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Breast Lesion Localization: Savi Scout

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Breast Lesion Localization: Savi Scout

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Introduction on Mammography

- Imaging of the breast
 - Screening and diagnostic exams
- The breast consists of glandular and connective tissue which is shown on the radiographic image
 - Radiographic detail is determined by the amount of fatty tissue within the breast.
 - Post-pubertal adolescent breast (move over) contains more dense tissue.
 - Development of glandular tissue decreases radiographic contrast and creates an opaque image.
- Between puberty and menopause, hormones influence changes in breast tissue
- Breast tissue density is categorized by different types
 - Fatty, heterogeneously dense, and extremely dense

(Long, Rollins, & Smith, 2016)

Non-Palpable Breast Lesions

- Requires preoperative image-guided localization
- First breast lesion localization, 1966, using a bent-wire implanted through a needle under fluoroscopic guidance
 - Needle-wire localization
- Multiple methods to localize non-palpable breast lesions,
 - Wire guided (WL)
 - Radioactive seed (RSL)
 - Savi Scout (SSL)
 - Magnetic seed (MSL)
 - Radiofrequency identification (RFID)
 - Hematoma ultrasound guided (HUG)

(Cheang, Thornton, & Mango, 2018)

What is the Savi Scout ?

- Cleared by the FDA in 2014 from Cianna Medical Inc. and is non-radioactive
- Places a reflector under ultrasound or mammographic guidance at the localized lesion
- Placement can be completed up to 30 days before surgery, maximizing flexibility of the surgeon, radiologist, and patient's schedule
- The signal emits a loud sound and numerical signal
- When the reflector is detected and proximity changes, the sound changes

(Jeffries, Dossett, & Jorns, 2017)

Savi Scout Procedure

- Scout images obtained to localize area of interest
- Once lesion found, measurements taken to correctly place reflector
- Radiologist numbs area, makes incision
- Delivery system is inserted into breast, and reflector released when button pushed, creating a snapping sound.
- Delivery system removed from the breast, and radiologist tests reflector using hand piece.
- After placement confirmation, two post-procedure images are taken to verify reflector location

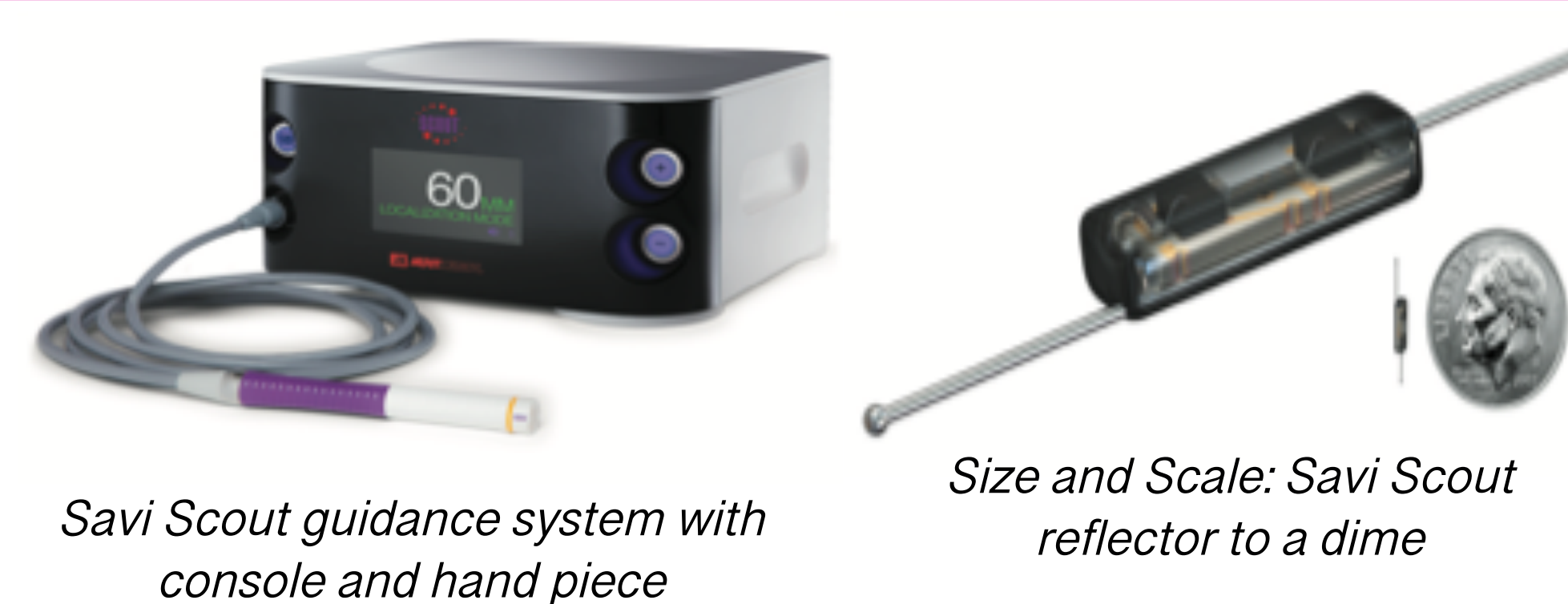
(Jeffries, Dossett, & Jorns, 2017)

