




Cryotherapy in breast cancer

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Introduction

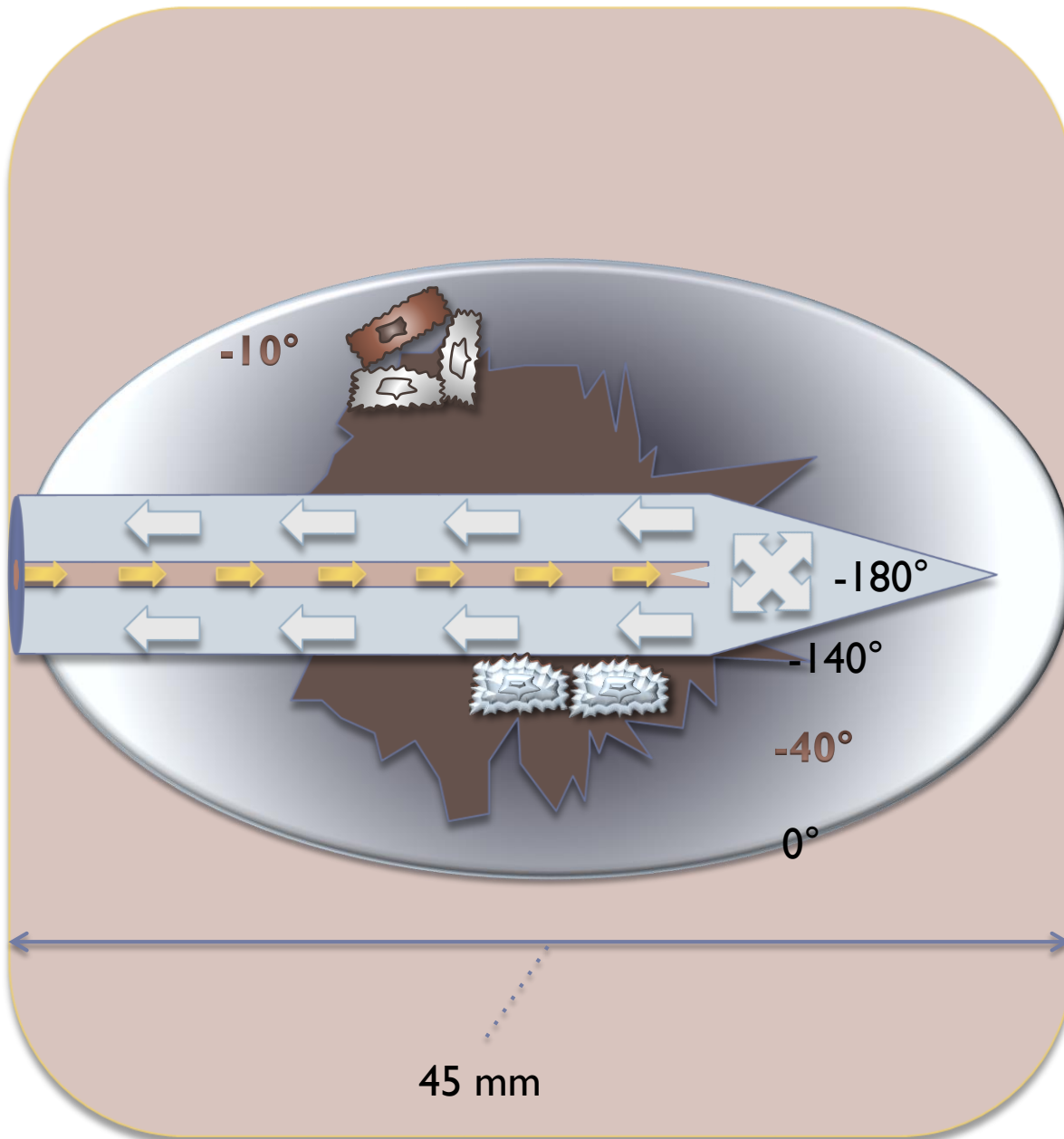
- ▶ Population is getting older
 - ▶ Increases the risk of cancer
- ▶ Breast cancer
 - ▶ 1st cause of death of women between 65 and 84 yo
- ▶ Treatment decision is based on¹ :
 - Comorbidity
 - Autonomy
 - Life expectancy
 - Desire of the patient

