

Excisional cervical lymph node biopsy in patients aged 15-25: outcomes and indicators

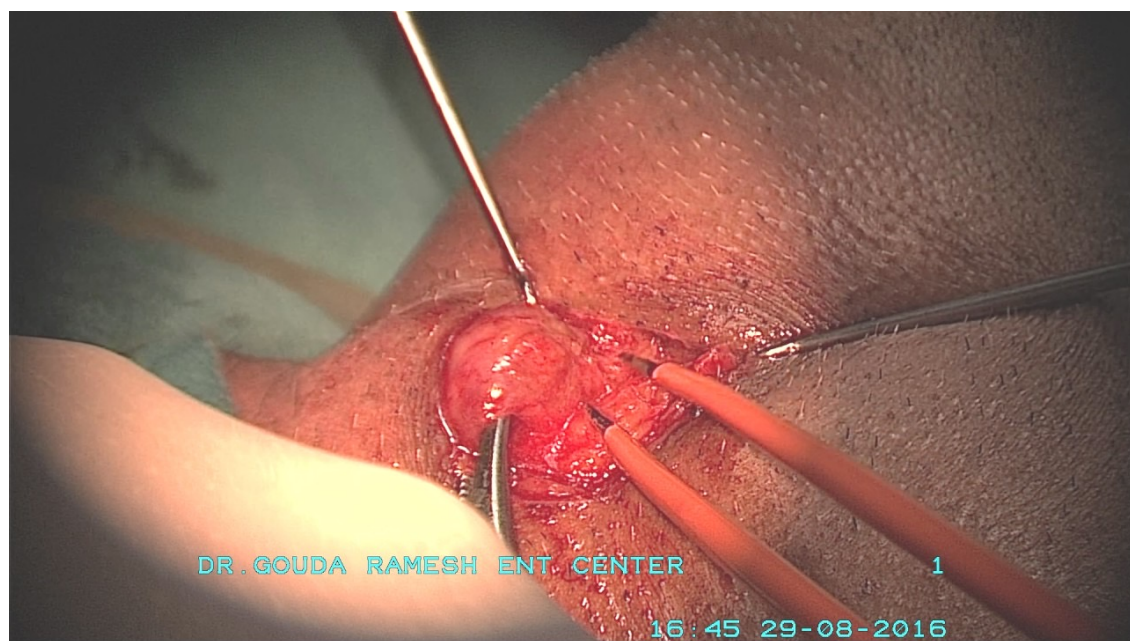
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ABSTRACT

Cervical lymphadenopathy (cLAD) in adolescents and young adults can be diagnostically challenging. The objective of this study was to determine the role and reliability of FNA as compared to excisional lymph node biopsy (eLNBx) in establishing a definitive diagnosis of cLAD as well as establish additional diagnostic indicators in this patient population. Study population included adolescents and young adults (aged 15-25) who underwent eLNBx and/or FNA for cLAD. Using a case report form via retrospective chart review, a deidentified database was developed from historical medical records that recorded age, demographic, clinical symptoms, histological findings of FNA & eLNBx, white blood cell count, radiographic findings, and diagnosis. Of the 159 patients who met the inclusion criteria for the study, 109 resulted in benign pathologies while 50 resulted in malignant pathologies. Of the FNAs non-concerning for malignancy, 62 were benign while 1 was malignant. A fisher's exact test of the FNA results demonstrated significance ($p < 0.0001$), sensitivity of 98.4% and specificity of 99.9%. When evaluating by neck level, 29/50 patients who presented with level V cLAD had malignant pathology, whereas those with levels I or II cLAD, only 12/87 were malignant. Overall, this study suggests a variety of diagnostic criteria including FNA cytohistologic diagnosis, patient factors (cLAD neck level), and cross sectional imaging are useful for the determination of malignant vs. benign pathology prior to eLNBx in patients with cLAD.

