Plymouth Hospitals NHS
NHS Trust

FNA vs core biopsy and the role of the head and neck one-stop clinic

Dr Tim Bracey

MBChB BScHons PhD MRCS FRCPath

Consultant Histopathologist and Cytopathologist

Lead Head and Neck/Upper GI Pathologist

Derriford Hospital

Dr Basil Morson CBE

"Its your job to control surgeons"

Overview

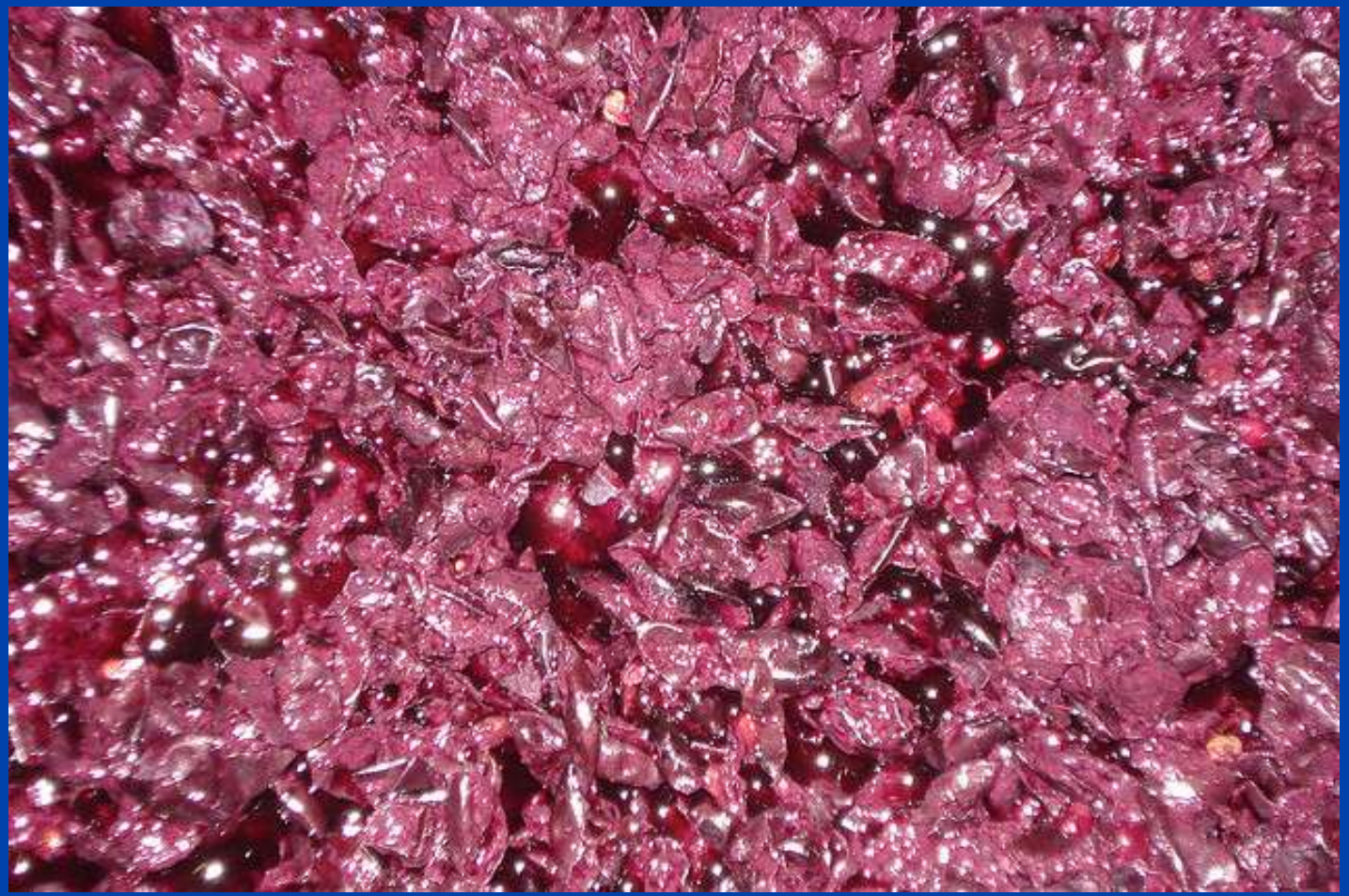
- Difference between FNA and core biopsy
- History, background and aims of our one-stop clinic
- *How to make the most of the material aspirated/biopsied*
- Clinical and pathology audit results
- Costs, potential savings and patient feedback
- Common pathology encountered
- Examples where FNA and core bx best used
- Clinic and non-clinic approach to lymphoma diag

	FNA 	*Core biopsy* 	*Open / Excision biopsy*
Time to diagnosis	Minutes	Days	Days - weeks
Complications	Virtually none	Rare	Possible
Utility	Confirms suspected malignancy Can diagnose common benign lesions but cannot really "exclude neoplasia"	Usual 2nd line after FNA. Confirms and subtypes most malignant and benign lesions. May not subtype *all* lymphomas	Confirms , sub-classifies stages, treats and prognosticates malignancy and some lymphoid neoplasms
Examples	Confirm metastatic SCC Pleomorphic adenoma, Warthin tumour, identify likely lymphoma	Confirms most common lymphoma. Immunotypes metastases and allows predictive testing	Solitary cystic lesions. Low grade salivary neoplasms. Follicular thyroid. Low grade