Geriatric evaluation
- ▶ Less surgery in elderly patients than in younger ²



Technical point

Cryothérapie en sénologie



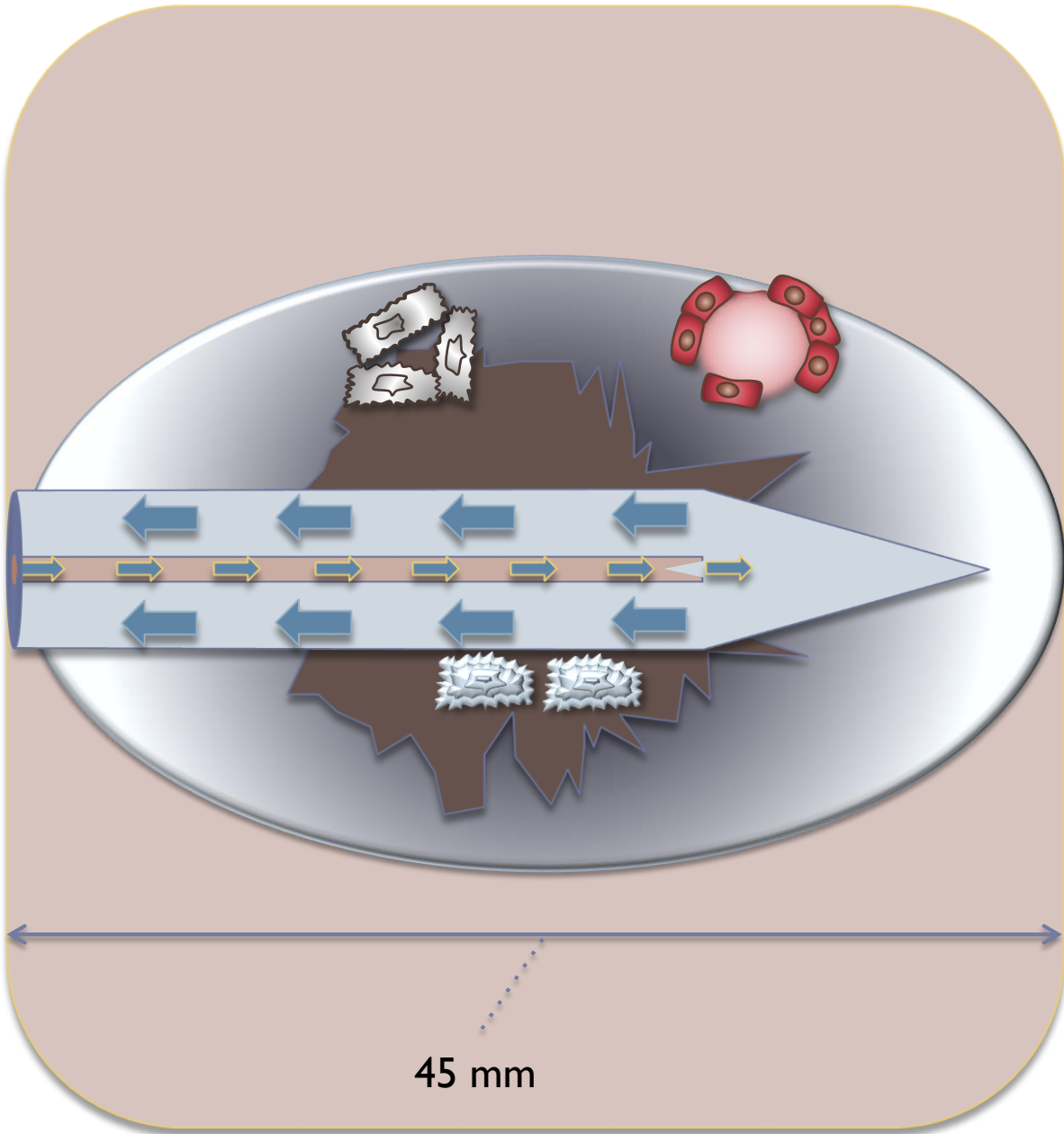
Freezing phase

Joule-Thomson effect

Compressed argon is expanded in the needle and is cooled to -180°C

Direct cell damages

1. Crystal formation
2. Appotosis



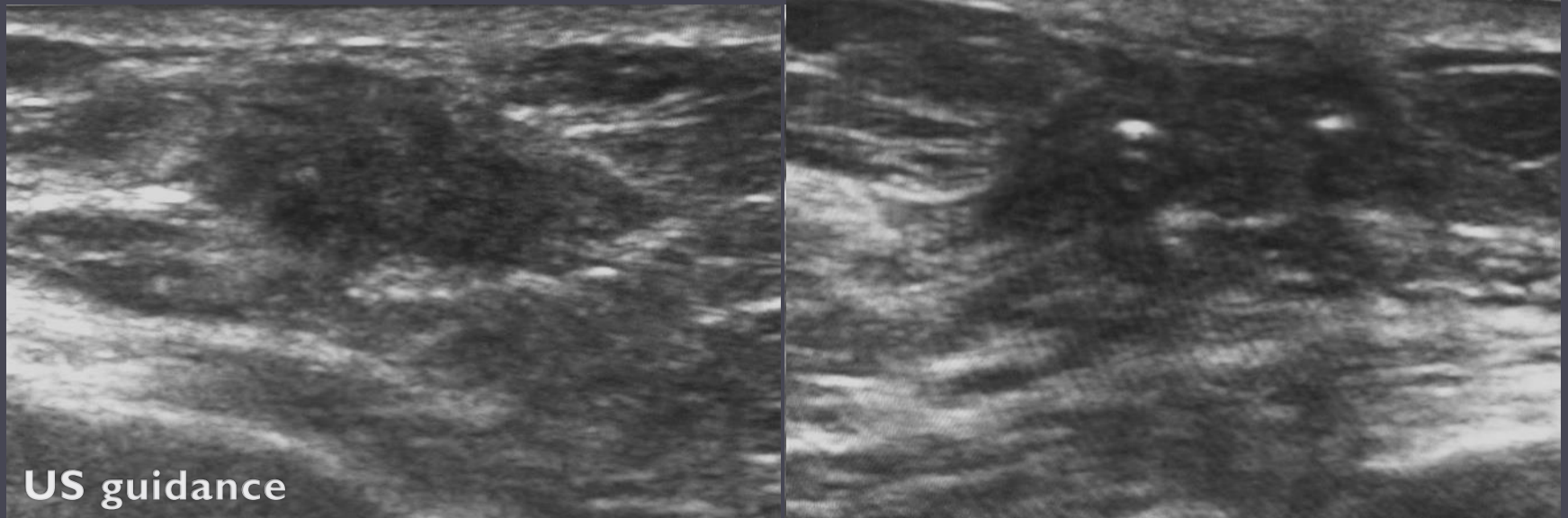
Warming phase

Vascular damages

Cell destruction

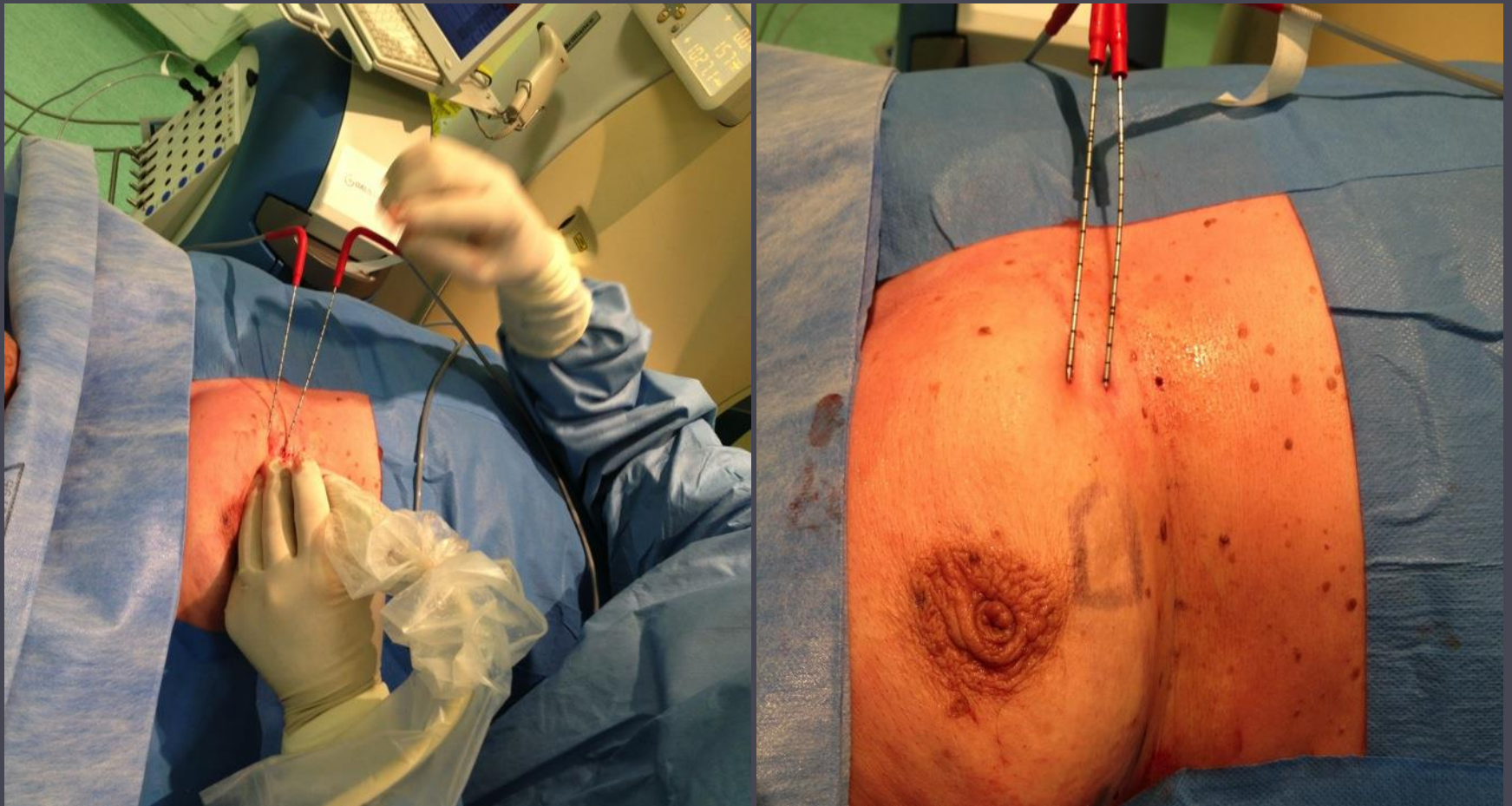
Procedure

Similar to a biopsy under ultrasound guidance with local anesthesia (Xylocaine 2%)



