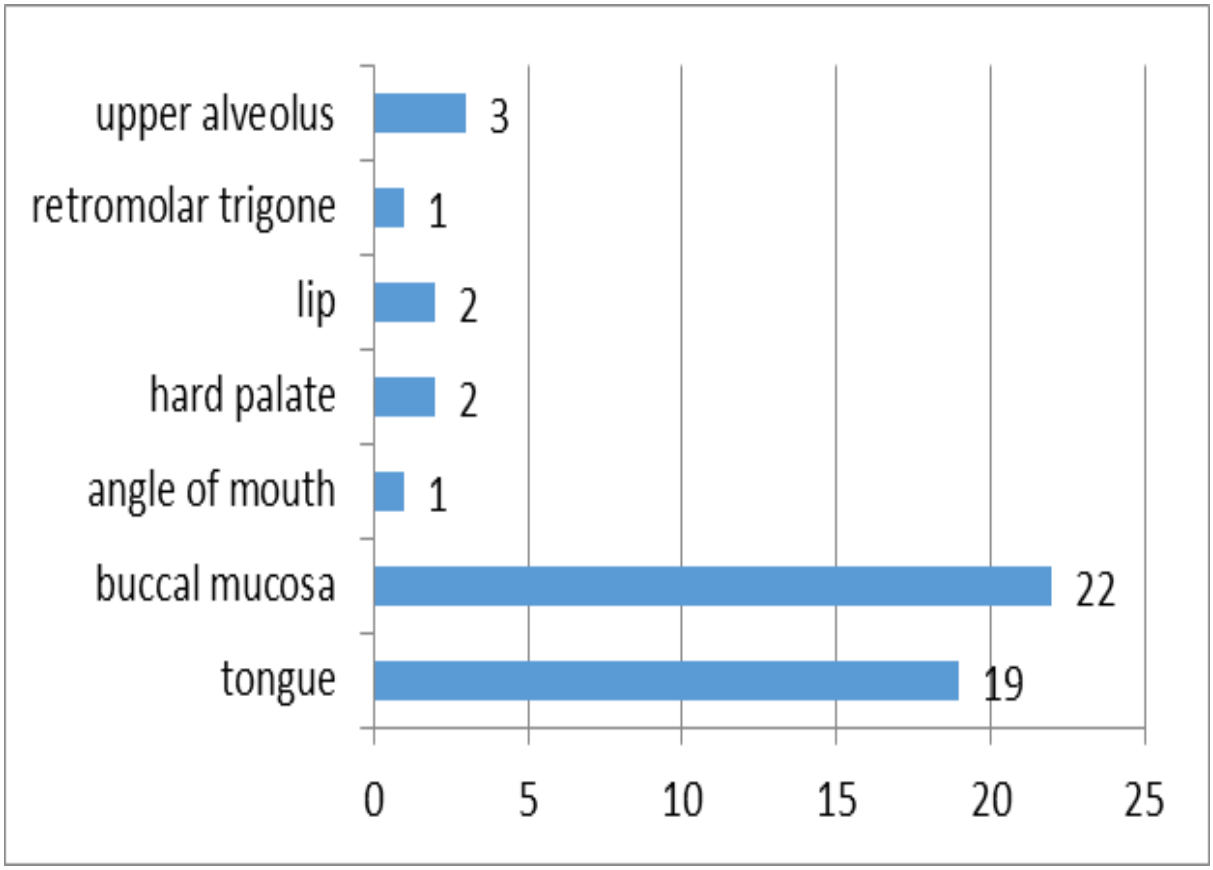


Smoking is the major risk factor. Majority of the patients included in the study have smoking associated with history of alcohol intake.

