THE UNIVERSITY OF JORDAN | School of MEDICINE

Surgical approach to cervical lymphadenopathy

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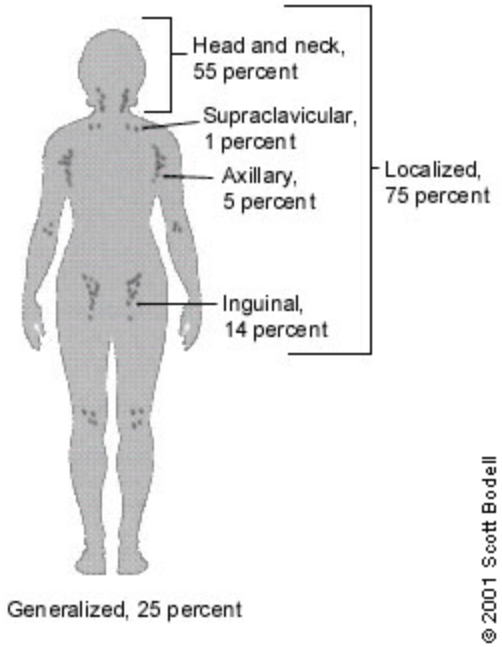
Cervical lymphadenopathy




38–45% of otherwise healthy children have palpable lymph nodes. Larsson et al

Magnitude of the cervical lymphadenopathy



- 0.6% annual incidence of unexplained adenopathy in the general population
- 10% require referral to subspecialist
  - 3.2% required a biopsy
  - 1.1% had malignancy

Ferrer R. Lymphadenopathy: differential diagnosis and evaluation. Am Fam Physician. 1998 Oct 15;58(6):1313-20

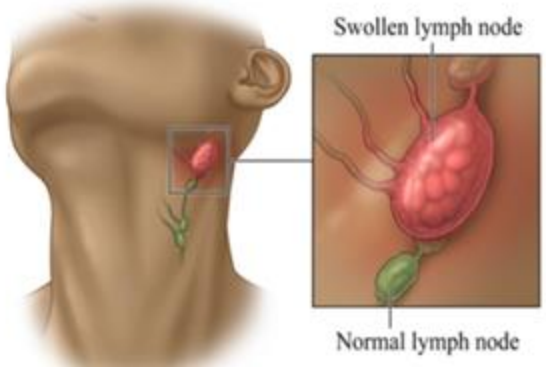
Risk of malignancy in lymphadenopathy

- In a series of 213 adults with lymphadenopathy
  - 0% cancer in lymph node smaller than 1 cm^2
  - 8 % risk of cancer in nodes from 1 cm^2 to 2.25 cm^2 (1 cm × 1 cm to 1.5 cm × 1.5 cm)
  - 38% of those with nodes larger than 2.25 cm^2 (1.5 cm × 1.5 cm)

Pangalis GA, Vassilakopoulos TP, Boussiotis VA, Fessas P. Clinical approach to lymphadenopathy. Semin Oncol. 1993;20:570-82.

Why do lymph nodes enlarge?

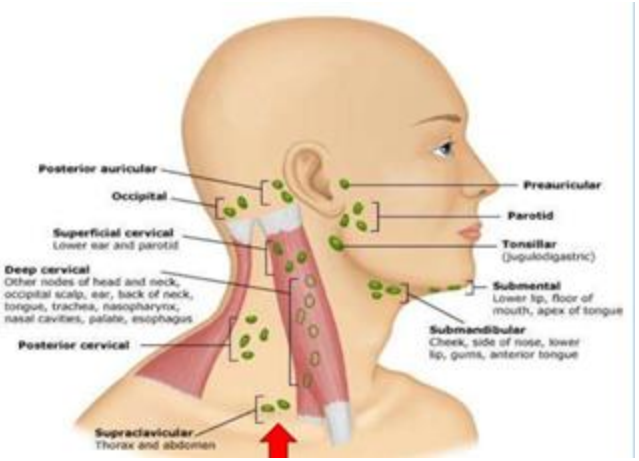
- Increase in the # of benign lymphocytes and macrophages in response to **Antigens**
- Infiltration of inflammatory cells in **infection**
- Malignant proliferation of lymphocytes or macrophages
- Infiltration by **malignant cells**
- Infiltration by **metabolite laden** macrophages (lipid storage disease)



