FNA SAMPLE PREPARATION

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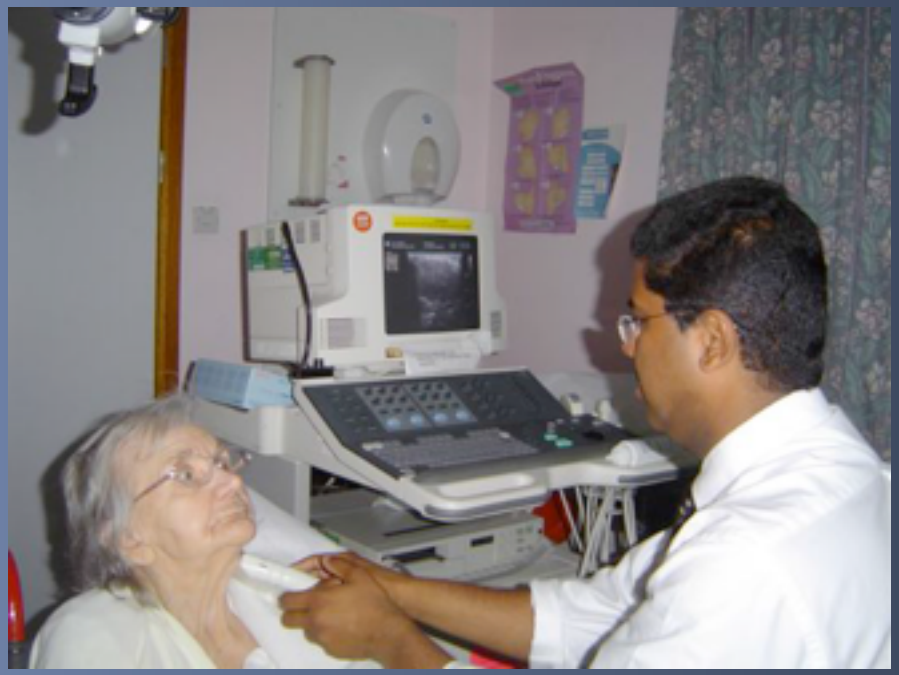
NHS Trust

One stop neck lump clinic



The three Qs

Quantity

enough sample to make a diagnosis!

Quality

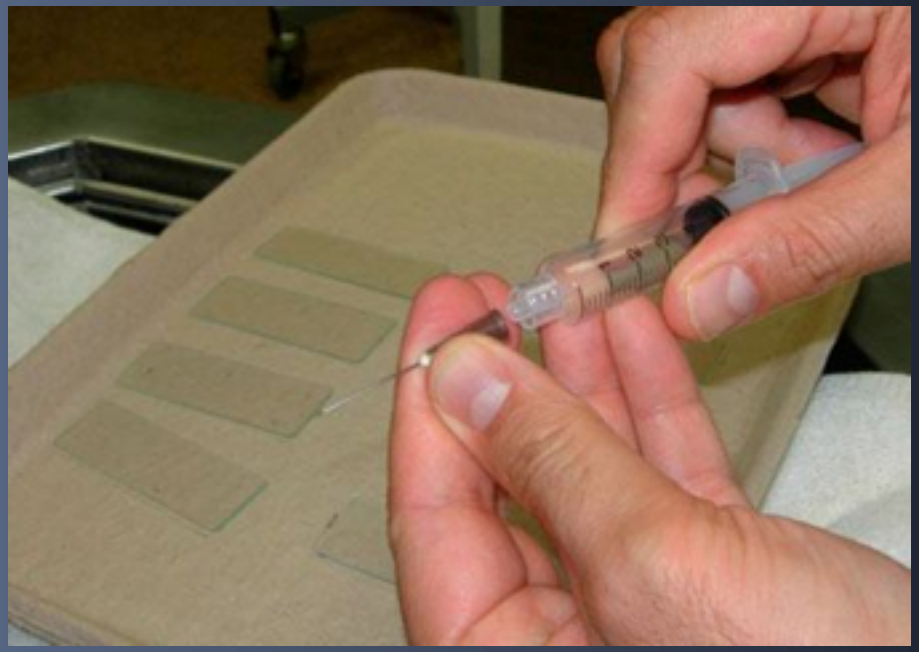
preventing poorly spread or crushed cells

Questions!

What clinical question is being asked?

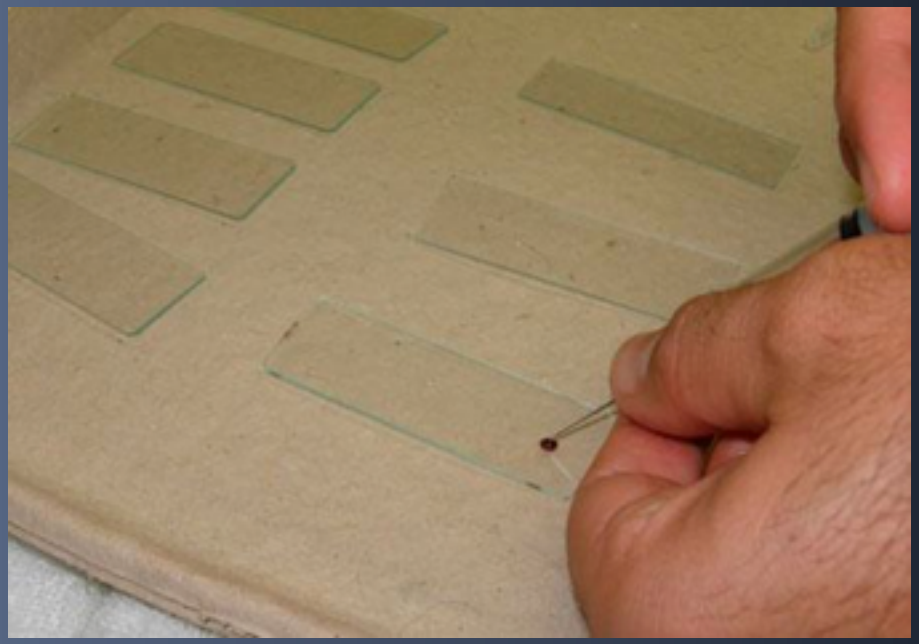
Is FNA the right test for this clinical question?
Ask your pathologist what preparations they prefer

