Dissertation on

ANALYSIS OF CLINICAL AND DIAGNOSTIC METHODS OF IDENTIFYING METASTATIC CERVICAL LYMPHADENOPATHY IN TERTIARY CARE CENTRE

submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

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BONAFIDE CERTIFICATE

This is to certify that this dissertation entitled "**ANALYSIS OF CLINICALAND DIAGNOSTIC METHODS OF IDENTIFYING METASTATIC CERVICAL LYMPHADENOPATHY IN TERTIARY CARE CENTRE"** is a bonafide record of the research work done by **Dr. SHARUMATHI R R,** Post graduate in the Department of Otorhinolaryngology, Government Kilpauk Medical College, Kilpauk, Chennai-10 in partial fulfillment of the regulations laid down by The Tamil Nadu Dr.M.G.R. Medical University for the award of **M.S. Degree in Otorhinolaryngology (Branch IV),** under my guidance and supervision during the academic year from 2019-2022.

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DECLARATION

I, **Dr. SHARUMATHI R R,** solemnly declare that the dissertation titled **"ANALYSIS OF CLINICALAND DIAGNOSTIC METHODS OF IDENTIFYING METASTATIC CERVICAL LYMPHADENOPATHY IN TERTIARY CARE CENTRE"** is the bonafide work done by me at the Department of Otorhinolaryngology, Govt. Kilpauk Medical College and Hospital, Chennai, under the guidance of **Dr.S.MUTHUCHITHRA M.S(ENT).,DLO.,** Professor and Head, Department of Otorhinolaryngology, Chennai.

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CERTIFICATE OF APPROVAL

The Institutional Ethics Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for "ANALYSIS OF CLINICAL AND DIAGNOSTIC METHODS OF IDENTIFYING METASTATIC CERVICAL LYMPHADENOPATHY IN TERTIARY CARE CENTRE" Submitted by Dr.Sharumathi R R, IInd year Postgraduate Department of ENT, Govt. Kilpauk Medical College, Kilpauk, Chennai-600010.

Proposal is APPROVED.

The Institutional Ethics Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

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CONTENTS

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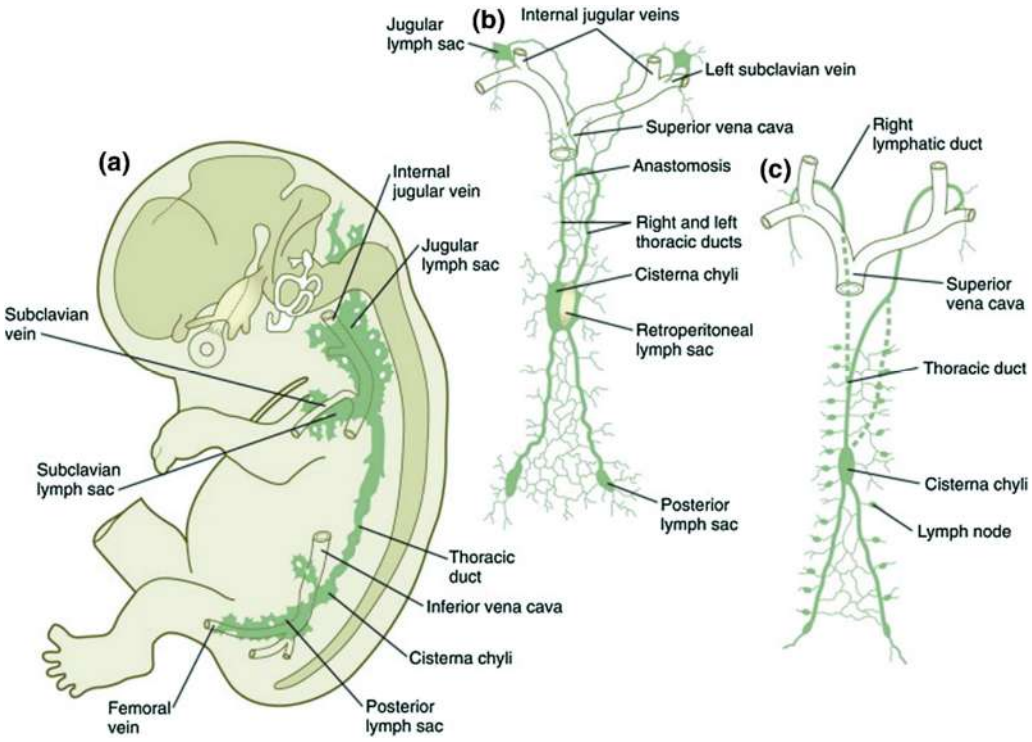
1. INTRODUCTION

Cervical lymphadenopathy is the single presentation in the most of the head and neck neoplasms. Since Tuberculosis is prevalent infection in developing countries like India, our diagnostic modalities are directed towards it. So it is mandatory to include malignancy as a differential diagnosis as soon as the patient comes to outpatient department. Head and neck squamous cell carcinoma that presents as carcinomas of unknown primary (CUP) represents difficult challenge for practicing physician. CUP represents a heterogenous disease entity characterized by the presence of clinically or radiologically obvious primary tumour. In the head and neck the definition of true unknown or occult primary carcinoma is the presentation of metastatic neck lymphadenopathy without the development or manifestation of an index primary tumour within a subsequent 5 year perior Various diagnostic modalities available for diagnosis and ruling out malignant cervical lymphadenopathy which includes ultrasonogram(USG), computerized tomography(CT) NECK,Magnetic resonance imaging(MRI) and Positron emission tomography(PET) . These investigations have high sensitivity and specificity. Eventhough the use of videolaryngoscopy and diagnostic nasal endoscopy play a vital role in the diagnosis of primary site of carcinoma of unknown primary with metastatic cervical lymphadenopathy. So in my study I am going to emphasize on the importance of using the endoscopy in the otorhinolaryngology department.

EMBRYOLOGY[1]

Two paired and unpaired endothelial sacs arise as outgrowths at 5th week of gestation. They are future jugular sacs. They are located at the junction of subclavian and internal jugular vein. The next sac to be formed will be unpaired which is located at the mesenteric root in the retroperitoneal space. The next unpaired cisternal chyli develops back to the mesenteric sacs. The final two paired sacs posterior sacs appear at the junction of the sciatic and femoral veins.

Six lymphatic sacs are linked together by multiple endothelial channels to form a network of lymphatic vessels at 9th week. During early development mesenchymal cells invade these sacs which then forms into lymph nodes as group.



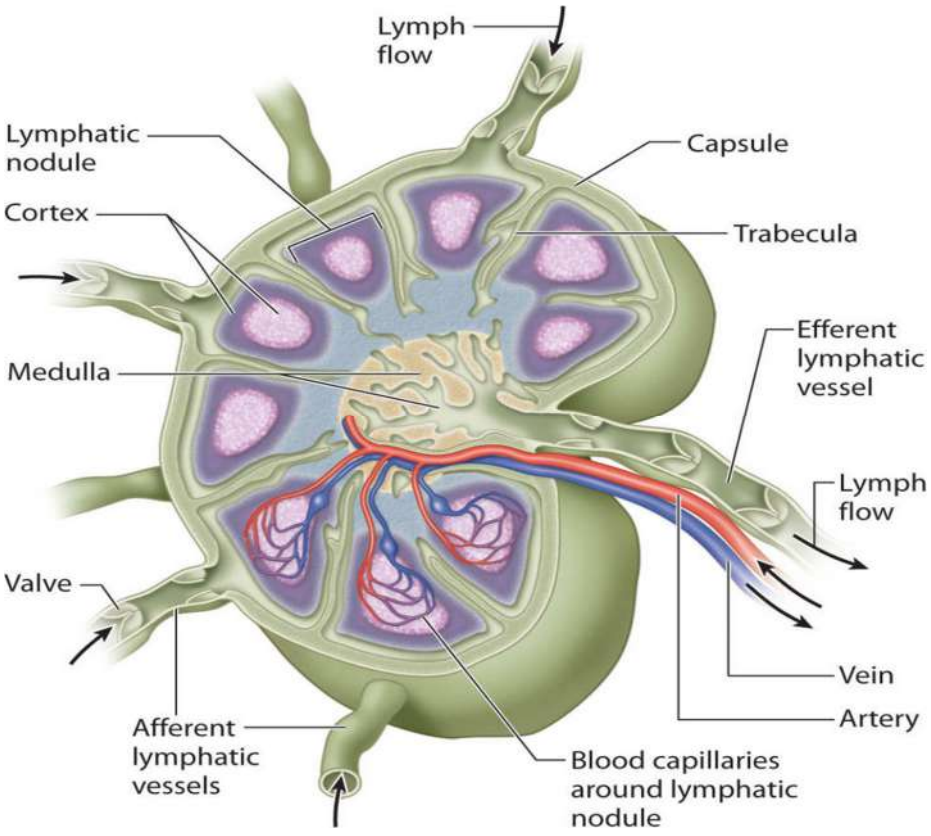
At earlier period, nodes are marked by unencapsulated lymphoid tissue mass located within the meshwork of lymphatic channels. Then, the lymphoid mass divides ito smaller portions which allows inward growth of blood vessels and lymphatic system.

Each mass becomes enclosed by a capsule of connective tissue including the portions of surrounding neck. Primary lymphoid tissue transforms into medullary cords and cortical nodules of the node which are then enclosed by lymphatic capillaries and form the peripheral lymph sinus.

Cervical nodes appear around the 9th week.

HISTOLOGY[2]

The size of the lymph nodes vary from 1 mm to to 4 cm in diameter. Histologically the lymphoid tissue is covered by a connective tissue which sends the trabecular extensions to the centre of the lymph node. The nodal parenchyma is divided into cortex and medulla.



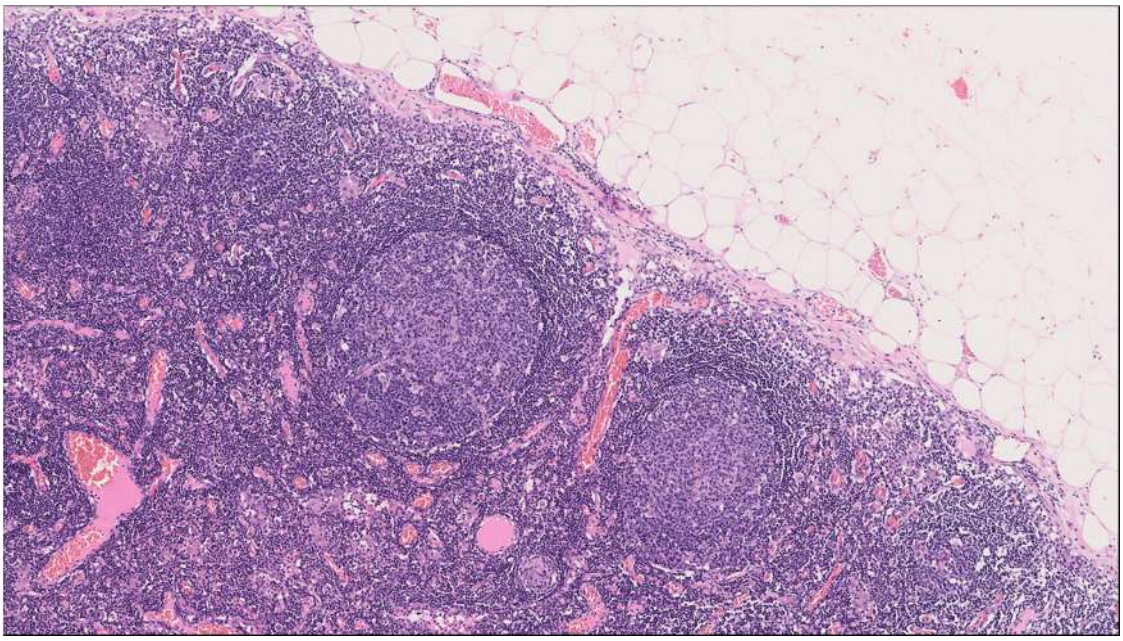
The outermost cortex is dense staing part of the lymph node. The cortex contains lymph nodules or follicles which contains germinal centres. Follicles are nothing but aggregation of lymphocytes. Germinal center is a morphological

indication of lymphatic tissue response which ultimately leads to lymphocyte, plasma cell and antibody formation which may be the site of genesis of immune system.

The innermost is the medulla in which lymphoid tissue of the medulla is organized into medullary cords and sinuses. Cords consists of reticular fibers and cells develop around small blood vessels. In association with medullary cord lymphocytes, macrophages and mature plasma cells can be found. Medullary sinuses present in the vicinity of efferent lymphatic vessels and serve to drain lymph node. Stellate cells found within the sinuses which allows interaction with macrophages in the wall of the sinus which act as a trap for cells which are passing through the lumen of the sinus.

Lymph vessels are lined by endothelium and comparatively larger than blood capillaries. They are permeable only in one direction. The edges overlap and forms intercellular graft with one or two tiny points of closer apposition and adherence.

From the endothelium extracellular bundles of filaments extend between the collagen bundles of connective tissues. They are of importance because it plays a role in keeping the lumen of the vessel open. Furthermore, it is presumed that as interstitial fluid increases around the lymphatic capillary, the anchoring filaments open the clefts which is responsible for allowing the inward flow of intracellular fluid and even large molecules. The large products of metabolism enter the lymph vessel which are being pushed by the contraction of surrounding muscles and interstitial pressures.