Definition of Cervical lymphadenopathy

- Lymph nodes that are abnormal in size >1 cm, consistency or number
  - Localized: one area involvement
  - Generalized: 2-or more noncontiguous areas

– Cervical lymphadenitis: **enlarged, inflamed and tender lymph node(s) of the neck**



Acute cervical lymphadenitis

<2 weeks in duration/infection

- Viral , Bacterial
  - Commonly from tonsillitis or a dental abscess
  - +ve constitutional symptoms (fever, anorexia and malaise
  - Treatment of primary focus
  - Incision and drainage if abscess develops
- Immunologic (less common)
  - Kawasaki disease
  - Kikuchi-Fujimoto disease
- Adverse drug reaction
- Histocytosis

Suspected organisms	First-line therapy	Alternative therapy (if penicillin allergy)	Duration
Group A streptococci, *Staphylococcus aureus*, *Haemophilus influenzae*	Oral Augmentin 50 mg/kg/day Q12H OR oral cephalexin 50 mg/kg/day Q8H OR oral cloxacillin 50 mg/kg/day Q6H	Oral clindamycin 30 mg/kg/day Q8H	10–14 days total duration (until symptom resolution)
Anaerobic bacteria	Oral Augmentin 50 mg/kg/day Q12H	Oral clindamycin 30 mg/kg/day Q8H	

Q6H: every six hours; Q8H: every eight hours; Q12H: every 12 hours

Subacute cervical lymphadenitis

2-6 weeks in duration

- Infections
  - CMV, EBV,HIV
  - Non TB
  - TB
  - Toxo, Fungal

Unilateral

- Immunologic
  - SLE
  - JIA
  - Dermatomyositis

Bilateral, arthralgia, arthritis, rash

Chronic cervical lymphadenopathy >6weeks

- Malignancies
  - Hodgkin's
  - Acute leukemia
  - Rhabdomyosarcoma
  - Neuroblastoma
  - Metastatic
- Immunologic
  - Immunodeficiency
  - Chronic granulomatous disease
  - Hyperimmunoglobulin E syndrome
- Miscellaneous (less common)
  - Sarcoidosis
  - TB
  - Storage disease

Risk factors for malignancy

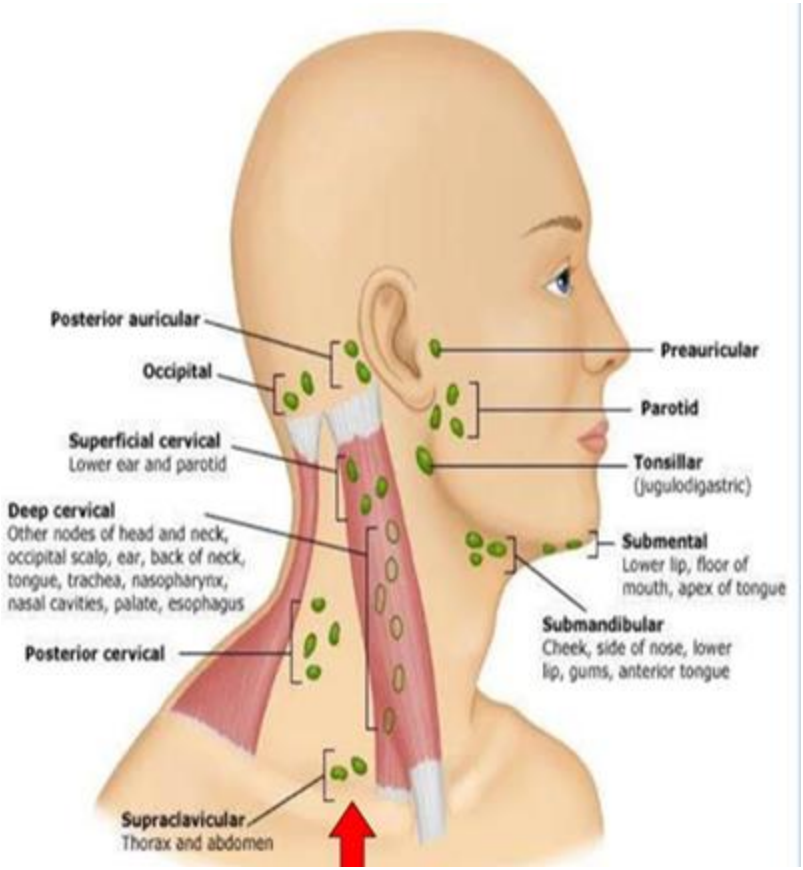
- Age
  - less than 30 years are clinically benign in 80% of cases
  - Over the age of 50 years only 40% benign
- Characteristics of the nodule
  - Hard-firm vs soft and fluctuant
- Location of the node
  - Supraclavicular lymph nodes are most worrisome
- Known primary CA
- Associated clinical setting
  - B –symptoms
  - wt. loss, night sweats