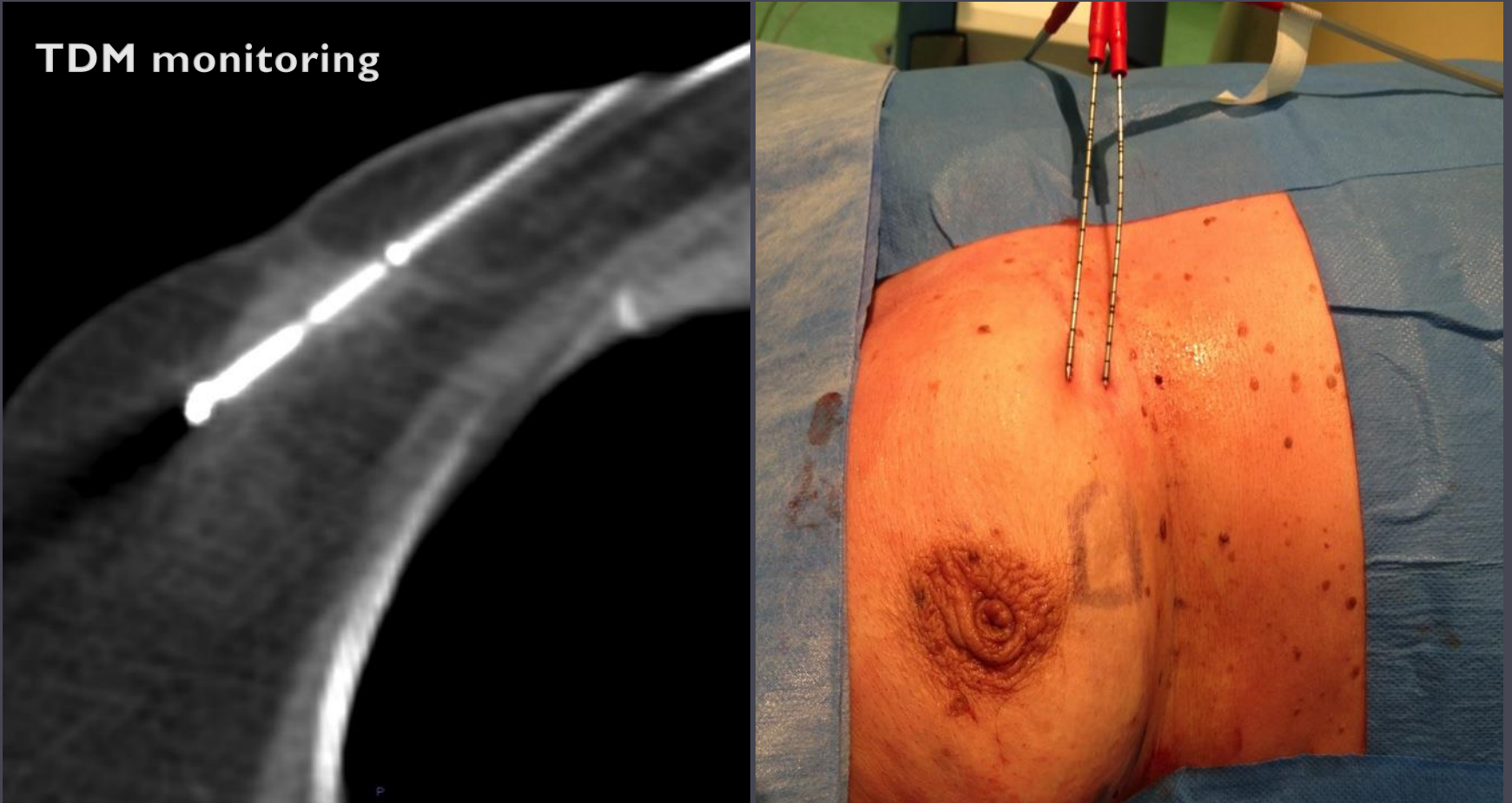
Procedure

77 yo, IDC in the ULQ of the right breast



77 yo, IDC in the ULQ of the right breast

TDM monitoring



77 yo, IDC at the ULQ of the right breast

1st freezing phase

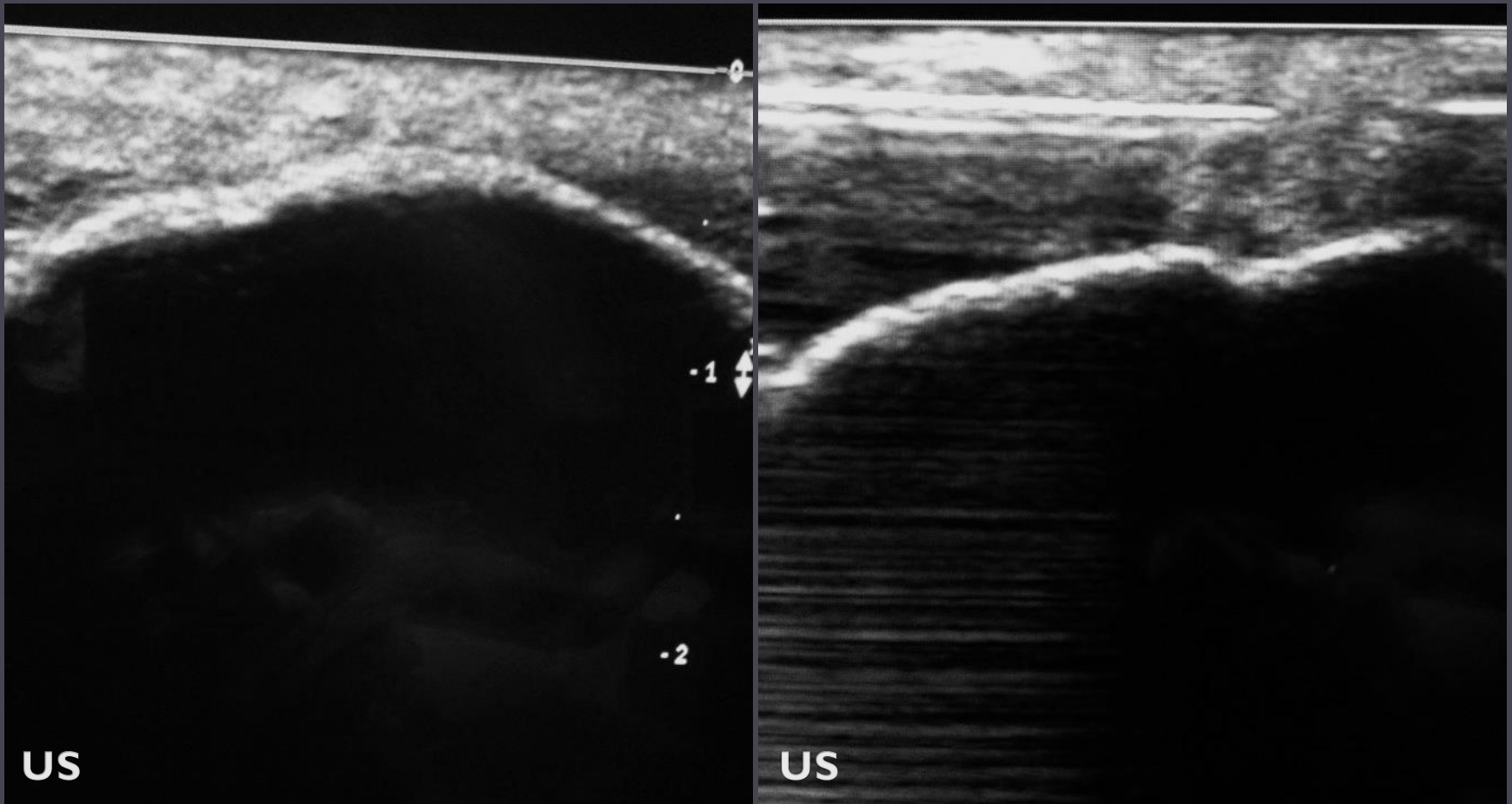


Skin protection



Procedure

Skin protection by clinical monitoring, warming, and saline serum injection between the skin and the ice block