Table-7

local examination	Frequency	Percentage
tongue	19	38.0%
buccal mucosa	22	44.0%
angle of mouth	1	2.0%
hard palate	2	4.0%
lip	2	4.0%
retromolar trigone	1	2.0%
upper alveolus	3	6.0%

Figure - 6

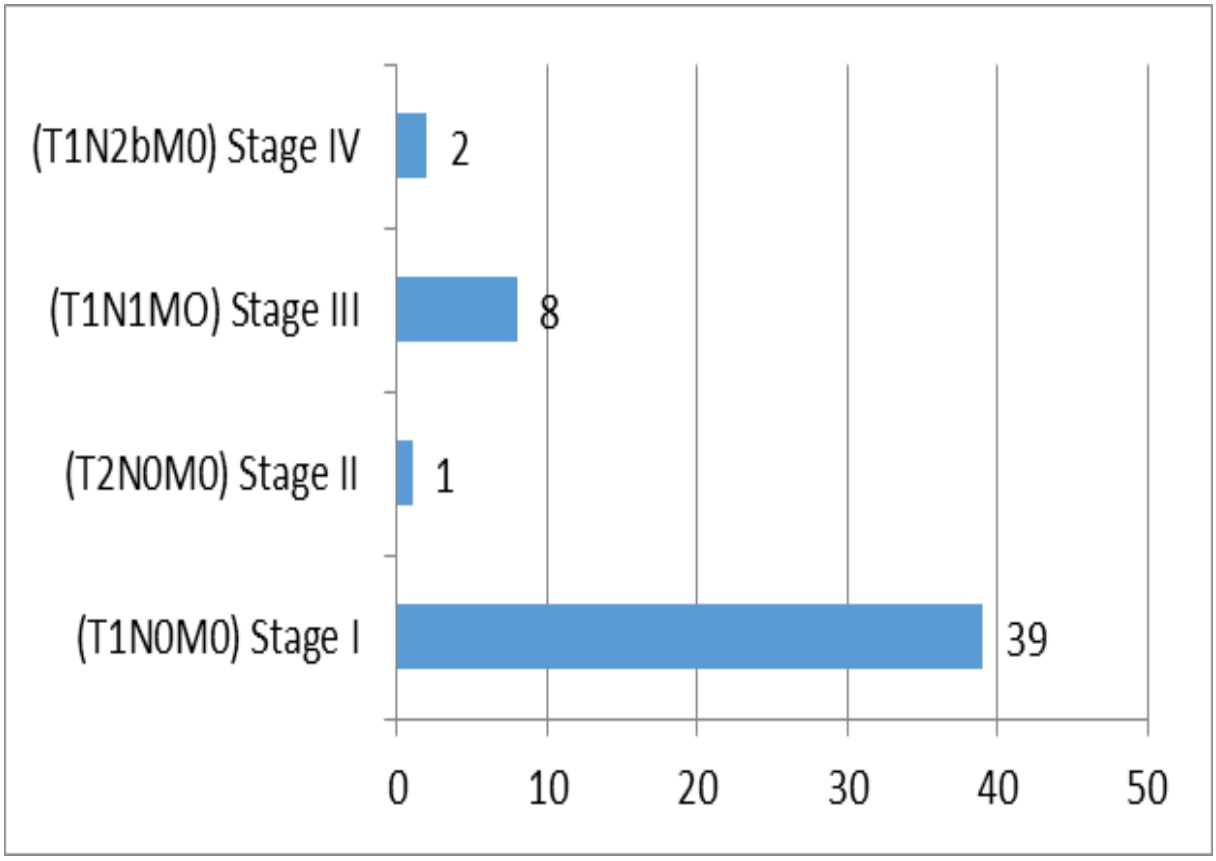


Buccal mucosa is the most common sub site in this study followed by tongue. Retromolar trigone is the least common site.

Table - 8

TNM staging	Frequency	Percentage
(T1N0M0) Stage I	39	78.0%
(T2N0M0) Stage II	1	2.0%
(T1N1MO) Stage III	8	16.0%
(T1N2bM0) Stage IV	2	4.0%