Core biopsy analogy

The pathologist has the architecture and surroundings to help with diagnosis

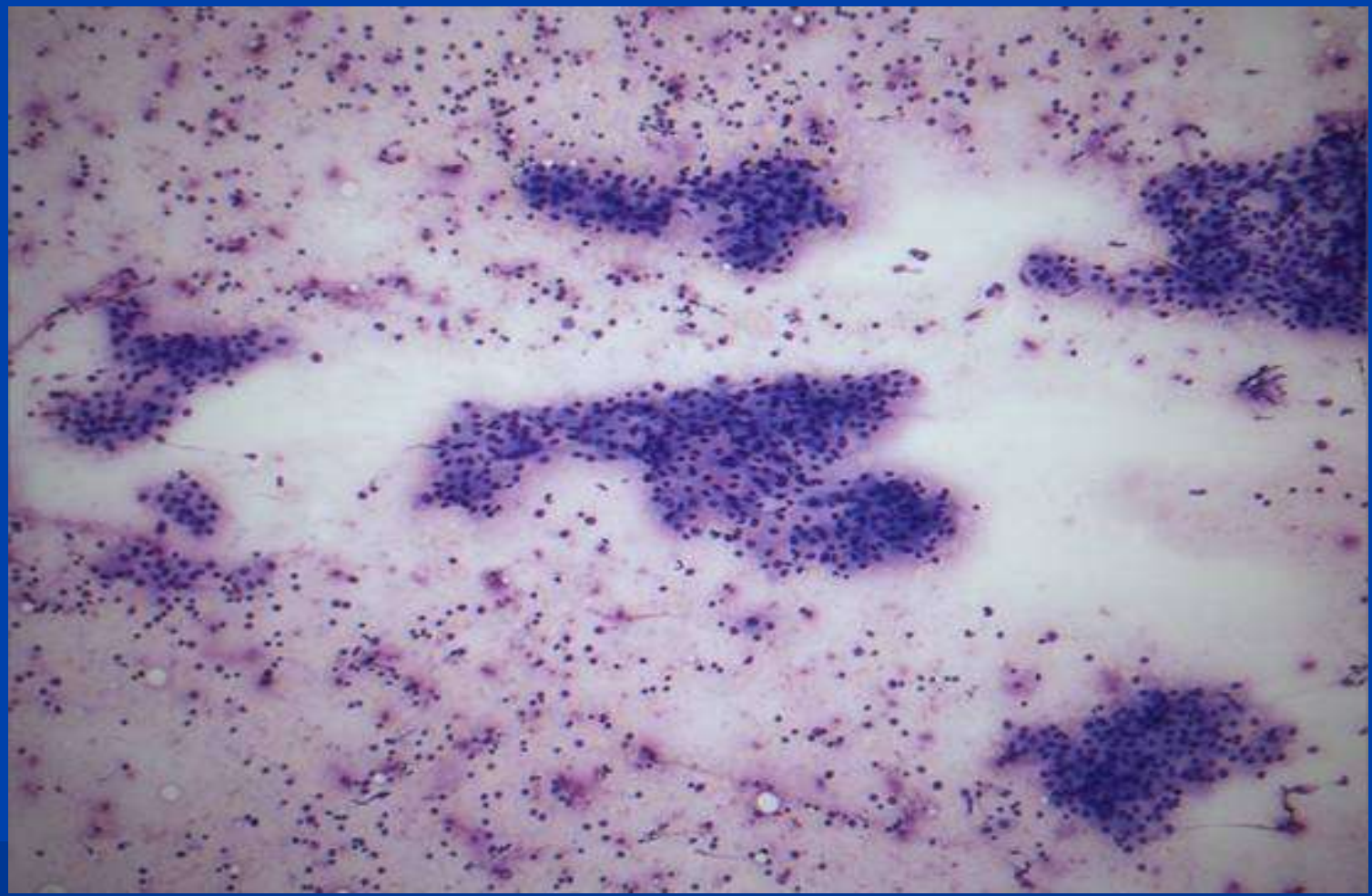
FNA analogy

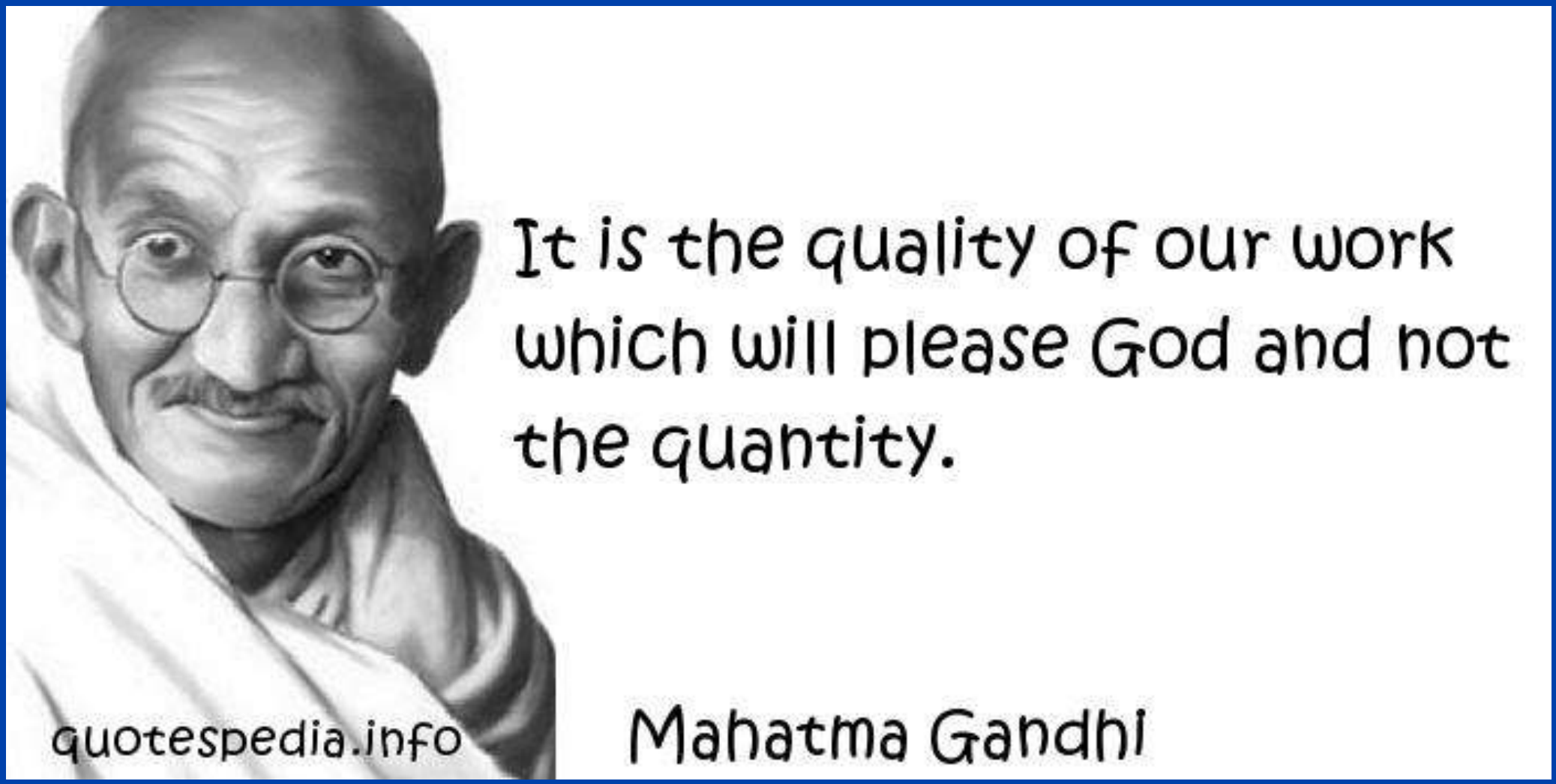


cells only, with no architecture or surrounding anatomy

Quality

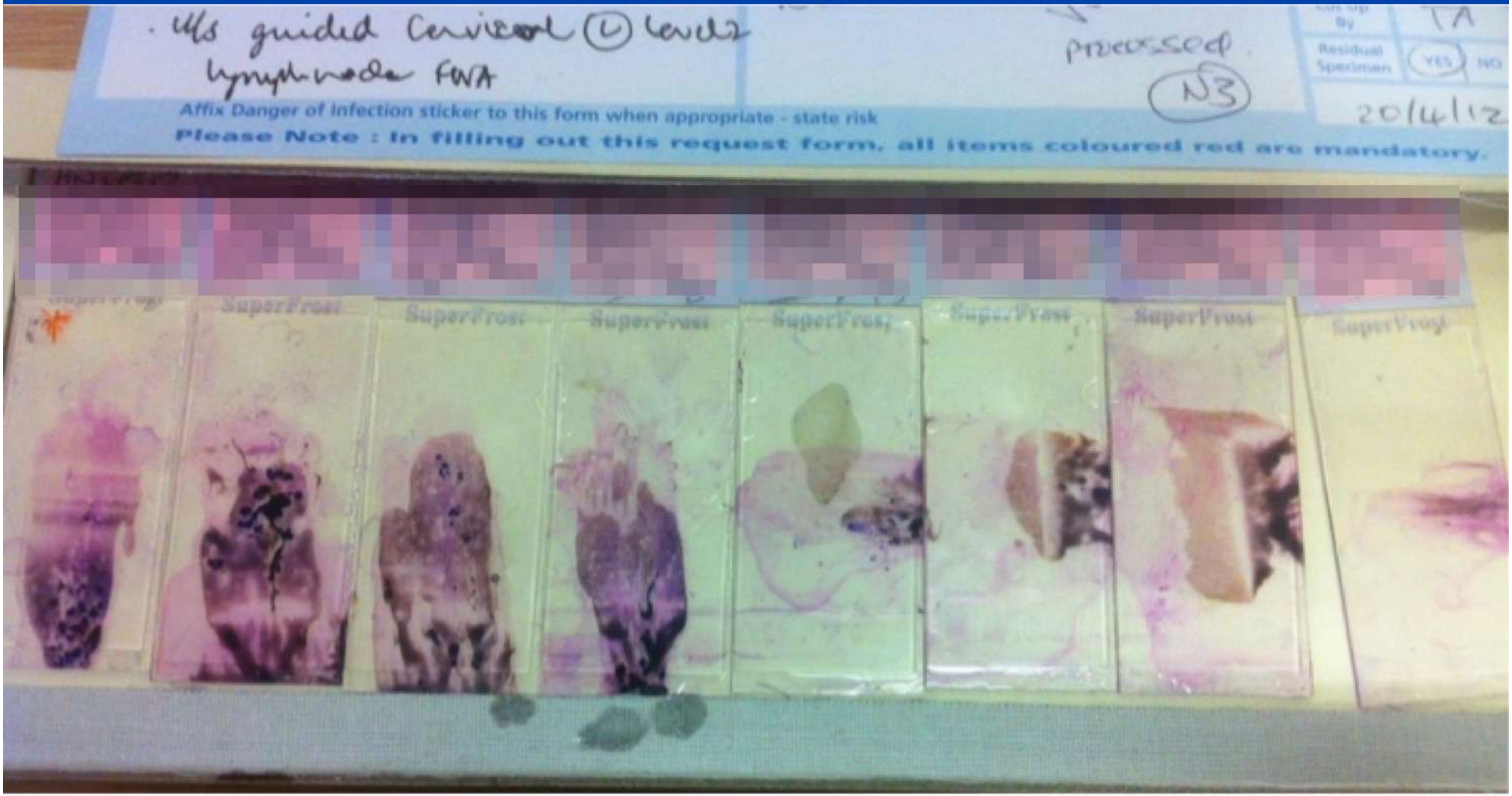
The aim is to produce a smooth, egg-shaped monolayer. “Sticky” epithelial groups as pictured here can be distinguished from dispersed lymphoid cells





….but to please your pathologist you need quantity too!

Don’t put all the material on the slides!



Pathology triage extra material depending on initial features

Micro

Cell pellet

Pap stains

Flow cytometry

Derriford One-Stop Clinic

- NICE - *Improving outcomes in head and neck cancers(2004)*
