LIGHTHOUSE

Unclear **Ly**mph node **S**welling – a **S**treamlined **E**xamination **S**ystem - The Lighthouse **ULySSES-Project -**

Dr. Tom Heller
Lighthouse Clinic
Malawi

The problem to start with - a man with swollen lymph nodes

A 34-year old male HIV positive patient (CD4 count = 144 cells/ml) was seen in the clinic for general malaise, weight loss and swellings under his arms.

The swellings were felt to be lymph node masses larger in the right axilla than the left.

Differential diagnosis?

Enlarged lymph nodes – a first differential

-TB lymphadenitis (“cold abscess”)

-Kaposi’s sarcoma (watch for lesion at legs, groins or mouth)

-Lymphoma (often larger nodes)

-HIV lymphadenopathy (PGL) (symmetrical, generalized)

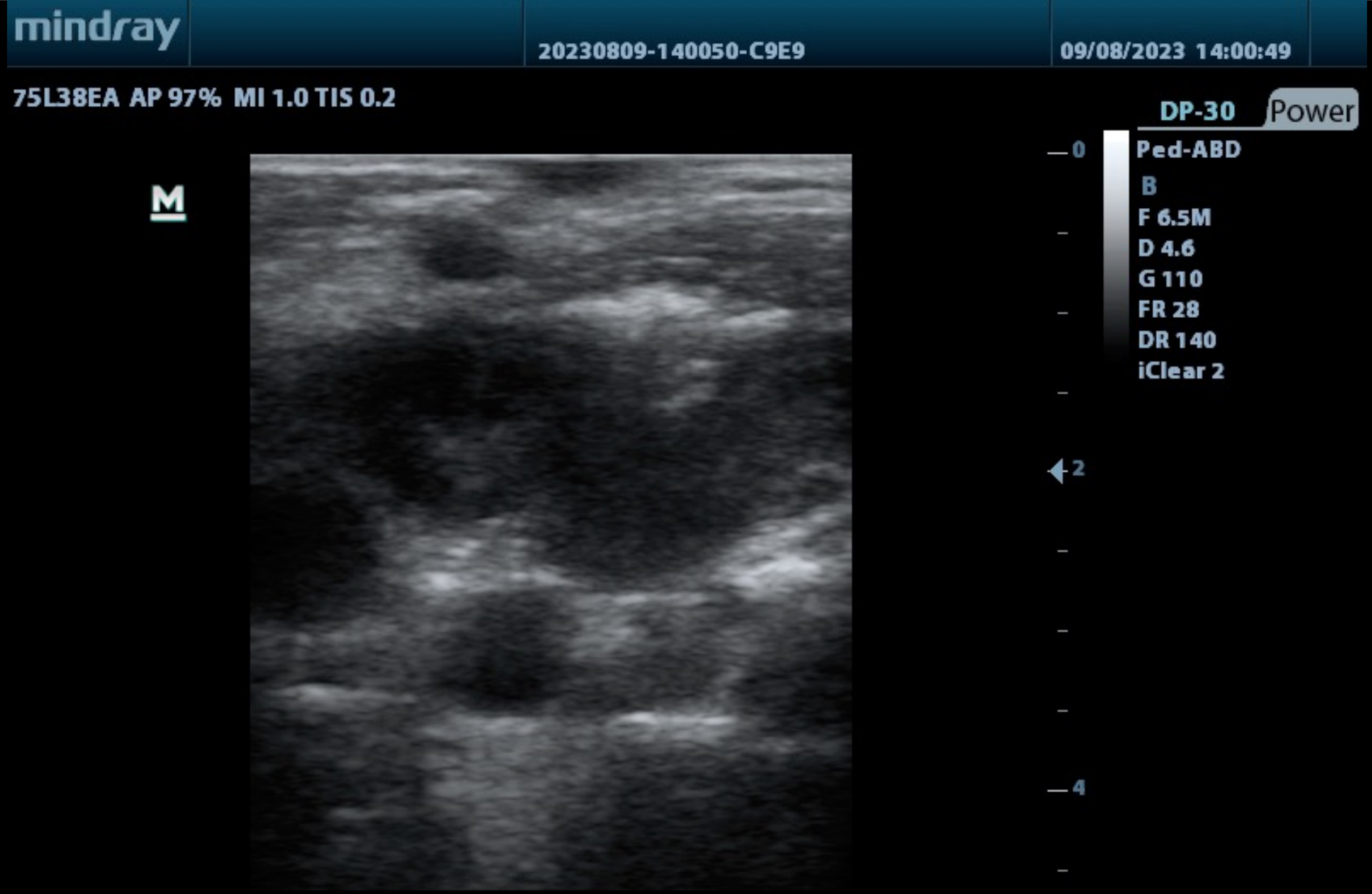
-Local bacterial and fungal infections (tender, inflamed, purulent LN, local infections visible)

- Let us have a look with the ultrasound

Did we learn much ???

LN -TB

LN -TB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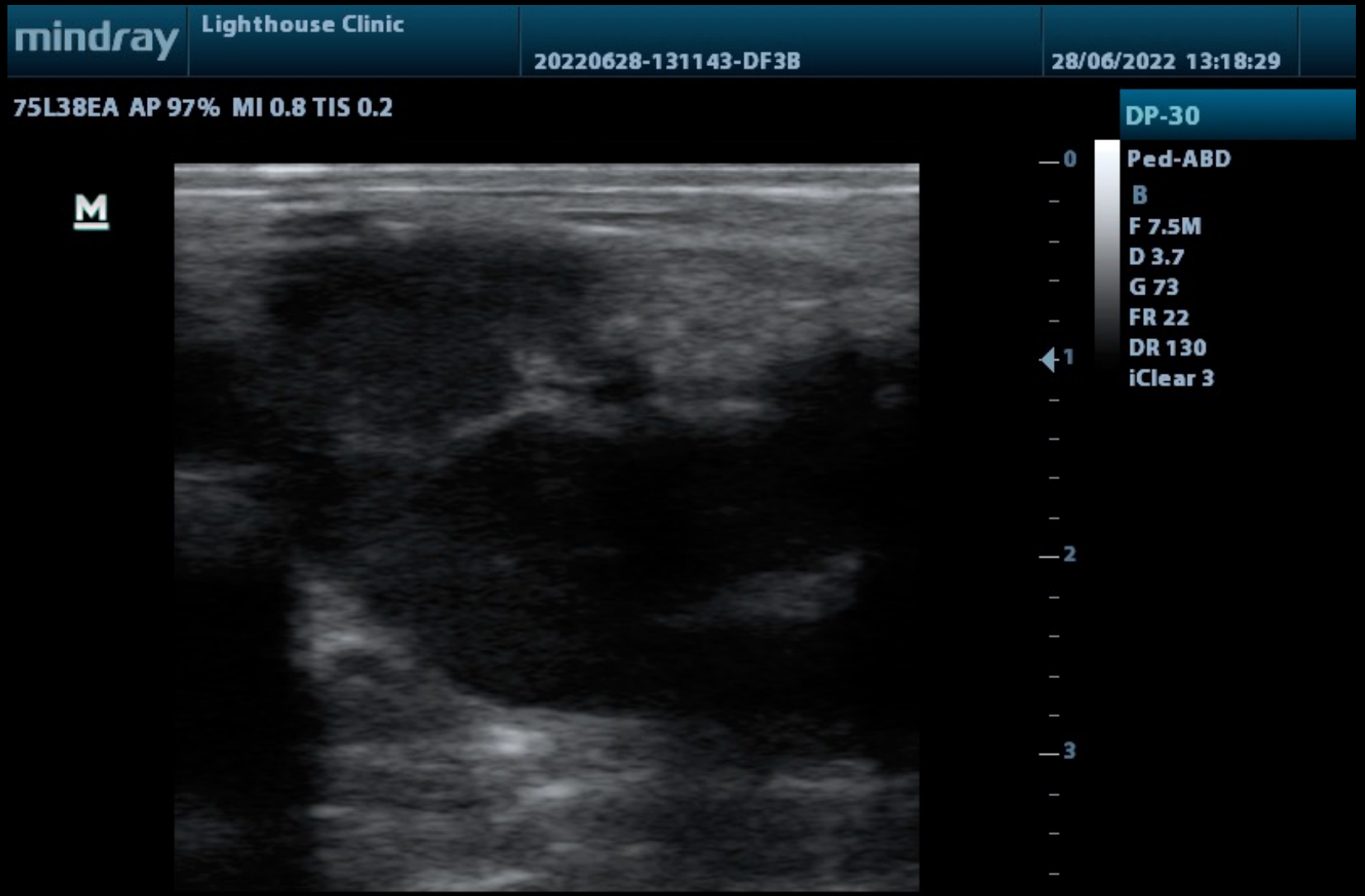
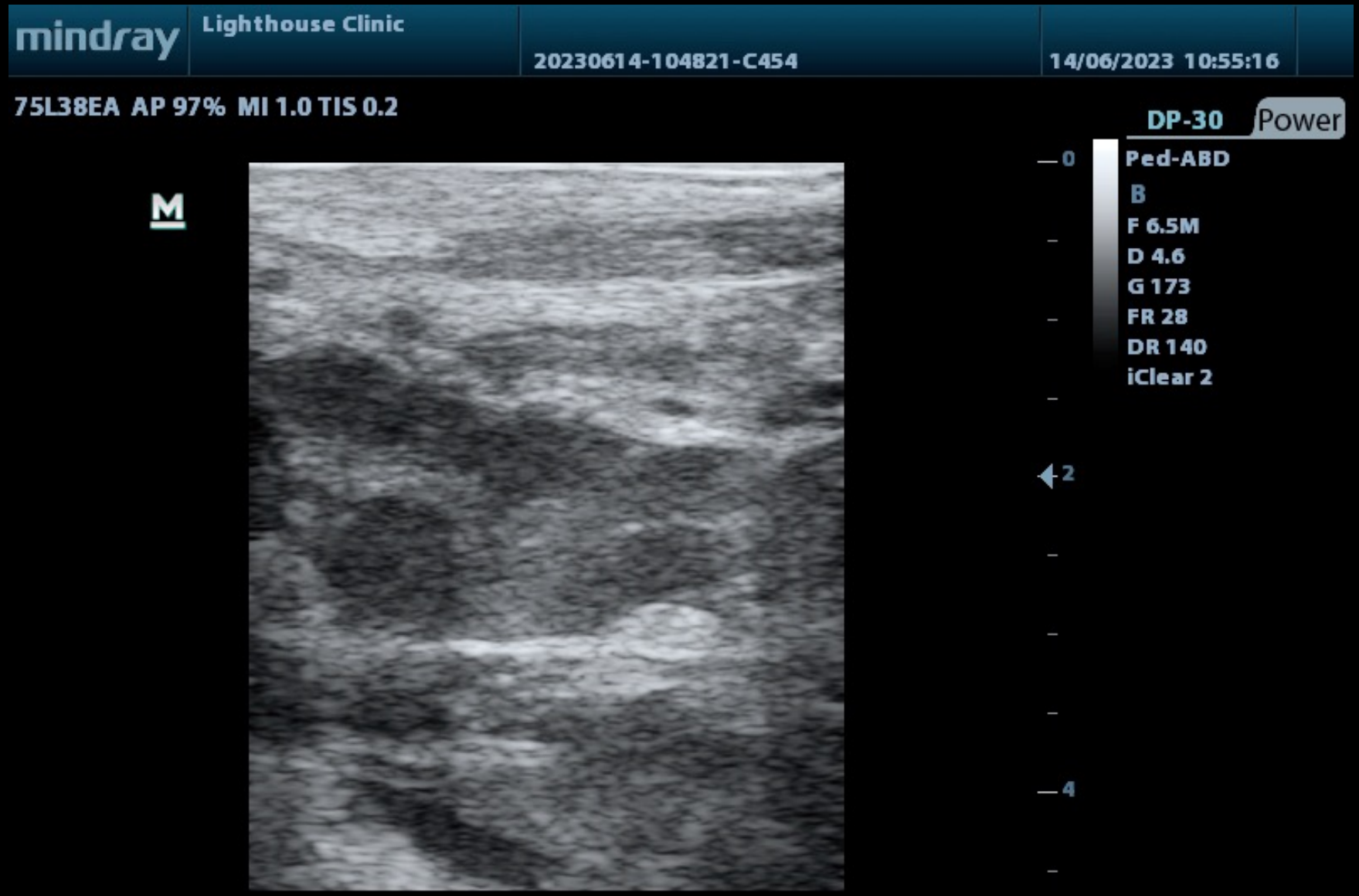
LN –
reactive LN