Figure - 7

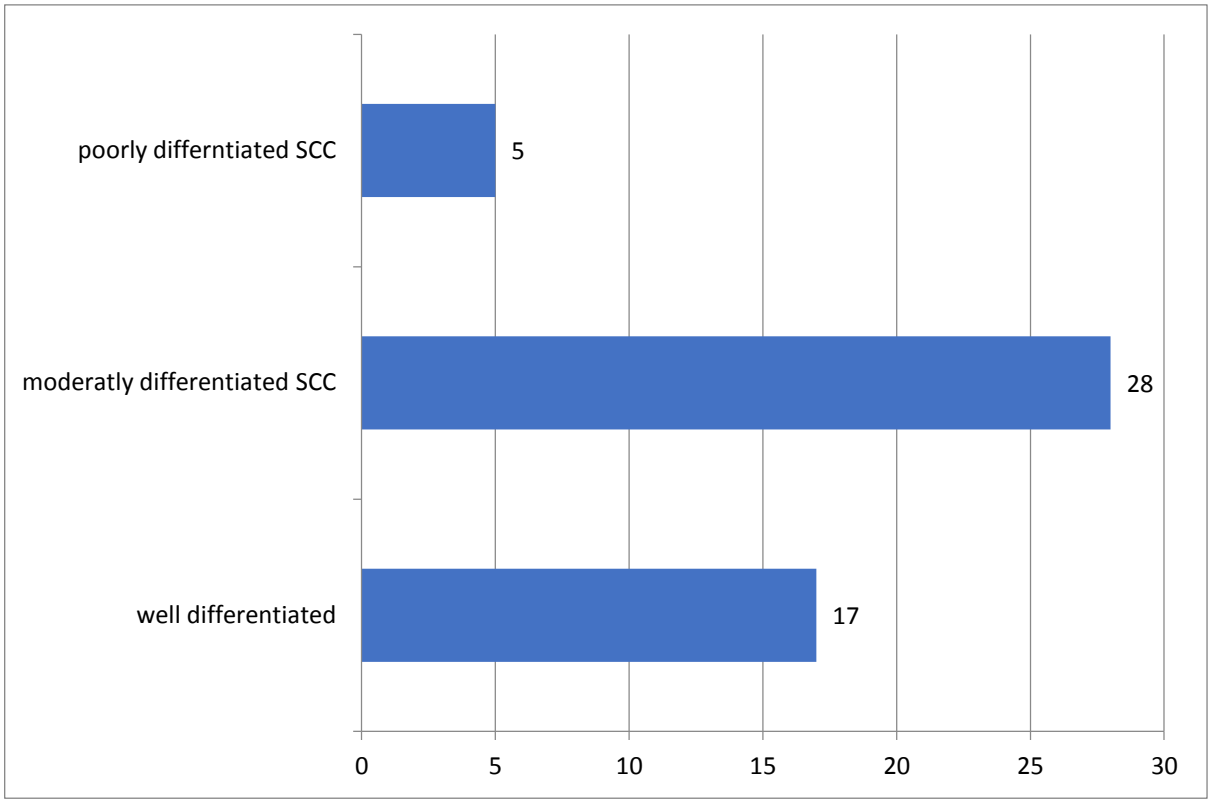


Among the patients with oral malignancies, the presentation of the disease is more with T1N0M0 (Stage I) followed by T1N1M0 (Stage III).

Table - 9

Histology	Frequency	Percentage
well differentiated	17	34.0%
moderately differentiated SCC	28	56.0%
poorly differentiated SCC	5	10.0%

Figure - 8



All the patients included in this study group had squamous cell carcinoma of which moderately differentiated squamous cell carcinoma was the most common histological variety.

DISCUSSION

In the study conducted, oral malignancies accounted to 5.2% of all malignancies. The Alberta cancer registry figures show the incidence around 2%. The incidence of oral cancers in United States is 3% of all cancer cases.

Table : 1

Study	**%**
Alberta	2
United States	3
Present study	5.2

In the present study, majority of the patients present in their sixth and seventh decades. In the Alberta cancer registry, the maximum incidence was in the fifth and sixth decade. In United States, the average age of onset was fifth decade.

Table : 2

Study	Age (Decade)
Alberta	$_{5}$th, $_{6}^{th}$
United States	$_{5}^{th}$
Present study	$_{6}$th, $_{7}^{th}$

The Male : Female ratio in this study was 3 : 2. The ratio in Alberta study was 2:1 and in United States the ratio was 3:1.

Table : 3

Study	M : F
Alberta	2:1
United States	3:1
Present study	3:2

This may be attributed to increased exposure to betelnut and tobacco in females. Fewer males chewed betelnut and tobacco.

The commonest site was buccal mucosa followed by tongue, Alveolus, Hard palate, floor of mouth and lip. In both the Alberta and United States study, the commonest site is buccal mucosa followed by tongue, lip, floor of mouth, Alveolus and Hard palate.