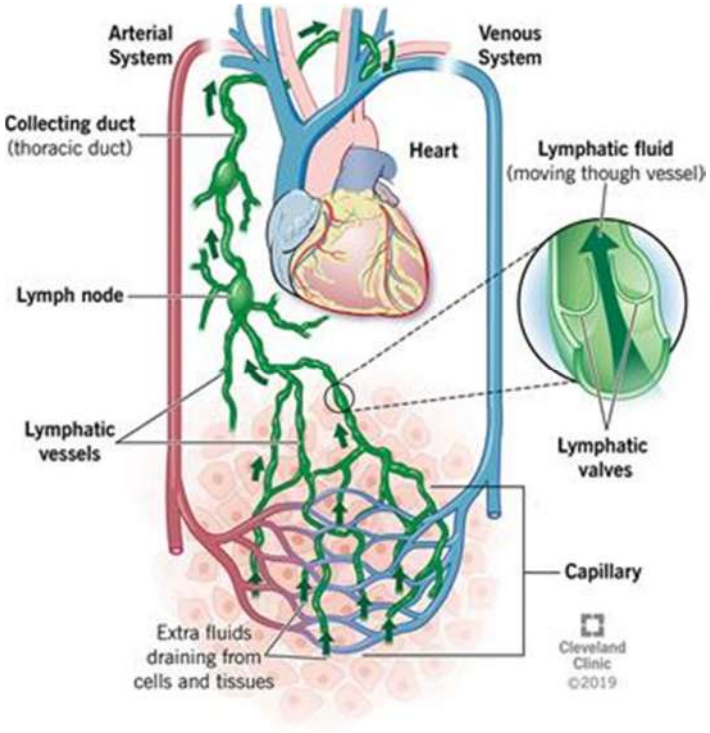


PATHWAY OF LYMPH FLOW[3]

The lymph flow starts in the interstitial space where lymph accumulates. The lymph accumulation is formed by capillary filtration and resorption. Then the lymph passes from lymph capillaries to lymphatic vessels by propulsion and contraction.

Then it passes through the sinuses to reach the lymph nodes. Then it passes to the next node through the efferent vessel and eventually flows into lymphatic trunk. Then it reaches the thoracic duct and right lymphatic duct where it reaches the venous circulation.

Thoracic duct and right lymphatic duct open into their respective brachiocephalic veins and in some cases opens into inferior vena cava, renal, suprarenal, azygos and iliac veins.



Lymphatic valves permit passage and circulation of lymph fluid of about 3 to 5 liters daily. Valves are bicuspid and it prevent backflow.

Lymphatic vessels accompany blood vessels. They are similar in structure to vein except it have thinner walls, more valves and contain lymph nodes at various intervals.

PHYSIOLOGY[3]

The lymph nodes act as a filter for lymph and it produces antibodies by responding to antigens.

The lymphatic vessels and blood vessels interact which is of importance.

Lymph nodes effectively arrest the passage of particulate matter and blood cells and entrap and destroy bacteria.

Some viruses rapidly multiply and thereby easily disseminate throughout the body. Similarly, lymph nodes fail to entrap some cells carried in the lymph. Example: malignant cells.

PATHWAYS OF SPREAD OF MALIGNANT CELLS

Permeation of minute lymphatic vessels ultimately leads to growth and spread to regional lymph nodes.

Lymphatic metastasis by tumor cell emboli may bypass a lymph node or become entrapped in the lymph node.

Lymph nodes may act as temporary filters in which metastatic malignant cells are trapped and then destroyed.

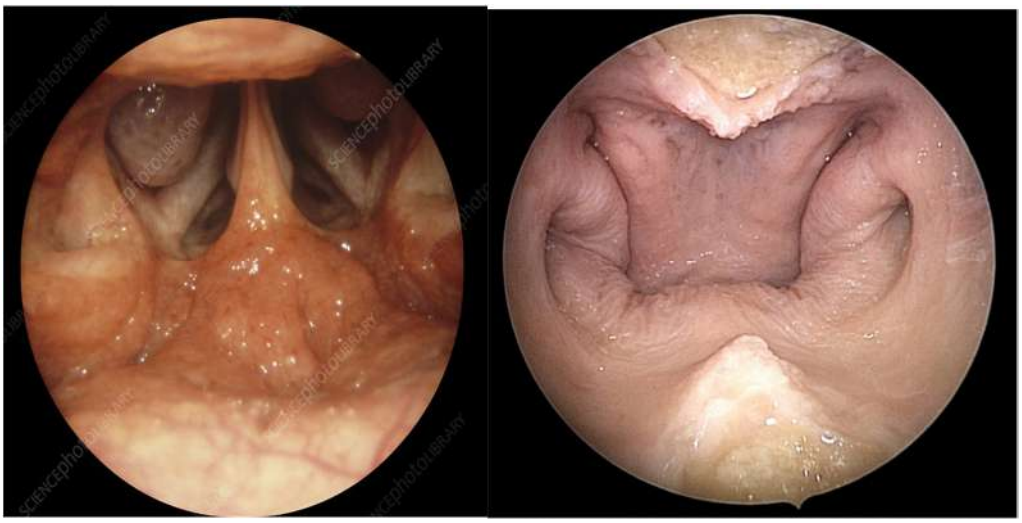
Malignant cells entrapped within the node may multiply rapidly eventually increasing the size of the node. Non tender, hard nodes usually contain metastatic carcinoma. The particular location of the lymph gland enlargement provides very definitive clues to the origin of the primary lesion.

SURGICAL ANATOMY[4]

NASOPHARYNX

Superior part of the pharynx which is behind the nasal cavity and above the soft palate which is a transitional zone between nasal cavity and oropharynx.In adults it is 4 cm in height.

Anterior wall	Choanal orifice and posterior margin of nasal septum
Floor	Upper surface of the soft palate
Roof and posterior wall	Body of the sphenoid, Basi occiput and first two cervical vertebrae – which harbors adenoids
Lateral wall	Pharyngeal opening of the eustachian tube. Torus tubaris – elevation created by elastic cartilage of eustachian tube Fossa of rosenmuller



OROPHARYNX.

The oropharynx extends from the soft palate to the epiglottis. It is continuous with the mouth through the oropharyngeal isthmus formed by the palatoglossal muscles on each side.

Anterior wall	Posterior third of the tongue Three glossoepiglottic folds – one in midline and two laterally Space on either side of median epiglossoepiglottic fold is the vallecula
Superior wall	inner surface of the soft palate and uvula
Roof and posterior wall	Sloping surface od body of the sphenoid,basi occiput and first two cervical vertebrae – which harbours adenoids
Lateral wall	Two folds – palatoglossal and palatopharyngeal folds Palatine tonsil

HYPOPHARYNX

The hypopharynx lies below and behind the base of tongue and on each side of the larynx.It extends from the level of hyoid bone superiorly to the lower border of cricod inferiorly.

The three anatomical subsites are

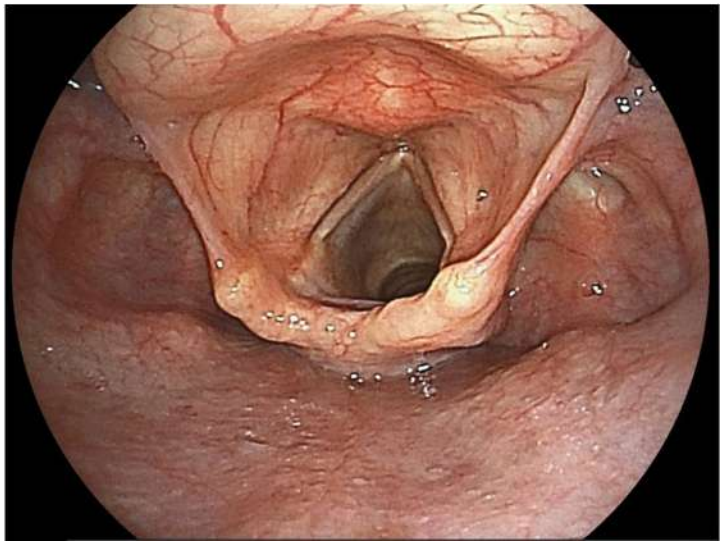
Pyriform fossa,

Postcricoid region

Pharyngeal wall.

Pyriform fossa are channels formed on either side of the larynx and are open posteriorly. The lateral walls are continuous with are continuous with the posterior pharyngeal wall, and the medial wall on each side contributes to the aryepiglottic fold and merges posteriorly with the postcricoid mucosa.

The upper part of the fossa is bounded laterally by the thyrohyoid membrane, and medially by the aryepiglottic fold. The deepest (most inferior) portion of the fossa is known as the apex. The apex is related laterally to the thyroid cartilage, medially to the cricoid cartilage and inferiorly to the paraglottic space, which the potential space bounded by the thyroid ala laterally and the conus elasticus and the quadrangular membrane medially. Tumours involving the medial wall and apex of the pyriform fossa easily gain entrance to the paraglottic space and then pass inferiorly lateral to the vocal cord.



The postcricoid area lies behind the larynx and extends from the aryteroid cartilages to the inferior border of the cricoid cartilage. It is continuous below with the upper end of the oesophagus.

The posterior pharyngeal wall is less well defined. It can be said as a part of the hypopharynx lying between two lines projected posteriorly from the vocal cords as they lie in the cadaveric position. It extends from hyoid bone to the arytenoids. It is separated from the prevertebral muscles by a fascial space.

LARYNX

The larynx extends from the epiglottis and the aryepiglottic folds to the cricoid cartilage. It communicates with the laryngopharynx above through the laryngeal inlet to the trachea below.

The lateral walls of the larynx have two infoldings of mucous membrane, the vestibular folds above and the vocal folds below.

Rima vestibuli- The space between the two vestibular folds

Rima glottidis - The space between the two vocal folds.

Vestibule -The part of the larynx that extends from the inlet to the rima vestibuli.

Ventricle - The part that lies between the rima vestibuli and the rima glottidis.

The ventricle has a lateral extension, the saccule, between the vestibular fold and the thyroid cartilage.

The larynx is made of cartilages and ligaments that are essential to its role in phonation.

For practical considerations, the larynx is divided into the supraglottis, the glottis and the subglottis.

Each site is further sub-divided into sub-sites as follows:

Supraglottis

- Epilarynx (including marginal zone)
- Suprahyoid epiglottis (including the tip)
- Aryepiglottic fold
- Arytenoid

Supraglottis excluding epilarynx

- Infrahyoid epiglottis
- Ventricular bands (false cords)
- Ventricular cavities

Glottis

- Vocal cords
- Anterior commissure
- Posterior commissure

Subglottis

Anatomical divisions of neck

The neck is divided by the sternocleidomastoid muscle into triangles, which by convention, are known as the anterior and posterior triangles of the neck. Each triangle is further sub-divided into smaller triangles by the omohyoid and digastric muscles. These triangles are three-dimensional in shape and change with the position of the neck.

The posterior triangle

The posterior triangle is bounded by the sternocleidomastoid muscle in front, the trapezius muscle behind, and the clavicle below. It is divided by the omohyoid muscle into an occipital triangle and a supraclavicular triangle. Although this is an anatomical division, a more important division is that made by the accessory nerve which travels in the roof of the triangle from 1 cm above Erb's point (where the greater auricular nerve curves around the sternomastoid muscle) down to entering trapezius in its lower third. Everything that is important in the posterior triangle lies below and inferior to this nerve.

1. Occipital triangle

The occipital triangle has a muscular floor formed from above downwards by the semispinalis capitis, splenius capitis, levator scapulae and scalenus medius muscles.The spinal accessory nerve courses across the muscular floor of the posterior triangle to pass deep to the trapezius muscle. In addition, the cutaneous nerves of the neck, course through the deep fascia of the neck that covers the posterior triangle

2. Supraclavicular triangle

The supraclavicular triangle lies above the middle of the clavicle. It contains the terminal portion of the subclavian artery, the roots, trunks and divisions of the brachial plexus, branches of the thyrocervical trunk and cutaneous tributaries of the external jugular vein. The copula of the pleural cavity extends above the level of the clavicle.

The Anterior Triangle

The anterior triangle is bounded by the sternocleidomastoid behind, the midline of the neck in front and the mandible above.

It is sub-divided into submental, digastric, carotid and muscular triangles.

1. Submental triangle

The submental triangle is bounded by the anterior belly of the digastric muscle, the midline of the neck and the hyoid bone. The mylohyoid muscle forms its floor.

2. Digastric triangle

The digastric triangle is bounded by the mandible above and the two bellies of the digastric muscle. In addition, the stylohyoid muscle lies with the posterior belly of the digastric muscle. The mylohyoid and hyoglossus muscles form the floor of this triangle. The submandibular salivary gland is a prominent feature of this area, which is also referred to as the submandibular triangle. The hypoglossal nerve runs along with the stylohyoid muscle and posterior belly of the digastric muscle, between the hyoglosssus muscle andthe submandibular gland, on its course into the tongue. The facial vessels course across the triangle, with the facial artery passing deep to the submandibular gland while the facial vein passes superficial to it.

