



Rôle du radiologue dans les traitements néo adjuvants du cancer du sein

Dr Domenico Lepori
dlepori@imagerieduflon.ch



Imagerie du Flon

Centre d'imagerie diagnostique et interventionnelle
sénologique, obstétricale et gynécologique

Lausanne, Suisse

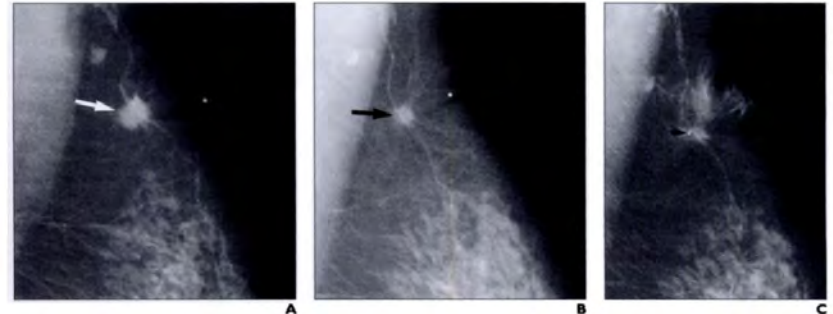
Sion
Octobre
2019

Réseau
Lausannois
du Sein

Usefulness of Tissue Marker Clips in Patients Undergoing Neoadjuvant Chemotherapy for Breast Cancer

Nilima Dash¹
Sherri H. Chafin¹
Ronald R. Johnson^{1,2}
Farhad M. Contractor¹

AJR:173, October 1999



A

B

C

Introduction

Bilan diagnostic initial

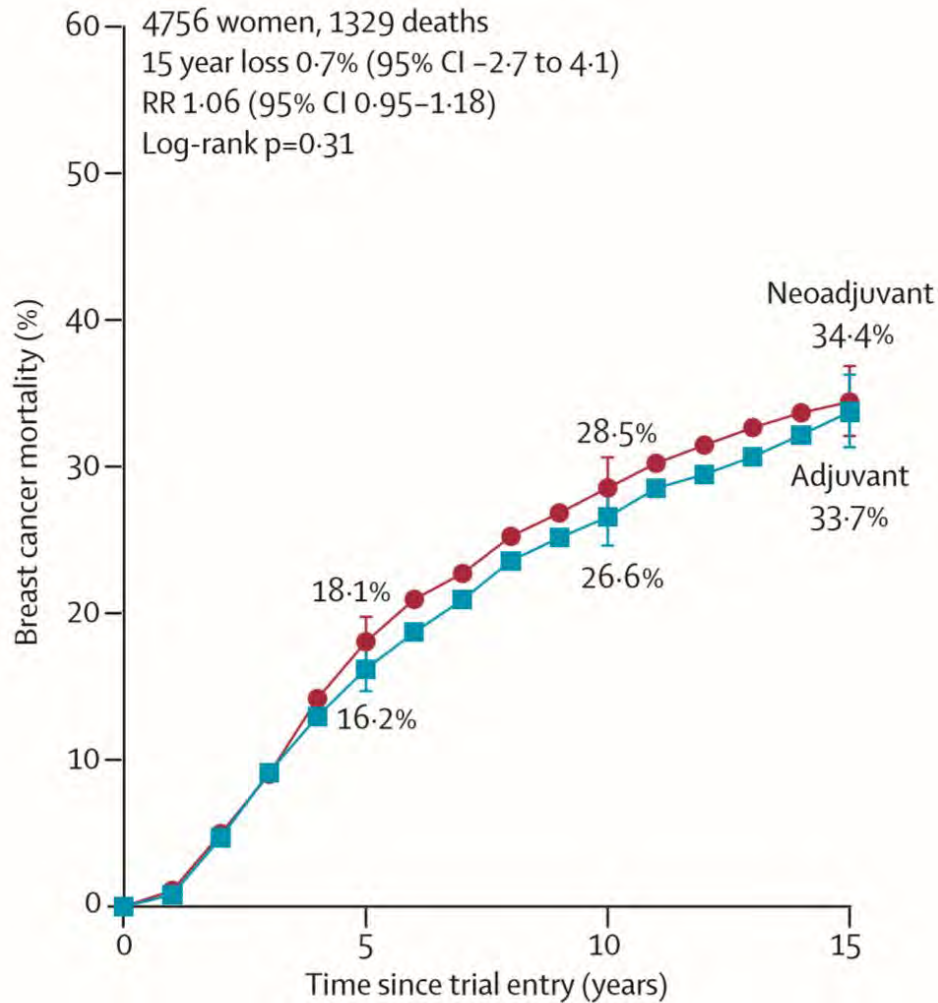
Marquage

Evaluation de la réponse au traitement

Repérage préopératoire

Introduction

Bilan diagnostic initiale



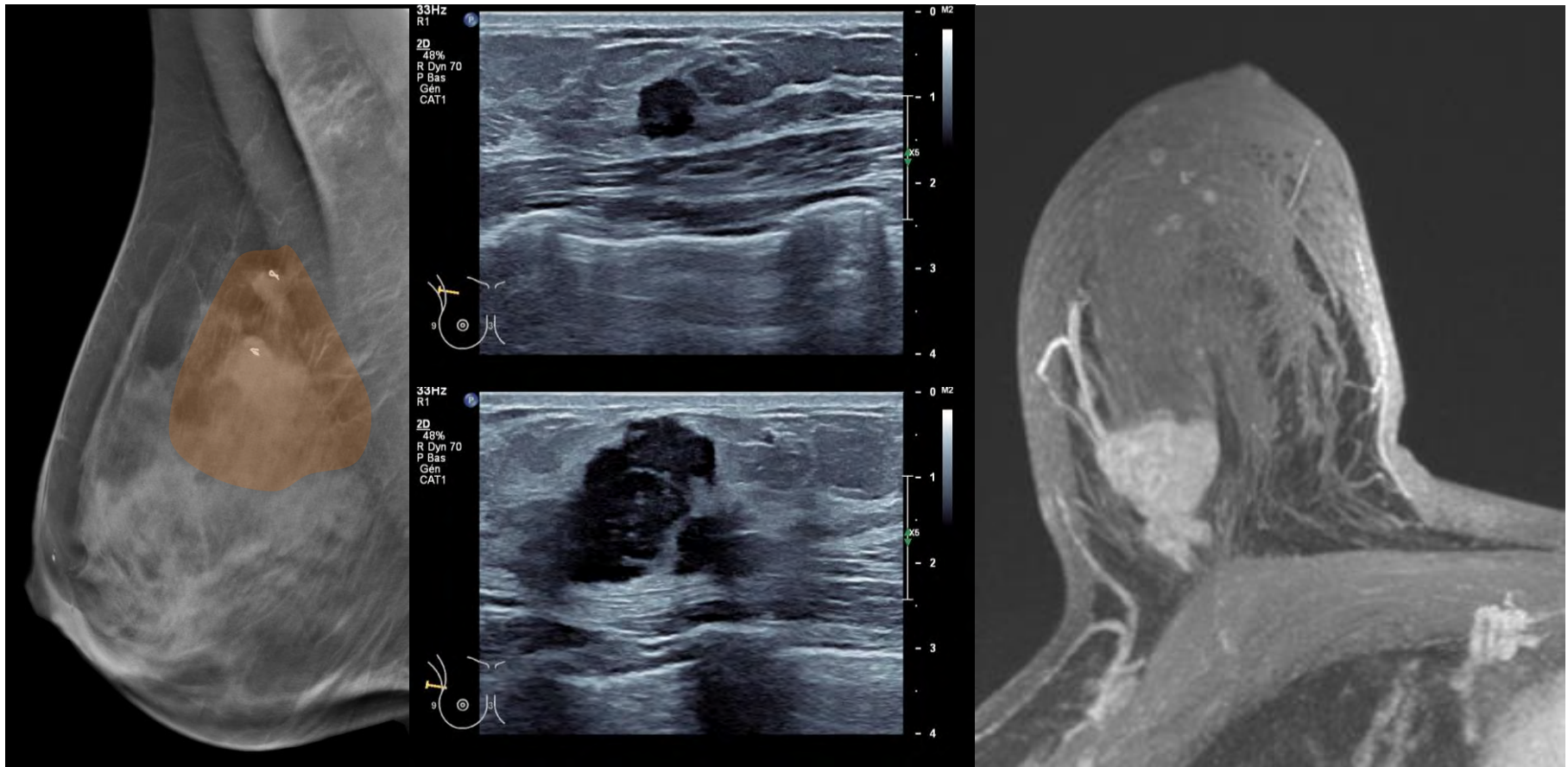
Breast cancer mortality crude rates (events per woman-years)
and log-rank analyses

Long-term outcomes for neoadjuvant versus adjuvant chemotherapy in early breast cancer: meta-analysis of individual patient data from ten randomised trials

Intérêt de la chimiothérapie néo adjuvante

diminution de l'agressivité des traitement chirurgicaux

- dans le sein
- dans l'aisselle

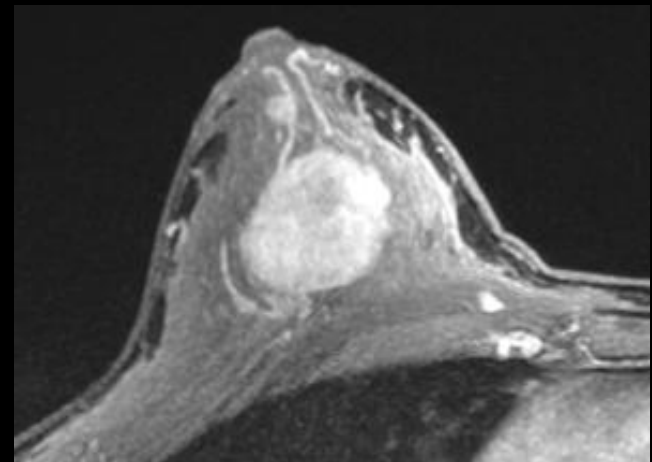
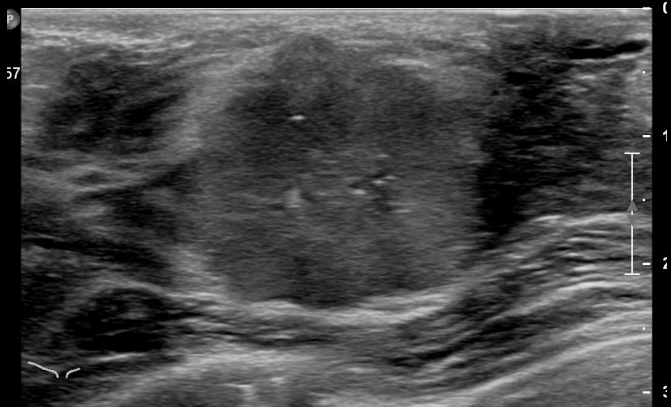
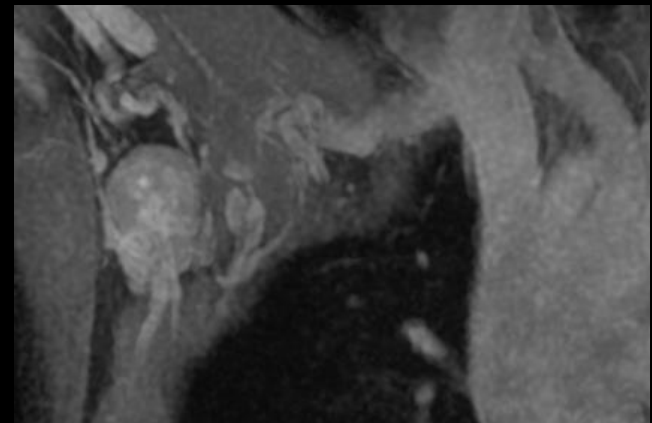
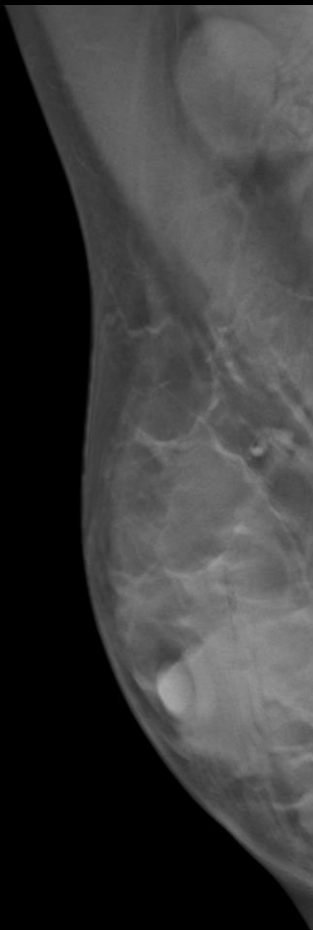


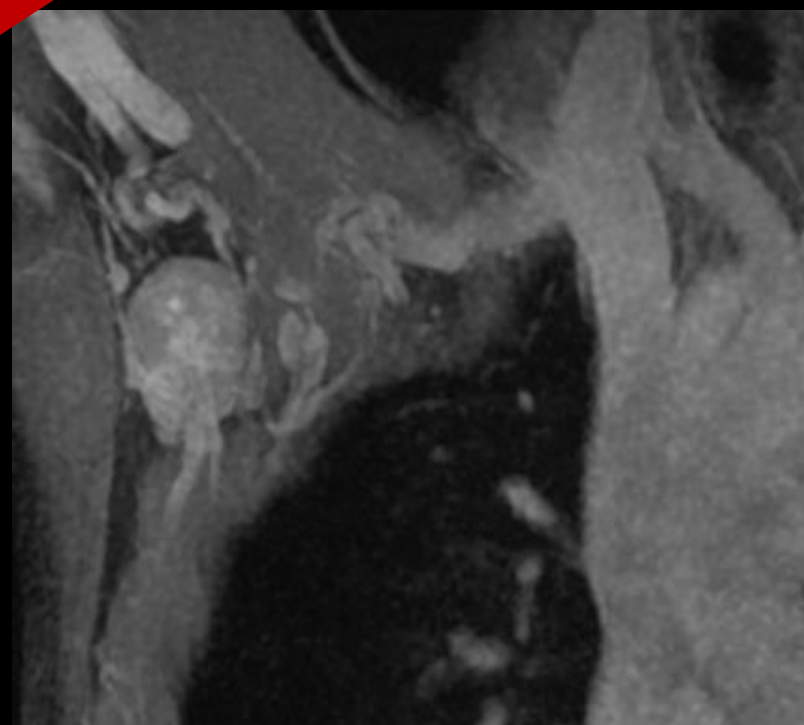
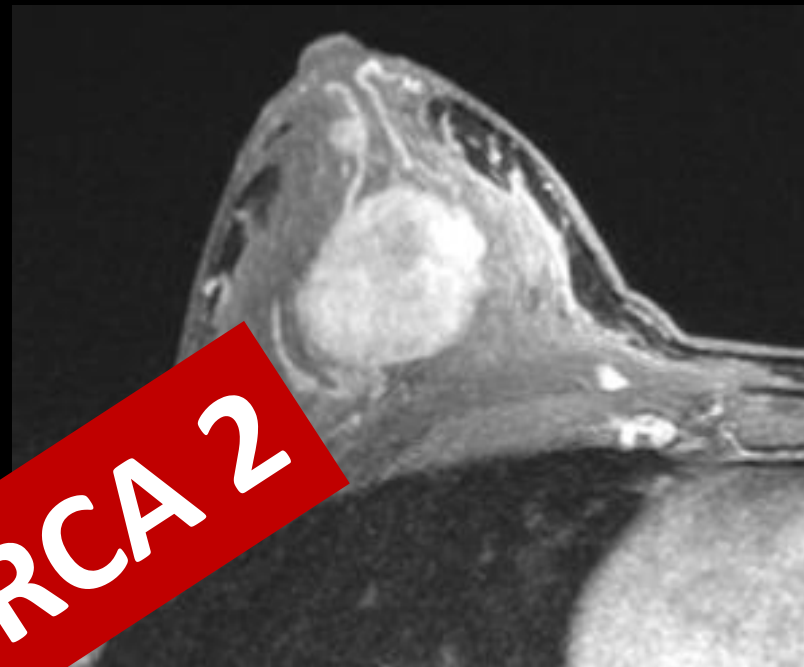
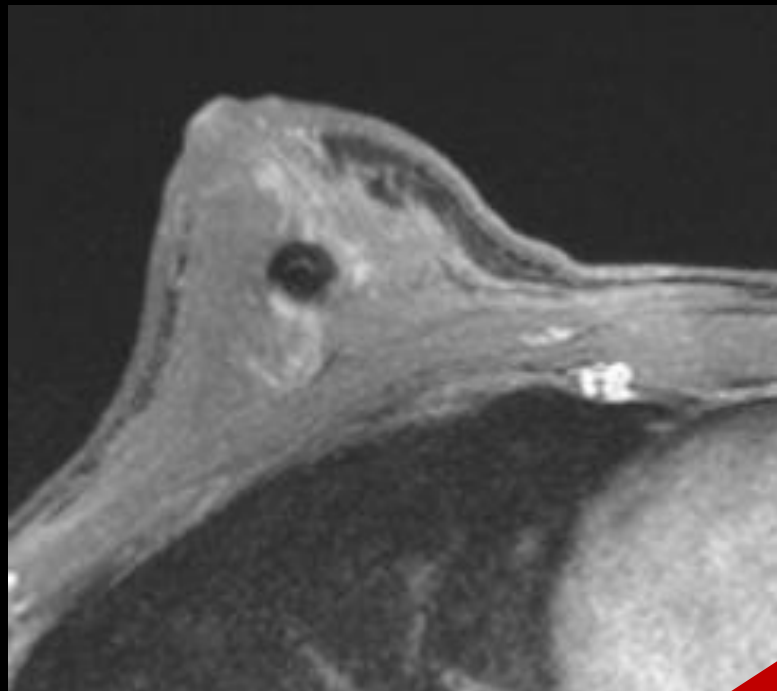
Intérêt de la chimiothérapie néo adjuvante

meilleure planification de la chirurgie

conseil génétique possible

planification d'une éventuelle reconstruction

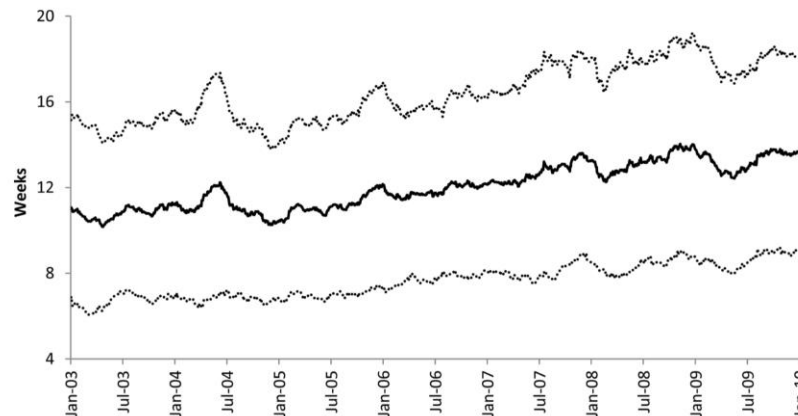
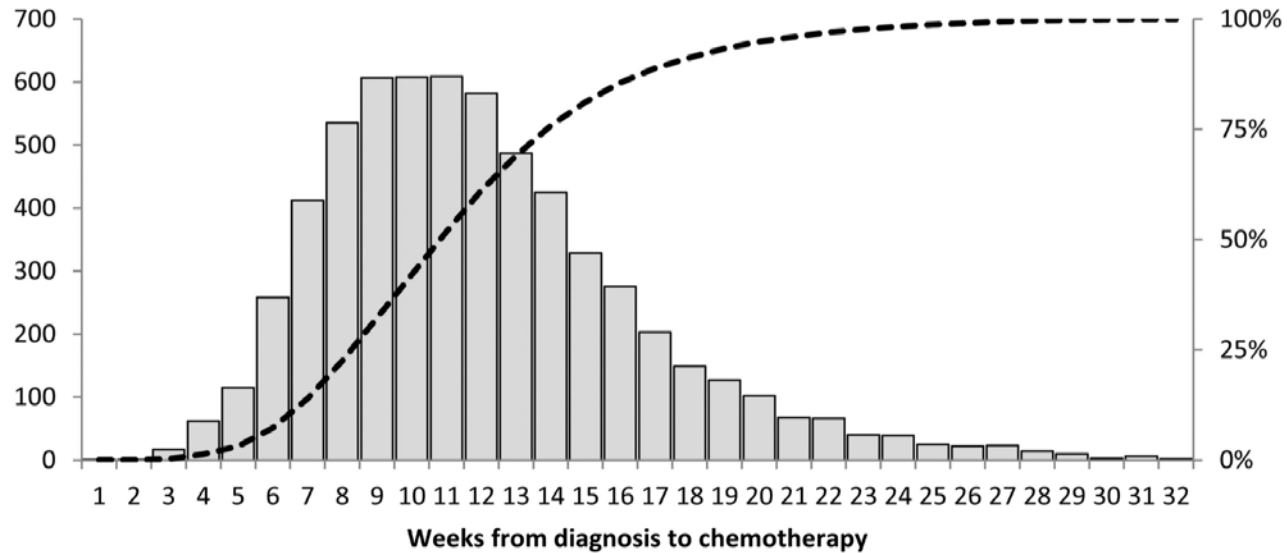




MUTATION BRCA 2

Intérêt de la chimiothérapie néo adjuvante

diminution des délais dans les traitements systémiques



Time to Adjuvant Chemotherapy for Breast Cancer in National Comprehensive Cancer Network Institutions

Jonathan L. Vandergrift, Joyce C. Niliand, Richard L. Theriault, Stephen B. Edge, Yu-Ning Wong, Loretta S. Loftus, Tara M. Breslin, Clifford A. Hudis, Sara H. Javid, Hope S. Rugo, Samuel M. Silver, Eva M. Lepisto, Jane C. Weeks

Intérêt de la chimiothérapie néo adjuvante

permet d'étudier «in vivo» l'efficacité des traitements

modulations des traitements

motivation de la patiente

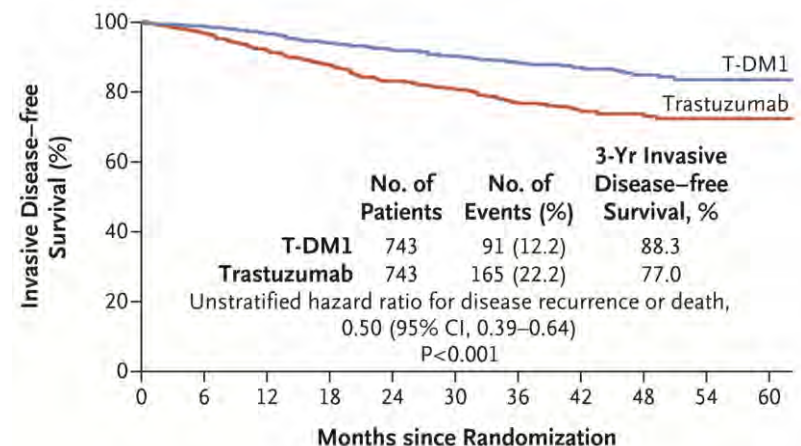
plateforme idéale pour études cliniques

informations pronostiques

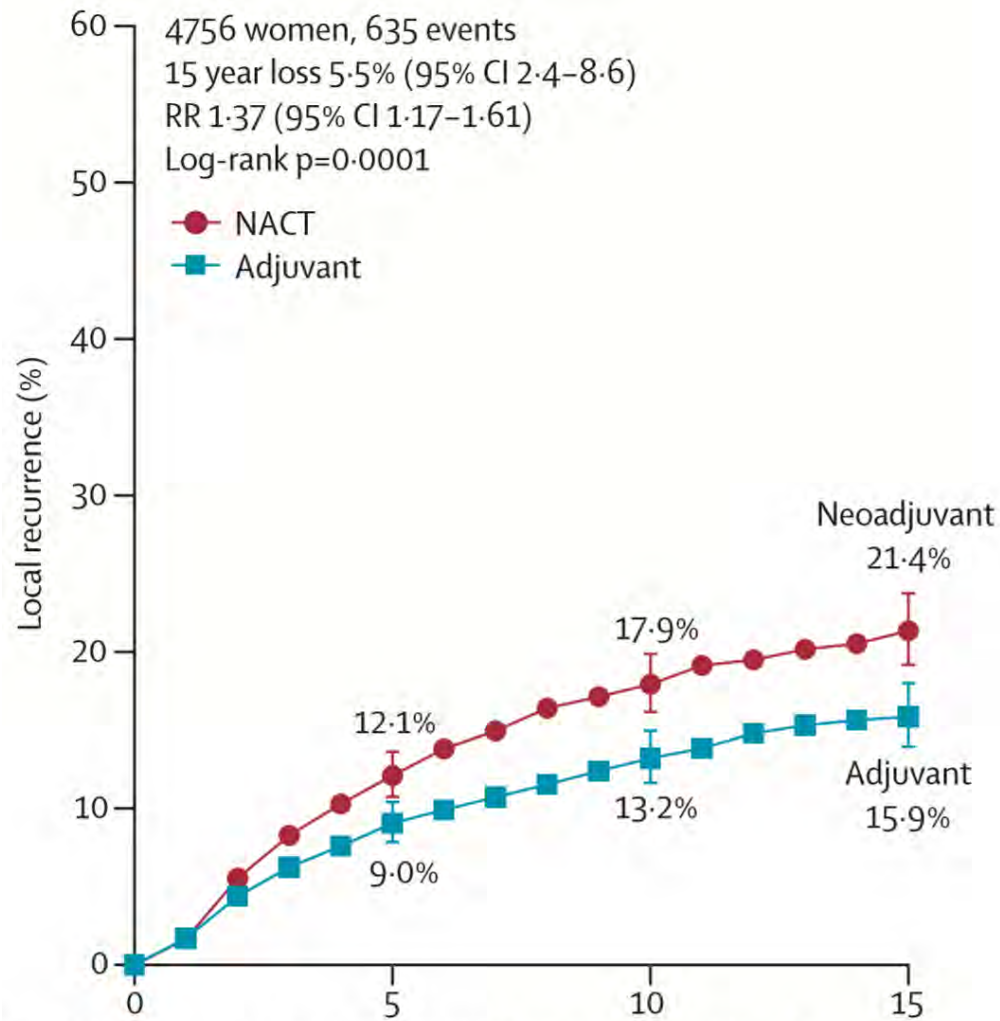


Trastuzumab Emtansine for Residual Invasive HER2-Positive Breast Cancer

G. von Minckwitz, C.-S. Huang, M.S. Mano, S. Loibl, E.P. Mamounas, M. Untch, N. Wolmark, P. Rastogi, A. Schneeweiss, A. Redondo, H.H. Fischer, W. Jacot, A.K. Conlin, C. Arce-Salinas, I.L. Wapnir, C. Jackisch, M.P. DiGiovanna, P.A. Fasching, J.P. Crown, P. Wülfing, Z. Shao, E. Rota Caremoli, H. Wu, L.H. Lam, D. Tesarowski, M. Smitt, H. Douthwaite, S.M. Singel, and C.E. Geyer, Jr., for the KATHERINE Investigators*

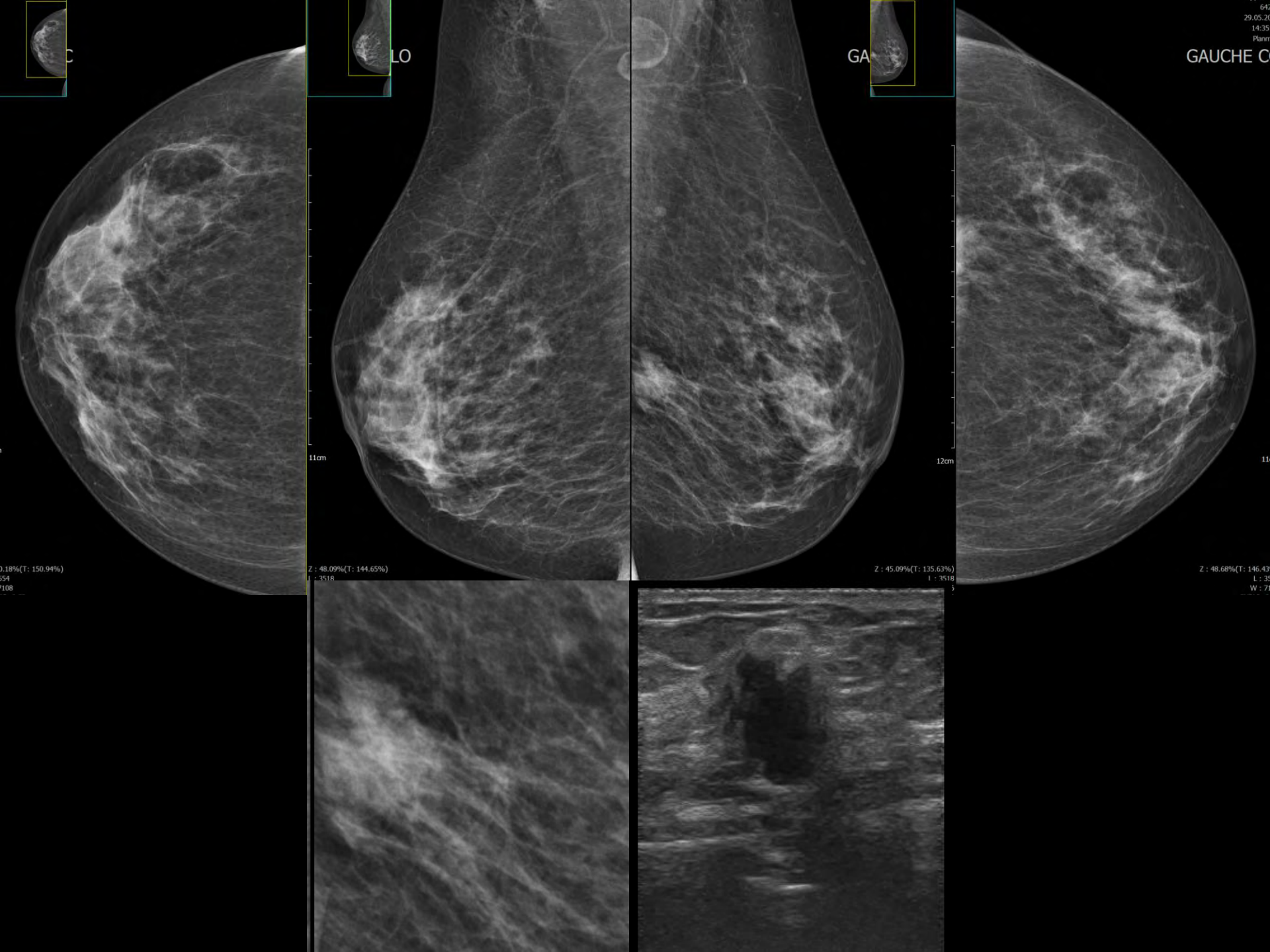


Introduction

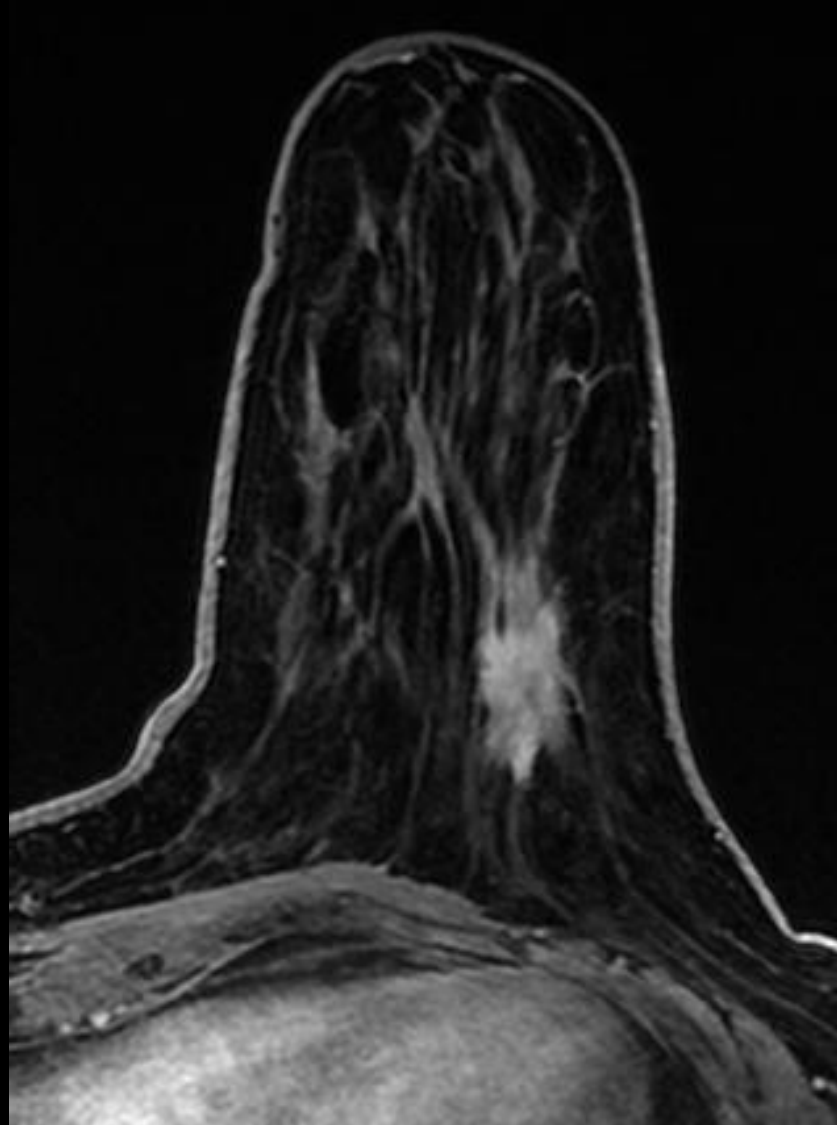
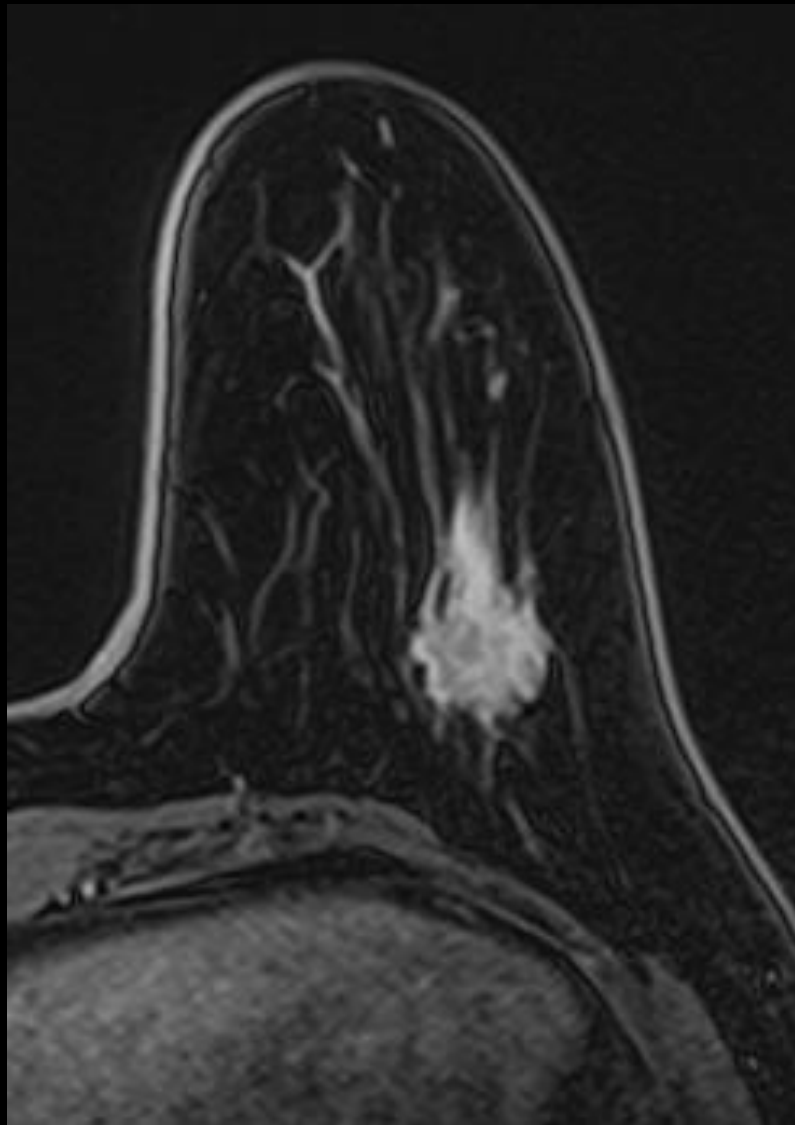


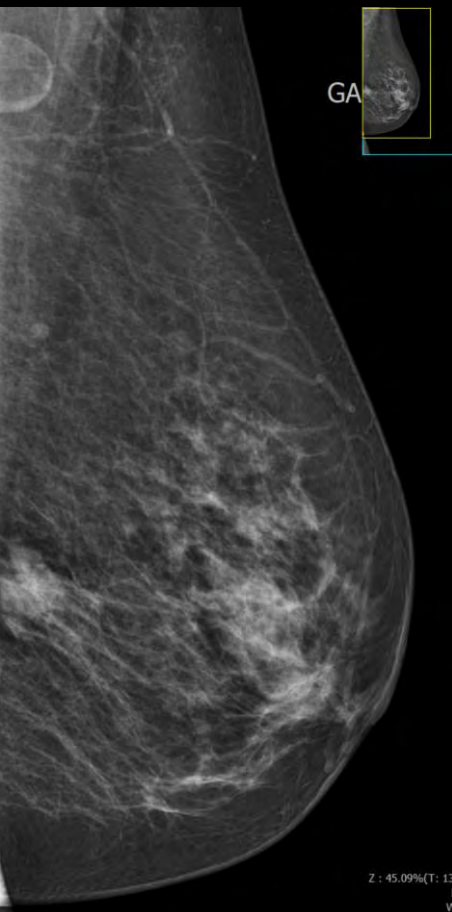
Local recurrence crude rates (events per woman-years)
and log-rank analyses

Long-term outcomes for neoadjuvant versus adjuvant chemotherapy in early breast cancer: meta-analysis of individual patient data from ten randomised trials

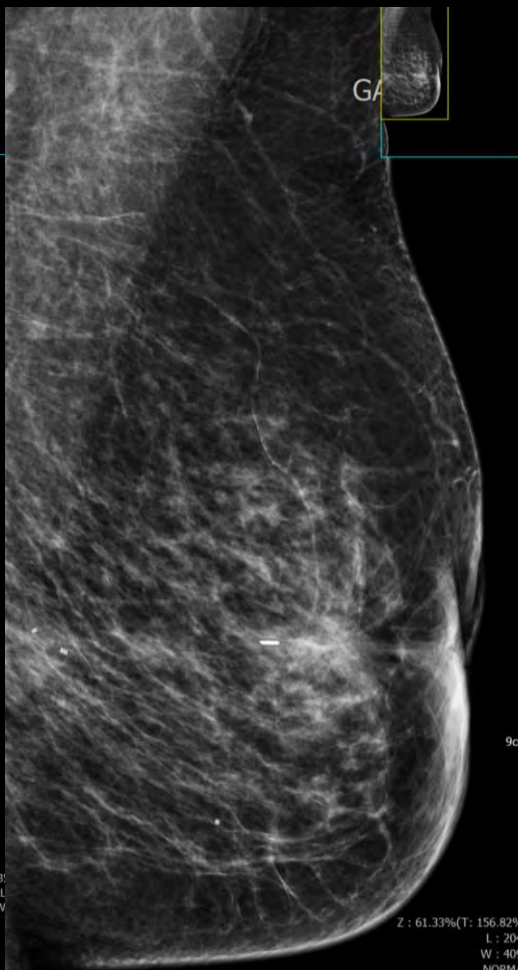


MIB 70%

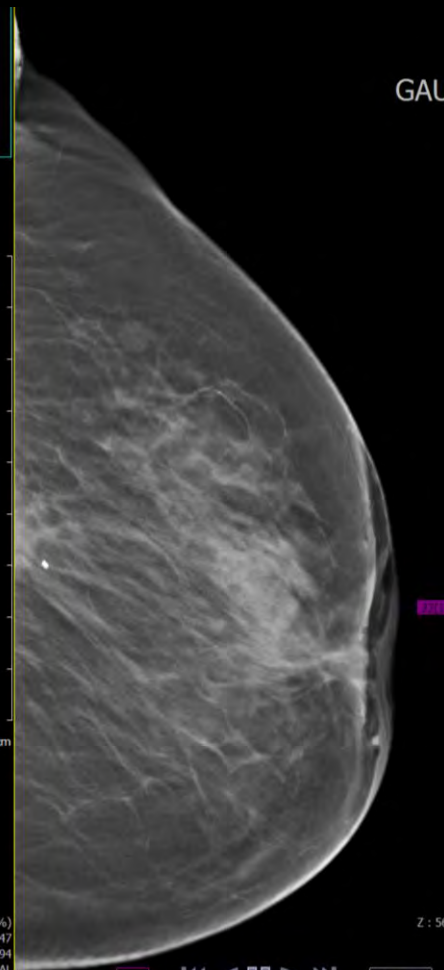




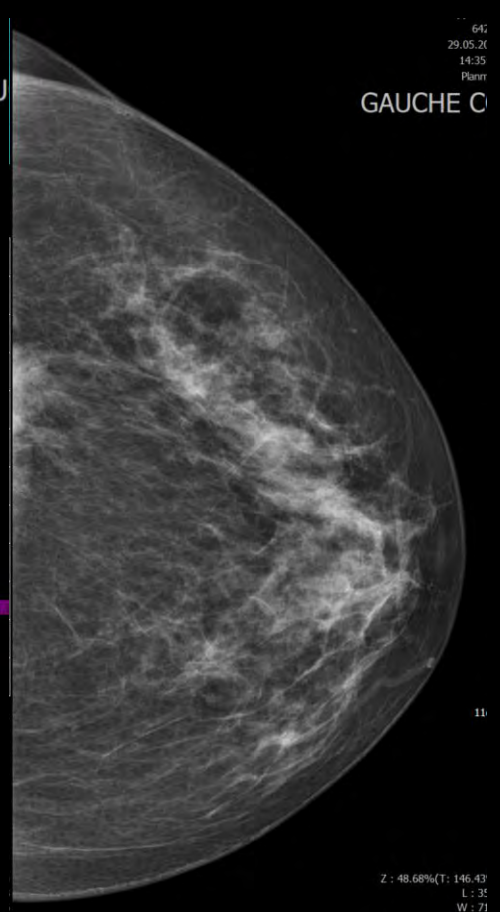
Z : 45.09%(T: 13)
L :
W :