Box 1. Red flags in cases of cervical lymphadenopathy:

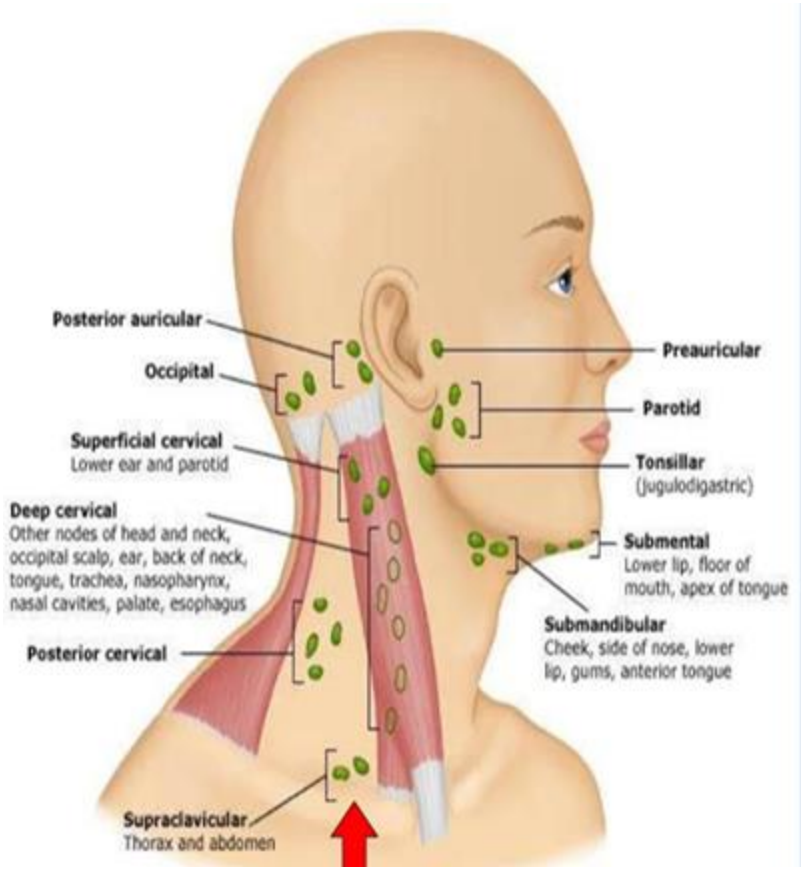
- Lymphadenopathy > 2 cm
- Steady increase in size over 2–3 weeks
- No improvement or decrease in size after 4–6 weeks
- Supraclavicular lymphadenopathy
- Hard, fixed, matted, non-tender lymphadenopathy
- Persistent fever lasting more than one week
- Signs and symptoms suggestive of malignancy: weight loss, petechiae, pallor, night sweats, hepatosplenomegaly
- Signs and symptoms suggestive of autoimmune disease: rash, arthralgia, arthritis, generalised lymphadenopathy
- Features suggestive of Kawasaki disease
- Abnormalities in full blood count or chest radiography