LN – Hodgkin lymphoma- relapse after 1 year



LN – Hodgkin lymphoma

LN - MAC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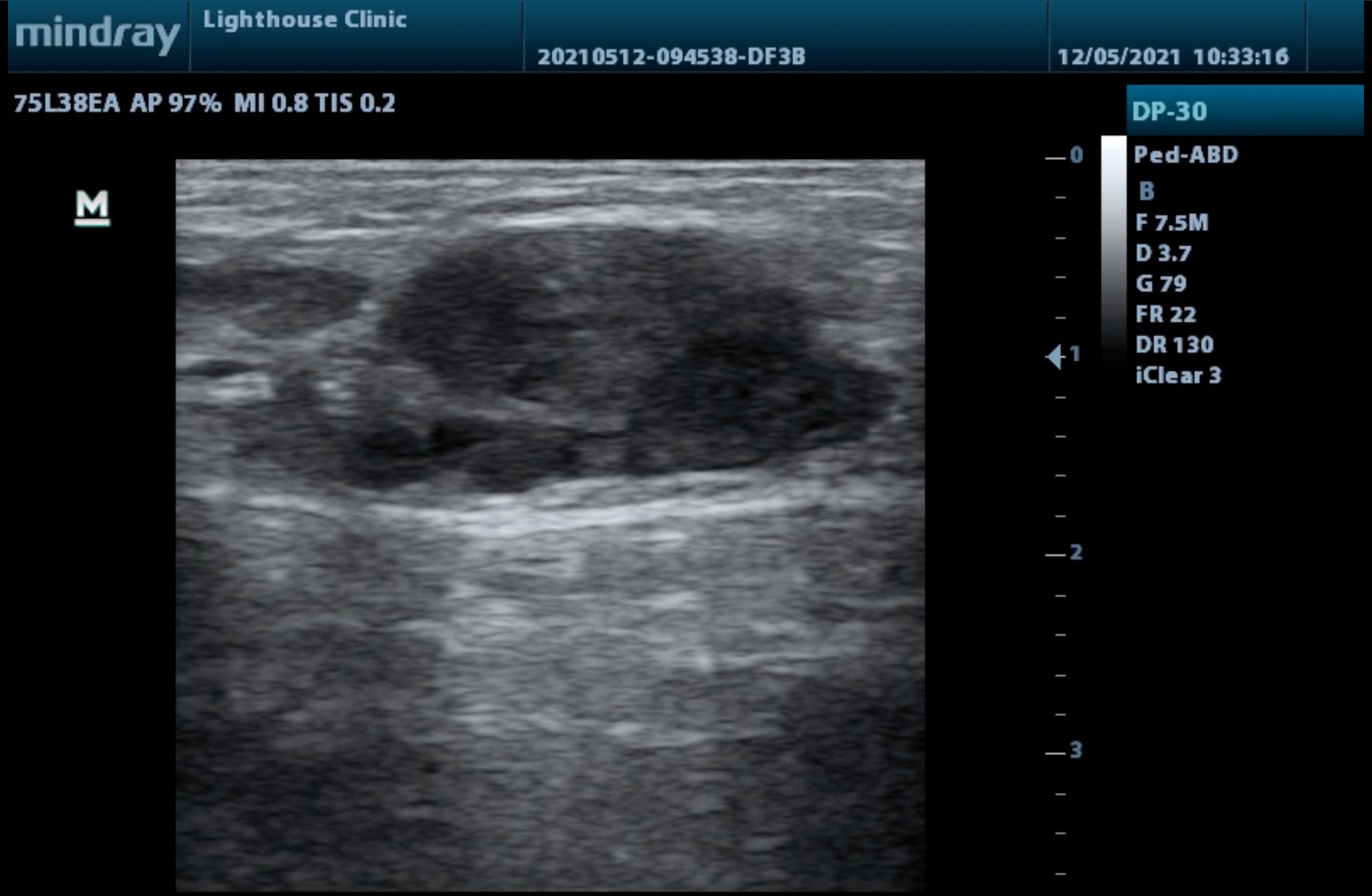
LN - KS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G 79
FR 22
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More diagnostic tests are needed:

- Aspirate for Xpert MTB/RIF Ultra
- Aspirate for bacterial culture
- Aspirate for mycobacterial culture
- Aspirate for cytology
- Core needle biopsy for histology
- Surgical biopsy for histology

More diagnostic tests are needed:

- Aspirate for Xpert MTB/RIF Ultra	- **Pro:** sensitive and specific, quick, available, +/- 10$, **Contra**: dead bacteria
- Aspirate for bacterial culture	- **Pro:** reasonably quick, only available in the lab, **Contra**: lost samples and results, empiric treatment
- Aspirate for mycobacterial culture	- **Pro:** sensitive and specific, determines viability **Contra**: very, very slow, sample loss, etc
- Aspirate for cytology	- **Pro:** quick, if pathology available, **Contra**: hardly ever diagnostic information found
- Core needle biopsy for histology	- **Pro:** often final diagnosis, not invasive **Contra**: no microbiology information, no resistance info
- Surgical biopsy for histology	- **Pro:** very often final diagnosis, **Contra**: invasive, no microbiology informatio, no resistance info

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Causes of enlarged lymph nodes – a closer look:

"The Big Five"

- Tuberculosis
- Lymphoma
- Kaposi's sarcoma
- HIV-ass. persistent generalized lymphadenopathy (PGL)
- Reactive lymphadenitis in local infections

"The Rare Zebras"

Infectious

- Atypical mycobacteriosis
- Infectious mononucleosis (EBV)
- Brucellosis
- Tularemia
- Syphilis
- Cat-scratch disease
- Fungal infections (e.g. histoplasmosis)
- Toxoplasmosis

Inflammatory

- Kikuchi-Fujimoto disease
- Dermatopathic lymphadenitis
- Rosai-Dorfman disease
- Langerhans cell histiocytosis
- Kimura disease
- Sarcoidosis
- Kawasaki's disease
- Systemic lupus erythematosus

Malignant

- Metastatic carcinoma
- T-cell leukemia
- Hairy-cell leukemia
- Castleman's disease
- Myeloid tumors

Others

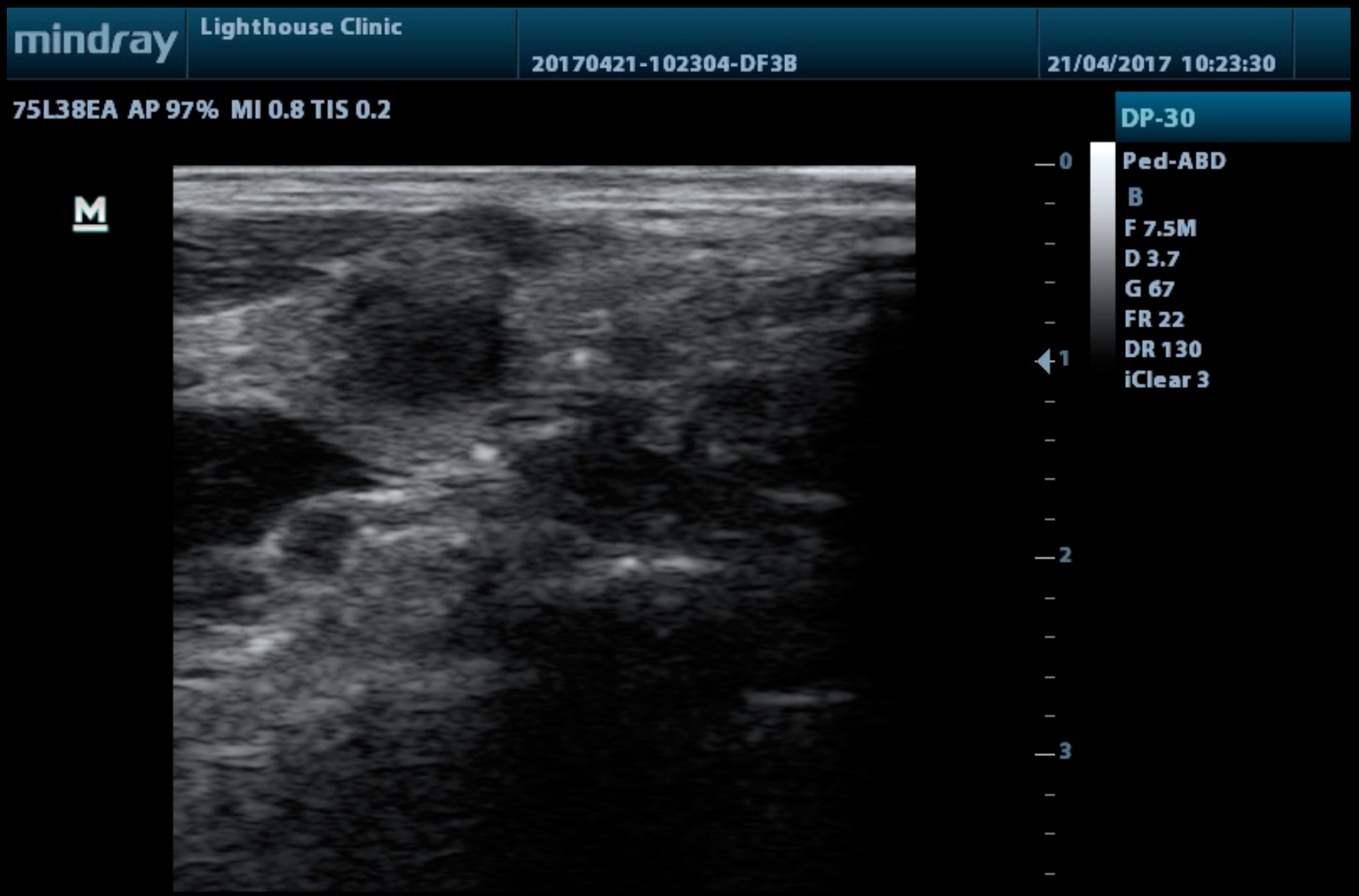
- Amyloidosis
- Metabolic storage diseases

Rare diseases can be found – a quick case

- 22-year-old female patient who recently delivered a healthy baby seen at LH

- **Complaints:**
- enlarged lymph node on the left side of her neck
- additionally reported recent upper respiratory symptoms
- slight fever + mild headache
- No typical TB symptoms (no weight loss, night sweats or cough)

- **Investigations:**
- HIV test was negative
- Full blood count was normal except for mild leukopenia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“Tissue is the issue”

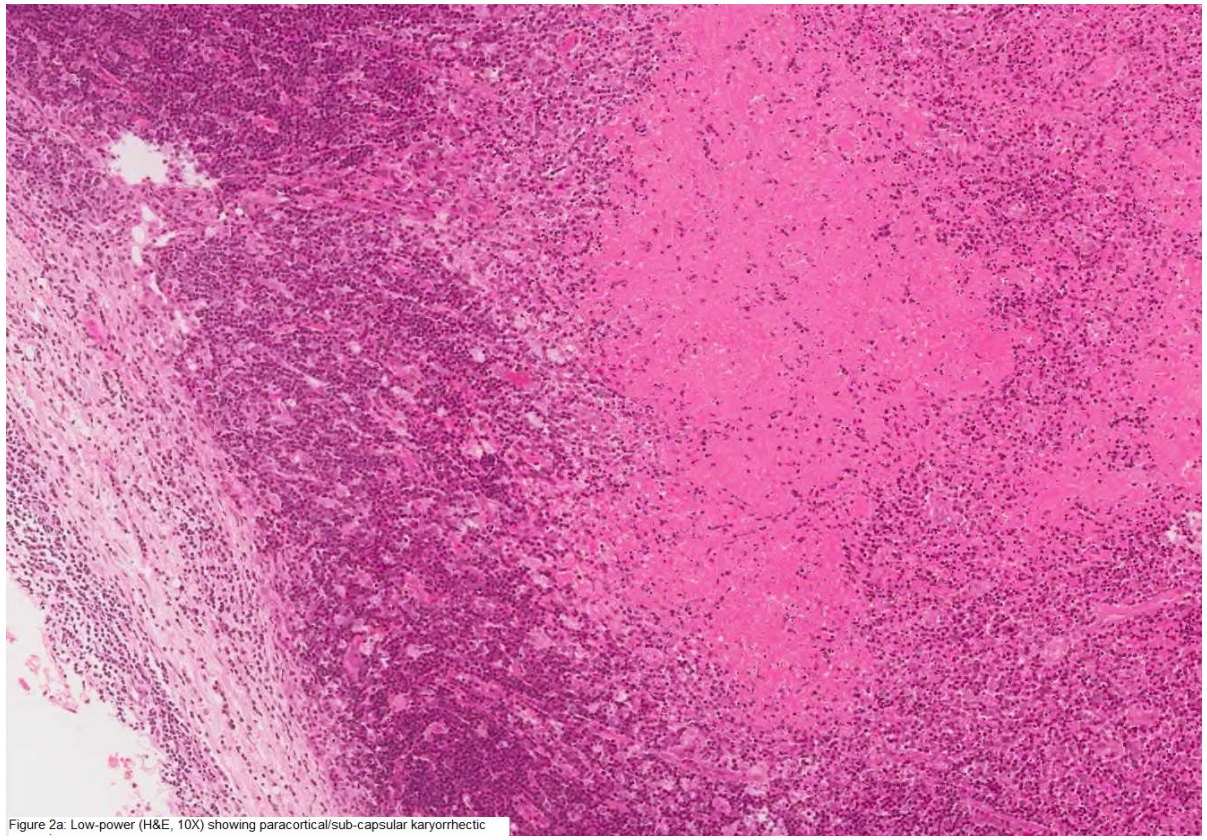
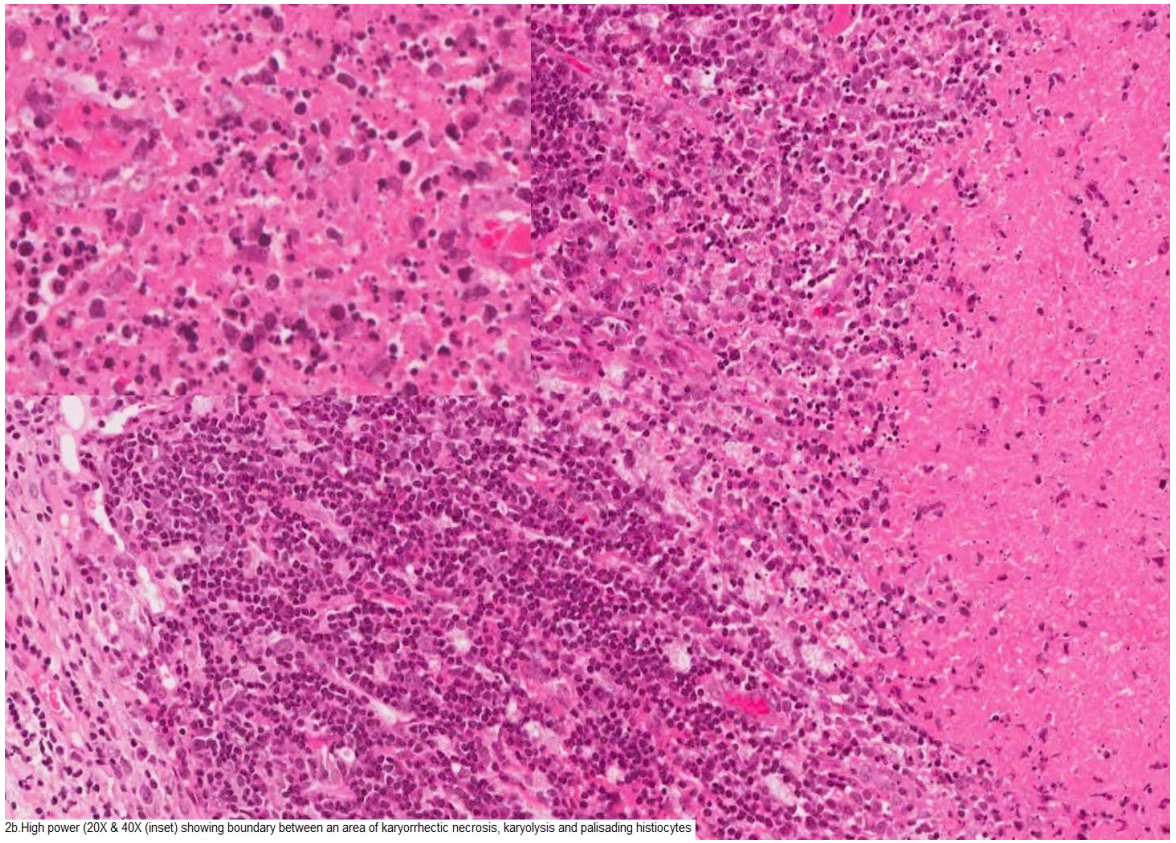