INTRODUCTION

- Cervical lymphadenopathy in adolescents and young adults can be diagnostically challenging.
- Most patients require expectant management dictated by past medical history.
- Persistent cLAD can result in an extensive diagnostic workup.
- eLNBx is the gold standard to reach a definitive histologic diagnosis – risks including anesthetic use, nerve damage, and scar.



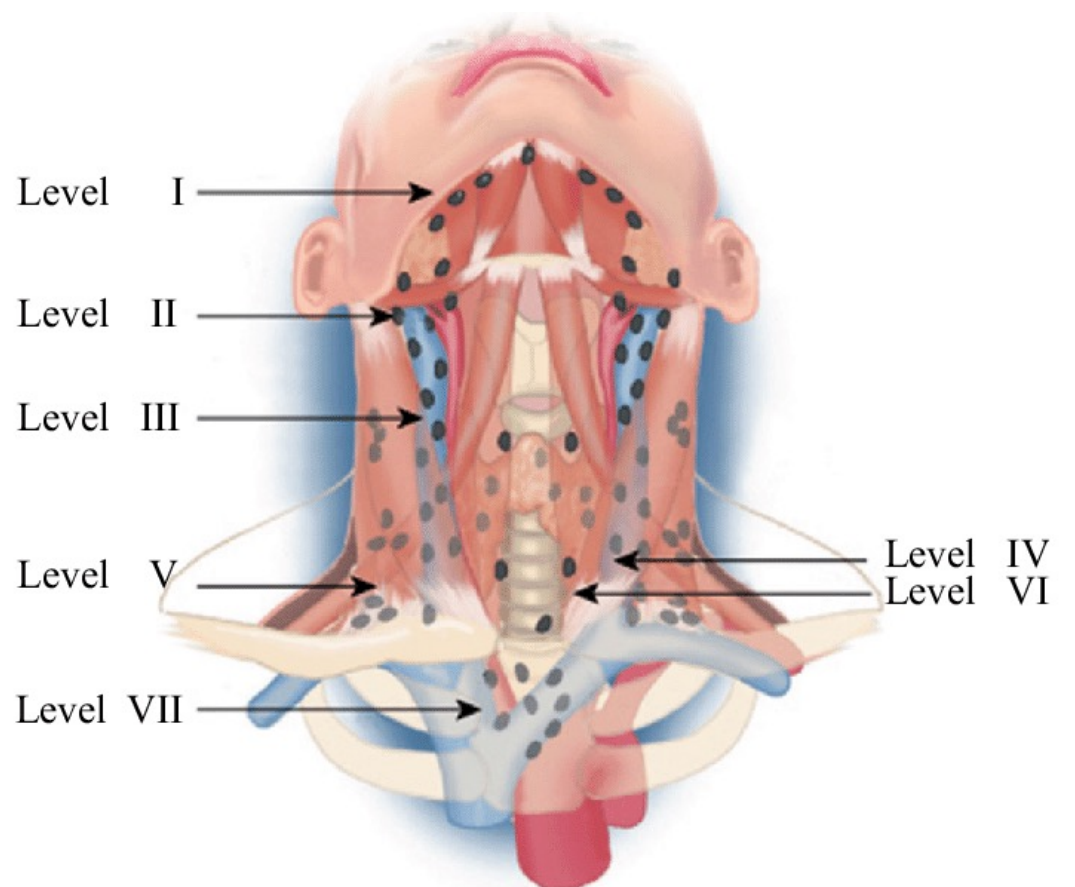
OBJECTIVES

Establish Database of patients aged 15-25 who underwent eLNBx for cLAD

Evaluate FNA and other diagnostic indicators as compared to eLNBx

HYPOTHESIS

- Majority of adolescents and young adults undergoing eLNBx for cLAD will demonstrate benign pathologies.
- Upon further analysis, cLAD described by neck level in conjunction with FNA data may offer diagnosis and clinical direction negating the need for eLNBx.