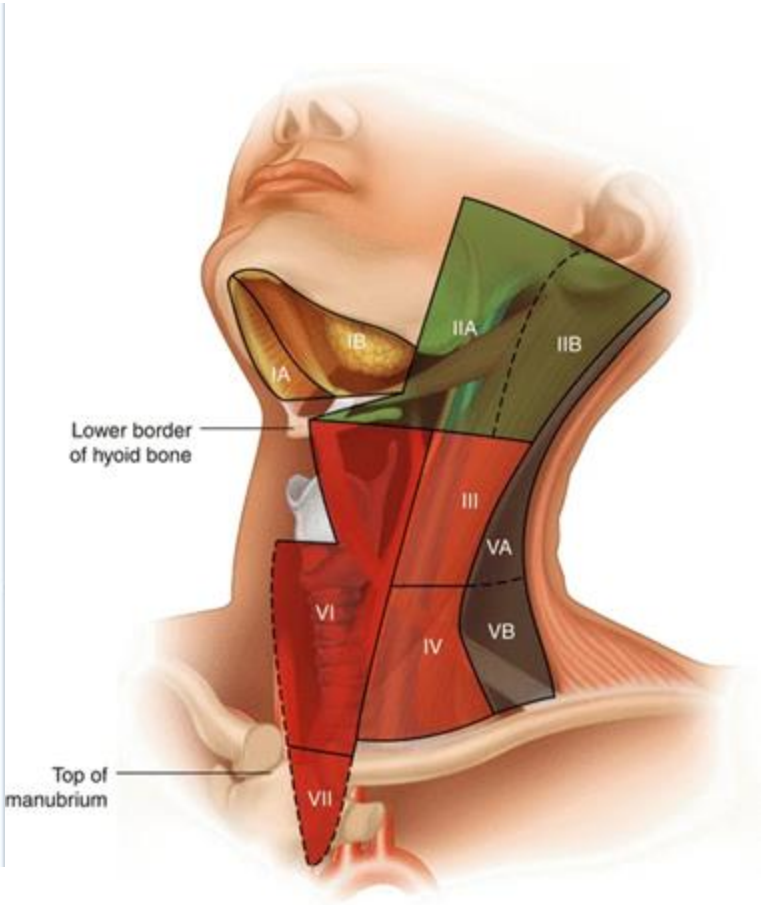
Anatomical consideration

- The neck comprises of more than 300 lymph nodes
- They can be classified as the superficial group and the deep group.