Figure 2a: Low-power (H&E, 10X) showing paracortical/sub-capsular karyorrhectic



2b.High power (20X & 40X (inset) showing boundary between an area of karyorrhectic necrosis, karyolysis and palisading histiocytes

- karyorrhectic necrosis, karyolysis and palisading histiocytes => Kikuchi’s disease

CASE REPORT MMJ

Lymphadenopathy due to Kikuchi-Fujimoto disease – A rare differential for a common presentation

Claudia Wallrauch[1], Tom Heller[2], Bal Mukunda Dhungel[3], Henry Kayera[1], Sam Phiri[2,4,5], Tamiwe Monica Tomoka[2]

How can I biopsy lymph nodes and tissues?

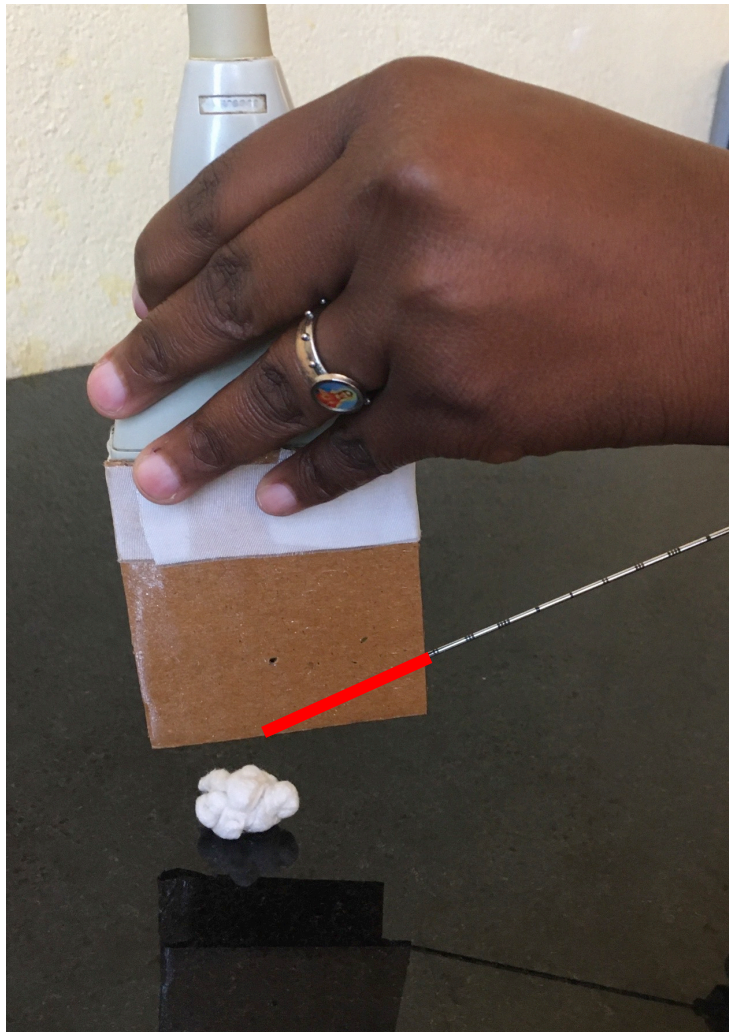
Technique

a) Blind

b) Free hand

c) Transducer with needle guide

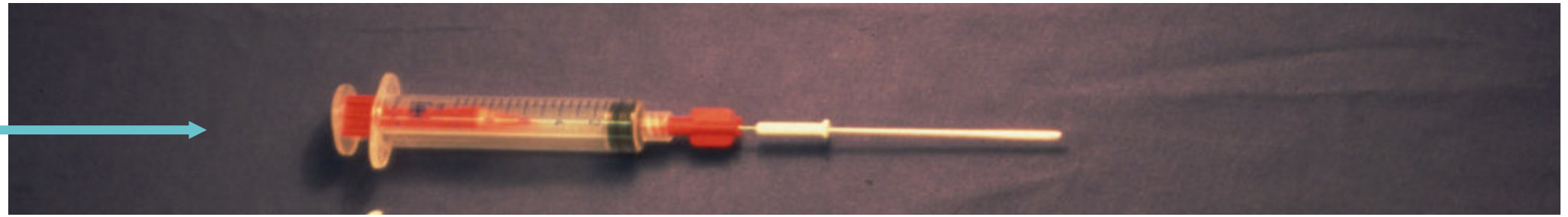
Remember to stay in the channel!



Different types of needles

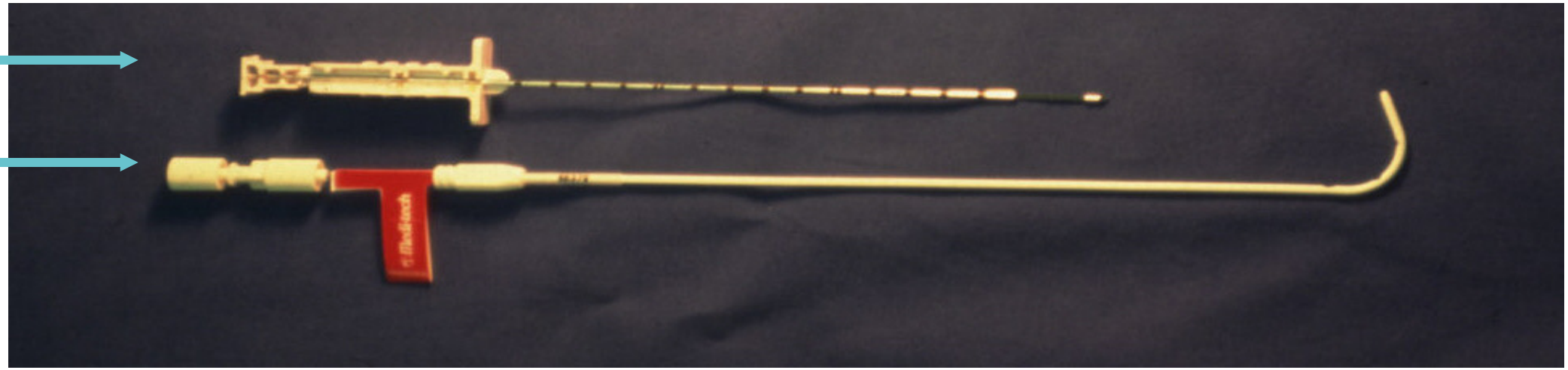
Chivas

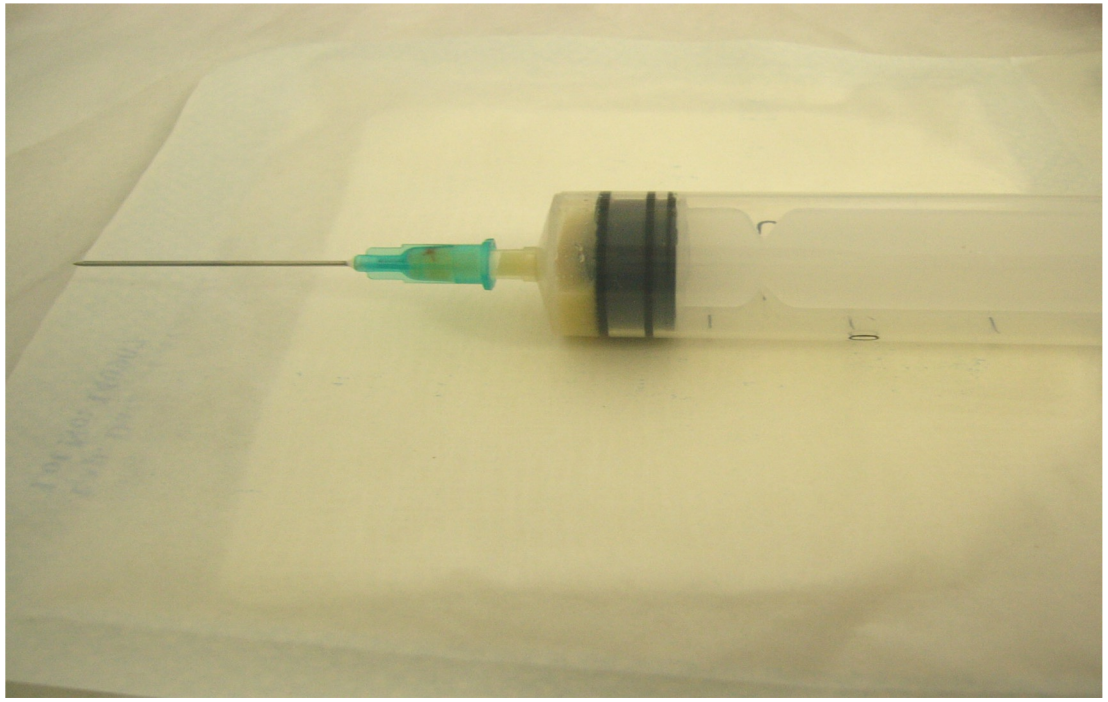
Menghini



Trucut

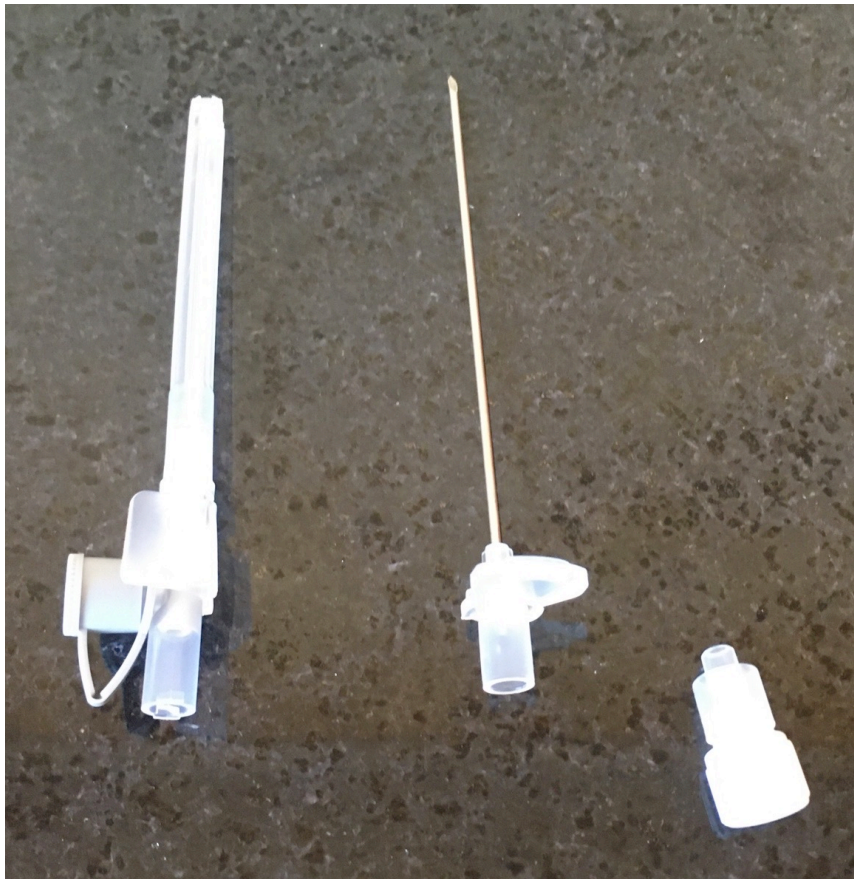
Pigtail





Fine Needle Aspiration (FNA)