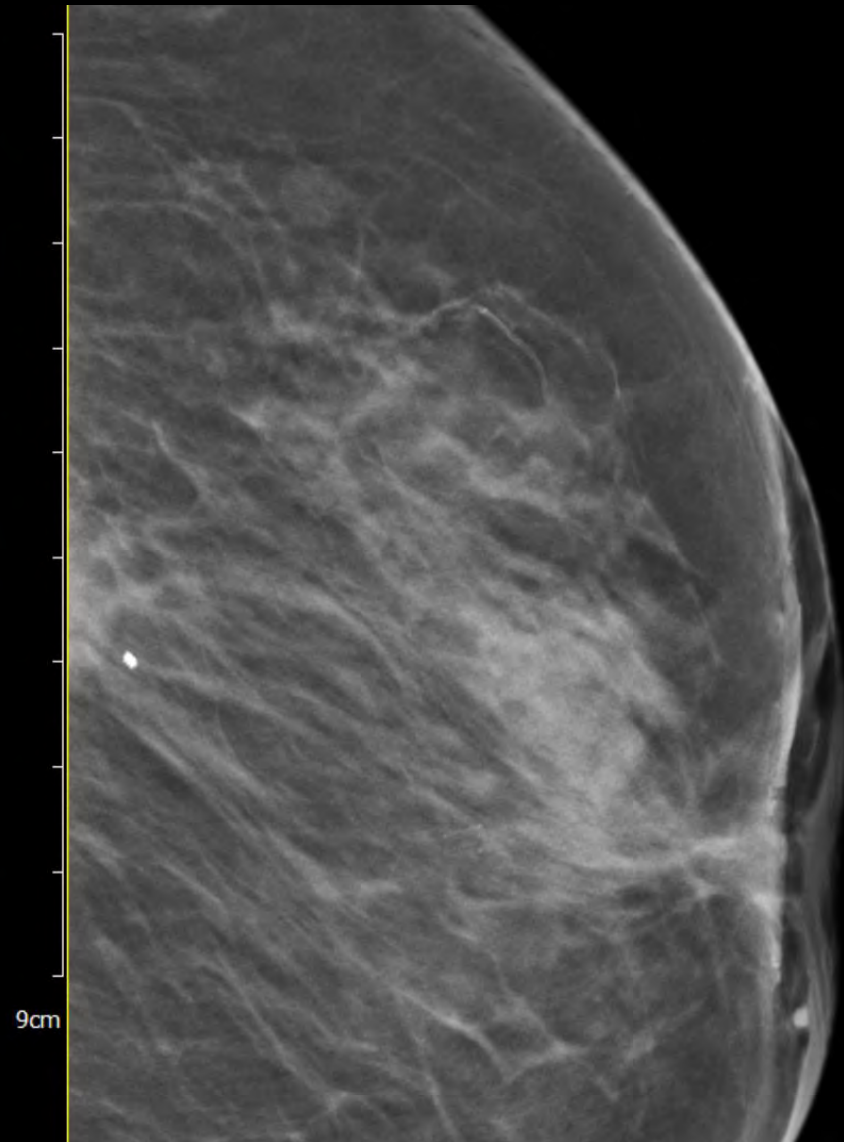
Z : 61.33%(T: 156.82%)
L : 2047
W : 4094
NORMAL

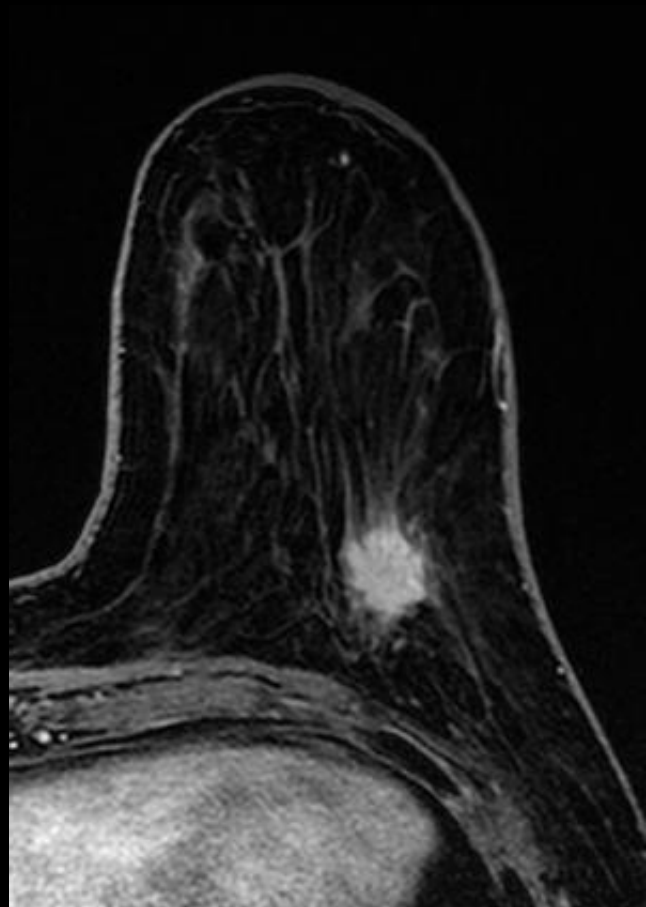
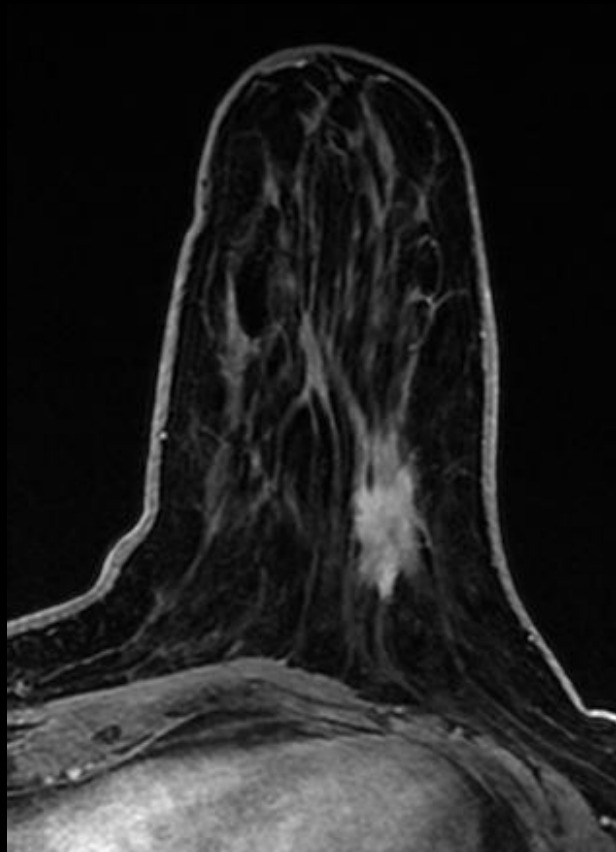
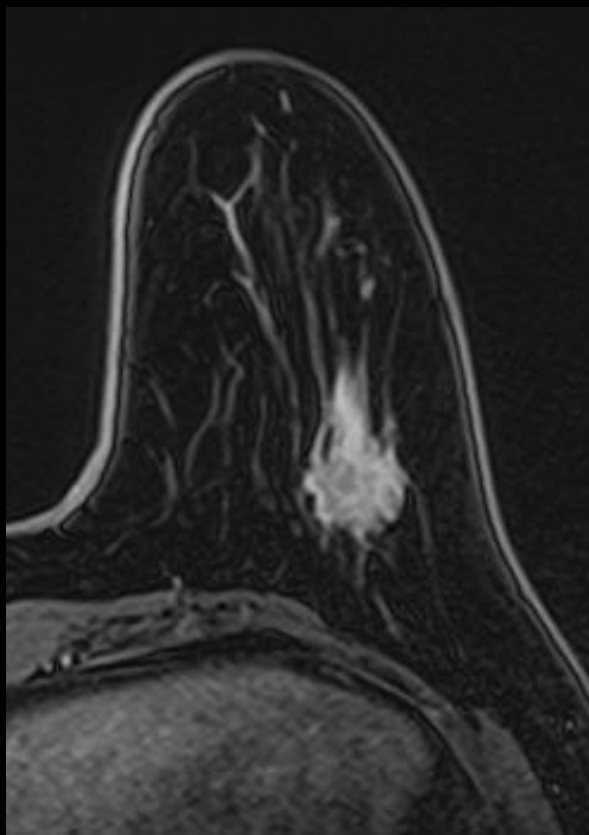


Z : 56.



Z : 48.68%(T: 146.43)
L : 35
W : 71





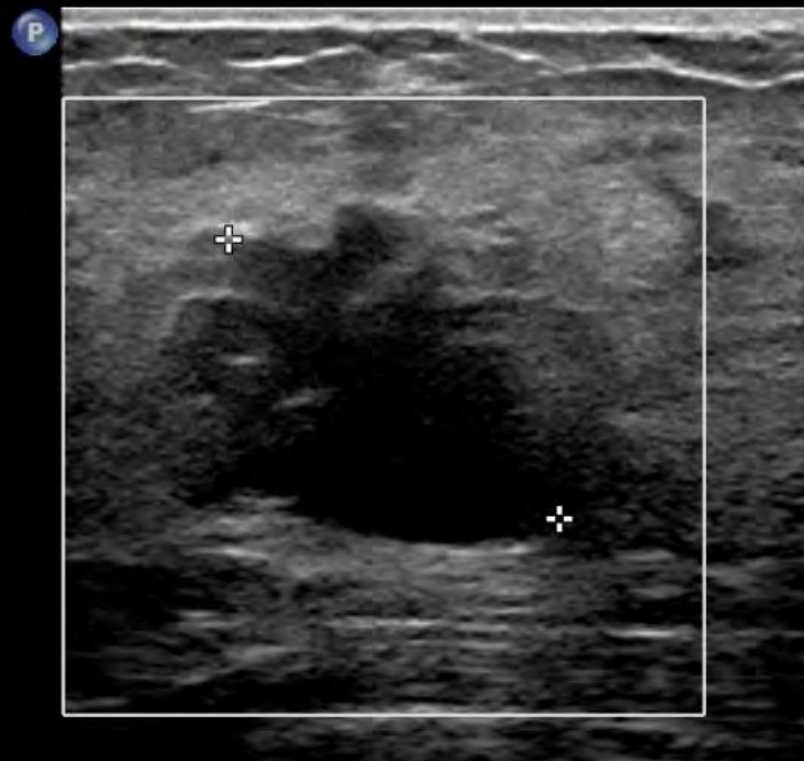
Introduction

Bilan diagnostic initial

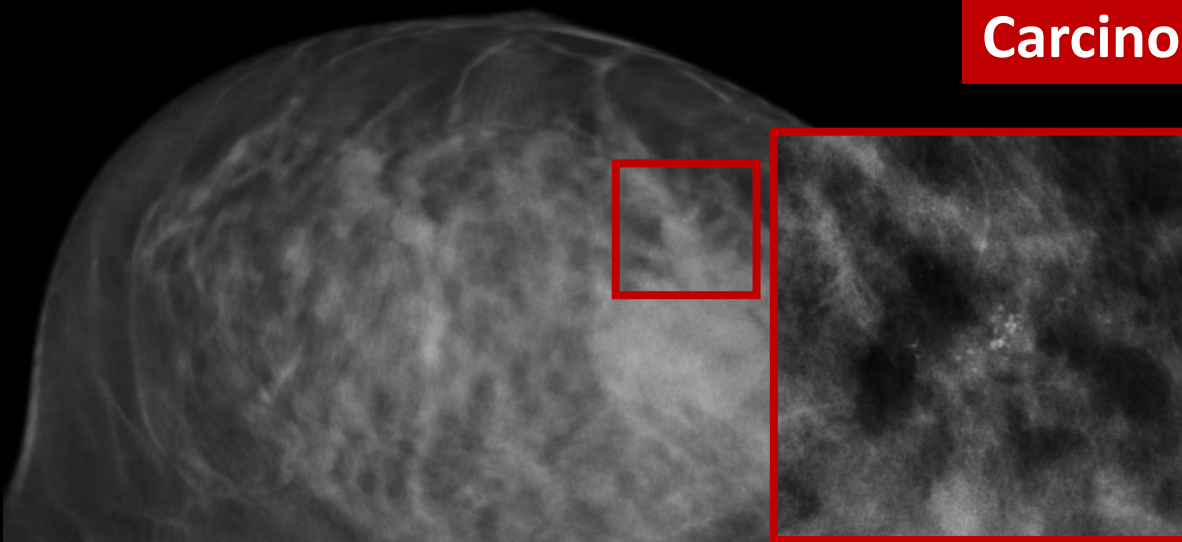
Marquage

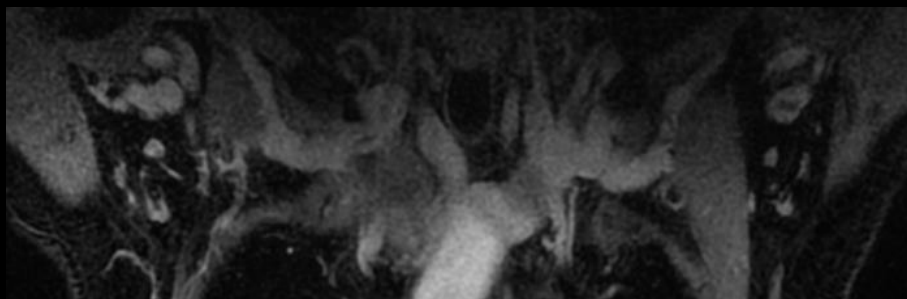
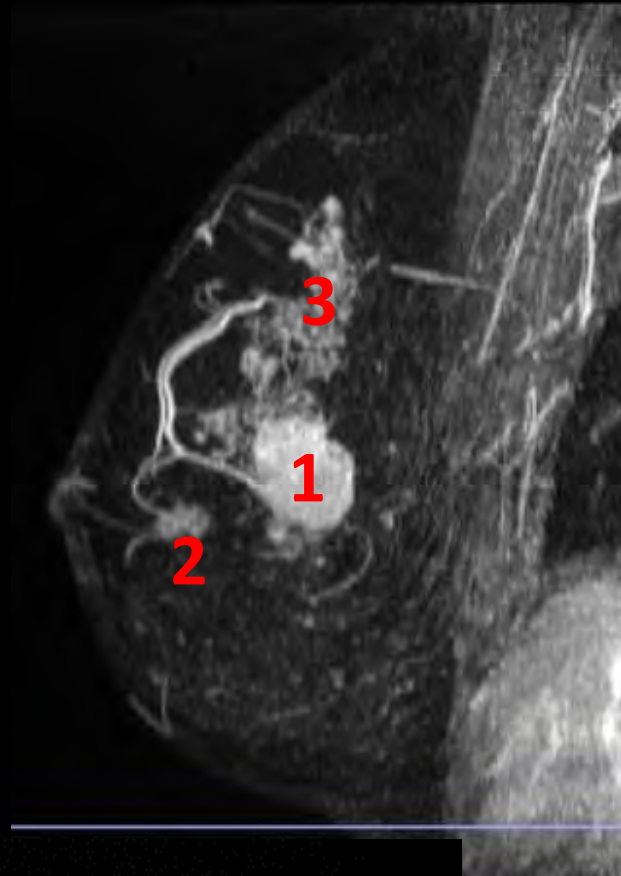
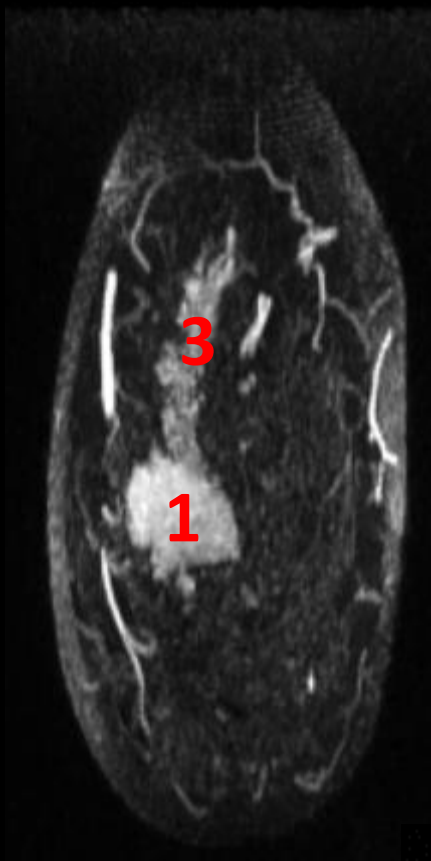
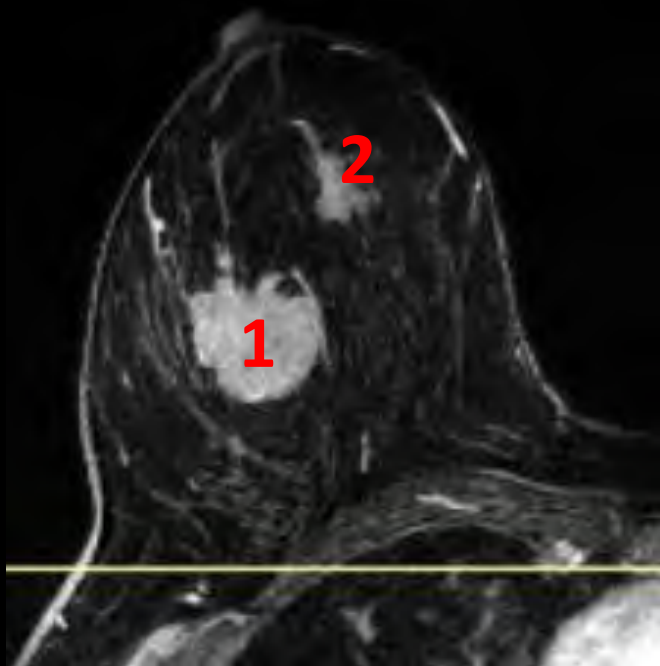
Evaluation de la réponse au traitement

Repérage préopératoire

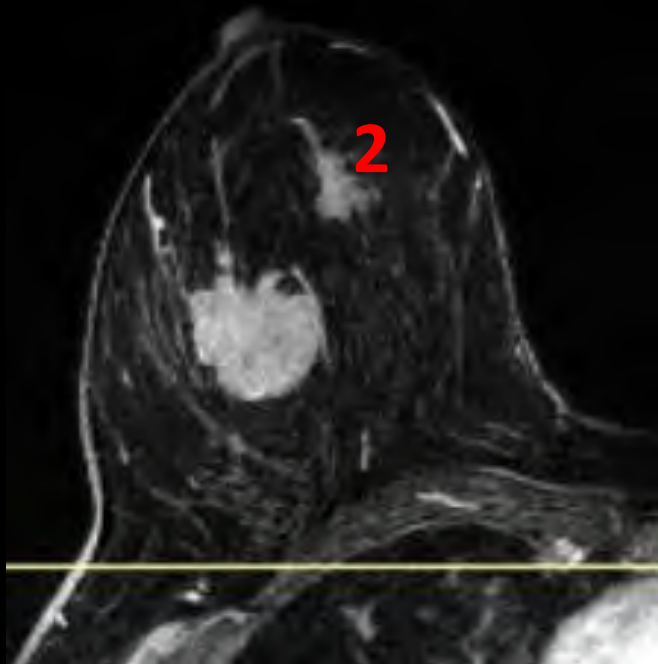


Carcinome canalaire invasif NST





Investigation anomalie Nr 2



5:50:57

2D

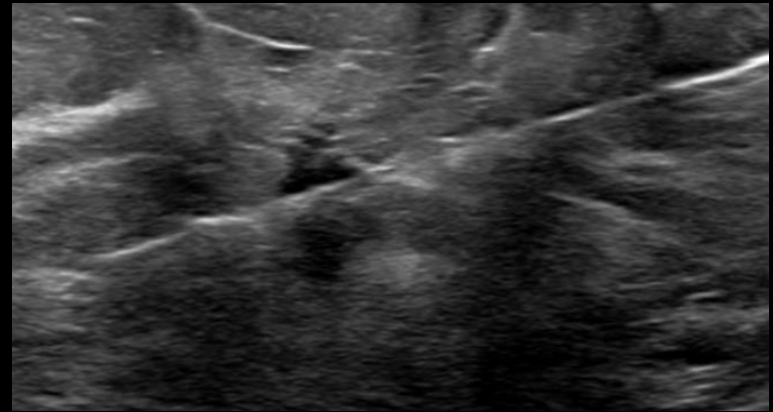
49%

R Dyn 68

P Moy

Gén

CAT1



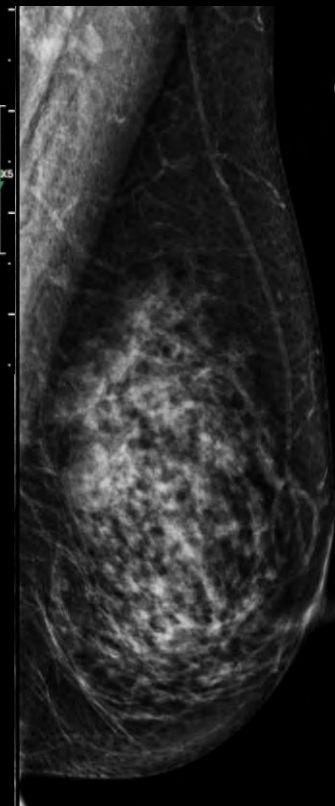
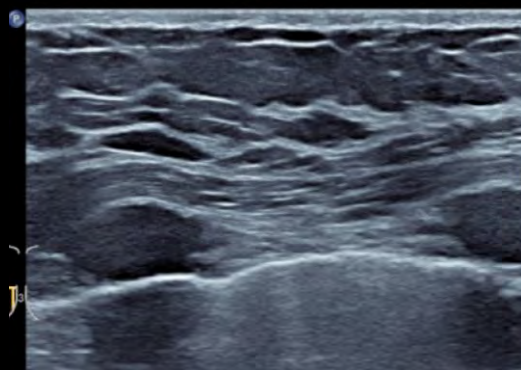
Lésion papillaire sans atypie



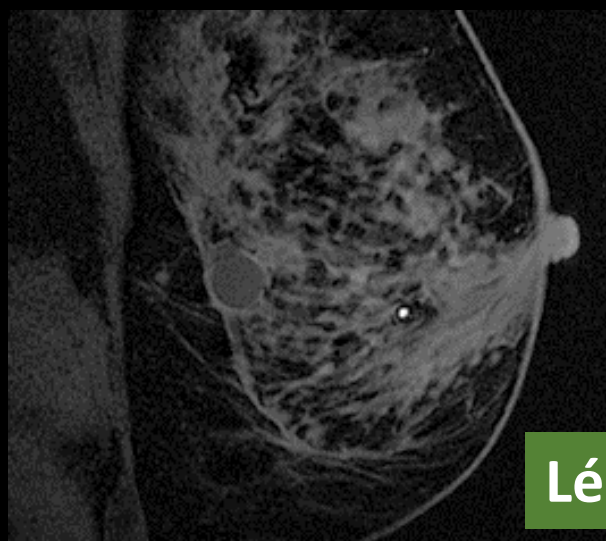
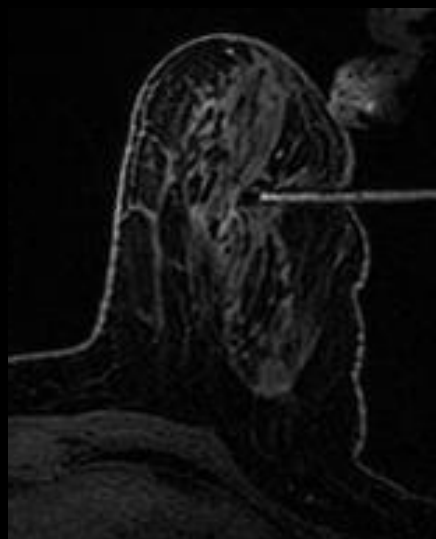
Sein G



Sein G



Investigation anomalie du sein G

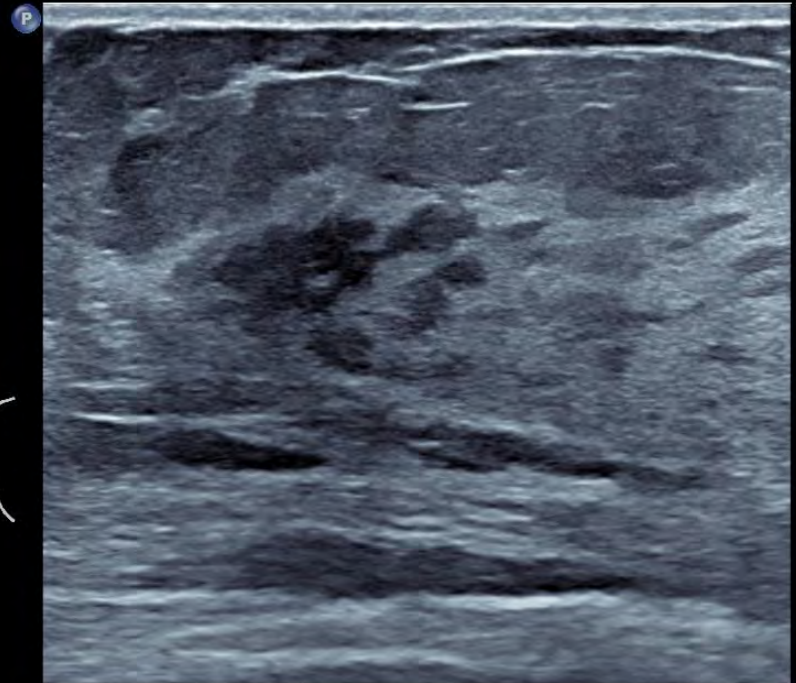


Lésion papillaire sans atypie

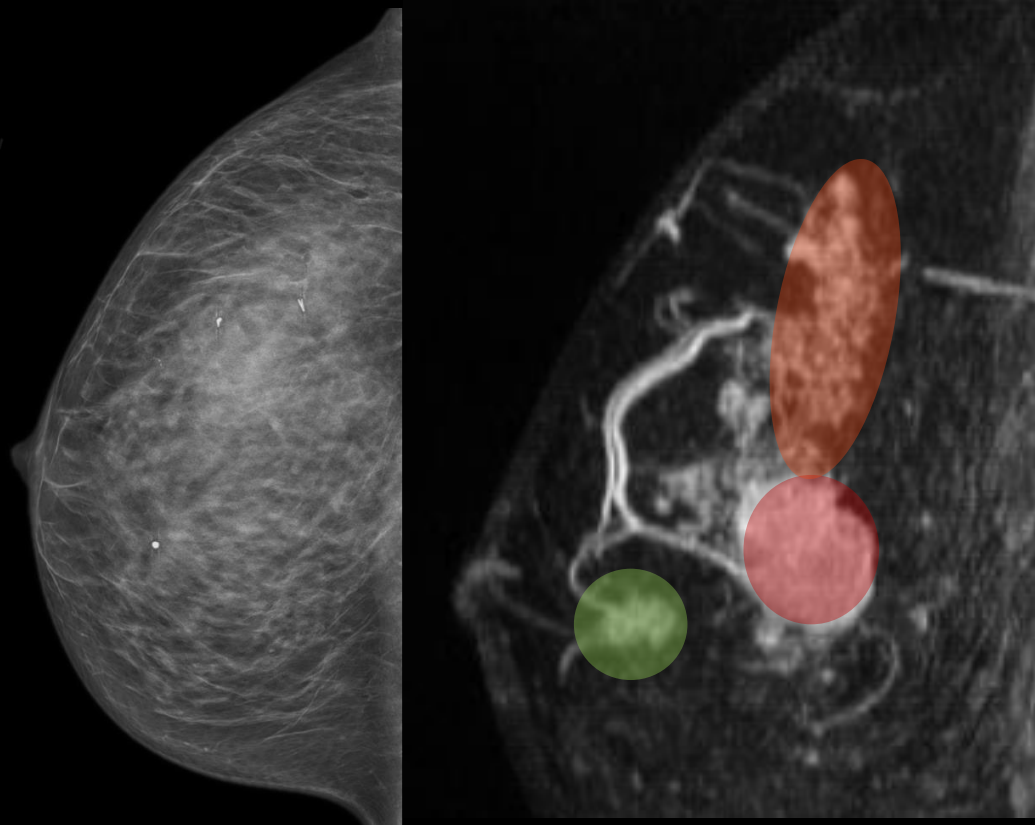
Investigation anomalie Nr 3



32Hz
R1
2D
53%
R Dyn 70
P Moy
Gén
CAT1



Carcinome canalaire invasif NST



Mammographie bilatérale

US seins et axillaire

Ponction de la lésion Nr 1 sous US

IRM des seins

US 2^{ème} look D et G

Ponction de la lésion Nr 2 sous US

Ponction sous IRM de la lésion G

Ponction de la lésion Nr 3 sous US

Pose de clips sein D sous US

ex	Age	Modality	Body Part	Study Date	R..	Study Desc
	049Y	MG\SR\US	BREAST	01.10.2019 14:30:02	5..	Biopsie sous US
	049Y	MR	CHEST	24.09.2019 11:59:38	5..	Biopsie
	049Y	MR\US	BREAST	23.09.2019 16:00:45	5..	Seins
	049Y	MG\SR\US	BREAST	17.09.2019 10:34:41	5..	Mammographie diagnostique

Introduction

Bilan diagnostic initiale

Marquage

Evaluation de la réponse au traitement

Repérage préopératoire

Pourquoi marquer

Quand marquer

Avec quel matériel

Technique de marquage

Complications/déplacements

Marquage axillaire?

Pourquoi marquer

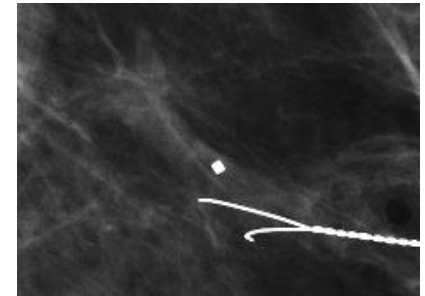
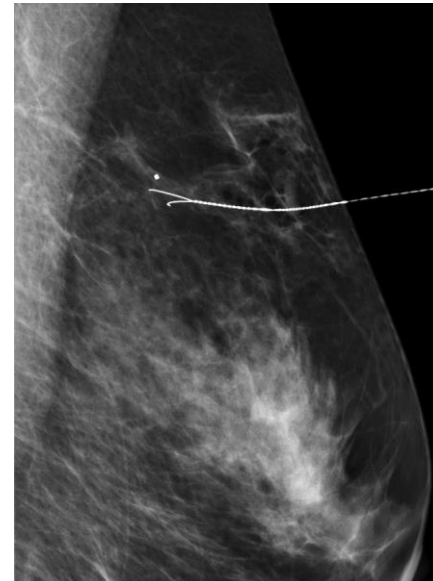
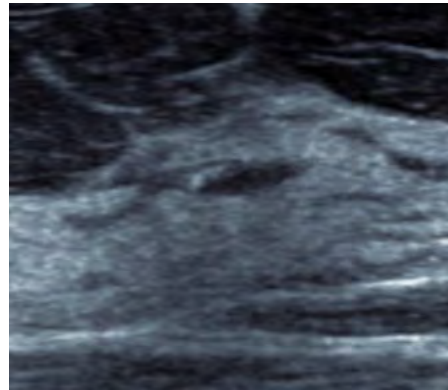
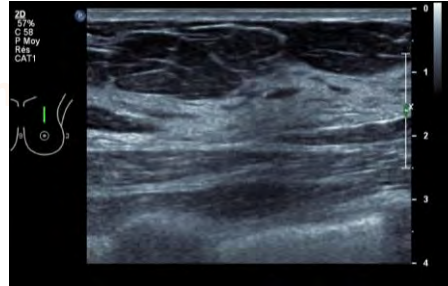
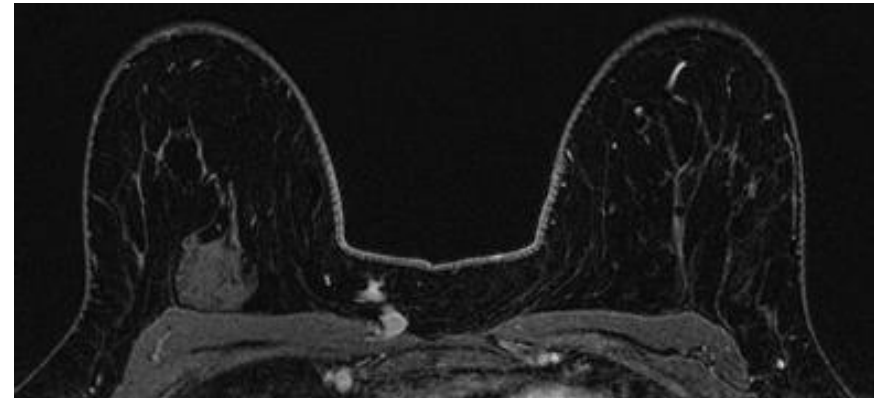
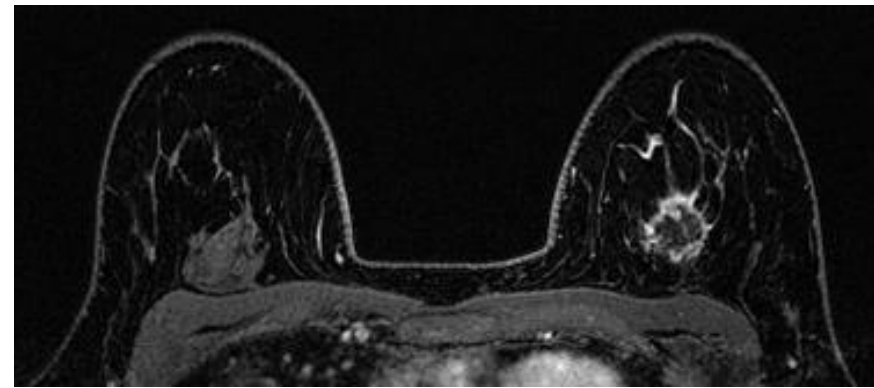
Quand marquer

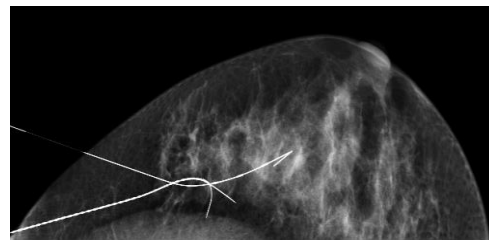
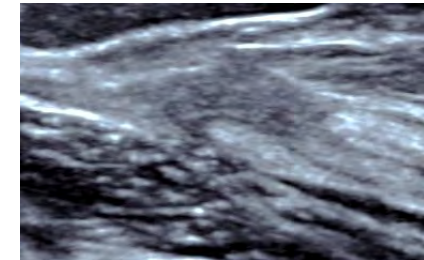
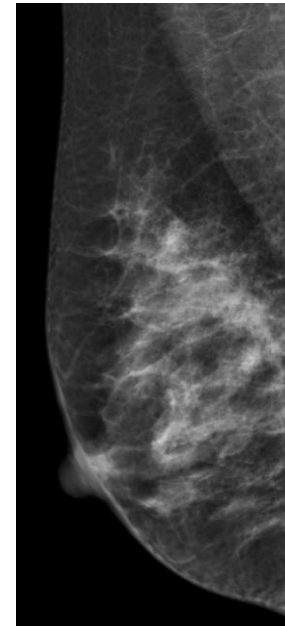
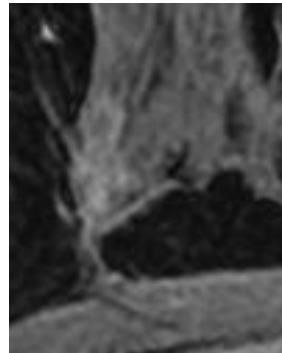
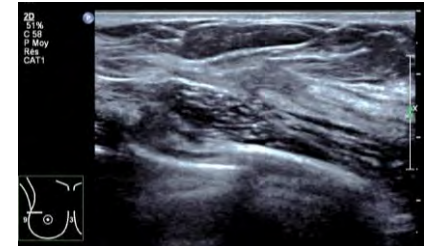
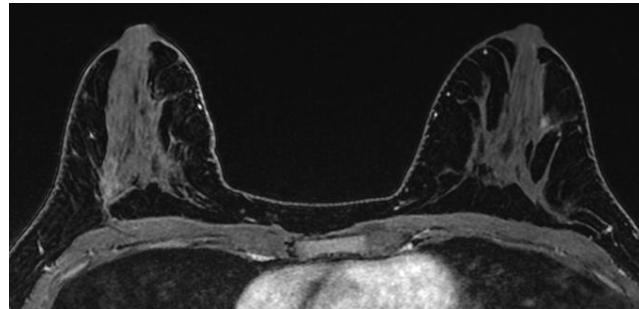
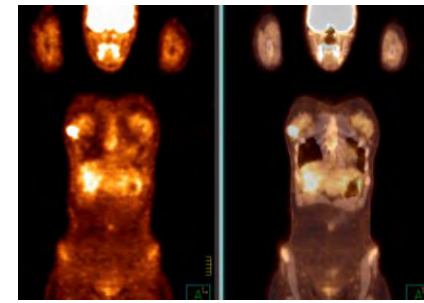
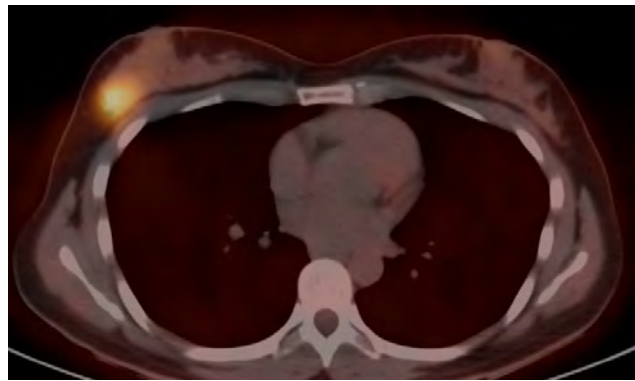
Avec quel matériel

Technique de marquage

Complications/déplacement

Marquage axillaire?





Pourquoi marquer

Quand marquer

Avec quel matériel

Technique de marquage

Complications/déplacements

Marquage axillaire?