  - *"specialist clinics for management of patients with neck lumps structure in a similar way to breast lump clinics with a cytopathologist present and preferably ultrasound guidance"*
- Estimated £20,000 per clinic per year
  - but benefit patient and Trust by reducing delay and avoiding repeat visits
  - Initial £28,000 capital. £78 vs £56 per normal clinic visit. Saving of >£14Kpa reducing repeats
  - 100% patients said they preferred OSC to individual appointments
  - 88% said they were told a diagnosis at end of clinic

Setup of Derriford clinic

- Fast track clinic December 2004 ENT dept
- Thursday weekly 11am-1pm; 8-10 patients
- 2 Maxillofacial Consultants
- 2 ENT Consultants
- 1 Radiologist (3)
- 1 Pathologist (3) and 1x BMS (2)
- Trainees from various specialities

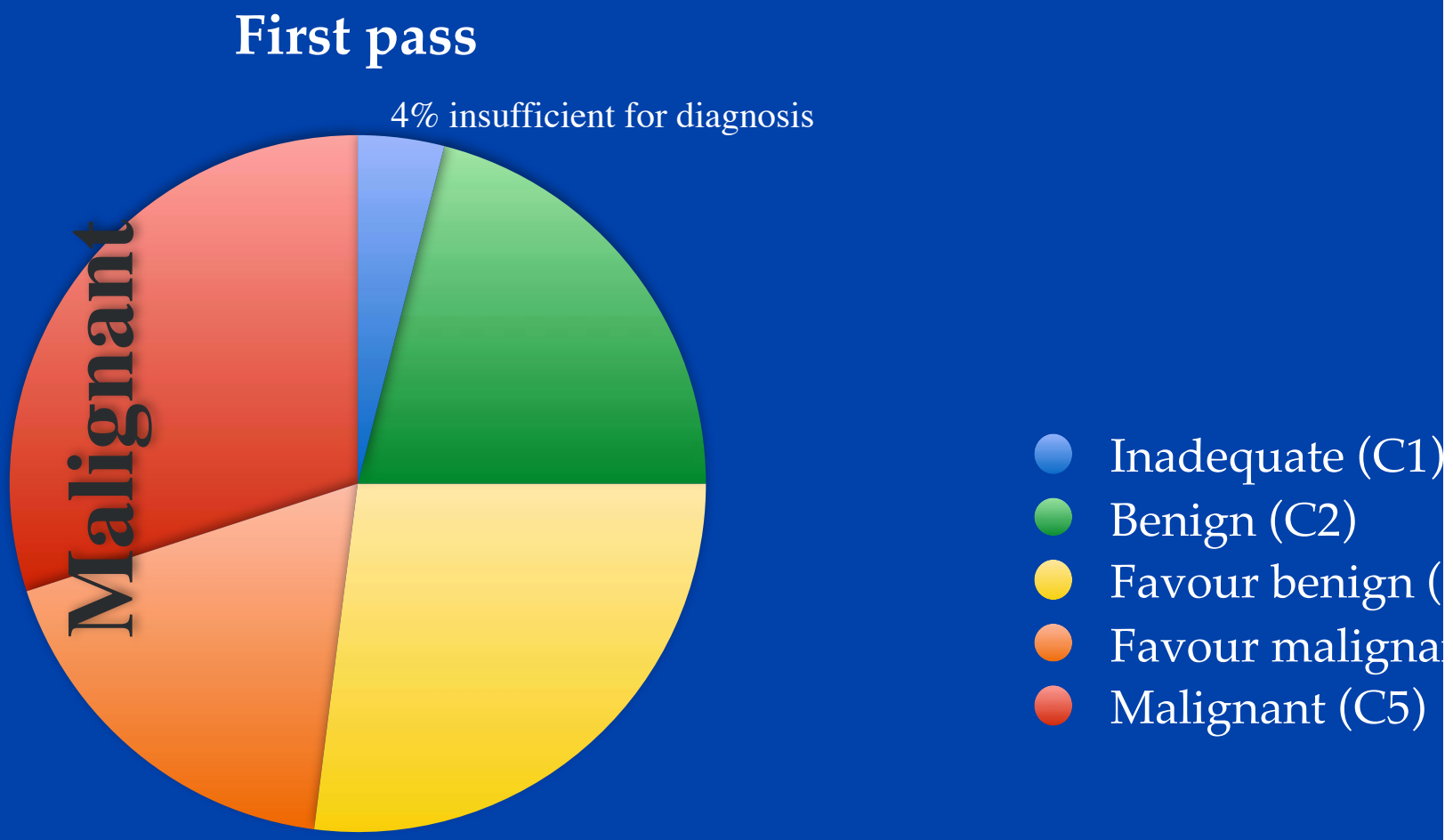
Who and what do we see?

