

How I do it:

Fine needle aspiration

KETAN A. SHAH

Abstract

Fine needle aspiration test is a useful tool in the investigation of head and neck masses, be they of salivary gland, lymphoid, thyroid or other (branchial cyst) origin. Some practical aspects of this procedure are presented.

Key words: Cytological Techniques

Fine needle aspiration (FNA) is a simple and reliable diagnostic test, the outcome of which depends largely on the sampling technique. Its sensitivity and specificity in the diagnosis of lymph node, salivary gland and thyroid enlargement is high. It is also useful for the investigation of miscellaneous neck masses such as branchial cysts and in differentiating them from cystic metastasis of squamous carcinoma.

This simple out-patient procedure requires no anaesthesia, although for children local application of an anaesthetic cream one to two hours before the procedure is recommended. It has no serious complications and only infrequently is local bruising encountered. Rare complications documented in thyroid FNA include tracheal puncture (resulting in a coughing paroxysm) and transient laryngeal nerve palsy.

Materials

Ten ml syringes, 23 G (blue hub) and 25 G (orange hub) needles, frosted glass slides, orange sticks and alcohol fixative (desirable) are required. The last can be stored in plastic slide jars with screw-top lids (Stretton Young jars), obtained from the laboratory. It is advisable to change the fixative after every clinic as dilution by tissue fluid decreases its efficacy. A useful tool to acquire, if regularly performing FNAs, is a syringe holder (one such example is from Cameco Ltd., London SW10 9EL, Figure 1). This provides good control during the aspiration process.

Before the FNA

The procedure is explained to the patient. The slides should be labelled with the patient's name before

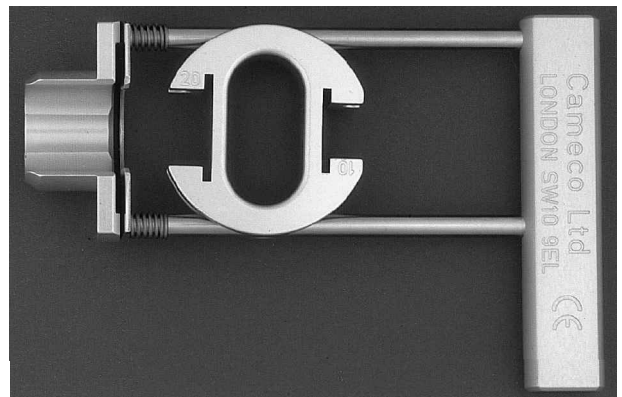


FIG. 1
Syringe holder

starting the procedure to avoid mistakes in busy clinics. Proper positioning of the patient is important in order to gain unhindered access to the site. For aspirating thyroid masses, the patient is made to lie supine, with a pillow placed behind the shoulders to slightly extend the neck. The patient is told not to speak or swallow during the procedure as the thyroid moves with speech and deglutition. For other head and neck masses, having the patient lie on a couch where the back-rest is raised between 30° and 45° is satisfactory.

FNA technique

The site is cleaned with an alcohol swab. The mass is steadied between the index and middle fingers of the non-dominant hand, creating a window through which the needle is inserted. The progress of the

needle is gauged by the sensation generated on the fingers steadying the mass. Once in the mass, the piston is withdrawn fully to create suction. The needle and syringe are then moved to and fro within the mass, in the direction of insertion, while maintaining the suction. This separates cells in the tissue and draws them into the needle. The number of 'passes' required depends on the cellularity and vascularity of the mass. In any event, suction should be released and aspiration terminated once material is seen in the hub. The needle is withdrawn and firm pressure applied on the site with cotton wool (the patient is asked to assist in this).

Helpful tips

- (1) The 'passes' are made in the direction of needle insertion. Moving the needle in different directions traumatizes the tissue causing haemorrhage and dilution of the aspirated material.
- (2) The suction (piston) must be released before withdrawing the needle. Otherwise, material will get sucked into the syringe, from where it cannot be released for making smears. (If this happens inadvertently, saline is aspirated into the syringe and the washings sent to the laboratory).
- (3) Needle washings are non-contributory when the smears contain insufficient material and are not required when a good aspirate/smear has been obtained.
- (4) If fluid is obtained on inserting the needle (as in cases of branchial cyst, colloid goitre or other cysts), as much as possible is aspirated by holding the needle steady or manoeuvring it gently. The suction is released when the flow stops and the fluid transferred to a plain container/transport medium for laboratory analysis. Re-aspiration of any residual masses is recommended.
- (5) The thyroid gland is vascular and aspirates from it can be 'haemorrhagic'. To minimize this, the aspiration should be stopped after three or four 'passes', even if no material is seen in the hub. Some operators advocate using a needle alone (without suction), relying on capillary action to draw up the cells.
- (6) The 25G needle is useful for aspirating superficial and the 23G needle for deep-seated masses.
- (7) FNA does not require 'brute' force. The best aspirates are the ones carried out gently and with the least blood contamination. When material does not appear in the hub (as occurs with some salivary gland neoplasms), stop after eight or 10 'passes'.