Equipment Used

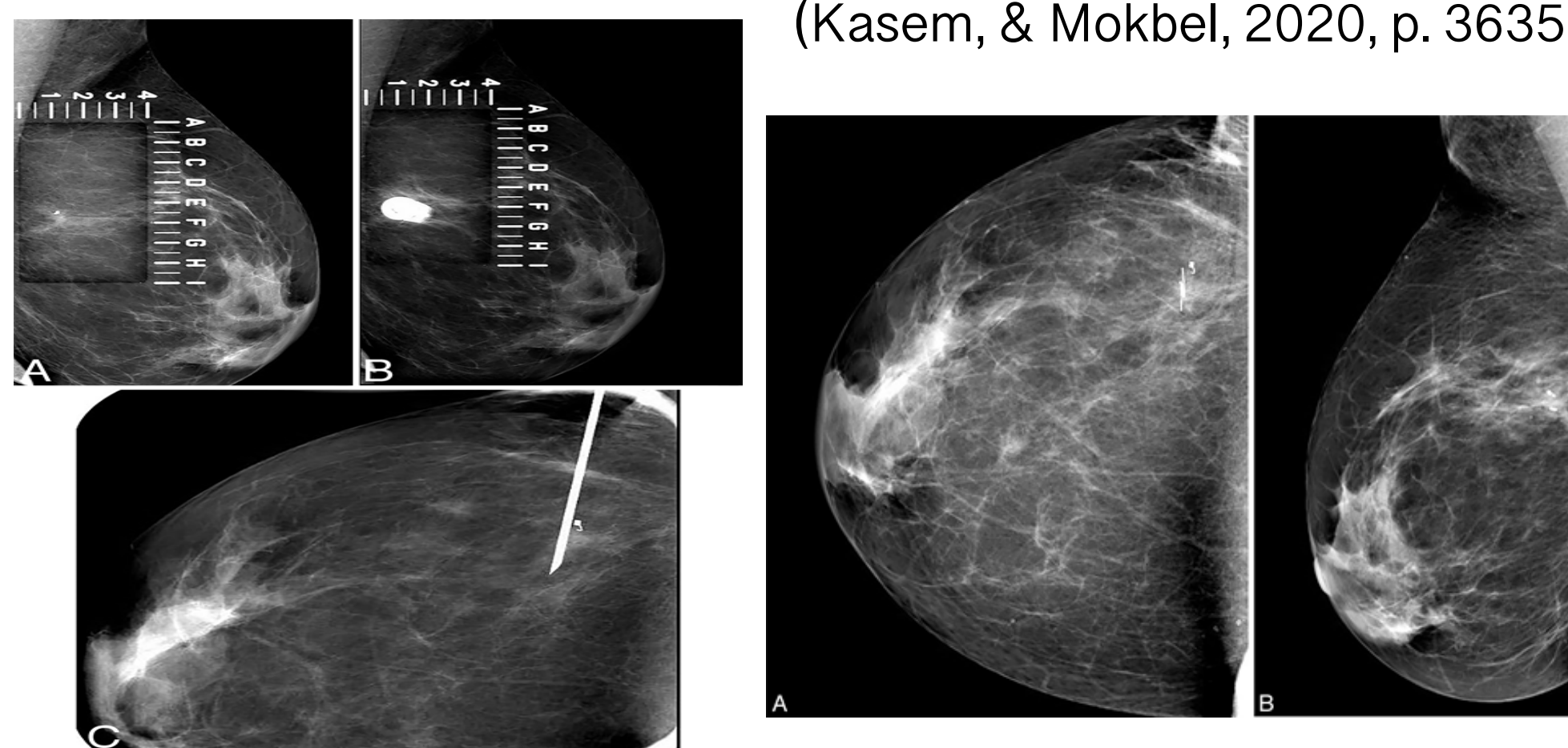
- Uses a radar reflector activated with an infrared light
 - Reflector is the length of a dime
 - Reflects the radar signal and is detected by a hand piece and console
- Uses a preloaded 16-gauge needle through a delivery system to insert the reflector
- Reflector is 12mm in length with a 4mm body and two 4mm antennas, one at each end, that can be inserted under ultrasound or mammographic guidance
- Placement is chosen based on scout images, and once lesion is located measurements are taken with grid coordinates