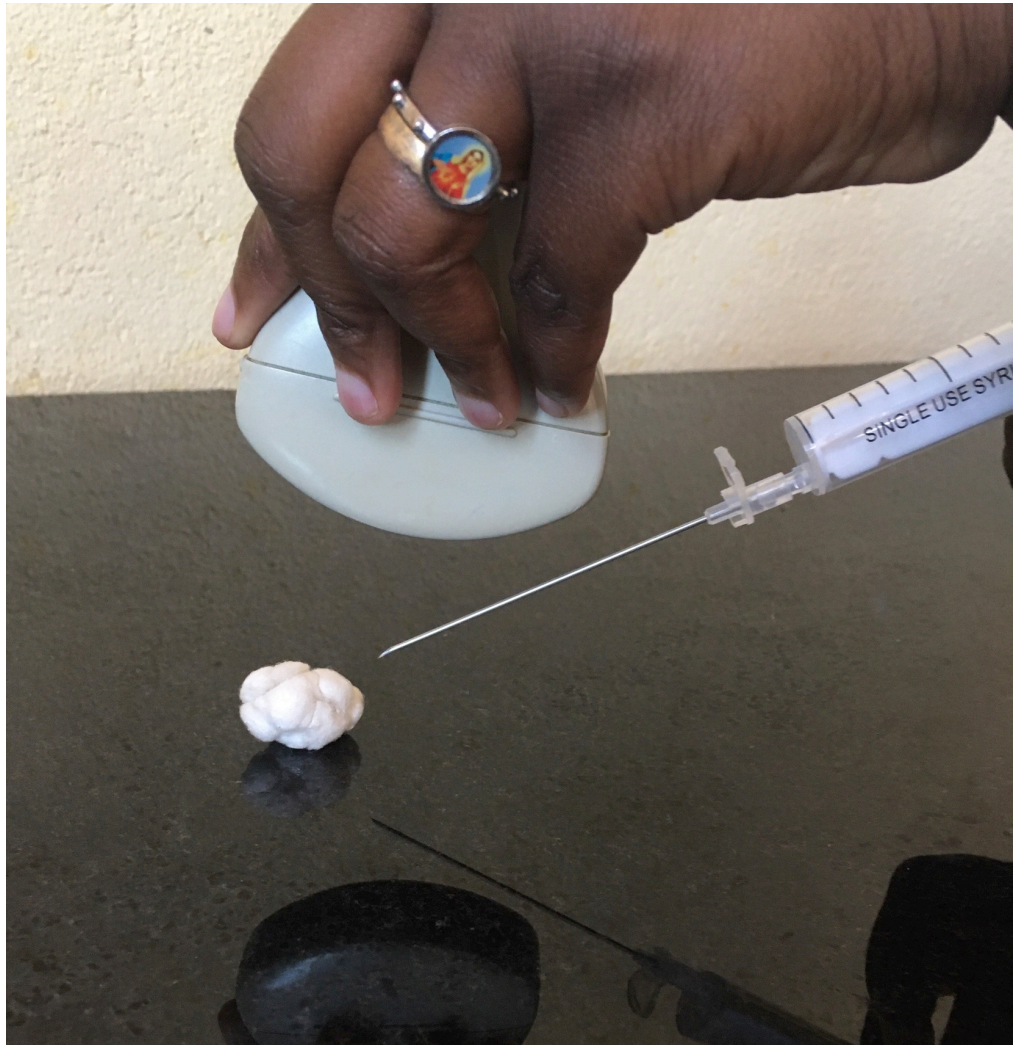
FNA- step by step



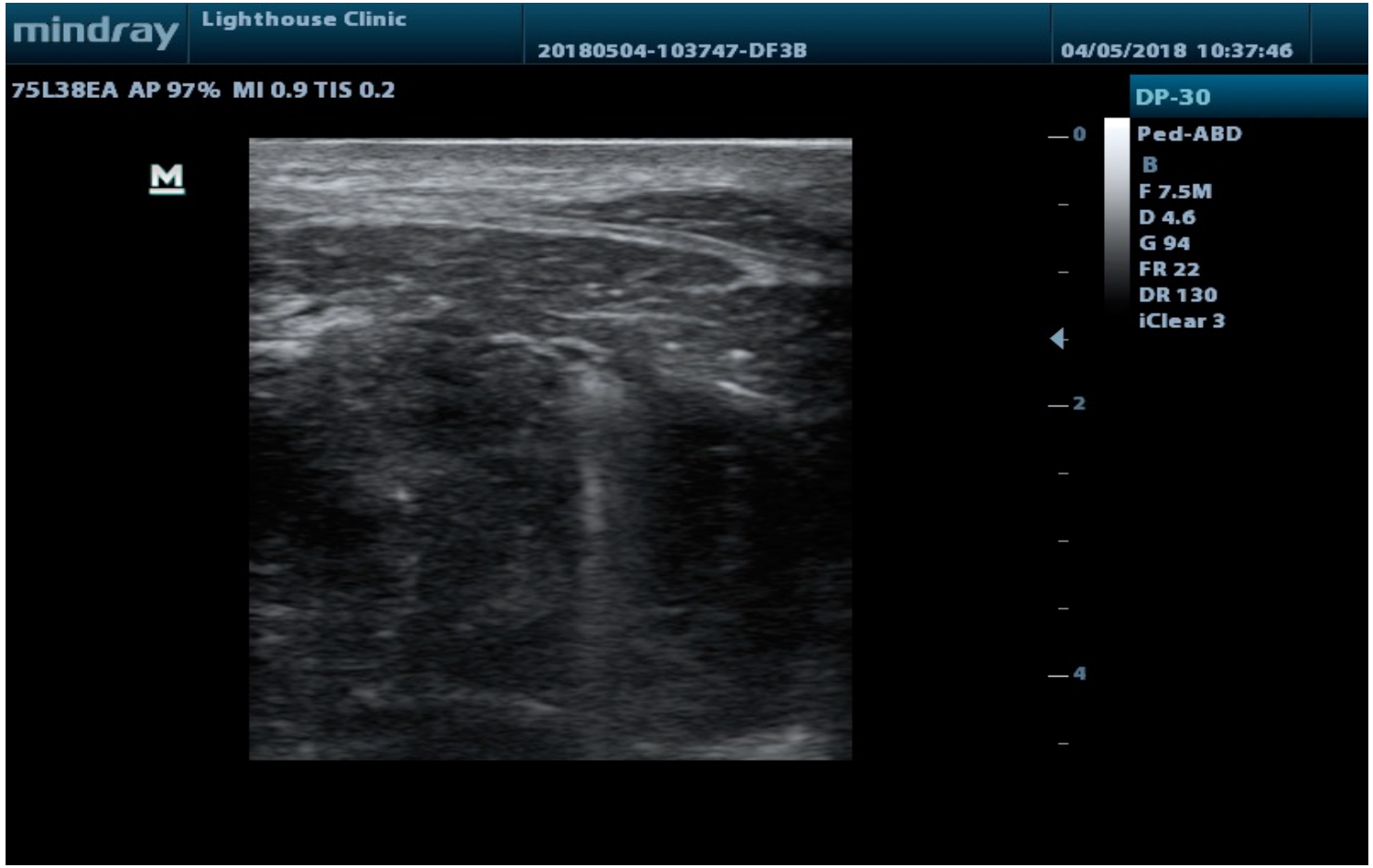
Use only the steel part

And connect it to the syringe

FNA- step by step



Puncture and aspirate the node under ultrasound guidance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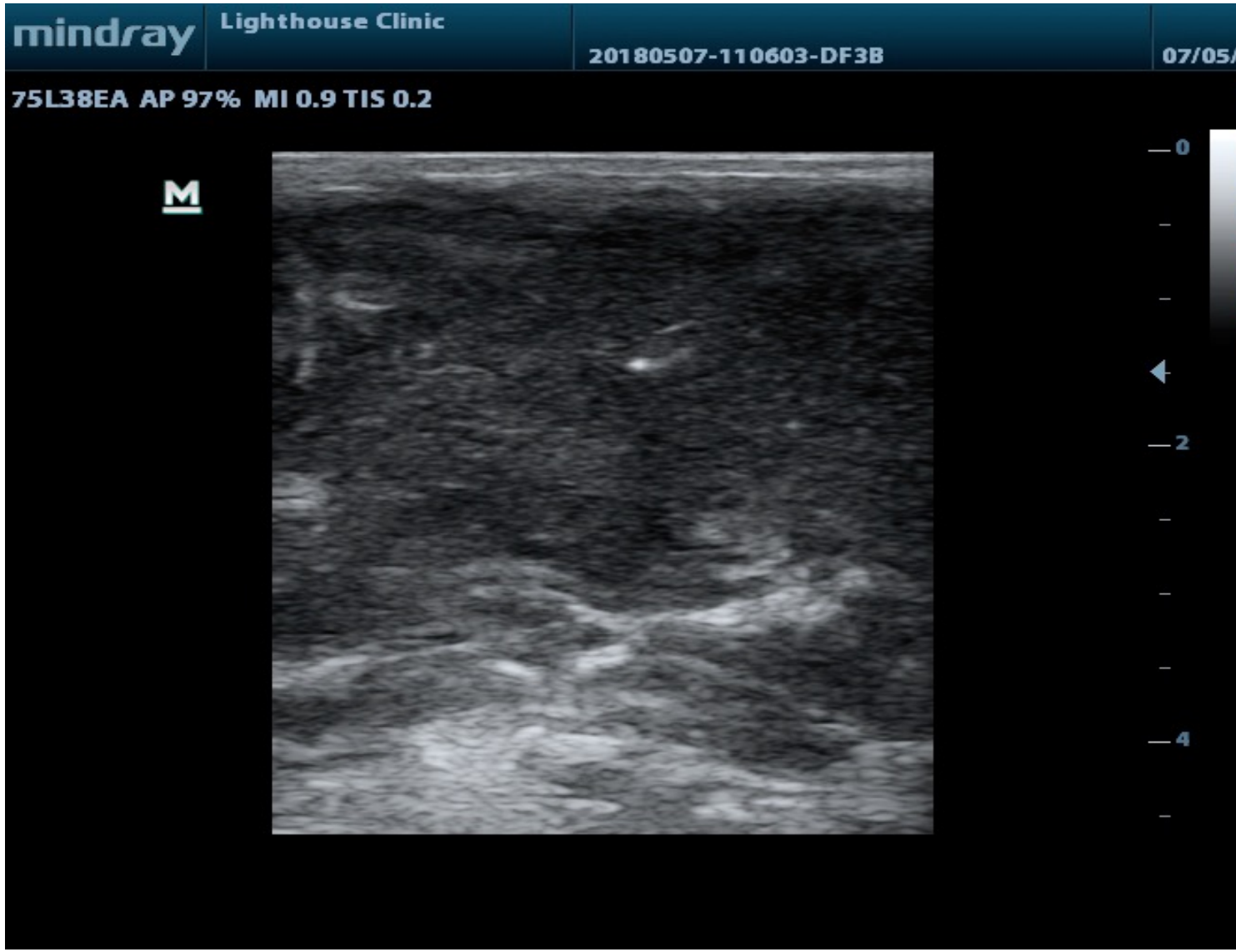
Neogloves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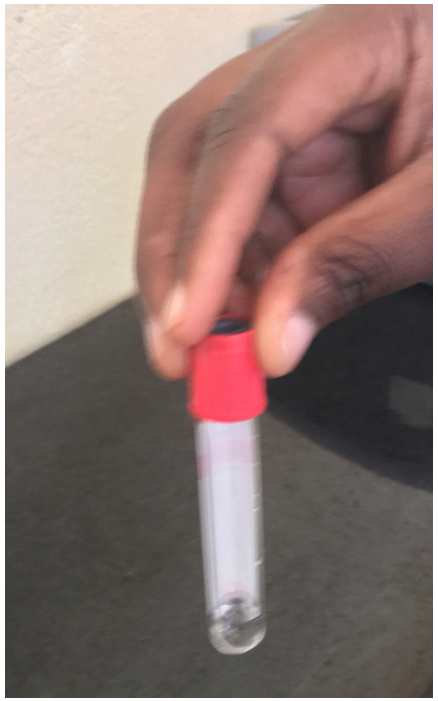
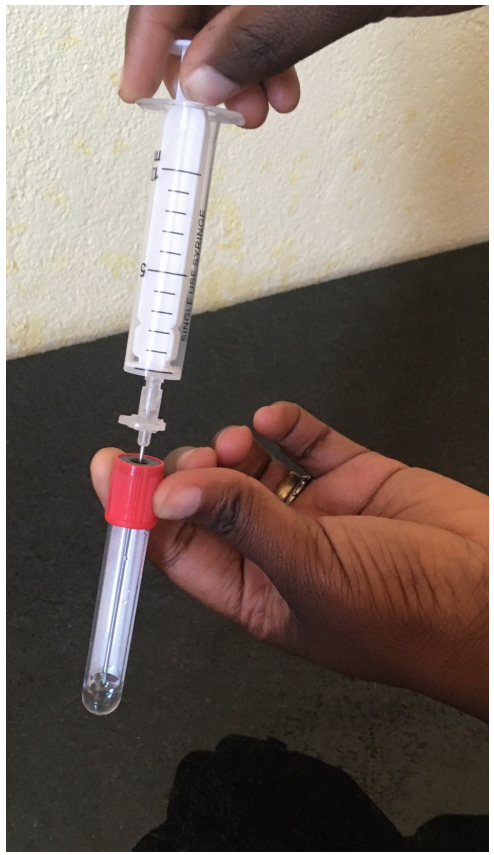
FNA- step by step