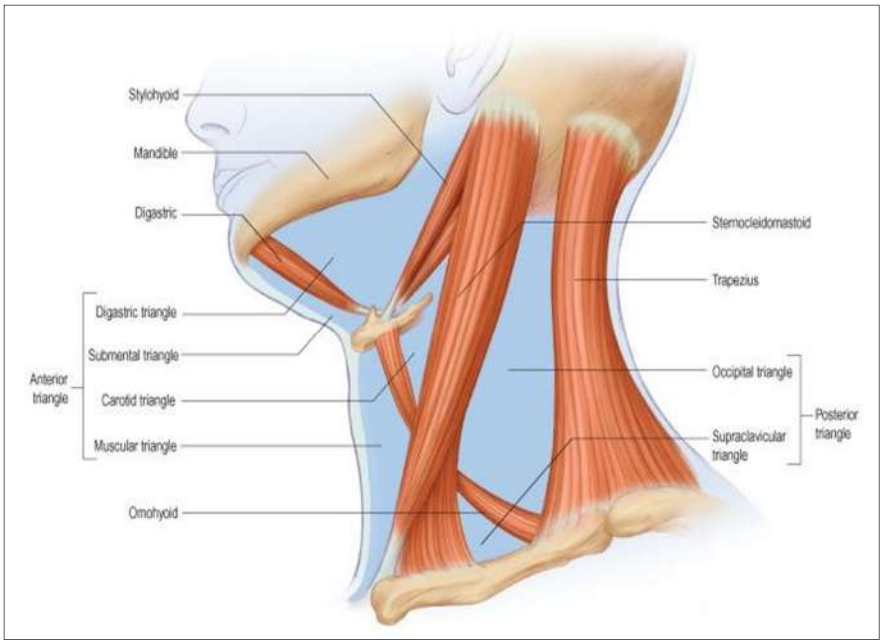
3. Carotid triangle

The carotid triangle is bounded by the sternocleidomastoid muscle behind, the posterior belly of the digastric muscle above and the omohyoid muscle below. Its floor is formed by the constrictor muscles of the pharynx. It contains the structures of the carotid sheath-namely, the common carotidartery as it divides into its external

and internal carotid branches, the internal jugular vein and its tributaries and the vagus nerve with its branches.

4. Muscular triangle

The muscular triangle is bounded by the omohyoid muscle above, the sternomastoid muscle below and the midline of the neck in front. It contains the infrahyoid muscles in its floor. Deep to these muscles are the thyroid and parathyroid glands, the larynx, which leads to the trachea, and the oesophagus. The hyoid bone



forms the superior attachment for the infrahyoid muscles and the prominent thyroid cartilage and cricoid cartilage are also contained in this region.

The Lymphatic System of The Head And Neck

There are 500 lymph nodes in the body and of these 200 are in the headand neck. The lymph nodes of the head and neck consist of two main groups, an outlying group and a terminal group. The terminal group are the deep cervical nodes which lie along the internal jugular vein and which receive all the lymphatic drainage of the head and neck. The lymph may drain directly into the deep cervical group or may first pass through nodes of the outlying group.

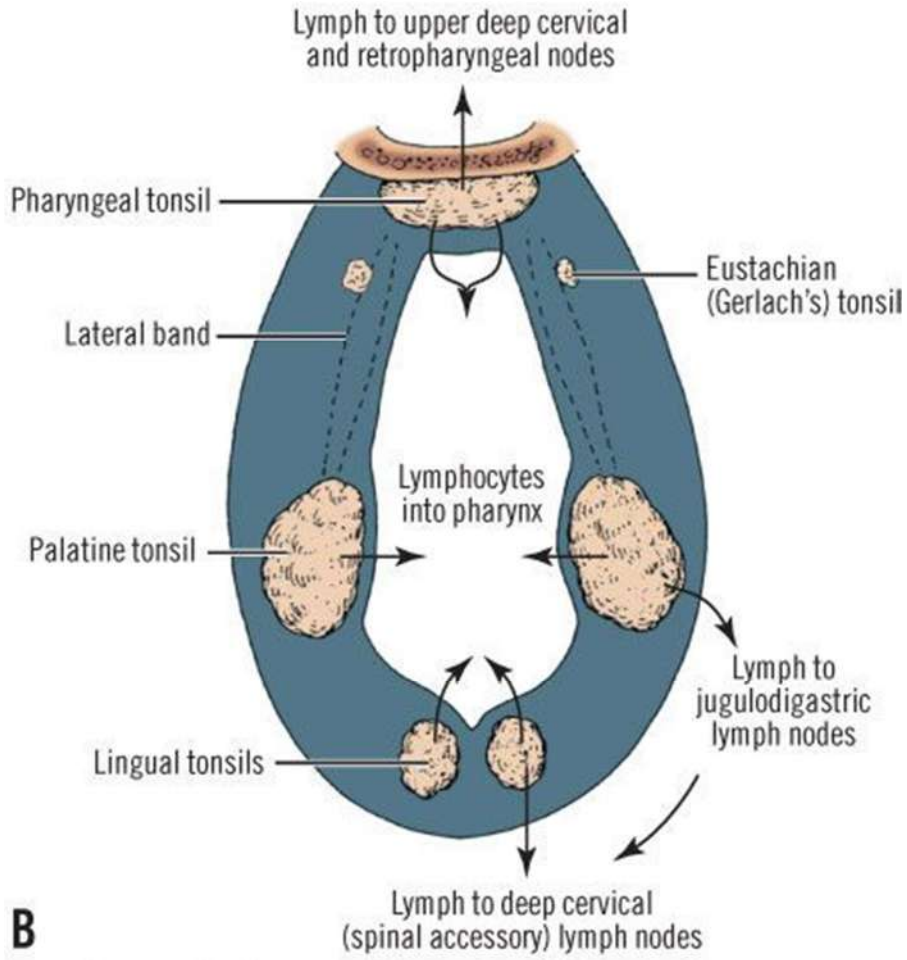
The lymphatic drainage of the head and neck is conventionally divided into three systems. They are:

- Waldeyer's internal ring
- Waldeyer's external ring and
- Cervical lymph nodes proper – deep nodal system

Waldeyer's internal ring

Within the pharynx at the skull base, there is a circular collection of lymphoid tissue aggregates which plays an important part in early immunological development. They consist of a collection of lymphoid tissue and were described by Waldeyer in 1884. The ring includes the adenoid, the tubal tonsil, the lingual tonsil, the palatine tonsils and aggregates of lymphoid

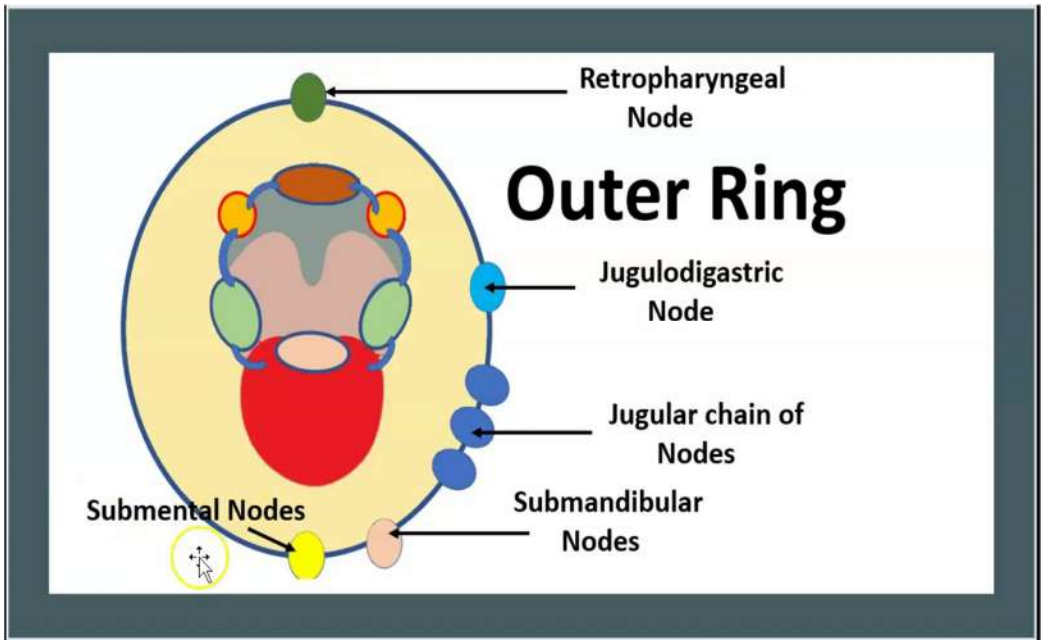
tissue on the posterior pharyngeal wall. Tumours arising in this area have a high propensity for lymphatic spread.



Waldeyer's external ring

Waldeyer's external ring, also known as the superficial nodal system, drains the superficial tissue of the head and neck. It consists of two circles of nodes, one in the head and the other in the neck. In the head, the nodes are situated around the skull base and are known as the occipital, post auricular, parotid or pre auricular, and buccal or facial nodes. They are in continuity withthe superficial nodes in the upper neck consisting of the superficial cervical, submandibular and submental nodes, along with the anterior cervical nodes. These latter nodes are situated along the external jugular vein and the anterior jugular veins respectively.

This superficial system receives drainage from the skin and underlying tissues of the scalp, eyelids and face, along with Waldeyer's internal ring, nasal sinuses and oral cavity.



Cervical lymph nodes proper

The deeper fascial structures of the head and neck drain either directly into the deep cervical lymph nodes or through the superficial system first and then into the deep system.

The deep cervical nodes are divided into upper and lower groups, and within these groups two more prominent either single nodes or groups ofnodes can be identified. These are the jugulo-digastric nodes and the jugulo- omohyoid nodes.

The jugulo-digastric nodes consist of one large and several smaller nodes situated in the triangle formed by the internal jugular vein, the facial vein and the posterior belly of digastric muscle. They receive lymphatic vessels from the submandibular region, the tonsil, the tongue and from the floor of the mouth.

The jugulo-omohyoid nodes are situated low in the neck close to the point where the omohyoid muscle crosses the internal jugular vein. This groupof nodes receives lymphatic vessels from the anterior floor of the mouth and from the tongue.

The efferent vessels from the deep cervical nodes form into a jugular trunk which, on the right side ends at the junction of the internal jugular vein and subclavian vein or joins the right lymphatic duct. On the left side, the jugular trunk usually joins the thoracic duct or may enter the junction of the internal jugular vein and subclavian vein separately.

Levels of Lymph Nodes In The Neck

It is possible to predict the site of a primary tumour based on the distribution of cervical metastases, and this was done by Lindberg in a classic study in 1972 where by he was able to identify the likely sites of metastases related to the site of the primary tumour. It is the accepted rule that patterns of subclinical microscopic metastases follow a similar distribution. Following Lindberg's work, the Memorial Sloan – Kettering Hospital published in 1981, a number of levels or regions within the neck which contain groups of lymph nodes that represent the first echelon sites for metastases from head and neck primary sites. These are described below:

Level I: Submental and submandibular groups

The submental group of lymph nodes within the triangle

Boundaries: The anterior belly of digastric and the hyoid bone

The submandibular group of nodes

Boundaries: The posterior belly of digastric and the body of the mandible.

Level II: Upper jugular group

This consists of the lymph nodes located around the upper third of the internal jugular vein and adjacent spinal accessory nodes.

It extends from the skull base down to the level of the carotid bifurcation where the digastrics muscle crosses the internal jugular vein. This point relates to level of the hyoid bone on a computed tomographic (CT) scan. It contains the junctional and sometimes the jugulo-digastric nodes.

Level III: Middle jugular group

This consists of lymph nodes located around the middle third of the internal jugular vein.

It extends from the carotid bifurcation superiorly (bottomof level II) down to the upper part of the cricoid cartilage (seen on a CT scan) and represents the level where the omohyoid muscle crosses the internaljugular vein. It usually contains the jugulo-omohyoid nodes and may contain the jugulo-digastric node.

Level IV: Lower jugular group

This consists of lymph nodes located around the lower third of the internal jugular vein extending from the cricoid cartilage down to the clavicle inferiorly. It may contain some jugulo-omohyoid nodes

Level V: Posterior triangle group

These nodes are located along the lower half of the spinal accessory nerve and the transverse cervical artery. Supraclavicular nodes are also included in this group. The posterior boundary is the anterior border of the trapezius and the anterior boundary is the posterior border of the sternomastoid muscle.

Level VI: Anterior compartment group (visceral group)

This consists of lymph nodes surrounding the middle visceral structuresof the neck extending from the hyoid bone superiorly to the suprasternal notchinferiorly. The lateral border on each side is the medial border of the sternomastoid muscle. It contains the parathyroid, the paratracheal and pretracheal, the perilaryngeal and precricoid lymph nodes.

Level VII

These are the lymph nodes in the upper anterior mediastinum.

The factors which affect the pattern of spread of malignant disease to the neck depend on both tumour and patient factors. The site of the primary tumour is important, with some sites having a high incidence of metastases, both palpable and otherwise, at presentation.

It is important to note that the above drainage patterns apply in the non-violated neck. Once the natural history of the disease is changed, lymph-node metastases can occur anywhere. This explains why the operation of selective neck dissection is usually only suitable in the previously untreated neck.