- ~300pa average age 53, malignant av 60
- Most are 2ww referrals
- ~ third are discharged on clinical/USS
- ~ Half have a FNA
  - Enlarged / abnormal lymph nodes
  - Salivary gland lesions
  - Soft tissue lesions and cysts
  - Unspecified neck masses

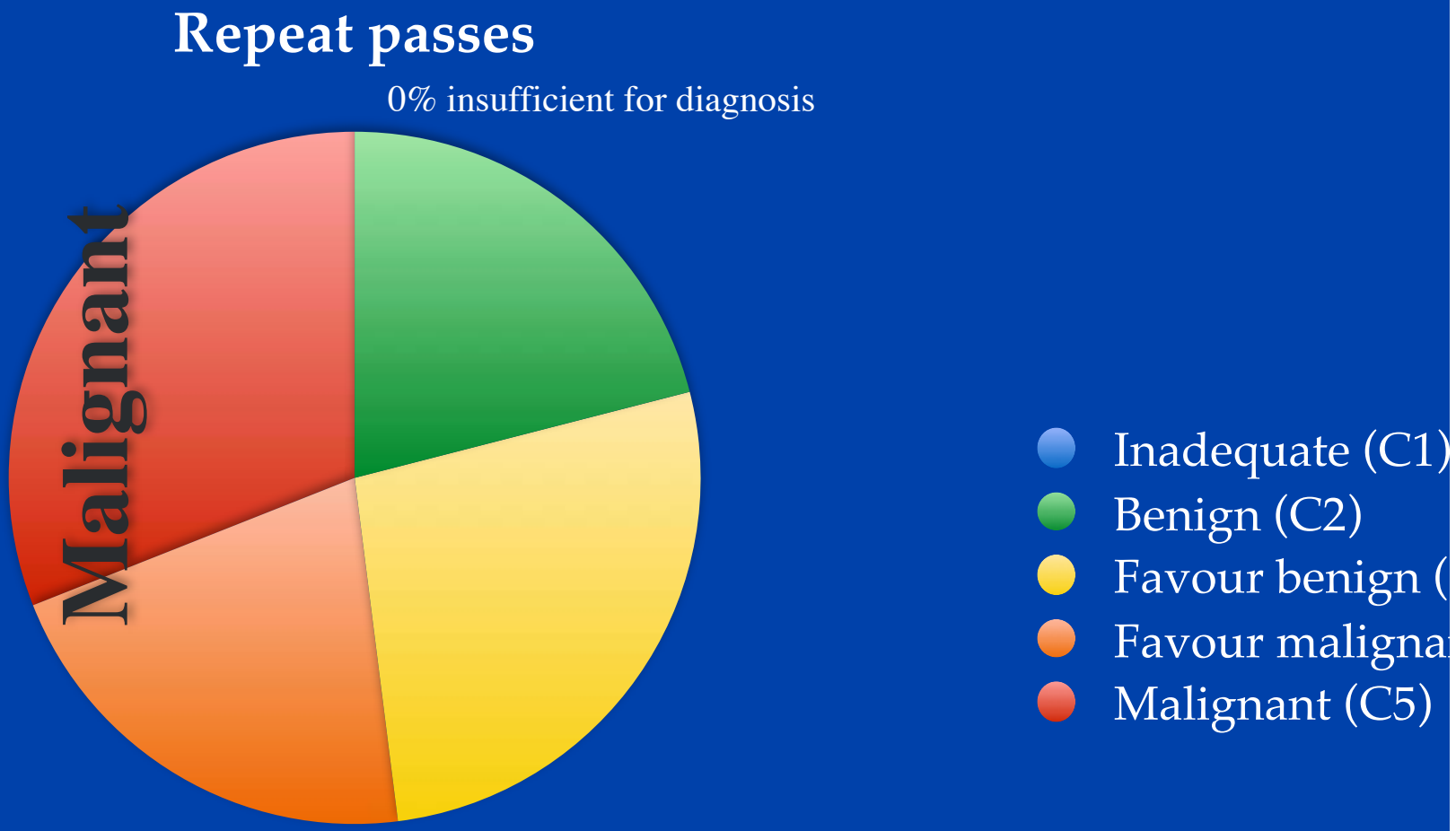
Although criteria for FNA adequacy are established for breast, thyroid, cervix…

for head and neck FNA, RCPath guidance is that findings should be "consistent with the clinical impression"

Pathology audit by C category



Pathology audit by C category



Solitary Cystic lesions

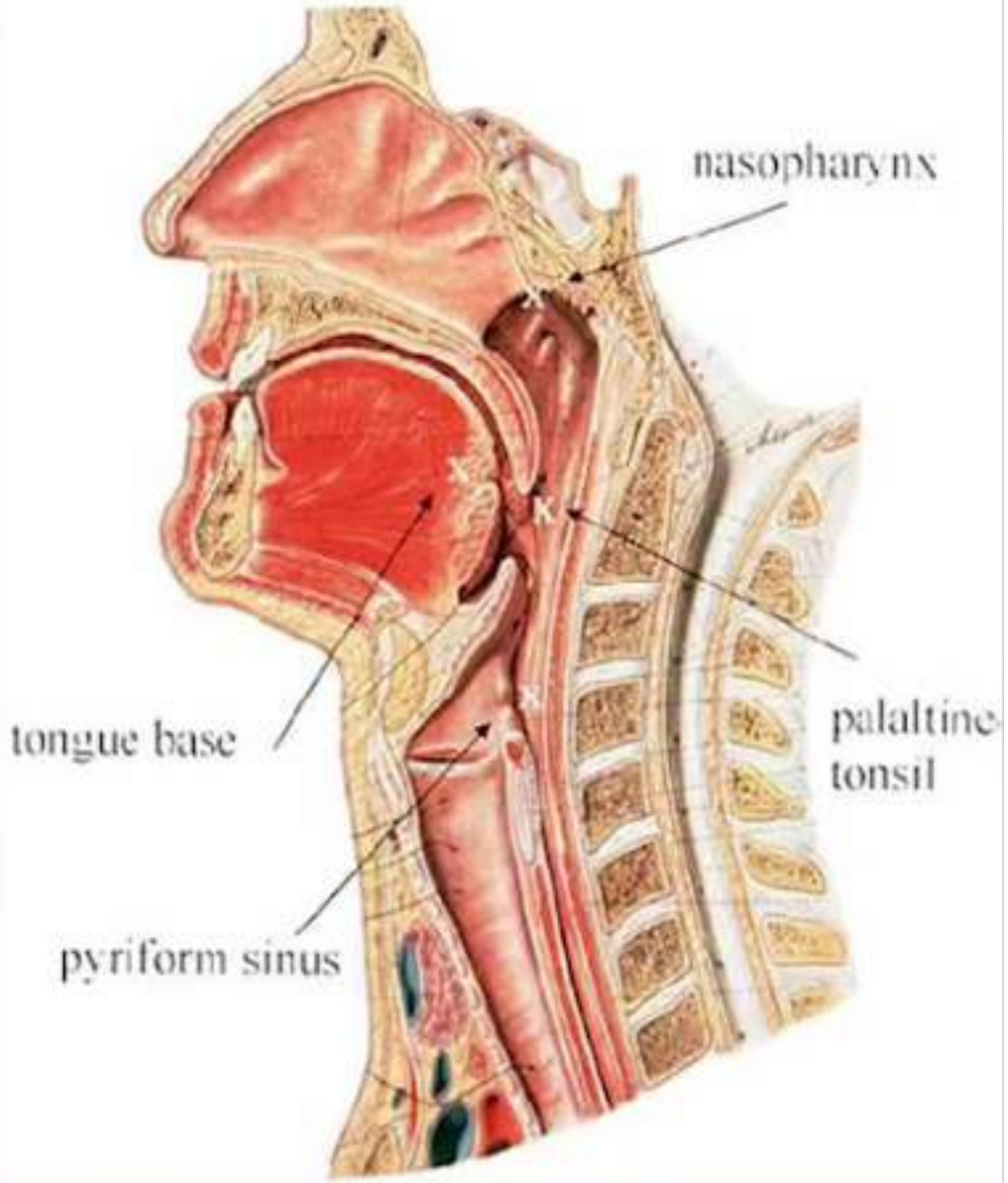
- 45 year old man never smoked min EtOH
- Slowly enlarging cystic mass ant SCM
- USS - partly cystic, partly solid level II
- FNA - squamous cells and debris
- Differential diagnosis = Branchial cleft cyst vs metastatic SCC
- Core biopsy of neck node = Poorly differentiated NK-SCC (HPV-16 positive) with extracapsular spread

