RSNA Quality Improvement Report

Knowledge is Power

How to Educate Your Patients About Breast Biopsy Markers

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Purpose

- To determine if providing an informational handout to patients improves patient knowledge and comfort with receiving a breast biopsy marker.

Background

- Breast biopsy markers designate biopsied lesions[1,2]
  - Well seen on mammogram > ultrasound and MRI
- Made of inert metal or alloy, usually with titanium[3]
- Come in a variety of shapes[4]
- Regardless of the pathology, biopsy markers are useful!

If malignant or high risk…	If benign…
Marker shows where the abnormality is (especially useful for small targets that become less prominent after biopsy[5])	Site remains marked for future imaging
Serves as a target for radiologists during pre-surgical localizations[6] → surgical excision or lumpectomy	Prevents unnecessary repeat biopsy in the future

1. Thomassin-Naggara I, Lalonde L, David J, Darai E, UzanS, TropI. A plea for the biopsy marker: how, why, and why not clipping after breast biopsy? (2012). Breast Cancer Res Treat. 132(3):881-93.
2. Bick, U., Trimboli, R. M., Athanasiou, A., Balleyguier, C., Baltzer, P. A., Bernathova, M., ... & Sardanelli, F. (2020). Image-guided breast biopsy and localisation: recommendations for information to women and referring physicians by the European Society of Breast Imaging. *Insights into imaging*, *11*(1), 1-18.
3. Portnow, L. H., Thornton, C. M., Milch, H. S., Mango, V. L., Morris, E. A., & Saphier, N. B. (2019). Biopsy Marker Standardization: What's in a Name?. *American Journal of Roentgenology*, *212*(6), 1400-1405. Portnow, L. H., Thornton, C. M., Milch, H. S., Mango, V. L., Morris, E. A., & Saphier, N. B. (2019). Biopsy Marker Standardization: What's in a Name?. *American Journal of Roentgenology*, *212*(6), 1400-1405.
4. Shah, A.D., Mehta A.K., Talati N., Brem R., Margolies L.R. Breast tissue markers: Why? What's out there? How do I choose? 2018. Clinical Imaging. (52), 123-136.
5. Dash, N., Chafin, S. H., Johnson, R. R., & Contractor, F. M. (1999). Usefulness of tissue marker clips in patients undergoing neoadjuvant chemotherapy for breast cancer. *AJR. American journal of roentgenology*, *173*(4), 911-917.
6. Burbank, F., & Forcier, N. (1997). Tissue marking clip for stereotactic breast biopsy: initial placement accuracy, long-term stability, and usefulness as a guide for wire localization. *Radiology*, *205*(2), 407-415.

However…

- Patients frequently have concerns about the biopsy marker
  - Fear of having a foreign body in their breast
  - Concern for reaction with the marker
  - Concern that the marker transmits data
- Prior studies[7] have investigated patient anxiety upon receiving news that they needed a breast biopsy, while they wait for an appointment, and on the day of the biopsy.

- To our knowledge, however, patient comfort level or knowledge of receiving the biopsy marker has yet to be investigated.
- Our purpose was to empower our patients with accurate, reproducible information before every biopsy with a patient-friendly educational handout.

7. Soo, M. S., Shelby, R. A., & Johnson, K. S. (2019). Optimizing the patient experience during breast biopsy. *Journal of Breast Imaging*, *1*(2), 131-138.

Materials and Methods

- IRB-exempt prospective study
- Content of handout was derived from discussion with breast imaging faculty members
- The 5 most commonly asked questions were agreed upon based on personal experiences

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5 FAQS About Breast Biopsy Markers

Also called 'microclips'

1. What is a biopsy marker made out of?

- Half (4/8) are made of **titanium**
- 2/8 are made **of stainless steel**
- The rest are made of **nickel alloy** or **zirconium oxide**

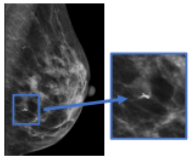
Example of markers drawn to scale

2. Why do I need a biopsy marker?

- If your biopsy results require surgery, this marker will help surgeons identify exactly which area to remove. Before biopsy markers, surgeons had to remove more tissue!
- It marks the site of biopsy within the breast, so that radiologists reading your future mammograms know where your biopsy site is

3. What if I don't need surgery?

- The marker remains in your breast and is **safe**
- It will be visible on all future mammograms
  - This is **very useful** for your radiologists to know where your biopsy site is located



This marker is easy to identify on a mammogram.

4. How does a biopsy marker get placed?

- Through a thin, **sterile** needle while your breast is still numb. Most people are surprised when they learn that it is already in place!