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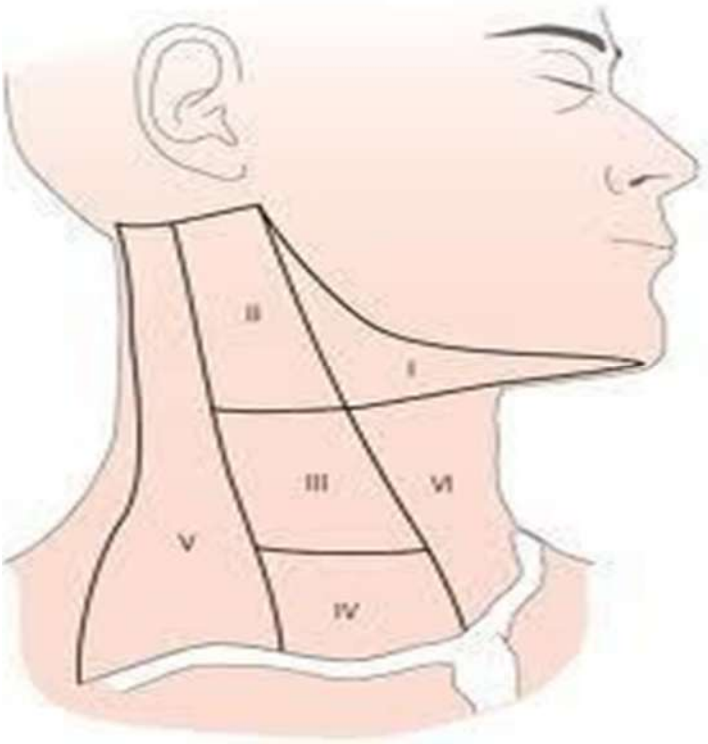
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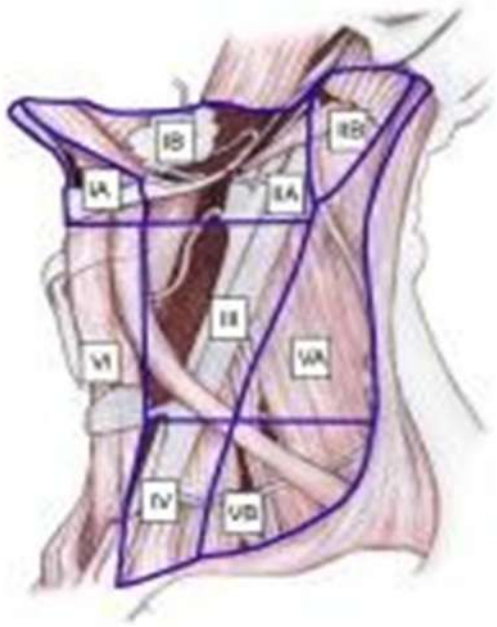
IB
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SURGICAL PATHOLOGY[5]

Although the presence or absence of cervical metastases is the single most important factor in determining prognosis in head and neck cancer the extent of the cervical metastases is also important. Thus staging of the metastasis is important both from the point of view of reporting disease and also in terms of management and prognosis in a particular patient. Fortunately the most recent classifications suggested by the AJC and UICC are identical. These classifications apply to nodes from an unknown primary and from all primary tumours in the head and neck apart from the nasopharynx and thyroid. The classification is shown below:

TNM classification of regional lymph nodes

N_x Regional lymph nodes cannot be assessed

N_0 No regional lymph node metastasis

N_1 Metastasis in a single ipsilateral lymph node 3 cm or less in its greatest dimension.

N_2 Metastasis in a single ipsilateral lymph node, more than 3cm but not more than 6cm in its greatest dimension, or in multiple ipsilateral lymph nodes none more than 6cm in greatest dimension, or in bilateral or contralateral lymph nodes none more than 6cm in greatest dimension.

N_{2a} Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6cm in greatest dimension.

N_{2b} Metastasis in multiple ipsilateral lymph nodes, none more than 6cm in greatest dimension.

N_{2c} Metastasis in bilateral or contralateral lymph nodes, none morethan 6cm in greatest dimension.

N_{3a} Metastasis in a lymph node more than 6cm in greatest dimension. Without extranodal extension

N_{3b} Metastasis in a single or multiple lymph nodes with clinical extranodal extension

Behaviour of disease within cervical lymph nodes

The spread of disease from the primary tumour to the regional lymph node occurs by passive transport within lymph. Metastatic involvement of various lymph node regions usually progresses from superior to inferior in an orderly fashion but it has been shown that in some situations lymph node groups can be bypassed even in the normal lymphogram.

Once tumour cells arrive at a draining lymph node, they can proliferate, die, remain dormant or enter the blood circulation through blood vessels in the node. The process of metastasis is not a random phenomenon, although random events may be important.

Paget's seed and soil hypothesis was an attractive one and, although largely disproved, a number of important properties have recently been assigned to tumour cells or metastatic seeds and these include cell growth, chemotaxis, immunological, metabolic and hormonal factors.

Similar host environment (soil) factors include the tissue and stromal environment, hormones, inflammatory and immunological responses and the presence and absence of vital nutrients.

There are several stages of metastasis via lymphatic pathways. Premetastatic invasion of the epithelial basal lamina of the primary tumour is followed by subsequent encroachment, penetration and translocation of cells through a lymphatic.

This is followed by intranodal settling, proliferation and destruction of the lymph node.

Secondary metastases to other lymph nodes soon develop, although their occurrence is not always accompanied by the destruction by the primary echelon node.

Metastatic squamous cell carcinoma within a cervical lymph node can stimulate the stroma in a variety of ways anda number of histological and immunological patterns have been described.

There are four distinct growth patterns of squamous cell carcinoma within cervical lymph nodes.

1. Following original cancerous deposits in the sub-capsular sinus, growthwithin the affected node proceeds to a considerable extent before extra nodal spread occurs. Ultimately extra nodal extension occurs bythe direct penetration and destruction of the capsule, or by the arrest of further underlying capsular or juxta capsular lymphatics.
2. Extra nodal spread occurs at an early stage in the genesis of the tumour growth within the node.
3. A less common pattern involves the deposition of a malignant embolus within the subcapsular sinus together with the simultaneous arrest of tumour within capsule or juxta capsular lymphatics. This results in the coincident and equivalent proliferation of cancer both within and outside the node.
4. The least common growth patterns show capsular or juxta capsular emboli with no intranodal cancer. This is important to realize since, in some instances, extranodal spread can occur much earlier in the naturalhistory of the disease process and, as such, may be important when undertaking conservative neck surgery.

Head and neck squamous cell carcinoma that presents as carcinomas of unknown primary (CUP)[6] represents difficult challenge for the practicing physician. CUP represents a heterogenous disease entity characterized by the presence of clinically or radiologically obvious primary tumour.

In the head and neck, the definition of true unknown or occult primary carcinoma is the presentation of metastatic neck lymphadenopathy without the development or manifestation of an index primary tumour within a subsequent 5-year period.

Rigorous clinical examination, appropriate cross-sectional imaging and examination under anesthesia including an ipsilateral tonsillectomy and biopsy of the tongue base mucosa with or without the mucosa of the post nasal space and /or ipsilateral pyriform fossa.

Volkmann in 1882 believed that the neck mass resulted from the degeneration of branchiogenic cyst into carcinoma. In 1940, Martin and Morfit revised this hypothesis and this theory was dismissed

Two hypothesis currently predominate first ,the microscopic primary tumour lies undetected in the mucosal folds of Waldeyer's ring and it is too small to be detected by conventional diagnostic methods and is ultimately successfully treated either by design or coincidental.

Second, primary tumour is removed by the patients iinate or adaptive immune system but not before early metastasis to the cervical lymph nodes has occurred with subsequent evasion of the host immune response 30% of patients with early stage carcinoma of the head and neck with a clinically negative node have nodal metastasis on histo- pathologic analysis. Efforts have been made to improve the diagnosis of occultnodal metastasis and this improves instituting early treatment of the neck.

Assessment of cervical lymph nodes

In the first place, palpation by the experienced head and neck surgeon remains the standard assessment.

The clinician stands behind the patient and flexes his or her head slightly. The index fingers are placed on both mastoid processes and palpate down the trapezius muscle until the fingers meet at the clavicle. The under surface of the anterior border of trapezius should also be palpated. When the clavicle is reached, the posterior triangle (Level V) is palpated. Here the nodes lie between the skin and muscles of the floor of the triangle and therefore can be rolled between these two surfaces. By gentle lateral movement of the head to the examining side, the sternomastoid is palpated with the fingers placed in front of and medial to the sternomastoid with the thumb behind it, thus forming a 'C' around the muscle. The examination progresses down the muscle carefully because 80% of the nodes lie under the muscle within the jugular chain (Levels II-IV) of the deep cervical lymph nodes. The smallest node which can be easily palpated in the jugular chain is probably 1 cm.

Most clinically positive nodes occur in the upper jugular chain (Levels II and III) but the most superior jugular nodes (Level II), including the junctional nodes, are difficult to palpate, particularly in men, and positive lymph nodes in the lower jugular area (Level IV) may be difficult to feel sincethey are often small, deep and mobile.

Attention should be paid to the suprasternal notch and the space within it (The Space of Burns), to check for positive cricothyroid and pretracheal nodes. Then the trachea is palpated and the size of the thyroid gland is assessed. The mobility of the larynx and pharynx on the prevertebral fascia is then assessed. The submandibular gland and nodes, submental nodes and the preauricular nodes are then examined. These are easier to feel and nodes downto 0.5cm can usually be palpated.

Difficulties in assessment of lymph nodes

1. The retropharyngeal and parapharyngeal nodes are impossible to detectunless very large.
2. The nodes in the supraclavicular fossa are difficult to feel.
3. Patients with short and thick necks.
4. Structures in the neck which may be mistaken for enlarged lymph nodes – transverse process of atlas, the carotid bifurcation, parotid tail, the superior horn of thyroid cartilage, irradiated and obstructed submandibular salivary gland.

It should also be remembered that a neck lump in a patient with a tumour of the piriform sinus or tonsil may not be a secondary in a lymph node,but a direct extension of the tumour through either the thyrohyoid membrane or the pharynx. This should be assessed by asking the patient to swallow, uponwhich a lump due to direct extension will move up and down. In addition, such lumps are often painful.

RADIOLOGY OF CERVICAL LYMPHADENOPATHY

USG NECK – FEATURES

Ultrasonogram plays a major role in the diagnosis of metastatic lymphadenopathy and monitoring the prognosis of metastatic lymphadenopathy

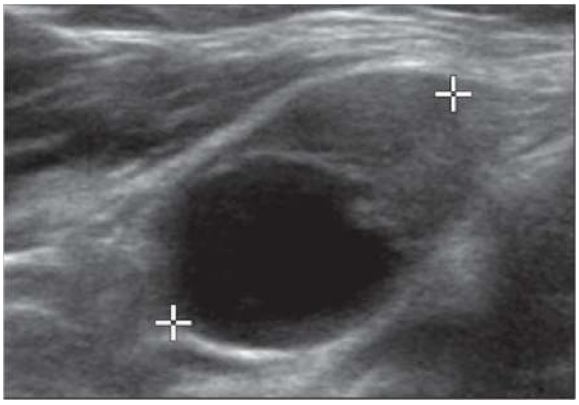
Spherical rather than elliptical

More tgan 10mm in size

Metastatic nodes have sharp border

Hypoechoic relatively compared to suurounding structures

Intranodal necrosis

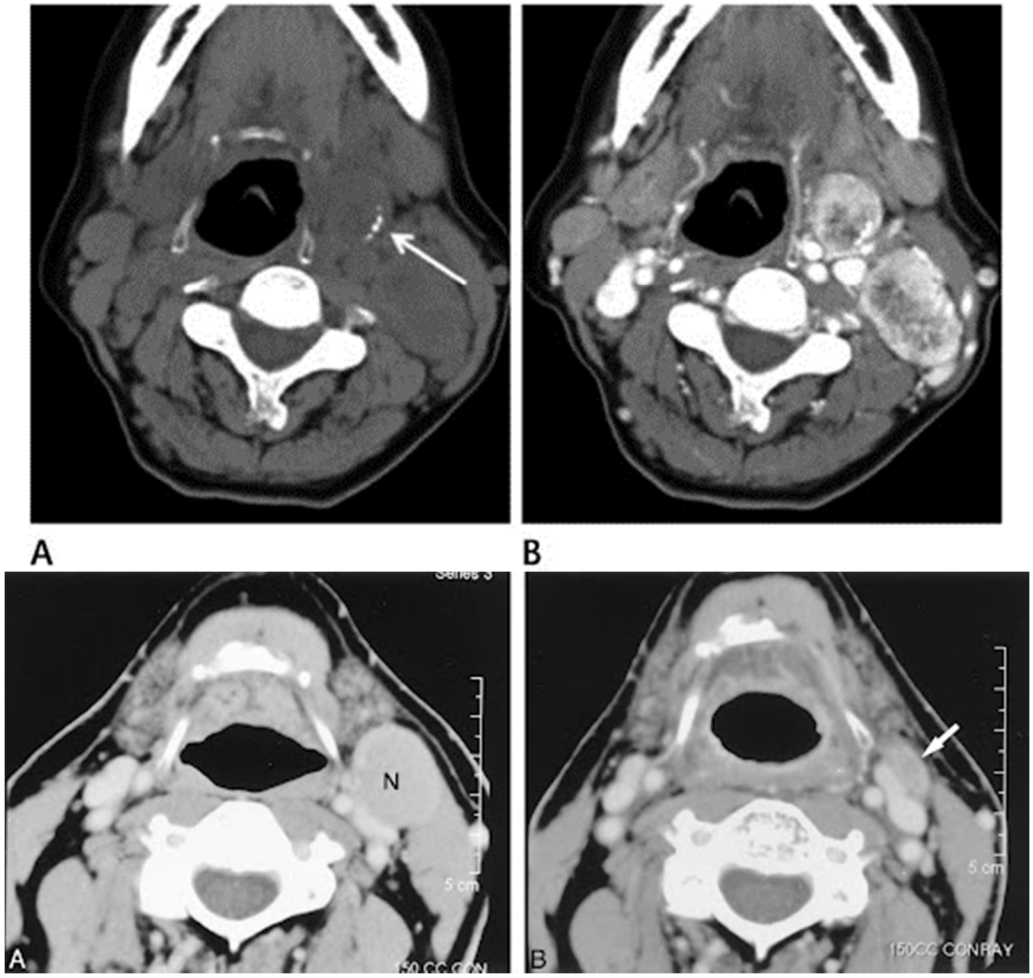


CT NECK - FEATURES

The role of computerised tomography (CT) becomes the next logical step in evaluating the regional spread of head and neck cancer. CT is accurate for nodes larger than 10mm and with central lucency, but is less accurate for smaller nodes (<10mm).