Oropharyngeal SCC

- Increasingly recognised as HPV-related
- Better prognosis and response to treatment
- HPV positivity indicates oropharyngeal origin even when no primary seen
- This patient had a 5mm tongue base primary!
- *5% of HPV positive neck node patients remain as "occult primary"*

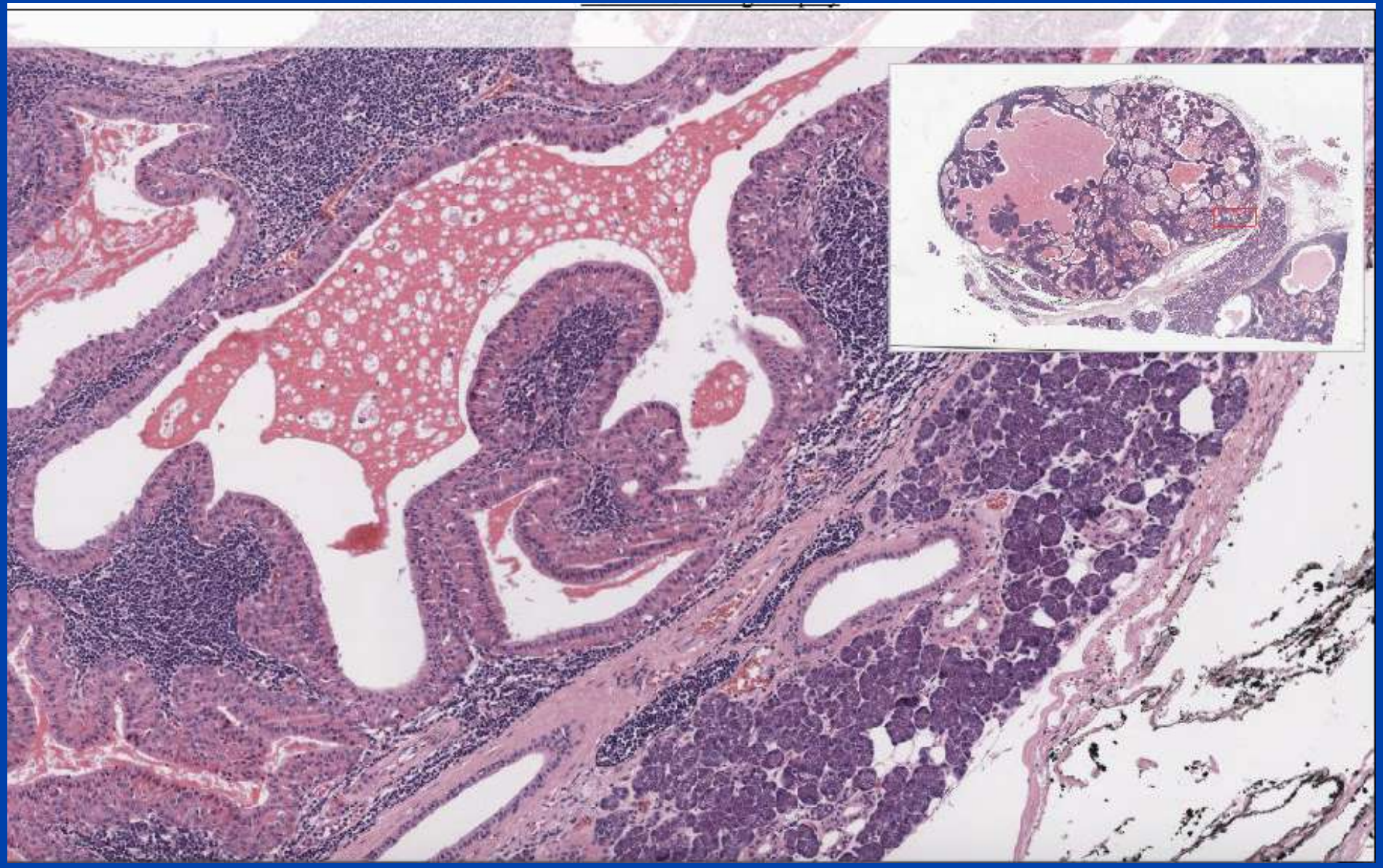
"Good news! The exploratory surgery turned up negative!"