Table : 4

Study	Buccal Mucosa	Tongue	Alveolus	FOM	HP	Lip
Alberta	29.5%	23%	6.5%	15.5%	5%	20%
United States	28%	24%	9%	12%	4%	22%
Present study	44%	38%	6%	0%	4%	4%

Squamous cell carcinoma was the commonest type 100%. This was comparable to the results of the other studies where the incidence was 88% and 90% respectively.

Table : 5

Study	**%**
Alberta	88
United States	90
Present study	100

SUMMARY AND CONCLUSION

- 50 patients who attended Tirunelveli medical college and hospital during the period of July 2017 – 2019.
- Highest incidence of oral cancer was seen in 6^{th} decade of life and male female ratio being 3:2.
- Buccal mucosa is the most common site. 22 out of 50 patients had buccal carcinoma.
- All the patients had Squamous cell carcinoma as the histology type.
- Majority of the patients presented with complaints of ulcerative lesion and pain. 39 out of 50 patients presented at stage I which is due to increased awareness and availability of medical services.

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PROFORMA

NAME :

AGE :

SEX :

IP NO :

ADDRESS :

SYMPTOMS:

1. ULCER / SWELLING / GROWTH
2. PAIN
3. BLEEDING
4. EXCESSIVE SALIVATION
5. DYSPHONIA
6. ALTERATION IN TASTE
7. LOSS OF WT / APPETITE
8. TRISMUS
9. RECENT DENTAL EXTRACTION
10. ANY OTHER SYMPTOM

PAST H/O

- H / O PREVIOUS SURGERY
- H / O ORAL CANDIDIASIS
- H / O ANY SYSTEMIC DISEASE DM / HT / TB
- H / O IRRADIATION

PERSONAL H/O

- SMOKING
- ALCOHOL
- BETEL NUT / TOBACCO CHEWING
- SHARP TEETH / DENTURES
- CHRONIC ORAL SEPSIS
- SPICY FOOD INTAKE
- RADIATION EXPOSURE

FAMILY H/O

GENERAL EXAMINATION

- BUILD / NOURISHMENT
- PALLOR
- GEN. LYMPHADENOPATHY
- PULSE
- B.P
- ICTERUS

EXAMINATION OF ORAL CAVITY

INSPECTION

SITE – LIPS, CHEEK, ALVEOLUS, TONGUE, FLOOR OF MOUTH, PALATE

PREMALIGNANT LESIONS – LEUKOPLAKIA, ERYTHROPLAKIA,

SUBMUCOUS FIBROSIS

SIZE, EXTENT

MOUTH OPENING

ORAL HYGIENE

DENTAL FORMULA

PALPATION

TYPE

SITE & SIZE

EXTENT

TENDERNESS

FLOOR & BASE

BLEEDS ON TOUCH

OROCUTANEOUS FISTULA

NODAL STATUS

OTHER SYSTEMS

STAGE:

நோயாளிகளுக்கு அறிவிப்பு மற்றும் ஒப்புதல் படிவம்
(மருத்துவ ஆய்வில் பங்கேற்பதற்கு)

ஆய்வு செய்யப்படும் தலைப்பு:
பங்கு பெறுவரின் பெயர்:
பங்கு பெறுவரின் வயது:

		பங்கு பெறுவர் இதனை ✓ குறிக்கவும்
1.	நான் மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்களை படித்து புரிந்து கொண்டேன். என்னுடைய சந்தேகங்களை கேட்கவும், அதற்கான தகுந்த விளக்கங்களை பெறவும் வாய்ப்பளிக்கப்பட்டுள்ளது என அறிந்து கொண்டேன்.	☐
2.	நான் இவ்வாய்வில் தன்னிச்சையாக தான் பங்கேற்கிறேன். எந்த காரணத்தினாலோ எந்த கட்டத்திலும், எந்த சட்ட சிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகி கொள்ளலாம் என்றும் அறிந்து கொண்டேன்.	☐
3.	இந்த ஆய்வு சம்பந்தமாகவோ, இதை சார்ந்து மேலும் ஆய்வு மேற்காள்ளும் போதும் இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். நான் ஆய்வில் இருந்து விலகிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன்.	☐
4.	இந்த ஆய்வின் மூலம் கிடைக்கும் தகவலையோ, முடிவையோ பயன்படுத்திக் கொள்ள மறுக்க மாட்டேன்.	☐
5.	இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக் கொள்கிறேன் எனக்கு கொடுக்கப்பட்ட அறிவுரைகளின் படி நடந்து கொள்வதுடன், ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்று உறுதியளிக்கிறேன். என் உடல் நலம் பாதிக்கப்பட்டாலோ, அல்லது எதிர்பாராத, வழக்கத்திற்கு மாறான நோய்குறி தென்பட்டாலோ உடனே இதை மருத்துவ அணியிடம் தெரிவிப்பேன் என உறுதி அளிக்றேன்.	☐