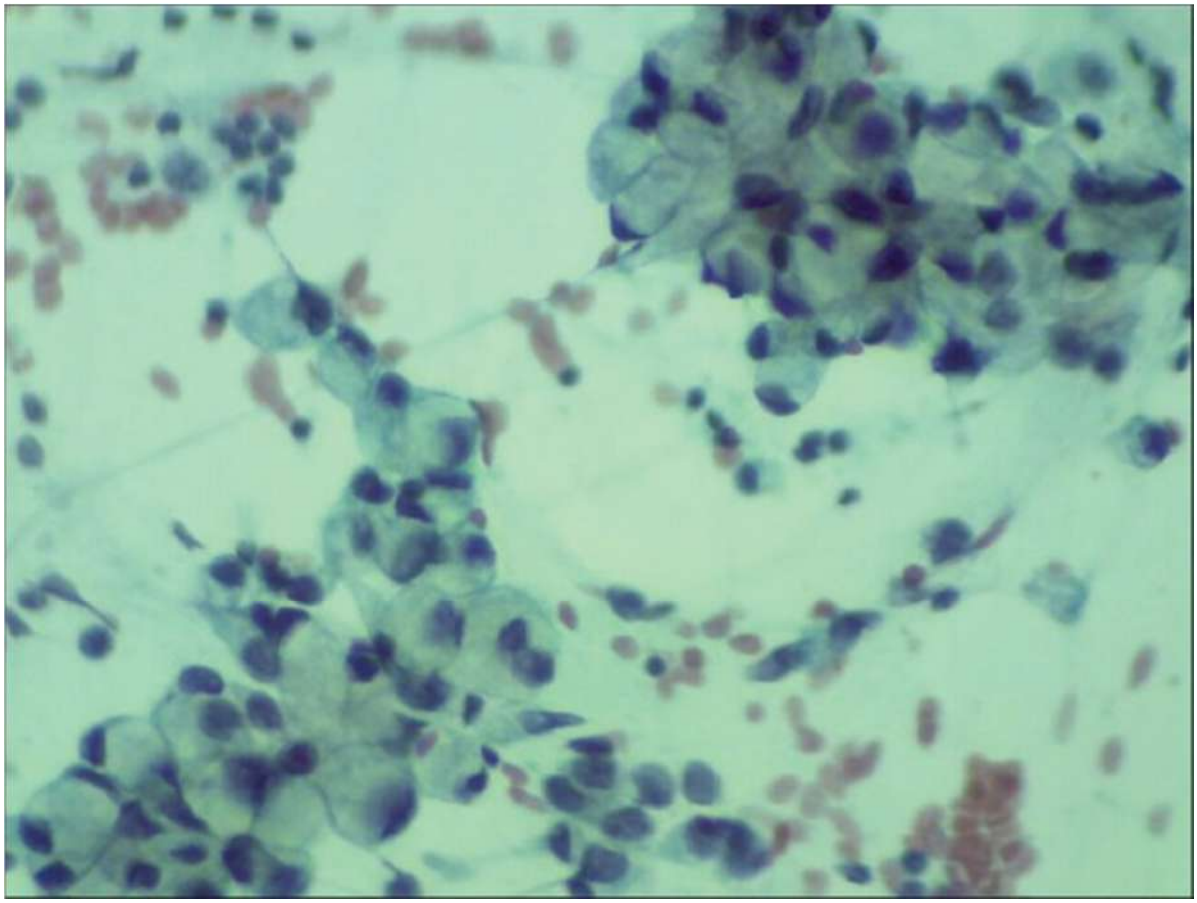
CT findings suggestive of metastatic node

- Spherical rather than oval
- >10mm size
- Peripheral enhancement with i.v. contrast
- Central necrosis (lucency)



Currently research is being done in the field of Nuclear medicine with Positron Emission Tomography (PET) and Single Photon Emission Computed Tomography (SPECT) with Thallium – 201 in an attempt to improve the detection of nodal metastases.

FNAC is an important step in the assessment of nodes from an unknown primary in the process of diagnosis and treatment, and usually follows the clinical examination. However, open biopsy of the node is contraindicated, as it adversely affects survival. Experienced cytologists today have a high degree of success in the diagnosis of different tumours including lymphoma and salivary gland tumours [. It is simpler and less traumatic, provides equally accurate sampling and has a smaller chance of seeding.



Clinical Presentation

Patients with cervical nodal enlargement suspected to be metastatic should undergo a thorough general examination and ENT examination with particular reference to the common primary sites viz., the nasopharynx, oropharynx, hypopharynx and larynx.

Epidemiology of suspicious neck node swelling

1. Adult male population.
2. Asian or Mediterranean descent.
3. Alcohol abuse and heavy smoking.
4. Painless, often slowly growing mass in level II/ III.
5. Radiation exposure in the past.
6. Curative treatment in the past for other malignancy.

Nasopharynx

Patients with primary tumour in the nasopharynx may present with

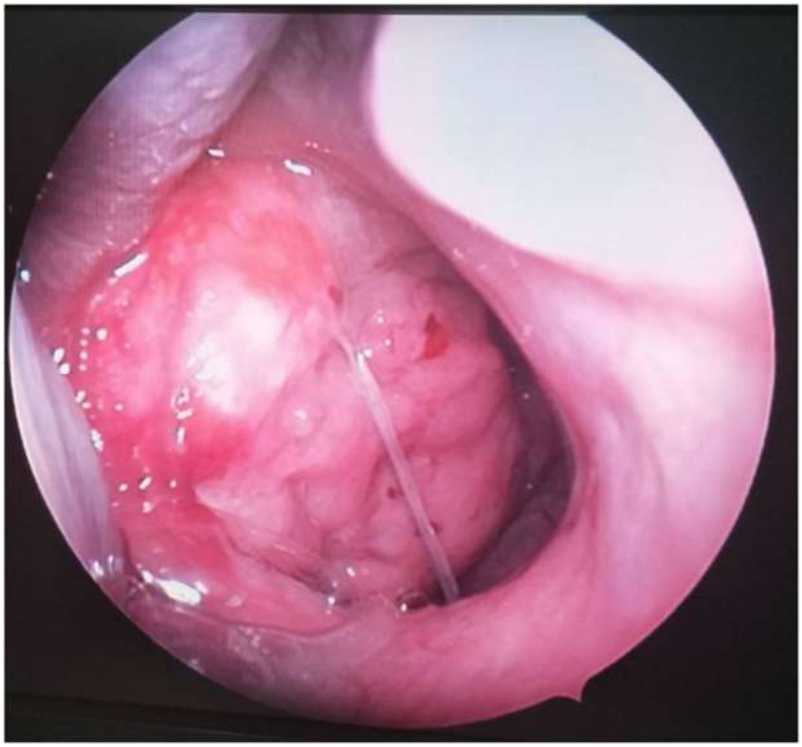
1.Painless cervical lymphadenopathy

2.Epistaxis and nasal symptoms

3.Ear symptoms-tinnitus, otalgia and deafness

4.Neurological symptoms – headache, cranial nerve palsies andHorner's syndrome.

Particular attention to be made, during the examination, to the postnasalspace, fossa of Rosenmuller and the eustachian tube orifice. This is further guided by the use of rigid Hopkin's telescope.



Oropharynx

1. Pain on swallowing
2. Soreness or discomfort in the throat
3. Referred otalgia
4. Ulcer in oropharyngeal region
5. Large tumours - change in voice of the patient.

Clinical examination should focus on the soft palate, the tonsillar fossae and pillars, the tonsillo-lingual sulcus..

Hypopharynx

1. Pain – usually unilateral radiating to the ipsilateral ear

2. Dysphagia – progressive

3.Hemoptysis – unusual

4. Hoarseness of voice if laryngeal extension is present

5. neck mass

6. Weight loss

Clinical examination to be focussed on the presence of any mass lesion,pooling of saliva in the pyriform fossae (Chevalier – Jackson sign). Presence of laryngeal crepitus to be ascertained (Boca's sign).

Larynx

1.Progressive dysphonia

2. Dyspnea

3. Pain – late symptom

4. Referred otalgia

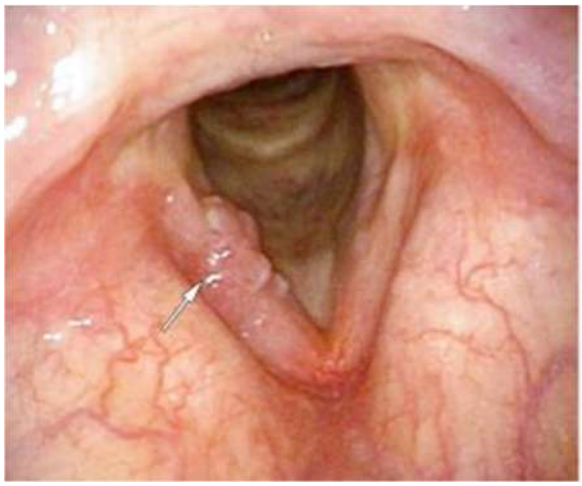
5. Dysphagia

6. swelling of the neck or larynx – direct spread or metastasis

7. cough or irritation of the throat

8. hemoptysis, anorexia or cachexia

Special note to be made of any lesion in the epiglottis, aryepiglottic fold, arytenoids, vocal folds and any extensions into the adjoining hypopharynx. The mobility of the vocal cords and the arytenoids are also ascertained. This can be done on indirect laryngoscopy or with a probe during direct laryngeal examination under GA. Videolaryngoscopy with 70° hopkin's provides a convenient method of assessing the hypopharynx and larynx, as an OP procedure.



Nodal factors affecting prognosis

- Presence or absence of clinically palpable cervical lymph nodemetastasis.
- The size of the metastatic lymph node.
- The number of lymph nodes involved.
- The location of the metastatic lymph node.

Involvement of lower cervical lymph nodes (level IV) and lower posterior triangle lymph nodes (level V) by metastatic cancer usually implies ominous prognosis. Thus involvement of lymph nodes in the lateral neck below the level of the cricoid is of serious prognostic significance.

The presence of extra nodal spread of metastatic disease by capsular rupture of the lymph node with invasion of the soft tissues impacts upon the prognosis.

Perivascular and perineural infiltration by tumour, as well as the presence of tumour emboli in regional lymphatics, also have an adverse impact on prognosis.

Therefore , these factors must be considered in developing a treatment strategy for patients in whom regional lymph nodes are involved by metastatic disease, particularly for planning adjuvant therapy and for assessment of prognosis.

Risk of nodal metastasis

The risk of nodal metastasis increases as one goes from anterior to posterior aspect of the upper aerodigestive tract i.e., lips, oral cavity, oropharynx and hypopharynx.

For tumours of the larynx and pharynx, the risk of nodal metastasis increases as one progresses from the centre (vocal cords) to the periphery (pyriform fossa and lateral pharyngeal wall).

This means the risk increases as one progresses from the vocal cords to the vestibular folds, AE folds, pyriform sinus and pharyngeal wall. Nearly two-thirds of patients with primary carcinomas of the hypopharynx present with clinically palpable regional lymph node metastasis.

The nasopharynx,nasal cavities and sinuses drains via junctional nodes into the upper deep cervical nodes(level II and III) having passes through retropharyngeal or submandibular lymph nodes.

For primary tumours in the oral cavity, risk for early dissemination by metastatic cancer are limited to levels I, II and III (supra omohyoid triangle of the neck). Skip metastasis to levels IV and V in the absence of metastatic disease at levels I, II or III is exceedingly rare, with one exception being primary squamous cell carcinoma of the middle-third of lateral border of the tongue where skip metastsis to level IV has been reported.

For tumours on the lateral aspect of the oropharynx and larynx,nodes at highest risk of micro-metastasis in the clinically negative neck are in levels II, III and IV on the ipsilateral side.

The lymph node groups in the deep jugular chain are the jugulo digastric, highest spinal accessory chain of lymph nodes, mid jugular lymph nodes, jugulo- omohyoid nodes and supraclavicular nodes deep to the sternomastoid muscle.

Contiguous lymph nodes lateral to the internal jugular vein overlying the cutaneous roots of the cervical plexus are considered components of levels II, III and IV. In primary carcinomas of the oropharynx, hypopharynx and larynx,skip metastasis to levels I and V in the absence of disease at levels II, III or IVis usually not seen.

Primary tumours which involve bilateral sides of the midline have the potential of microscopic dissemination of metastatic disease of jugular lymph nodes on both sides of the neck. Similarly, tumours of the medial wall of the pyriform sinus are reported to have an increased risk of contralateral neck metastases.

Regional metastasis from primary thyroid carcinomas occurs in perithyroidal lymph nodes and those in the tracheo-oesophageal groove and superior mediastinum. Sequential progressionthen goes to levels IV, III, V and to upper jugular nodes. Metastasis to level I from primary thyroid carcinoma is exceedingly rare and seldom seen.Only 20 - 25% of parotid tumours develop regional lymph node metastasis. The first echelon nodes here are those in the preauricular, peri and intra parotid region as well as levels II, III and upper accessory chain.

Initial dissemination from primary malignant tumours of submandibular salivary gland occurs in the supraomohyoid triangle (levels I,IIand III)

2. AIMS AND OBJECTIVES

I. Aims of the study

- To emphasize on the clinical evaluation of cervical lymphadenopathy in otorhinolaryngology department

- The diagnosis of malignancy by noninvasive technique and also including endoscopy.