Directed biopsy sites for HNSCC with Unknown Primary



Other cystic lesions eg.Warthin's tumour

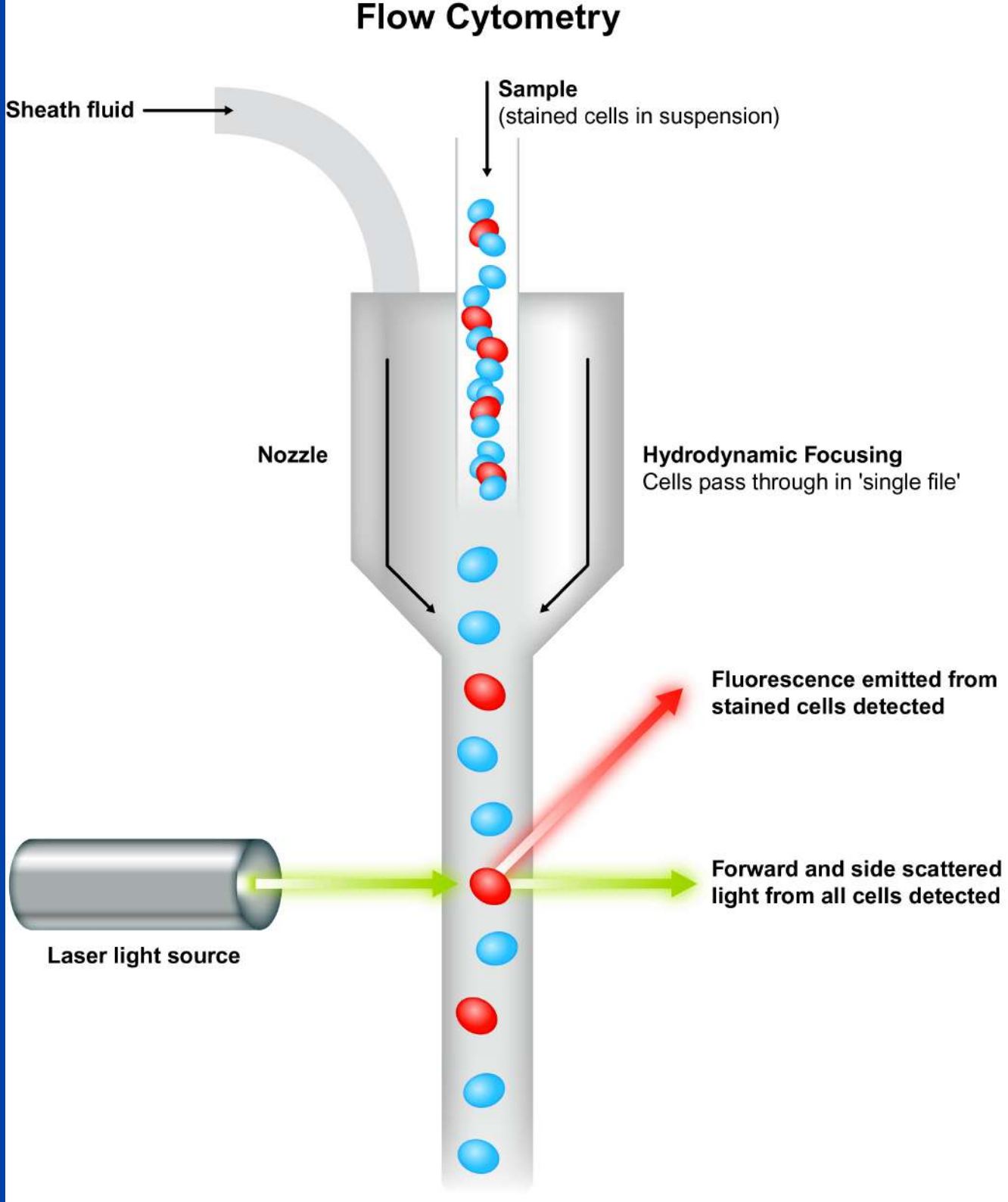
Warthin's tumour - difficult on FNA, easy on core / excision