Anatomical Considerations

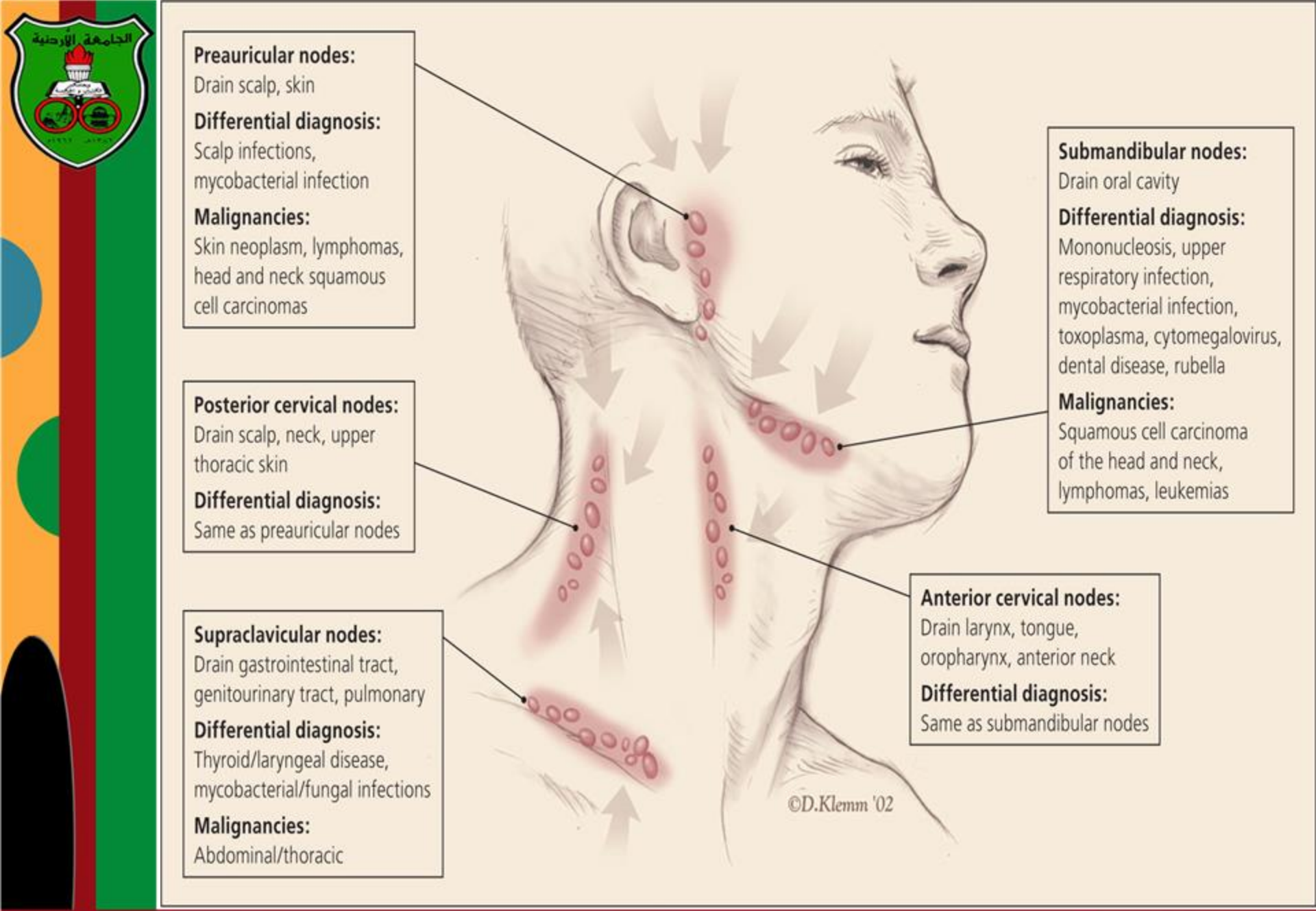




Neck mets

Summary of drainage areas for cervical lymph node groups.

Region	Drainage areas
Submental	Bottom lip, floor of mouth, skin of cheeks
Submandibular	Mouth, lips, tongue, submandibular gland, cheek
Preauricular	Anterior and temporal scalp, anterior ear canal and pinna, conjunctiva, parotids
Postauricular	Temporal and parietal scalp
Occipital	Posterior scalp
Upper, middle and lower cervical	Tongue, tonsils, larynx, oropharynx, anterior neck, scalp, lower ear canal, parotid
Posterior cervical	Scalp and neck
Supraclavicular	Mediastinum, lungs, abdomen


Preauricular nodes:
Drain scalp, skin
Differential diagnosis:
Scalp infections, mycobacterial infection
Malignancies:
Skin neoplasm, lymphomas, head and neck squamous cell carcinomas
Posterior cervical nodes:
Drain scalp, neck, upper thoracic skin
Differential diagnosis:
Same as preauricular nodes
Supraclavicular nodes:
Drain gastrointestinal tract, genitourinary tract, pulmonary
Differential diagnosis:
Thyroid/laryngeal disease, mycobacterial/fungal infections
Malignancies:
Abdominal/thoracic
Submandibular nodes:
Drain oral cavity
Differential diagnosis:
Mononucleosis, upper respiratory infection, mycobacterial infection, toxoplasma, cytomegalovirus, dental disease, rubella
Malignancies:
Squamous cell carcinoma of the head and neck, lymphomas, leukemias
Anterior cervical nodes:
Drain larynx, tongue, oropharynx, anterior neck
Differential diagnosis:
Same as submandibular nodes
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Clinical approach to CLA/History

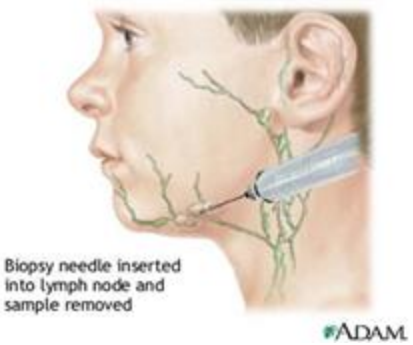
- Site and duration
- Fever, systemic symptoms
- H&N complaints
- Dental complaints
- Infectious risk

Clinical approach to CLA/Examination

Site and size
Number
Tenderness
Consistency
Fixity
Examine h&N, scalp, teeth

Clinical Approach to CLA/Investigation

- **ROUTINE LABORATORY INVESTIGATIONS**
  - COMPLETE HEMOGRAM AND PERIPHERAL SMEAR CANNOT BE OVEREMPHASIZED TO DIAGNOSE CLINICAL CONDITIONS LIKE MONONUCLEOSIS OR HEMATOLOGICAL MALIGNANCIES.
- **IMAGING**
  - NECK ULTRASOUND
  - CONTRAST ENHANCED COMPUTED TOMOGRAM
- **TISSUE DIAGNOSIS**
  - FINE NEEDLE ASPIRATION CYTOLOGY.
  - LYMPH NODE BIOPSY



