Case

[The following is a fictitious case based on experience with similar cases.]

Debby is a 45-year-old woman with a self-detected palpable breast lump noticed incidentally one week ago. The lump is tender and increasing in size. Her sister was diagnosed with breast cancer at age 48. Debby is terrified that this may be cancer.

About 1 in 10 women who present with a new breast lump has breast cancer.1 The younger the age of the patient at presentation, the less likely the lump will prove to be cancer. Only 1 in 100 women with a new breast lump at age 40 or younger will have breast cancer.2 Because 10% of malignant lesions in young women have features consistent with a fibroadenoma,3 new palpable masses in women of any age should be thoroughly evaluated. Cysts account for about 25%4,5 of all breast lumps and are common in premenopausal women over 35 years of age and uncommon in postmenopausal women unless they have received hormone therapy.6 In this article, we review an approach to the initial management of palpable breast lumps and describe several techniques for breast lump aspiration in the outpatient setting.

Evidence

Most information on managing breast lumps is from cohort studies. There are several algorithms available for the diagnosis of a breast lump.7-9 The 1998 consensus guideline from the Department of Surgery at the University of Toronto is particularly useful for family physicians in an office setting. It was updated in 2009 by a group of experts in the management of breast lumps — including four surgical oncologists (DM), a radiologist, a pathologist, a general practitioner-oncologist (RH) and a nurse practitioner — using a review of the literature since the original algorithm was developed (Figure 1). It is applicable to all postpubescent women with a discrete palpable lump that is not suspicious for cancer.

Initial management

A patient presenting with a lump and features suggesting cancer (e.g., hard irregular mass fixed to the skin, palpable ipsilateral nodes or peau d’orange) should immediately be sent for mammography, ultrasonography and core biopsy, and referred to a breast surgeon.

Lumps that are not clinically suspicious for malignancy can be managed initially in the family physician’s office. The algorithm (Figure 1) advocates fine-needle aspiration of palpable breast lumps and assumes access to a skilled cytopathologist.

Even an experienced examiner can find it difficult to differentiate between cystic and solid lesions by palpation alone. Imaging can be useful, but the wait time may result in unnecessary anxiety for the patient. Some studies support the initial use of aspiration or ultrasound to differentiate between cystic and solid lesions.10 Ultrasound is 98%–100% accurate in identifying simple cysts, but initial in-office aspiration of a cyst is therapeutic, immediately diagnostic and more cost-efficient.1 If the physician or patient is not comfortable with breast lump aspiration, ultrasound is an alternative initial approach to determine whether the lump is cystic or solid.19

Key points

- Aspiration of a palpable breast lump allows immediate reassurance for women with breast cysts and timely investigation and referral for women with solid masses.
- If the lump is a cyst, the aspirated fluid may be discarded provided the fluid is not bloody and the lump disappears.
- If the lump is solid, triple assessment (clinical examination, breast imaging and fine-needle aspiration cytologic assessment) is warranted.
Case continued

Examination showed a tender fluctuant mass measuring 2 cm in the upper outer quadrant of the right breast. Debby had no overlying skin changes or supraclavicular or axillary adenopathy.

Aspiration of a breast lump

Aspiration is a quick and straightforward initial approach for patients with a breast lump and no features suggestive of cancer. It can be done in the family physician’s office for all women with a discrete palpable mass who do not have breast implants and who are not on anticoagulants. There is no need for a local anesthetic before aspiration.

Two common approaches are described in Boxes 1 and 2. Aspiration can also be practised with a model of a breast lump (Appendix 1, available at www.cma.ca/cgi/content/full/cmaj.090416/DC1). If the lump completely disappears with the aspiration of nonbloody fluid, the lesion is a simple cyst, and the fluid may be discarded. The cyst’s location in the breast should be documented precisely (e.g., clock position and distance from the nipple).

The finding of bloody aspirate, a lump that does not completely disappear or a lump that recurs warrants referral to a surgeon. The aspirated fluid should be sent for pathologic examination. Any of these features may be associated with cancer; however, only 0.5%–1.0% of women presenting with a palpable cystic lesion will have an associated underlying neoplasm.

If the lesion is solid, a fine-needle aspiration biopsy could be performed, or the needle could be removed without further aspiration. Any specimen obtained should be fixed as per the local laboratory’s policy and sent for analysis by a cytopathologist.

Complications of aspiration include discomfort at the site of aspiration, bruising if there is inadvertent puncture of a vessel, infection, vasovagal response (which usually resolves quickly after the needle is removed) or, uncommonly, a pneumothorax. If air is drawn into the syringe, inspiratory and expiratory chest radiographs should be taken. Pneumothorax is unlikely if lesions close to the chest wall are moved over a rib before aspiration.