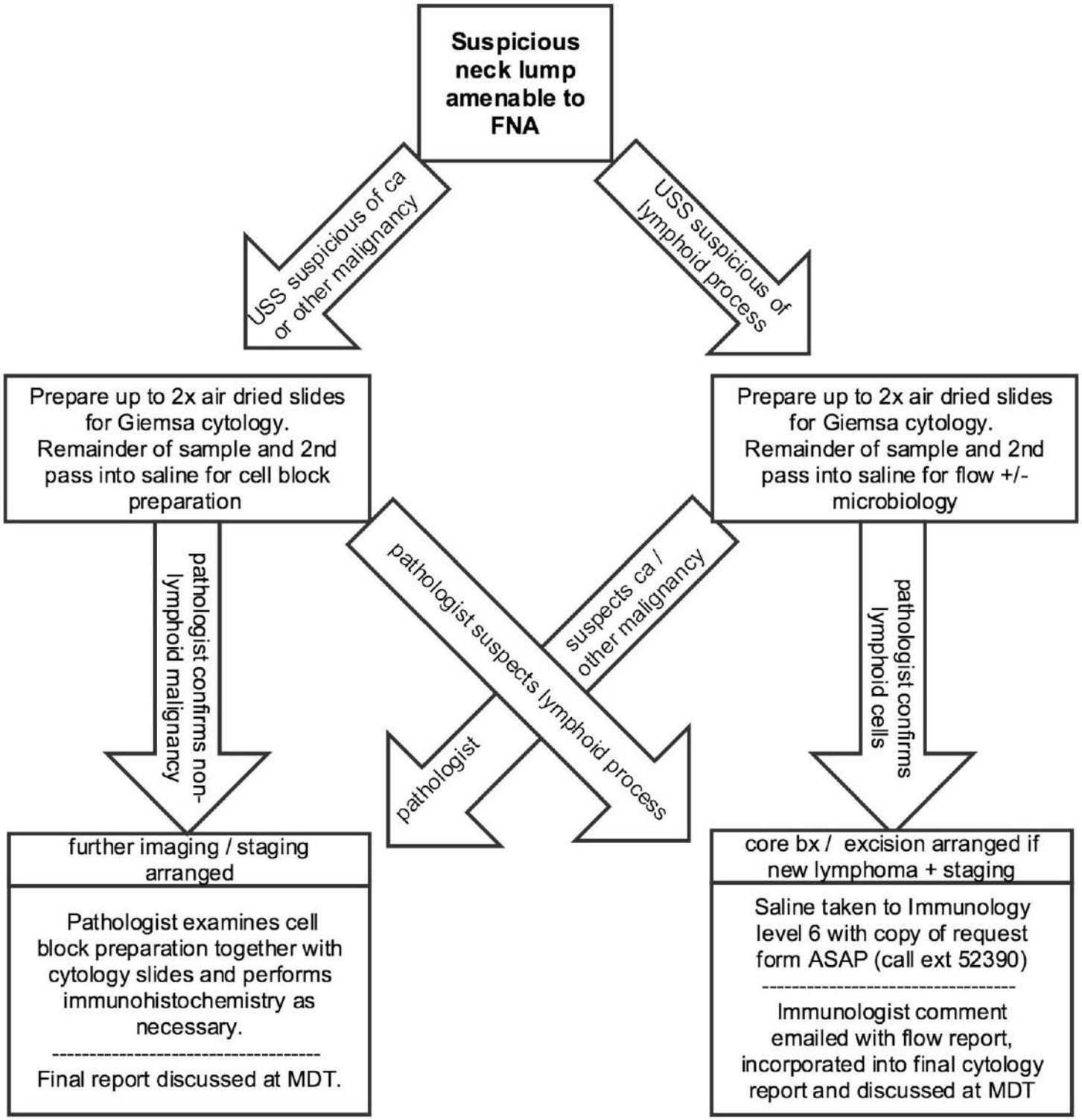


Lymphoma

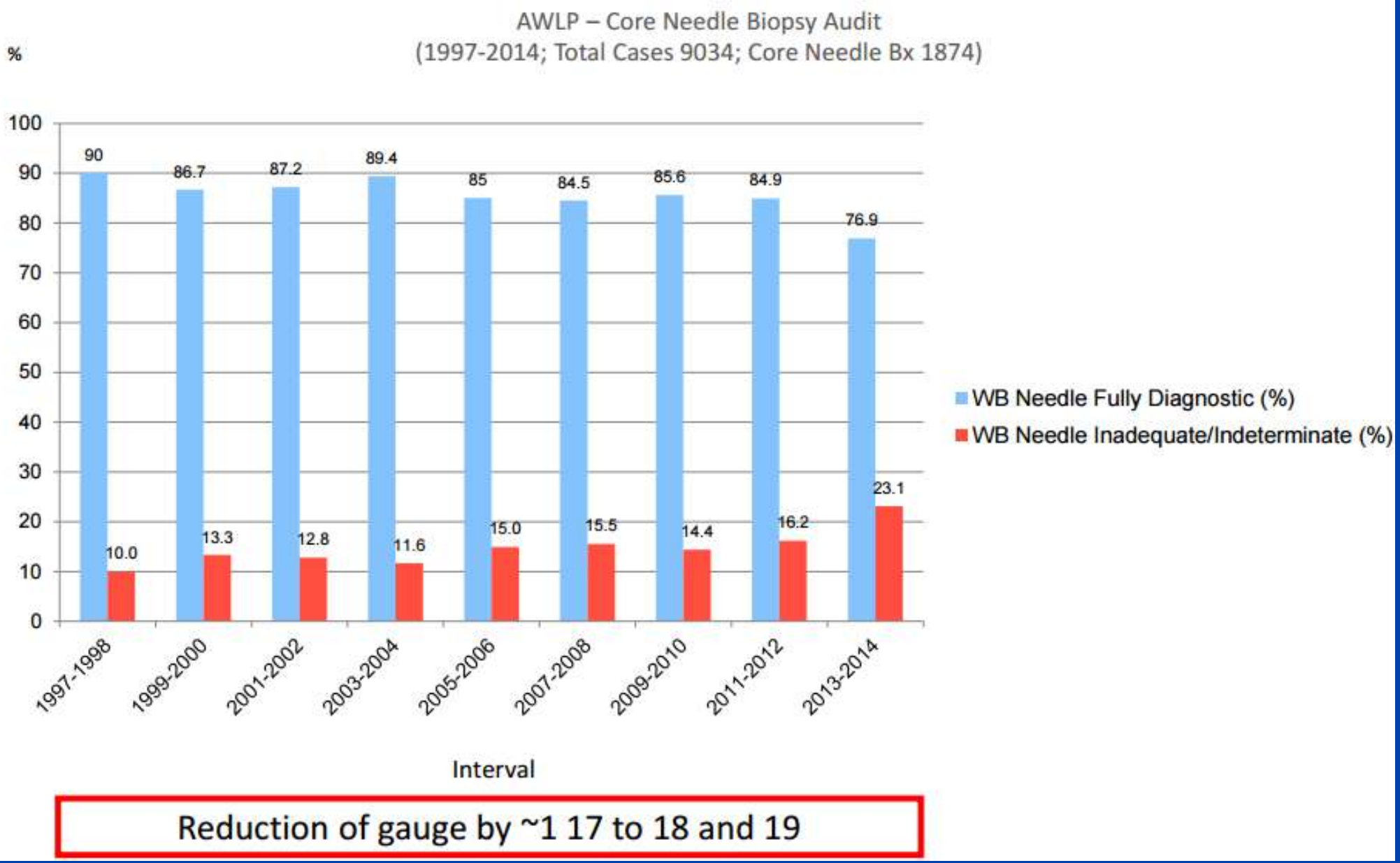
- Most are B cell non-Hodgkin's
- Usually suspected clinically and on USS
  - some turn out to be metastatic ca and other malignancy
- FNA useful for triage to core or excision
- Currently all have a biopsy/excision for confirmation and sub typing before treatment
- Certain lymphomas cannot be subclassified even on core biopsy
- We underutilise flow cytometry in UK (fresh cells in saline/ unfixed tissue needed)

