



Pristina Serena™ Experience at Queen Elizabeth Hospital Gateshead

Image guided or stereotactic breast biopsy is an important method to evaluate breast abnormalities and thus has become an integral part of a breast imaging programme to provide a tissue sample for histopathological analysis. Mammographically identified lesions not visible under ultrasound, such as microcalcifications, undergo stereotactic biopsy. Image guided biopsy can be performed using a specialized prone biopsy table where the patient lies prone with the breast pendant through a hole in the table. As an alternative, an upright unit may be added to the mammography machine for seated positioning.¹ However, a DBI™ (Decubitus Breast Imaging) table or special reclining chair may be used to allow the patient to lie in the lateral decubitus position for the biopsy. This position may be more comfortable for performing a biopsy procedure as it minimizes the risk of fainting episodes which may sometimes occur in an upright position.²

However, breast biopsy may be challenging due to various factors. These may be related to positioning, imaging, targeting, technical challenges and patient factors.³ This paper describes the experience with the Pristina Serena biopsy system at the Queen Elizabeth Hospital (part of the Gateshead Health NHS Foundation Trust, UK) and how its features could help overcome some of these challenges.



Queen Elizabeth Hospital
The Gateshead Health NHS Foundation Trust, UK

About Queen Elizabeth Hospital

Queen Elizabeth Hospital which forms part of the Gateshead Health NHS Foundation Trust, has experience performing image-guided biopsy with GE Senographe Pristina Serena digital mammography system.

Established in 2005, Gateshead was one of the first Foundation Trusts in the United Kingdom. Queen Elizabeth Hospital's services range from prenatal and newborn care to specialty services for older people. The hospital has a national reputation as a centre for breast and bowel cancer screening (NHS. Queen Elizabeth Hospital).

QE Hospital performs on average about 2,500 screening mammograms per month. About 120 patients require further assessment and about 30 patients undergo biopsy. Screening mammograms are read by a two independent radiologists and advanced practitioners. If an abnormality is detected, the patient is recalled to an Assessment clinic for further imaging, and ultrasound. Where necessary, patients are referred by a radiologist for a vacuum-assisted core biopsy if the abnormality is not visible using ultrasound, or when microcalcifications are detected. Stereotactic biopsy is performed on the same day, so that patients do not have to return for a separate appointment. The Senographe Pristina Serena system was installed at QE Hospital in March 2018 and the hospital has been using the system ever since.



2,500
MAMMOGRAPHS
PER MONTH



30
UNDERGO
BIOPSIES



120
FURTHER
ASSESSMENT



» Improved biopsy experience

Patient positioning is the first step in the procedure. A position which is comfortable for both the patient and operator can help ease the biopsy procedure to ensure access to the target and minimize procedure time. Choosing the correct position is also important as sometimes the position of the lesion can determine whether a biopsy will be successful. Such challenging cases include patients with small or thin breasts; a superficial lesion close to the skin, or a deep lesion adjacent to the chest wall.² Pristina Serena allows both upright and decubitus positioning. At QEH, the performing clinician chooses the position which will allow the shortest access route for the needle to reach the lesion. The preferred method is to have the patient lying down whenever possible as this means the needle is not in the patient's vision and may help to avoid fainting episodes. The foldable panels on both sides of the DBI bed allow the operators easy access to the patient, helping to reduce the need to stretch, lean or adopt an awkward position as they position the patient close to the system. The bed can also be moved up and down with a push button, ensuring minimum manual handling of the patient.

Once accurate positioning is achieved, compression is applied to the breast and three images are acquired, allowing the lesion to be localised in three dimensions. The lesion is located using the system software, and accessibility and needle compatibility is checked automatically. In this step, if the selected target and needle combination cannot be safely used, the system displays an alert. If the operator needs to change to a lateral needle approach, it can be done with a simple adjustment that does not disturb the patient, keeping procedure time to a minimum. After the target coordinates are sent to the positioner, the needle guide is motorised to the correct area using a push button. This enables consistently safe and accurate procedures to be performed.

Once the biopsy positioner is correctly at the targeting position, the laser guide is used for the delivery of anesthesia. The laser guidance is very helpful and the Advanced Practitioner in Mammography at QEH mentions that *"Laser guidance makes a difference when you are administering the anesthetic, it enables you to deliver the anesthetic in the exact location of the biopsy needle. This unique feature on the Senographe Pristina enables us to administer the anesthetic quickly and accurately reducing stress to the patient."*

After delivering the anesthesia, the biopsy device is introduced. During this step, the system will display a warning message indicating if the lesion cannot be reached or highlighting a potential mechanical issue (*if the needle will enter the safety margin above the table top for example*). The operator can decide whether to choose a different biopsy needle, or select a smaller notch to collect the sample. This is especially useful when targeting a lesion in small breasts.

Image checks are conducted to make sure the needle is in the correct position before samples are taken. The stereo images are obtained automatically from the console; the operator does not have to manually move the x-Ray tube. Once adequate samples are taken, a marker can be placed at the target site, and routine post biopsy care is administered.

» Patient comfort

Pristina Serena allows patients to undergo biopsy in either a seated, or decubitus position. The biopsy procedure is quick due to the automated features, so the patient does not have to stay in an uncomfortable position for any longer than necessary. The positioning options with Pristina Serena also help to reduce patients' anxiety, because they can be positioned so they do not see the needle. Because the patient can lie down for the procedure, there is a lower risk of injury resulting from fainting than if they were in an erect position. The laser guidance ensures accurate and speedy administration of the anesthetic.

» Fast procedures

Features of Pristina Serena such as fast targeting and a simple, intuitive user interface requiring few user 'mouse-clicks' translate into efficient and fast procedures. With Pristina Serena, the time for a routine biopsy at QEH is 10-15 minutes. However, a more complex case may take longer, and with Pristina Serena it takes around 30 minutes. The hospital has noticed that up to 50 percent more biopsy appointments can be scheduled per day. Prior to having the Pristina 2 biopsies were carried out in a session, and now it is possible to schedule 3 or 4.

» Other advantages of the Pristina Serena system

The system offers versatility as it is multifunctional and can be used as a standard mammography unit for performing routine 2D and 3D imaging. Therefore a dedicated biopsy room is not required. As an add-on biopsy kit that is easy to install when needed; with a simple user interface requiring minimal user mouse-clicks to operate; biopsy procedures are easily integrated into the clinical workflow and take short time to perform.



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GE imagination at work

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