Take the tube with the buffer

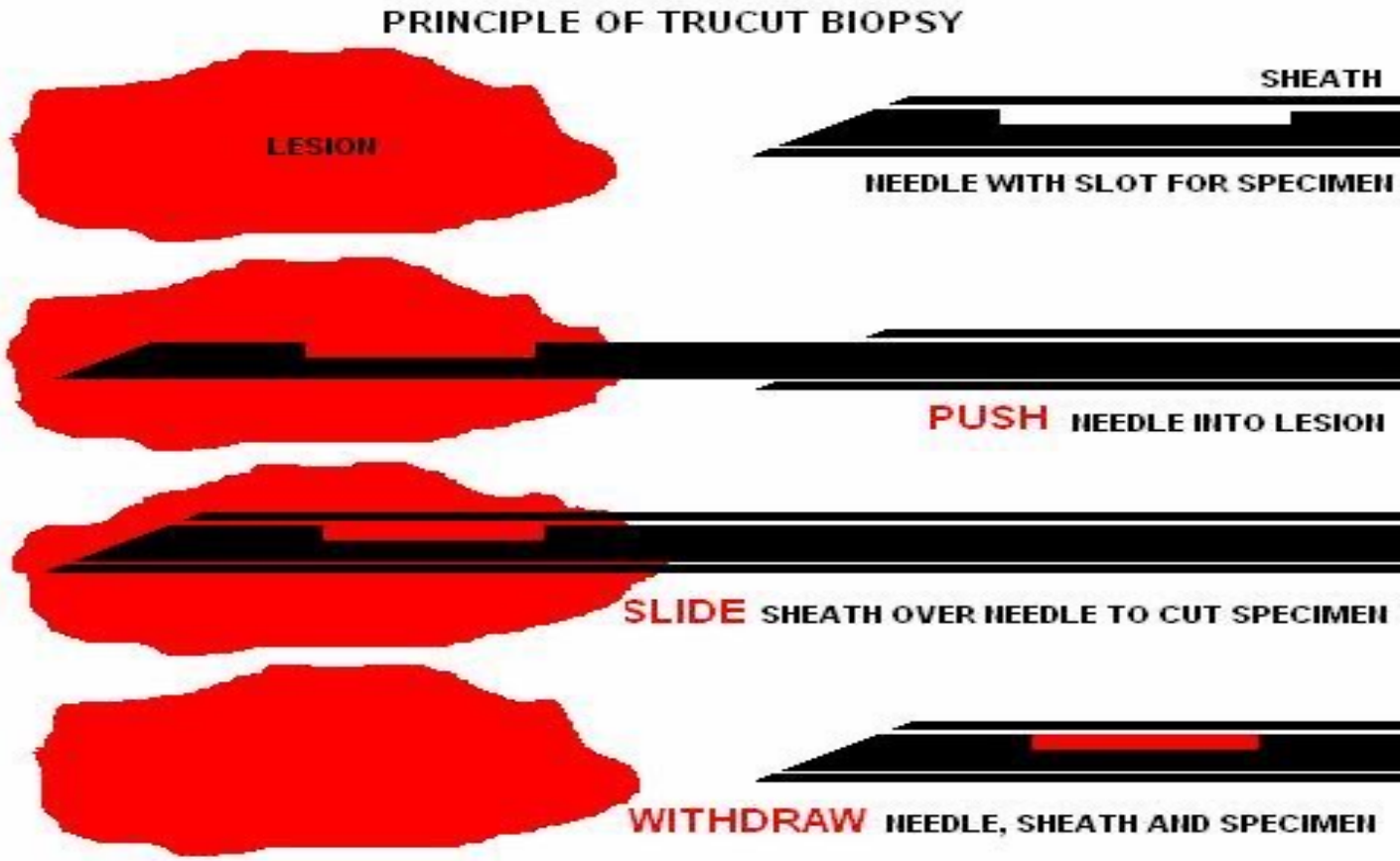


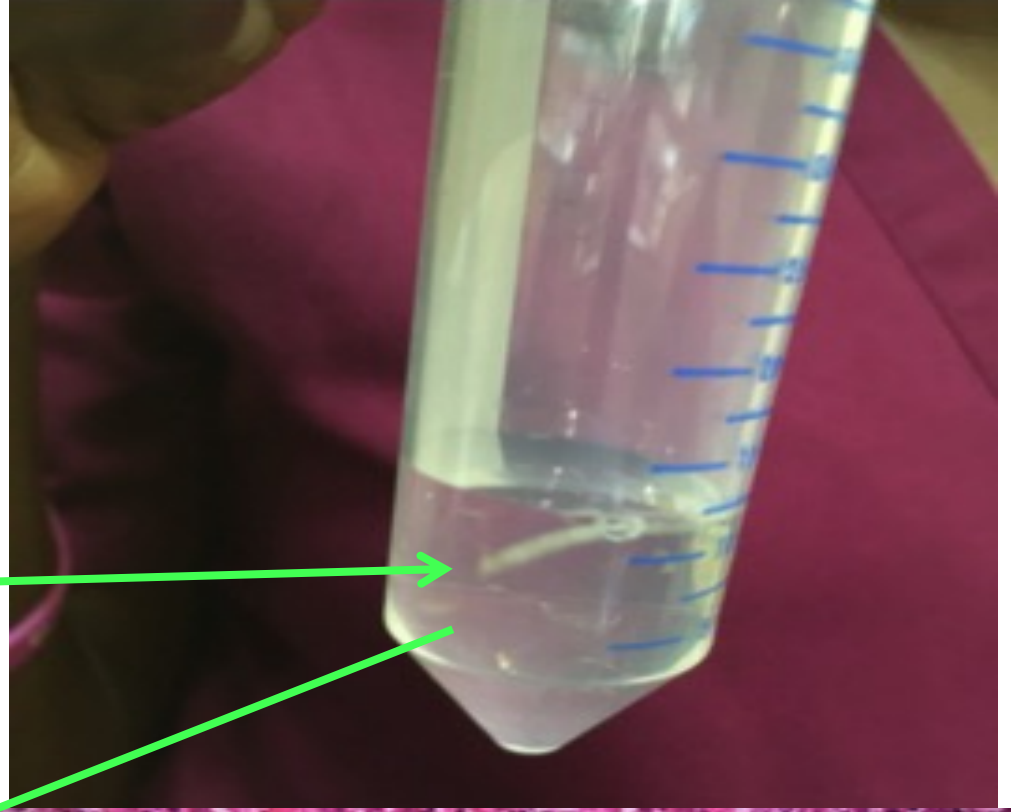
Flush and rinse the material from the needle

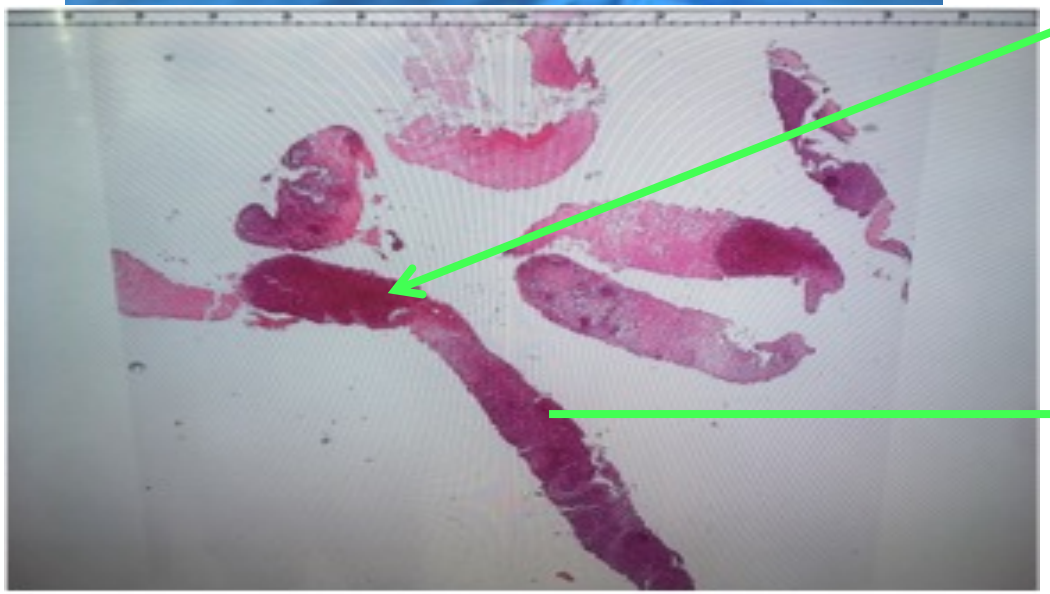
Often the fluid will afterwards be turbid or slightly blood stained

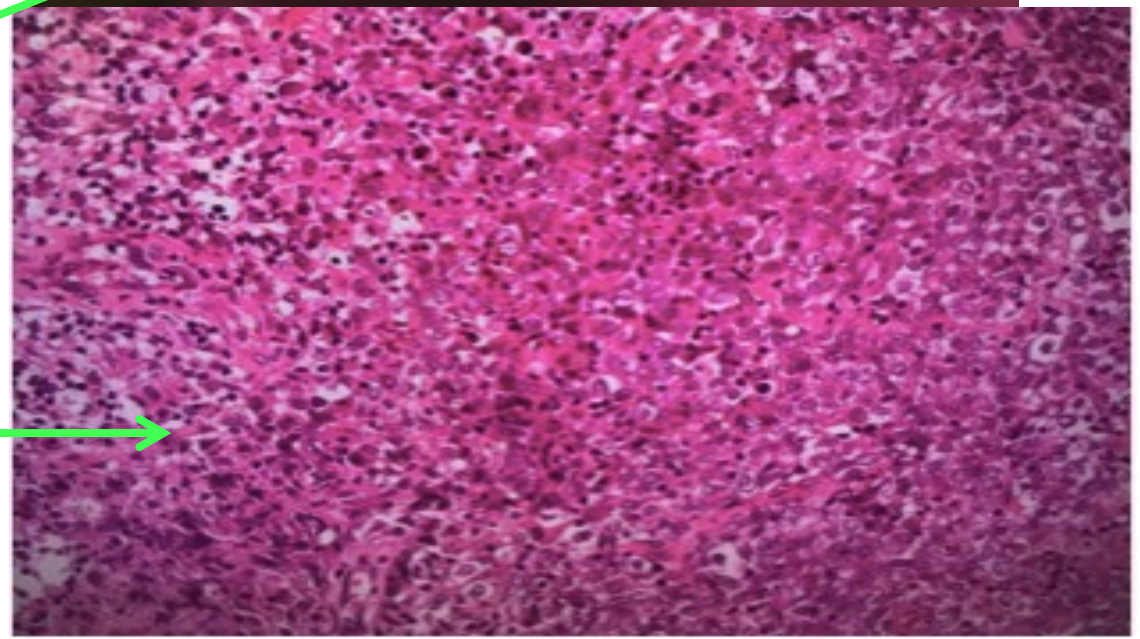
Core Needle Biopsy (CNB)

TRUCUT -Biopsy

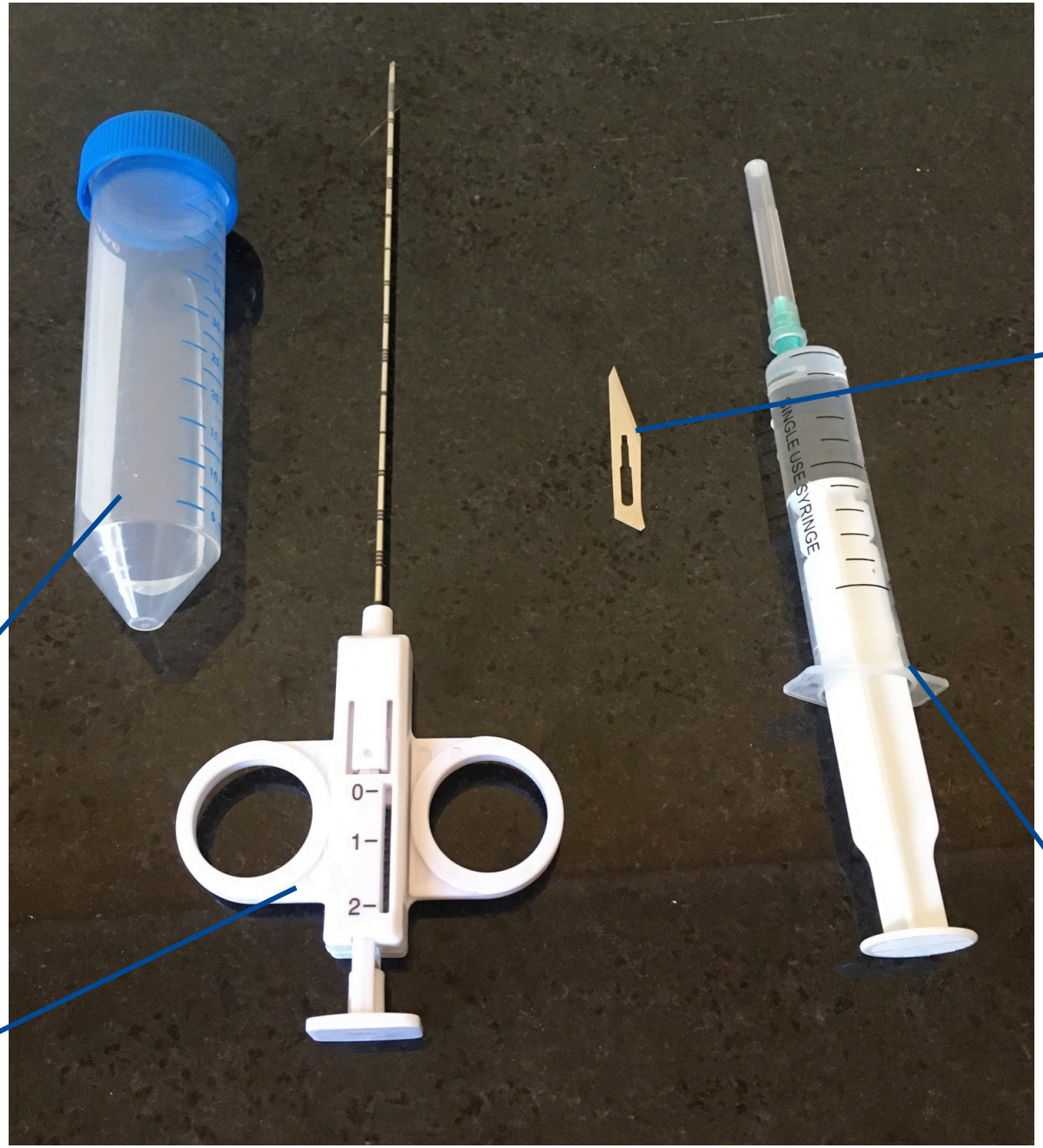








Core needle biopsy- step by step



Pointed blade (no 11)