(lors des procédures diagnostiques)

Après concertation pré-thérapeutique

choix des patients

exclusion cancers inflammatoires

exclusion des cancers à foyers multiples éloignés

inclusion de certaines patients métastatiques

choix du type de marquage

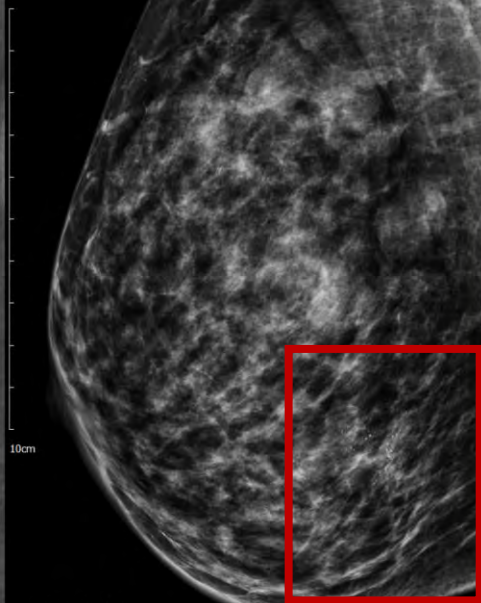
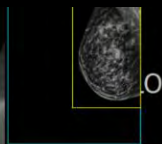
Avant le début de la chimiothérapie

si possible

(si fonte tumorale clinique)

Head
10 cm
Foot
19/79

: 65.08%(T: 166.39%)
: 2217
: 2773
NORMAL

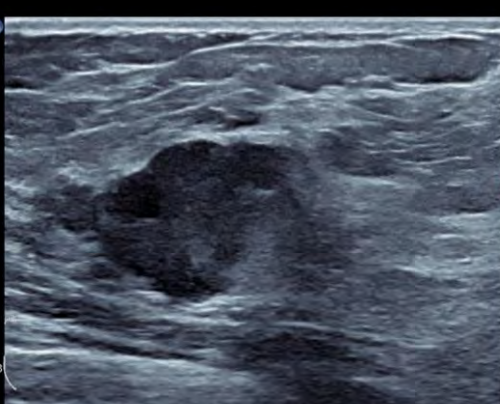


Z : 55.33%(T: 141.47%)
L : 2046
W : 4993
NORMAL

eL18-4
33Hz
R1



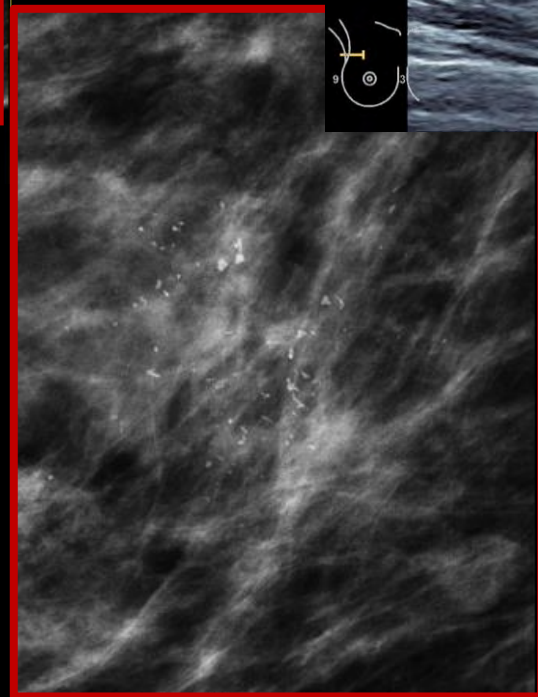
33Hz
R1

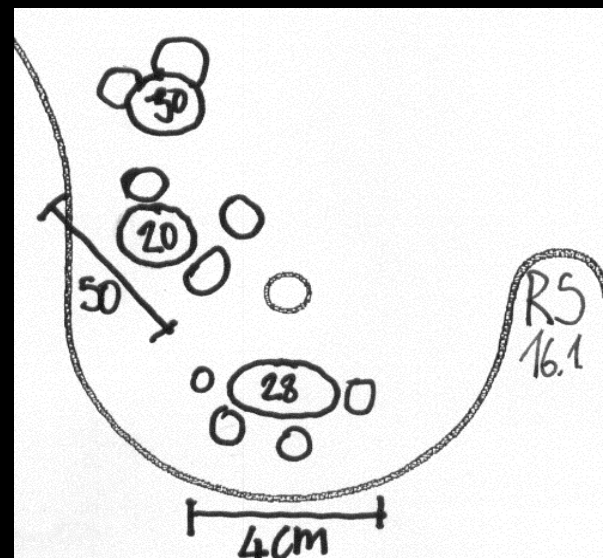
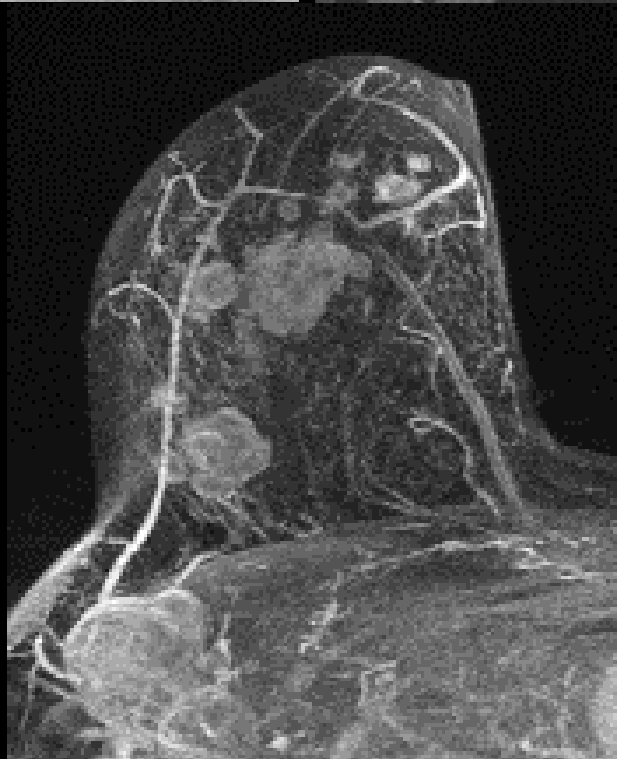
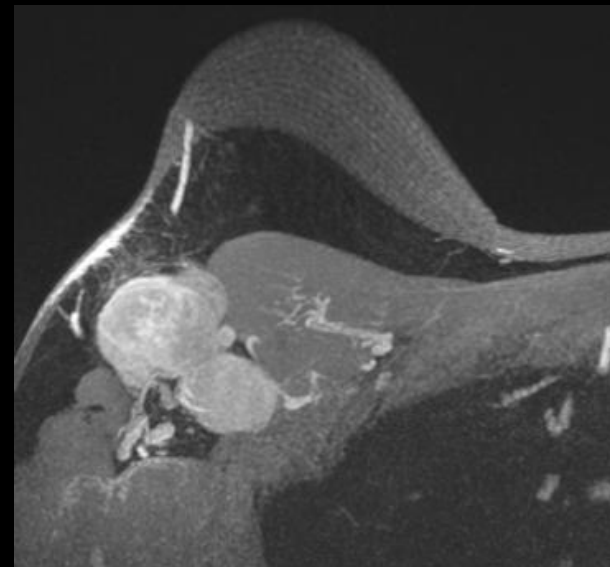
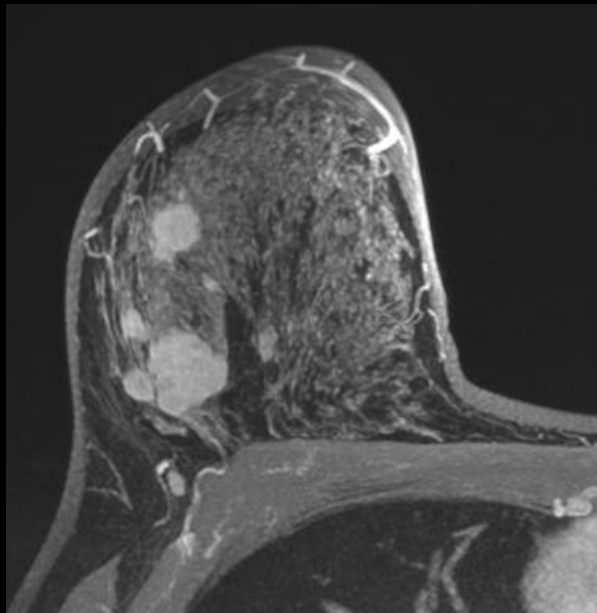
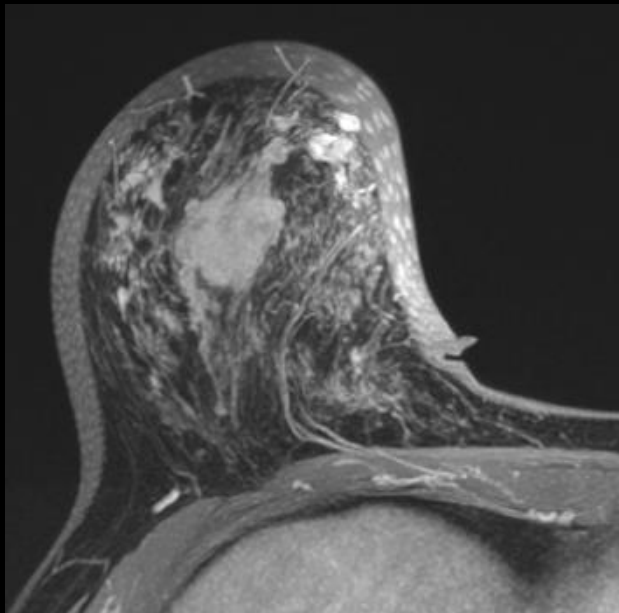


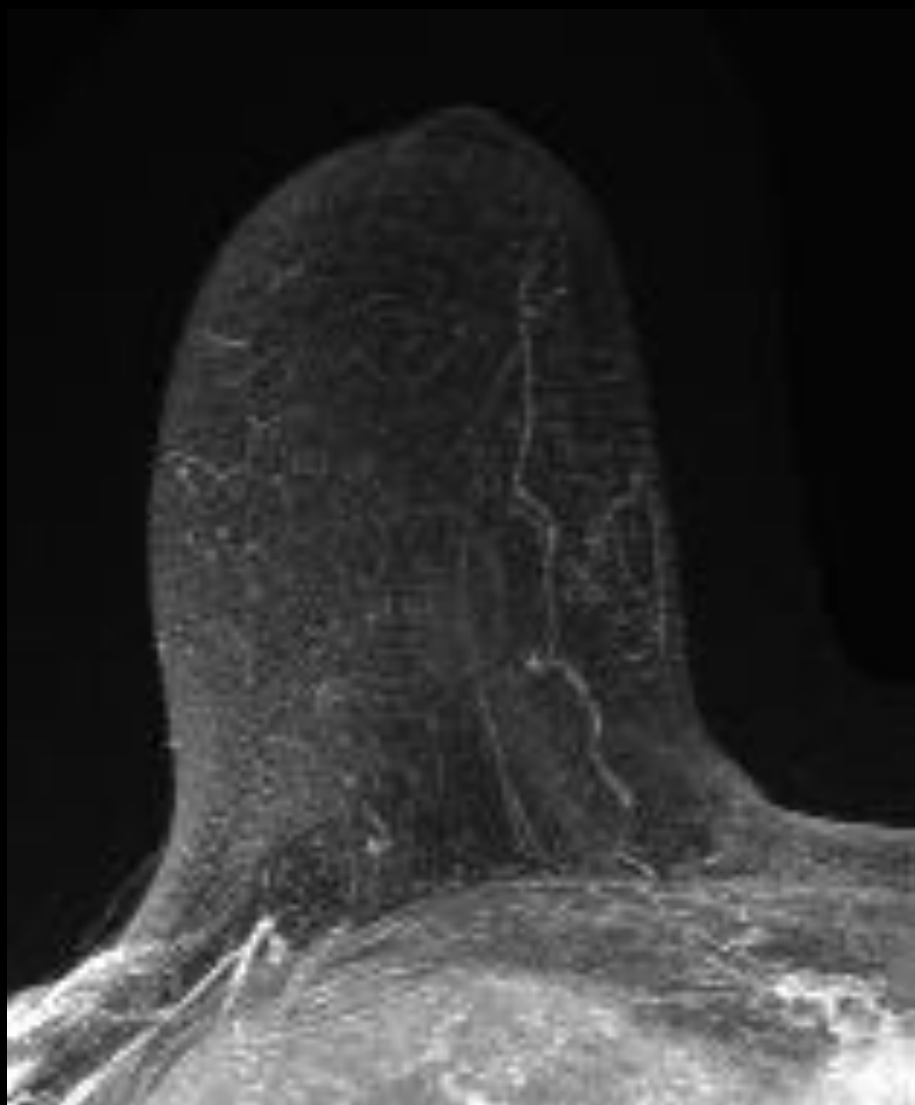
33Hz
R1



Dist 1.44 cm







Pourquoi marquer

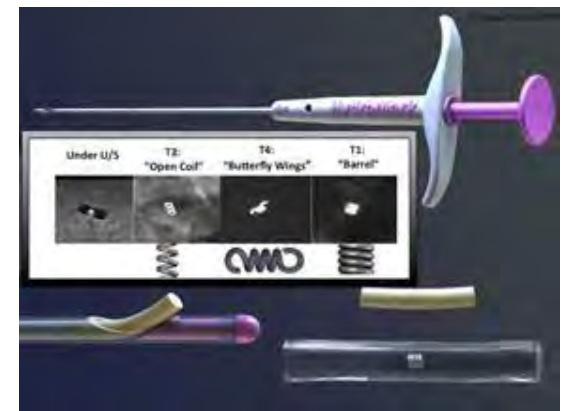
Quand marquer

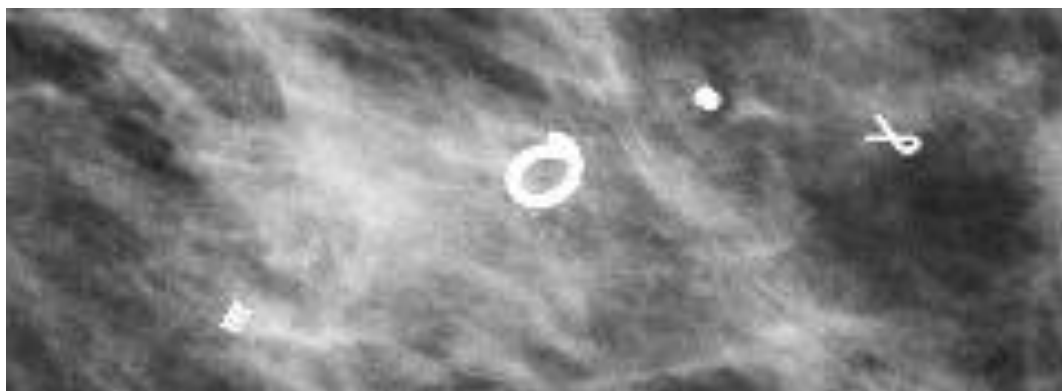
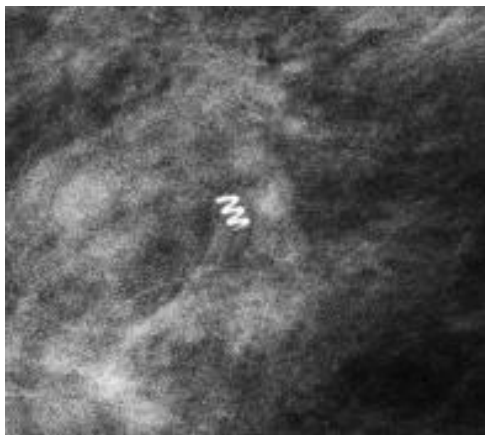
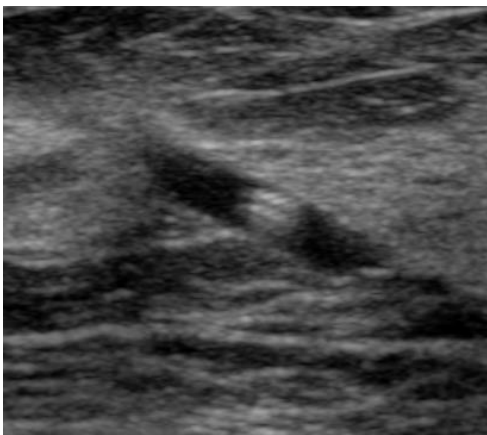
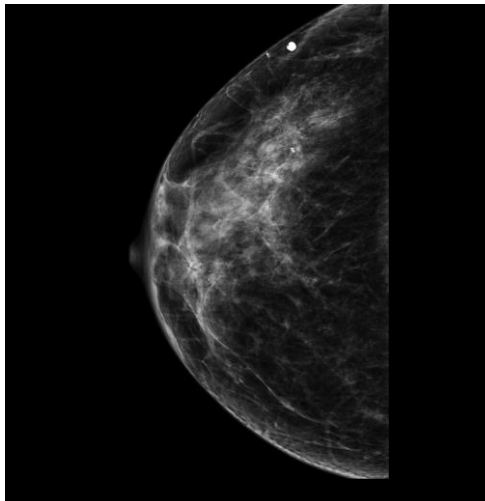
Avec quel matériel

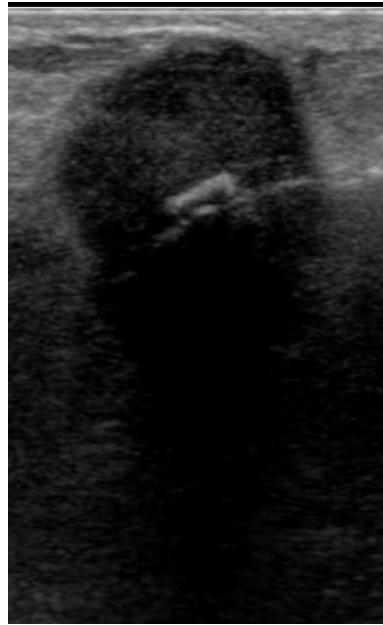
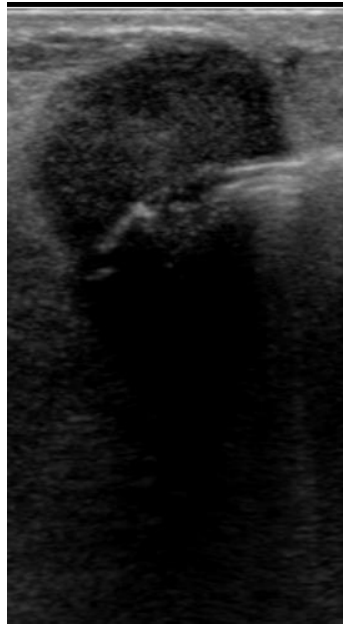
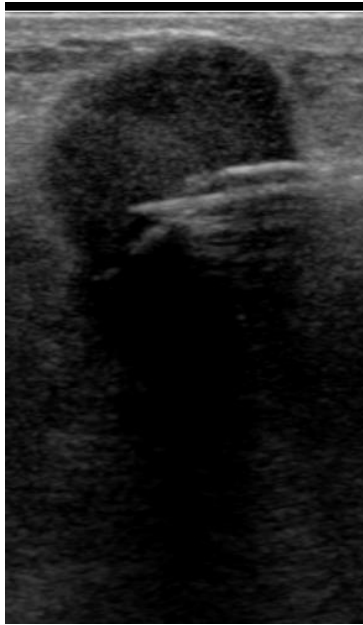
Technique de marquage

Complications/déplacements

Marquage axillaire?



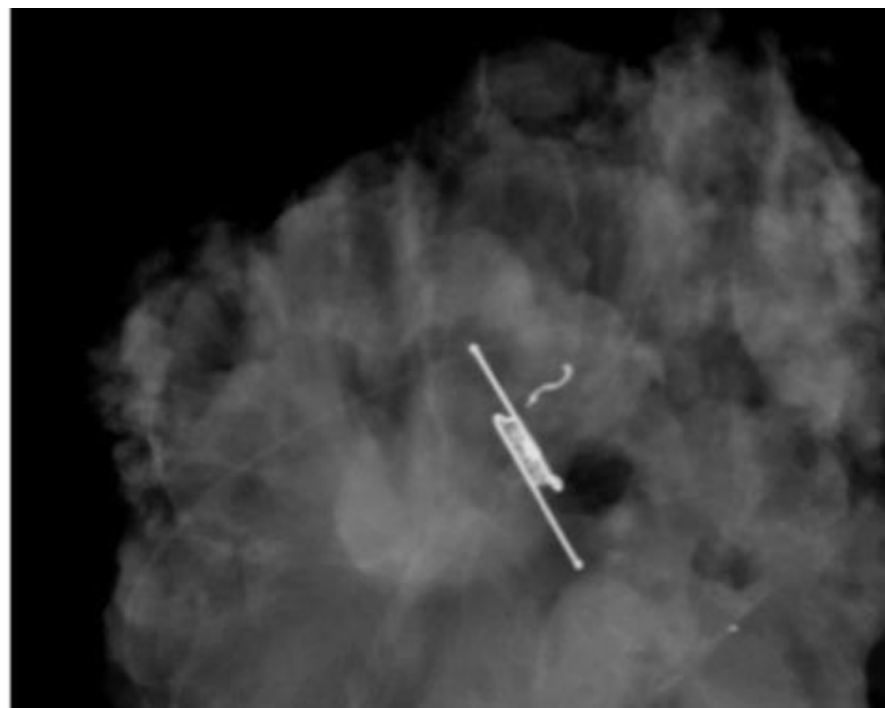
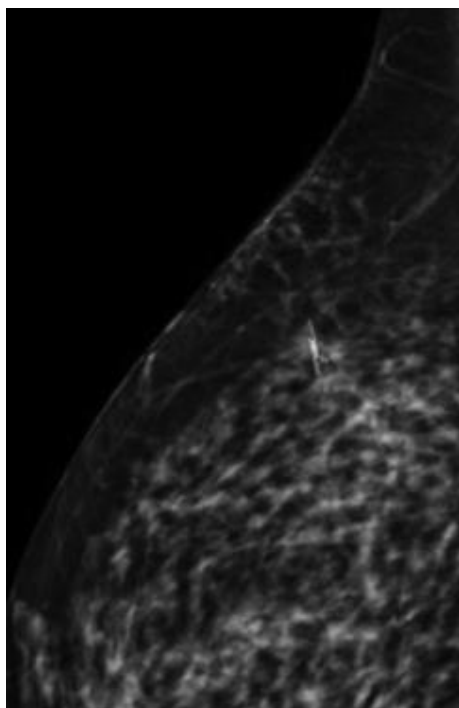
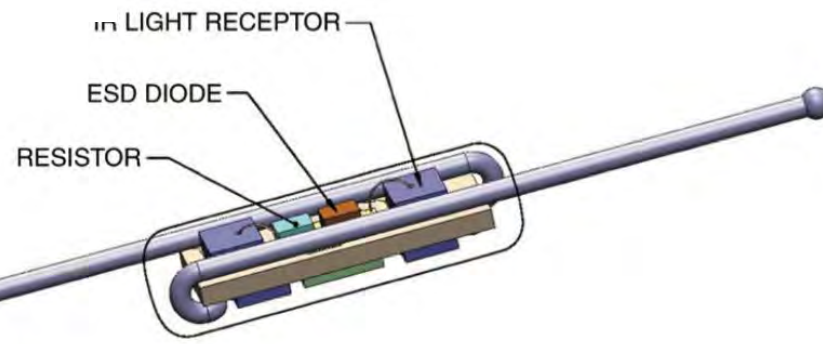




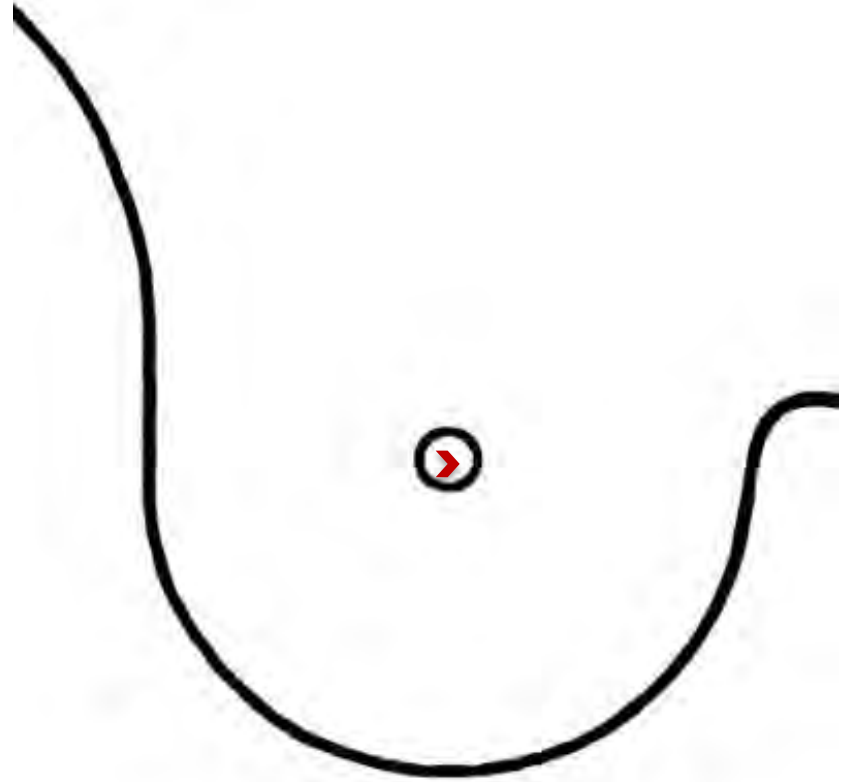
Beyond Wires and Seeds:

Reflector-guided Breast Lesion Localization and Excision¹

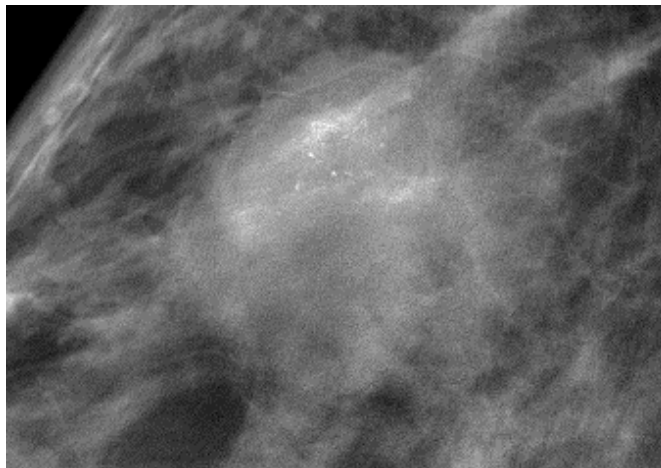
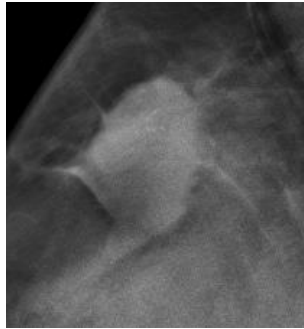
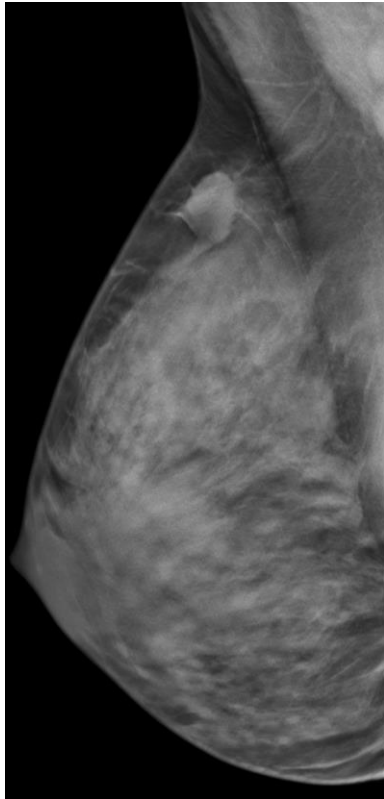
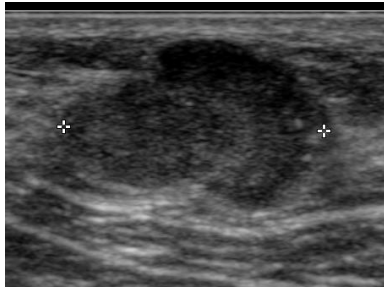
Victoria L. Mango, MD
Ralph T. Wynn, MD
Sheldon Feldman, MD
Lauren Friedlander, MD
Elise Desperito, MD
Sejal N. Patel, MD
Ameer Gomberawalla, MD
Richard Ha, MD

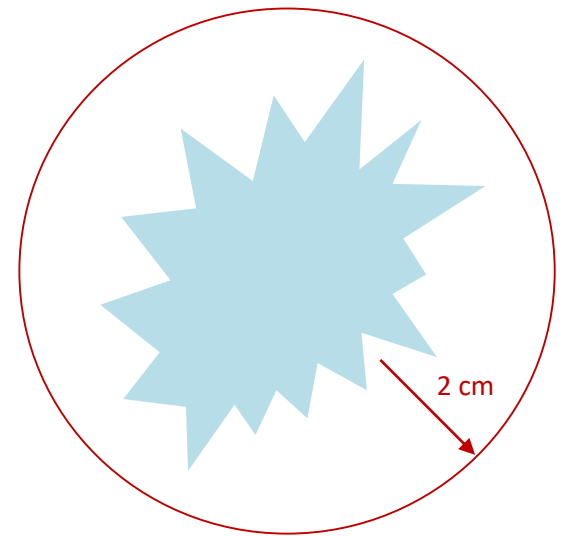
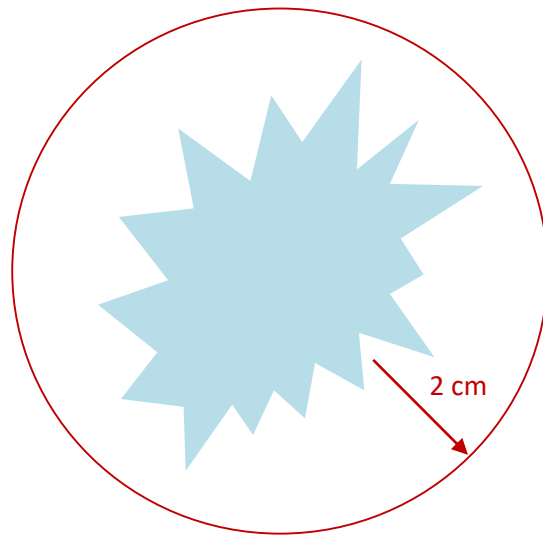


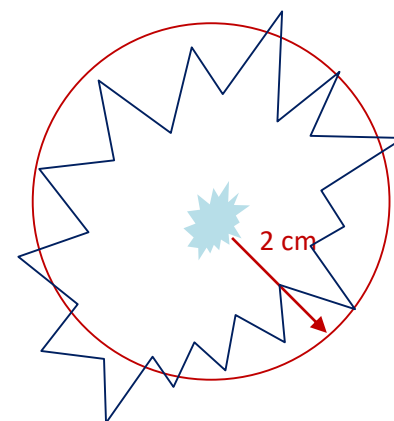
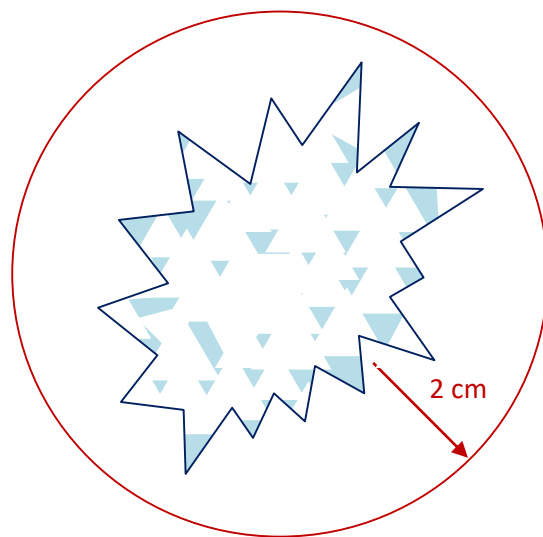
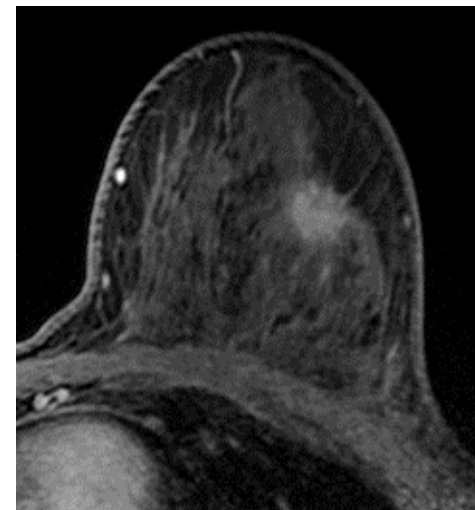
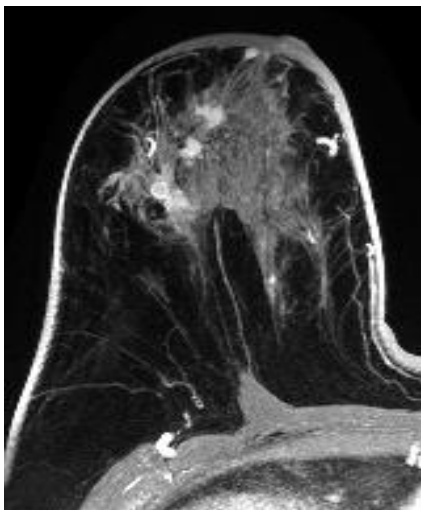
Balises intrinsèques



Balises intrinsèques







Pourquoi marquer

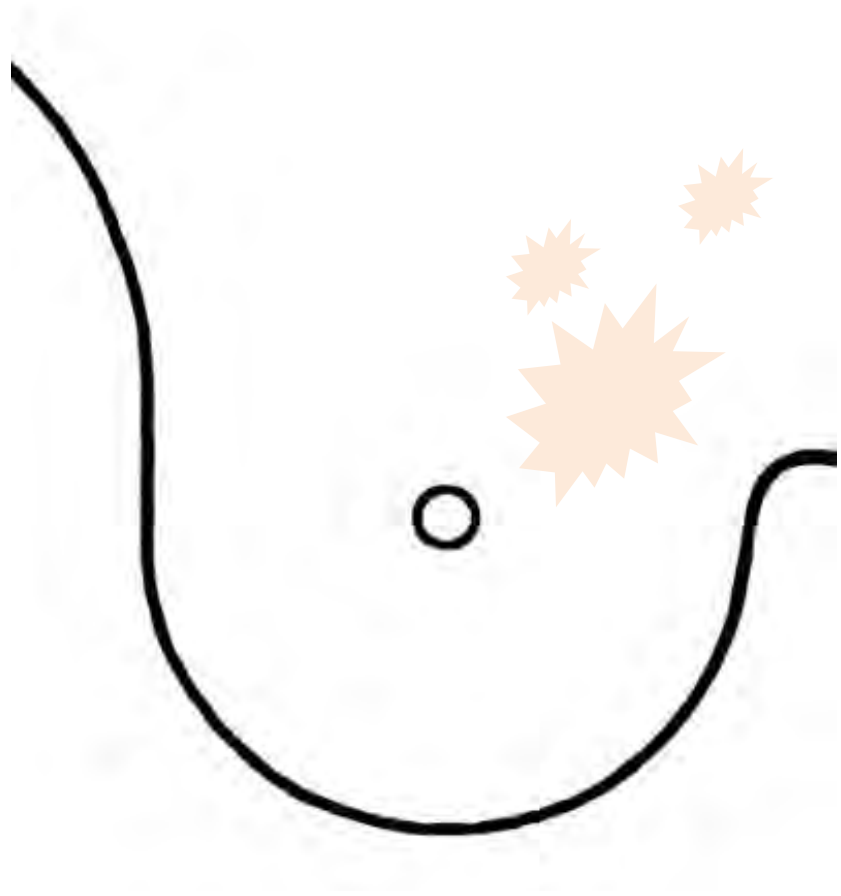
Quand marquer

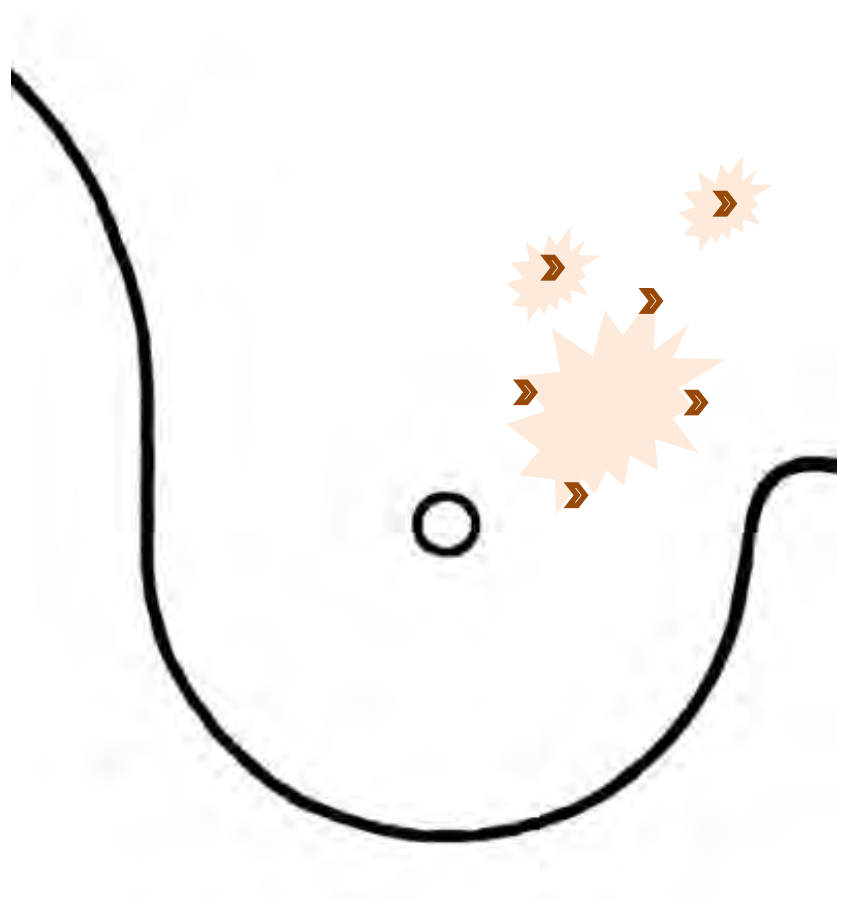
Avec quel matériel

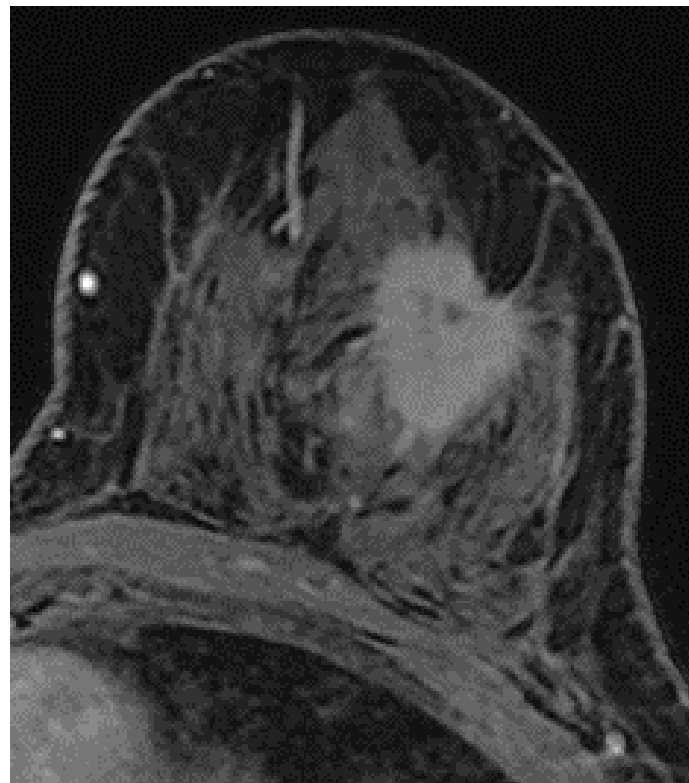
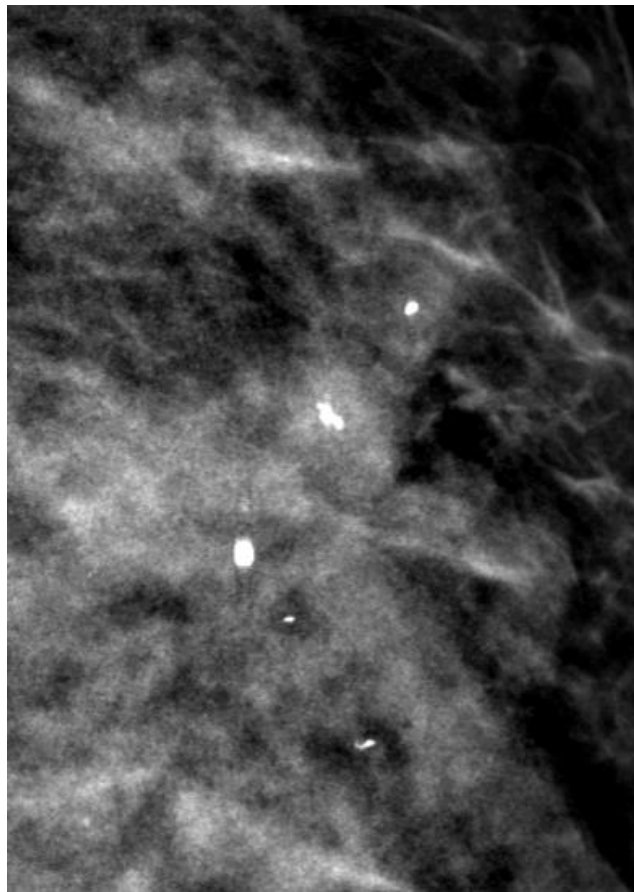
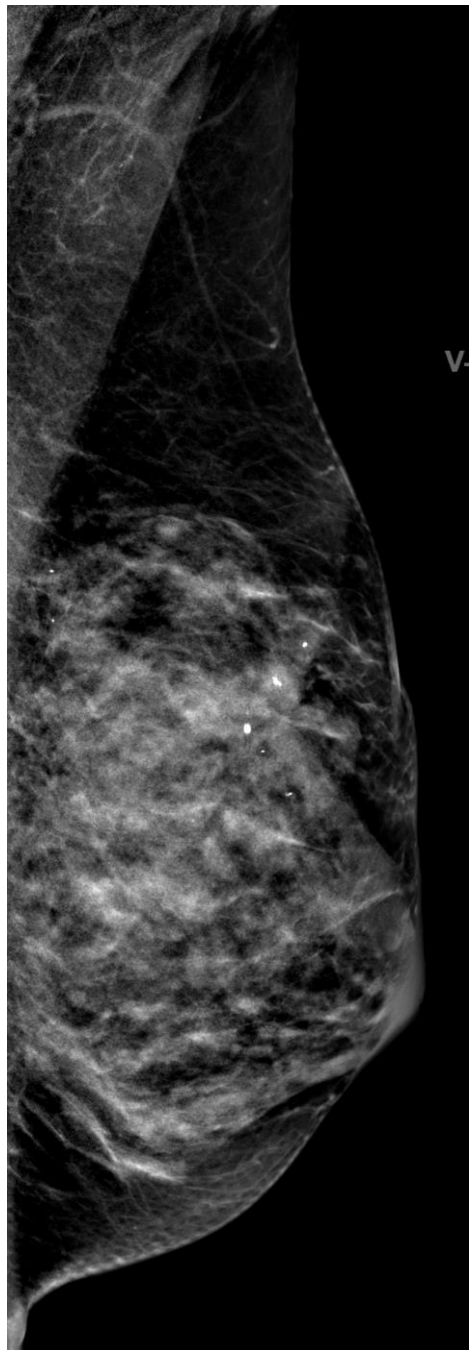
Technique de marquage

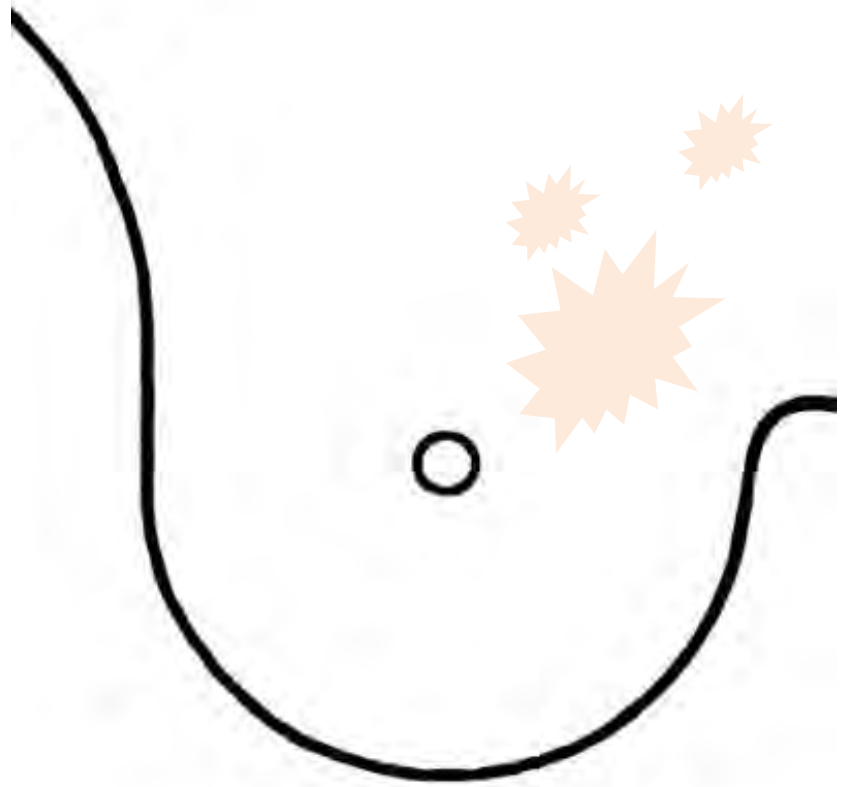
Complications/déplacements

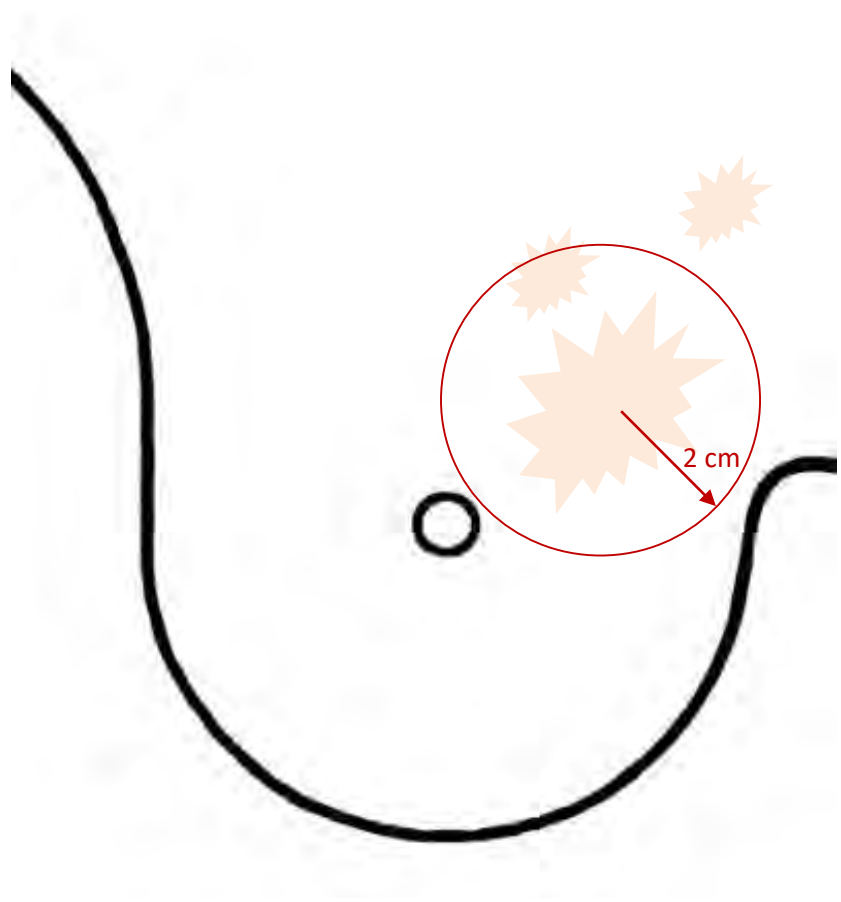
Marquage axillaire?