METHODS

Study Population

Patients aged 15-25 who underwent eLNBx for cLAD

Process

Reviewed UNC Health medical records from 2009–2019

Data Collection

Deidentified database detailing data points via retrospective review

RESULTS

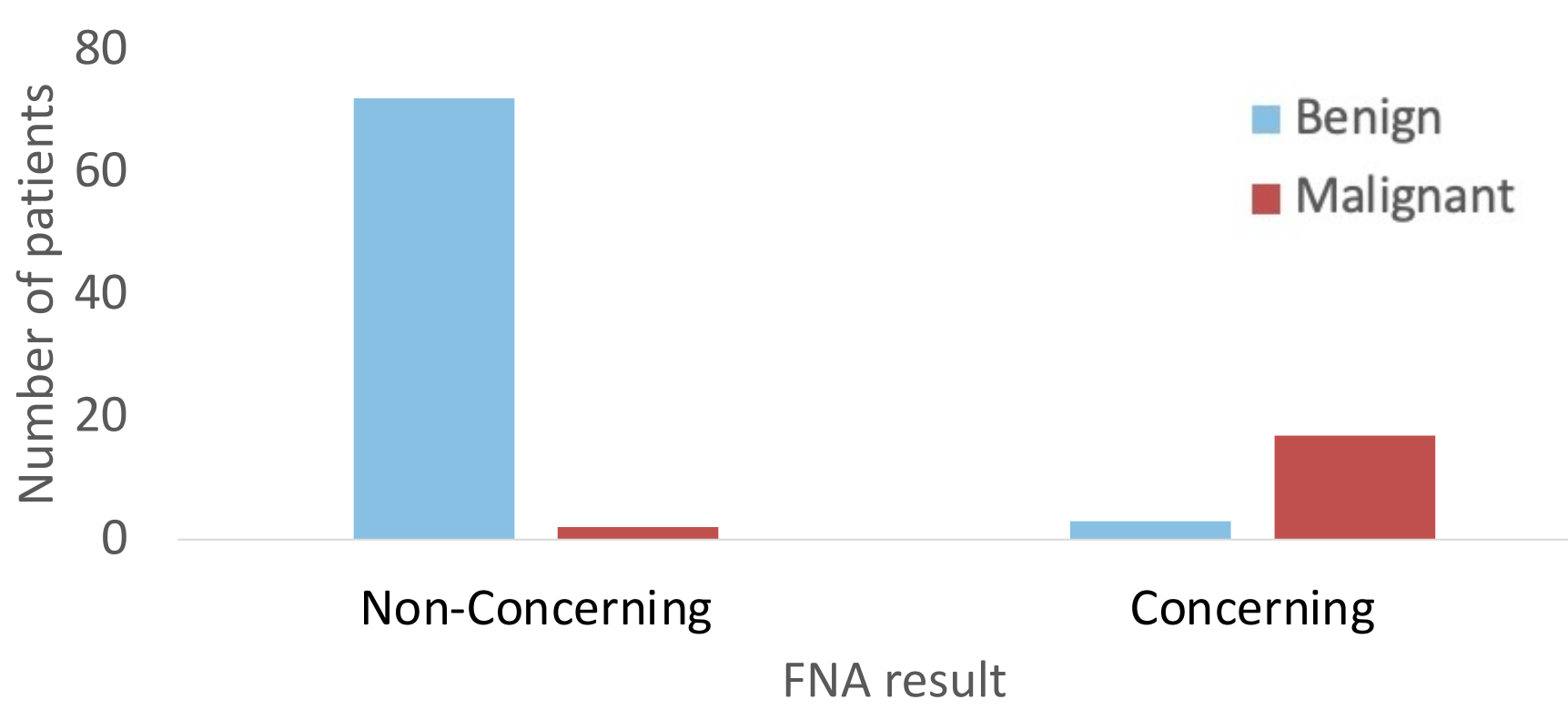


Figure 1. Pooled FNA results stratified by concern for malignant pathology

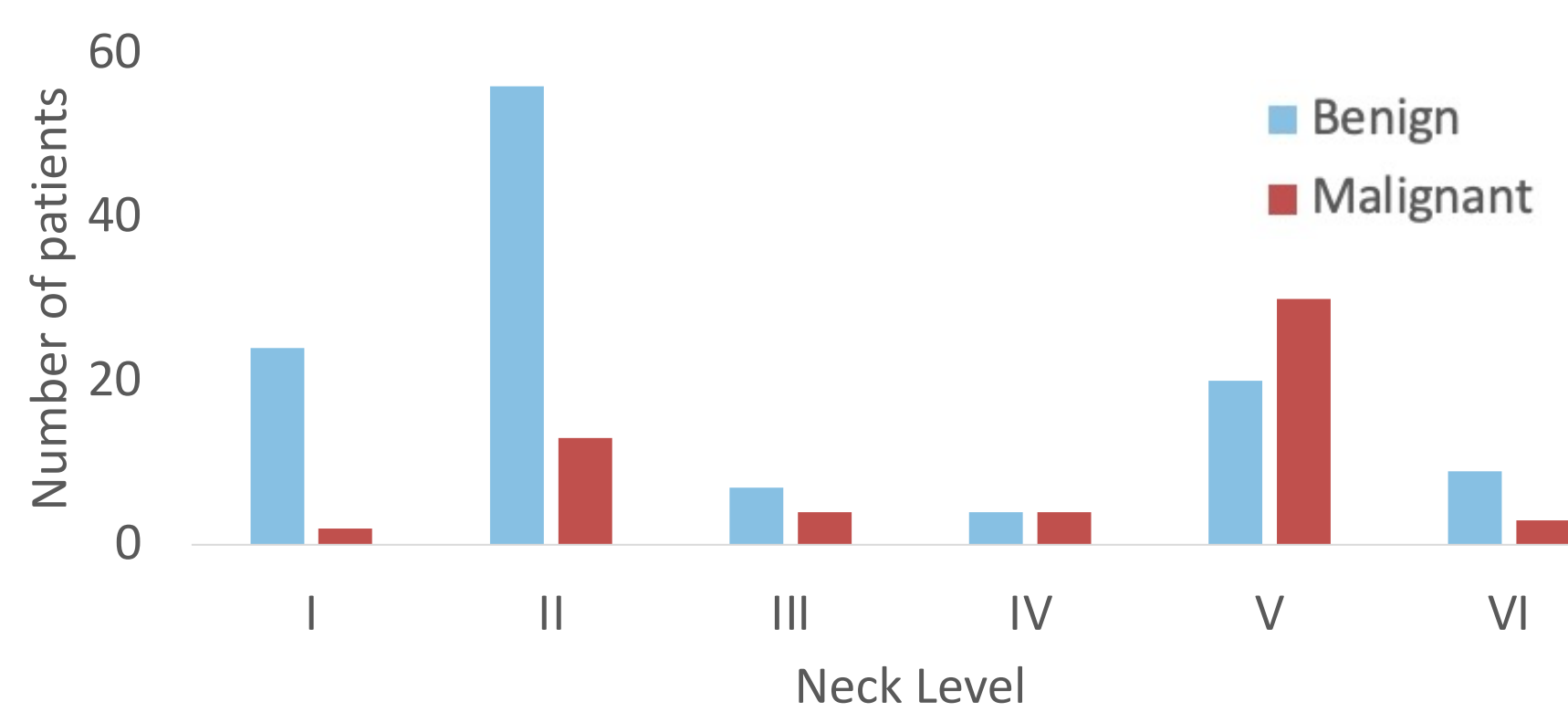


Figure 2. Malignant vs. benign pathology by neck level

FNA & eLNBx Concordance		Total	% of All
Concordance		40	82%
Brachial cleft cyst	3		
Lymphatic malformation	3		
Reactive hyperplasia	25		
Venous malformation	1		
Metastatic papillary carcinoma	7		
Lymphoma	1		
Further evaluation		8	16%
Brachial cleft cyst	1		
Reactive hyperplasia	1		
Venous malformation	1		
Lymphoma	5		
Non-Concordance		1	2%
Lymphoma	1		

