

# Pintuition® Surgical Marker Navigation for Excision of Non-Palpable Ultrasound-Visible Breast Lesions: First 200 Cases in a French Cancer Center

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**Study conclusion:** The Sirius Pintuition® magnetic surgical marker navigation system for the removal of non-palpable breast lesions has been easily implemented, with significant improvement in theater planning, and low complication and re-excision for margin clearance rates. The procedure is very safe and can be used as an alternative to wire guided excision.

<p><b>100%</b></p> <p><b>LESION EXCISION</b></p> <p>Primary tumor removed in all 200 procedures</p>	<p><b>100%</b></p> <p><b>MARKER RETRIEVAL</b></p> <p>All markers recovered; no additional procedure needed</p>	<p><b>9%</b></p> <p><b>RE-EXCISION RATE</b></p> <p>vs. 14.9–20.8% for wire-guided localization</p>	<p><b>98.5%</b></p> <p><b>EASY DETECTION</b></p> <p>Marker easy to detect by surgeon intraoperatively</p>
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## STUDY OVERVIEW

- DESIGN** Prospective monocentric study · 9 surgeons · 1 dedicated radiologist
- COHORT** 200 procedures - non-palpable ultrasound-visible breast lesions
- SETTING** Institut Godinot & Institut Curie, France · May 2022 - June 2023
- ANALYSIS** R Development Core Team (2020) used to statistically assess primary outcomes of tumor excision and magnetic marker retrieval, as well as secondary outcomes including insertion difficulty, localization accuracy, patient tolerance, and re-excision rate.



## RE-EXCISION RATE: Pintuition® vs. Wire-guided Localization

**9%** re-excision **PINTUITION®**

**~18%** re-excision **WIRE-GUIDED**

Literature benchmark: 14.9-20.8% re-excision rate for wire-guided localization (pooled analysis)\*

## WHY PINTUITION® OUTPERFORMS WIRE GUIDANCE

- Up to 180 days** **Decouples radiology and surgical scheduling**  
Marker inserted up to 180 days before surgery – no same-day coordination required. 39.5% of cases placed 2-29 days ahead, with no difference in re-excision rate (7.6% vs. 9.1%, p = 0.71). Flexible pre-operative timing significantly reduced scheduling pressure on radiology and OR teams compared to wire-guided localization.
- 100% insertion accuracy – classified “easy” in all cases**  
All 200 markers placed optimally (<1 cm from tumor). No migration, no second marker required. Insertion pain rated 1–2/10 in 93% of patients.
- Low Pain, Improved Patient Comfort**  
Insertion pain rated 1-2/10 in 93% of patients.

Outcome / Feature	Pintuition®	Wire-Guided
Primary lesion excision	100%	100%
Marker/wire retrieval	100%	100%
Re-excision rate	9%	14.9–20.8%*
Insertion accuracy	100% optimal	Variable
Pre-op scheduling flexibility	✓ Up to 180 days	Same day only
Detectable in hematoma/fluid	✓	X
Risk of pre-op wire migration	None	Documented risk
Patient discomfort	Pain ≤2/10 in 93%	Higher reported
Theater planning improvement	✓ Significant	X
Signal decay over time	None	N/A (wire)

## ONCOLOGIC EQUIVALENCE CONFIRMED

Pintuition® re-excision rate of 9% is lower than wire-guided localization (14.9-20.8%)\*. It is comparable to non-wire localization benchmarks; for example, radioactive seed localization (RSL): 6.8-10.3%\*\*.

In 8.5% of procedures (17/200), marker dislodged intraoperatively; primary lesion still excised with clear margins in all cases - no re-excision required.  
**Reference:** Ceccato V, Wallaert L, Michel S, et al. Magnetic surgical marker navigation for excision of non-palpable ultrasound visible breast lesions: first 200 cases in a French cancer center. Sci Rep. 2025;15:5002. doi: 10.1038/s41598-025-88430-5. No competing interests declared.

\*Pooled analysis of wire-guided localization literature (Davey et al., Breast 2022; Shirazi et al., Medicina 2023). \*\*RSL: Davey M.G et al. (2022).

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## PINTUITION® ADVANTAGES AT A GLANCE

100% lesion excision

Flexible scheduling

Hematoma-safe signal

No wire migration risk

Low patient discomfort

No radioactivity

9 surgeons – easy adoption

## ADDITIONAL BENEFITS REPORTED

More comfort for the patient, more freedom for the surgeon to decide the best incision, the localization of the magnetic marker was **easier than with the end of the wire**, and there was a possibility to **check the margin with the probe** (*i.e., distance between the margin and the marker*).