Preparation of slides

The needle is detached from the syringe, air sucked through the nozzle, the needle re-inserted and material gently deposited (blown out) on a slide, close to the frosted end. Only enough material is released such that subsequent smears do not cover

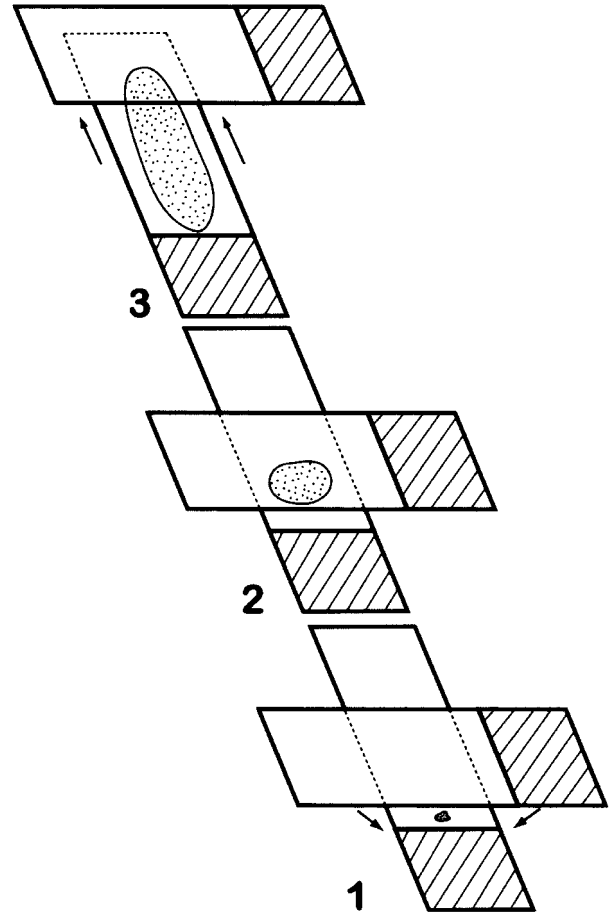


FIG. 2

Smear preparation after FNA

the whole slide. It is better to prepare several slides than to have a few thick, suboptimal smears (Figure 2). Air-drying is universally accepted; these slides are stained using Romanowsky stains. Whenever feasible, some smears should be fixed in alcohol (a couple of minutes is sufficient). These smears are stained using the Papanicolaou (or rarely, haematoxylin and eosin) stain. It is critical that smears are placed immediately in alcohol upon spreading as, paradoxically, air-drying introduces artefacts which hinder interpretation of this material.

Helpful tips

- (1) The tip of the needle should be placed close to the slide when extruding material to prevent splattering.
- (2) Excessive pressure must be avoided while smearing as it will crush the cells.
- (3) Any material that still remains in the hub is collected using a bevelled orange stick and smeared on another slide. This material is often diagnostic.
- (4) Colloid goitres and some salivary gland neoplasms can yield thick, tenacious material that is difficult to expel. Gentle and persistent pressure will ensure deposition of the material on slides.

- (5) Slides (air-dried or alcohol fixed) must be completely dry before placing them in slide carriers.

General tips

- (1) When smears from deep-seated neck masses have an oily appearance (small drops along the length of the smear), they are more likely to contain fatty connective tissue and may be non-representative. Repeat aspiration in this instance would avoid a non-diagnostic result.
- (2) When repeating an aspirate, create a new puncture.
- (3) Lymphoid cells are very fragile and extra care should be exerted in spreading lymph node aspirates.
- (4) Providing adequate and relevant clinical information on the pathology requisition form is as important as performing the FNA. The phrase 'mass in the neck' is meaningless.

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Address for correspondence:
Dr Ketan A. Shah,
Department of Cellular Pathology,
The John Radcliffe Hospital,
Headington,
Oxford OX3 9DU, UK.

Fax: 01865 222 894
E-mail: ketan.shah@orh.nhs.uk

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