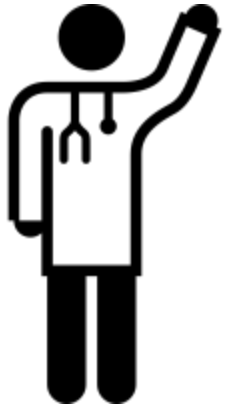
Causes of lymph nodes MIAMI

- Malignant
- Infectious
- autoimmune
- miscellaneous
- iatrogenic (due to medications).

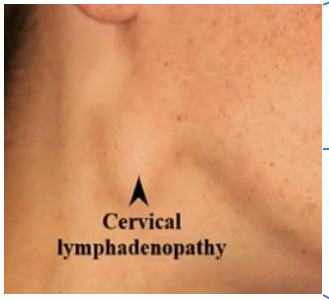
Management

1ry care physician

- Identify the underlying cause and treat as appropriate
- Localized adenopathy
  - 3-6 weeks observation period for resolution
  - Refer to specialist for further studies and management



When to refer to specialist?



Size <2cm
Persistent lymphadenopathy after 6 weeks → Routine referral 4-6weeks

Size >2cm
Steady increase in size
Suspicion of autoimmune disease → Early referral 2-3 weeks

Severe infection
Suspicion of malignancy
KD → Urgent referral 24-72 hours

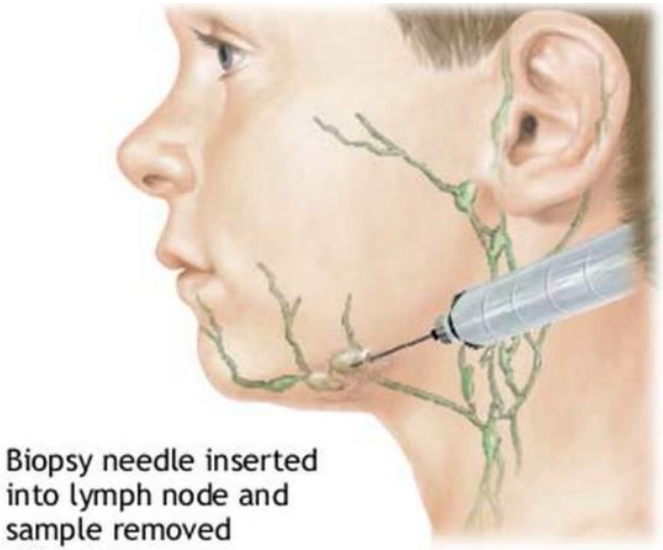
When to obtain lymph node biopsy?

- LN biopsy is a clinical decision made by the treating physician
  - High risk group patients (age, hard, persistent, B-symptoms
  - Suspected TB or CGD
  - Persistent CL with no obvious cause and not responding to conservative Rx
  - Presence of gross splenomegaly