Air-dried slide preparation technique



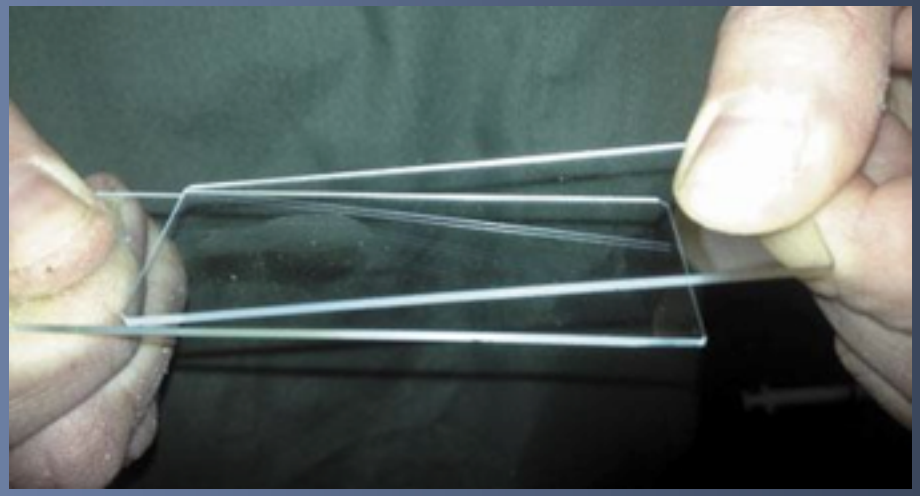
add an air-filled syringe to the needle (containing sample in barrel and hub)

Air-dry slide preparation technique



aspirate the sample with the needle touching the slide to prevent spatter, a cm or so away from the frosted end of the slide