5. How will this affect my daily life?

- Short answer: It won't!
- Long answer:
  - It cannot be felt, because it is **inside** the breast tissue
  - It will not set off airport alarms or metal detectors
  - The marker is MRI-compatible, in the case you ever need an MRI
  - The marker is NOT a tracking device!

*A biopsy marker has **almost ZERO** risk and offers your radiologists and surgeons **invaluable** information.*

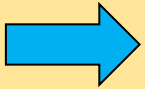
Please feel free to ask any questions that you may have!

Materials and Methods

- 4 question survey with a 5-point Likert Scale was created
- Patients undergoing US, stereo, or MRI biopsy were asked to answer 4 questions (Q1-Q4)

Q1. Self-evaluate knowledge about breast biopsy markers

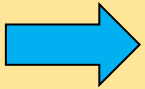
Read handout



Q3. Self-evaluate again

Q2. Self-evaluate comfort level of receiving a breast biopsy marker

Read handout



Q4. Self-evaluate again

UCLA Breast Biopsy Marker Survey

UCLA Breast Imaging has developed a new patient handout on Breast Biopsy Markers (also referred to as "clips" or "microclips"). Please fill out the following survey to help us continue to improve this process as part of a UCLA research study. This survey is anonymous, voluntary, and will not affect your clinical care! We estimate the time to complete the survey to be 2 minutes. *We thank you in advance!*

The principal investigator of the study is Dr. Tiffany Chan, Assistant Clinical Professor (310-393-5153). If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the UCLA OHRPP by phone: (310) 206-2040; by email: participants@research.ucla.edu or by mail: Box 951406, Los Angeles, CA 90095-1406.

Before reading the handout:

1. Please rate your understanding about Breast Biopsy Markers (also referred to as "clips") from 1-5, with 1 being "Least Knowledgeable" and 5 being "Most Knowledgeable".

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Least Knowledgeable — Most Knowledgeable

2. Please rate your comfort level of receiving a Breast Biopsy Marker during today's biopsy, from 1-5, with 1 being "Least Comfortable" and 5 being "Most Comfortable".

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Least Comfortable — Most Comfortable

After reading the handout:

3. Please rate your understanding about Breast Biopsy Markers (also referred to as clips) from 1-5, with 1 being "Least Knowledgeable" and 5 being "Most Knowledgeable".

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Least Knowledgeable — Most Knowledgeable

4. Please rate your comfort level of receiving a Breast Biopsy Marker during today's biopsy, from 1-5, with 1 being "Least Comfortable" and 5 being "Most Comfortable".

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Least Comfortable — Most Comfortable

Materials and Methods

An email discussing the handout and survey is sent to all breast imaging members, including faculty, trainees, and technologists

Handout is printed, laminated, and affixed by binder rings to clipboards also holding consent paperwork

Technologist provides this clipboard to each biopsy patient to read in the consultation room, waiting consent with the physician

The patient is then instructed to leave the handout on the clipboard, which is collected by the technologist following the biopsy and placed in a folder in the reading room

Survey responses are recorded in a Google-based Excel sheet

Statistical analysis is performed with Paired T-test and Wilcoxon (nonparametric) tests. A p-value less than 0.01 was considered statistically significant

Results

- 141 completed surveys between 12/11/20 – 4/23/21

Before reading handout	After reading handout
Q1: Please rate your understanding of biopsy markers	Q3: Please rate your understanding of biopsy markers
Q2: Please rate your comfort level of receiving a biopsy marker	Q4: Please rate your comfort level of receiving a biopsy marker

	Mean	95% CI - low	95% CI - high	Std dev	Median
Q1	2.59	2.34	2.84	1.52	2
Q2	3.4	3.2	3.6	1.42	4
Q3	4.26	4.1	4.4	0.95	5
Q4	4.2	4.03	4.37	1.04	5

Table 1. Individual question scores.

	Mean	95% low	95% high	Std dev	p value
Q1→Q3	1.67	1.44	1.91	1.42	<0.001
Q2→Q4	0.8	0.61	0.99	1.15	<0.001

Table 2. Differences between scores before and after reading handout.

Discussion

There was a **statistically significant increase** in patient self-evaluation knowledge and comfort scores after reading our educational handout.

- Limitations:
  - Single institution design
  - Handout was available only in English
  - Occasionally, patients would ask the physician performing the consent questions regarding the handout before completing the last two questionnaire questions
    - This could potentially increase self-evaluated scores to Questions 2 and 4

Conclusion

- Providing patients with an educational handout about biopsy markers prior to a biopsy significantly increased their knowledge and comfort with receiving a biopsy marker.
- Future directions:
  - Analyze how patient demographics may affect these same metrics
  - Translate the survey into different languages to provide more inclusivity for those whose primary language is not English
  - Send a copy of the handout home with patients after their diagnostic evaluation so they can have more time to read and understand the handout