Blue tube with 3-5 cc of formalin

Biopsy needle (semiautomatic)

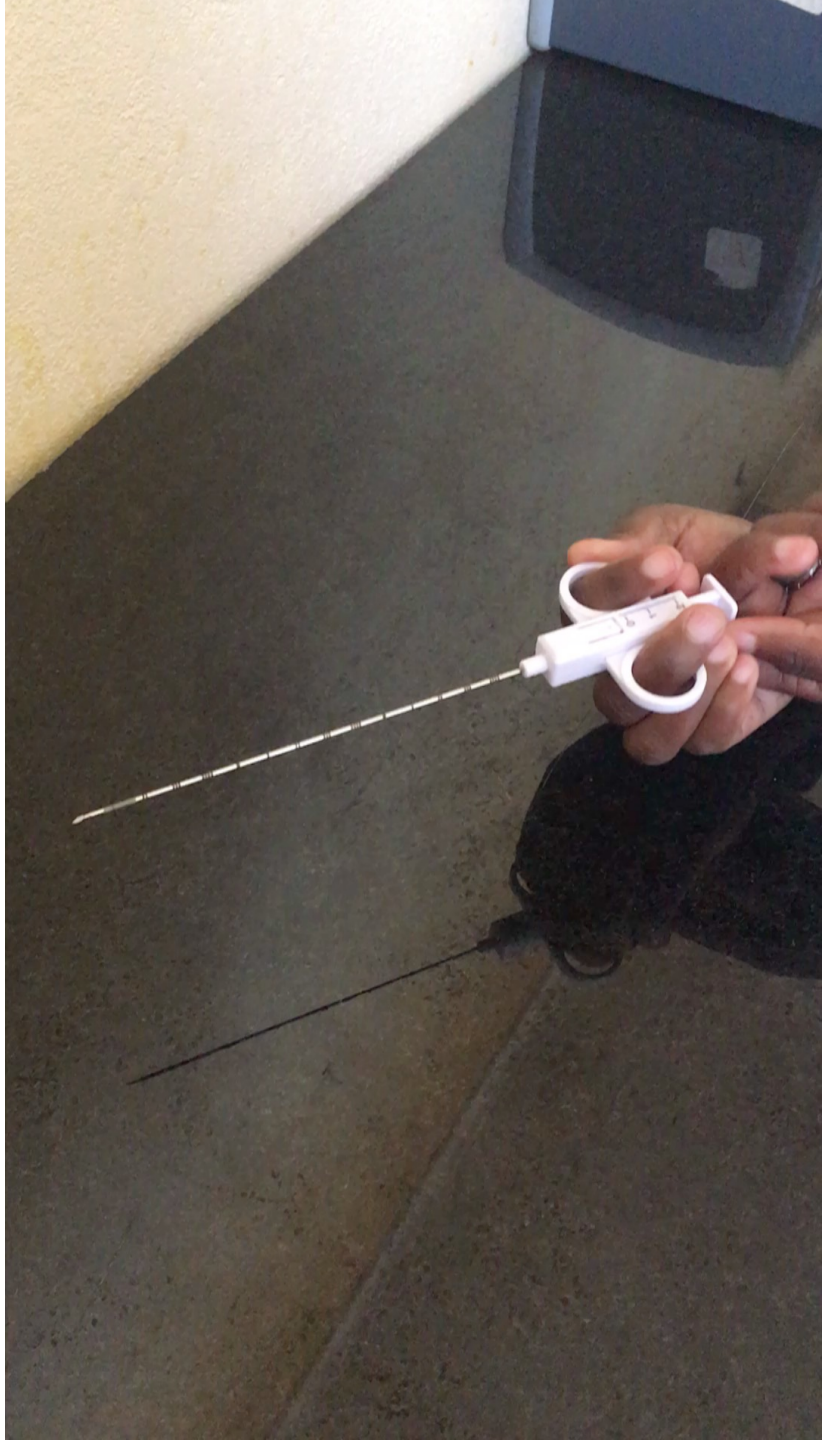
Local anesthesia

+ desinfectant (not shown)

Core needle biopsy- step by step

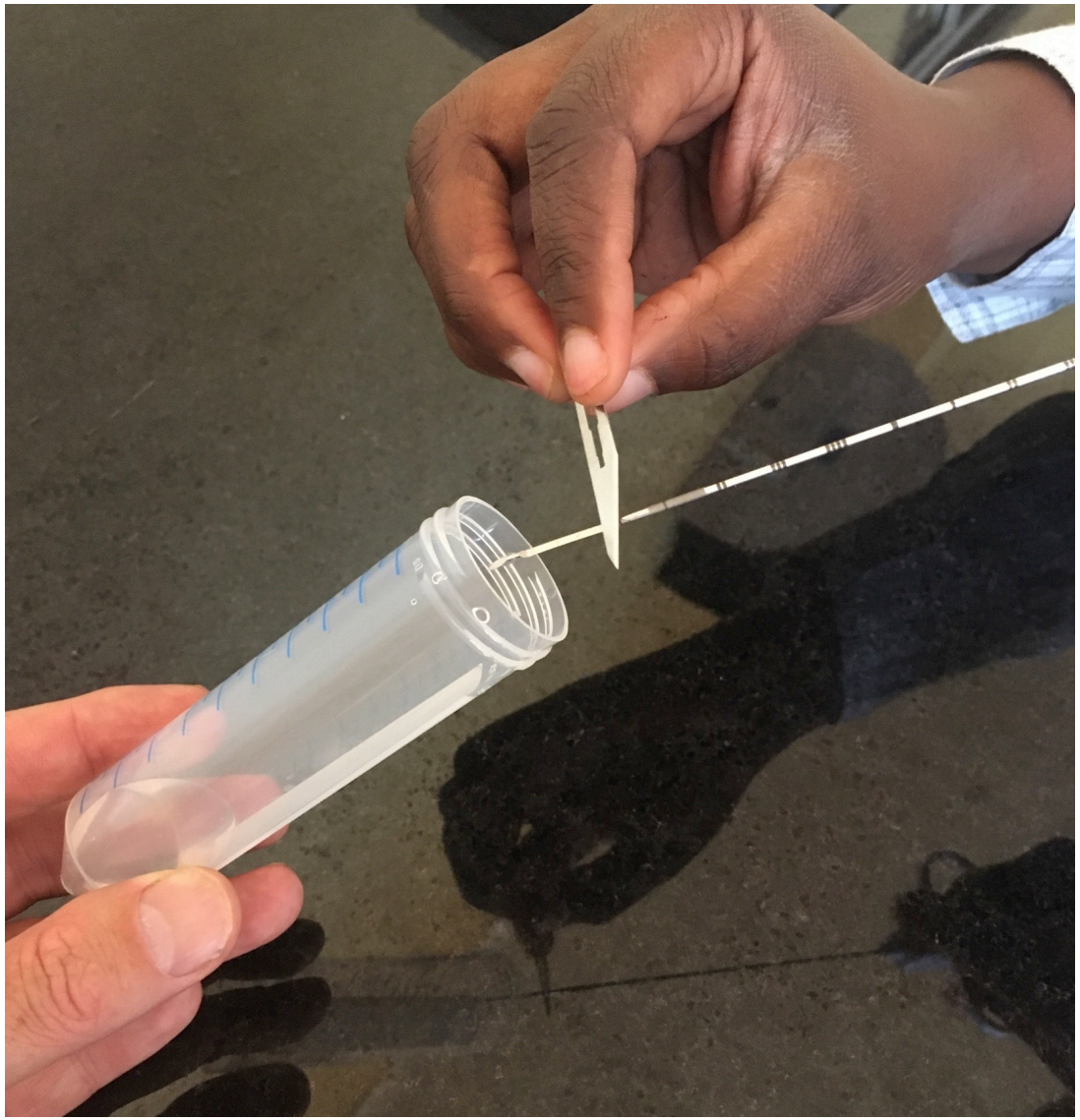
- Pierce the skin next to the LN where the needle will enter with the blade

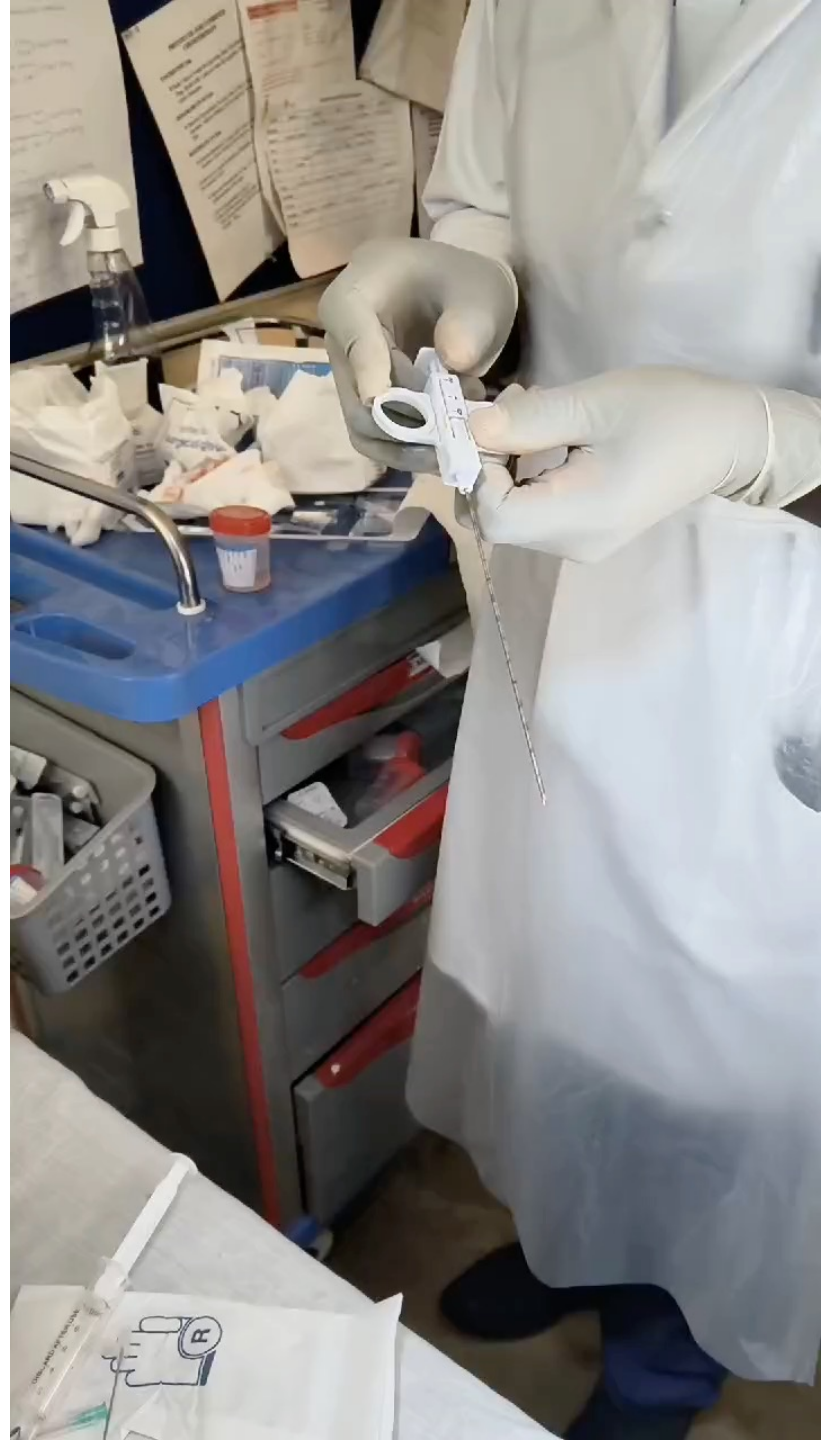
- Load the needle by pulling ->1 ->2
- Enter the needle close to the LN
- Push the plunger in gently to enter the notch into the node
- Push the plunger through to “shoot” the outer part
- Pull the needle out