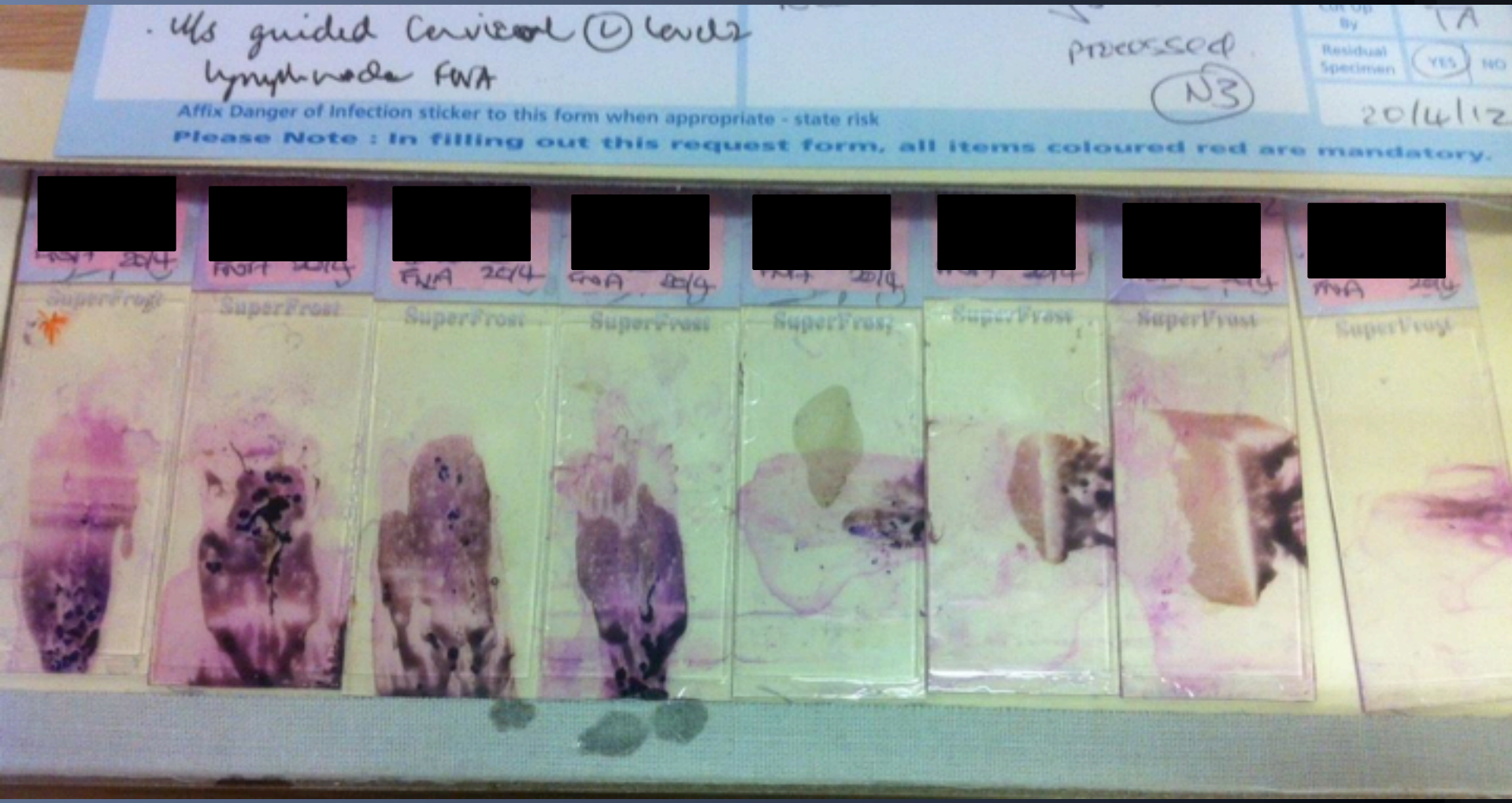
Air-dry slide preparation technique



"float" one slide onto the other and gently glide to produce an evenly spread, egg-shaped monolayer

See the first two techniques on youtube here or http://www.papsociety.org

Quantity - don't put all the material on slides if you have a lot of sample



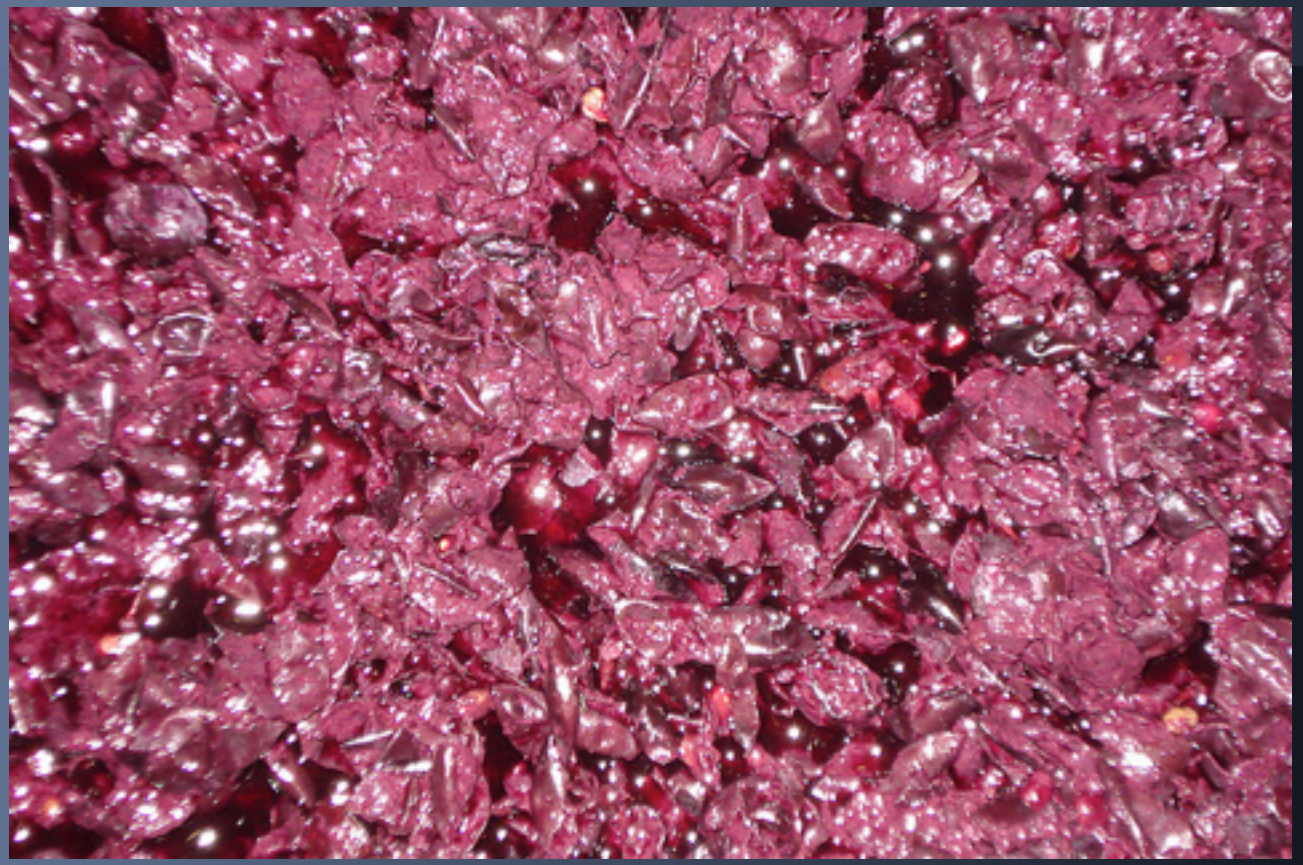
Quality - an analogy

In a histology slide, architecture of the original 3d lesion is retained

Quality - an analogy

In cytology cells are removed from the lesion but in a well prepared sample the cells retain some architecture