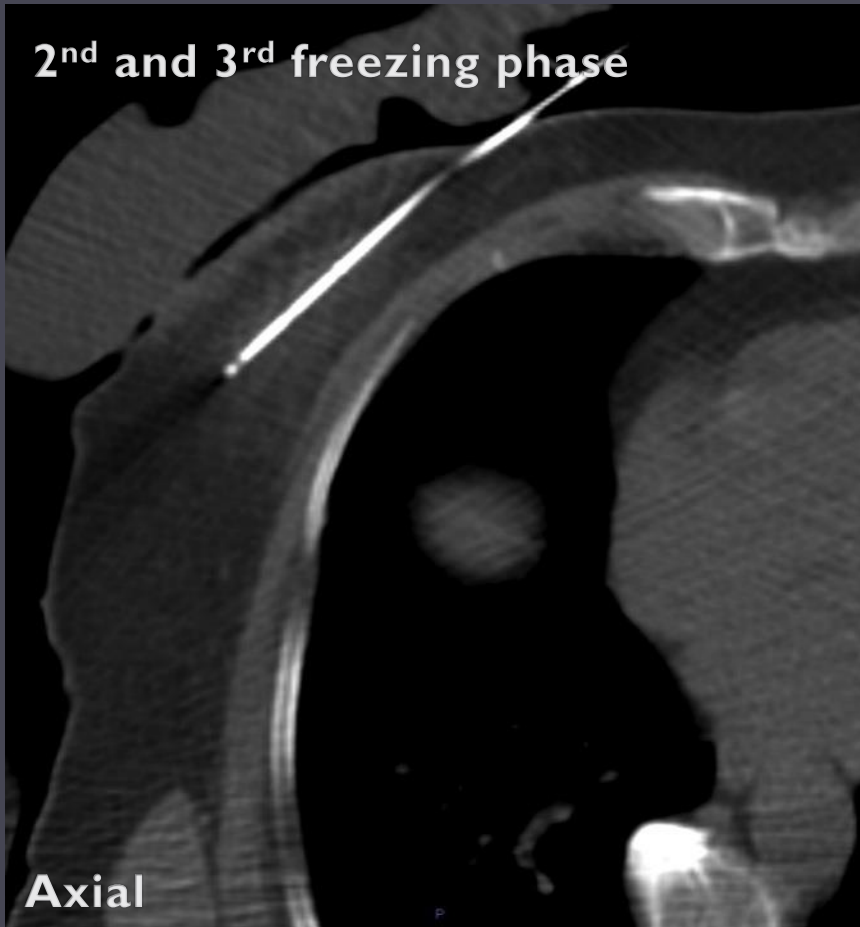


77 yo, IDC in the ULQ of the right breast



77 yo, IDC at the ULQ of the right breast

2nd and 3rd freezing phase



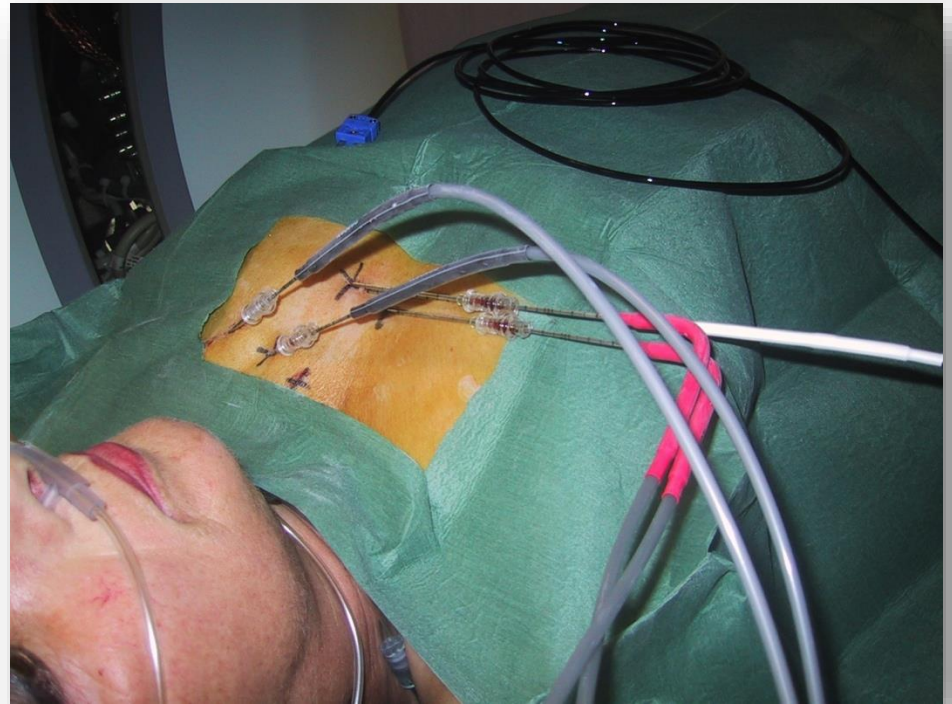
Axial



Sagittal

Multiple cryoprobes

- ▶ The number of needle depends on the tumor size
 - ▶ <10 mm = 2 needles
 - ▶ +1 needle per 1 cm
- ▶ Multiple tumors



Bicentric Study Bergonier and Saint-Louis

Purpose

- ▶ To evaluate feasibility, tolerance, and mid-term results of cryotherapy of breast cancer
- ▶ To compare cryotherapy to surgery in term of performances and complications
- ▶ To define target population

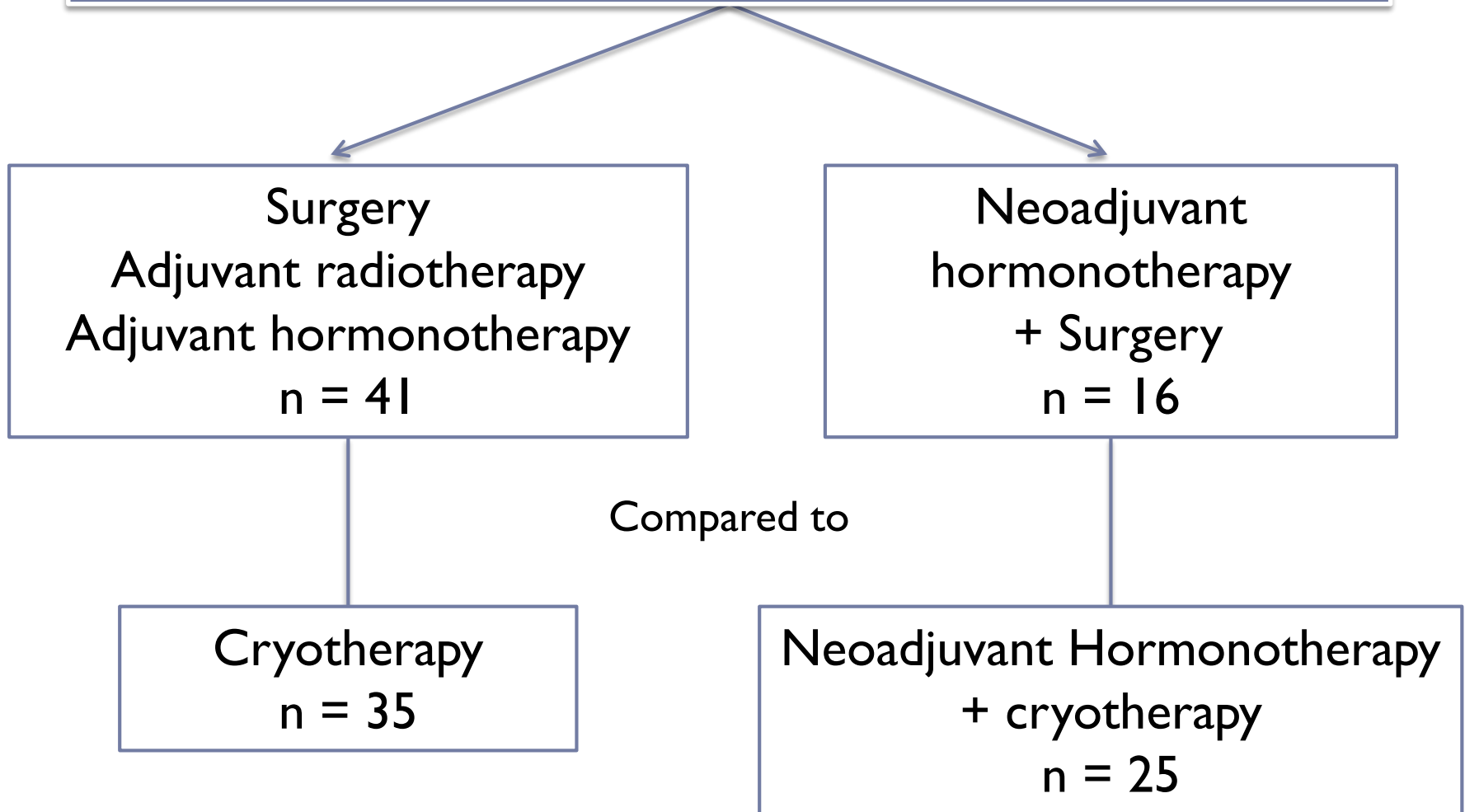
Patients treated by cryotherapy for breast cancer ≤ 35 mm
Between february 2012 and february 2015