பங்கேற்பவரின் கையொப்பம் / ..... இடம் .....
கட்டைவிரல் ரேகை
பங்கேற்பவரின் பெயர் மற்றும் விலாசம் .....
ஆய்வாளரின் கையொப்பம் /..... இடம் .....
ஆய்வாளரின் பெயர் .....
மையம் .....
கல்வியறிவு இல்லாதவற்கு (கைரேகை வைத்தவர்களுக்கு) இது அவசியம் தேவை
சாட்சியின் கையொப்பம் /..... இடம் .....
பெயர் மற்றும் விலாசம் ....

S. No	Name	Age	Sex	Ip No	Cheif complaints	Past H/O	Family H/O	Personal H/O	local examination	TNM staging	Histology
1	Chinnavellaiyammal	45	female	26644	growth and pain	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
2	Avudaiyammal	60	female	55396	growth	Diabetes	not significant	tobacco chewing	tongue	(T1NOMO) Stage I	well differentiated
3	Muthammal	56	female	48727	ulcer and pain	not significant	not significant	not significant	tongue	(T1N1MO) Stage III	moderatly differentiated SCC
4	Hyder ali	50	male	51536	growth and pain	diabetes/CAD	not significant	smoker	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
5	Munniyasamy	52	male	93997	growth and pain	not significant	not significant	smoker	tongue	(T1N0M0) Stage I	well differentiated
6	Sheikammal	65	female	93639	growth	not significant	not significant	not significant	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
7	Essakiammal	52	female	18172	growth and pain and difficulty in swallowing	not significant	not significant	betel nut chewer	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
8	Vellammal	40	female	86532	growth	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
9	Senthoorpandi	65	male	86595	ulcer, pain and difficulty in swallowing	not significant	not significant	smoker and alcohol	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
10	Murugesan	53	male	95942	growth and pain	diabetes and Hypertension	Ca stomach in 2nd degree relative	not significant	retromolar trigone	(T1N2bM0) Stage IV	poorly differntiated SCC
11	Thangaraj	55	male	11545	ulcera nd pain	diabetes	not significant	smoker	buccal mucosa	(T1N0M0) Stage I	well differentiated
12	Murugan	48	male	10617	growth and pain	not significant	not significant	not significant	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
13	Muthammal	59	female	48727	growth and pain	not significant	not significant	not significant	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
14	Essakiammal	62	female	464625	growth and pain and difficulty in swallowing	diabetes	not significant	not significant	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
15	manimuthu	60	male	20504	growth	not significant	not significant	smoker and alcohol	lip	(T1N0M0) Stage I	moderatly differentiated SCC

