Vacuum Assisted Excision in breasts with ultrasound

Breast surgeons work closely with radiologists in mammography departments. Now radiologists can perform minimally invasive procedures of minor breast changes with a new method – vacuum assisted excision. The technique is described here by radiologist Tryggve Eriksson in Östersund Sweden, where the procedure has become routine.



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Common patients

Here are some patients often seen in breast surgery or mammographic departments: 1. Lisa, 38 years old, with a 3 cm large tumor in the breast. Core biopsy is benign, but the lesion causes pain and discomfort, Lisa wants it removed.

2. Eva, 45 years old, has unilateral nipple discharge. Core biopsy shows a papilloma next to the nipple which warrants excision.

3. Emma, 40 years old, has been called back from the mammographic screening due to an architectural distortion in the breast tissue. Core biopsy shows a benign radial scar, but a larger sample volume is required to be certain. All three patients traditionally have needed open breast surgery under general anaesthesia with aftercare in the recovery department, scarring and, as always, with potential risk of complications.

Alternatives to open surgery

In Östersund, these women avoid the risks of open surgery. Instead we offer ultrasound guided Vacuum Assisted Biopsy and Excision - VAB and VAE. It is a surgical method done under local anesthesia in the mammography department leaving only a subtle 3-4 mm scar. The women go home two hours later and work as usual the next day. So far, our patients have been very satisfied. Our clinic is one of only three in Sweden who use this ultrasound guided method.

The method is not difficult to learn. You have to be familiar with breast ultrasound and freehand biopsy and have a vacuum biopsy device, all of which many mammography clinics already have.

Why is the method not used at more departments in Sweden? The method is known since 1998. well documented and well established in large parts of Europe and USA, but Sweden and the Nordic countries have fallen behind. According to the European guidelines the method is recommended as the first-hand method on several of the B3 lesions (potentially malignant lesions) at the international consensus meeting 2018 in Zurich Switzerland (1). It is also economically noticeably favourable compared to open surgery (2).

In Östersund we started gradually introducing VAE two years ago.

The method is now fully incorporated in our routines and has saved considerable time for our

surgeons in favour of other patients.

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New method



Figure 1. a) Fibroadenoma n=8. b) Papilloma n=13. c) DCIS/Cancer (One inoperable patient) n=3. d) Radial scar 2. e) Other: Cystic fibroadenosis, Inflammation and foreign body reaction, Papilloma + Atypical ductal hyperplasia (ADH) n=3. f) Only haematoma after core biopsy n=1. (Several dots are double due to having the same diameter).



Figure 2. Ultrasound of 12 mm benign papilloma. The author.



Figure 3. Corresponding histopathology of Figure 2. 12 mm benign papilloma. Egle Tolokiene NUS Umeå.



Figure 5. Scar after VAE - vacuum assisted excision after three months. The author.



Figure 4. Excision of small tomato in pea model with 7G needle. The author.



Figure 6. Ultrasound image of benign papilloma (1)and ring marker (2) during VAE - Vacuum Assisted Excision. VAE needle and pen. The author.

The technique

Here's how it works: Under local anaesthesia a wide bore needle (7–10G) is inserted and placed beneath the lesion under ultrasound guidance. The needle opens, sucks in part of the lesion, closes and cuts off the piece which is then sucked into the collecting basket. The needle is now ready to cut and remove a new piece. Between 3 and 50 pieces are required depending on the size and type of lesion. All biopsies are sent to a pathologist for review. A marker is left in place so the excision site can be easily reacquired if additional surgery / VAE is necessary, even if the lesion has been removed. An ultrasound follow-up is performed after three months according to Dutch practice. (Figure 2-6).

Indications

The indications are excision of benign

changes (eg fibroadenoma) and an alternative to open surgical biopsy and excision of several B3 lesions (i.e. potentially malignant breast lesions). The treatment decision is made at multidisciplinary conference. Lesions larger than 4 cm and B3 lesions larger than 2.5 cm are avoided. (See fact box).

Own experience

Our department has currently successfully excised over 30 lesions. Lesion size has been between 3 mm and 40 mm in patients aged 24-82 years old. Histopathology before and after the procedure has significantly deviated in two patients with initial papilloma (B3 lesion) upgraded to DCIS (ductal carcinoma in situ) after VAE. This emphasizes the importance of excising B3 changes (Figure 1).

I am convinced there are many colleagues in Sweden and in the other Nordic countries who can incorporate this method into their practice given the opportunity. One limiting factor is of course the shortage of breast radiologists.

There are significant advantages for the individual patient, as well as cost savings, reducing overall cost of care. Hopefully there will be an increasing awareness of these potential benefits and that this method will become as common here as it is in the rest of Europe and the world.

If interested, you can find a 50minute instructional film and additional information at www.tryggveeriksson.se

More information can also be obtained by e-mail on request.

References

- Second International Consensus Conference on lesions of uncertain malignant potential in the breast (B3 lesions) 2018, Zurich, Switzerland. <u>https://pubmed.ncbi.nlm.nih.go</u> v/30506111/
- Reduced Hospital Costs for Ultrasound guided Vacuumassisted Excision Compared with Open Surgery in Patients with Benign Breast Masses and Highrisk Lesions.

https://academic.oup.com/jbi/ar ticle/2/5/452/5875848

Fact box

Excision by VAB/VAE in preference to open surgery

- Discomfort from benign lesions <4cm
- Replace surgical biopsy in B3 lesions <2,5 cm as follow
- Flat epithelial atypia (FEA)
- Atypical lobular hyperplasia (ALH)
 Classical lobular carcinoma in situ
- Classical lobular carcinoma in s
- (LCIS)
- Papillary lesions (PL)
- Radial scars (RS)
- (Inoperable patients)

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