Contraindication of surgery : n=29
Refusal of surgery : n=7
Total = 36



Patients treated by surgery for a breast cancer < 35mm
Between 2005 and 2013



Parameters

	Cryotherapy group	Control groups
Population	Age	
	Charlson score (comorbidity)	
	ADL, IADL score (autonomy)	
	Satisfaction	
Tumor	size, pathology, grade, RH, HER-2	
Cryotherapy	Protocole	
	Type et nombre d'aiguille	
	Tolérance	
Cryotherapy and surgery	Complication	
	Lengh of hospital stay	
Follow-up	Clinic : Relaps at 24 month?	
	MRI : 3, 6, 12, 24, 36 mois	



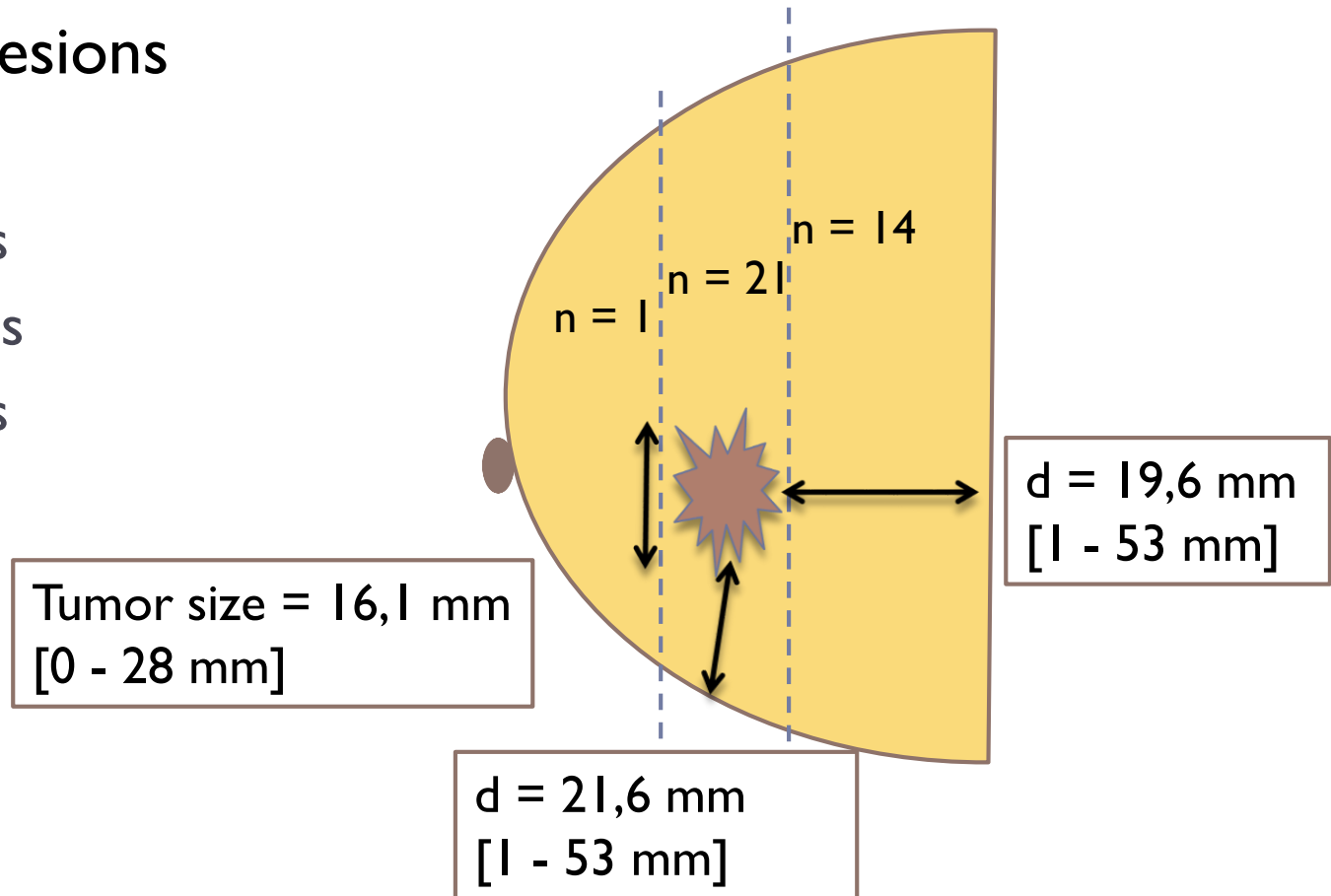
Results

Population in cryotherapy group

- ▶ Age = 84 yo [73-102]
- ▶ Population
 - ▶ Charlson score (Comorbidity)
 - ▶ 30% > 4
 - ▶ 30% ≤ 2
 - ▶ ADL Score (Autonomy in intimate life) : 5,5/6
 - ▶ IADL Score (Autonomy in social life) = 7/7
- ▶ Life expectancy : >4 years for 50% of the patients