(Jeffries, Dossett, & Jorns, 2017)

Images



(Kasem, & Mokbel, 2020, p. 3635)



(Jeffries, Dossett, & Jorns, 2017)

Savi Scout vs. Wire Localization

- A study recently conducted compared 42 patients who underwent Savi Scout localization and another 42 patients who underwent wire guided localization
- All had malignant diagnoses
- All were comparable and matched
 - Age
 - Tumor size
 - Invasive cancer rate
 - Receptor status
- No statistical difference
 - Mean tumor volume (15.2 cm³ in SSL vs 16.3 cm³ in WL)
 - Negative margin rate (92.9% in SSL vs 88.1% in WL)
 - Re-excision rate (7.1% in SSL vs 9.5% in WL)
- Savi Scout localization is very safe
 - Does not require radiation safety precautions.

(Cheang, Thornton, & Mango, 2018)

Savi Scout: Advantages and Disadvantages

- Advantages**
 - Non-radioactive, FDA approved
 - Scheduling flexibility
 - Real time distance measurement
 - Determines the ideal incision site and improves cosmesis
 - Skips preoperative localization procedure
 - No radioactive decay over time
- Disadvantages**
 - Limits repositioning once deployed
 - Repositioning could damage the reflector and cause migration
 - Placement deeper than 6cm can interfere with detection of the reflector
 - Only placed under ultrasound or mammographic guidance
 - Contains nickel which can cause a reaction in patients with an allergy
 - Substantially more expensive than other localization methods including an initial capital purchase and disposable purchase per procedure

(Cheang, Thornton, & Mango, 2018)

Expansion of Localizing Non-Palpable Breast Lesions

- A growing number in different types of techniques, offering an alternative to wire-guided localization over the last five years
- Previously, radioisotope dependent localization techniques never got full acceptance
 - due to issues of handling disposal and accessibility associated with radiation and inoperative ultrasound.
- Three radioisotope free licensed localization devices for use in both Europe and the U.S.
 - Magseed
 - Endomag, Cambridge, UK
 - Radiofrequency detection using a localizer
 - Hologic, Massachusetts, USA
 - Infrared detection using Savi Scout
 - Cianna Medical, Aliso Viejo, CA
- The change and shift in switching technologies is difficult for healthcare providers,
- Three main companies producing these new techniques
 - Have all demonstrated the feasibility of their products to perform safe localization lesion excisions.
- New methods are a replication of the radioactive methods without the radioactivity
 - Creates an increase in cost of equipment
 - Decrease in time patients spend at a facility

(Ahmed, 2020)

Conclusion

- The Savi Scout localization procedure is a new and safe method used to localize non-palpable breast lesions
- It is more efficient, and has become a more common procedure that many radiologists are performing more often
- Minimally invasive
- FDA approved
- Determines the correct site of incision
- Although it more expensive than other localization methods, it is very beneficial to the patient as it is more of a convenience
- Savi Scout is becoming more common to diagnose breast lesions