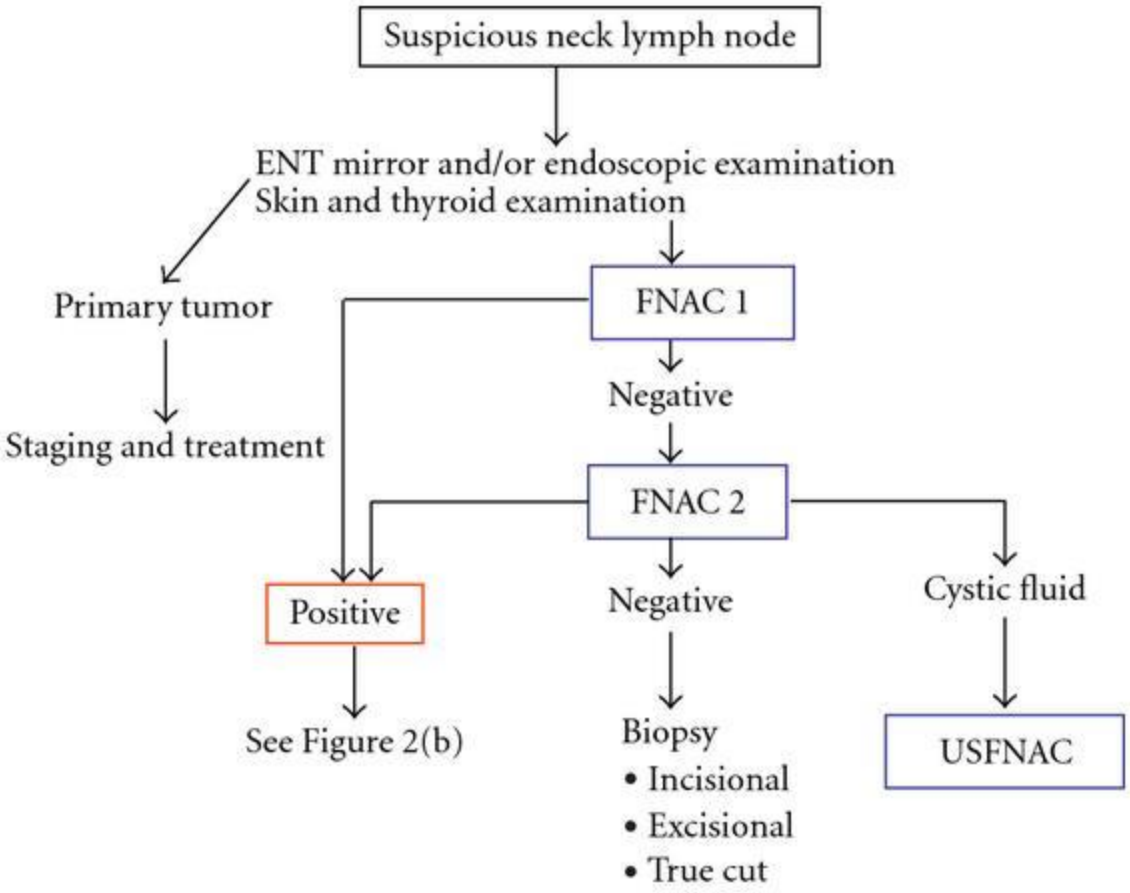
FNAB vs Node biopsy

FNAB/True Cut B	Node Biopsy
• Advantages – Quick and reliable – High sensitivity and specificity – No need for anesthesia – Low cost • Disadvantage – Limited histological evaluation – Subtyping of lymphomas currently difficult	• Advantages – Gold standard – Can be done under local anesthesia – Indicated for immunohistochemistry and subtyping of lymphomas • Disadvantage – cost – Interference with the surgical planes