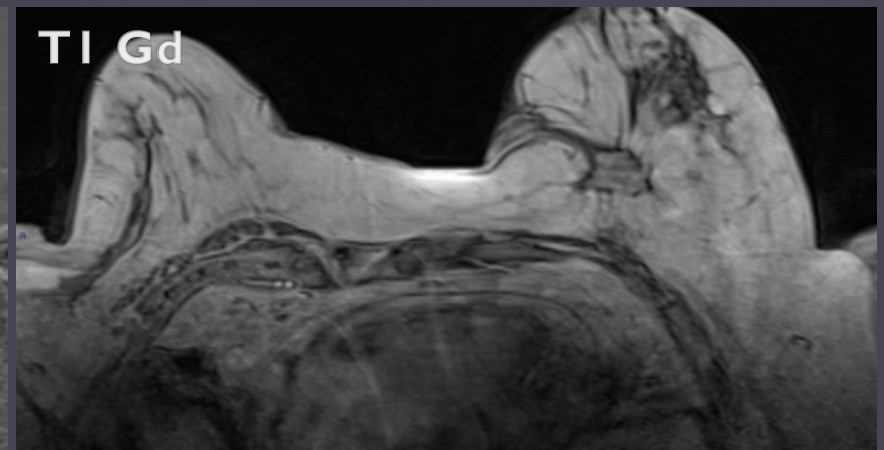
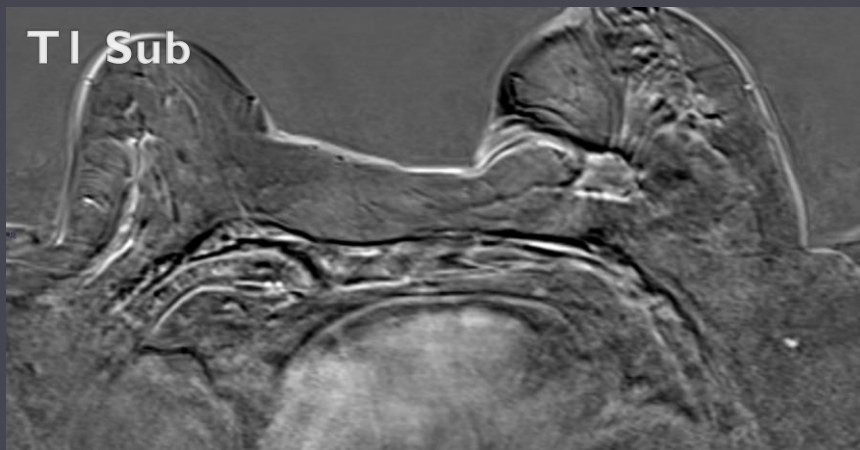
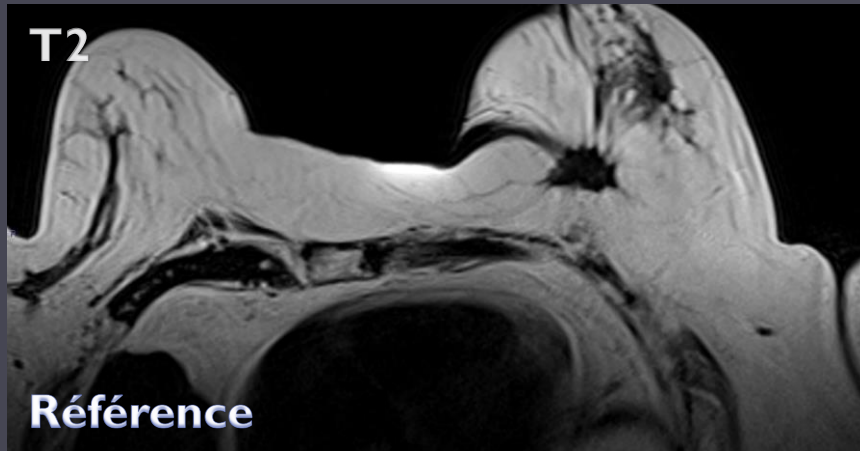
Tumors in cryotherapy group

- ▶ 33 IDC, 3 ILC
- ▶ 33 RH+ lesions
- ▶ Grade
 - ▶ I : 10 cas
 - ▶ II : 20 cas
 - ▶ III : 5 cas



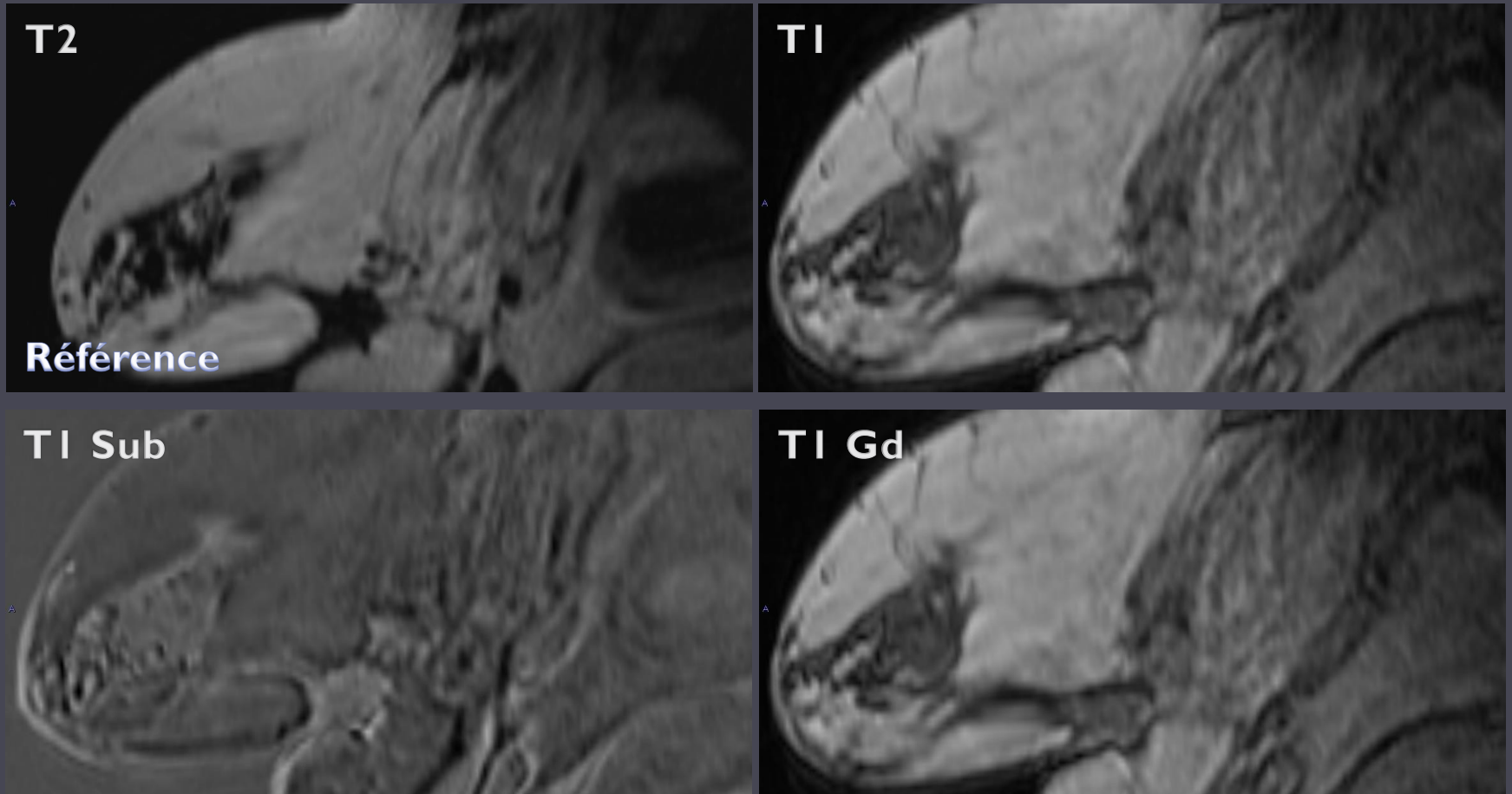
Tumors in cryotherapy group

85 yo, IDC treated by neoadjuvant homonotherapy in the lower quadrant of the left breast