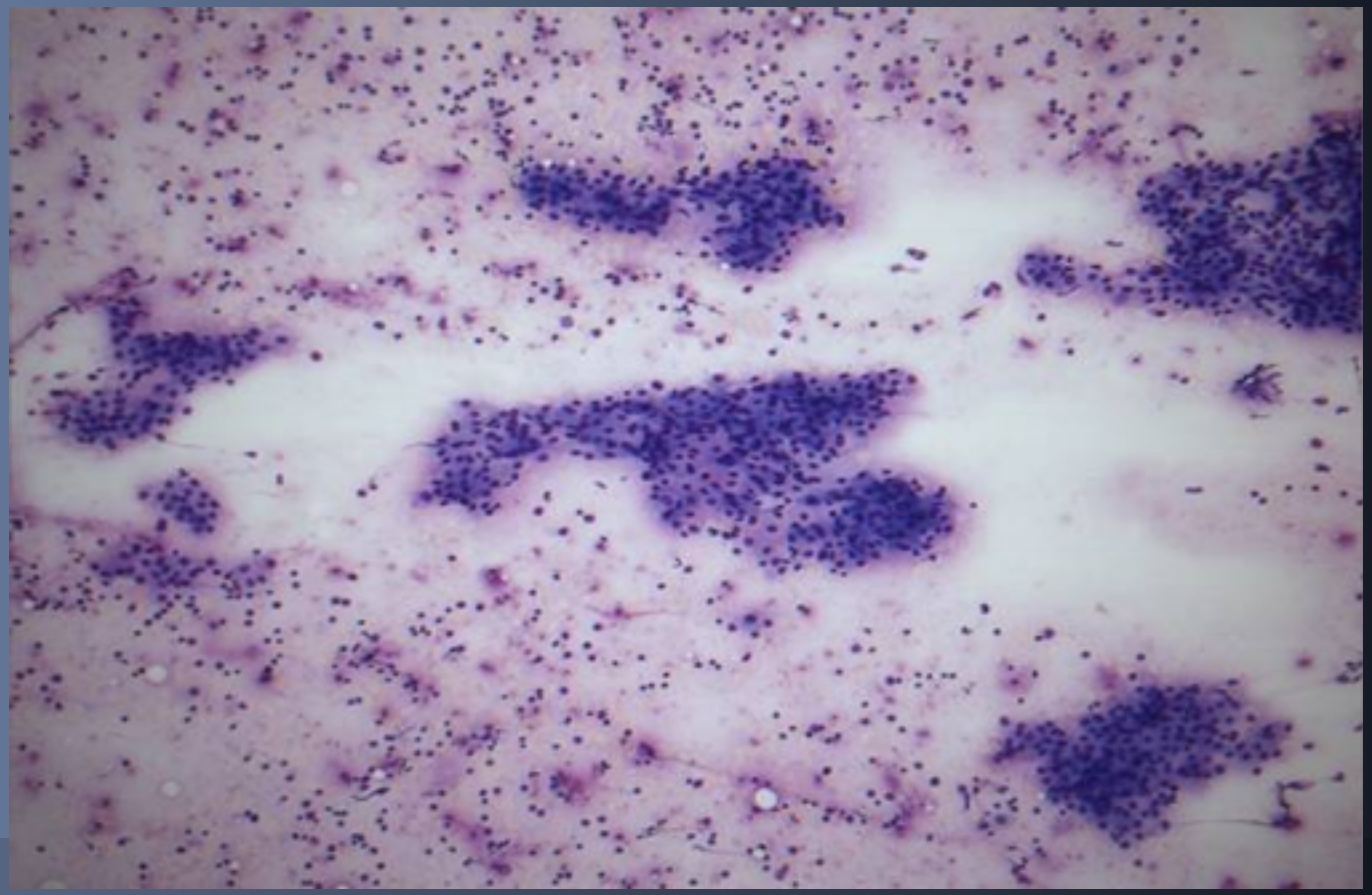
Quality



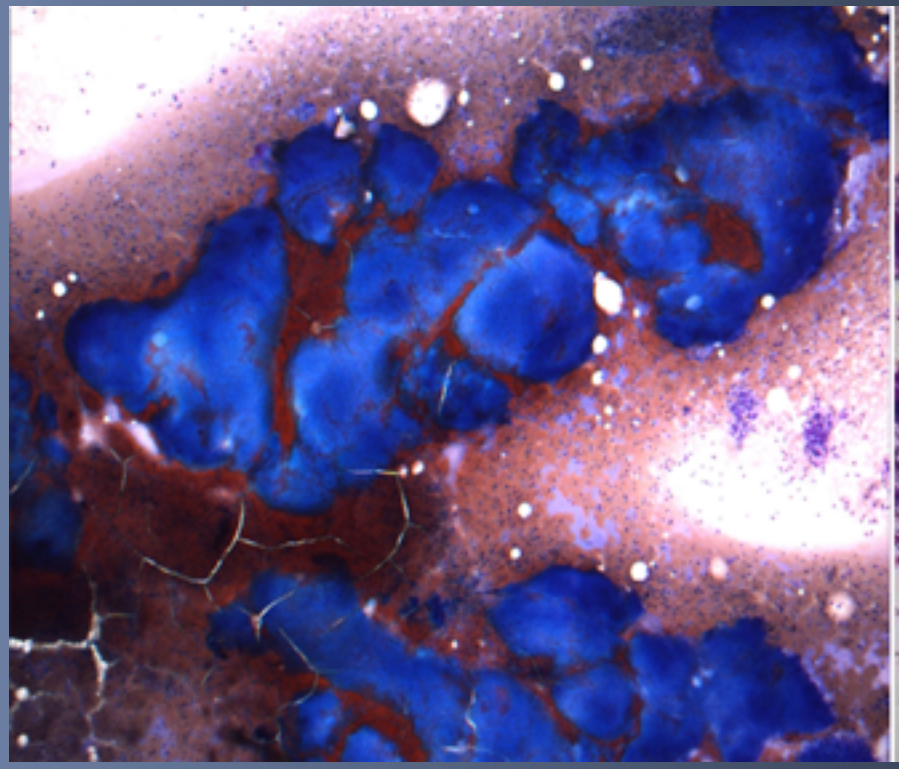
When the sample is crushed the cytologist may not be able to determine the cell type