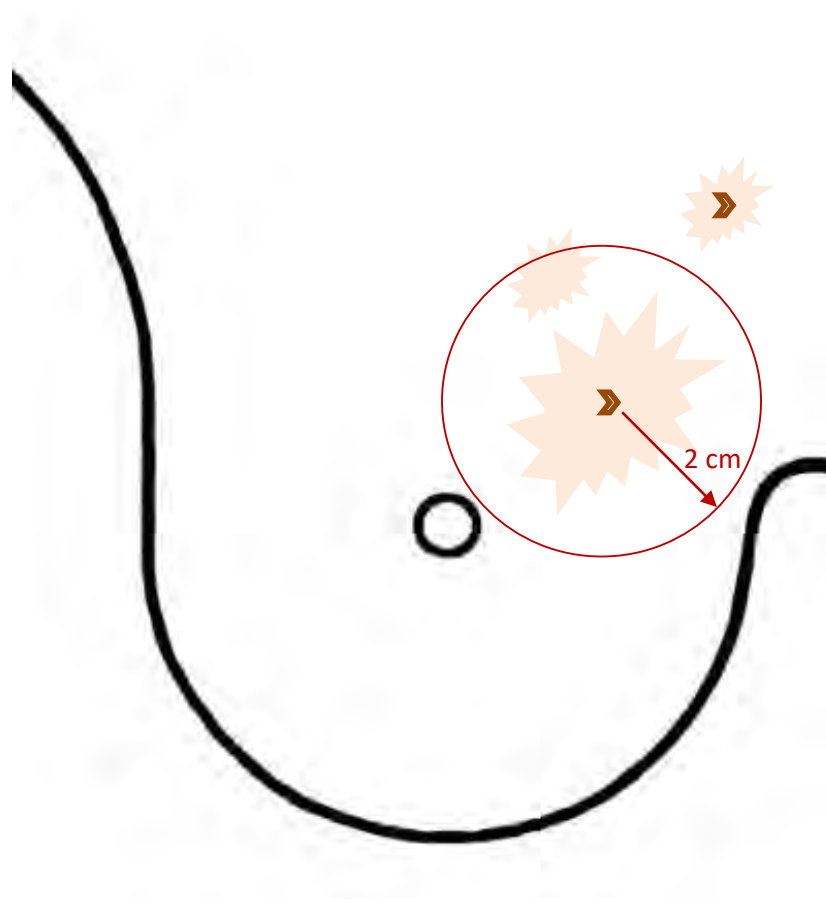


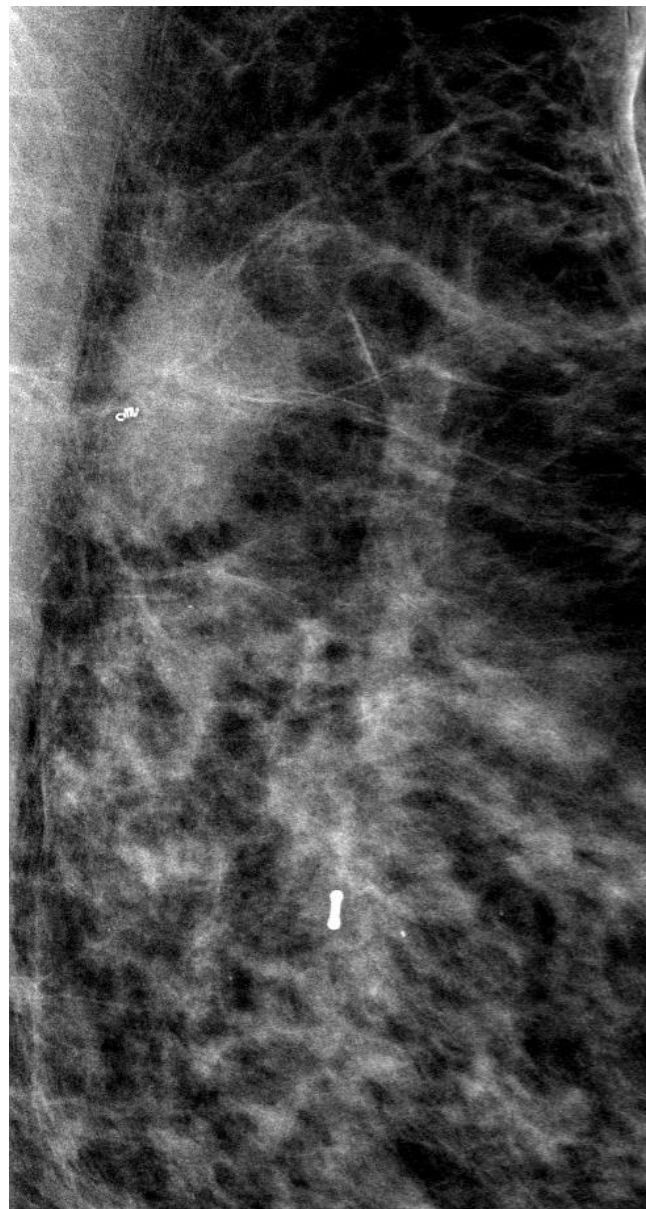
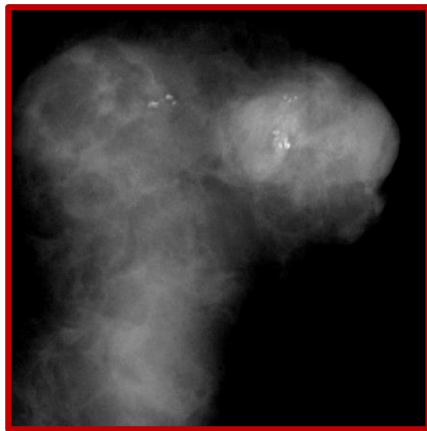
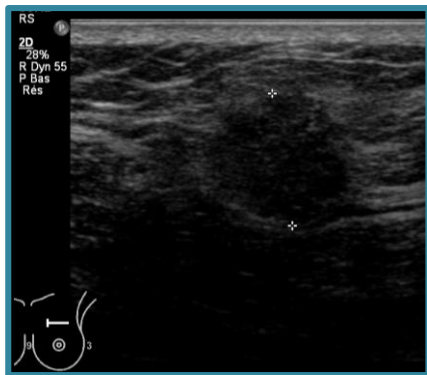
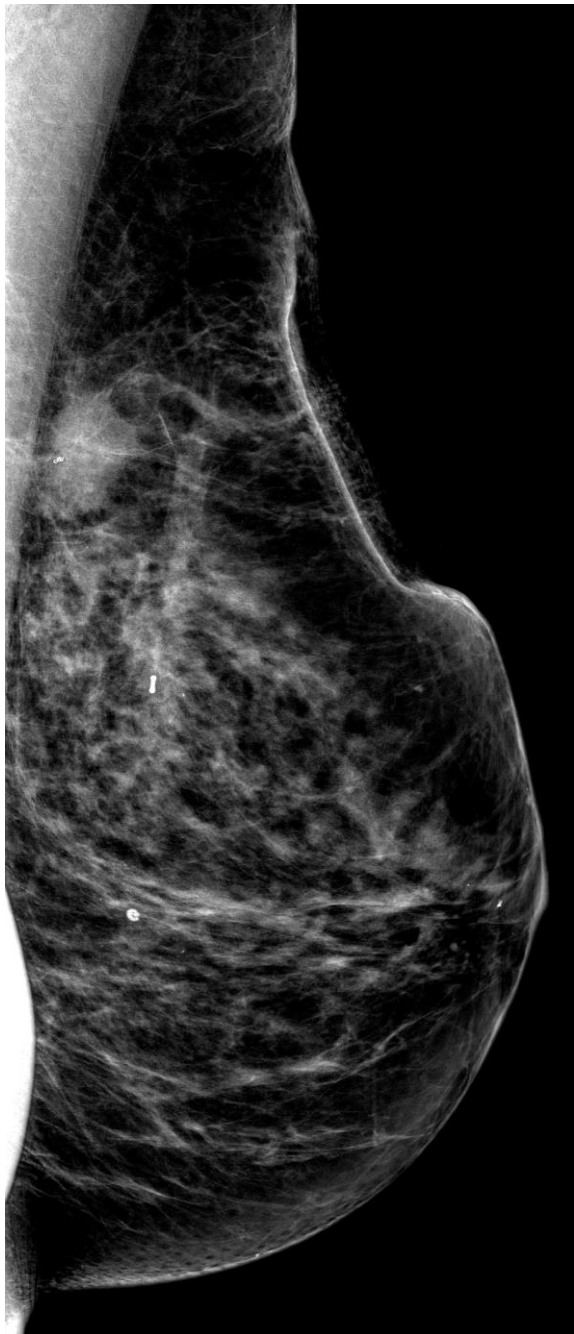


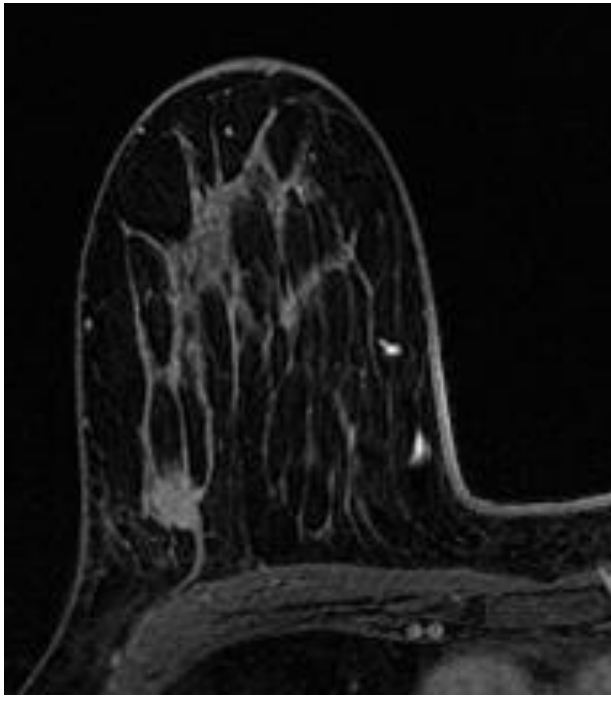
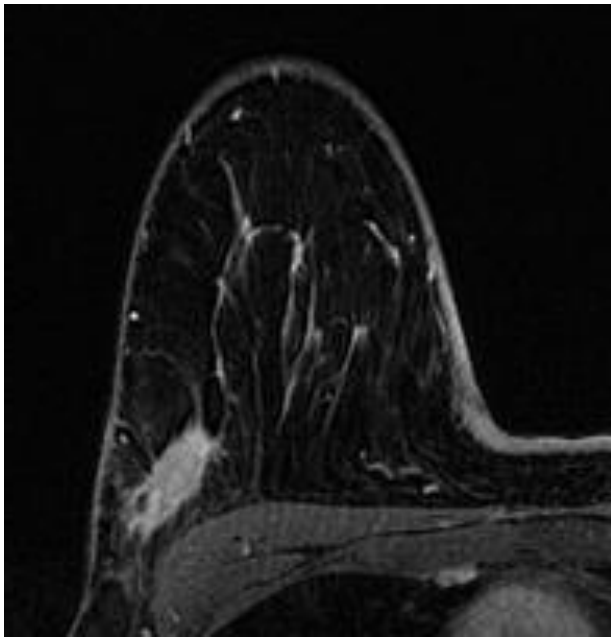
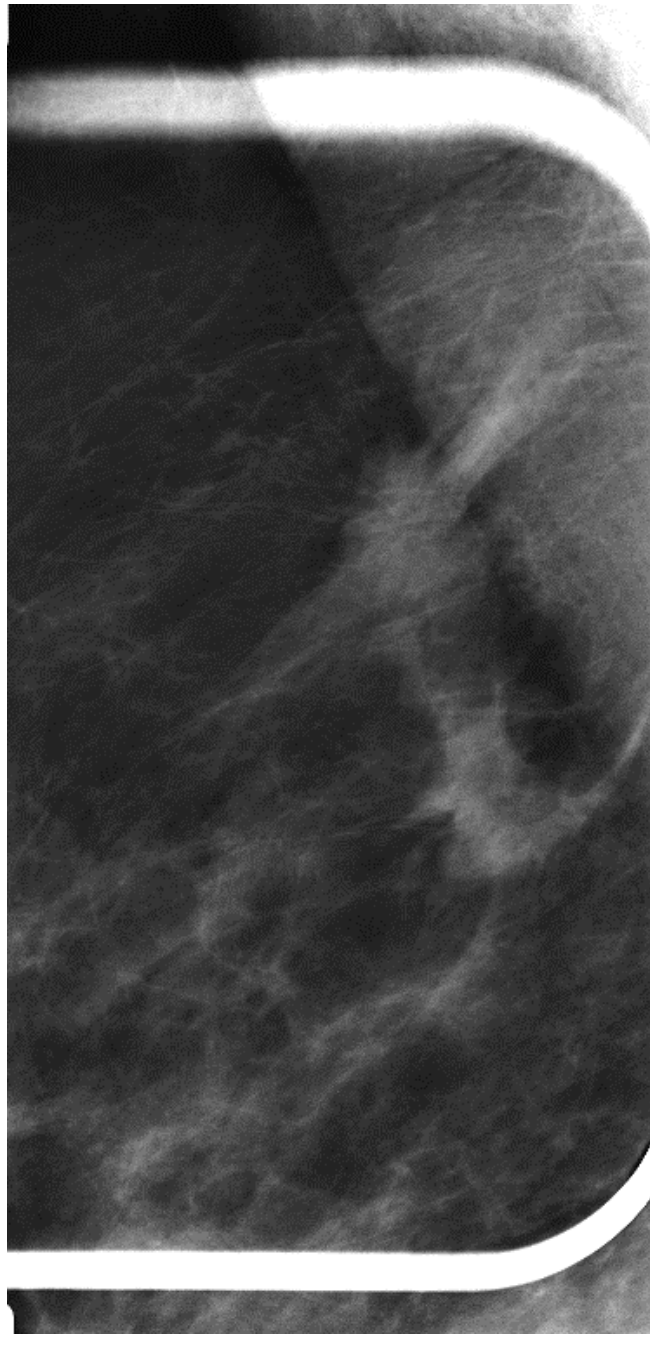
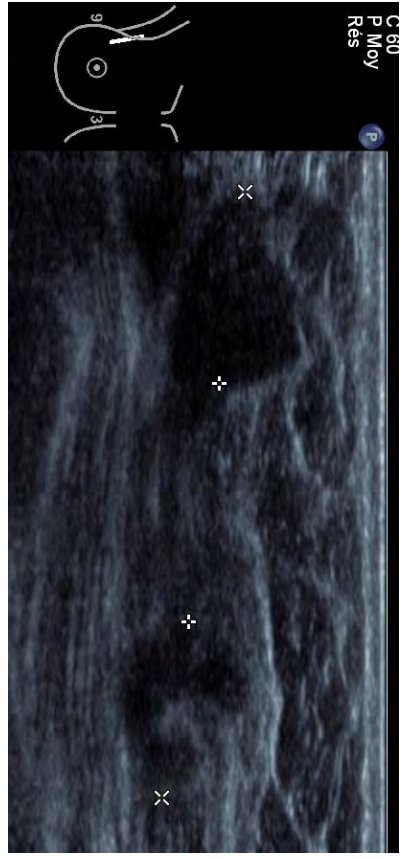


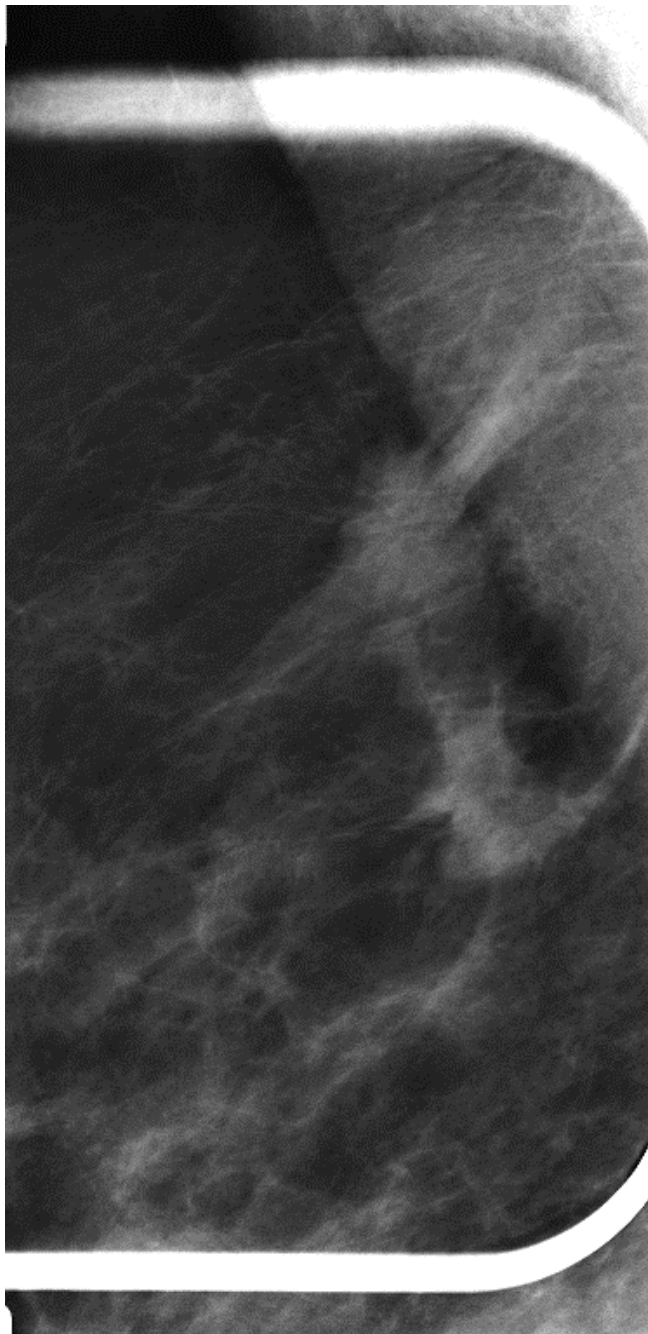




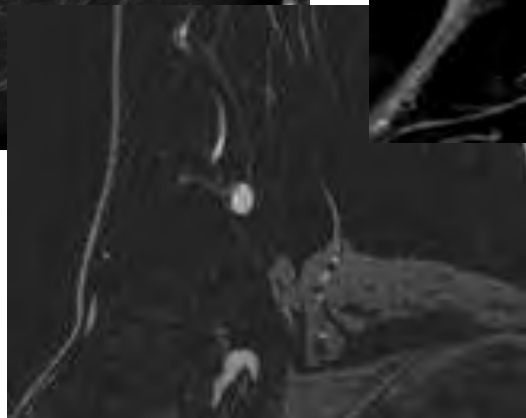
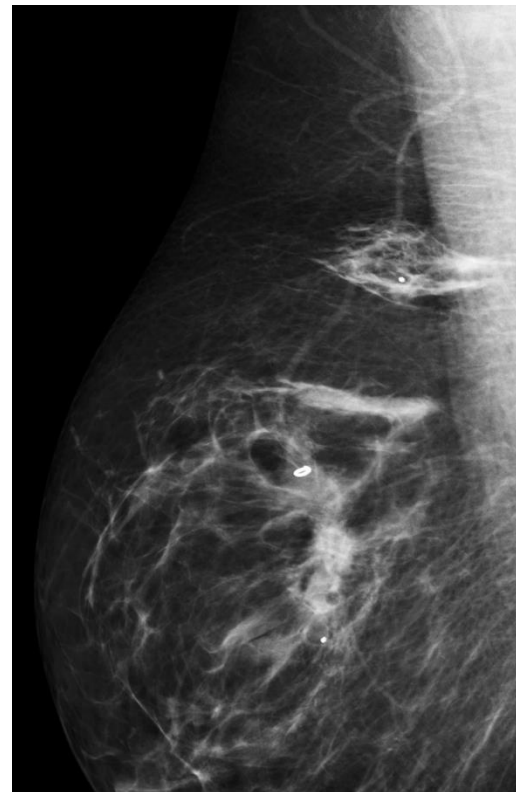
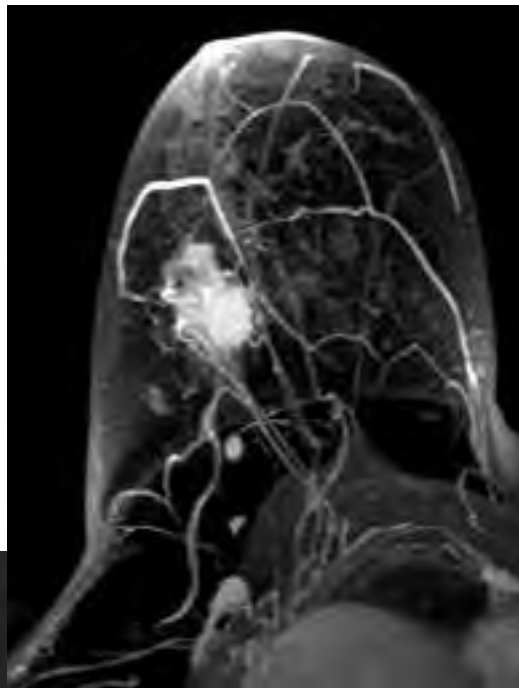
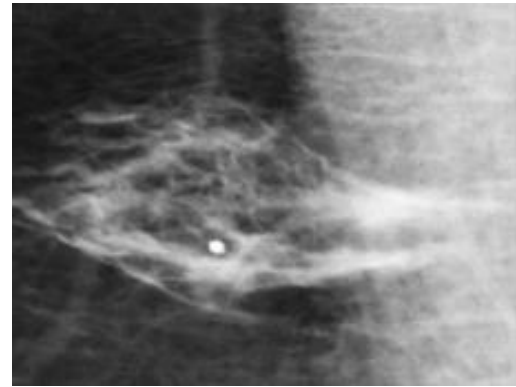
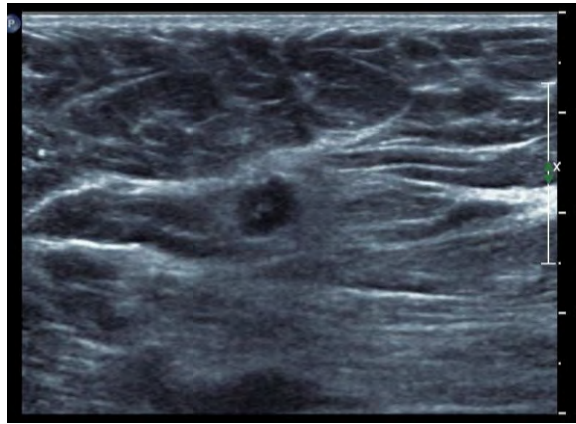
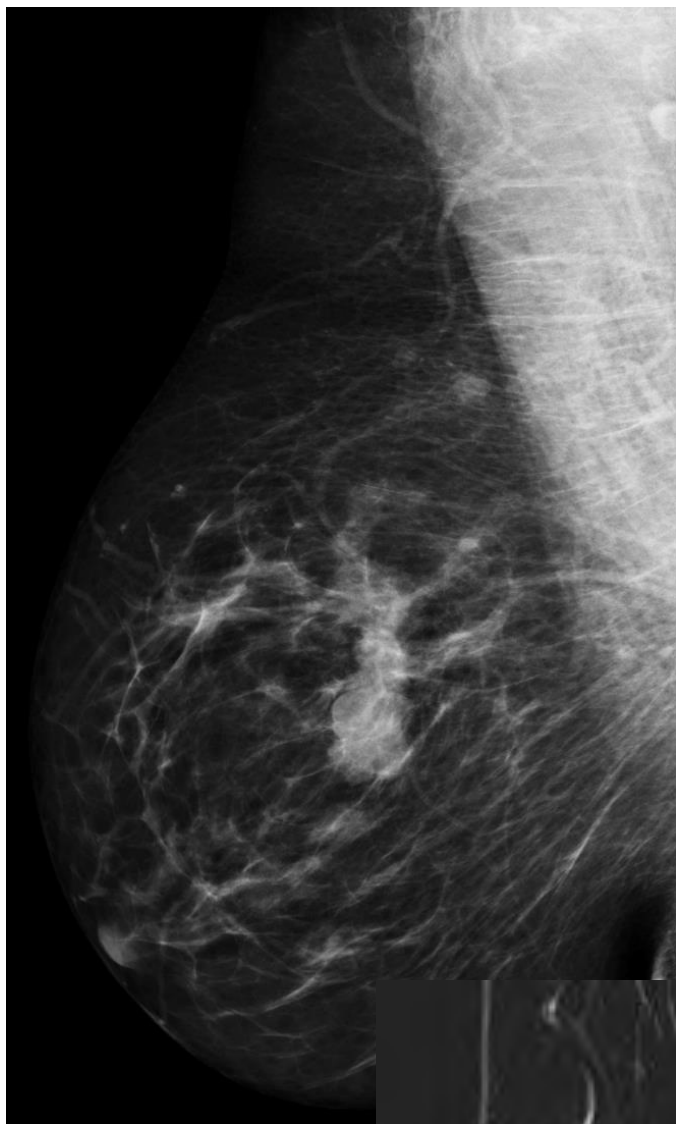








Toujours réaliser une mammographie
(2 clichés) après mise en place des clips



Intramammary lymph nodes: Patterns of discovery and clinical significance

Sandeep S. Vijan, MBBS,^a Steven Hamilton,^a Beiyun Chen, MD, PhD,^b Carol Reynolds, MD,^b Judy C. Boughey, MD,^a and Amy C. Degnim, MD,^a Rochester, MN

Pourquoi marquer

Quand marquer

Avec quel matériel

Type de fonte tumorale

Technique de marquage

Complications/déplacements

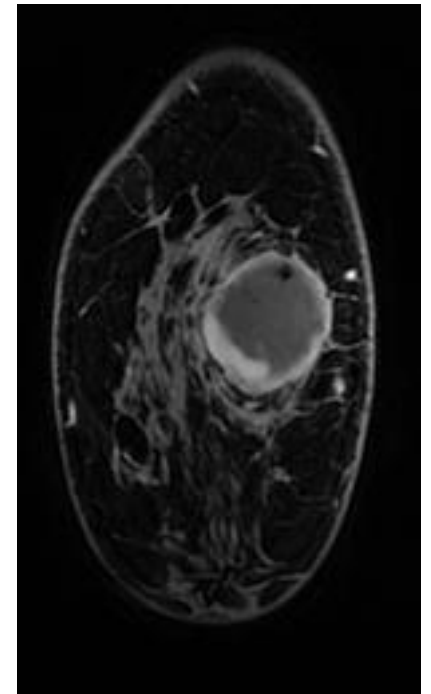
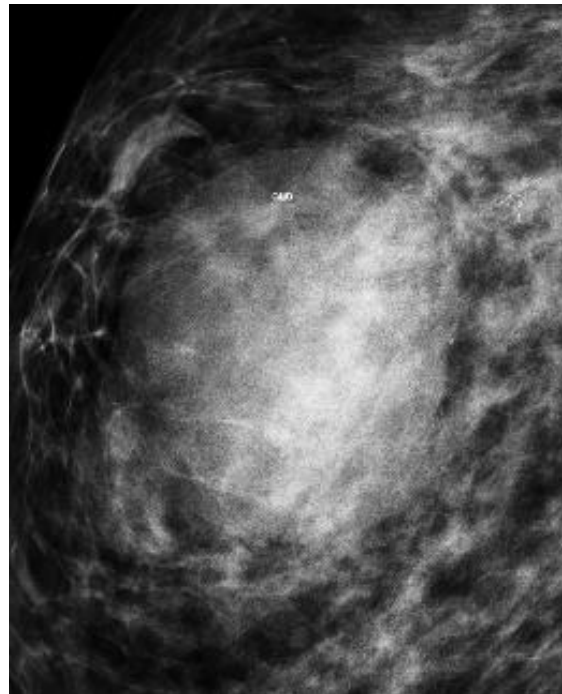
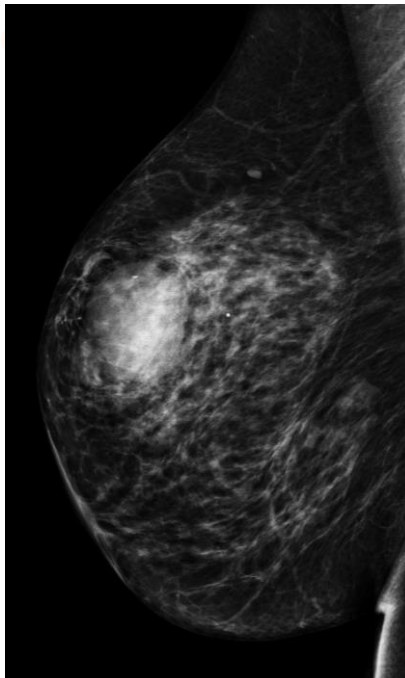
Marquage axillaire

Contexte psychologique compliqué ... geste technique à réaliser

Il s'agit d'aiguille de petit calibre

Parfois saignement plus abondant que lors de la biopsie ...

Peu de déplacement des clips (peu d'hématome!)



Pourquoi marquer

Quand marquer

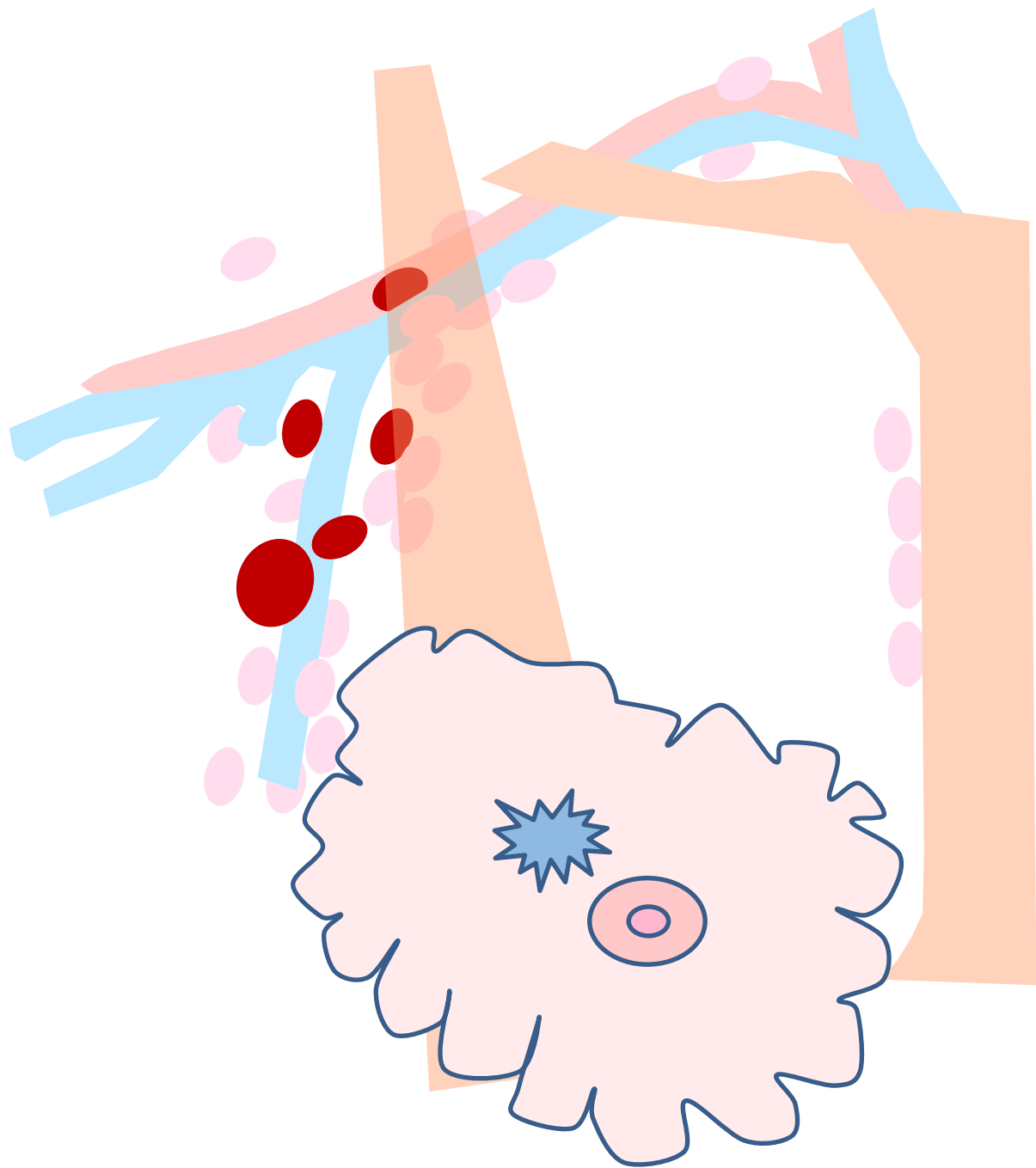
Avec quel matériel

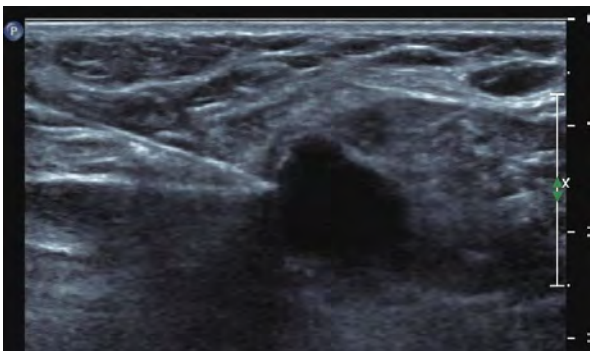
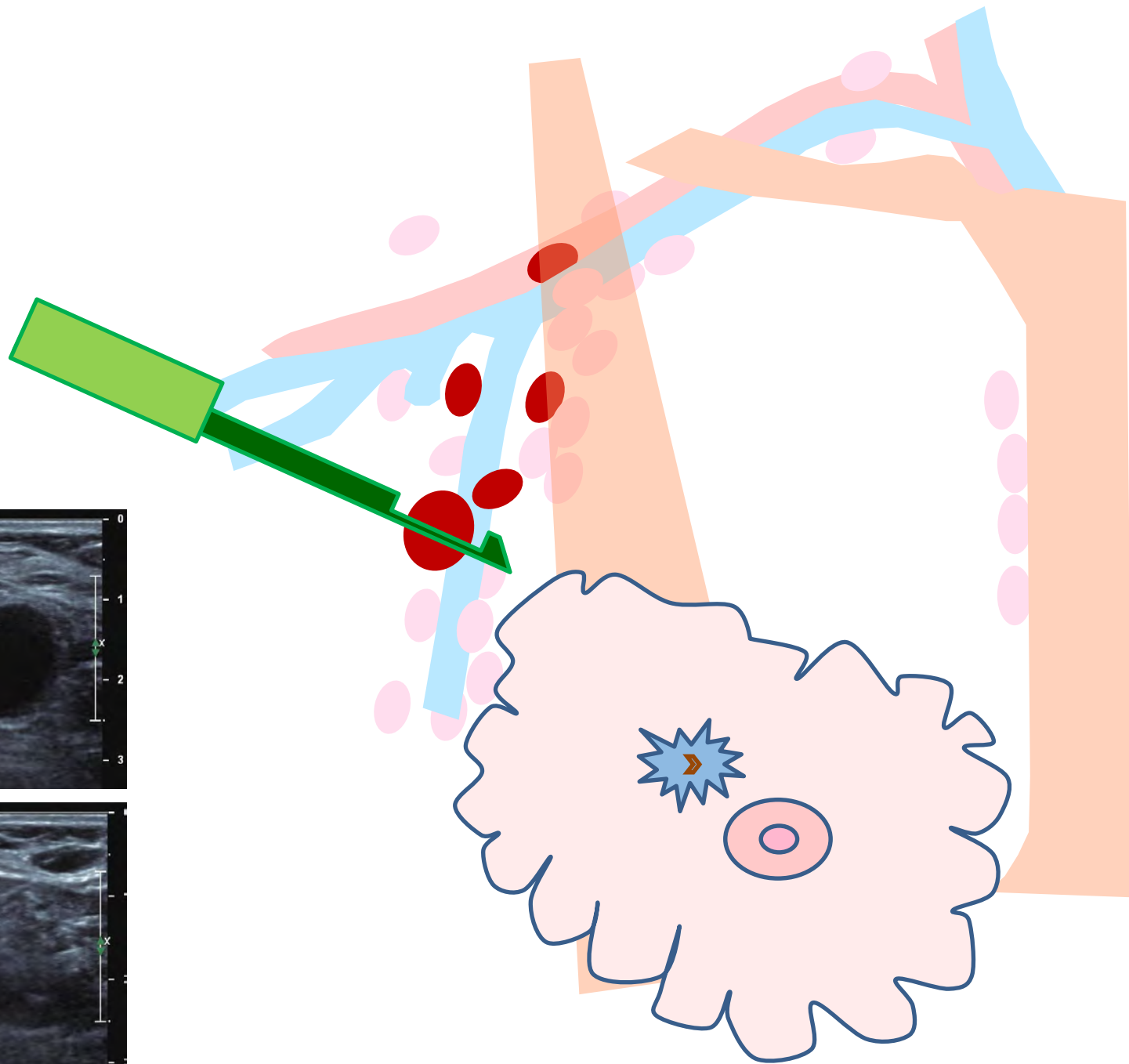
Type de fonte tumorale