Table 1. cLAD concordance between eLNBx

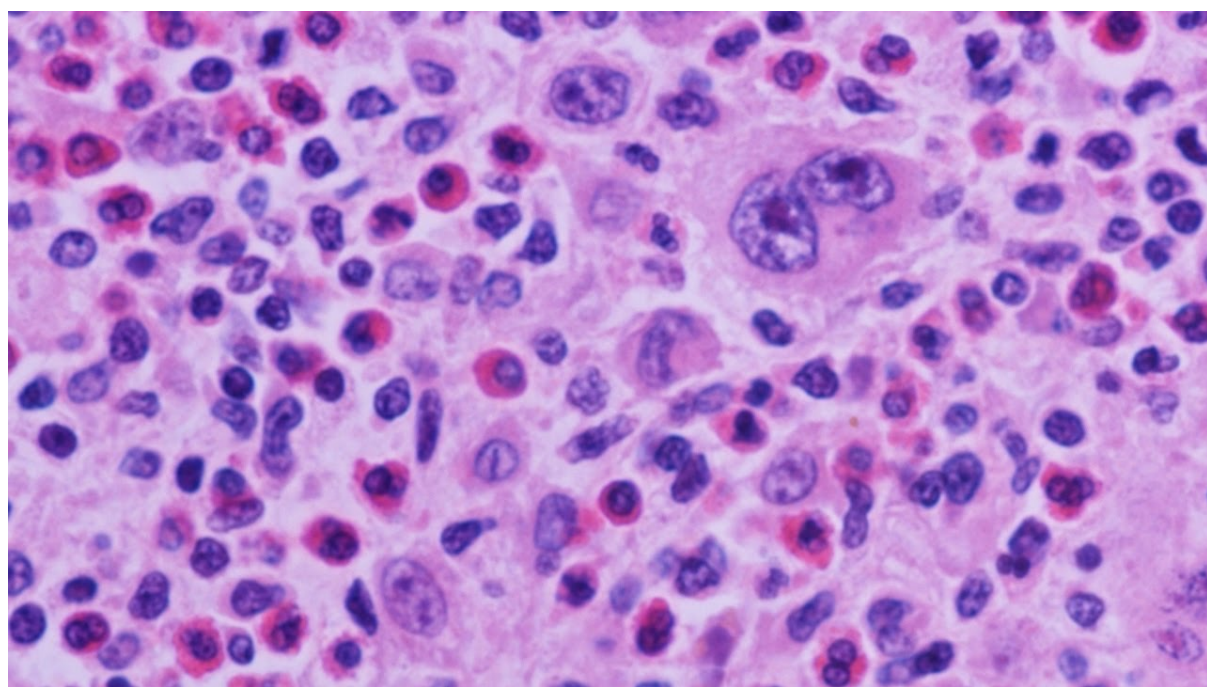
Imaging Modality	Concerning	Non-Concerning	Total
CT Neck	39	28	67
CT Neuro	3	0	3
MRI	1	4	5
PET CT	15	2	17
US	2	13	15
	Benign	Malignant	Total
Non-Concerning	45	2	47
Concerning	16	44	60

