

Practice Tips

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Fine needle aspiration of breast lumps

The first contact for an anxious patient with a lump in her breast is her family physician. Most lumps are simple cysts and present no danger of breast cancer. If a family physician can aspirate the patient's cyst in the office, diagnosis is made quickly, and a great deal of anxiety is avoided. If the mass is not a cyst and the tap is "dry," the cells in the needle can be examined for malignancy.

As with many procedures, opportunities to practise fine needle aspiration (FNA) of the breast sometimes do not arise during training and have to be sought through continuing medical education (CME). Such an opportunity arose when a CME session on breast assessment, including a workshop on FNA, was held at Queen's University in Kingston, Ont. For the FNA workshop, we designed a simple model of a breast for participants to use when practising FNA. Our model proved a realistic yet inexpensive item for training a large number of participants in the technique.

Fine needle aspiration

Materials for FNA

21-gauge needle or butterfly set
10-mL syringe
Alcohol swab
Preservative solution

The 20- to 22-gauge needle is needed to ensure adequate tissue is taken, and the 10-mL syringe to ensure adequate suction. The preservative solution can be acquired from a cytopathology laboratory and can be kept in the refrigerator.

Method with an assistant. Locate the suspected cyst and cleanse

the overlying skin with an alcohol swab. With the cyst stabilized between two fingers of your non-dominant hand, introduce the needle or butterfly connected to the syringe through the skin into the lesion. The butterfly set is preferable because it allows you to introduce the needle into the cyst and stabilize it, but the set can be used only when an assistant is available (**Figure 1**).

Figure 1. Fine needle aspiration with an assistant: Stabilize the needle with a butterfly set and ask an assistant to apply suction and aspirate the cyst.



When the needle is in the cyst, the assistant should apply suction and aspirate the cyst. When the cyst collapses, ask the assistant to stop aspiration and withdraw the needle.

Method without an assistant. The method is similar, except that you have to hold the syringe in your dominant hand (**Figure 2**). With the syringe stabilized and your thumb positioned at the plunger, introduce the needle into the cyst. Apply pressure to the

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Figure 2. Fine needle aspiration without an assistant: *Hold the needle in your dominant hand, stabilize the syringe, and, with your thumb positioned on the plunger, introduce the needle into the cyst.*



plunger only when it is in the cyst. When you have aspirated the contents, release the pressure and withdraw the needle. Aspiration pressure is applied only while the needle is in the cyst to avoid contaminating the needle with normal breast tissue. This detail is important in the event of a dry tap.

Discard cyst contents unless the aspirate contains blood. When this is the case, follow the steps for a dry tap.

Dry tap. If the mass is solid, no fluid will be aspirated, and the mass will not collapse. When this happens, the cells in the needle should be sent to a cell pathologist for examination and diagnosis. Because the cells must remain in the needle hub for recovery and not be aspirated into the syringe, it is important to release the pressure on the syringe as the needle is withdrawn from the breast. Rinse the dry needle contents in preservative solution and send them to a cytopathology laboratory.

If the tap is dry, it could be that the needle was not correctly placed into the cyst. We recommend that you adjust the placement of the needle in the area of the mass in order to ensure that a dry tap is not due to inaccurate placement. If the needle is correctly placed, adjustment will sample more cells of a solid mass. Again, be sure to release the pressure in the syringe before withdrawing the needle to avoid aspiration of normal breast tissue.

Cysts that resolve do not require further investigation beyond follow up for recurrence. All solid masses require further investigation that can include imaging, core biopsy, or open biopsy.

Comparison trials have shown that FNA has a sensitivity of 60% compared with 96% for core biopsy.¹

Referral to a breast assessment centre is warranted in the case of a dry tap.

Breast model

To give all participants an opportunity to practise the technique of FNA, we developed an affordable and realistic model of a breast. Commercial models, while realistic and reusable, can cost up to \$1500 each. Our models are not reusable, but they are simple to make and allow everyone in a large group to practise simultaneously.

We explored many options for the model and decided that balloons filled with flour and bath oil beads for breast lumps provided a stable and reasonable model. While the models do not look like real breasts, the texture and technical requirements simulate the real thing.

You need two balloons per model. Cut off the end of one balloon and fill it with one cup of flour. Place two bath oil “cysts” in the flour. Stretch the second balloon over the first balloon sealing the opening. Instruct participants on the technique, and then ask them to find the “masses” in the balloon breasts. Successful aspiration will occur with proper placement of the needle into the bath oil beads. Aspiration of flour indicates aspiration of normal breast tissue.

The model has proved to be practical. One of us (D.D.) learned the technique using the model and now successfully performs FNA in the office. We continue to use the model to teach FNA to residents. Having an opportunity to practise the technique on a model improves dexterity and leads to confidence in performing FNA in clinical settings.

Conclusion

Fine needle aspiration is an important procedure to use in the office because it can reduce our patients' anxiety, lead to earlier diagnosis, and lower health care costs. Barriers to performing the procedure include lack of opportunity to learn the procedure during training, lack of knowledge of the steps required to carry out the procedure, and lack of confidence in performing the procedure. Our simple balloon model can be used during residency training programs and CME events to introduce physicians to the technique of FNA so they can use it in their own offices. ❖

Reference

1. Clarke D, Sudhakaran N, Gateley CA. Replace fine needle aspiration cytology with automated core biopsy in the triple assessment of breast cancer. *Ann R Coll Surg Engl* 2001;83(2):110-2.