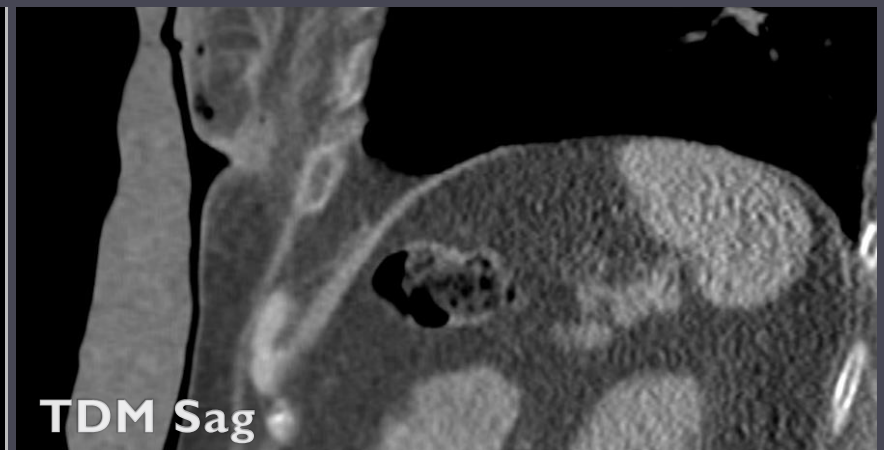
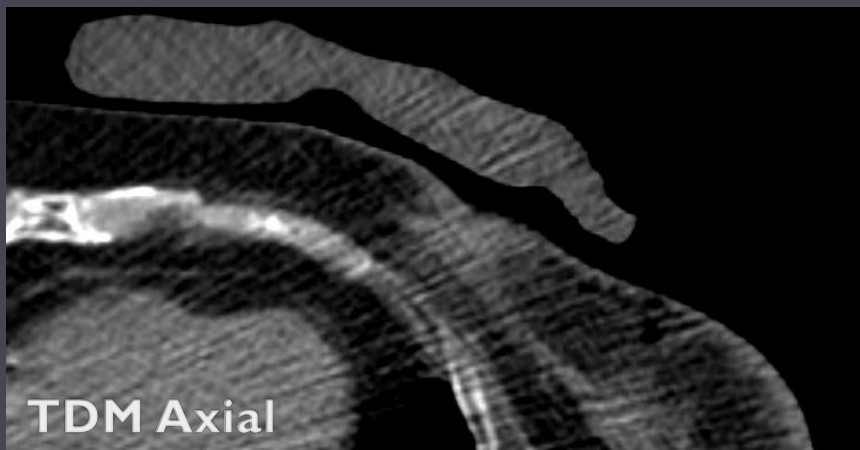
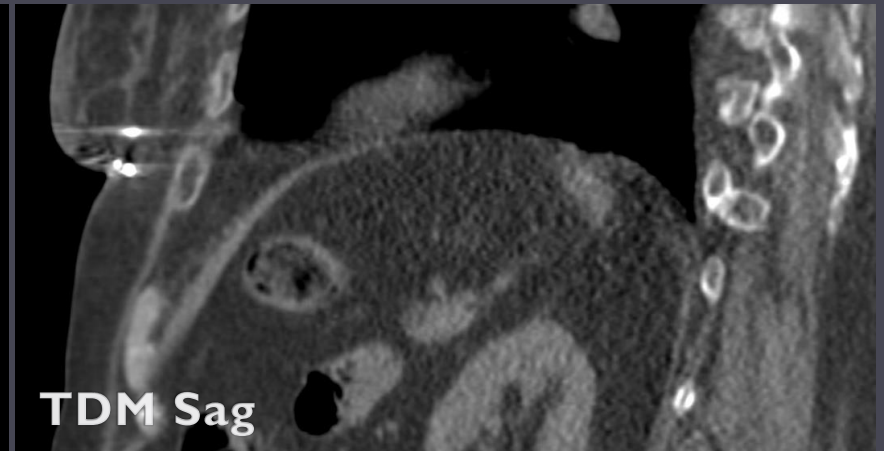
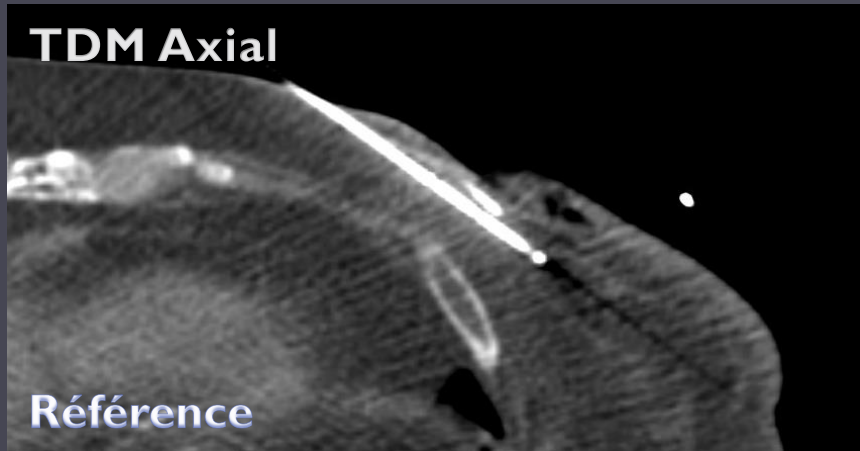
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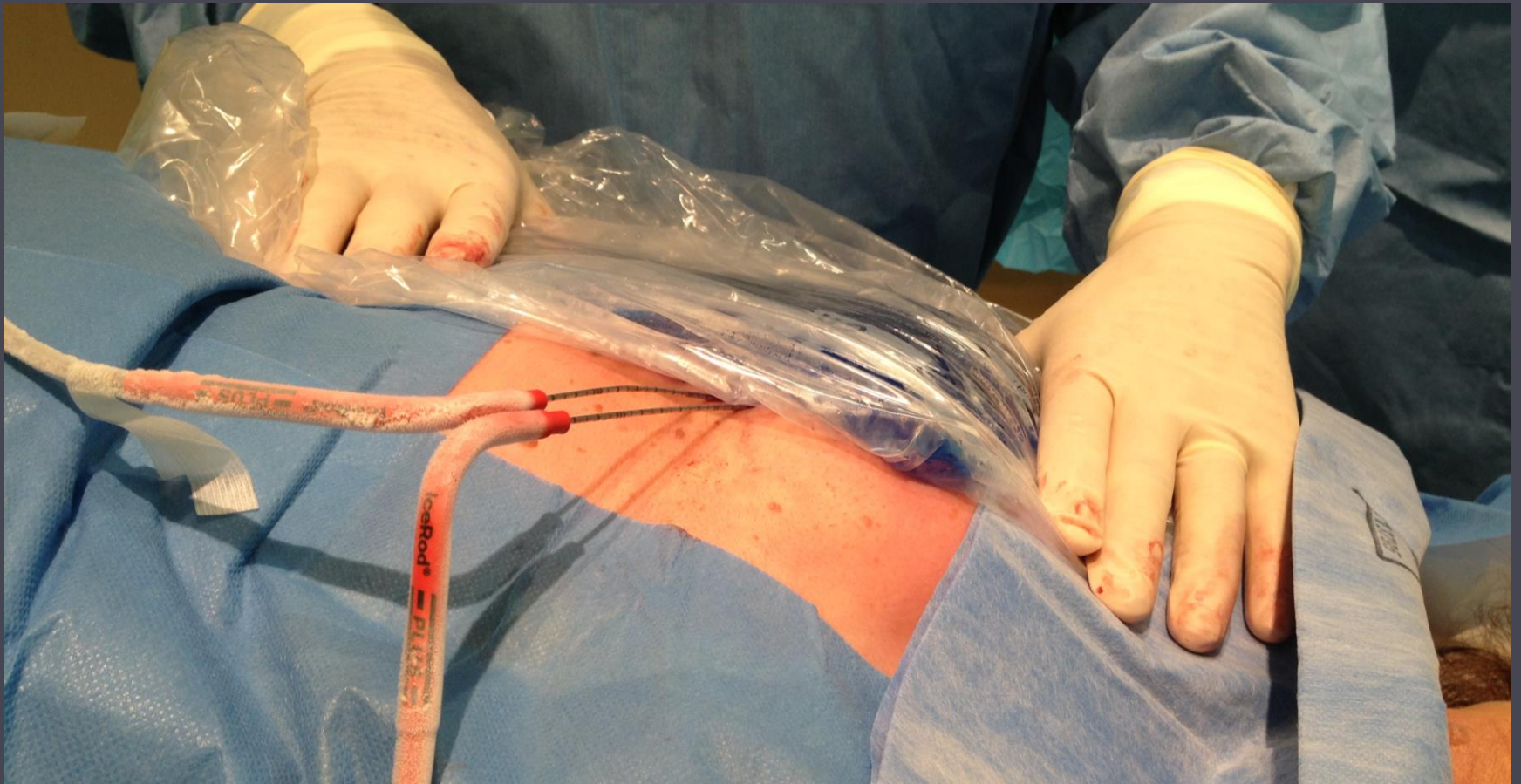
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