Table 2. Imaging modality designation with malignancy

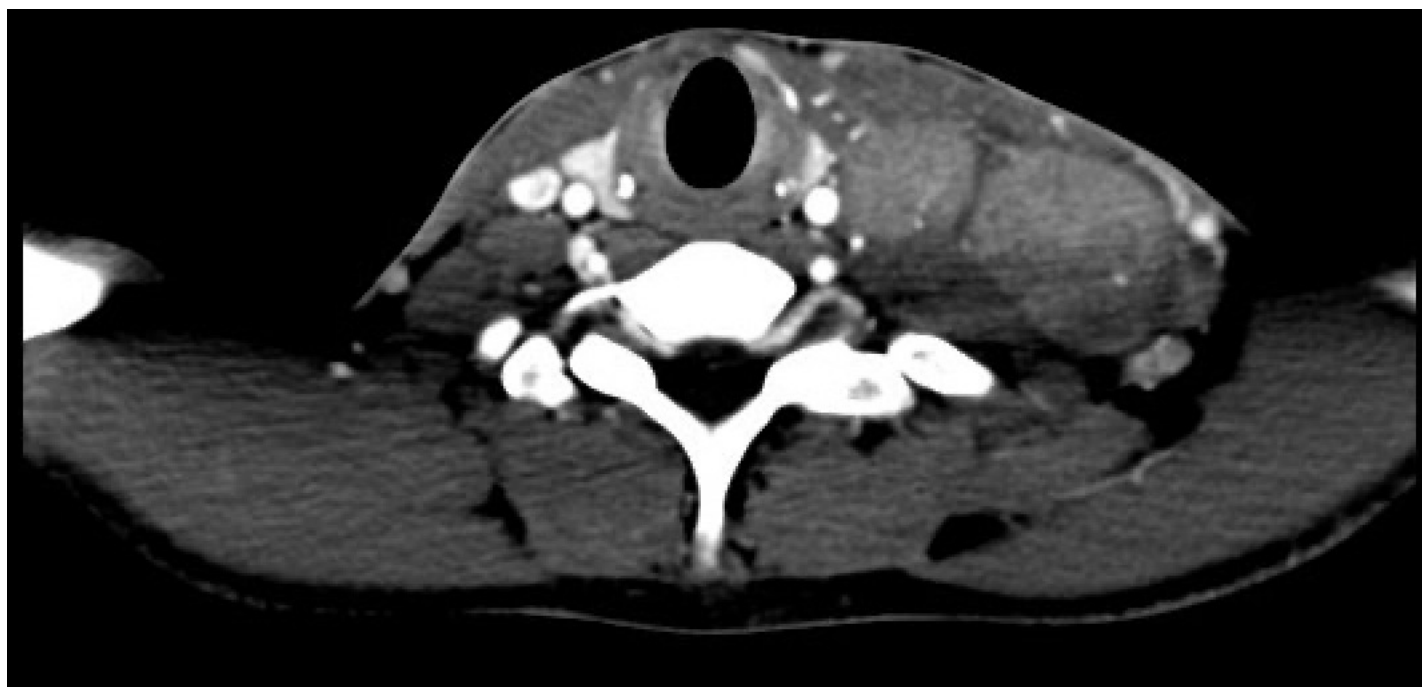
- Results of all 80 patients who had FNAs were pooled together and recorded as non-concerning or concerning for malignancy. 63 were deemed non-concerning for malignancy.
- A Fisher's exact test of the FNA results demonstrated significance ($p < 0.0001$); sensitivity 98.4% (95% CI: 91.7-99.9%) and specificity 99.9% (95% CI: 79.6-99.9%).
- Concordance, defined as both FNA and eLNBx diagnostic tests suggestive of identical cLAD etiologies, was 82%, consisting of mostly reactive hyperplasia (25/40).