16	Hyder ali	50	male	51836	growth and pain	not significant	not significant	tobacco chewing	tongue	(T1N0M0) Stage I	well differentiated
17	Rakkamuthu	85	male	52241	ulcer and pain	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	well differentiated
18	Rajesh	40	male	78698	growth	not significant	not significant	smoker	buccal mucosa	(T1N1MO) Stage III	well differentiated
19	Mani	50	male	60053	growth and pain	Pulmonary tuberculosis	not significant	smoker	buccal mucosa	(T1N0M0) Stage I	well differentiated
20	Arumugam	63	male	75467	growth	not significant	not significant	smoker and alcohol	tongue	(T1N0M0) Stage I	well differentiated
21	soorya	53	male	63256	ulcer and pain	diabetes/Hypertension	not significant	smoker	tongue	(T1N0M0) Stage I	well differentiated
22	Solaiyammal	59	female	47059	growth	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	poorly differntiated SCC
23	Muthammal	70	female	24744	growth	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
24	Palavesham	55	female	29748	ulcer	not significant	not significant	not significant	angle of mouth	(T1N0M0) Stage I	well differentiated
25	Madathy	70	female	78679	ulcer	diabetes	not significant	betel nut chewer	buccal mucosa	(T1N0M0) Stage I	well differentiated
26	Essakiammal	75	female	37171	growth and pain	diabetes	not significant	not significant	buccal mucosa	(T1N1MO) Stage III	well differentiated
27	Baby kamala	65	female	91168	ulcer and pain	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
28	Mani	59	female	60053	ulcer and pain	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	well differentiated
29	Sevagan	47	male	48070	growth and pain	not significant	not significant	smoker	tongue	(T1N2bM0) Stage IV	moderatly differentiated SCC
30	Thangaraj	65	male	44476	ulcer	diabetes	not significant	smoker	buccal mucosa	(T1N0M0) Stage I	well differentiated
31	Annaselvi	49	female	69663	ulcer	not significant	not significant	not significant	upper alveolus	(T1N0M0) Stage I	well differentiated
32	Lakshmi	55	female	69286	ulcer	diabetes/Hypertension	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
33	Paramasivam	52	male	78453	ulcer	not significant	not significant	smoker	tongue	(T1N1MO) Stage III	moderatly differentiated SCC
34	Subramaniam	43	male	30727	growth	not significant	not significant	smoker and alcohol	buccal mucosa	(T2N0M0) Stage II	moderatly differentiated SCC

35	Ayesha Banu	53	female	25195	ulcer	diabetes/Hypertension	not significant	not significant	tongue	(T1N0M0) Stage I	moderatly differentiated SCC
36	Chellasamy	65	male	44312	growth	diabetes	Ca stomach in 3rd degree relative	smoker and alcohol	tongue	(T1N0M0) Stage I	poorly differntiated SCC
37	Natarajan	47	male	49673	ulcer	diabetes/hypertension/CAD	not significant	smoker and alcohol	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
38	Devendran	58	male	76953	ulcer	not significant	not significant	smoker	tongue	(T1N1MO) Stage III	moderatly differentiated SCC
39	Margret mary	55	female	52649	growth	diabetes	Ca breast in 2nd degree relative	not significant	buccal mucosa	(T1N1MO) Stage III	moderatly differentiated SCC
40	mariappan	42	male	42346	ulcer	not significant	not significant	smoker	hard palate	(T1N0M0) Stage I	moderatly differentiated SCC
41	Gandhi	62	male	58440	ulcer	not significant	not significant	not significant	upper alveolus	(T1N0M0) Stage I	well differentiated
42	Sivanthuperumal	70	male	32742	ulcer	Diabetes	not significant	smoker and alcohol	lip	(T1N0M0) Stage I	poorly differntiated SCC
43	Gnanprakasham	77	male	35651	ulcer	CAD	not significant	tobacco chewing	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
44	Shanmugam	50	male	32756	ulcer	not significant	not significant	not significant	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
45	Gnanpathu pandian	60	male	30789	ulcer	not significant	not significant	smoker and alcohol	tongue	(T1N1MO) Stage III	moderatly differentiated SCC
46	Vartharajan perumal	50	male	68789	ulcer	diabetes/hypertension/CAD	not significant	tobacco chewing	buccal mucosa	(T1N0M0) Stage I	moderatly differentiated SCC
47	Essakiammal	68	female	30871	ulcer	diabetes	not significant	smoker	upper alveolus	(T1N0M0) Stage I	moderatly differentiated SCC
48	Allirajan	67	male	27214	ulcer	not significant	not significant	not significant	hard palate	(T1N0M0) Stage I	moderatly differentiated SCC
49	Balasubramaniam	60	male	38152	ulcer	not significant	not significant	smoker and alcohol	tongue	(T1N0M0) Stage I	well differentiated
50	Ayeerthaan	60	male	23322	ulcer	diabetes	not significant	smoker	buccal mucosa	(T1N1MO) Stage III	poorly differntiated SCC