Quality

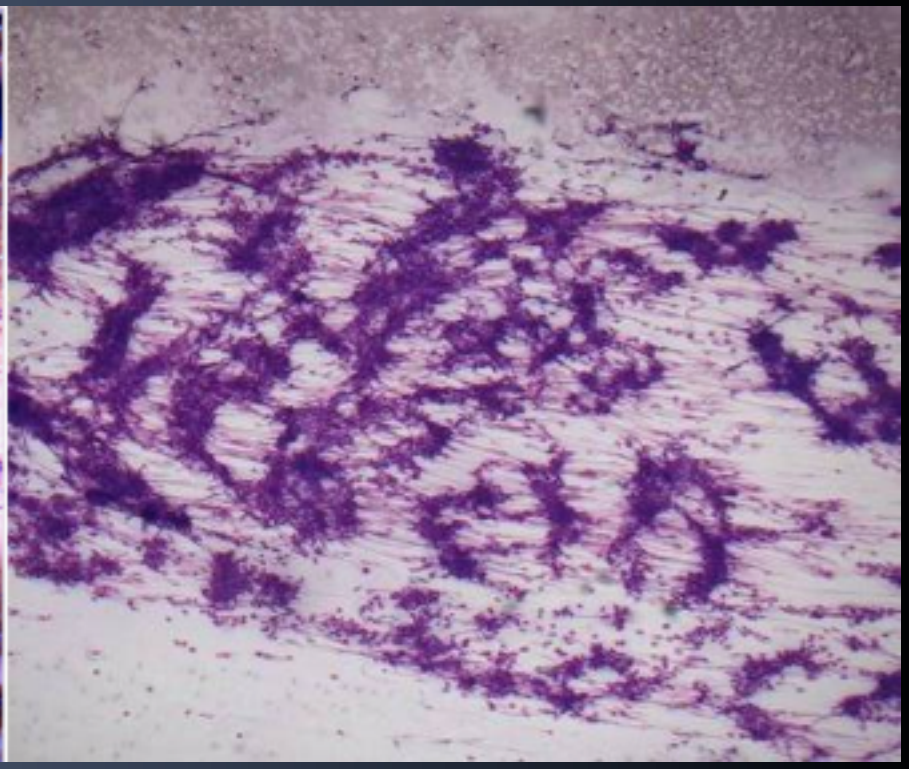
The aim is to produce a smooth, egg-shaped monolayer