Aspiration does not increase the rate of false-positive results of mammography provided that the radiologist is advised about the site of aspiration. If the lump proves to be cancerous, there is no evidence that a needle biopsy will

![Figure 1: Consensus guideline for in-office aspiration of a discrete palpable breast lump that is not suspicious for cancer. Adapted, with permission, from Can Fam Physician 1999;45:1928.](image-url)
cause the tumour to spread. In fact, most cancers are diagnosed by a needle or core biopsy before surgery.

Further investigations

In the case of a simple cyst that resolves with aspiration, the patient should be seen six to eight weeks later to determine whether there is a recurrence of the cyst. If the cyst recurs, the patient should be sent for mammography or ultrasonography, or both, and be referred to a surgeon for further assessment. If the cyst does not recur, additional tests are not necessary. This is, however, a good opportunity to ensure that screening tests are up to date.

If the lesion is solid, the patient should be sent for imaging and referred to a surgeon. If the patient is less than 30 years of age, only ultrasonography is recommended; for women 30 years of age or older, both mammography and ultrasonography should be ordered. A triple assessment (examination, imaging and aspiration) to diagnose solid breast lumps ensures concordance between the clinical findings and the results of imaging and pathologic examination. Although some clinicians elect to monitor palpable, presumed fibroadenomas without cytopathologic testing, this approach will miss some breast cancers in young women. In this group, most delays in the diagnosis of breast cancer result from falsely reassuring clinical findings or imaging results.

Case outcome

Debby’s breast lump disappeared completely after aspiration of clear fluid. She was relieved to know that the lump was not cancerous.

Box 1: Technique for aspirating a breast lump (Figure 2)

1. Obtain oral consent from patient.
2. Clean area over the lump with an alcohol swab.
3. Immobilize the lump between the index and middle fingers of your nondominant hand.
4. Use a 23-gauge 1-in disposable needle with a semipaque needle hub attached to a 3-mL or 5-mL syringe.
5. Introduce a small amount of air into the syringe barrel to break the seal.
6. Hold the syringe with your dominant hand, as you would a pen, and insert the needle into the centre of the lump (A).
7. Use the fingers of your nondominant hand to stabilize the distal aspect of the syringe while walking the fingers of your dominant hand up the syringe to pull back on the plunger to aspirate (B).
8. During aspiration, move your nondominant hand to palpate the aspirated area.
9. If the lesion is a cyst, the fluid is not bloody and the lump completely disappears after aspiration, discard the fluid and reassure the patient.
10. Document the site of aspiration (clock position and distance from nipple).
11. Place a bandage over the site of aspiration.
12. Reassess the patient six to eight weeks later to ensure that the cyst has not recurred.

If the lump is solid:

1. Perform a fine-needle aspiration biopsy (as below) or
2. Refer the patient to a breast surgeon and arrange diagnostic imaging (ultrasonography only if the patient is less than 30 years of age; mammography and ultrasonography if 30 years of age or older).

Performing a fine-needle aspiration biopsy:

1. Follow steps 1–8 above, but maintain a negative pressure and move the needle rapidly forward and backward for 10–15 strokes or until flashback of material fills the hub of the needle.
2. Fix as your cytopathologist recommends.
3. Refer the patient to a surgeon.

Box 2: Alternative technique (more difficult) for aspirating a breast lump (Figure 3)

If you are more comfortable with a larger syringe, you will need more pressure to aspirate the plunger. However, this method provides maintained negative pressure in the event that the lesion is solid, and a fine-needle aspiration biopsy will be needed.

1. Follow steps 1–7 in Box 1, but attach a 23-gauge 1-in needle to a 10-mL syringe.
2. When you uncap the needle, set the cap on the patient’s sternum.
3. When you have withdrawn the plunger to about the 6 cc mark, pick up the cap and insert it open side down on the flange of the syringe, wedging it between the plunger and the top of the syringe (A).
4. Maintain negative pressure using the wedged cap (B).

Figure 2: Aspirating a breast lump. Reprinted, with permission, from Can Fam Physician 1999;45:1928.

Figure 3: Alternative for aspirating a breast lump.
was only a cyst. She promised to return to the office in six weeks for a breast examination. Debby was offered mammography because she was 45 years old and had a first-degree relative with premenopausal breast cancer. However, because she had undergone mammography within the last year, there was no need for additional investigations at this time.

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