CONCLUSIONS & FUTURE DIRECTIONS

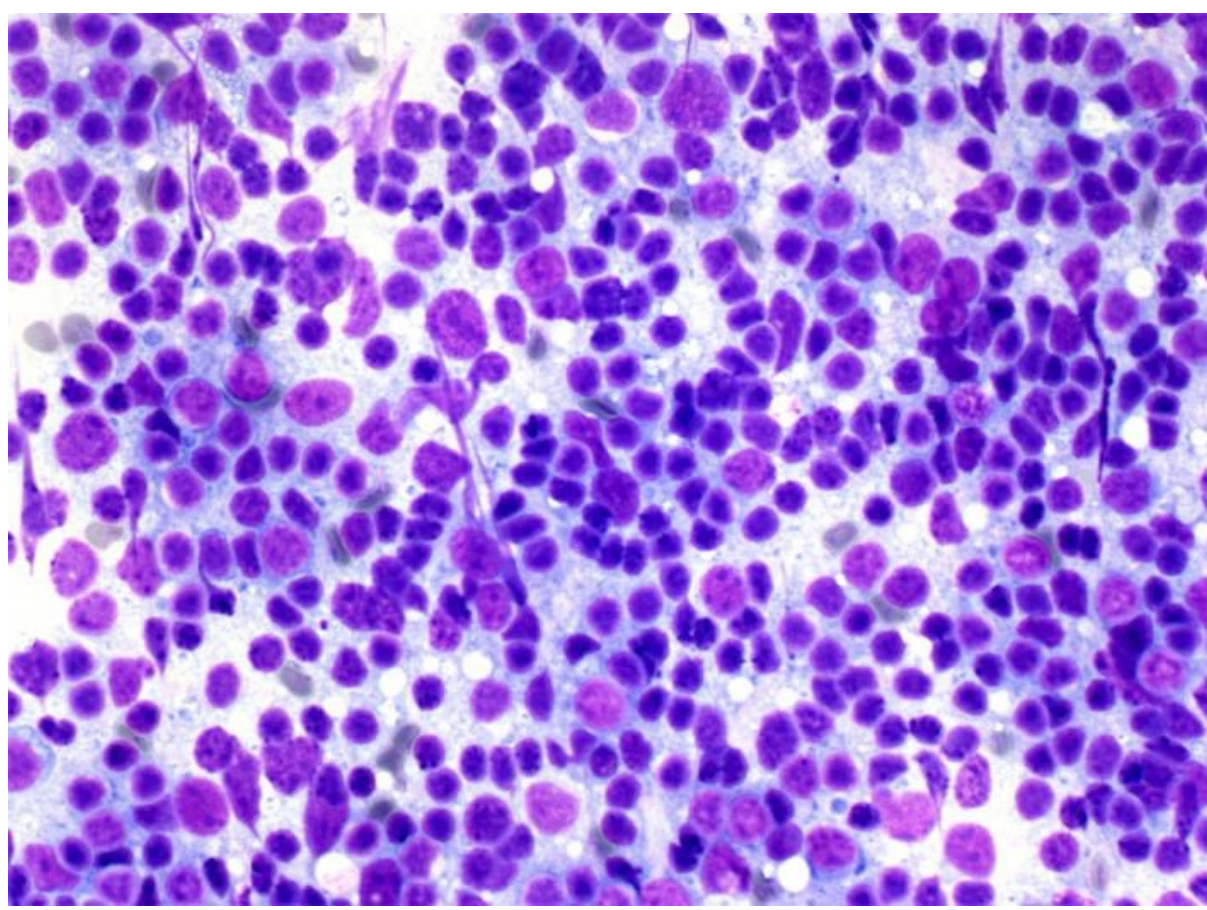
- FNA and neck level at presentation demonstrate utility and reliability in diagnosing benign versus malignant pathology in our cohort – solidifying the role of FNA, in combination with cross-sectional imaging, prior to an eLNBx.
- Analysis performed of the single patient that had a non-concerning FNA and a malignant pathology demonstrated a clinical history that warranted an eLNBx (e.g. imaging, duration, symptomatology).
- Lymphadenopathy by neck level, specifically level 5, was associated with increased risk of malignancy (Figure 2).
- Imaging studies are useful diagnostic tools as they further evaluate cLAD suspicious features. Specificity of 95.7% utility in ruling out malignancy
- In this study, 79 patients underwent eLNBx without a prior FNA for evaluation. 45 out of 79 patients had cLAD determined to be from benign etiologies.
- Our data suggests a significant number of eLNBx could be avoided in this patient population, preventing potential morbidity and reducing healthcare cost; >\$450,000 in the study population alone.