Flow Cytometry



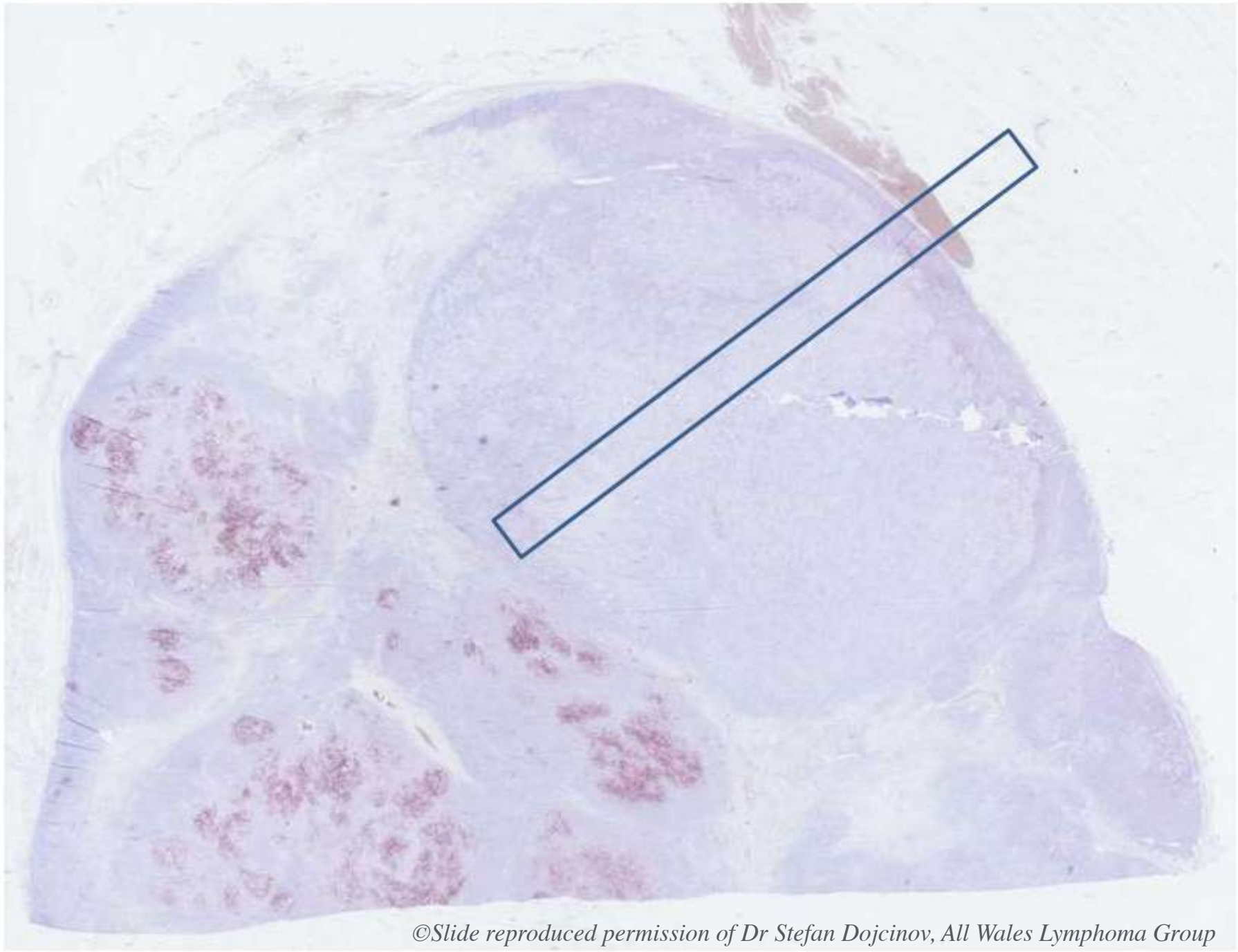

Suspicious neck lump amenable to FNA
USS suspicious of ca or other malignancy
USS suspicious of lymphoid process
Prepare up to 2x air dried slides for Giemsa cytology. Remainder of sample and 2nd pass into saline for cell block preparation
Prepare up to 2x air dried slides for Giemsa cytology. Remainder of sample and 2nd pass into saline for flow +/- microbiology
pathologist confirms non-lymphoid malignancy
pathologist suspects lymphoid process
suspects ca / other malignancy
pathologist
pathologist confirms lymphoid cells
further imaging / staging arranged
Pathologist examines cell block preparation together with cytology slides and performs immunohistochemistry as necessary.
Final report discussed at MDT.
core bx / excision arranged if new lymphoma + staging
Saline taken to Immunology level 6 with copy of request form ASAP (call ext 52390)
Immunologist comment emailed with flow report, incorporated into final cytology report and discussed at MDT

Lymphoma – how good is core biopsy?



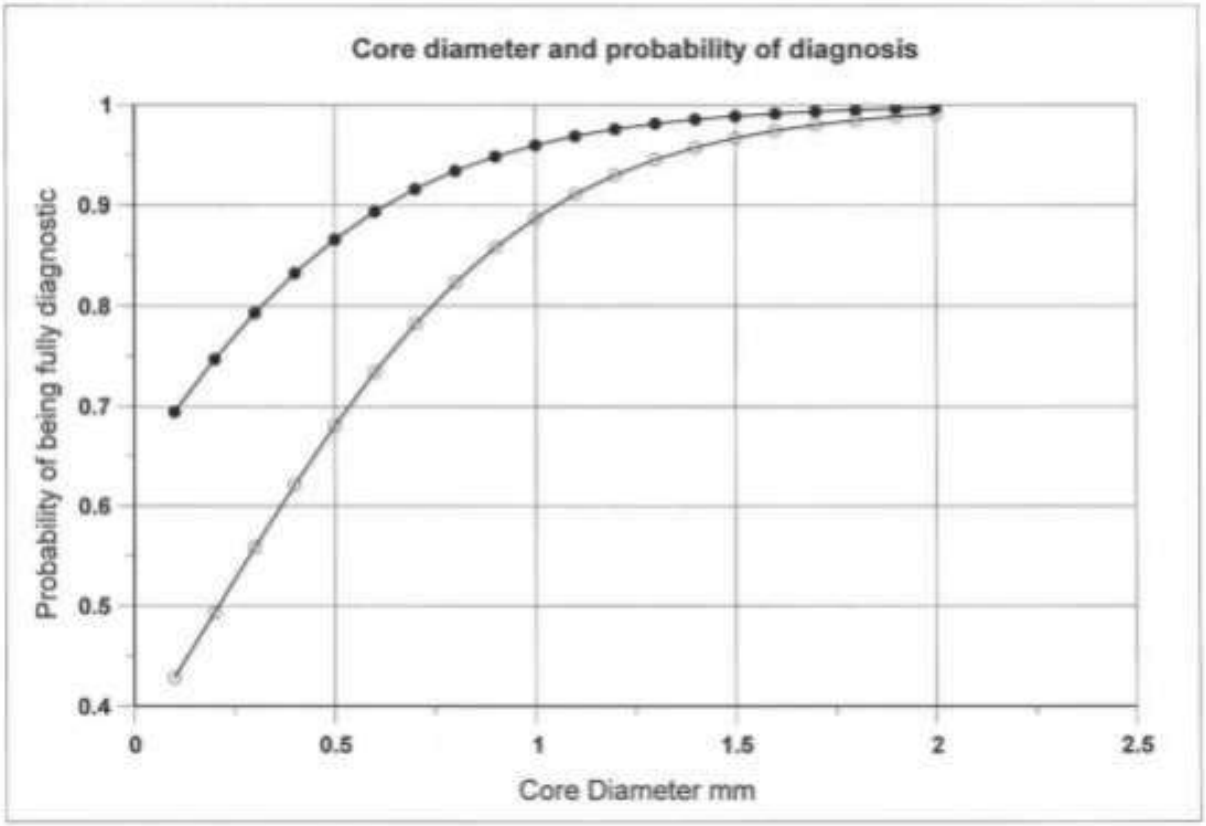
Reduction of gauge by ~1 17 to 18 and 19

Lymphoma – why insufficient core bx?



Lymphoma – why insufficient core bx?

BLPG Core Bx Audit
Core Diameter and Probability of Definitive Diagnosis
(n=277)



Conclusions

- FNA can be used in all superficial neck masses when used wisely
- I recommend at least one additional pass into saline (if pathology staff present) or fixative solution (if not)
  - Please don't spread all the material on glass slides!
- Core biopsy more likely to diagnose less common lesions, metastases with no known primary, and lymphoma than FNA
- Bigger cores and more of them for lymphoma + flow cytometry if possible
- Communication and clinical details!

Where is the one-stop clinic in this vision of the future?

tim.bracey@nhs.net
www.pathkids.com

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CytoFoam® CORE

Simply better

Innovative patented technology for collecting FNA cytology cell-blocks, making immunohistochemistry and molecular investigations simply better.

FNA CYTOLOGY

1 - The device consists of a core of CytoFoam within a tubular plastic housing.

2 - A needle is attached to one end and, if a suction FNA technique is to be used, a syringe may be attached to the other end.

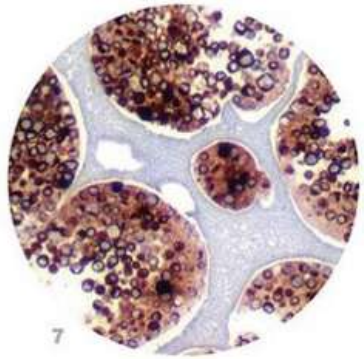
3 - With a needle only technique the assembly should be held by the needle hub. If a suction FNA technique is used the assembly should be connected to a syringe.

4 - The sample is absorbed into the tip of the Cytofoam. Once the FNA sample has been collected the blue plastic housing should be separated from the needle.

5 - The foam core MUST be protected by fitting the plastic guard cap (supplied) over the tip before formalin fixation for at least 12 hours. After formalin fixation the core is pulled from the adapter, wrapped in processing paper, paraffin processed and sectioned in the usual way.

6 - An H&E stained section showing tumour cells within the Cytofoam.

7 - Immunohistochemistry for Cytokeratin-7. CytoFoam Core cell-blocks are also ideal for other molecular investigations including FISH.



Exmoor Innovations Ltd.
Lisieux Way, Taunton TA1 2LB
T 44 (0) 1823 354307 **F** 44 (0) 1823 354035
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