- Proper evaluation of cervical lymphadenopathy for ruling out malignancy and initiating the treatment as soon as possible.

II. Objectives of the study

- Thorough Clinical evaluation and assessing the level of lymph nodes
- To do Videolaryngoscopy and diagnostic nasal endoscopy.If needed, endoscopic evaluation of upper gastrointestinal tract. Pan endoscopy as and when needed.
- Radiological evaluation – USG neck including thyroid,USG abdomen including genital tract of both gender.
- Histopathological evaluation followed by immunohistochemistry if needed

3. MATERIALS AND METHODS

- The study was conducted on 50 selected patients with suspected metatstatic cervical lymphadenopathy who presented to the otorhinolaryngology Department .Patients informed written consent was taken.
- The patients were examined clinically after taking a detailed history. Nodes enlarged were classified according to Memorial Sloan- Kettering Cancer Centre leveling system of cervical lymph nodes. The number of nodes, their size, consistency noted at each level.
- Histories of any form of previous treatment to the nodes like radiotherapy, chemotherapy were excluded from the study. Terminally ill patients were also excluded.

PROCEDURE

- Videolaryngoscopic and diagnostic nasal endoscopic examination done looking for the primary.
- The patient sat facing the standing examiner. Each patient was sprayed with 10% lignocane spray and the videolaryngoscopy was done with Hopkin‟s 45 degree or 70 degree rigid laryngoscope. The oropharynx, hypopharynx and larynx was examined in detailed fashion and looked for any primary.
- The patient in supine position after decongetion of the nasal mucosa ,diagnostic nasal endoscopy done and looked for any primary in nasopharynx concentrating the fossa of rosenmuller.
- If primary is not identified, radiological investigations were done. Ultrasonography of the neck and CT scan were done.
- If primary identified biopsy is taken from the site.

- A FNAC of the cervical node is also done.
- If primary is not identified, blind biopsies taken from the most common site . If primary is proven, radiotherapy or chemotherapy started otherwise treated as carcinoma of unknown primary.

4. REVIEW OF LITERATURE

In 1807, Philip Bozzini used instrument called "lichleiter" illuminated by wax candle (7).

From that time, different trials performed of laryngoscopy till revolution of video laryngoscopy.

Bastian et al in 1989 concluded Indirect Video Laryngoscopy can guide treatment planning (8).

Refoyo et al in 1996 validated video laryngoscopy as indispensable in laryngeal changes (9).

Al abbasi et al in 2006 published three years videolaryngoscopic experience in Iran (10).

Yaseen et al in 2012 compared video laryngoscopy with flexible fiberoptic laryngoscopy (11).

Kaplan et al in 2015 reviewed the evolution of laryngeal visualization by video laryngoscopy (12). Shenson et al in September 2019 published Utility of video laryngoscopy for diagnostic and therapeutic interventions in head and neck surgery (13).

The unknown primary tumor (UPT) is an intriguing clinical phenomenon found in approximately 5% of all newly diagnosed patients with cancer. UPT, alternatively known as cancer of unknown primary (CUP), is defined as a biopsy-proven meta-stasis of a malignancy in the absence of an identifiable primary site after a complete history and physical examination have been carried out, along with basic laboratory studies, chest X-ray and additional directed studies, indicated by positive findings during the initial work-up (14). Unknown primary tumors are predominantly classified as adenocarcinomas (50–60%) or poorly differentiated adenocarcinomas or carcinomas (30–40%). Only 5–8%of UPTs are squamous carcinomas and 2–5% undifferentiated malignancies (15)

Kwee and Kwee reported an overall primary tumor detection rate, pooled sensitivity, and specificity of 37%, 84%, and 84% for this modality in detecting unknown primary tumors.(16)

Fernando Lopez et al[17] told although most metastatic neck nodes arise from primary tumors of the head and neck, isolated supraclavicular and or inferior neck lymphadenopathy should alert the clinician to consider the likely possibility of a non -head and neck primary neoplasm. The most common remote primary tumors associated with neck lymph node metastases include cancers of the breast, lung, kidney, cervix, and testis. The lymphatic anatomy supports a predilection for metastases to left-sided lymph nodes.

Olivitto et al[18] Although the occurrence of neck metastases in breast carcinoma is low (2.3% to 4.3%)[19,20] breast cancer is the most common distant primary to metastasize to neck lymph nodes[21] The cervical nodes most often affected are the supraclavicular lymph nodes; jugular chain metastases are an extraordinarily rare event (≤0.5% of cases).[22] Cervical lymph node metastases can occur months to years after diagnosis of the primary tumor.[23]

Namitha Jaypal et al[24] Squamous cell carcinoma of the oral cavity is a challenging entity to the oral and maxillofacial surgeon and represents a public health problem of enormous dimension. For determining the right strategy toward treatment, a thorough assessment of the tumor as well as regional and distant spread is essential to obtain optimum results. This study is based on the efficacy of ultrasound as an investigative modality to assess the regional lymph node metastasis with regard to oral squamous cell carcinoma and to correlate the internal echo structure with histopathological findings

Henrisken et al[25] in his study of 420 cases, the incidence of metastases of carcinoma of the cervix to the left supraclavicular nodes was 0.1% in patients who had not been treated and 1.5% in those who had been treated.82 However, occult supraclavicular lymph node metastases have been identified by FDG-PET in 8% of patients (14 of 186)[26] With more recent improved treatment of cervical cancer, supraclavicular lymphadenopathy has emerged as a more common manifestation of recurrent disease[27] .

Tachibana et al reported approximately 20% to 30% of esophageal carcinomas present with cervical node involvement.[28] Neck ultrasound frequently detect clinically nonpalpable metastatic nodes leading to alteration of the final pretreatment TNM staging in patients with squamous esophageal carcinoma.

Nakagawa et al reported twenty-eight percent of patients who present initially with no palpable cervical nodes were subsequently found to have malignant nodes after being evaluated by ultrasound[29]

Takashima et al reported gastric carcinoma has a particular propensity to involve Virchow's node[30] Lymphatic spread is along the vascular network to nodes in the left gastric, hepatic, and splenic chains, and on to the celiac plexus and porta hepatis from where the thoracic duct is entered[31]

Gastric carcinomas do not have a very specific immunoprofile; they are frequently positive for caudal type homeobox-2 (CDX-2), similar to other carcinomas of the intestinal tract [32,33]

Approximately 20% to 30% of esophageal carcinomas present with cervical node involvement was present as per Griffith et al.[37] Neck ultrasound frequently detect clinically nonpalpable metastatic nodes leading to alteration of the final pretreatment TNM staging in patients with squamous esophageal carcinoma. Twenty-eight percent of patients who present initially with no palpable cervical nodes were subsequently found to have malignant nodes after being evaluated by ultrasound.[38]

The role of neck dissection for esophageal squamous cell carcinoma remains controversial.[39] Kato et al[40] found that patients who had bilateral neck dissection as well as transthoracic esophagectomy along with mediastinal and abdominal lymphadenectomy had a 5-year survival of 49% compared with 34% for those whose necks were not treated. Moreover, the prognosis for patients with positive cervical lymph nodes (26% of neck specimens) was relatively satisfactory (4-year survival of 48%). The presence of positive cervical nodes in patients with lower esophageal cancer involves a significantly worse survival.[37] The number of positive cervical nodes is important, as the overall survival of patients with ≥5 metastatic nodes is 6% compared with 45% for patients with ≤5 involved nodes.[37]

Howlader et al [34] The presence of cervical or supraclavicular lymph nodes indicates stage IV disease, which is associated with 5-year survival of 4%. Currently, there is no evidence to support a neck dissection in these cases.

See et al[35] reported testicular cancers include nonseminomatous and seminomatous germ cell tumors. The presence of neck metastases in germ cell tumors of the testis is an uncommon but well-established phenomenon. Incidence of neck metastases ranges from 2.6% to 4.5%, with a neck mass being the initial sign in approximately 5% of cases.

Wood et al [36] reported on 31 patients with supradiaphragmatic nodal metastases from testicular primary germ cell tumors and found neck lymphadenopathy in 10 of 11 patients with seminoma (91%) and in 13 of 20 patients (65%) with nonseminomatous germ cell tumors. Neck metastases are almost invariably left-sided.

Westreich et al [37] reported a case in which a patient with refractory peptic ulcer disease and elevated serum gastrin levels demonstrated uptake on octreotide scan near the pancreas as well as a focus within the left supraclavicular neck. There was no evidence of a primary lesion or liver disease on either preoperative or postoperative imaging.

Som et al[38] reported nodes larger than 10 mm are conventionally considered abnormal. However, 20% of nodes that exceed 10 mm harbour no metastatic deposits and histologically show only hyperplasia. On the other hand, 23% of nodes that show extracapsular spread measure less than 10 mm. The presence of nodal necrosis, irrespective of size, indicates metastatic involvement. Although this sign is highly specific for metastatic disease it is of limited usefulness in clinical practice. This is because most nodes with nodal necrosis are larger than 10 mm

39 Yousem et al. reported that the presence of more than 270^ of circumferential involvement of the carotid artery was highly suggestive of unresectability

Howlett et al [40] reported ultrasound-guided core biopsy may be considered as a diagnostic technique if the accuracy of FNAC is equivocal or nondiagnostic. Even in cases of lymphoma, for which excisional biopsy is considered standard for pathological diagnosis, core biopsy has been shown to yield an adequate diagnosis and to avoid the need for excision.

Extracapsular spread is common with approximately 60% of all metastatic nodes. Extracapsular spread is diagnosed when the nodes appear matted or the nodal outline appears streaky. Imaging is not very sensitive and approximately 45% of all histologically verified nodes with extracapsular spread are not seen on CT . It should also be noted that 50% of nodes harbouring malignant cells measure less than 5 mm and 25% of nodes with extracapsular spread are less than 10 mm[41]

Minna et al[42] reported lung cancer -The risk of dissemination of small cell carcinoma ranges from 74% to 96%, adenocarcinoma from 50% to 82%, large cell carcinoma from 48% to 86%, and squamous cell carcinoma from 25% to 54%. [43] When neck metastases occurs, the supraclavicular group is most often involved, although involvement of level I and II nodes has also been reported. Metastatic involvement of the supraclavicular lymph nodes by pulmonary malignancies is classified as N3, which is considered to be at least stage IIIB, and involvement of other cervical lymph nodes is classified as M1 (stage IV disease).44

Davis et al [45] reported the frequency of cervical lymph node involvement in patients with lung cancer, to vary from 1.5% to 32%, possibly because the term “cervical node” was used without site specification. High resolution ultrasound is extremely useful for imaging these patients.[46,47]

Prosch et al[48] assessed the utility of ultrasound evaluation and ultrasound-guided fine-needle aspiration biopsy for the diagnosis and staging of patients with lung cancer.There is no reported role for neck dissection for cervical metastases from a lung carcinoma.[49] The most useful immunohistochemical tools for identifying metastatic lung

adenocarcinoma are thyroid transcription factor-1 (TTF-1) and Napsin-A.[50,51]

Haigentz et al[52] reported biopsy of the lung mass confirming a different histology would support 2 separate malignancies, but a squamous histology of both head and neck and lung lesions leave the clinician with the challenge of considering the lung lesion as a metastases or a second primary.[53] With such a rich lymphatic supply, metastatic spread is unpredictable resulting in skip lesions, which are reportedly common.[29] . The presence of involved regional lymph nodes is associated with significantly reduced survival, although they do not necessarily preclude long-term survival after resection.[35,36] Long-term survival has not been reported in patients with junctional cancers who have cervical nodal disease or nodal metastases in 3 body compartments (neck, mediastinum, and abdomen).[36]

5. RESULTS

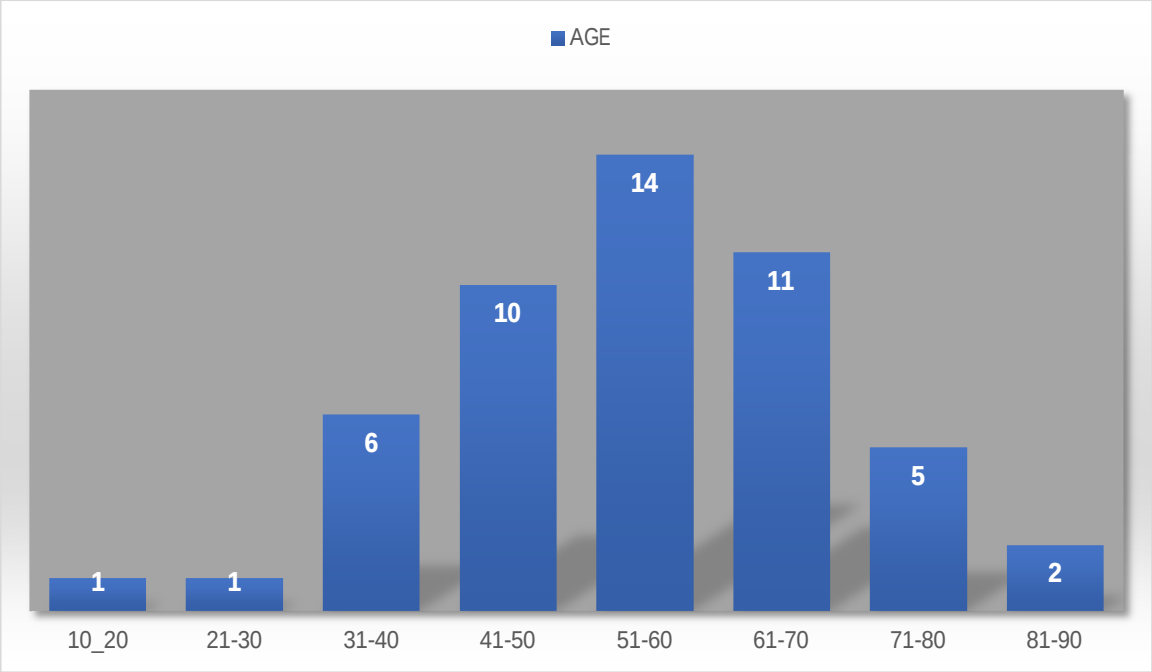


Table 1 Age Distribution of Metastatic Nodes	
0-9	-
10 – 20	1
21- 30	1
31- 40	6
41 – 50	10
51 – 60	14
61 – 70	11
71 – 80	5
81 – 90	2
TOTAL	50