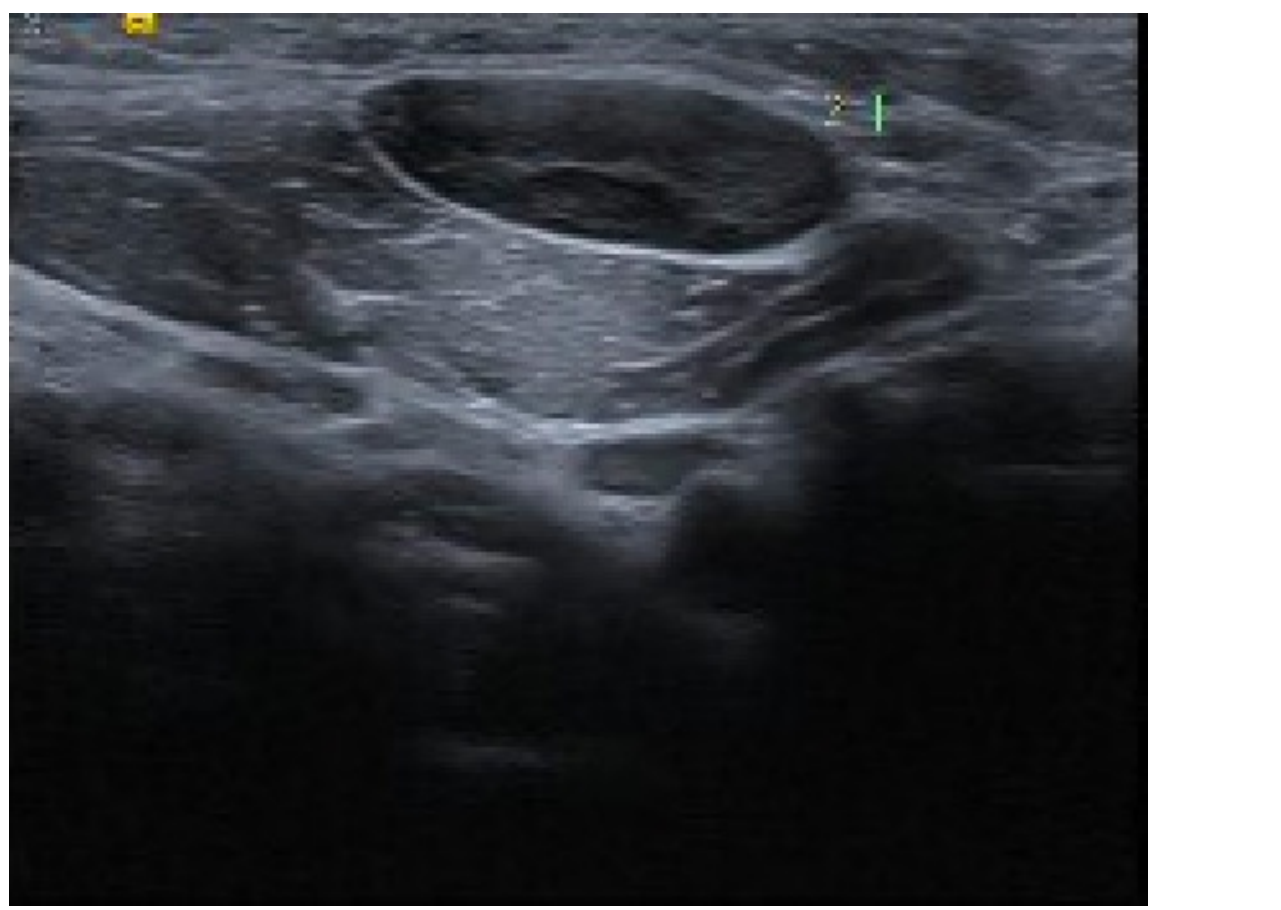
Histology of Hodgkin lymphoma



CT of neck displaying extensive cLAD



Histology of reactive hyperplasia



Ultrasound of neck displaying an enlarged lymph node



SCHOOL OF MEDICINE
Otolaryngology