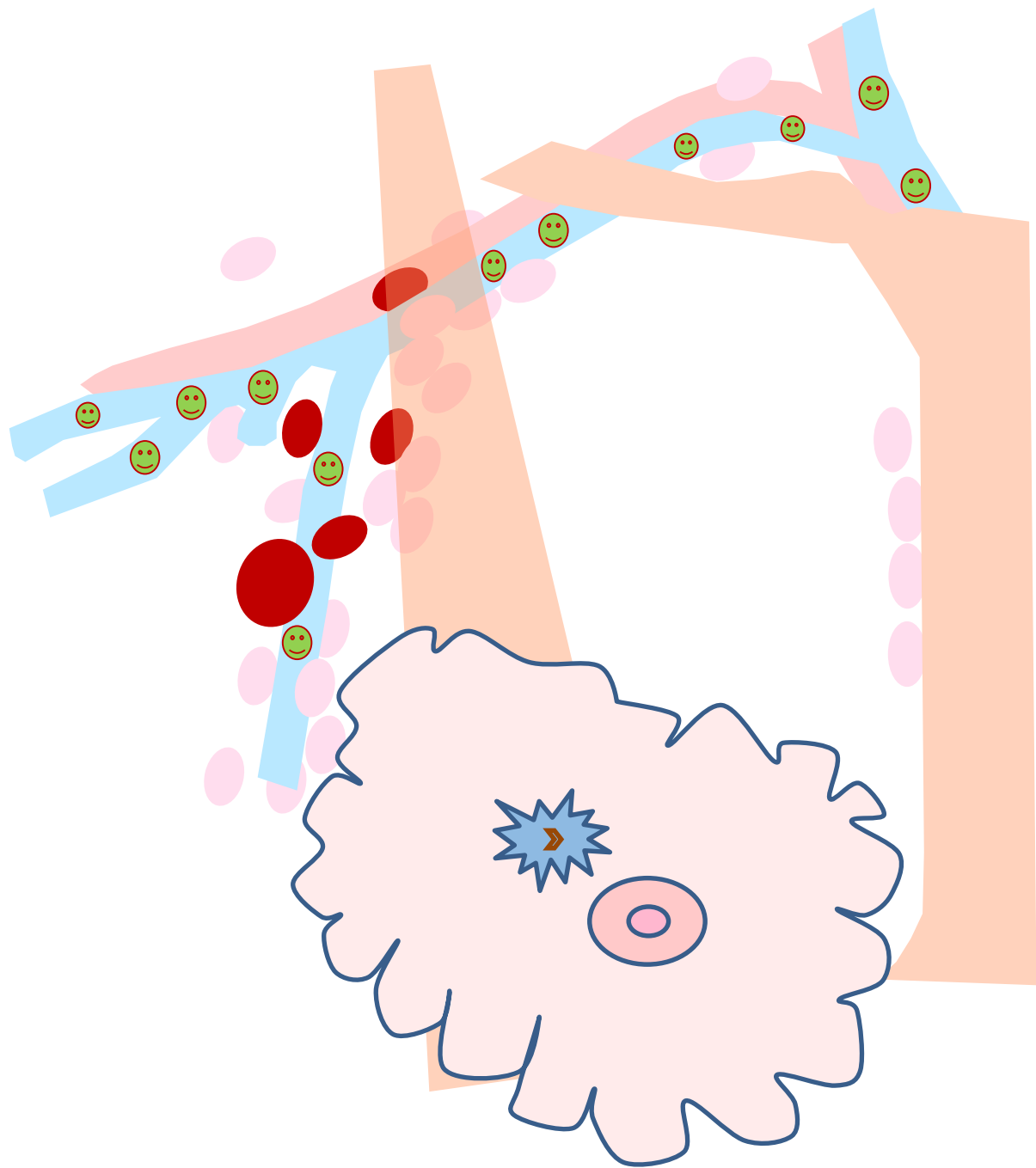
Technique de marquage

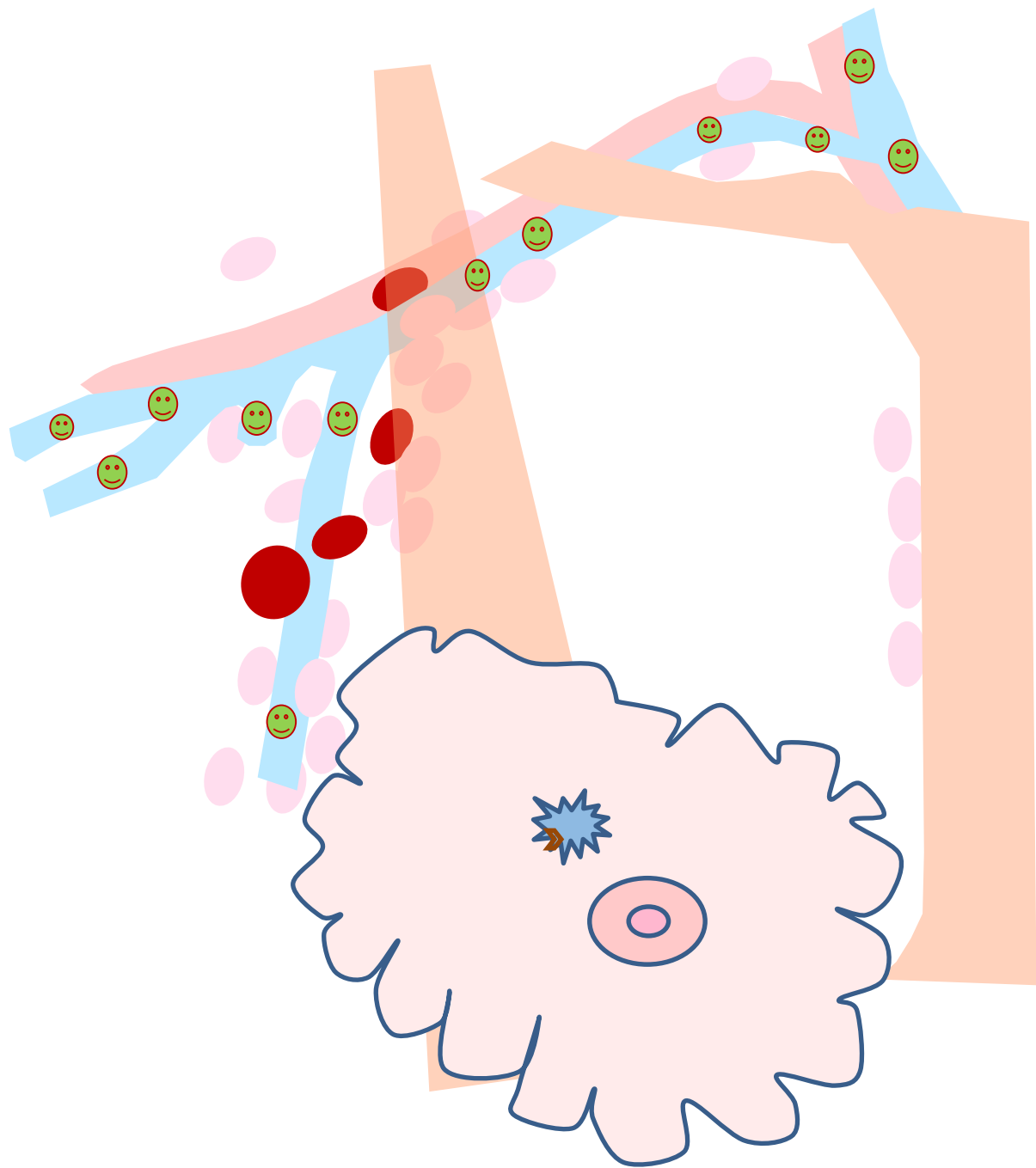
Complications/déplacements

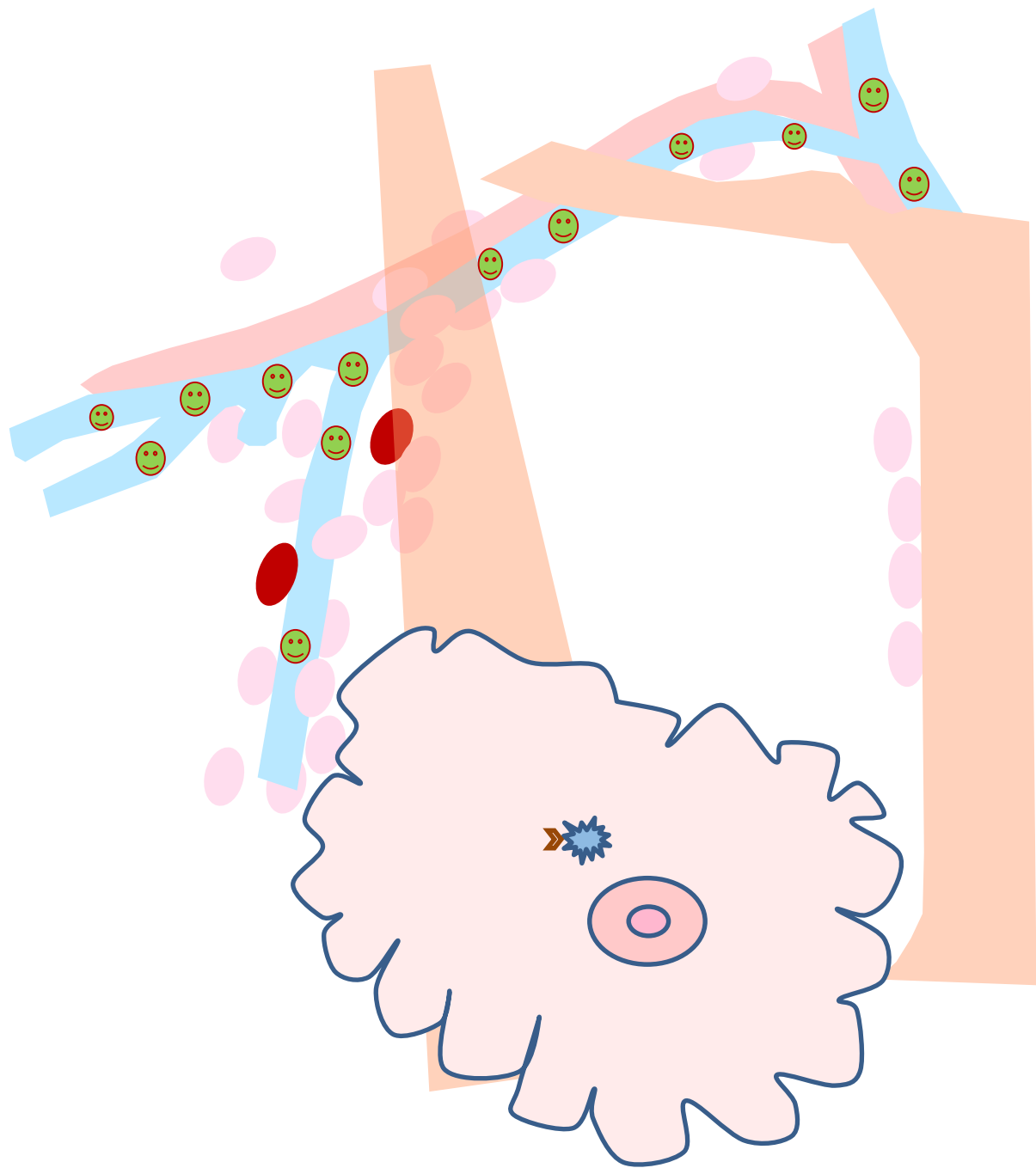
Marquage axillaire?

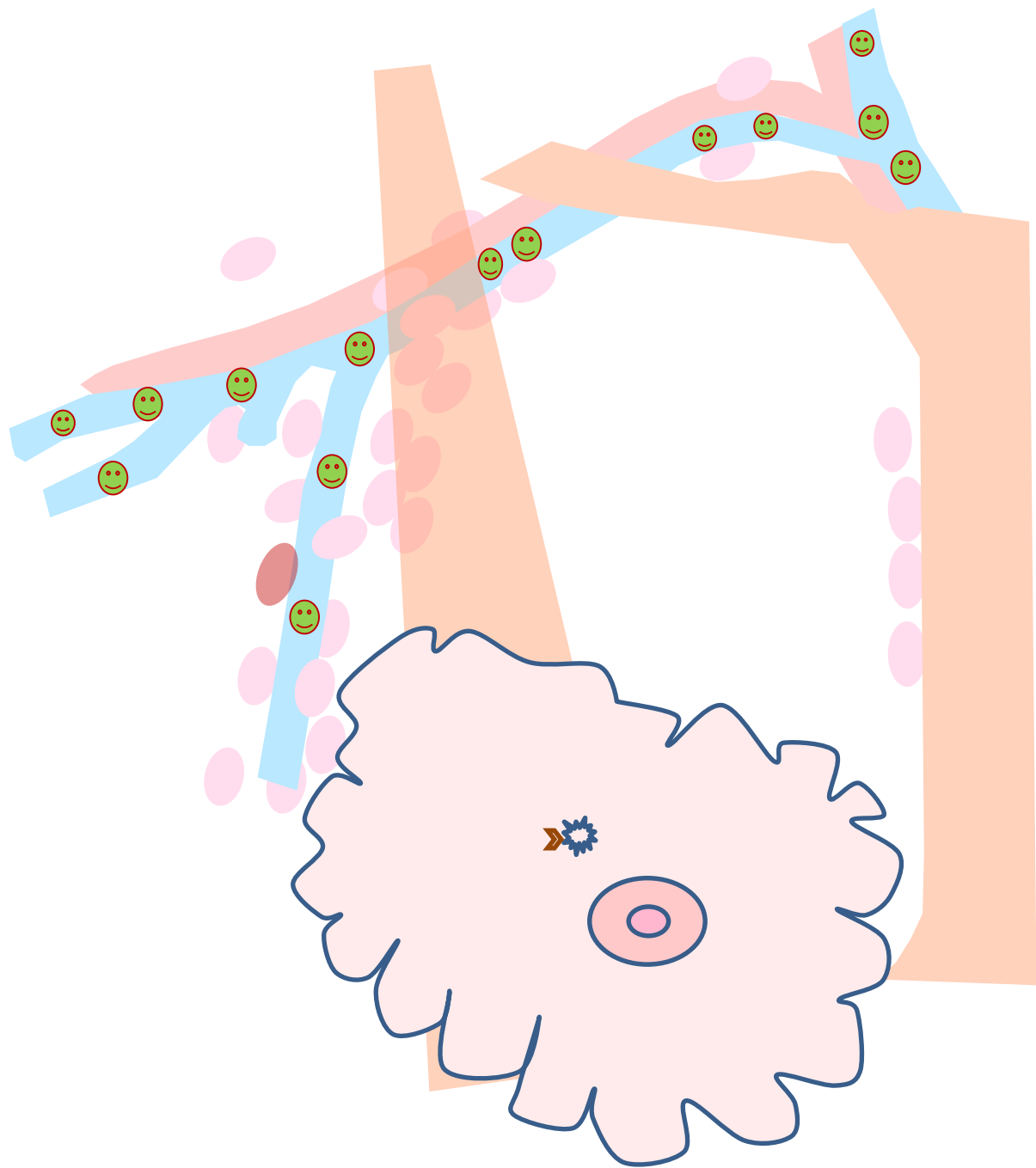




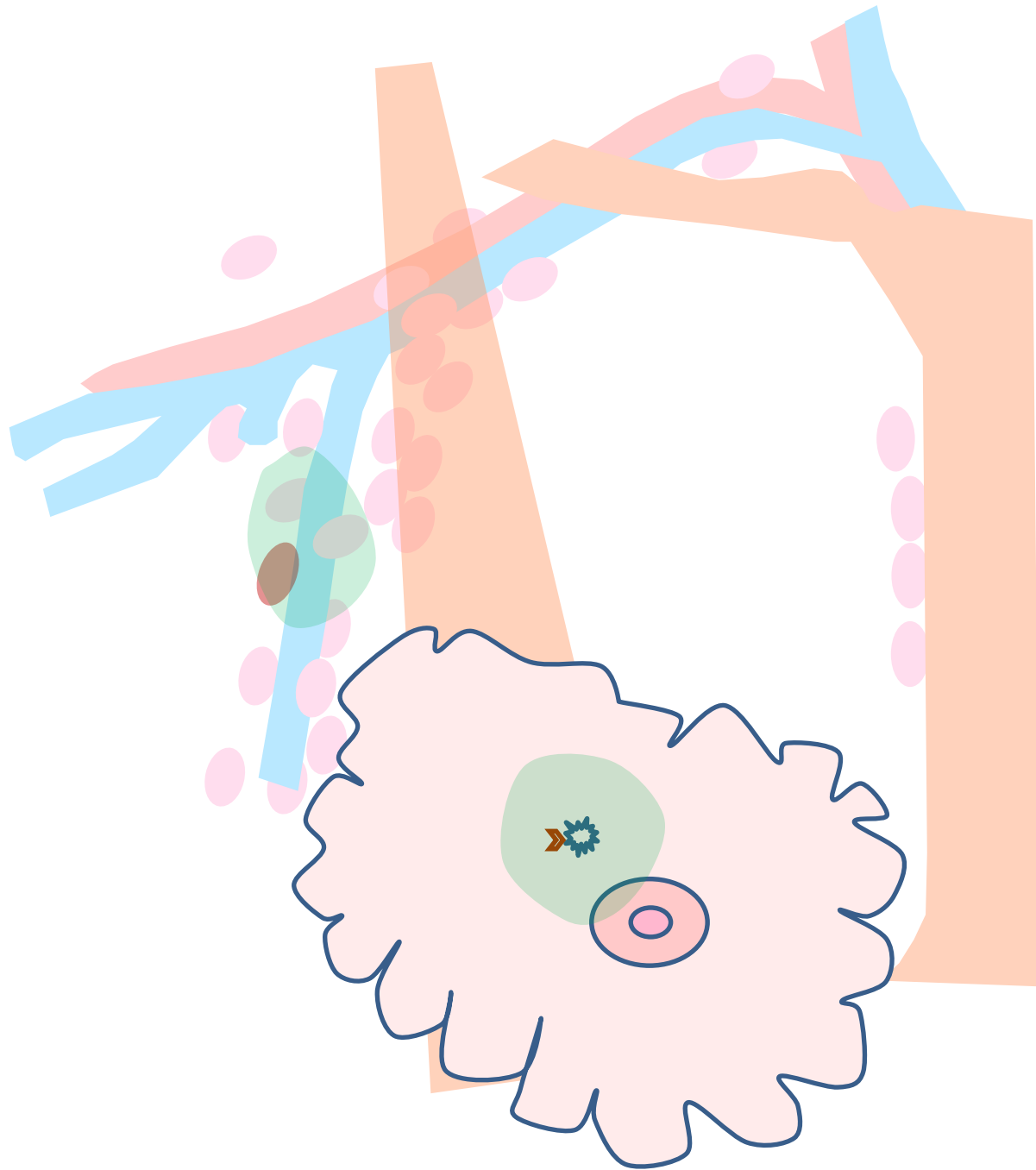








73-84 %



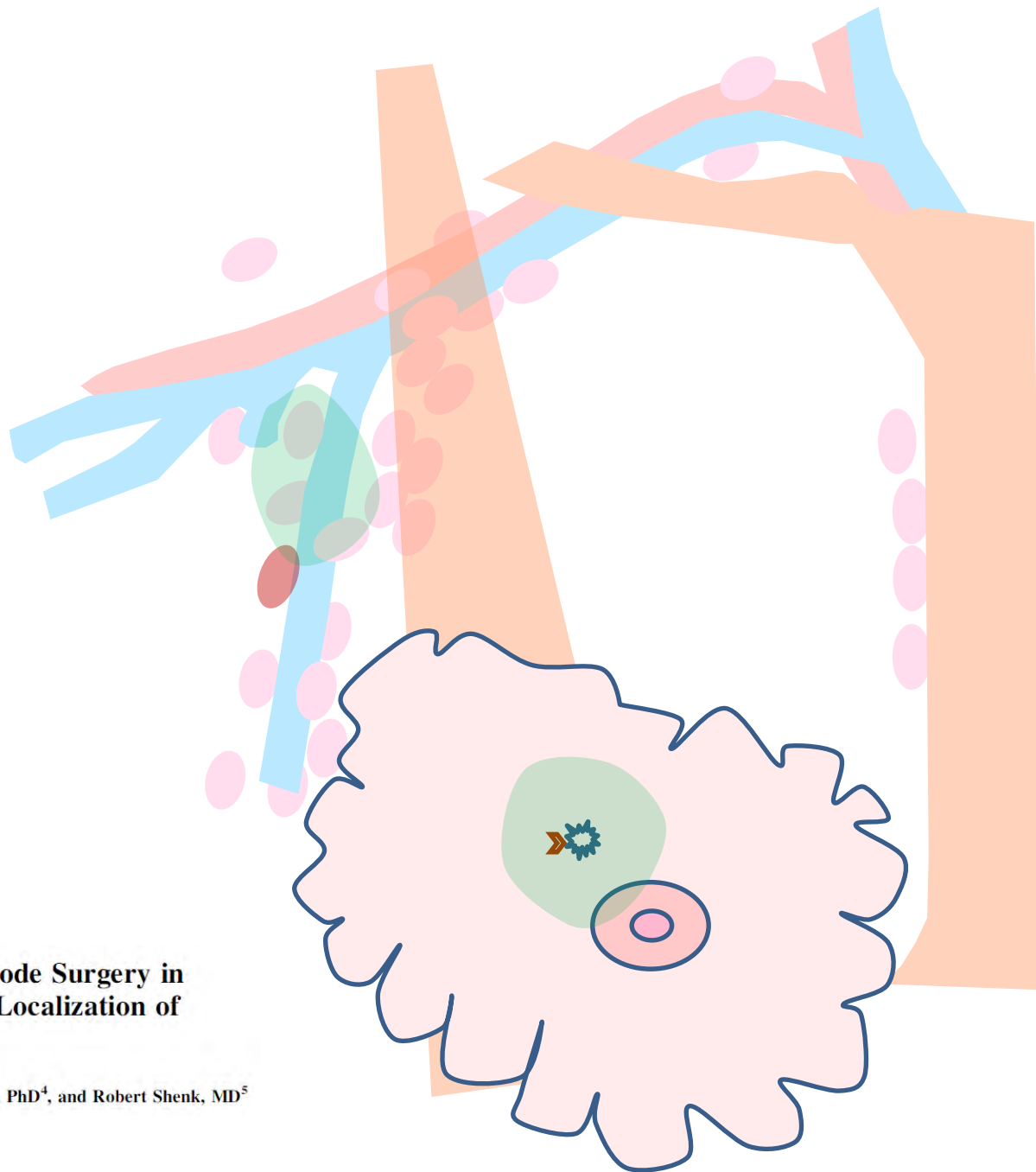
27-16 %

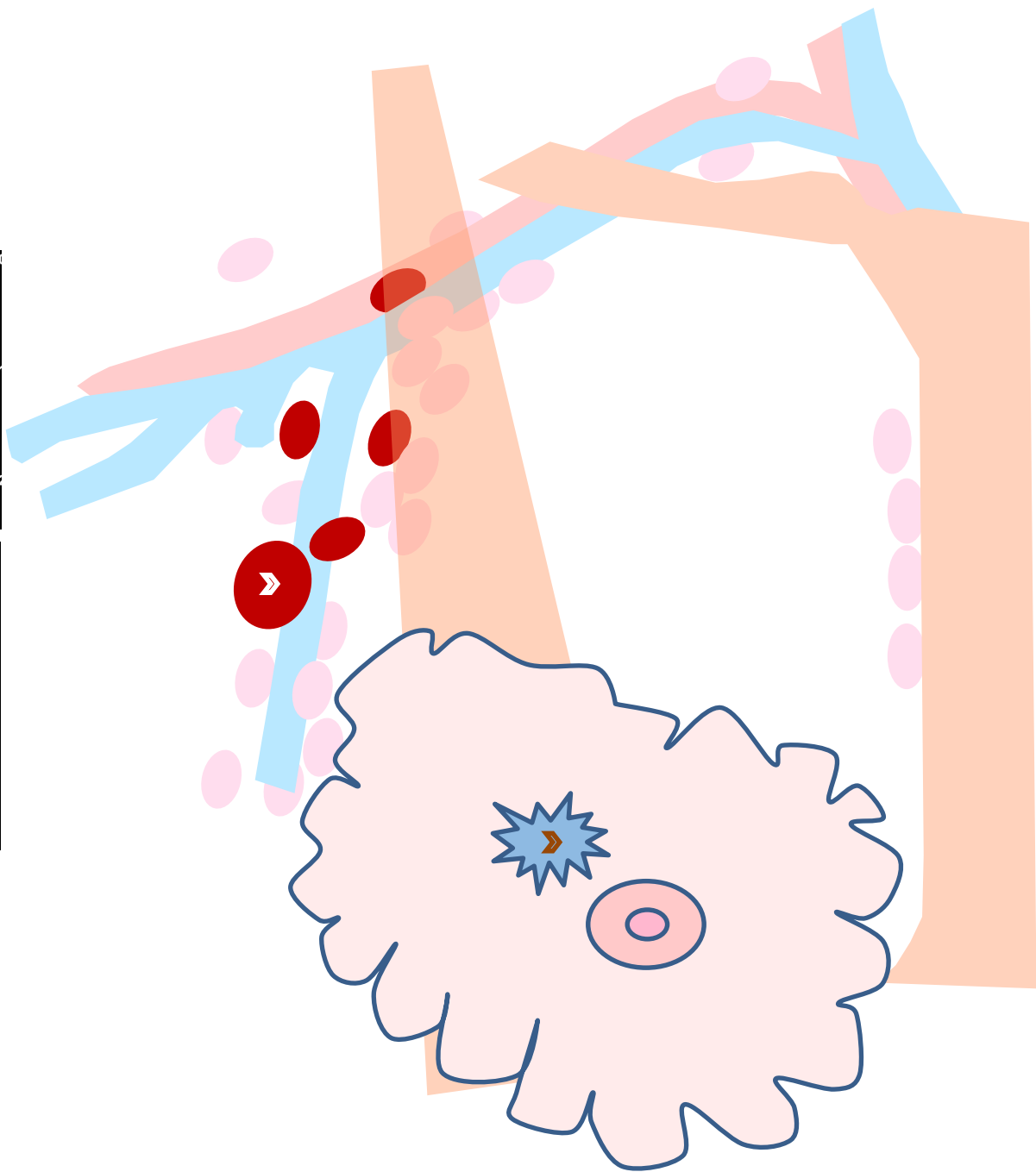
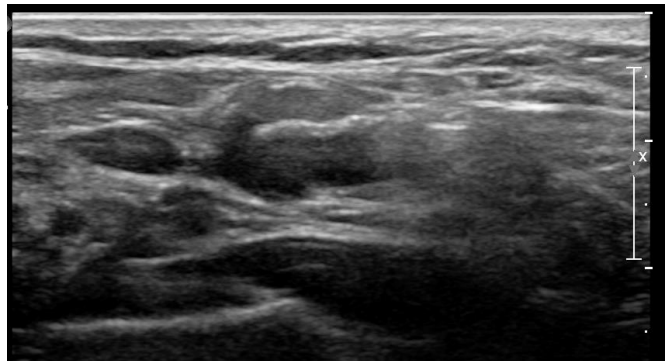
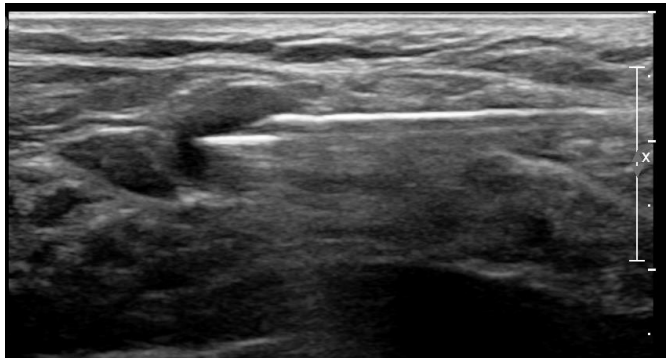
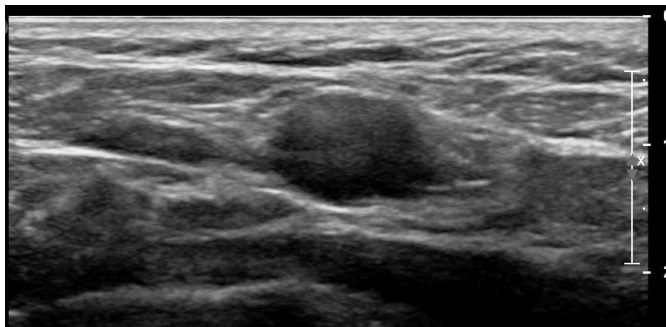
Improving the Accuracy of Axillary Lymph Node Surgery in Breast Cancer with Ultrasound-Guided Wire Localization of Biopsy Proven Metastatic Lymph Nodes

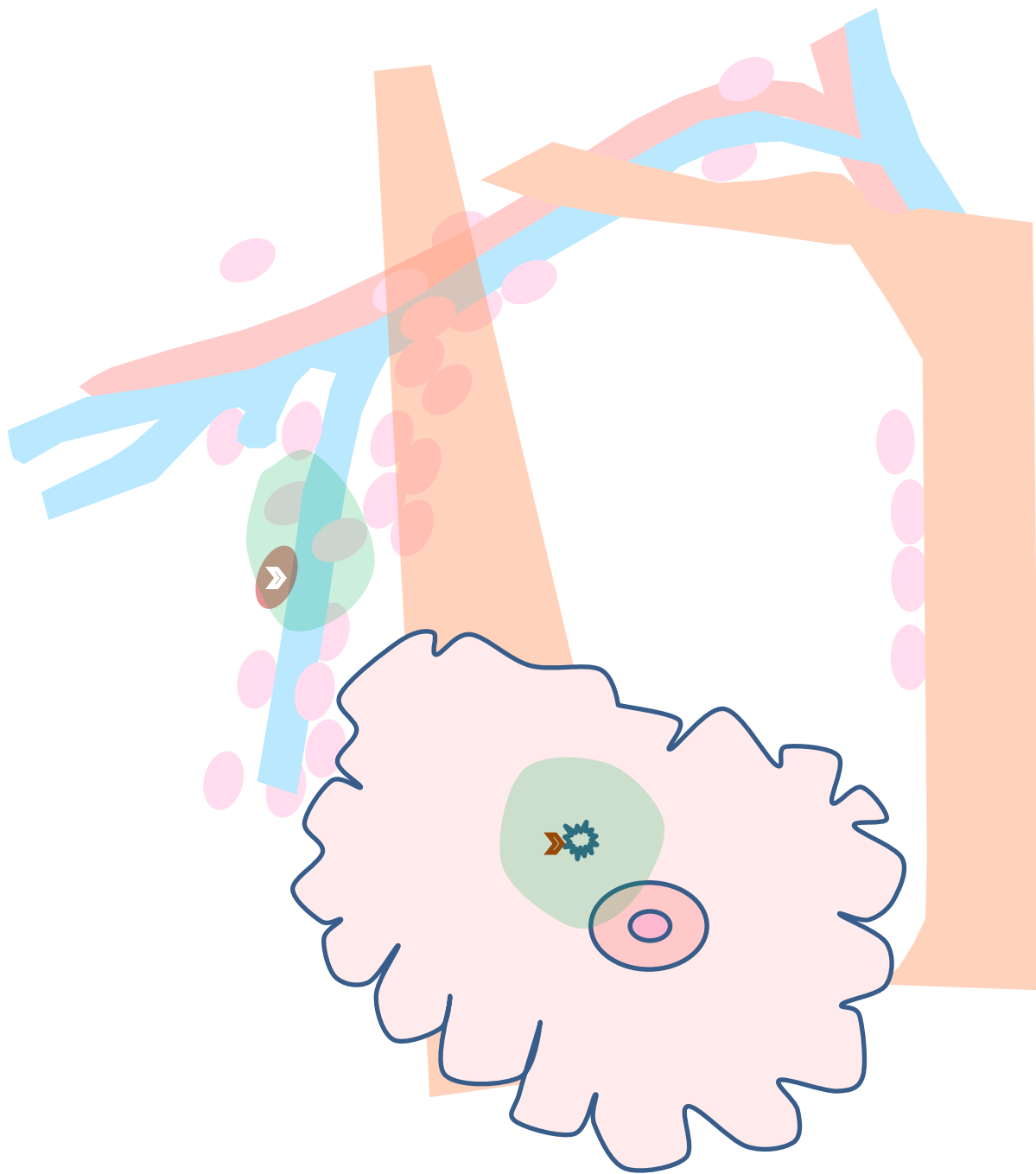
Donna Plecha, MD¹, Shiyu Bai, BS², Helen Patterson³, Cheryl Thompson, PhD⁴, and Robert Shenk, MD⁵

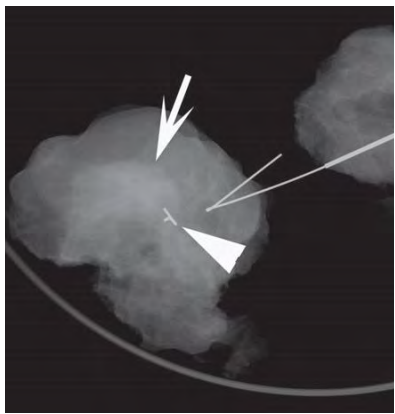
Ann Surg Oncol (2015) 22:4241–4246

DOI 10.1245/s10434-015-4527-y



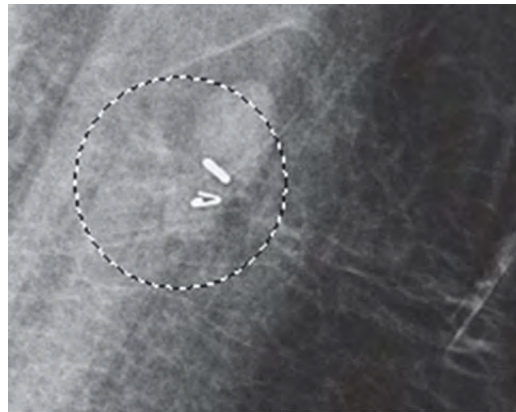
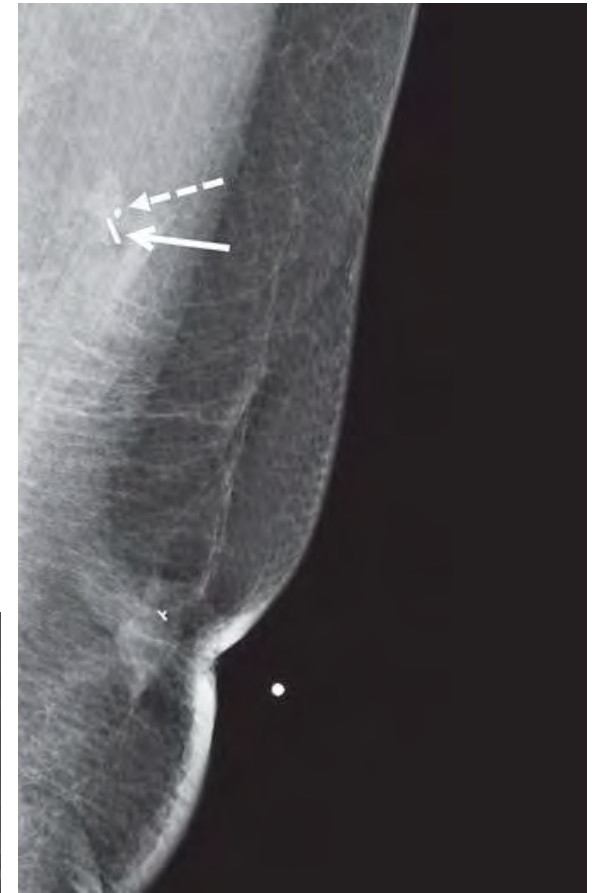






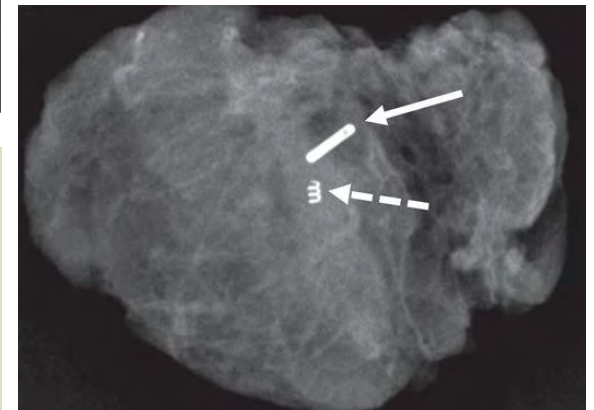
Repérage par harpon «classique»:

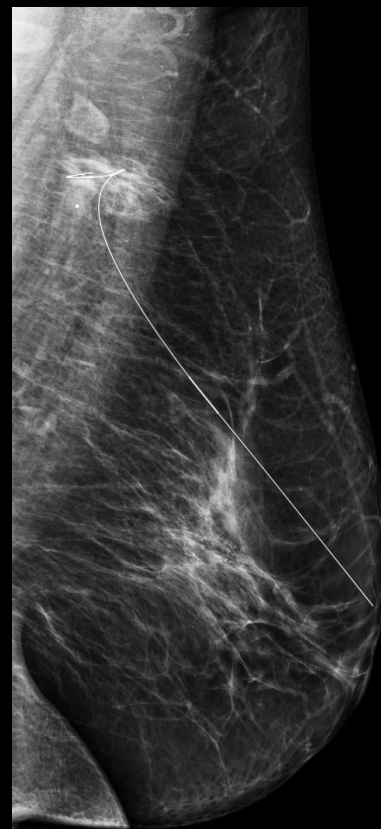
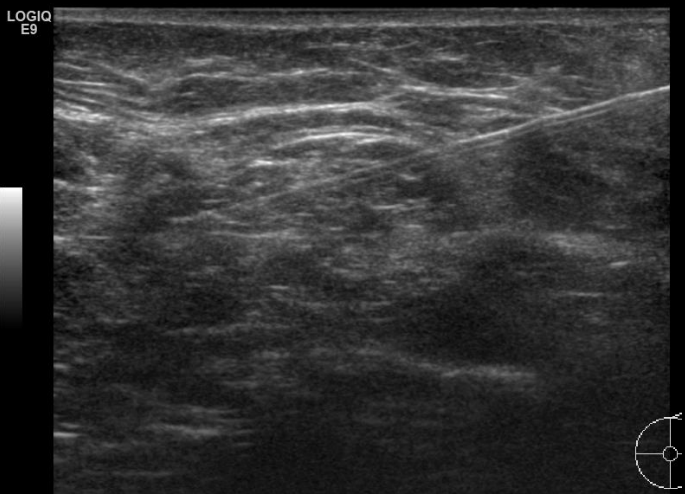
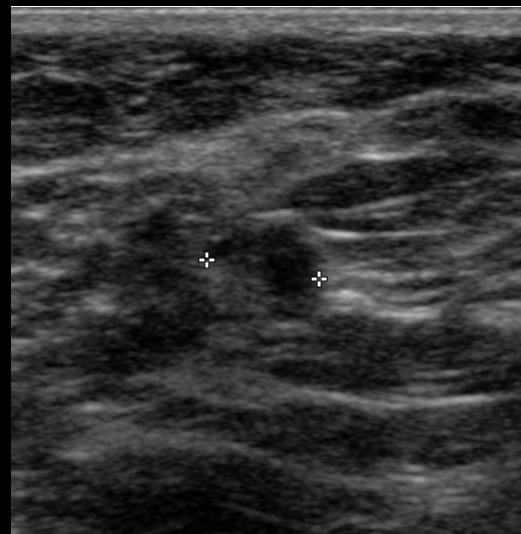
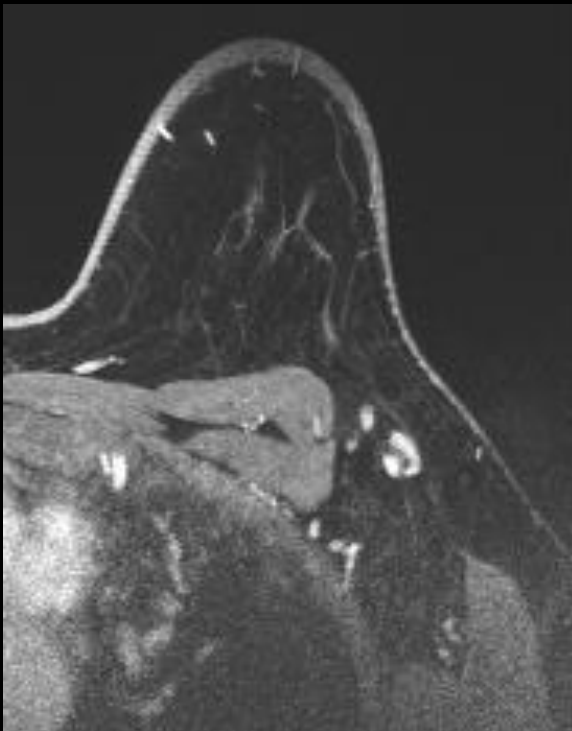
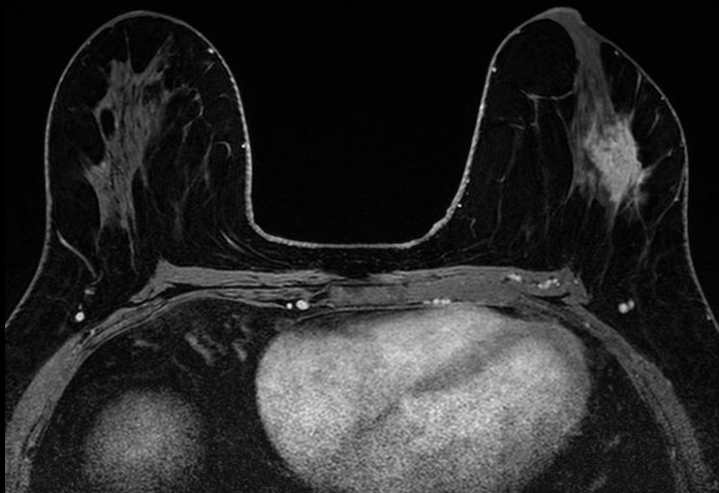
pas de visualisation en Mx
structures vasculaires
site chirurgical particulier