Quality - what not to do



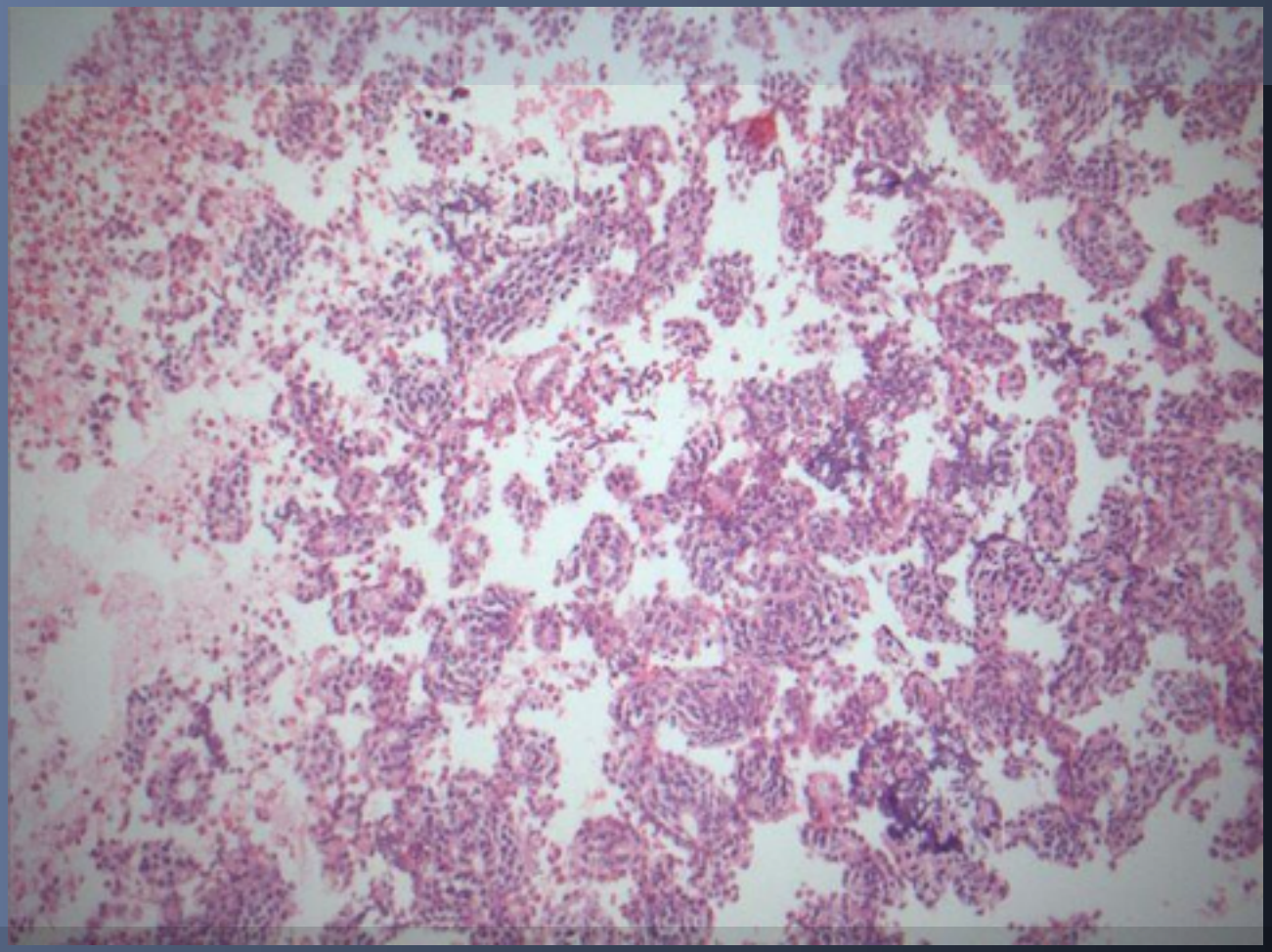
poorly spread thick clumps



crushed and overspread

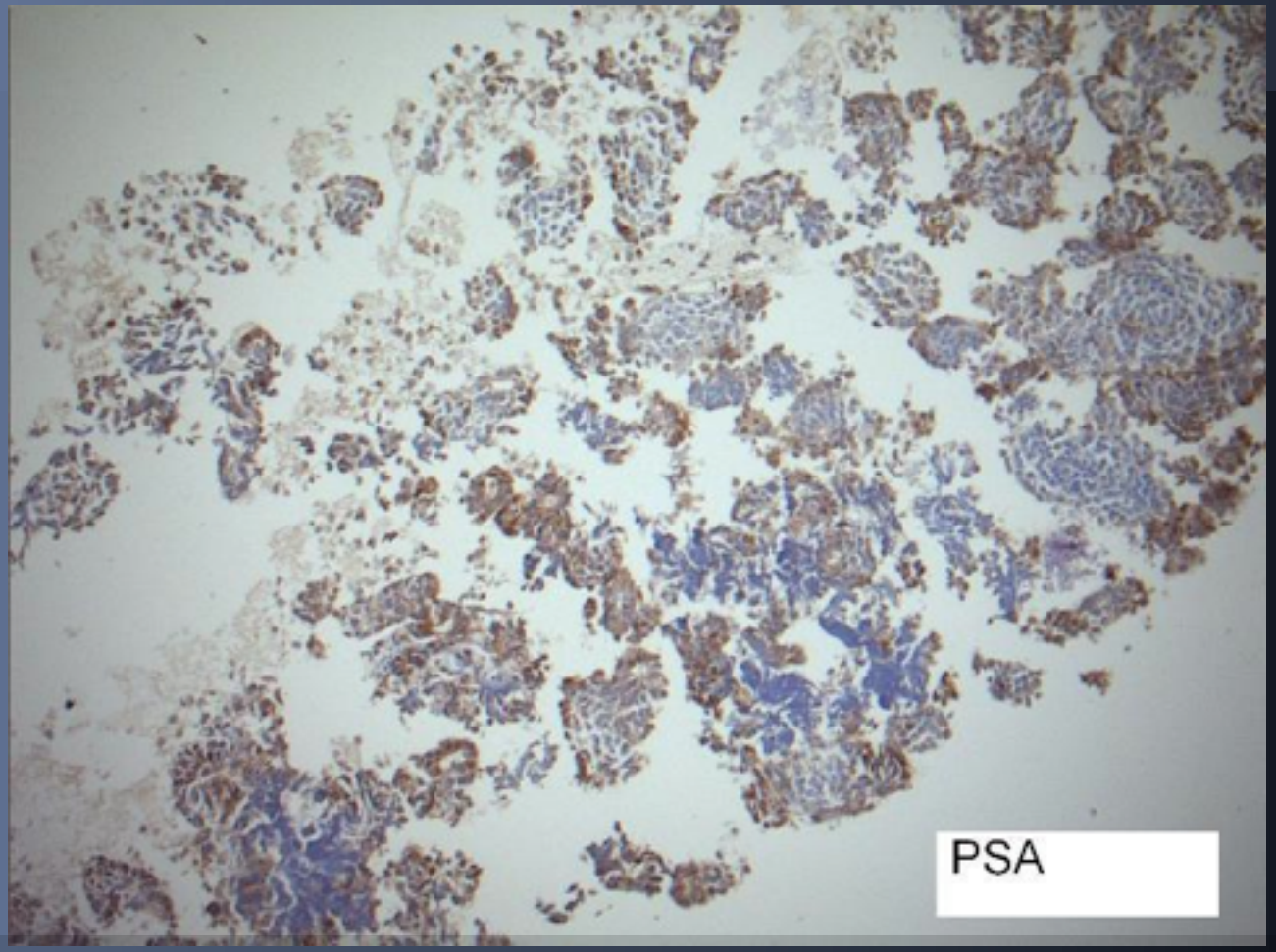
NB. if in doubt, the whole sample can be placed into saline or transport medium and cytology staff can prepare slides and/or cell pellets

Quantity AND quality



Cell pellet preparations enable histological sections and additional studies such as immunohistochemistry

Quantity AND quality



Metastatic prostate adenocarcinoma to a posterior triangle neck node

Question!