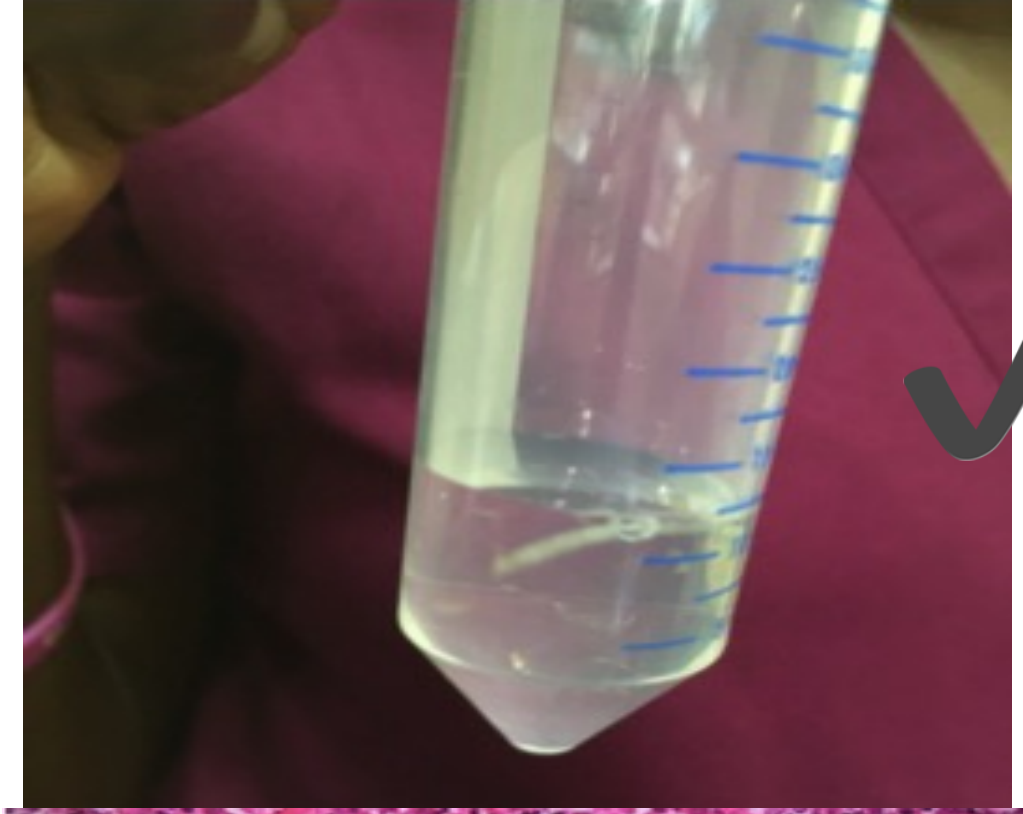


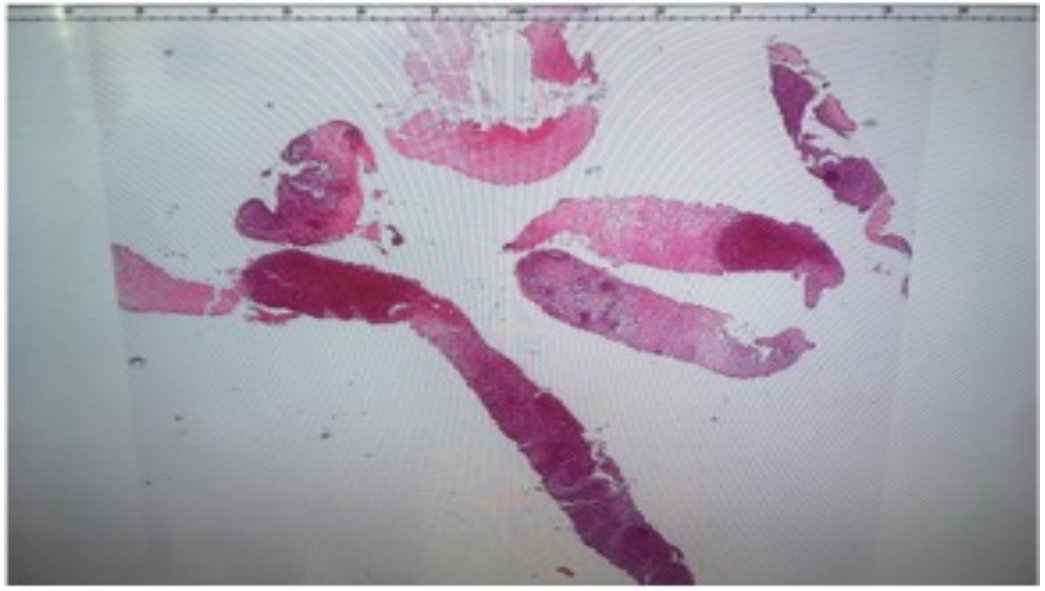
Core needle biopsy- step by step

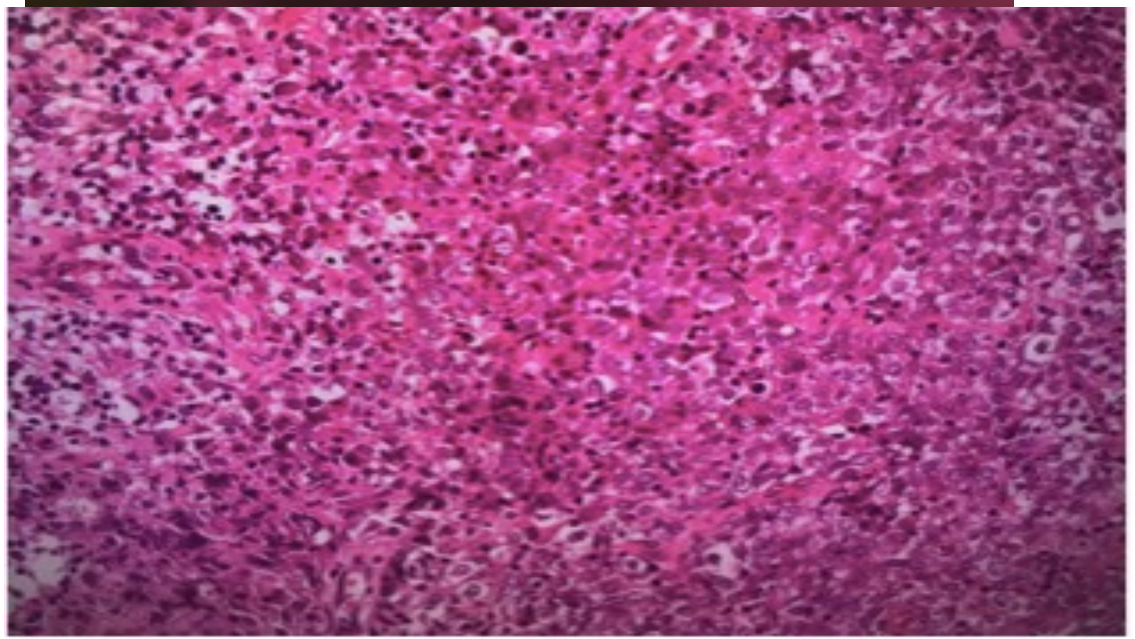
- Reload the needle by pulling ->1 ->2
- Push the plunger in gently in to make the notch visible
- Scratch the tissue cylinder with the blade into the formalin
- Pull the plunger gently back to close the notch again – now the needle is ready for the next biopsy





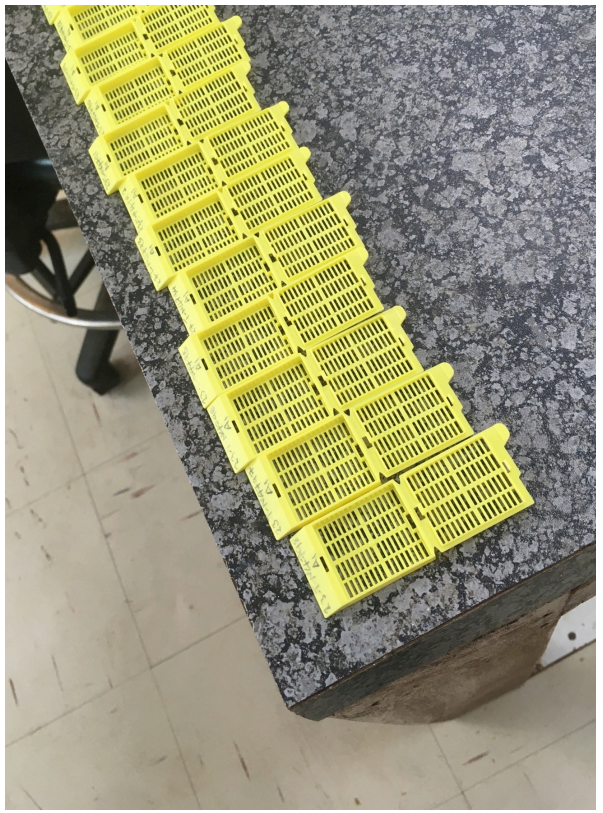






Pathology – a quick tour

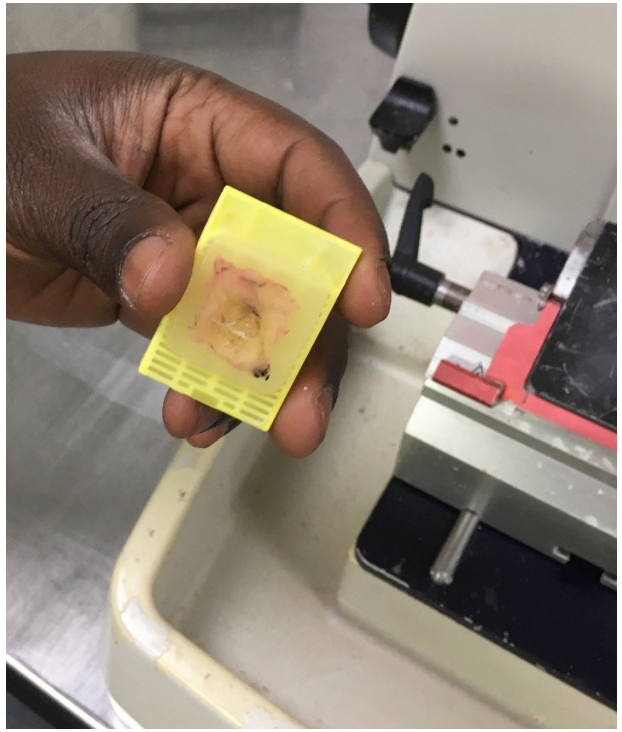
- Receive the sample



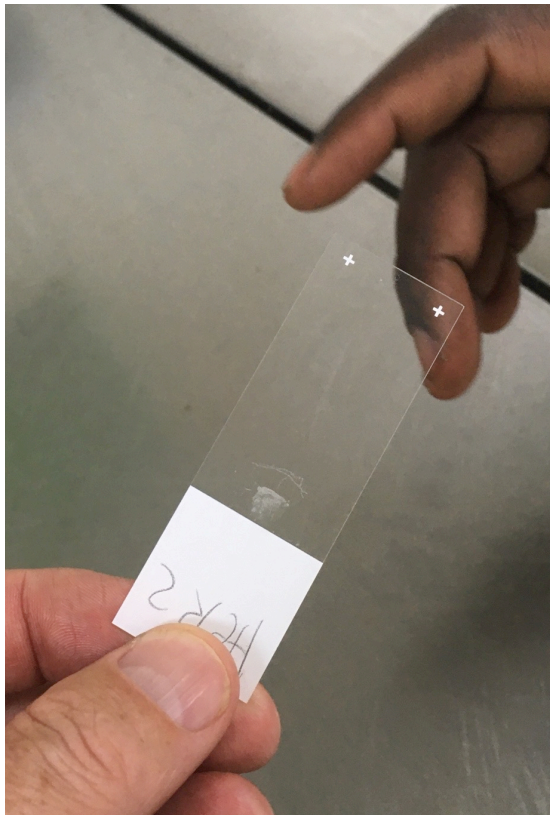
- Put in a little basket

- Embed it in wax

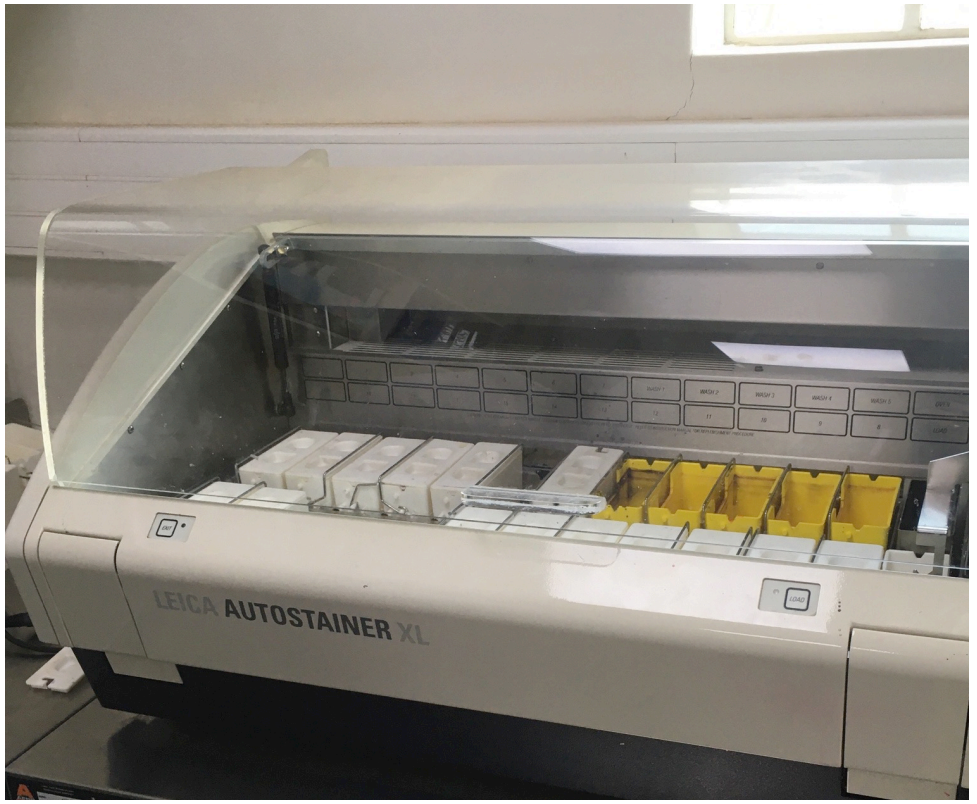
Pathology – a quick tour



- The block is cut in sklices



- The slices transferred on a glas slide

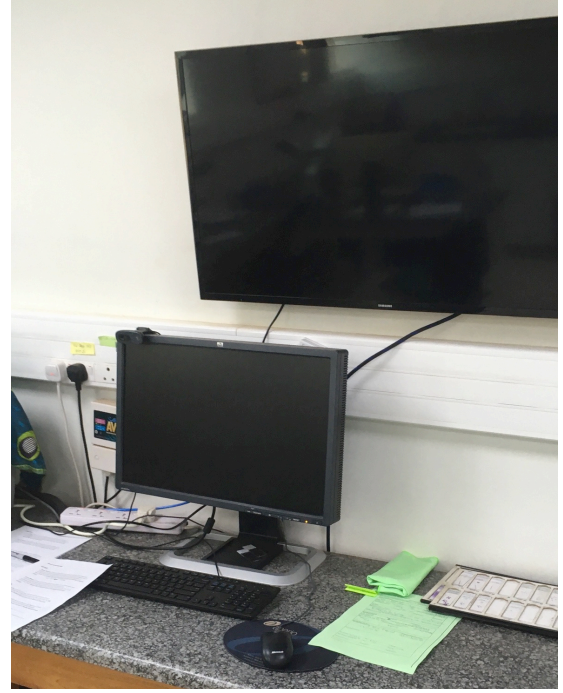


- And the stained with H&E (hematoxin and eosin)