Mise en place d'une capsule avec I^{125}

1-5 jours avant intervention chirurgicale
recherche sélective I^{125} et Tch⁹⁹





Introduction

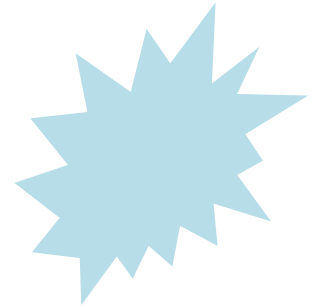
Bilan diagnostic initial

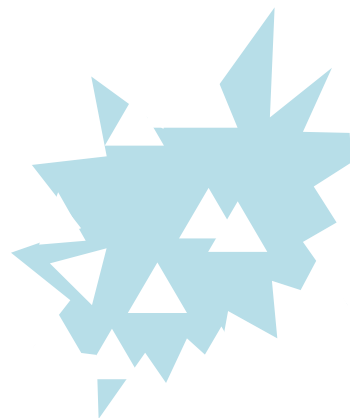
Marquage

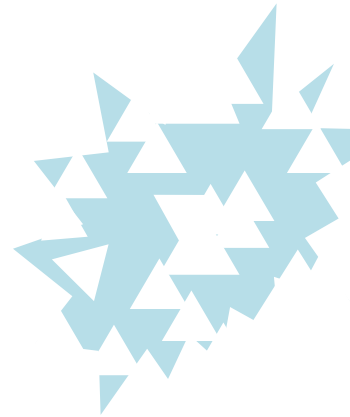
Evaluation de la réponse au traitement

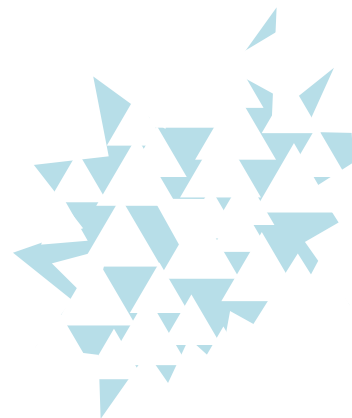
Repérage préopératoire

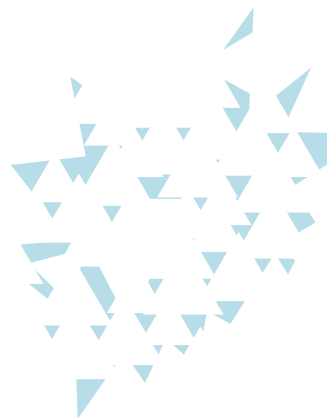


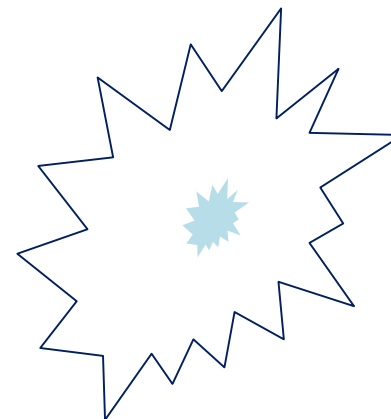
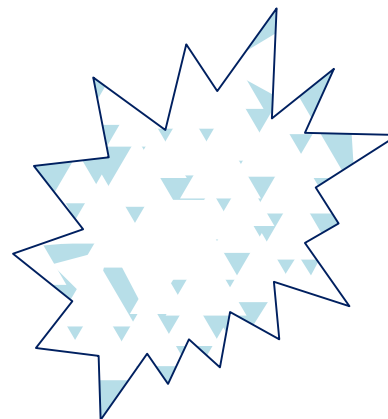


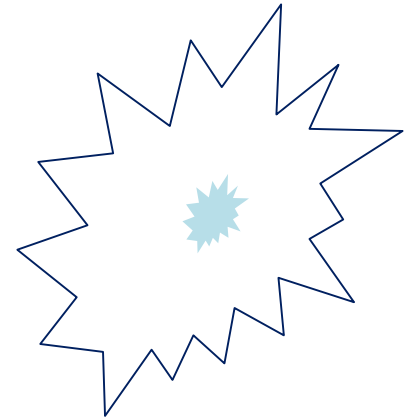
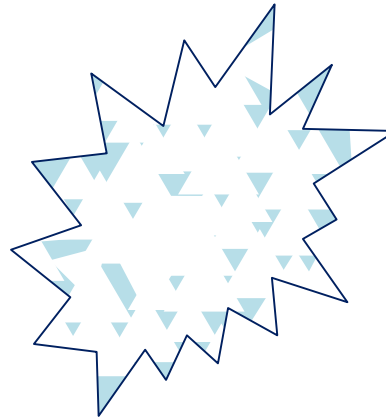
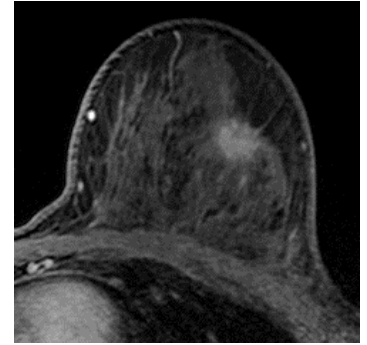
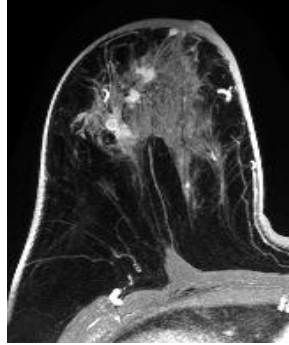
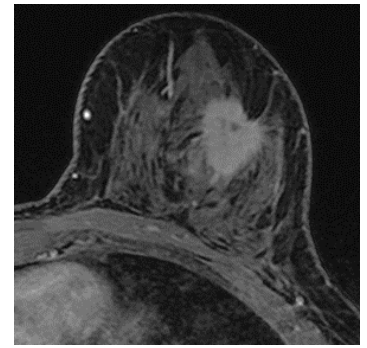
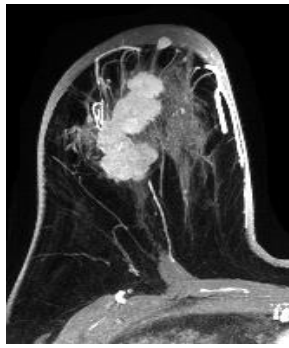


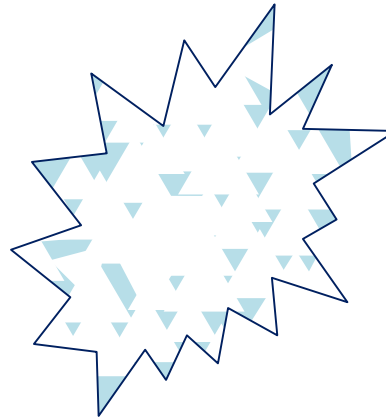
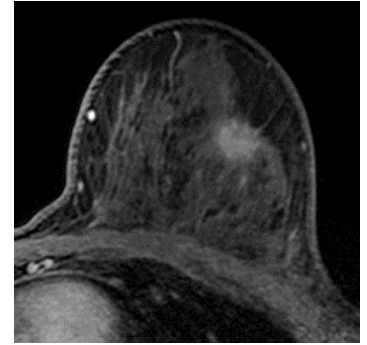
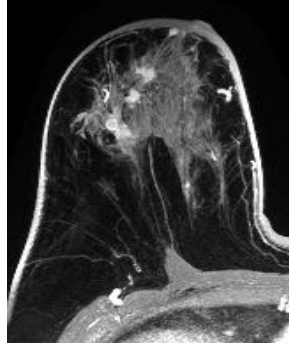
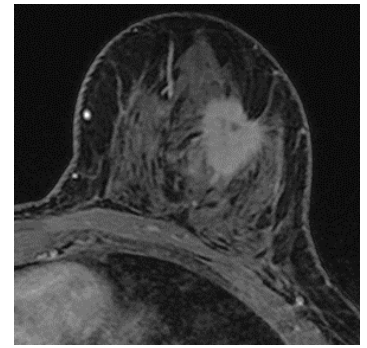
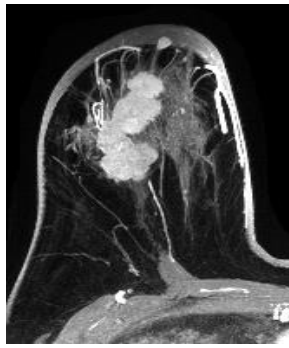




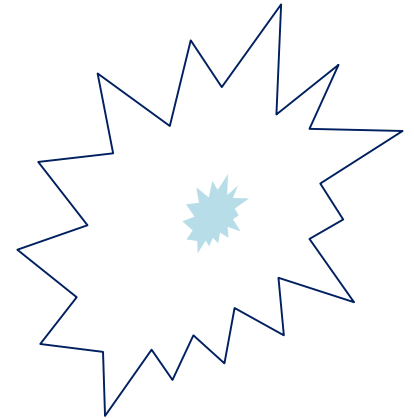








Fragmentation



Ice cubes type

Réponse pathologique complète (pCR) après chimiothérapie néo adjuvante (CNA)

70 % de réponse après NAC
pCR dans 13 -26 %

Subtype-specific pCR% stratified by whether the definition of pCR in neoadjuvant chemotherapy was applied to breast/axilla or breast only (model 1^a).

Model stratified by pCR definition	Estimated proportion with pathologic complete response		P value ^b
	pCR%	95% CI	
<i>pCR applied to breast and axilla (19 studies)</i>			
Hormone receptor positive: HR+/HER2–	7.2	6.0	8.8
HER2 positive: HER2+	26.5	23.8	30.5
Hormone receptor positive: HR+/HER2–		13.0	31.6
HER2 positive: HER2+		27.2	
Triple negative: ER–/PR–/HER2–		39.0	18.0
Hormone receptor positive: HR+/HER2–			35.7
HER2 positive: HER2+			48.6

Hormone receptor positive: HR+/HER2-

13.0

HER2 positive: HER2+

27.2

Triple negative: ER-/PR-/HER2-

39.0

pCR applied to breast only

pCR applied to breast and axilla

Hormone receptor positive: HR+/HER2-

13.0

7.2

HER2 positive: HER2+

27.2

26.5

Triple negative: ER-/PR-/HER2-

39.0

27.5

pCR des tumeurs E+ 8 % après ttt endocriniens long

Meta-analysis of the association of breast cancer subtype and pathologic complete response to neoadjuvant chemotherapy ☆

Nehmat Houssami^{a,*}, Petra Macaskill^a, Gunter von Minckwitz^b,
Michael L. Marinovich^a, Eleftherios Mamounas^c

VPP valeur
prédictive
positive

Capacité de prédire justement la
persistance de maladie résiduelle

95 %

**Si je dis que il n'y a plus
de tumeur c'est juste
dans 95 % des cas**

VPN valeur
prédictive
négative

Capacité de prédire justement
l'absence de maladie résiduelle

65 %

**Si je dis qu'il y a encore
de la tumeur c'est juste
dans 65 % des cas**

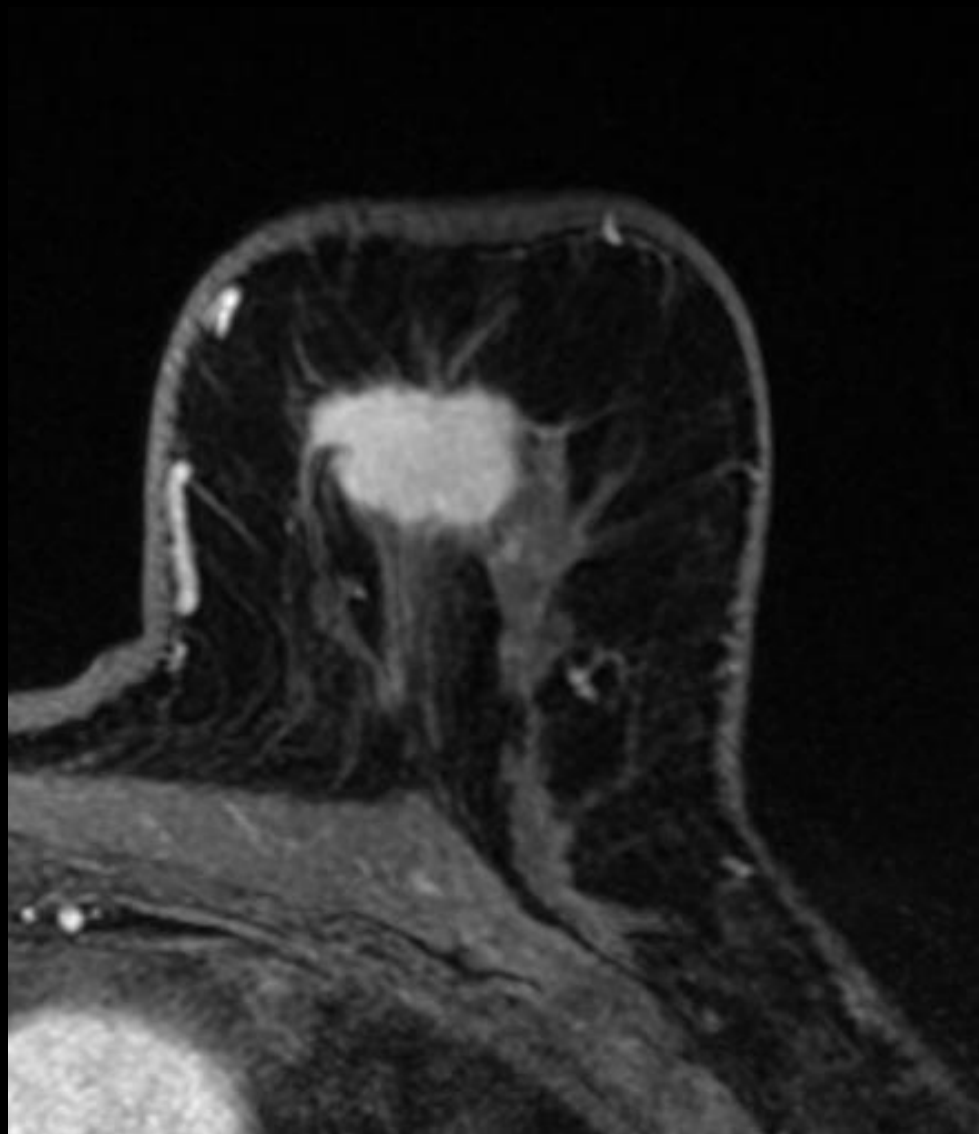
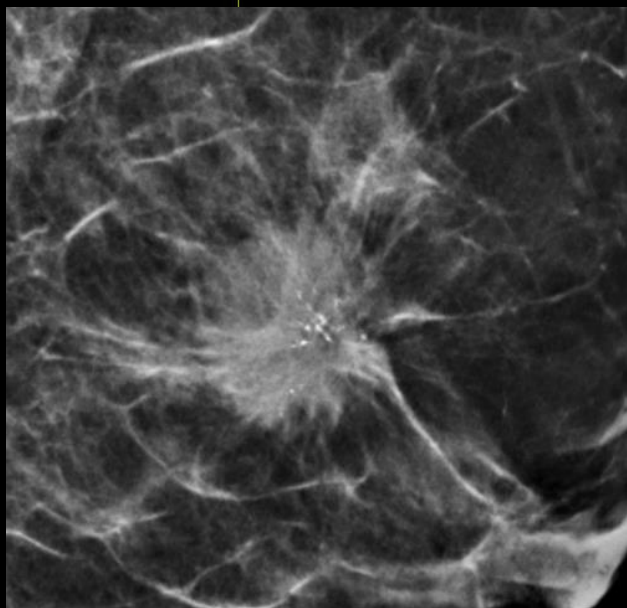
**Accuracy of Clinical Examination, Digital Mammogram,
Ultrasound, and MRI in Determining Postneoadjuvant Pathologic
Tumor Response in Operable Breast Cancer Patients**

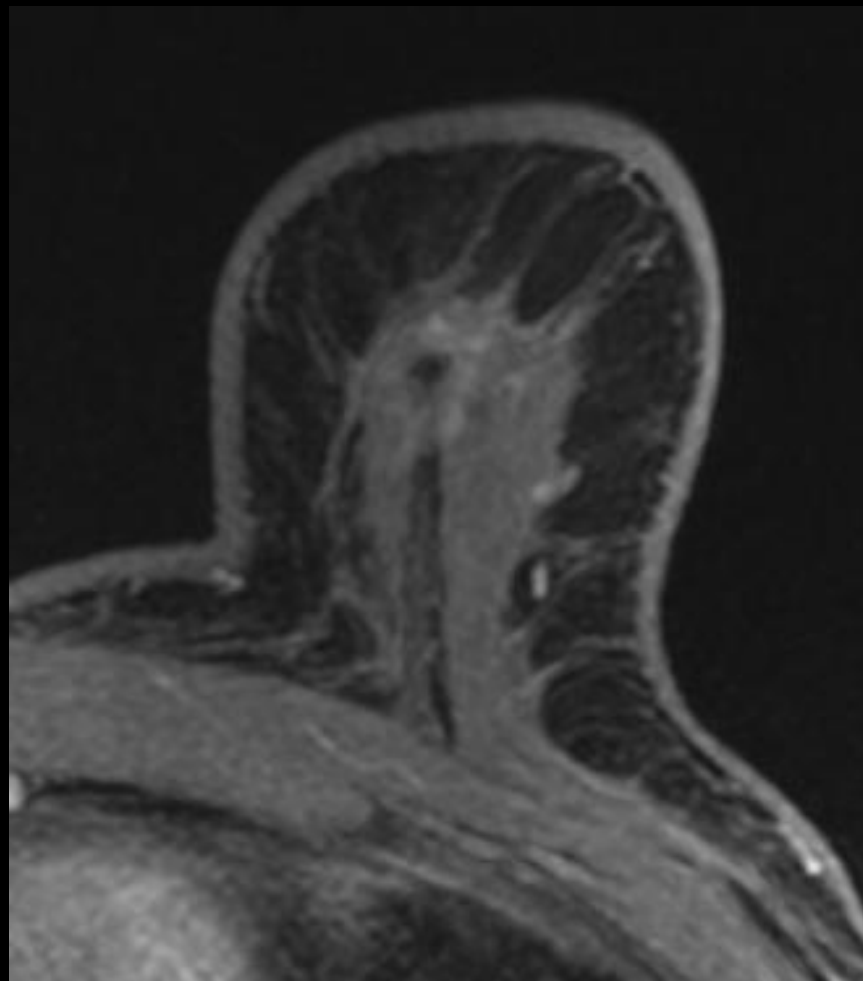
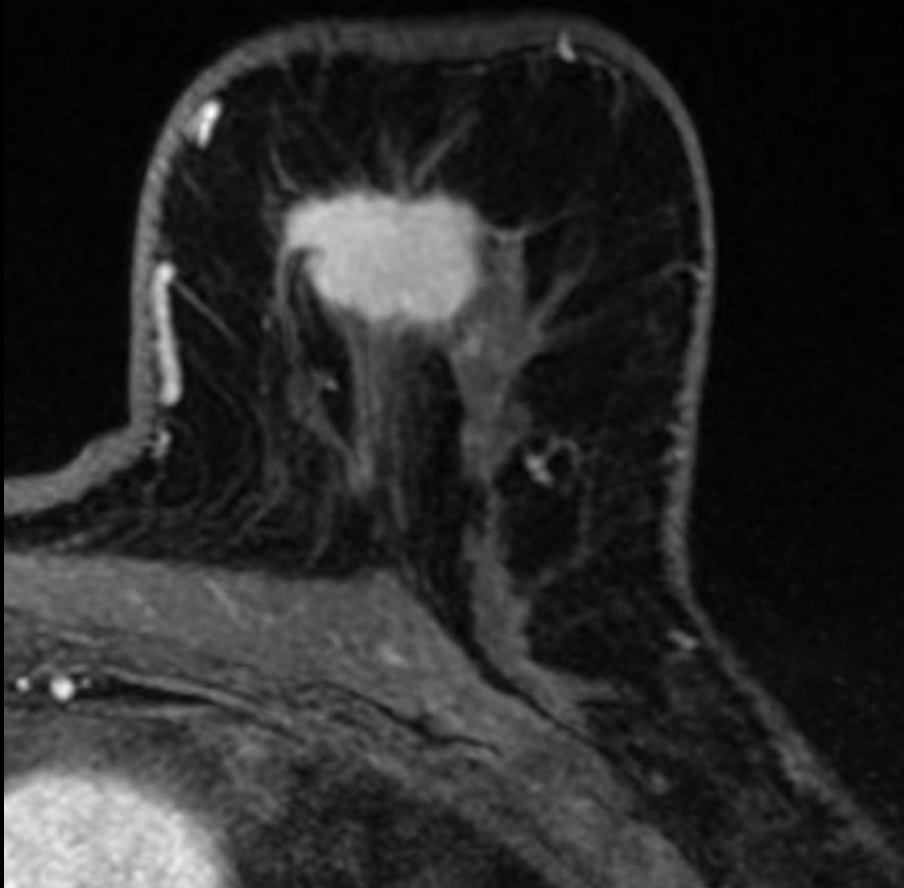
Randal Croshaw, MD¹, Hilary Shapiro-Wright, DO², Erik Svensson, MD³, Kathleen Erb, MD¹,
and Thomas Julian, MD^{1,4}

Ann Surg Oncol (2011) 18:3160–3163



GA

23 x 21 x 15 mm



Carcinome invasif NST

ER+, PR-, HER+

Mib1 Ki67 20%

2.9 cm au sein de remaniements fibreux

TABLE 1 Modality comparison for residual tumor size compared to pathologic tumor size*

Imaging modality	Residual tumor size compared to pathologic tumor		
	Sensitivity (%)	Specificity (%)	Accuracy (%)
CBE	49–50	49–50	54
Mammography	79–81	79–81	32
Ultrasonography	89–90	30–33	60
MRI	86–92	60–86	90
MBI	71–94	66–89	75
PET CT	84	65	

CBE clinical breast examination, *MRI* magnetic resonance imaging, *MBI* technetium-99m sestamibi scintimammography

Mesure de l'efficacité des NAC

Examen clinique	inefficace pour tumeurs de < 2 cm et profondes mauvaise distinction entre résidu tumoral et fibrose
Mammographie	diminution tumorale mal visible dans des seins denses MC après NAC ne représente pas tj une tumeur viable
Ultrasons	peu de spécificité entre tumeur résiduelle et fibrose
PET CT	mauvaise appréciation des tumeurs de bas grade et de résidus tumoraux de moins de 1 cm beaucoup de faux positifs
Scintigraphie technetium-99m sestamibi	bonnes performances examen en cas de contrindication à l'IRM

Amy M. Fowler, MD, PhD
David A. Mankoff, MD, PhD
Bonnie N. Joe, MD, PhD

**Imaging Neoadjuvant Therapy
Response in Breast Cancer¹**

Radiology: Volume 285: Number 2—November 2017

IRM mammaire

meilleur examen pour le suivis des NAC
examen de référence dans guidelines ACR, EUSOBI, NCCN,

suivis des NAC

diminution de la taille tumorale
bonne corrélation avec images tumorales

réponse angiogéniques

bien visible sur étude dynamique

ttt taxanes disparition des prise
de contraste

évaluation de la réponse des CCIS pas optimale

pas de protocole standardisé pour l'évaluation de la réponse ...

mesure de la taille ou volume ...

mesure «manuelle» ou par valeurs des voxels

mesure des changements dans l'imagerie de diffusion

Mai 2018

51Y|F

LO

L12-5
62Hz
RV
2D
29%
R Dyn 63
P Bas
Rés



✧ Dist 0.761 cm

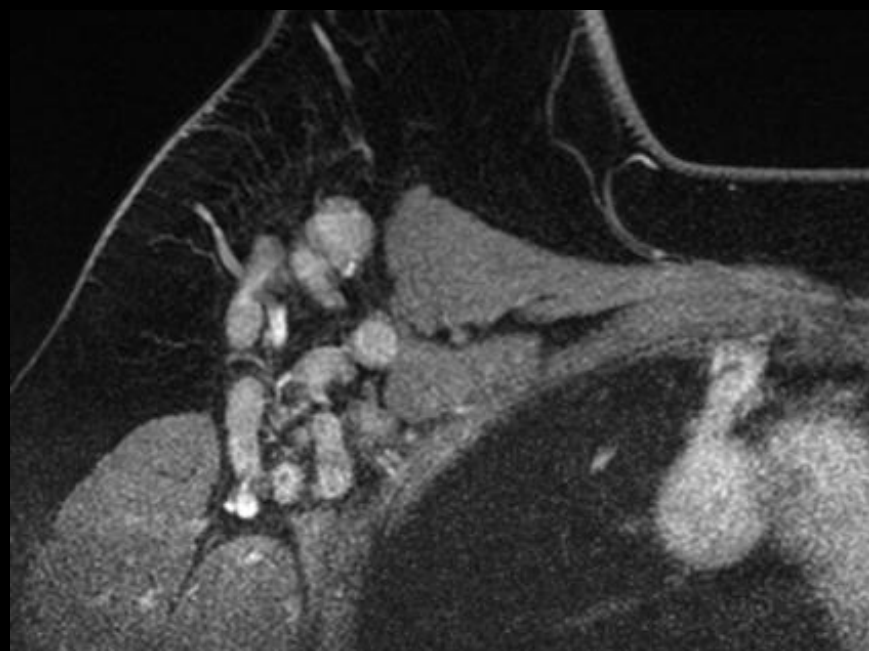
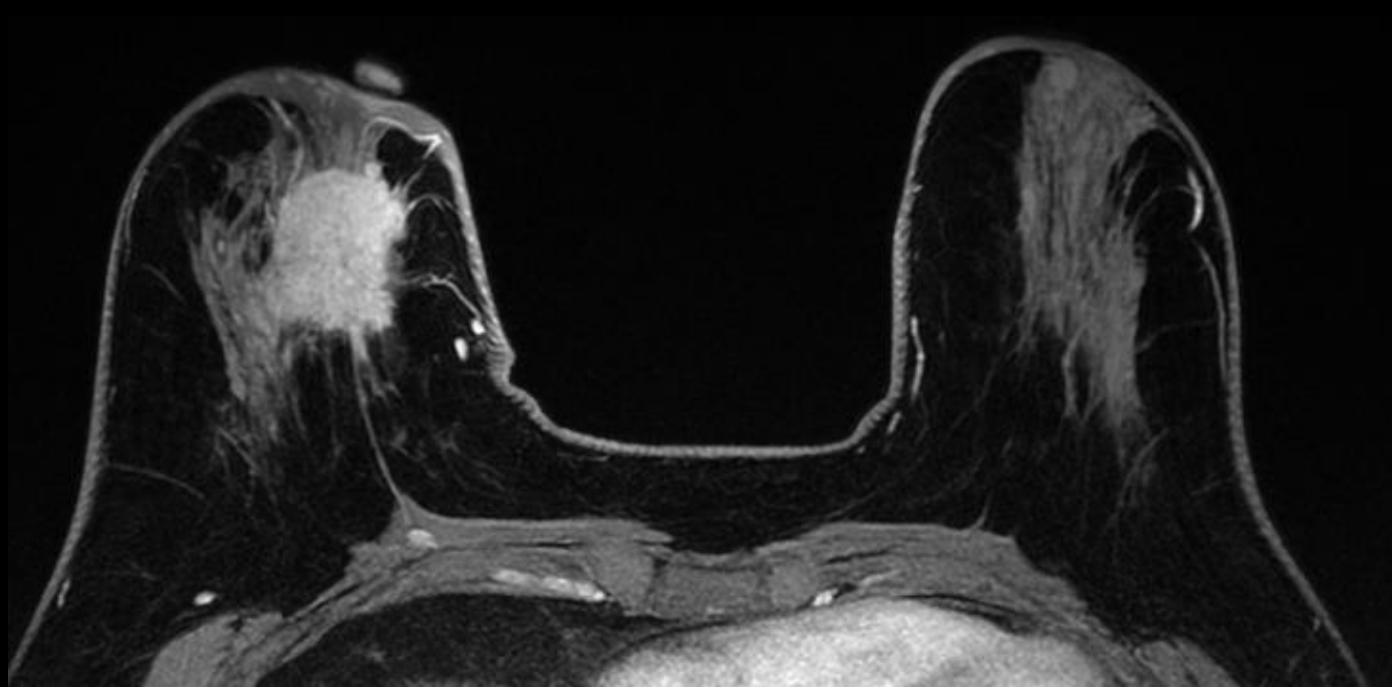
**Carcinome invasif NST, grade 2
ER +, HER +, Ki67 40%**

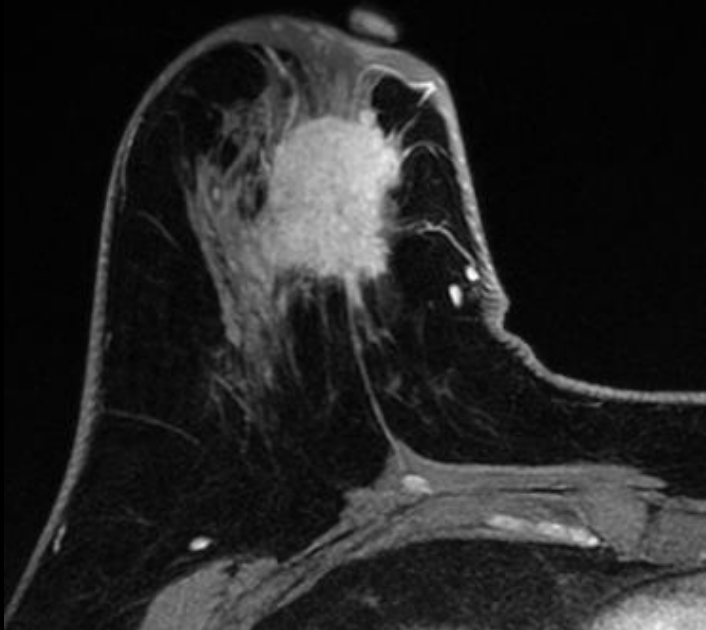
L12-5
62Hz
RV
2D
29%
R Dyn 63
P Bas
Rés



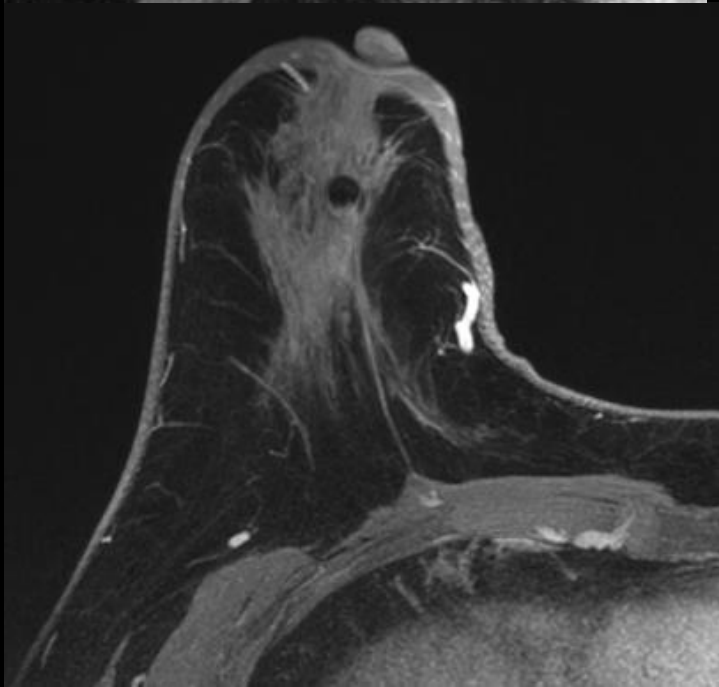
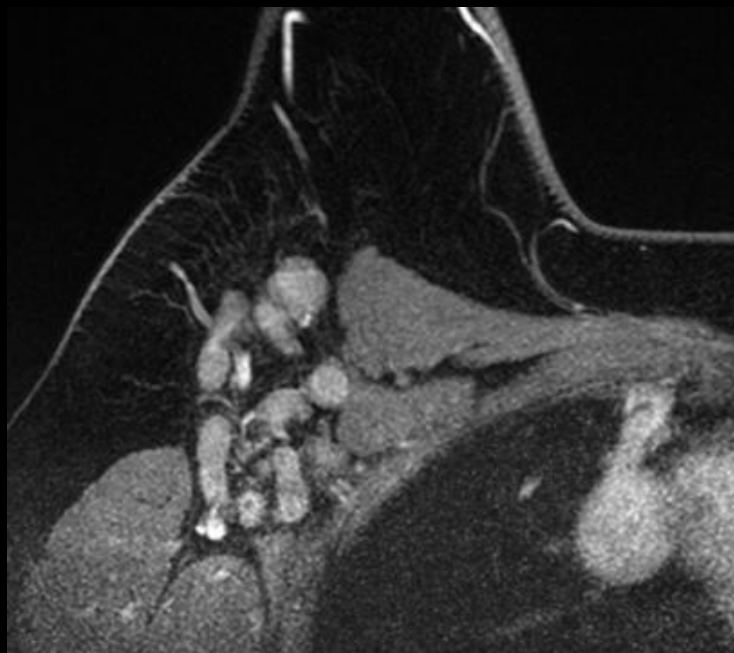
✧ Dist 3.58 cm

M3
- 1
- 2
- 3
- 4
- 5

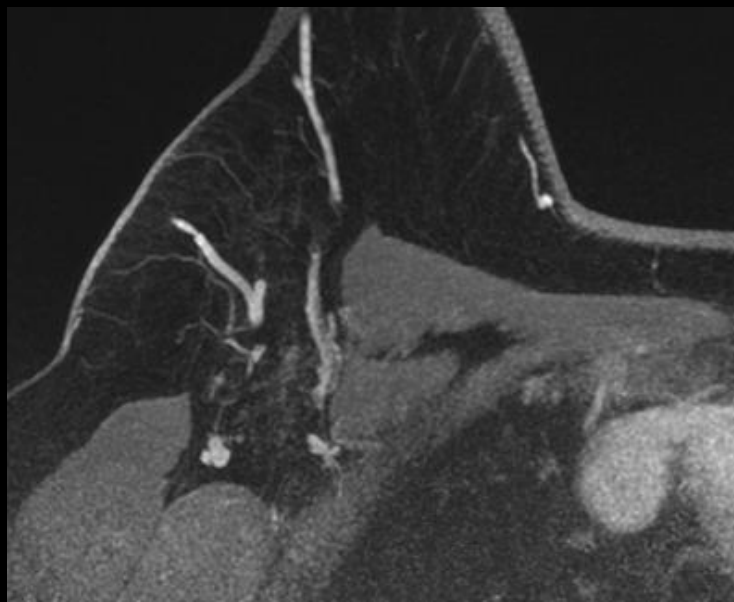




Mai 2018



Aout 2018

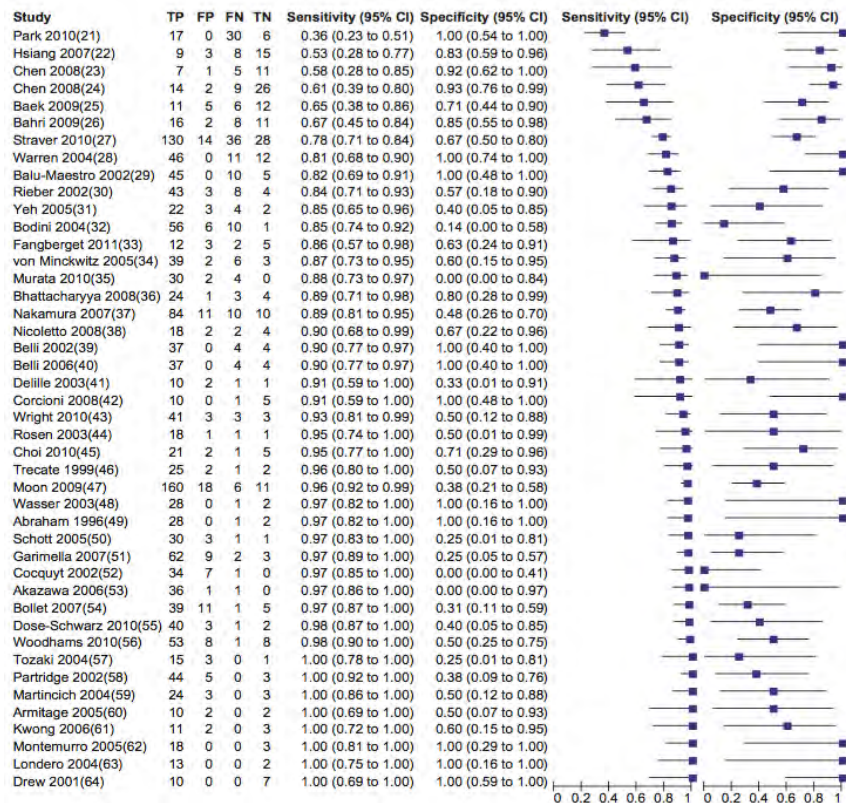


Meta-Analysis of Magnetic Resonance Imaging in Detecting Residual Breast Cancer After Neoadjuvant Therapy

Michael L. Marinovich, Nehmat Houssami, Petra Macaskill, Francesco Sardanelli, Les Irwig, Eleftherios P. Mamounas, Gunter von Minckwitz, Meagan E. Brennan, Stefano Ciatto†

Manuscript received September 3, 2012; revised November 5, 2012; accepted November 6, 2012.

Correspondence to: Michael Luke Marinovich, MPH, Screening and Test Evaluation Program, Sydney School of Public Health, A27, Edward Ford Building, University of Sydney, NSW 2006, Australia (e-mail: luke.marinovich@sydney.edu.au).



Sensibilité IRM

détection correcte de résidu tumoral

optimale

Spécificité IRM

identification correcte de la pCR

médiocre

Table 3**Functional and Quantitative Imaging Techniques for Assessing Neoadjuvant Therapy Response in Breast Cancer**

Technique	Biologic Parameter	Feasibility for Clinical Practice	Advantages	Challenges/Barriers
SER and pharmacokinetic DCE MR imaging	Tumor vascularity	Moderate for SER-based analyses; Pharmacokinetic analyses remain investigational	Demonstrated association with patient survival outcomes for certain SER-based parameters	Requires excellent image quality without motion artifact; difficult to standardize technique for pharmacokinetic analyses; requires additional postprocessing to obtain pharmacokinetic and SER parameters
Diffusion-weighted MR imaging	Tumor cellularity	Strong, in some current clinical practices	No intravenous contrast material requirement	Requires excellent imaging quality and fat suppression; image distortion problematic; no standardization for b-values; requires additional postprocessing to calculate ADC values for quantitative analysis
Proton MR spectroscopy	Choline metabolism	Possible, remains investigational	No intravenous contrast material requirement, but placement of spectroscopic volume of interest often based on contrast-enhanced images	Requires excellent magnetic field homogeneity; long acquisition time; limited coverage area for breast; difficult to perform successfully; difficult to standardize technique
FDG-PET	Glucose metabolism	Strong, in many current clinical practices	Readily available radiopharmaceutical	No census for timing and SUV cutoff; uptake in inflammation
FLT-PET	Tumor proliferation	Moderate, remains investigational but has undergone multicenter testing	Correlation with Ki67 biomarker for proliferation	No FDA approval for FLT; variable uptake among tumor subtypes
FACBC-PET	Amino acid metabolism	Possible, FDA-approved tracer used clinically for prostate cancer imaging	Strong uptake in invasive lobular carcinoma	Limited experience for breast cancer response evaluation
¹¹ C-choline-PET	Choline metabolism	Possible, FDA-approved tracer used clinically for prostate cancer imaging	May indicate resistance to trastuzumab in HER2+ disease	Short half-life limits distribution; limited experience for breast cancer response evaluation

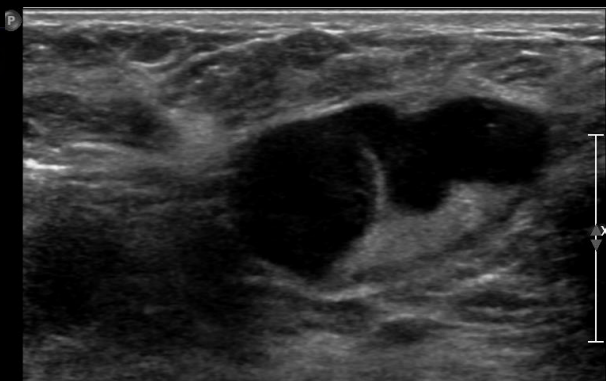
Note.—ADC = apparent diffusion coefficient, DCE = dynamic contrast enhanced, FDA = Food and Drug Administration, FACBC = anti-1-amino-3-¹⁸F-fluorocyclobutane-1-carboxylic acid, FLT = fluorine 18 fluorothymidine, SER = signal enhancement ratio, SUV = standardized uptake value.