- What is the clinical question being asked?
- Please provide clinical site and history

eg. “abnormal level 1 lymph node with tongue tumour” not “neck lump”

- Are you trying to confirm recurrence?
- or confirming metastasis from a known primary? (carcinoma, MM, sarc, lymphoma)
- Are you making a primary diagnosis or metastatic node with unknown primary site?
- Do you need to provide genetic material for predictive tests (eg. EGFR, HER2) ? flow? micro?
- consider whether core biopsy may be better for a given case

The poor man's cell block

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ABSTRACT
The authors describe a simple method for making formalin or isopropyl alcohol vapour fixed cell blocks from fine needle aspiration cytology specimens that we refer to as 'The Poor Man's Cell Block.'

The utility of fine needle aspiration cytology can be enhanced by the collection of cell blocks for immunohistochemistry and other molecular studies. We describe a method for making vapour fixed cell blocks that we have developed over the last 10 years. This technique, which we refer to as 'The Poor Man's Cell Block,' requires no equipment or reagents that are not available in an outpatient department or a radiology department. It has developed from a method that we first described in 2003.[1] The material is expelled from the fine needle aspiration needle to form a blob on the inside of the inverted lid of a universal container (figure 1). Sometimes the specimen is expelled as several blobs. These can be shepherded back into a single larger blob by an 'air-football' technique using puffs of air from the now empty needle and syringe. The lid is left inverted while a ball of tissue paper is pushed into the bottom of the universal container. A small amount of formalin, about 2 ml, is added to the container and soaks into the tissue paper. container. The container is screwed on to the inverted lid. The container is then left in the inverted position for at least 6 h at room temperature. By this time, the specimen has been fixed by the vapour and has become solid. It can be prised off the lid of the container with the edge of a scalpel and processed as if it were a biopsy. The specimen is best removed by first flooding the lid with a small amount of formalin so as to gently break the 'limpet' suction between the specimen and the lid. It is important not to let the specimen dry out once it has been removed from the lid, as this makes the specimen hard to section and causes cellular artefact. It should be cassetted and immersed in formalin as soon as possible. The use of isopropyl alcohol swabs is arguably preferable to the use of formalin, as handling formalin is considered to be more hazardous, and isopropyl alcohol vapour appears to fix the cell block more rapidly than formalin vapour. In addition, formalin vapour fixation may give rise to prominent formalin pigment. However, alcohol fixation of any type of cytology specimen should not be used without regard for the changes in immunohistochemical methods that are then required. Formalin-fixed control sections are no longer appropriate, and different antigen retrieval methods may be needed. For this reason, formalin vapour fixation is probably the more practical method. The cell block method described above