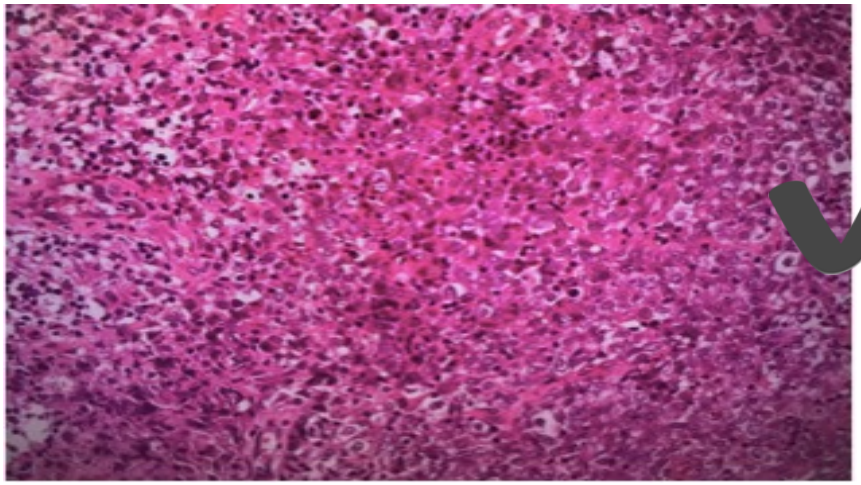
Pathology – a quick tour

- The sample is ready to be looked at

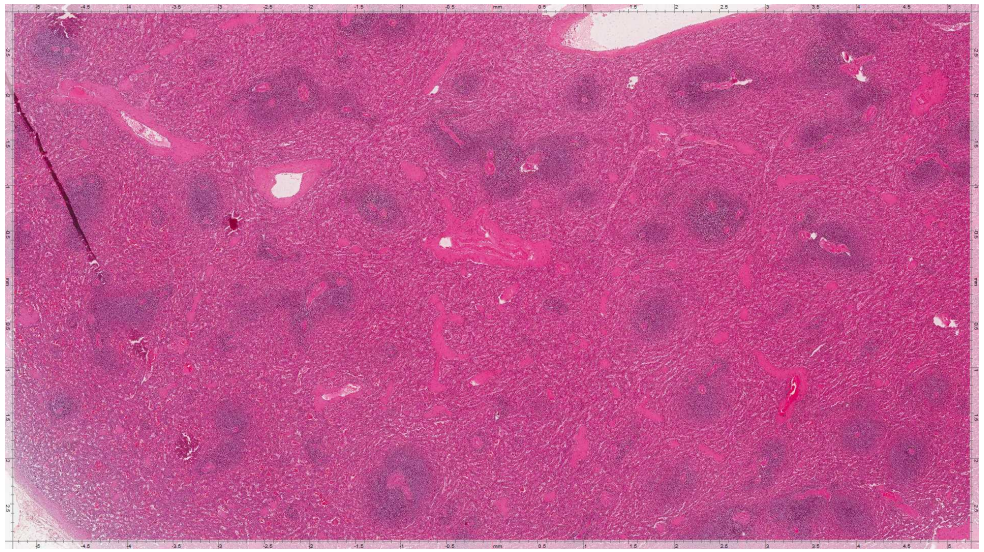
- Pathologist looks at it in the microscope



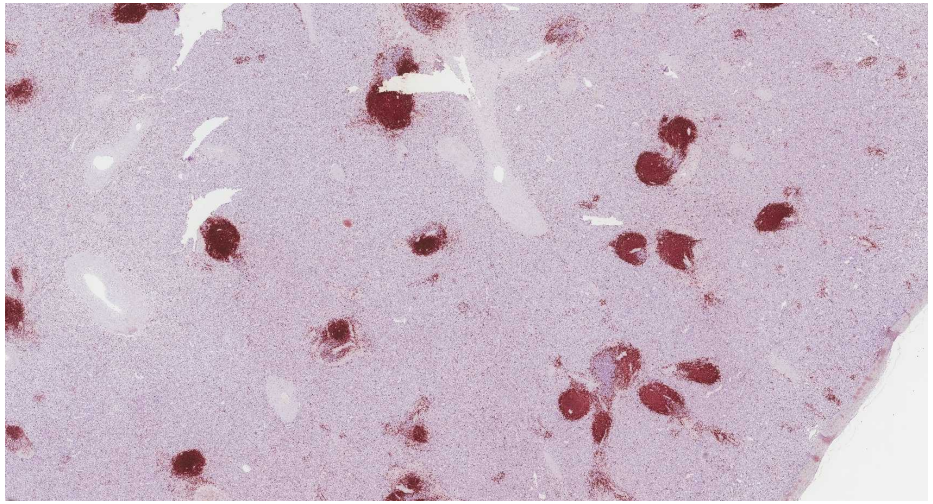
- And discusses it via Tele-pathology



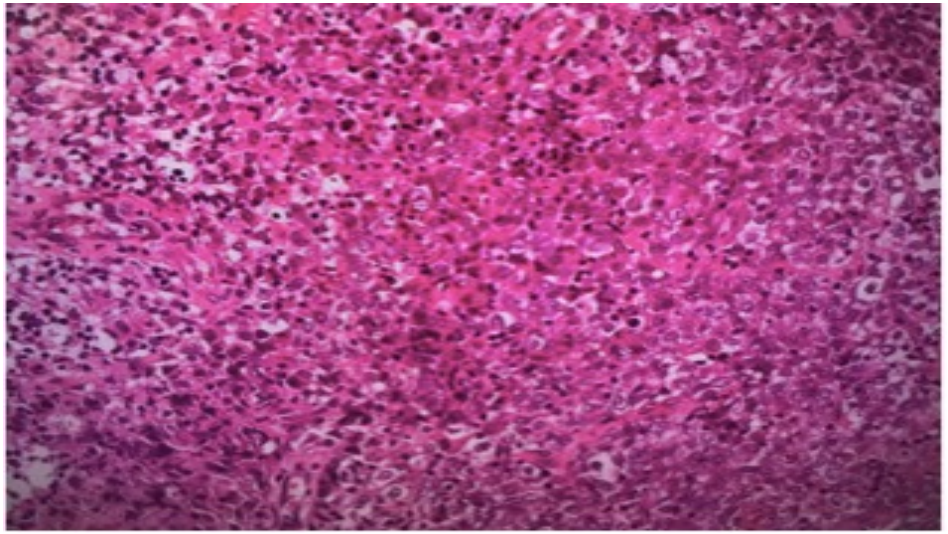
Pathology – a quick tour

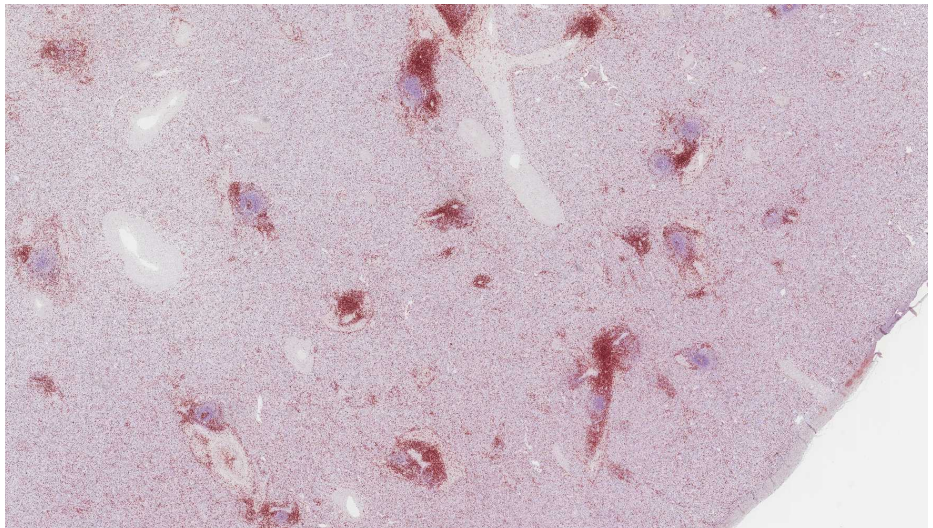


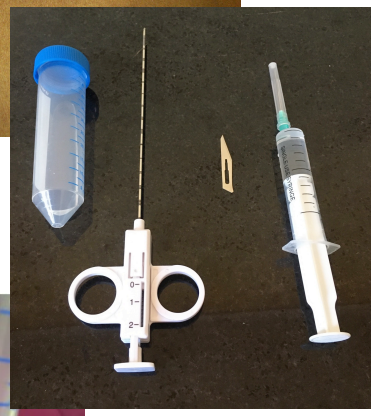
- H&E

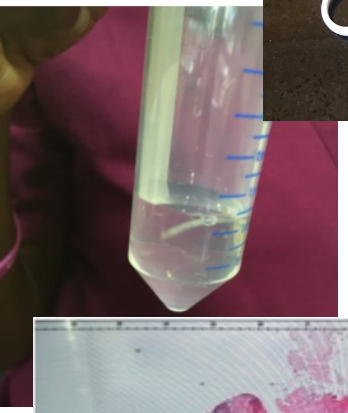


- Immunehistochemistry (IHC) for CD3, CD20, LANA and Ki-67









ULySSES Lymph node examination

US guided diagnostic service at LH sites

=> 63 CNB results after 8 months operations

1. Non-Hodgkin Lymphoma = 11 (17%)
2. Hodgkin Lymphoma = 4 (6%)
3. Kaposi's Sarcoma = 12 (19%)
4. Multicentric Castleman's Disease = 2 (3%)
5. Carcinoma/Non-hematolymphoid neoplasm= 13 (21%)
6. Necrotizing granulomatous inflammation (TB) = 3 (5%)
7. Reactive Lymph node/No malignancy = 5 (8%)
8. Insufficient sample = 10 (16%)

Are Needles (FNA and CNB) dangerous?

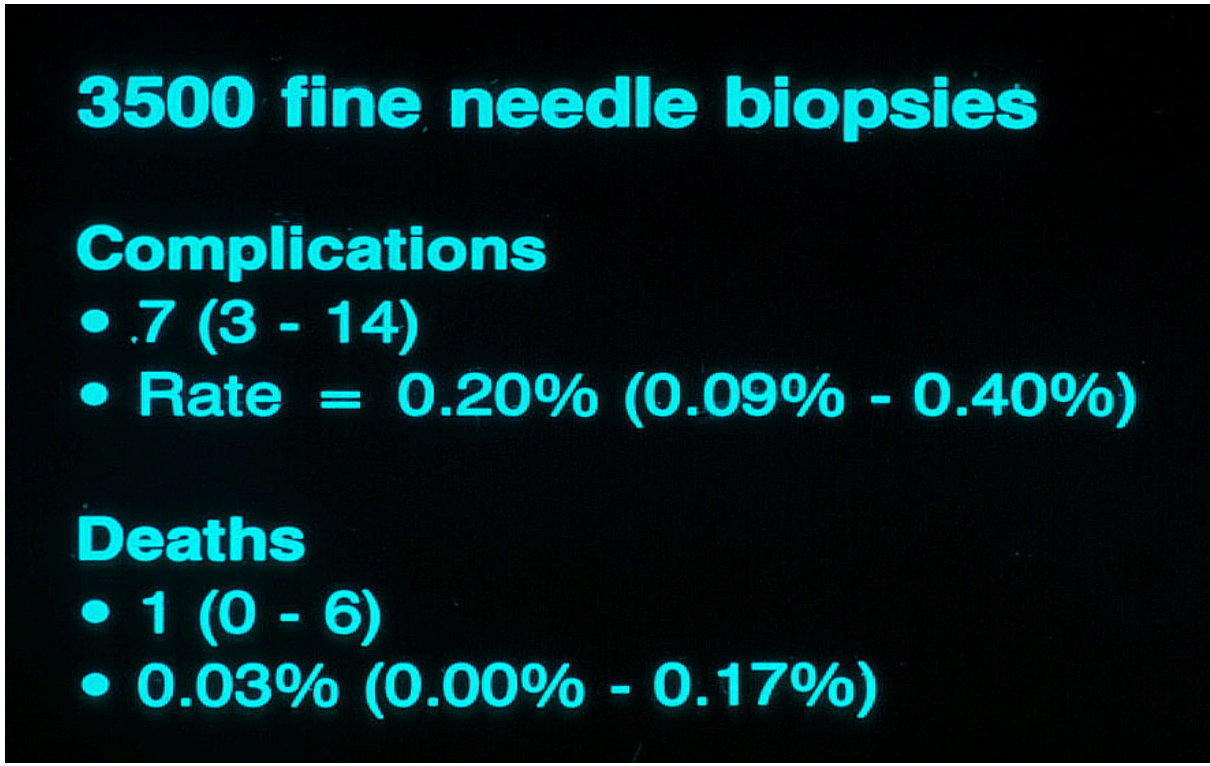
Risks and contraindications

a) bleeding risks
- impaired coagulation (Quick´s value < 50 %, platlets < 50,000 /µl)
- severe uremia
- severe anemia

b) dangerous targets
- aneurysms, vessels and carotide body tumor
- pheochromocytoma
- Echinococcus cysts (therapeutic drainage possible)

c) dangerous way
-long „dangerous“ route to target
-local infections
-puncture of the liver with biliary dilatation

But…



Nolsoe et al, J Clin Ultrasound 1990, 179-84

Please do NOT puncture !!!

The Lighthouse – ULySSES – Project

Flow chart for One-stop-shop approach

eet