Quantification du volume tumorale

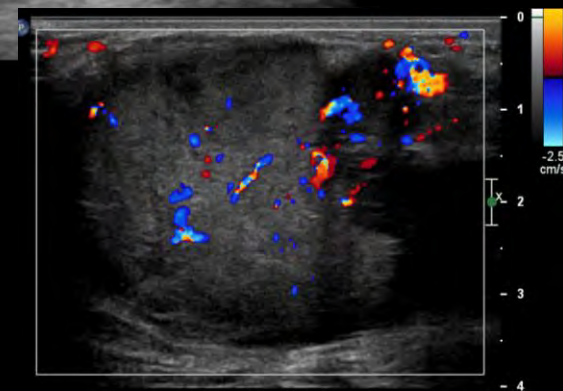
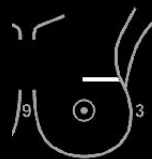
Critères **RECIST** (**R**esponse **C**riteria in **S**olid **T**umor)

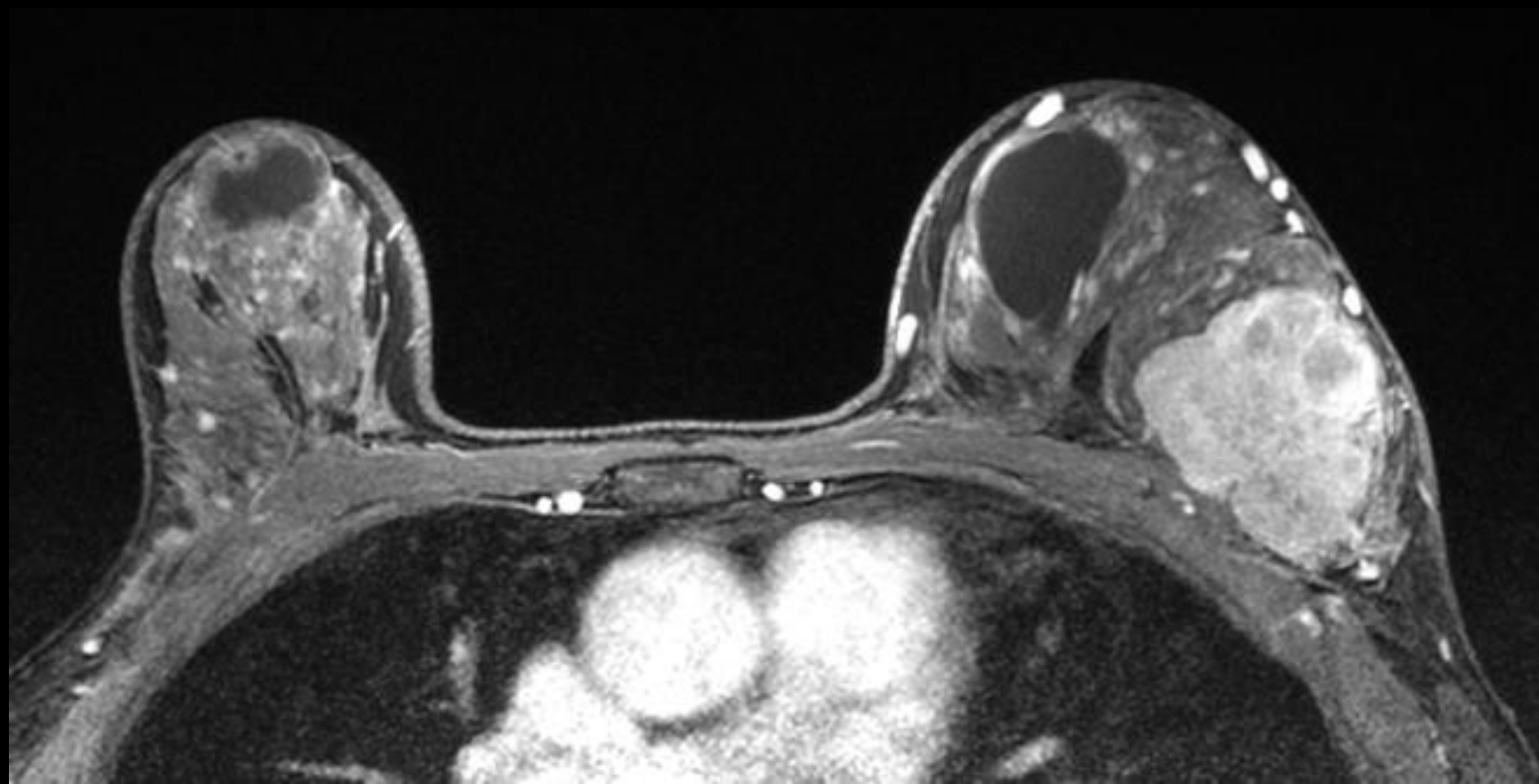
Imaging Tumor Response Evaluation Criteria

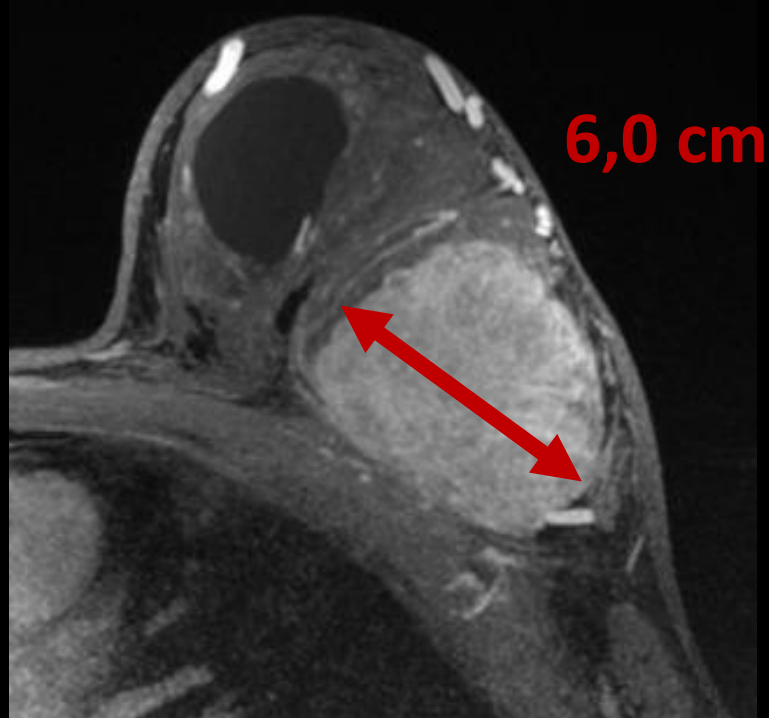
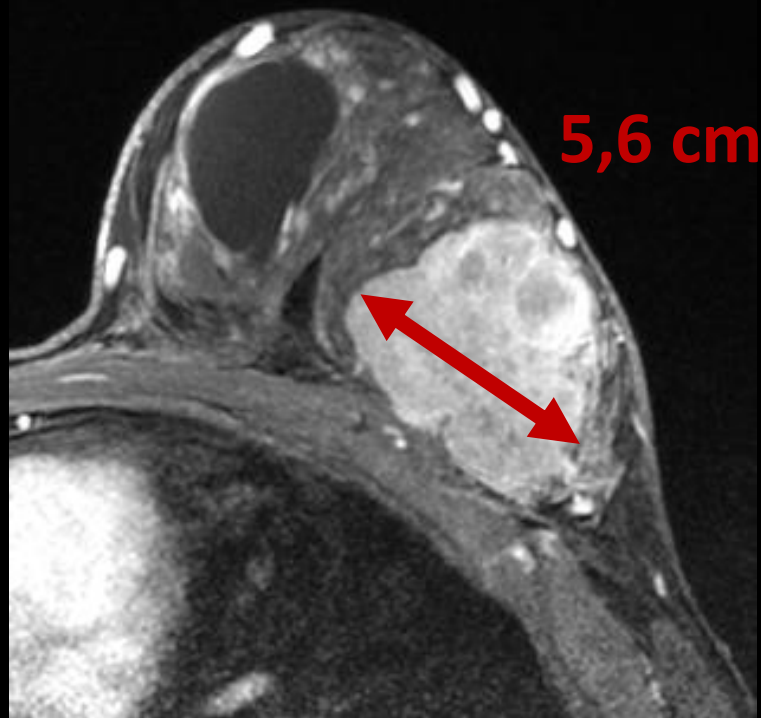
Parameter	Anatomic Imaging Response: RECIST 1.1
Complete response	Complete resolution of original imaging finding
Progressive disease	20% increase in lesion diameter or the appearance of new lesions
Partial response	At least a 30% decrease in lesion diameter
Stable disease	Interval changes in lesion size do not qualify for partial response or progressive disease



2D
59%
C 58
P Moy
Rés
CAT1

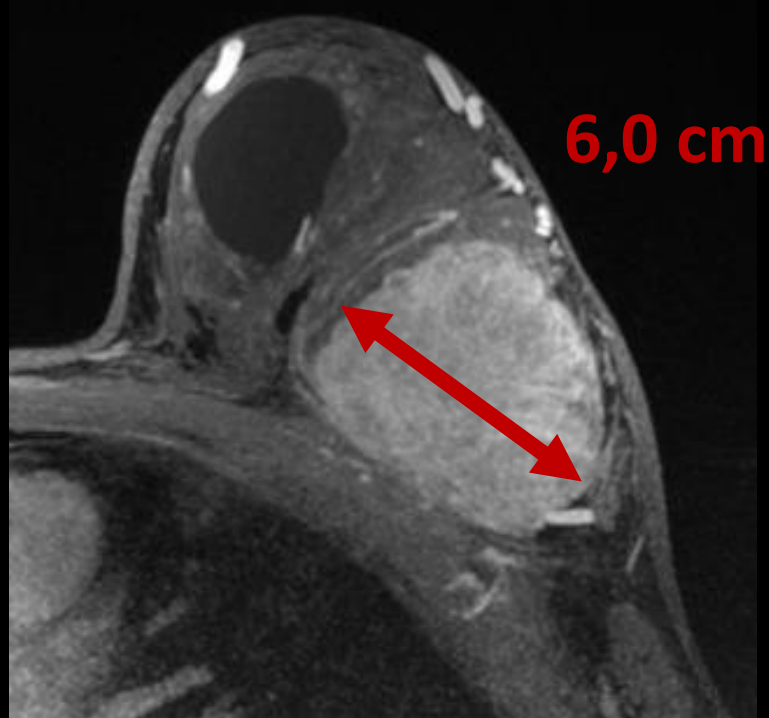
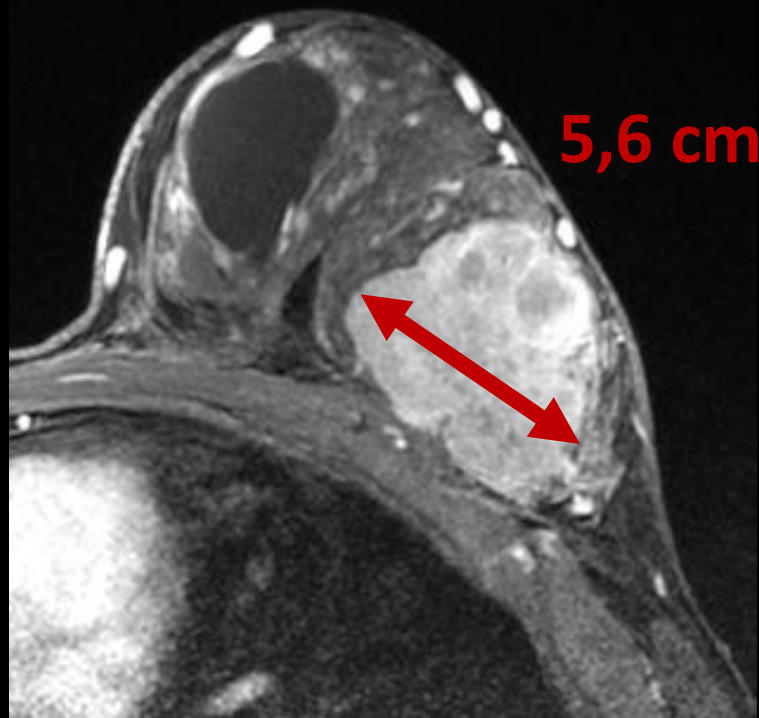






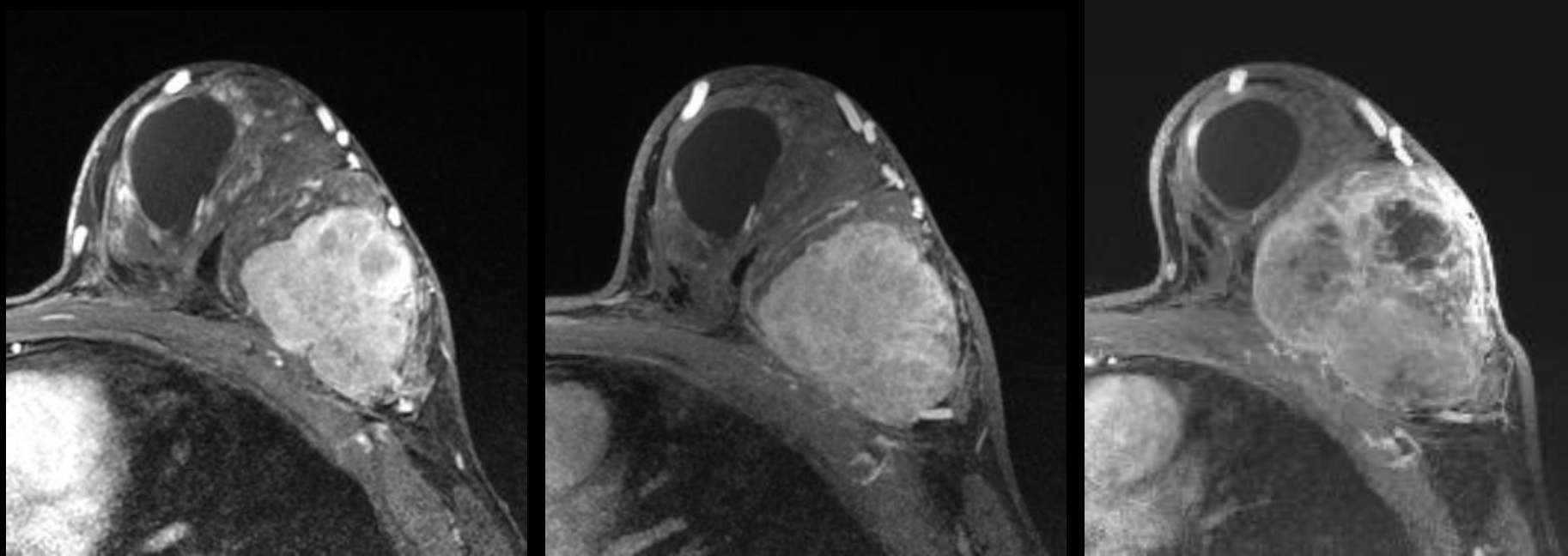
Avril 2018	5,6
Juillet 2018	6,0

Augmentation de 7 %

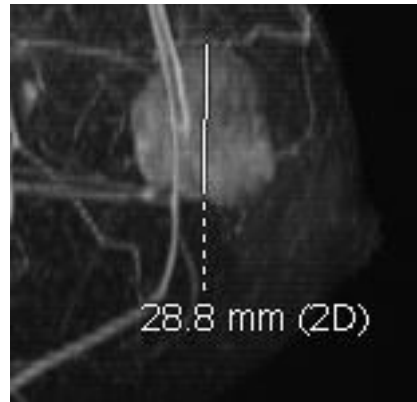
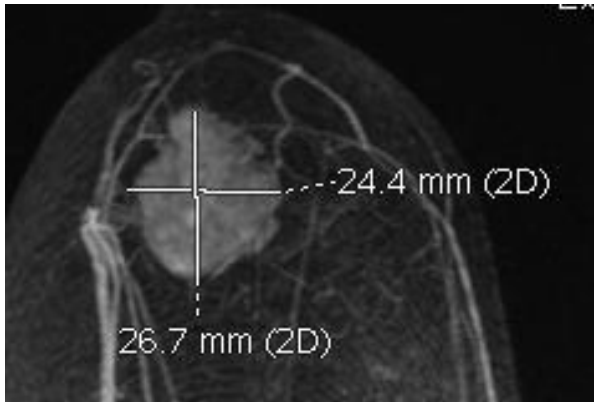
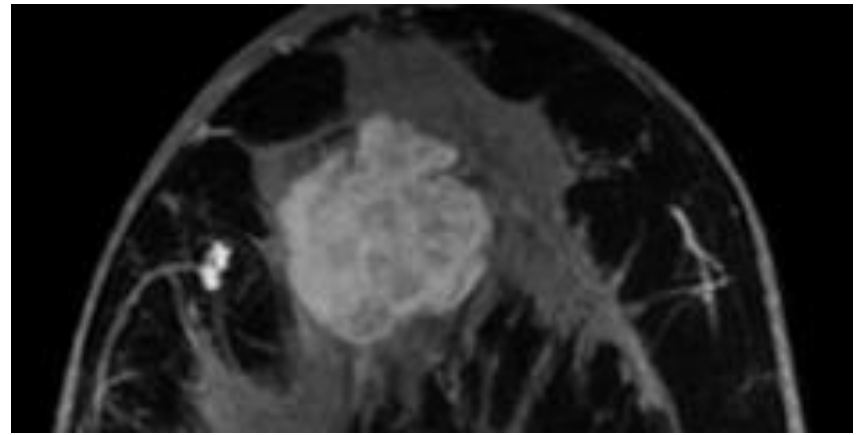


				volume
Avril 2018	5,6	4,5	4,5	56
Juillet 2018	6,0	5,5	5,0	82

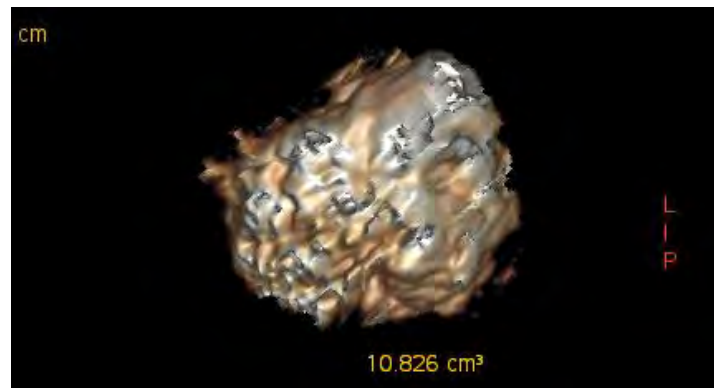
Augmentation de 46 %



				volume
Avril 2018	5,6	4,5	4,5	56
Juillet 2018	6,0	5,5	5,0	82
Novem 2018	8,4	7,7	6,6	213



$$\frac{2,44 \times 2,67 \times 2,88}{2} = 9,4 \text{ ml}$$

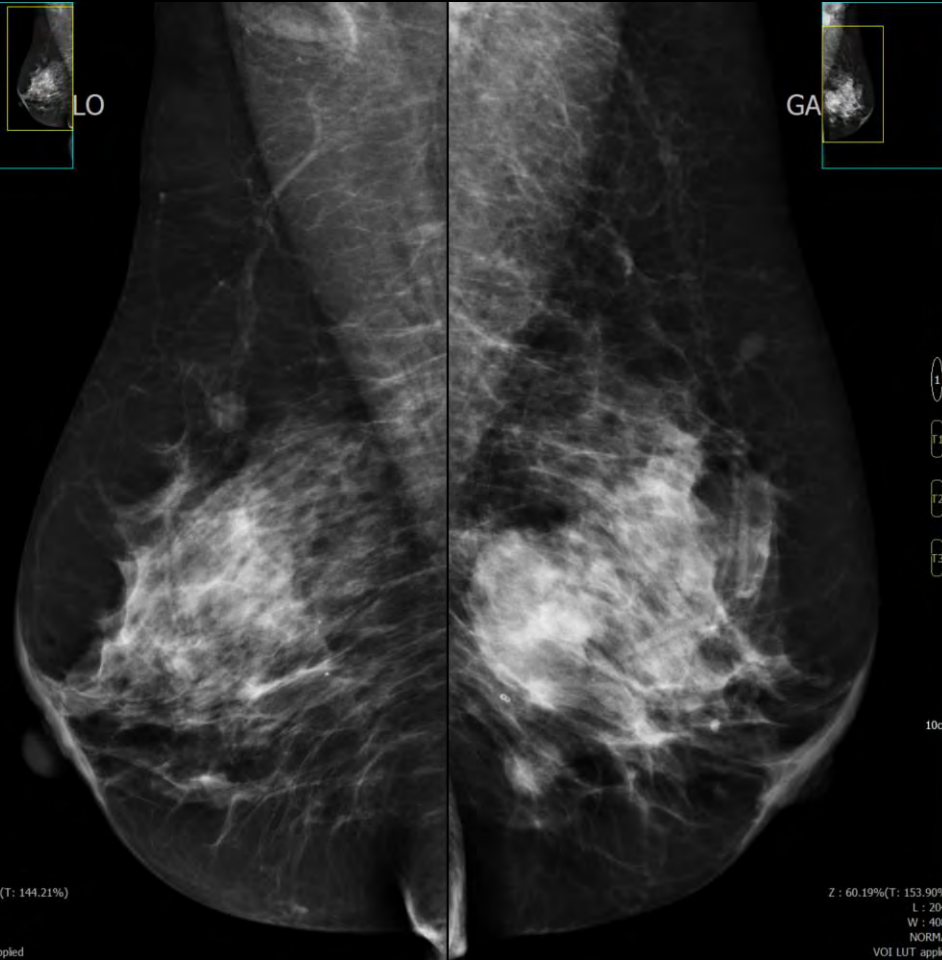
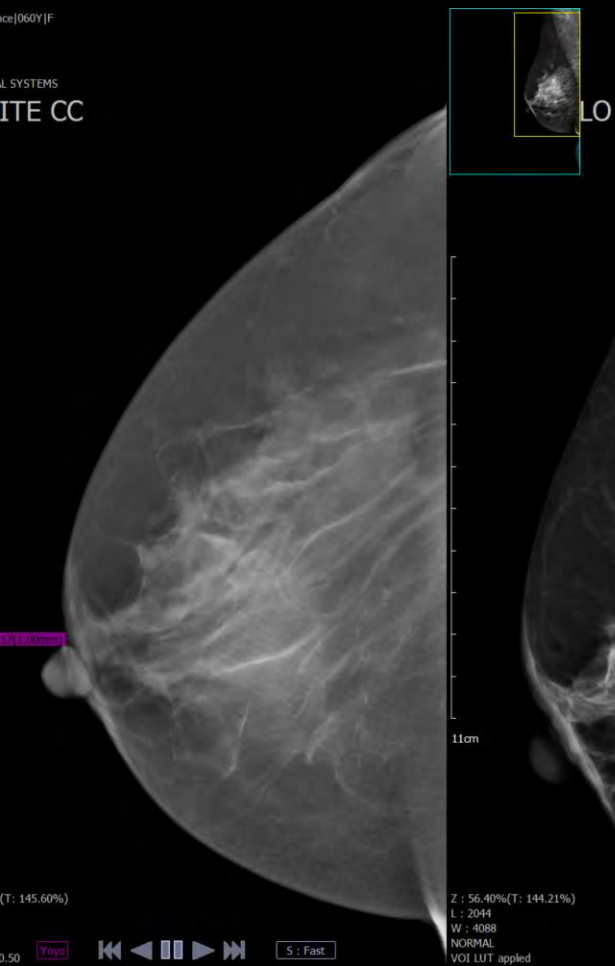


10, 8 ml

Octobre 2015

ce[060Y]F

L SYSTEMS
ITE CC



PERA Flor

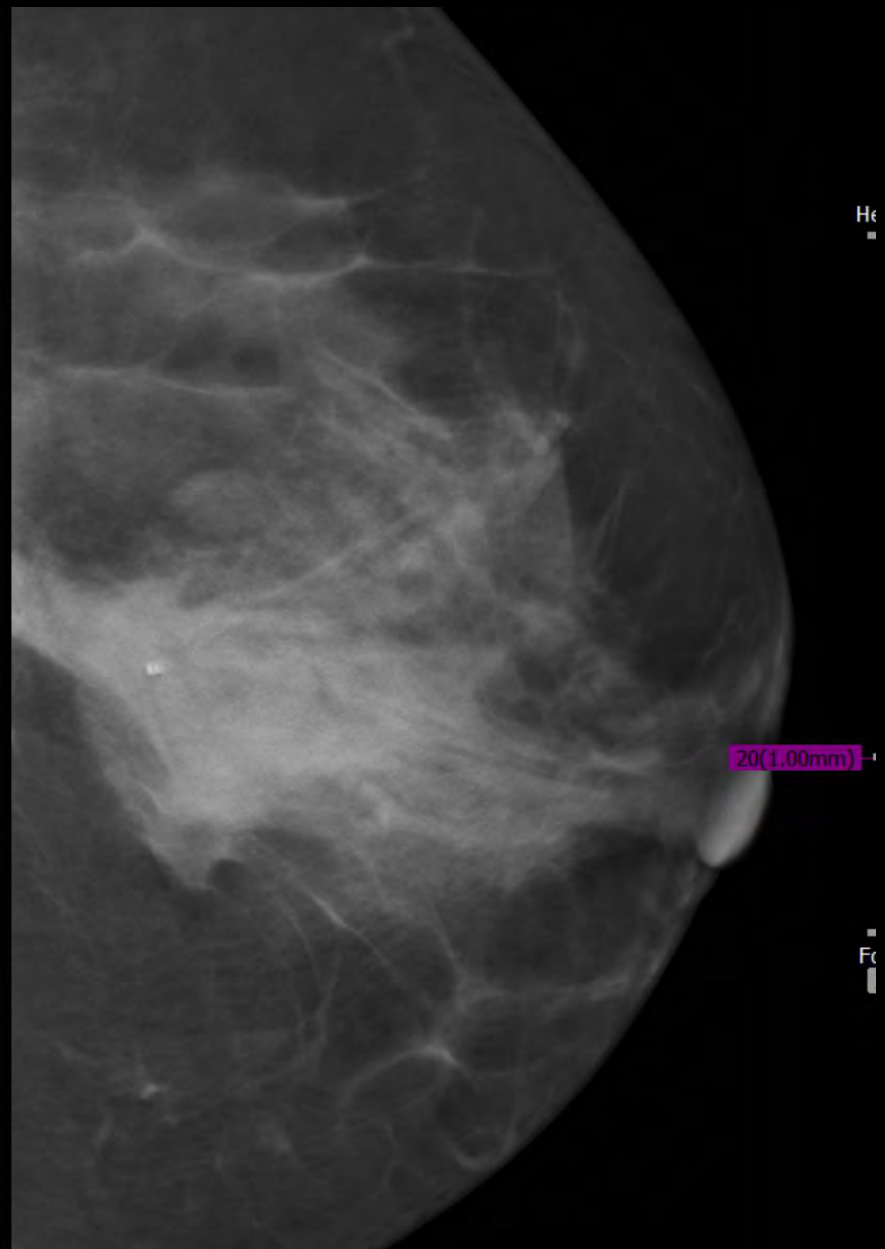
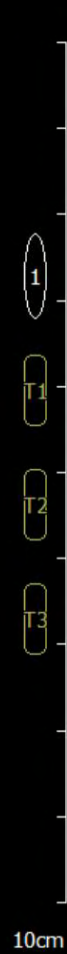
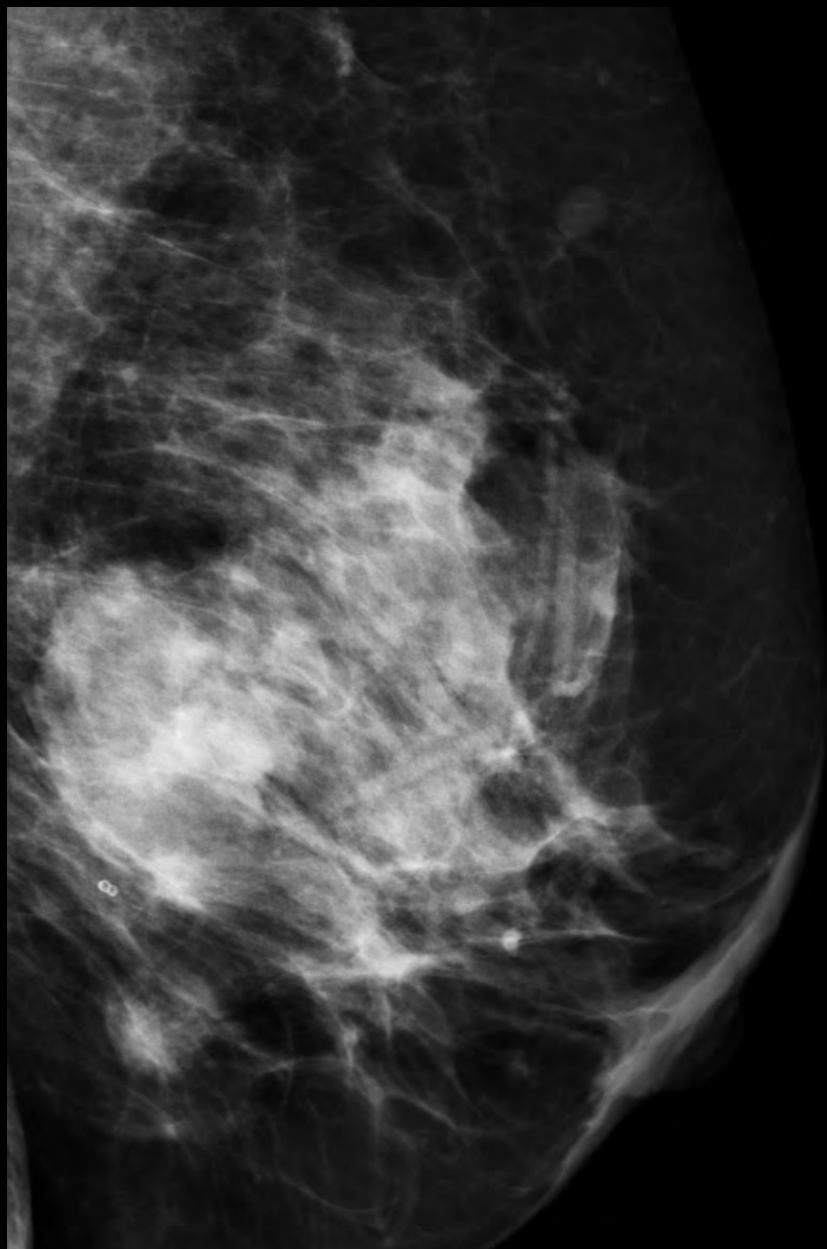
GE MEDICA
GAUCH

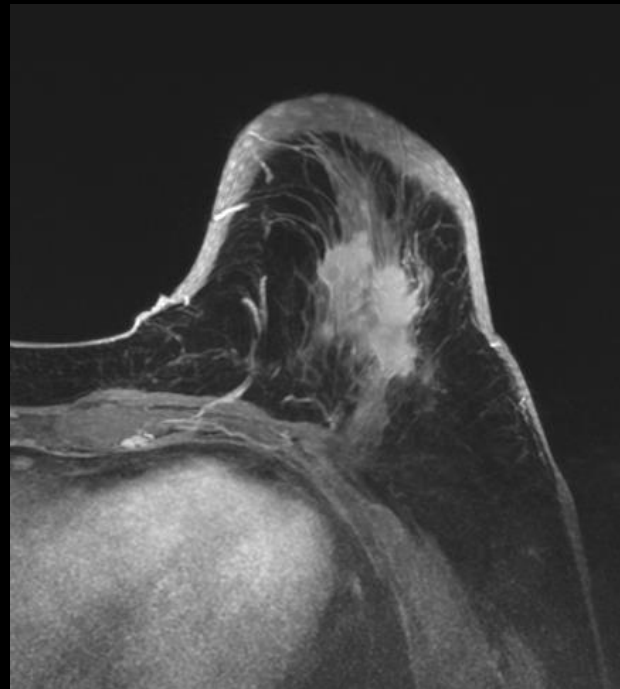
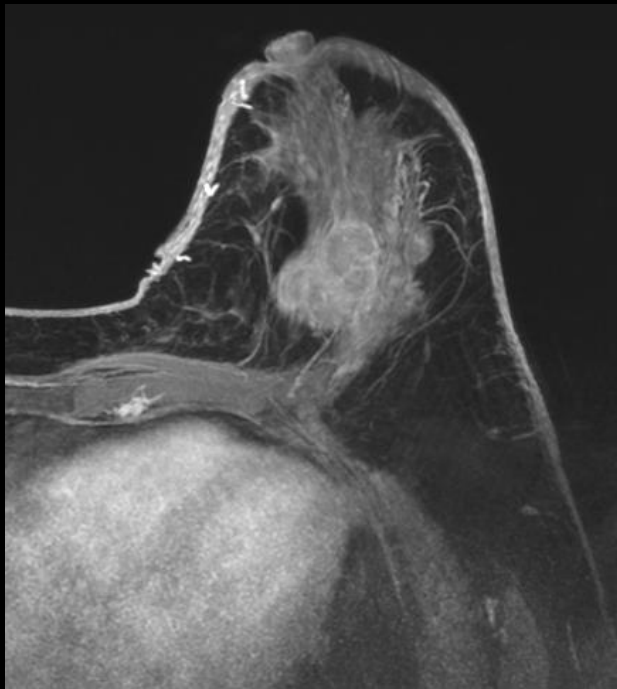
He

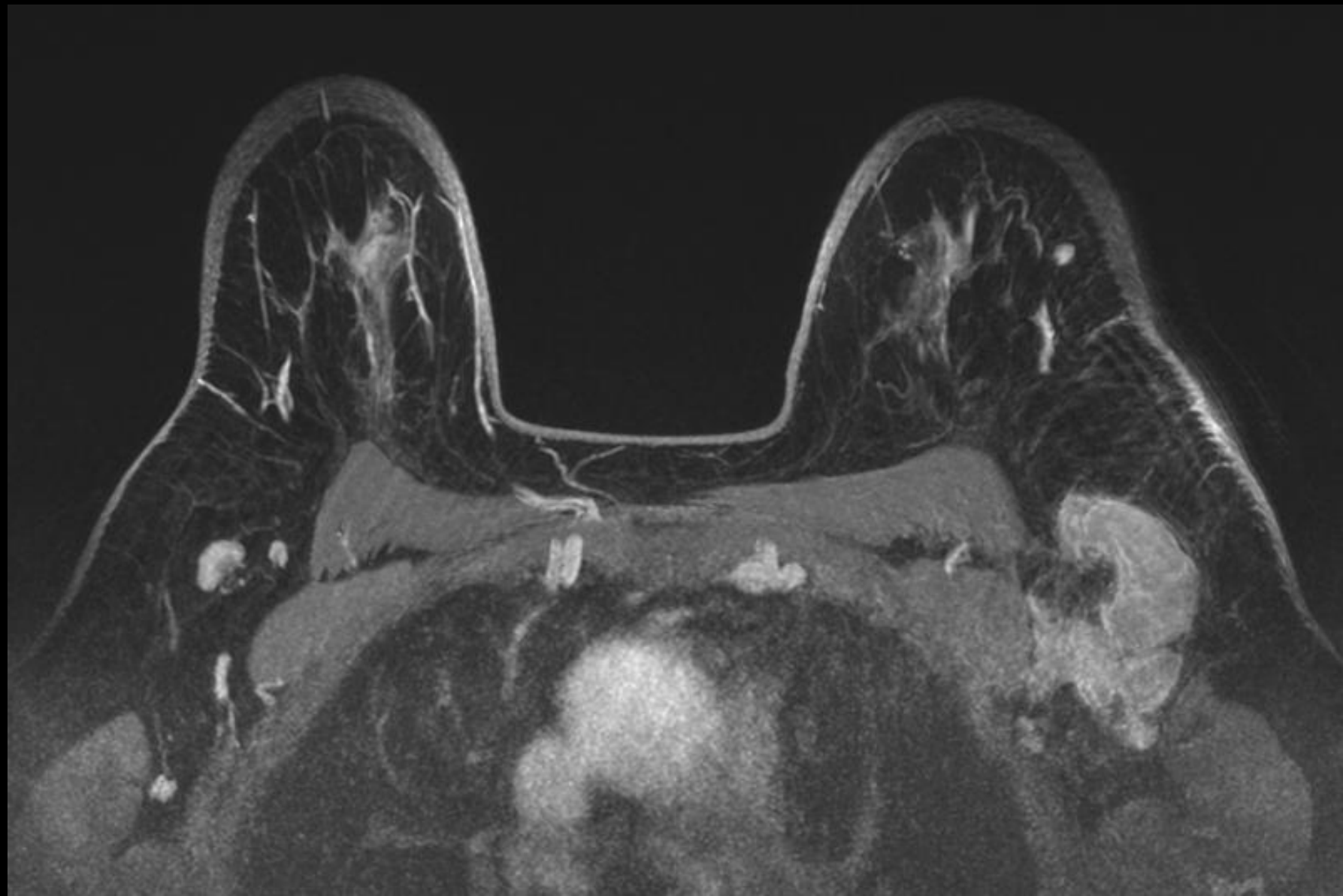
Fo

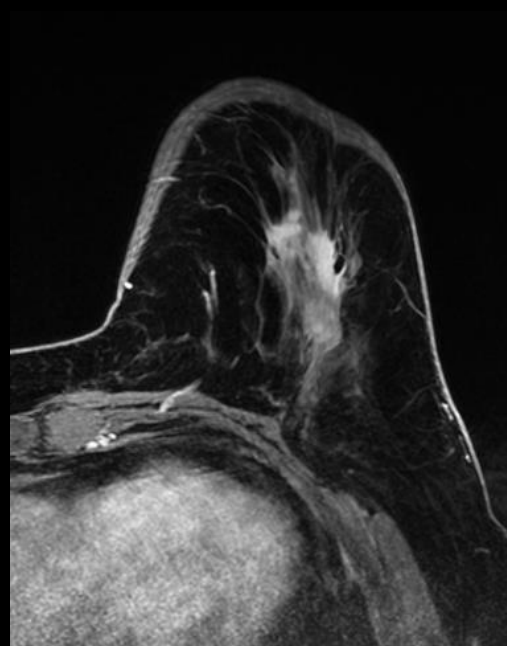
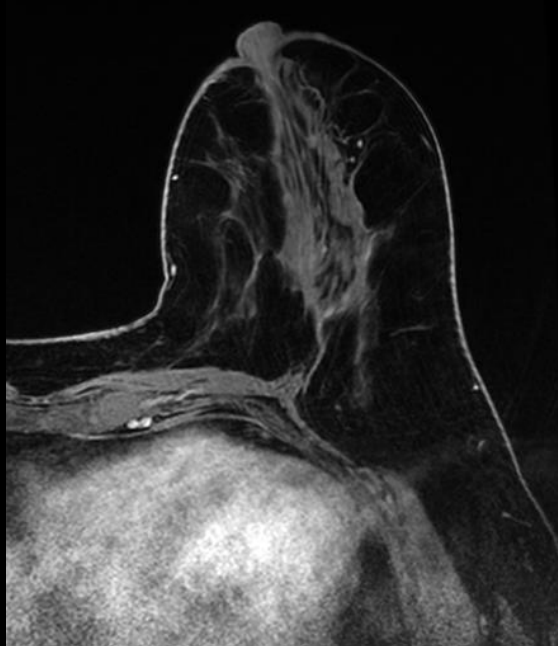
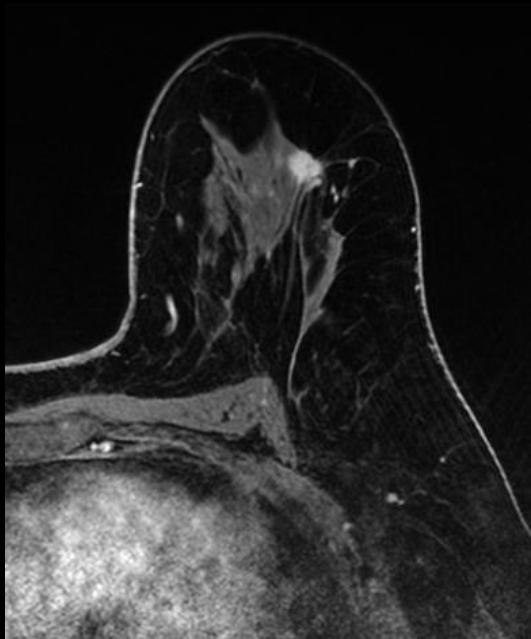
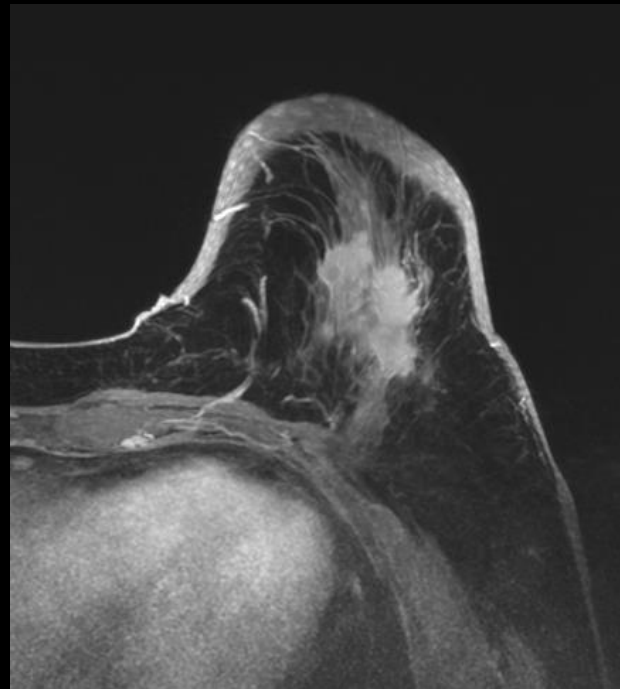
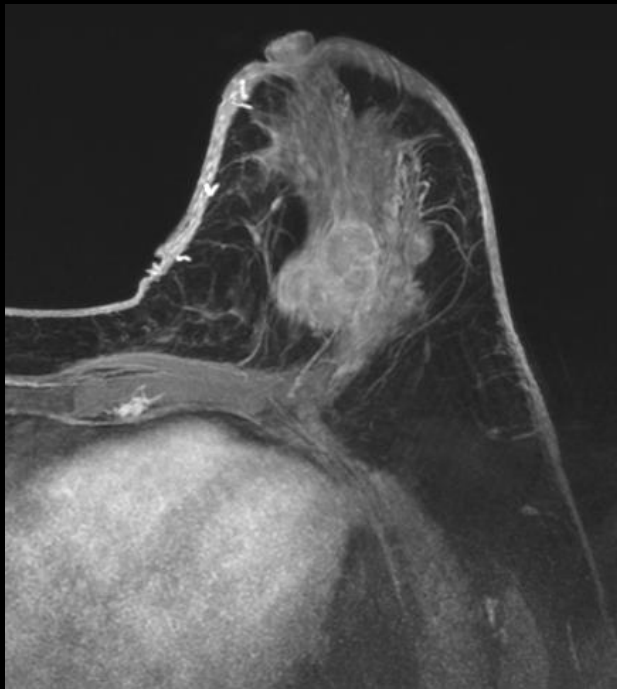
Z : 60.00%(T:

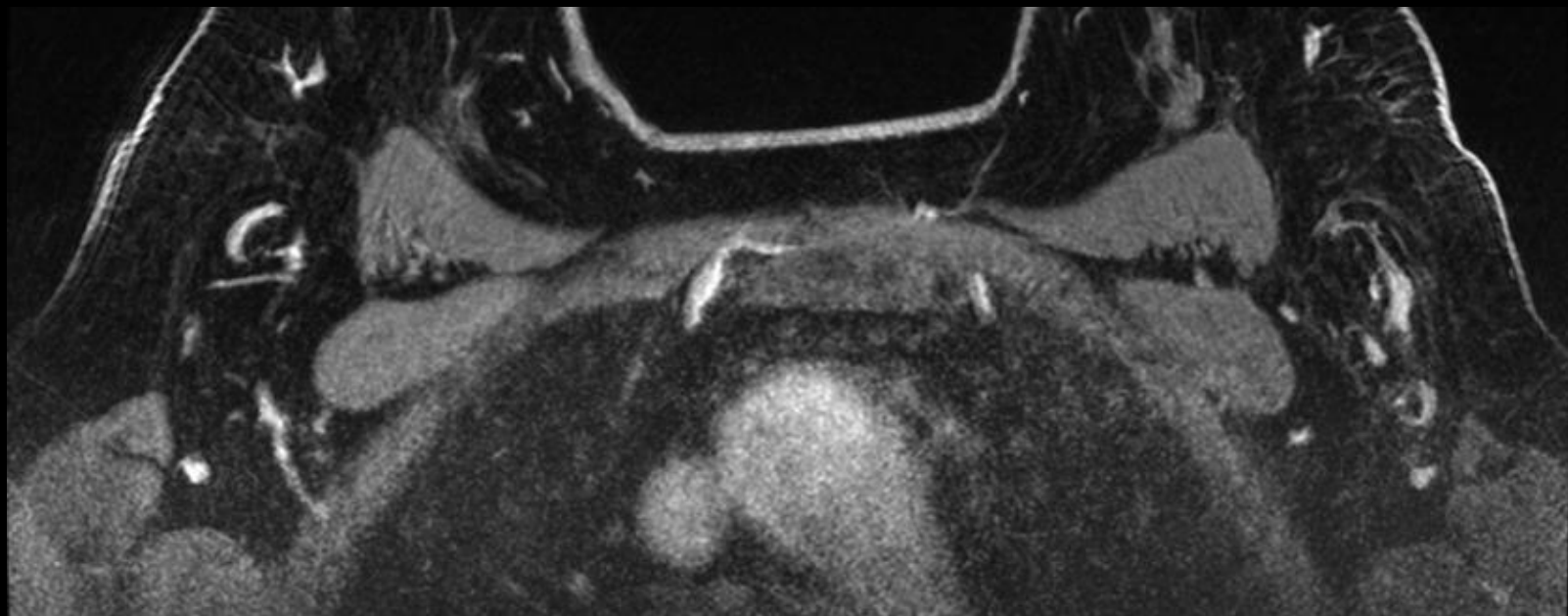
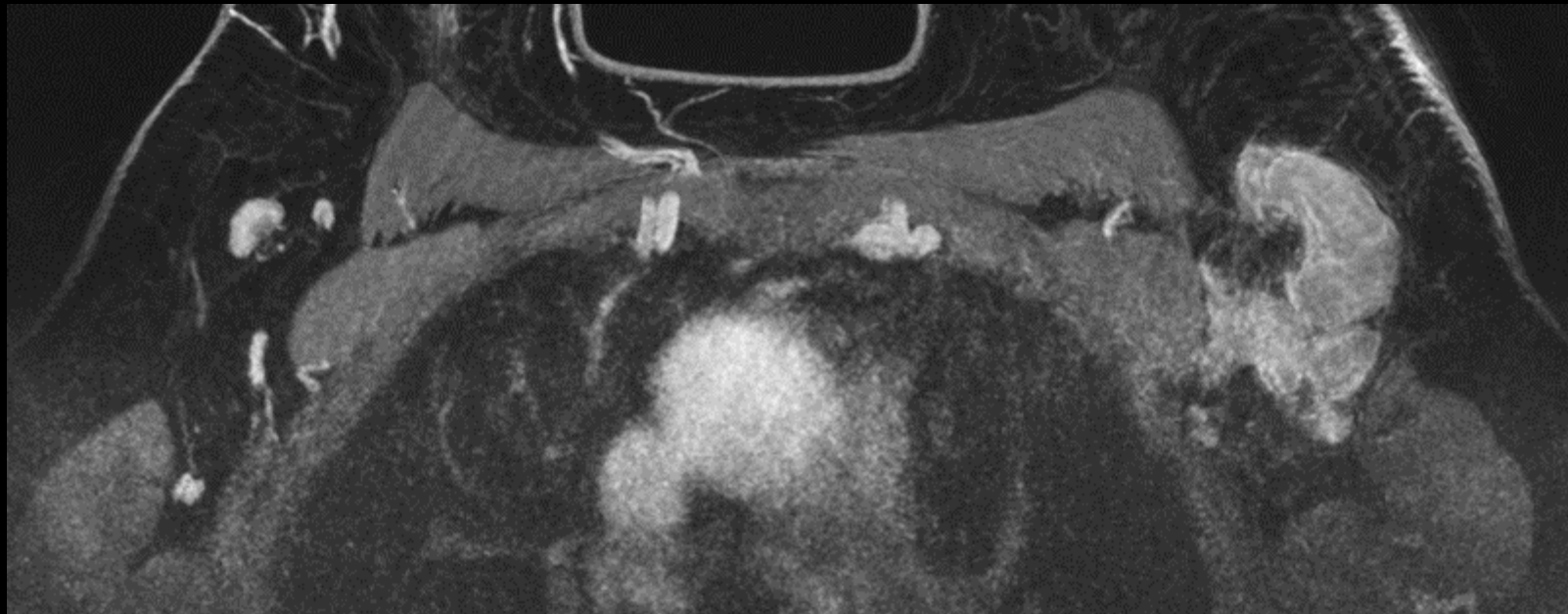
STGM

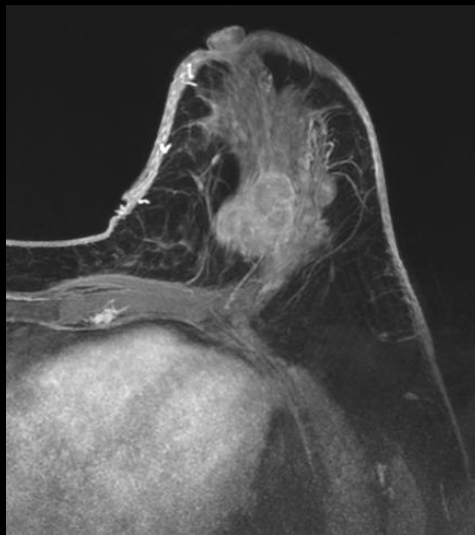
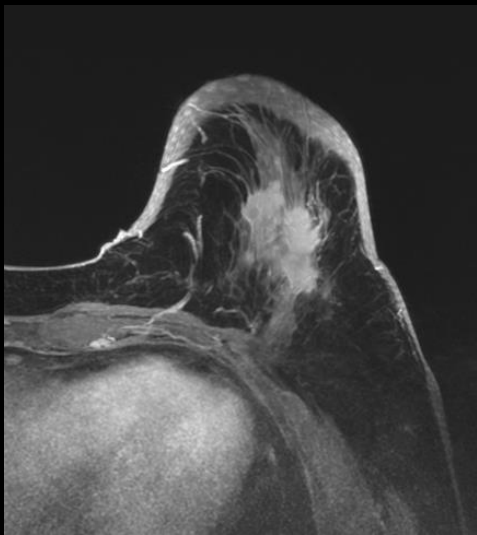












	histologie	Grade	RH	MIB-1 (Ki-67)
Biopsie sein 1	Carcinome canalaire invasif NST	Grade 2	80 %	10 %
Biopsie sein 2	Carcinome canalaire invasif NST	Grade 3	< 5 %	70 %
Biopsie ganglion	Infiltration par carcinome	Grade 3	0 %	80 %

Evaluation de la réponse après NAC au niveau ganglionnaire

Les patientes avec une NAC ont 70% d'atteinte ganglionnaire

NAC est moins efficace dans les ggl que dans le sein

16-41 % des pCR dans le sein ont de la maladie résiduelle dans les ggl

sensibilité de l'évaluation des ggl après NAC

US	70 %
MRI	80 %
PET	63 %

JAMA Oncology | Review

Axillary Nodal Management Following Neoadjuvant Chemotherapy A Review

Melissa Pilewskie, MD; Monica Morrow, MD

JAMA Oncology April 2017

Introduction

Bilan diagnostic initial

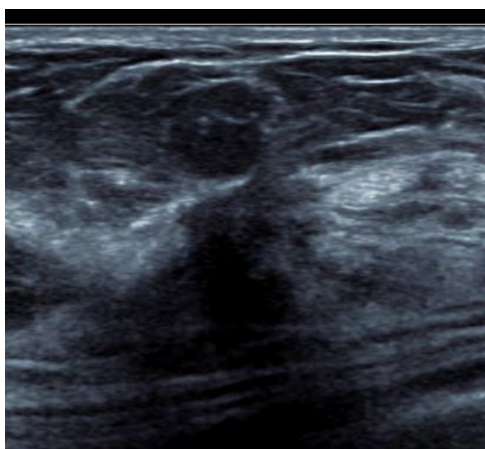
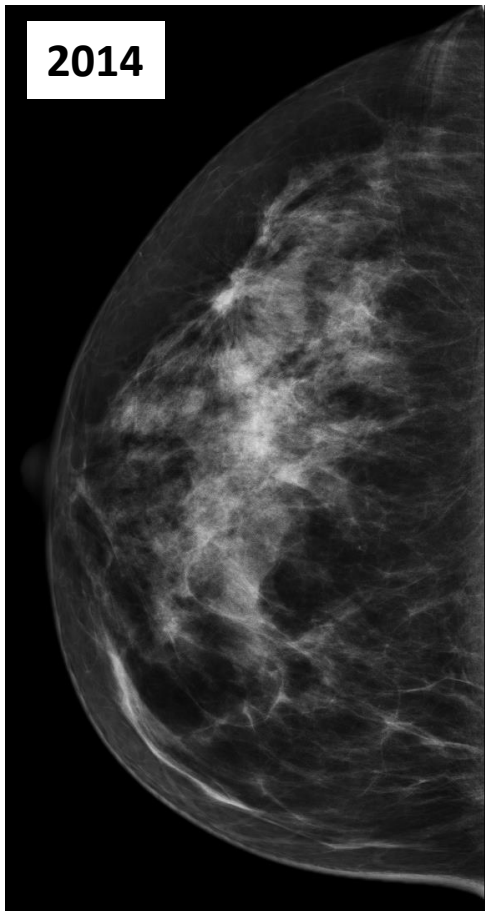
Marquage

Evaluation de la réponse au traitement

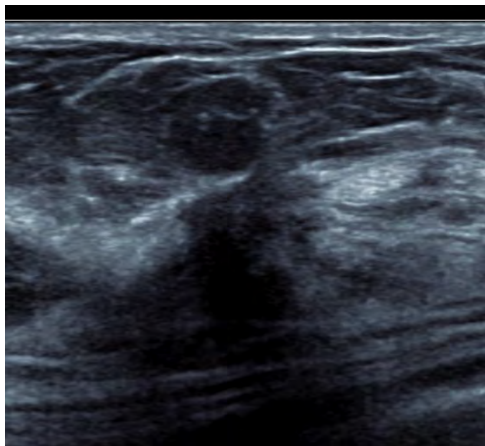
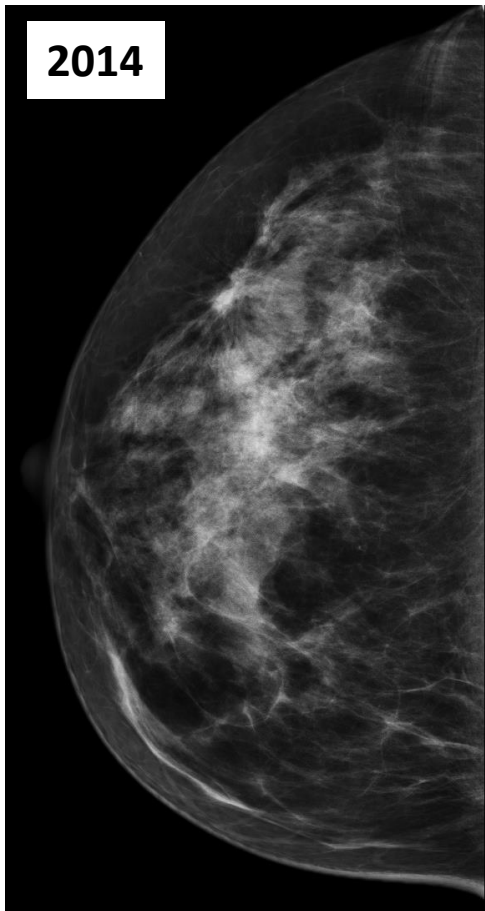
Repérage préopératoire

Le radiologue qui met en place le marquage devrait être impliqué dans le processus de repérage ...
Cela évite parfois des petites catastrophes!

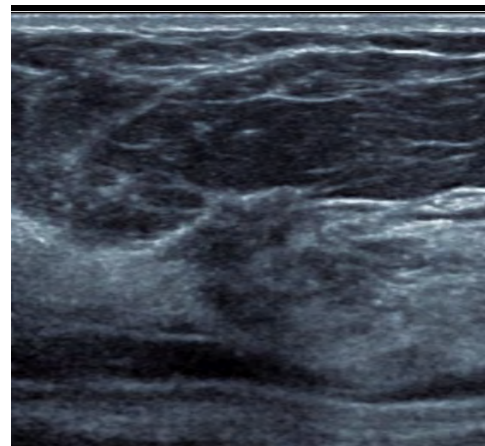
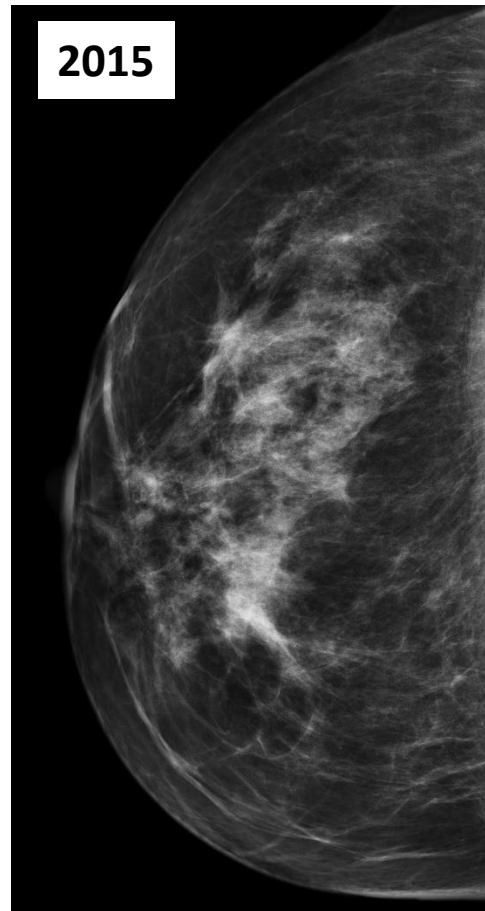
2014



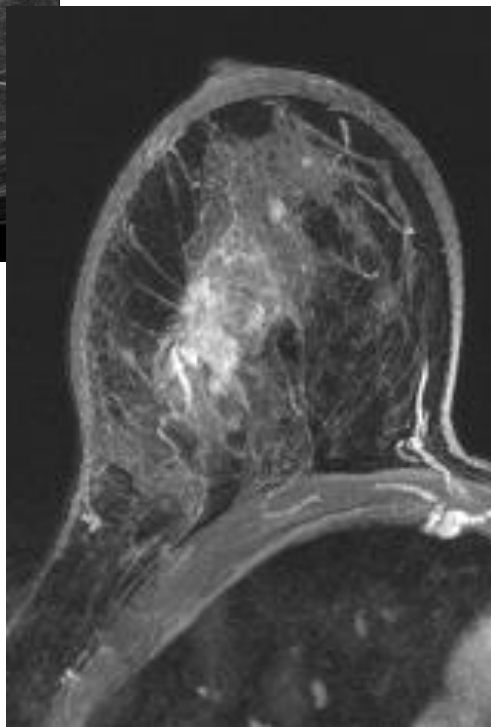
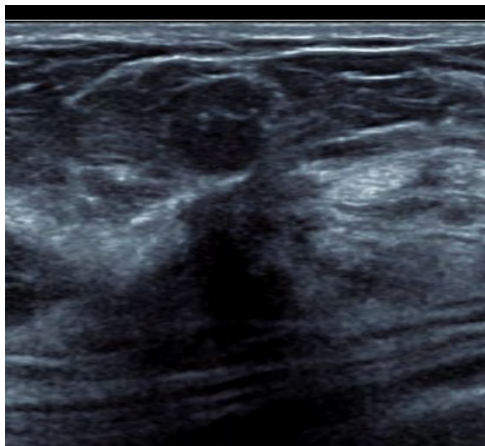
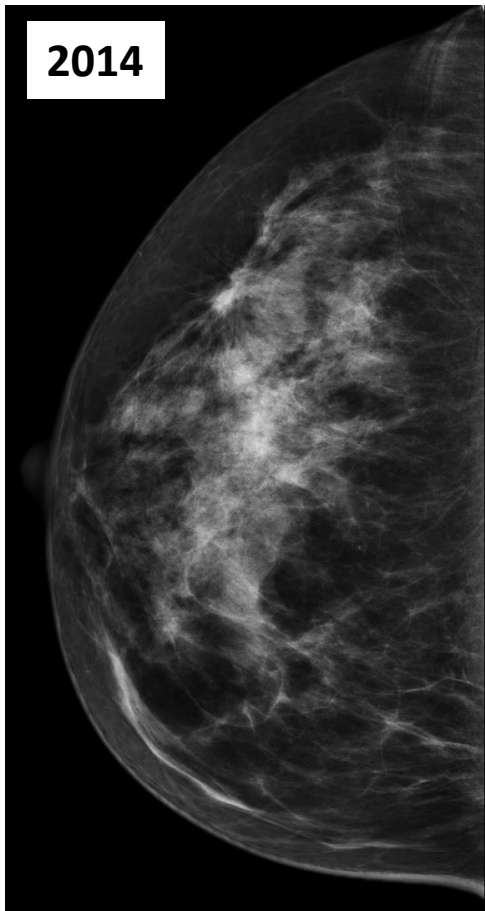
2014



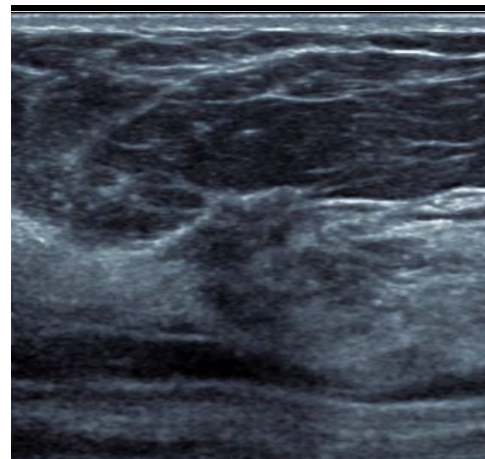
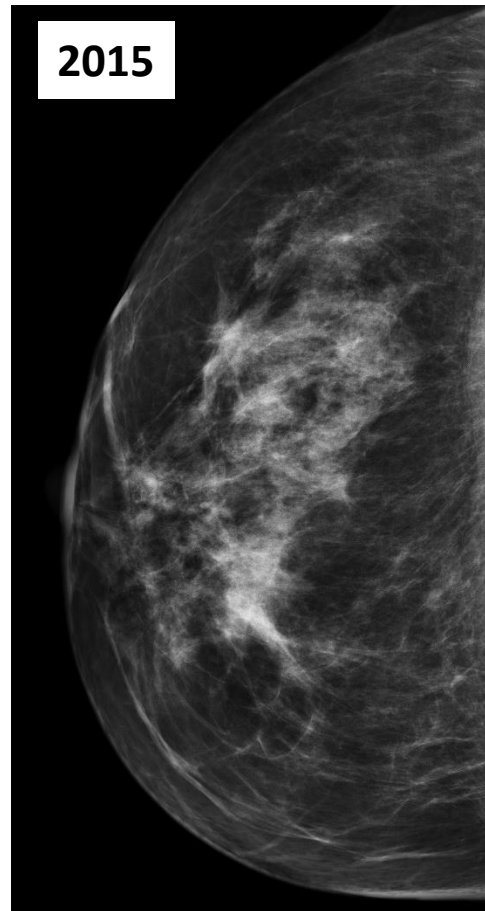
2015



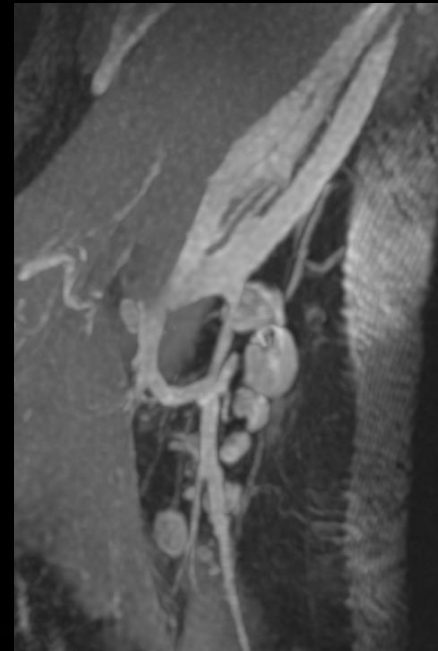
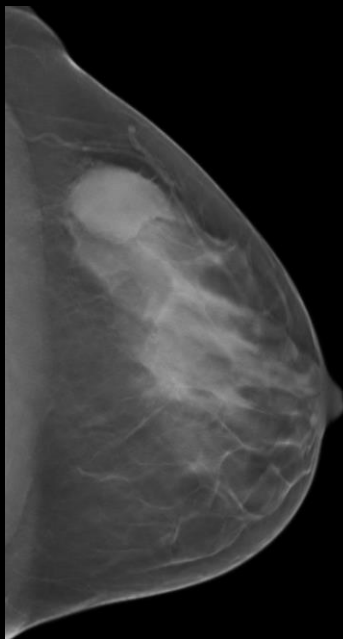
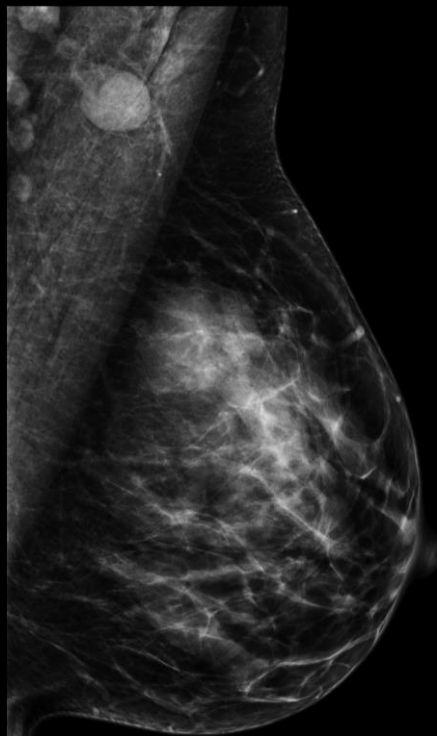
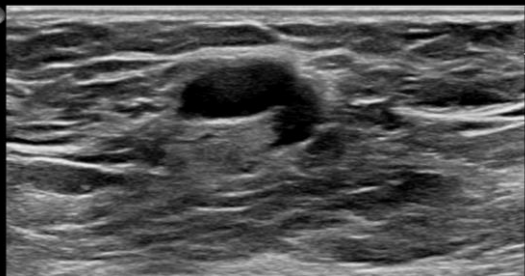
2014



2015

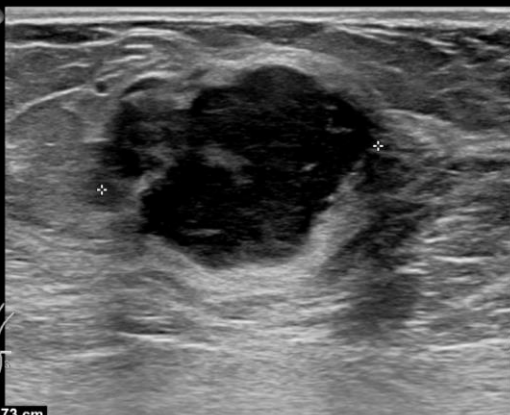


65Hz
S1
2D
55%
R Dyn 66
P Haut
Gen
CAT2

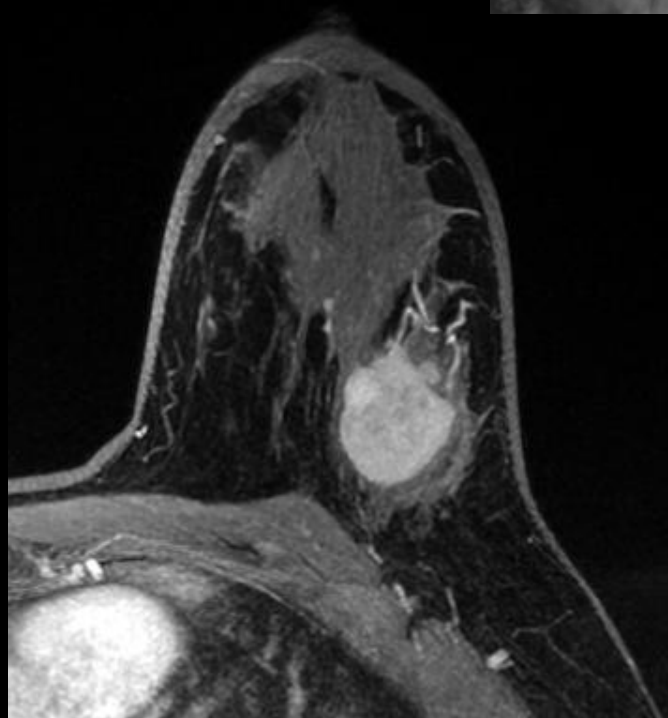


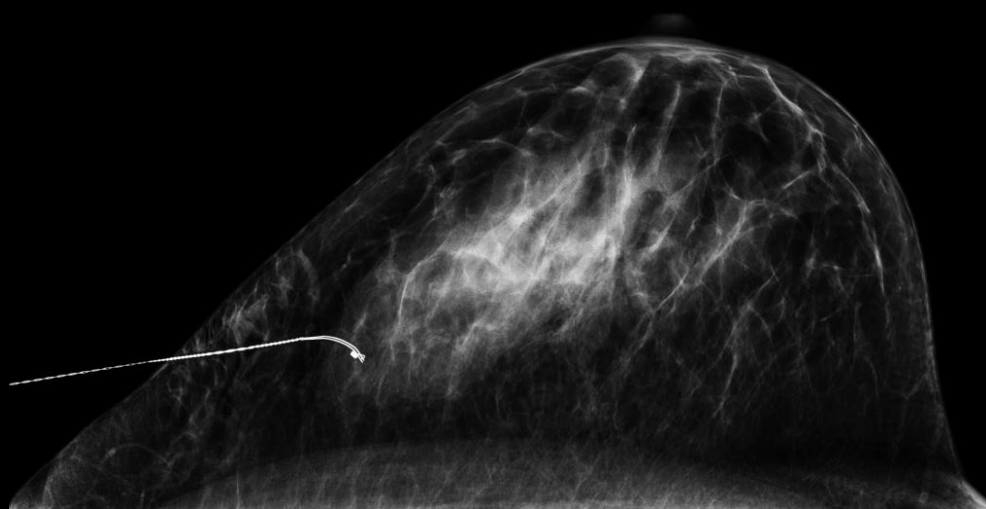
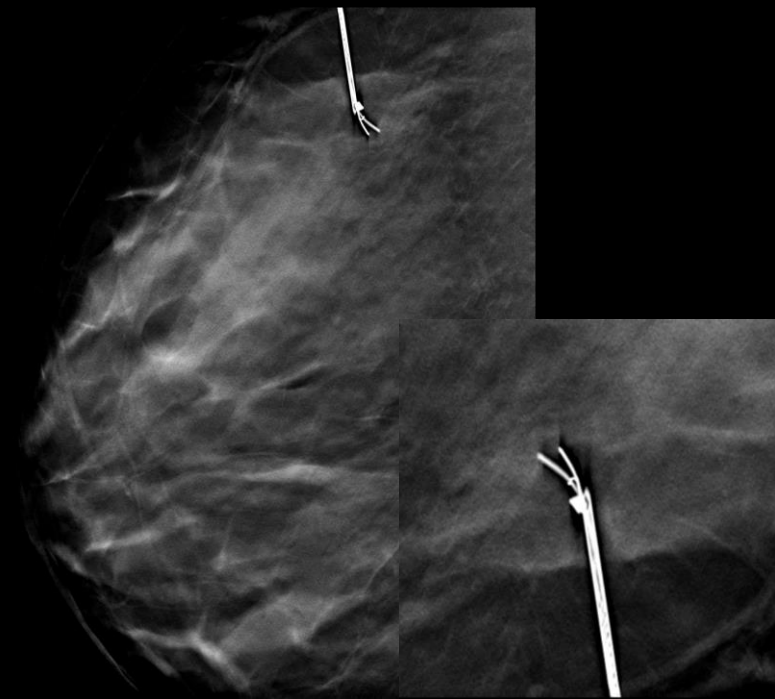
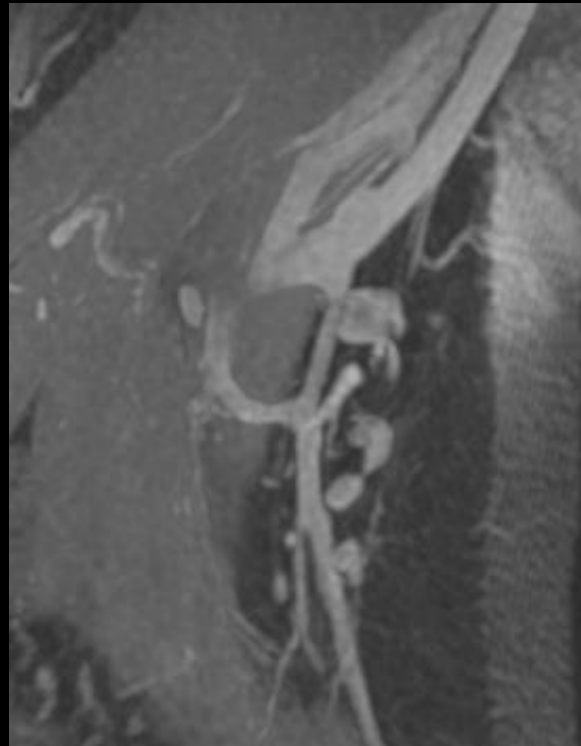
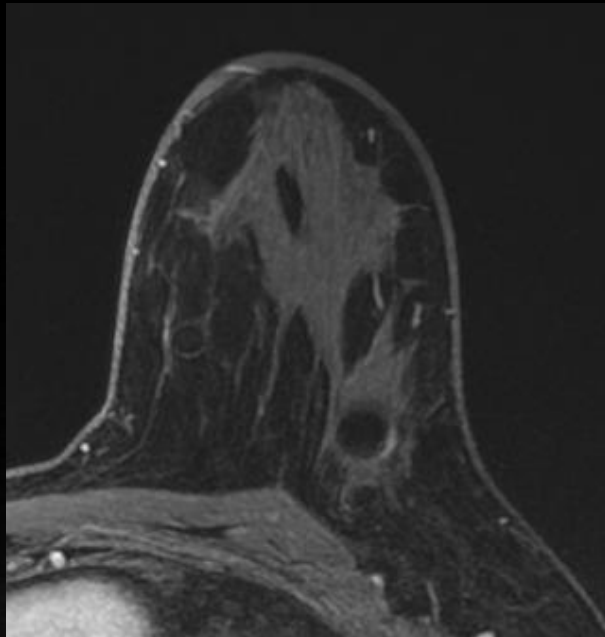
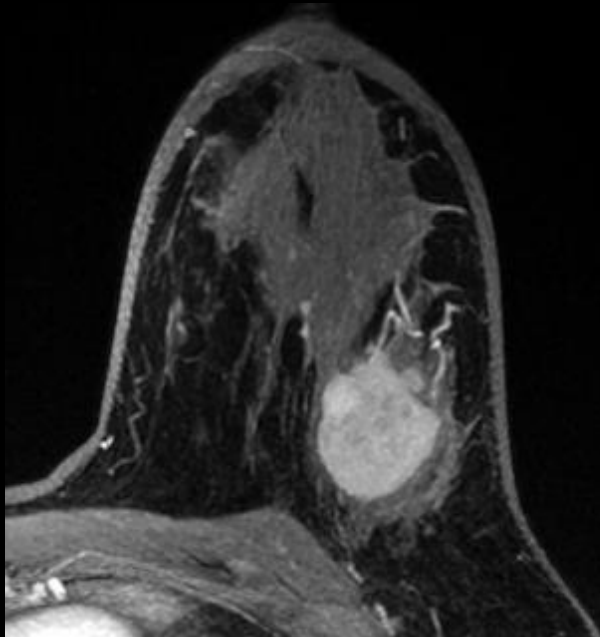
65Hz
S1

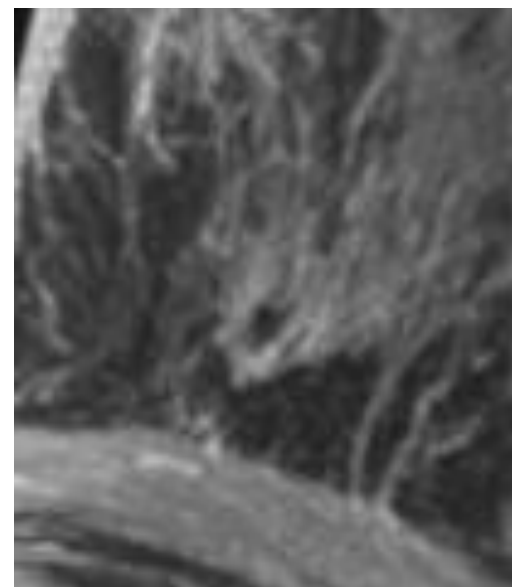
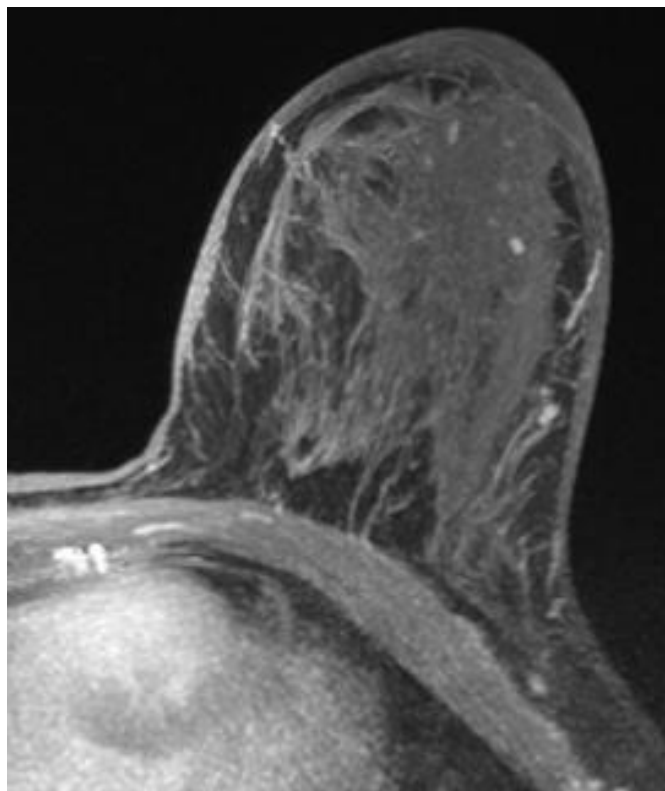
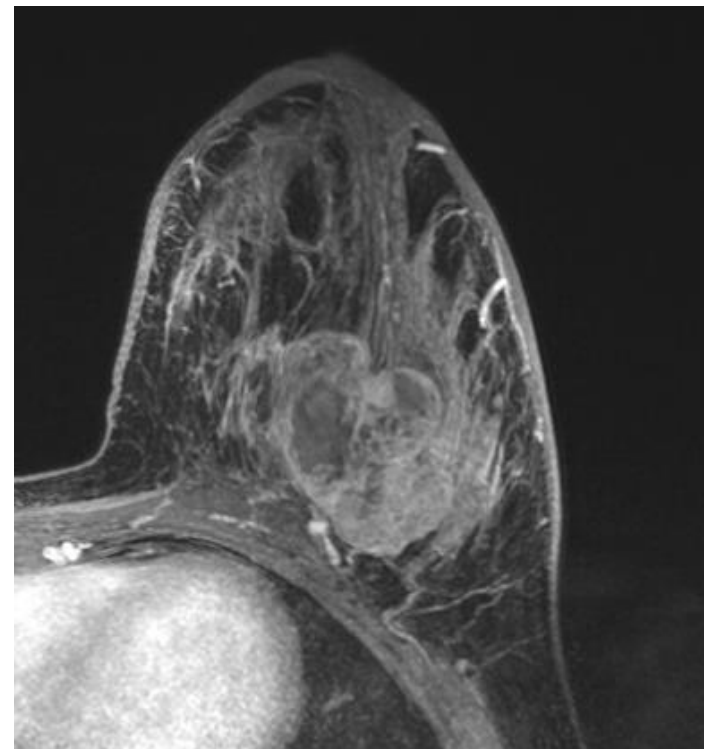
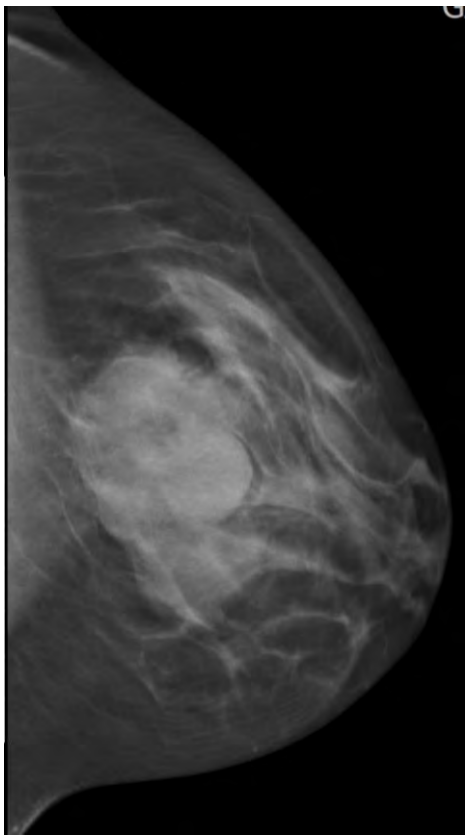
2D
55%
R Dyn 66
P Haut
Gen
CAT2

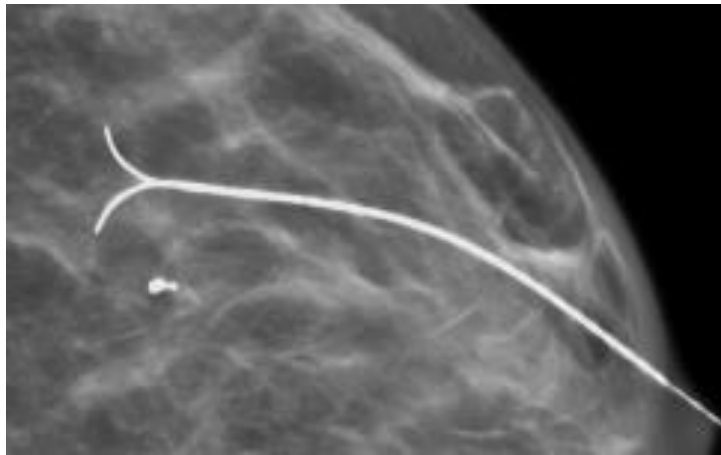
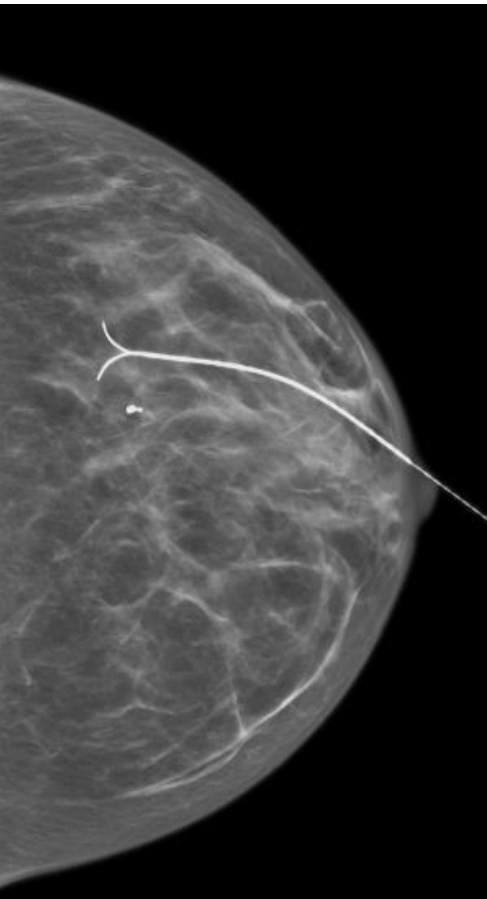


✦ Dist 2.73 cm









Introduction

Bilan diagnostic initial

Marquage

Evaluation de la réponse au traitement

Repérage préopératoire

Rôle du radiologue dans les traitements néo adjuvants du cancer du sein







BdS
BANCOMAT