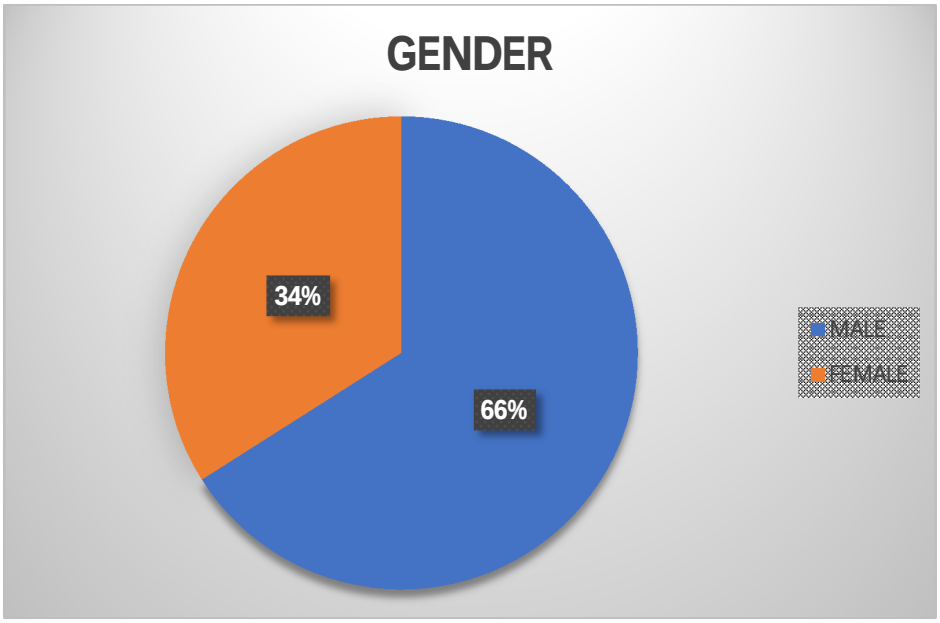


Table 2 Gender Distribution of Metastatic nodes	
Male	33
Female	17

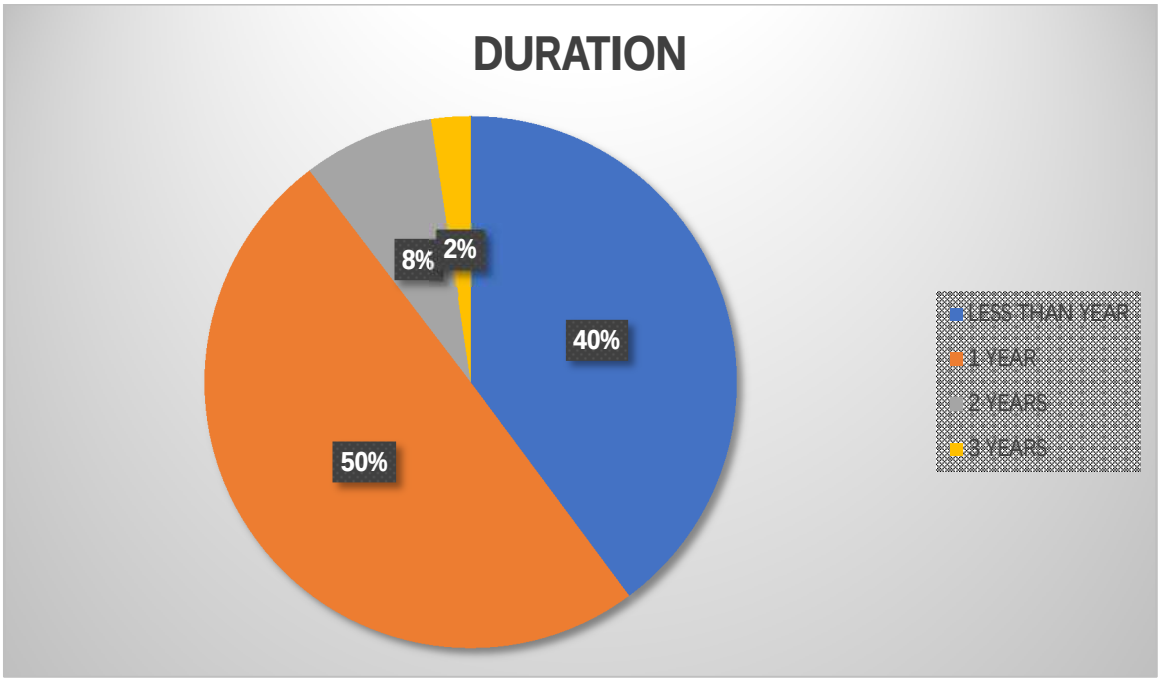


Table 3 :DURATION	
LESS THAN 1 YR	20
1 YR	25
2 YRS	4
3 YRS	1
TOTAL	50

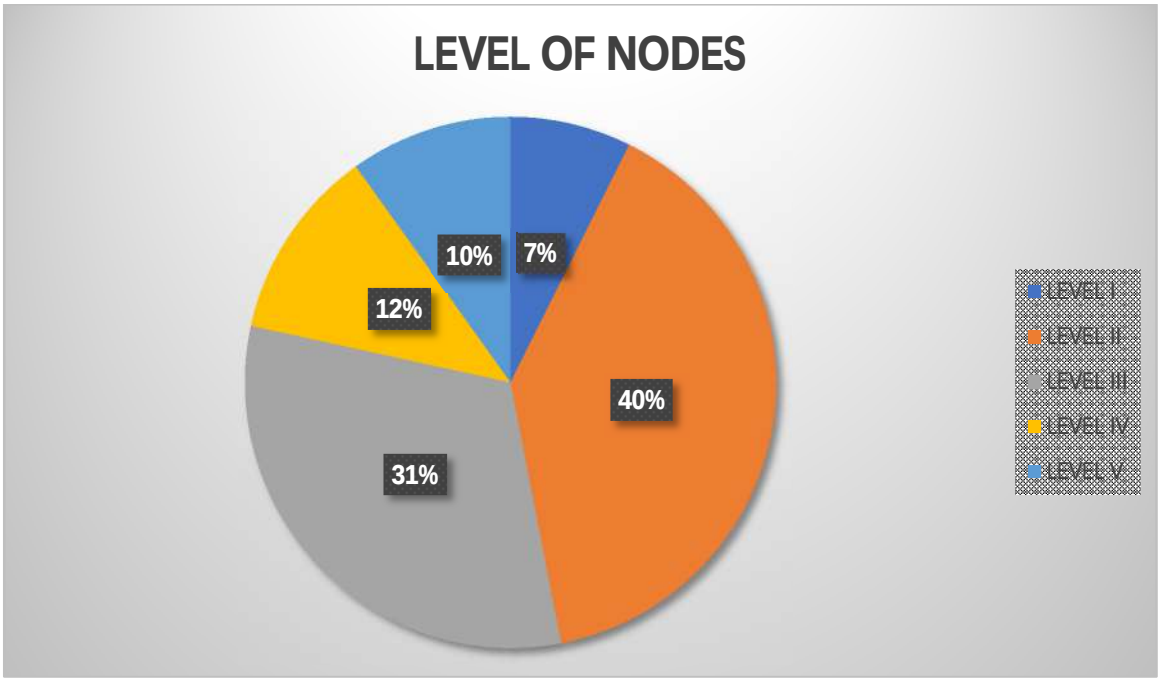


Table 4 Incidence of Metastatic Nodes	
Level 1	12
Level 2	44
Level 3	35
Level 4	13
Level 5	11

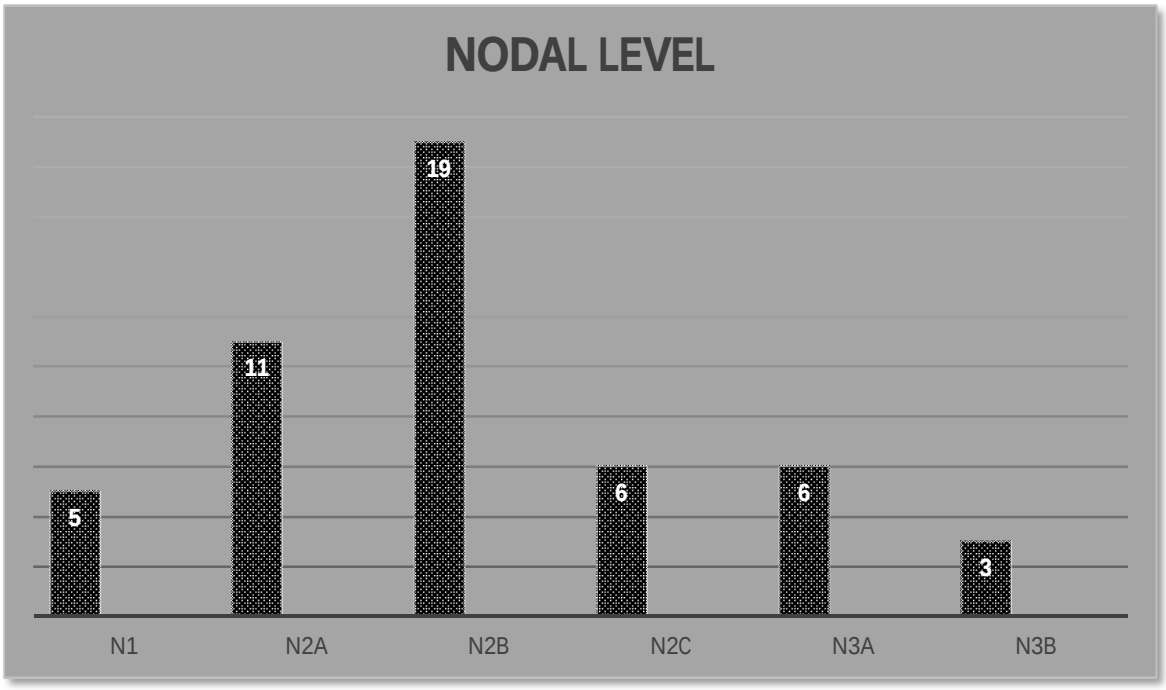


Table 5 NODAL LEVEL	
N 1	5
N 2 A	11
N 2 B	19
N 2 C	6
N 3 A	6
N 3 B	3

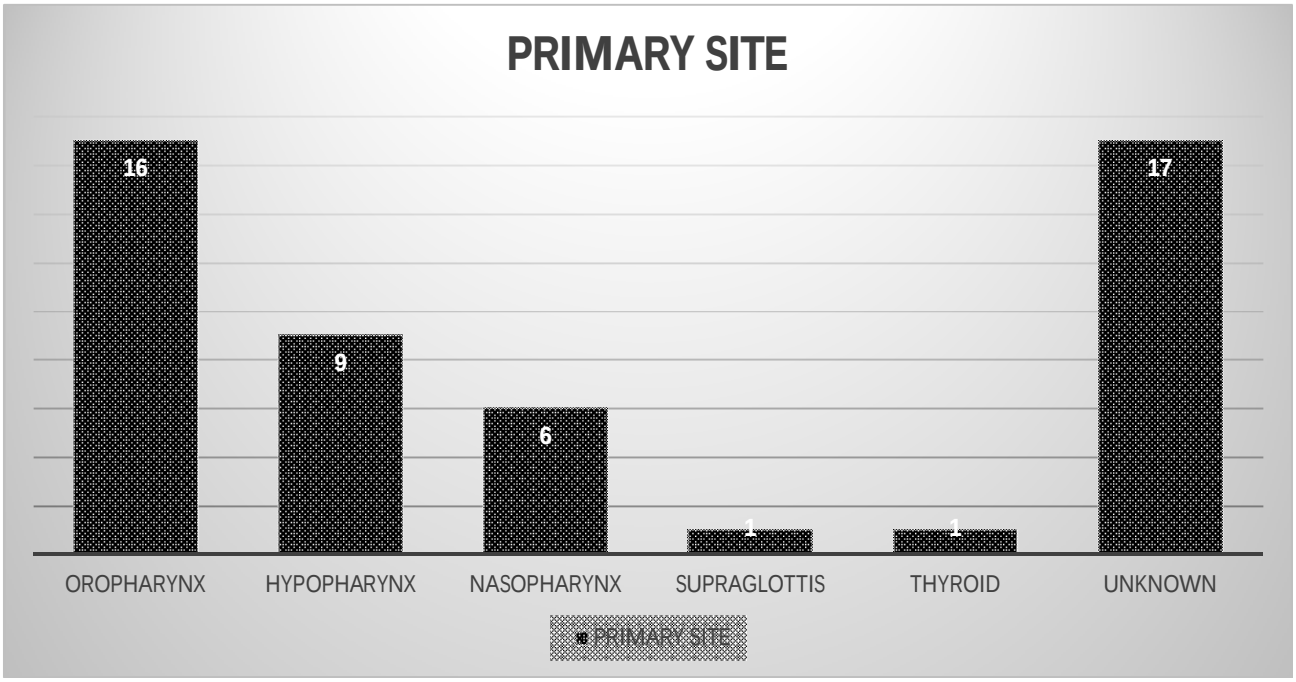


Table 6 PRIMARY SITE	
OROPHARYNX	16
HYPOPHARYNX	09
NASOPHARYNX	06
THYROID	01
SUPRAGLOTTIS	01
UNKNOWN	17

6. DISCUSSION

50 patients were selected and endoscopy done for all patients and then results were analysed and expressed as percentages and rates.