Poor man's cell block technique

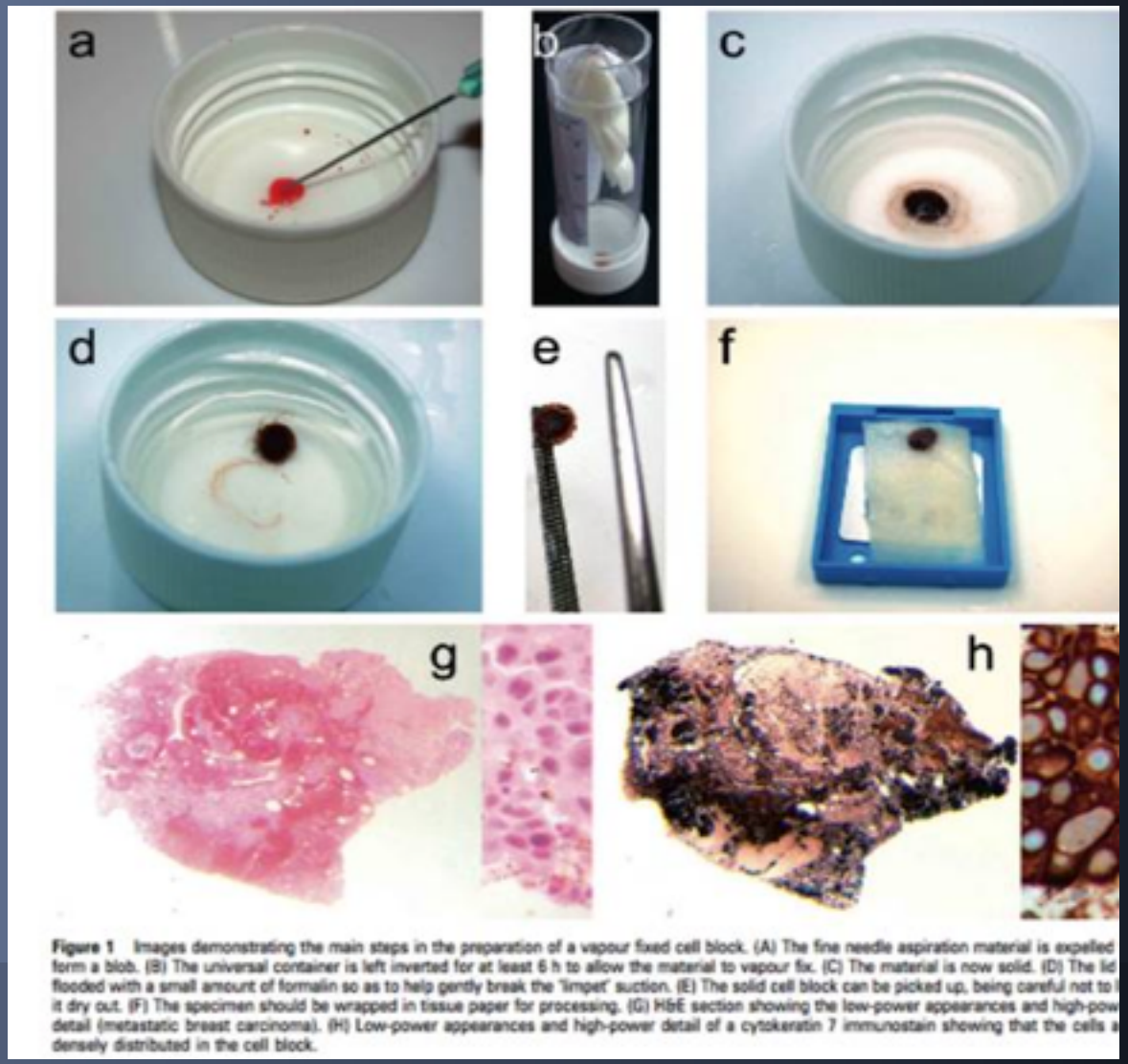


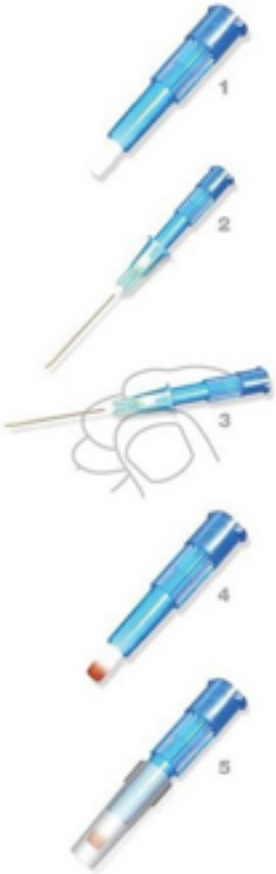
Figure 1 Images demonstrating the main steps in the preparation of a vapour fixed cell block. (A) The fine needle aspiration material is expelled form a blob. (B) The universal container is left inverted for at least 6 h to allow the material to vapour fix. (C) The material is now solid. (D) The lid flooded with a small amount of formalin so as to help gently break the 'limpet' suction. (E) The solid cell block can be picked up, being careful not to it dry out. (F) The specimen should be wrapped in tissue paper for processing. (G) H&E section showing the low-power appearances and high-pow detail (metastatic breast carcinoma). (H) Low-power appearances and high-power detail of a cytokeratin 7 immunostain showing that the cells densely distributed in the cell block.

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.

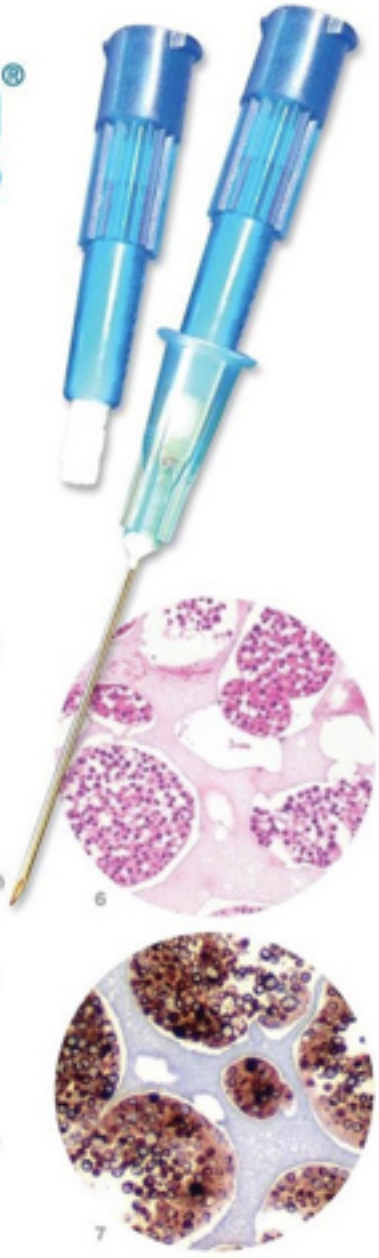
3 - With a needle only technique the assembly should be held by the needle hub. If a suction FNA technique is used the assembly should be connected to a syringe.

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.



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Conclusions

- Quality - sampling technique is important but useless unless the sample is dealt with correctly
- Quantity - if more material than to cover 2 slides consider providing additional material in needle washing solution, foam or poor man's pellet
- Don't prepare numerous slides (2 slides enough except occasionally for blood-stained thyroid samples)
- Think about the clinical question and provide clinical details! *No details may = inadequate sample*

- Talk to your pathologist!

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