FNAB vs Node biopsy



Biopsy needle inserted into lymph node and sample removed

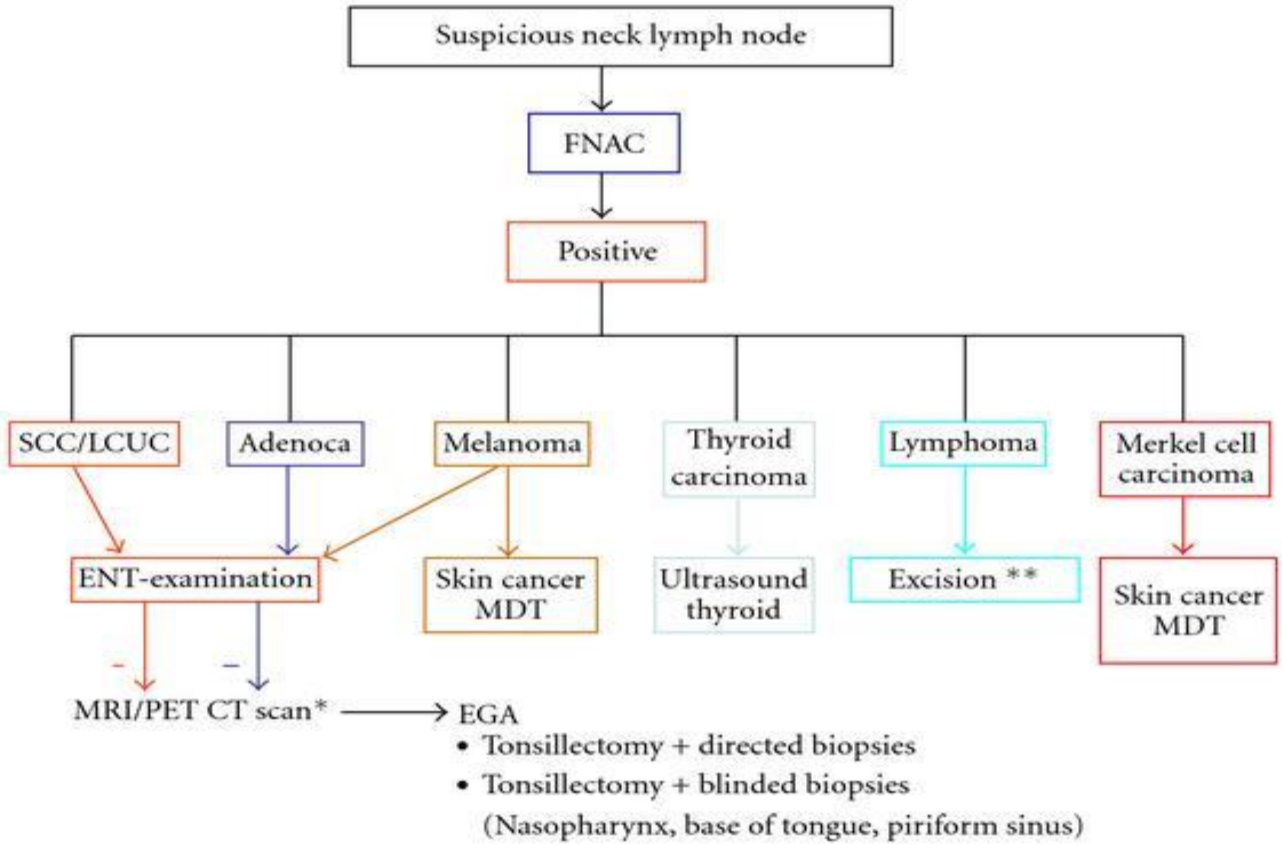

Suspicious neck lymph node
ENT mirror and/or endoscopic examination
Skin and thyroid examination
Primary tumor
Staging and treatment
FNAC 1
Negative
FNAC 2
Positive
See Figure 2(b)
Negative
Biopsy
• Incisional
• Excisional
• True cut
Cystic fluid
USFNAC

Aspiration Biopsy by Fine Needle of Cervical Adenopathy Guided by Ultrasonography

Table 1. cytopathologic diagnosis of the cervical adenopathies.

Cytopathologic diagnosis	Number of cases	Confirmation	Discrepancy
Metastatic epidermoid carcinoma	28	28	0
Metastatic thyroid tumor	17	16	1
Metastatic small cells carcinoma	3	3	0
Hodgkin's lymphoma	5	5	0
Non-Hodgkin lymphoma	1	1	0
Granulomatous disease	5	5	0
Unspecific chronic lymphadenitis	127	112	15
Total	186	170	16

Dedivitis RA, Pfuetzenreiter Jr EG, Castro MAF. Aspiration Biopsy by Fine Needle of Cervical Adenopathy Guided by Ultrasonography . Int. Arch. Otorhinolaryngol. 2009;13(4):417-420



(a) Algorithm of a diagnostic procedure for a suspicious lymph node in the neck, emphasizing the pivotal role of (Ultrasound) Fine Needle Aspiration Cytology [(US)FNAC]. (b) Algorithm of a diagnostic procedure for a suspicious lymph node in the neck with emphasis on further steps to be taken after positive FNAC results. EGA: examination under general anaesthesia; LCUC: large cell undifferentiated carcinoma; MDT: multidisciplinary team; SCC: squamous cell carcinoma; *CT scan can serve as an acceptable alternative; **Excision indicated if FACS (Fluorescence activated cell sorting by Flow Cytometry) reveals monoclonal lymphoid proliferation.

Good node biopsy

- Lower cervical is better than upper
- Large nodes better than accessible nodes
- Intact lymph nodes better than piecemeal
- Fresh and frozen samples in addition to formalin fixed samples
- No exposure to strong light

- What to do with node biopsy:
  - Histologic examination
  - Immunohistochemical staining
  - Flow cytometry
  - Genetic investigation
  - Culture /CGD,TB
  - Viral studies