1. Written consent obtained and privacy maintained
2. Thorough examination and necessary investigation done.

Patients of all ages and of both genders included in the study.2 patients were between the age group 10 -30. 6 patients between 31 -40.10 patients between 41-50.14 patients were between 51-60. 11 patients between 61-70. 5 patients between 71-89. 2 patients between 81-90.

Of the 50 patients, 33 patients were male ana 17 patients were female.

40% of the 50 patients came to our OPD within 1 year duration. 50% patient with 1 year duration. 8% with 2-years duration.2 % with 3-years duration.

Out of 50 patients, 44 patients had level II lymph node. Out of 50 patients, 35 patients Level III lymph node. Out of 50 patients 13,11,12 patients had Level IV, V, I respectively.

According to sloan memorial kettering staging, 19 patients had N2B level node,11 patients had N2A level node, 6 patients had N2C level node, 6 patients had N3A level node, 5 patients had N2B level node. 3 patients in N3B level.

In our study, most common site of primary in the patient presenting to outpatient department with metastatic lymphadenopathy is oropharynx – 16 patients followed by hypopharynx &nasopharynx – 9 & 6 respectively. Out of 50, one had primary in thyroid and one in supraglottic.the primary site is then confirmed by taking contrast enhanced CT scan of neck. Out of 50, in 17 patients, the primary site of the malignancy could not be found. Those patients referred to upper GI scope and no primary detected in UGI scope also. In those patients, FNAC of the lymphadenopathy done and malignancy proved in those cases and treated as carcinoma of unknown primary with radiotherapy.

All those patients followed up periodically with video laryngoscopy and diagnostic nasal endoscopy for prognosis, residual and recurrence.

7. CONCLUSION

Cervical lymphadenopathy is a confounding problem in general practice. The analysis of a

cervical lymphadenopathy is never straight forward and the difficulty is compounded by the differential diagnosis that include several diseases that resemble each other.

Many haed and neck diseases manifest as neck masses with a wide range of pathologies from tuberculosis to malignancy.

Cervical lymphadenopathy is one of the commonest presentations in otorhinolaryngology outpatient department. Thus, knowledge of prevalence of the different pathologies in this region is important for the management of patients with neck swelling.

Most of the patients treated with over-the-counter drugs and with long term antibiotics in primary health care center. It is mandatory to evaluate the patient with cervical lymphadenopathy for malignancies at the primary health care itself. Most of the malignancies will be presented only with cervical lymphadenopathy.Further evaluation by fine needle aspiration and endoscopy

can be done and further intervention either surgery or radio/chemotherapy can be initiated.

Most of the malignancies are treated aa infection and when the patient presenting to ENT OPD will present in the advanced stage. Hence patient with cervical lymphadenopathy should be referred to ent department as soon as possible. The diagnosis of malignancy can be obtained by simple endoscopic techniques and treatment can be started earlier. Early identification and intervention in malignancy can result in good prognosis

8. PROFORMA

NAME DATE OF STUDY

AGE

SEX

IP/OP NO

HISTORY OF PRESENTING ILLNESS

DURATION

PAST HISTORY

PERSONAL HISTORY

ON EXAMINATION,

GENERAL CONDITION

WEIGHT

SYSTEMIC EXAMINATION

CVS

RS

CNS

P/A

EAR

NOSE

THROAT – ORAL CAVITY

OROPHARYNX

NECK

DIGNOSTIC NASAL ENDOSCOPY

VIDEOLARYNGOSCOPY

ULTRASONOGRAM OF NECK

FINE NEEDLE ASPIRATION CYTOLOGY

CT/MRI SCAN

SIGNATURE OF INVESTIGATOR

SIGNATURE OF GUIDE

9. INFORMED CONSENT FORM

STUDY: Analysis on clinical and diagnostic methods of metastatic cervical lymphadenopathy in tertiary care centre'

STUDY CENTRE: Department of Otorhinolaryngology,

Govt.Kilpauk Medical College Hospital, Chennai.

PATIENT'S NAME :

PATIENT'S AGE :

I.P NO. :

Patient may check ( ) these boxes

I confirm that I understood the purpose of the procedure for the above study.( )

I had the opportunity to ask question and all my questions and doubts have been answered to my complete satisfaction.( )

I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving reason, without my legal rights being affected.( )

I understand that the ethical committee members and the regulatory authorities will not need my permission to look at my health records, both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the study I agree to this access. ( )

However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. ( )

I agree not to restrict the use of any data or results that arise from the study. ( )

I agree to take part in the above study and to comply with the instructions given during the study and faithfully co-operate with the study team and to immediately inform the study staff if I suffer any unexpected or unusual symptoms. ( )

I hereby consent to participate in this study. ( )

I hereby give permission to undergo complete clinical examination and surgical fixation , diagnostic tests including haematological, biochemical, radiological test ()

Signature / thumb impression of the patient:

Patient’s name and address:

Place:

Date:

Signature of the investigator:

investigator’s name:

Place:

Date:

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MASTER CHART

S.NO	AGE	SEX	SYMPTOMS	DURATION	ALCOHOL	SMOKING	NODE LEVEL	NODAL STATUS	DNE	VLS	USG NECK & ABDOMEN	CT	FNAC	PRIMARY SITE	BIOPSY
1	55	M	NECK SWELLING	2 YRS	+	+	II,III	N2B	N	BASE OF TONGUE	NO PRIMARY	DONE	SCC	OROPHARYNX	PROVEN
2	43	M	NECK SWELLING,DYSPHAGIA	1 YR	+	+	II,III.IV	N3A	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	HYPOPHARYNX	PROVEN
3	62	M	NECK SWELLLING	1 YR	-	-	V	N3A	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
4	57	M	NECK SWELLING	6 MONTS	+	+	II	N2A	N	N	NO PRIMARY	DONE	SCC	UNKNOWN	
5	49	F	NECK SWELLING	2 YR	-	-	V	N3A	FOR +	N	NO PRIMARY	DONE-NASOPHARYNX	METS	NASOPHARYNX	PROVEN - LYMPHOMA
6	59	M	NECK SWELLING,DYSPHAGIA	1 Y	+	+	II,III	N2A	N	VALLECULA	NO PRIMARY	DONE	SCC	OROPHARYNX	PROVEN
7	67	F	NECK SWELLING	2YRS	+	+	I,II	N3A	N	L TONSIL	NO PRIMARY	DONE	SCC	OROPHARYX	
8	82	M	NECK SWELLING	6 MON	-	-	I,II	N3B		VALLECULA	NO PRIMARY	DONE	SCC	OROPHARYNX	
9	65	M	NECK SWELLING	1YR	+	+	II,III	N2B	N	R TONSIL	NO PRIMARY	DONE		OROPHARYNX	
10	63	F	NECK SWELLING,DYSPHAGIA	1YR	-	-	I,II,III	N2B	N	N	NO PRIMARY	DONE	METS	UNKNOWN	

11	49	F	NECK SWELLING	6 MON	-	-	I,III,II, IV	N3B	N	PF	NO PRIMARY	DONE	SCC	HYPOPHARYNX	
12	56	M	NECK SWELLING	8 MON	+	+	III,V	N2B	FOR +	N	NO PRIMARY	DONE-NASOPHARYNX	METS	NASOPHARYNX	
13	53	F	NECK SWELLING,DYSPHAGIA	1YR	-	-	II,III,V	N2B	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
14	61	M	NECK SWELLING	2YRS	+	-	II,III	N2B	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	HYPOPHARYNX	PROVEN
15	72	M	NECK SWELLING,DYSPHAGIA	1 YR	+	+	II,III	N2C	N	VALLECULA	NO PRIMARY	DONE	SCC	OROPHARYNX	PROVEN
16	60	F	NECK SWELLING	1 YR	-	-	II,III,IV	N3A	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
17	69	M	NECK SWELLING,DYSPHAGIA	1 YR	+	+	II,III	N3A	N	BASE OF TONGUE	NO PRIMARY	DONE		OROPHARYNX	
18	75	F	NECK SWELLING	6 MON	-	-	II,III,IV	N2A	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
19	54	M	NECK SWELLING	4 MON	+	+	III,V	N2A	N	VALLECULA	NO PRIMARY	DONE	SCC	OROPHARYNX	PROVEN
20	48	M	NECK SWELLING,DYSPHAGIA	1 YR	-	-	II,III,IV	N2B	N	PF	NO PRIMARY	DONE	SCC	HYPOPHARYNX	
21	39	M	NECK SWELLING	1 YR	+	+	II,III	N2A	N	TONSIL	NO PRIMARY	DONE		OROPHARYNX	
22	55	M	NECK SWELLING	6 MON	+	+	II,III,IV	N2B	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
23	35	M	NECK SWELLING	5 MON	+	+	III,IV	N2B	N	N	THYROID	DONE-THYROID	METS	THYROID	

24	29	M	NECK SWELLING,DYSPHAGIA	1 YR	-	-	III,V	N2A	FOR +	N	NO PRIMARY	DONE-NASOPHARYNX	METS	NASOPHARYNX	
25	17	M	NECK SWELLING	6 MON	-	-	V	N2B	FOR +	N	NO PRIMARY	DONE-NASOPHARYNX	METS	NASOPHARYNX	PROVEN
26	68	F	NECK SWELLING	3YRS	-	-	II,III	N2B	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	HYPOPHARYNX	PROVEN
27	72	M	NECK SWELLING	1 YR	+	+	II,III,IV	N2A	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
28	74	M	NECK SWELLING,DYSPHAGIA	6 MON	+	+	II,III	N1	N	BASE OF TONGUE	NO PRIMARY	DONE	SCC	OROPHARYNX	
29	90	M	NECK SWELLING	3 MON	-	-	II,III,IV	N2A	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	HYPOPHARYNX	PROVEN
30	72	F	NECK SWELLING	1 YR	-	-	I,II,III	N2B	N	TONSIL	NO PRIMARY	DONE		OROPHARYNX	
31	69	M	NECK SWELLING	6 MON	-	-	I,II	N2A	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
32	35	F	NECK SWELLING	3 MON	-	-	III,IV	N1	N	VALLECULA	NO PRIMARY	DONE	SCC	OROPHARYNX	PROVEN
33	54	M	NECK SWELLING,DYSPHAGIA	1 YR	+	+	II,III,V	N2B	FOR +	N	NO PRIMARY	DONE-NASOPHARYNX	METS	NASOPHARYNX	

34	58	M	NECK SWELLING	1 YR	+	+	II,V	N2B	N	PF	NO PRIMARY	DONE		HYPOPHARYNX	
35	60	F	NECK SWELLING	1 YR	-	-	I,II,III	N2C	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
36	79	M	NECK SWELLING	6 MON	+	+	II,III	N1	N	TONSIL	NO PRIMARY	DONE		OROPHARYNX	
37	55	F	NECK SWELLING	8 MON	-	-	II,III	N2C	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	HYPOPHARYNX	PROVEN
38	74	M	NECK SWELLING,DYSPHAGIA	1 YR	+	+	I,II,V	N2C	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
39	48	M	NECK SWELLING	1 YR	+	+	I,II	N2B	N	BASE OF TONGUE	NO PRIMARY	DONE	SCC	OROPHARYNX	
40	70	F	NECK SWELLING	6 MON	-	-	II	N2B	N	TONSIL	NO PRIMARY	DONE		OROPHARYNX	
41	59	M	NECK SWELLING	7 MON	+	+	II,V	N2C	FOR +	N	NO PRIMARY	DONE-NASOPHARYNX	METS	NASOPHARYNX	
42	55	F	NECK SWELLING,DYSPHAGIA	1 YR	-	-	I,II	N2B	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
43	74	M	NECK SWELLING	1 YR	+	+	II,III,IV	N3B	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	HYPOPHARYNX	PROVEN
44	88	M	NECK SWELLING	1 YR	-	-	II,III	N2C	N	N	NO PRIMARY	DONE	METS	UNKNOWN	

45	65	F	NECK SWELLING	1 YR	-	-	I,II	N2A	N	BASE OF TONGUE	NO PRIMARY	DONE	SCC	OROPHARYNX	
46	78	F	NECK SWELLING	6 MON	-	-	II	N1	N	GROWTH IN PYRIFORM FOSSA	NO PRIMARY	DONE	SCC	OROPHARYNX	PROVEN
47	75	M	NECK SWELLING,DYSPHAGIA	1 YR	+	+	II,III,	N2A	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
48	56	F	NECK SWELLING	1 YR	-	-	II,III,IV	N2B	N	AE FOLD	NO PRIMARY	DONE		SUPRAGLOTTIS	
49	46	M	NECK SWELLING	8 MON	+	+	II,III	N2B	N	N	NO PRIMARY	DONE	METS	UNKNOWN	
50	58	M	NECK SWELLING	6 MON	+	+	II	N1	N	N	NO PRIMARY	DONE	METS	UNKNOWN	