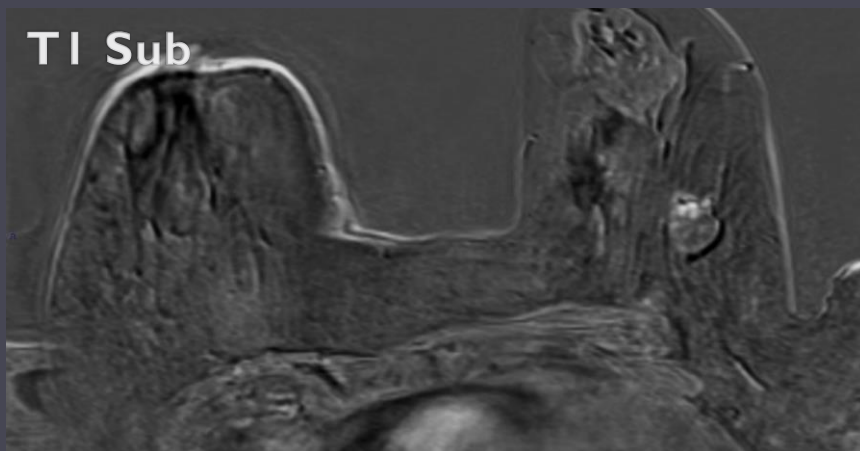
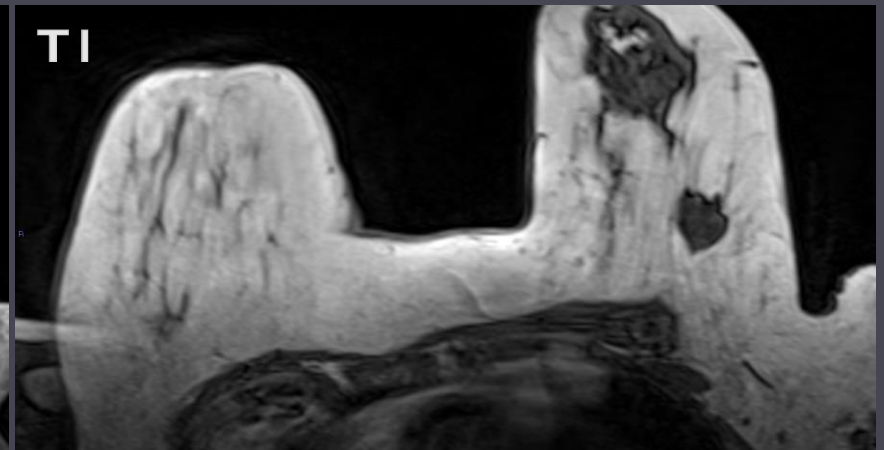
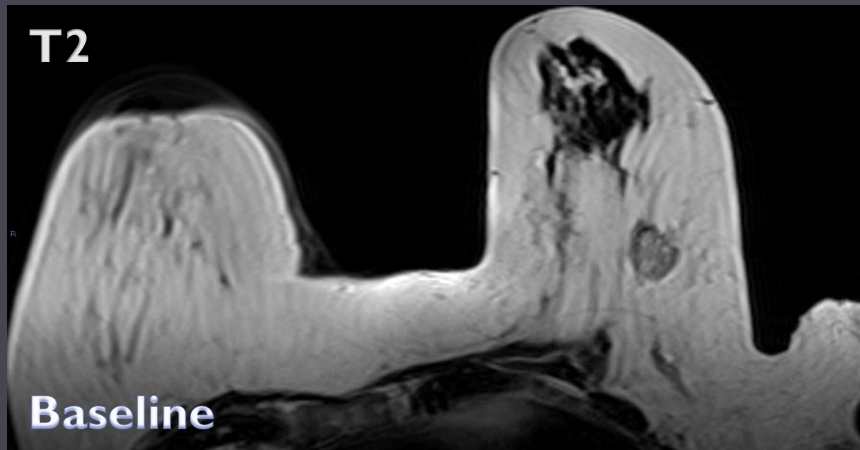
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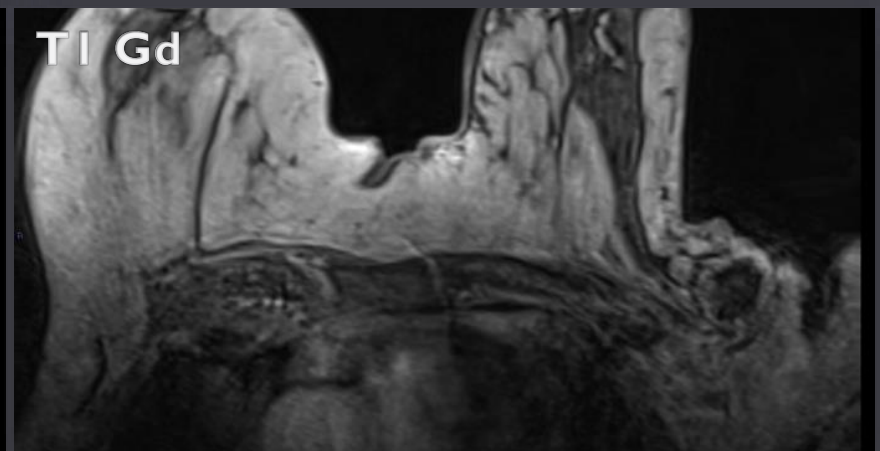
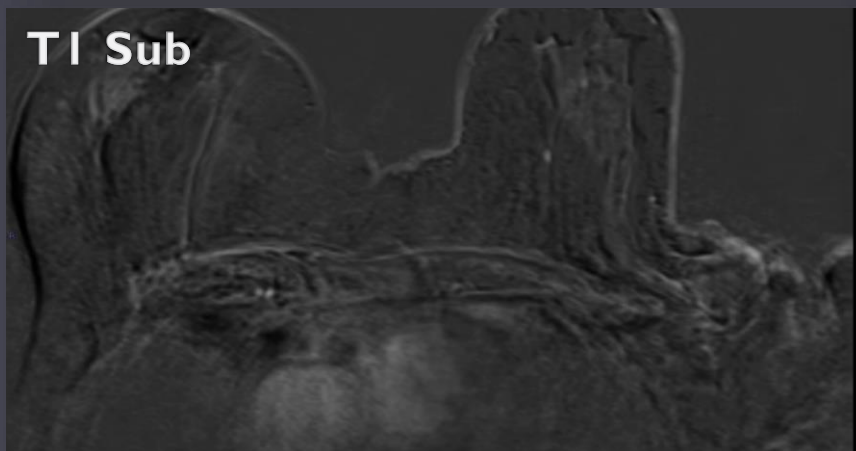
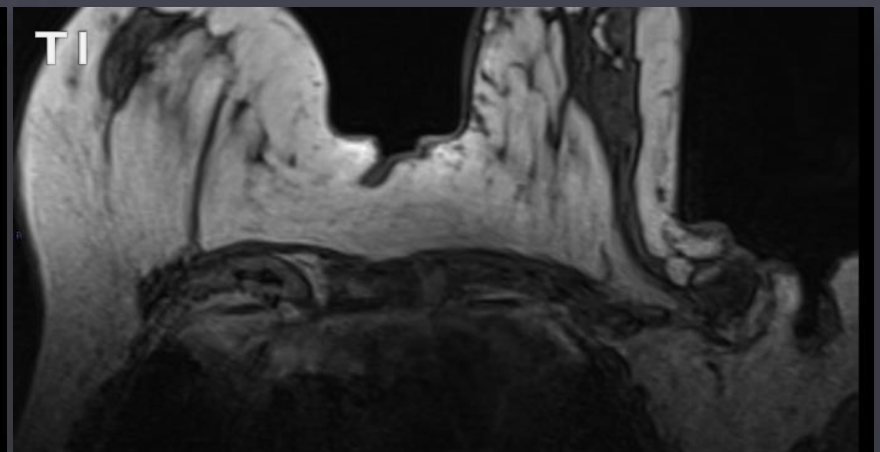
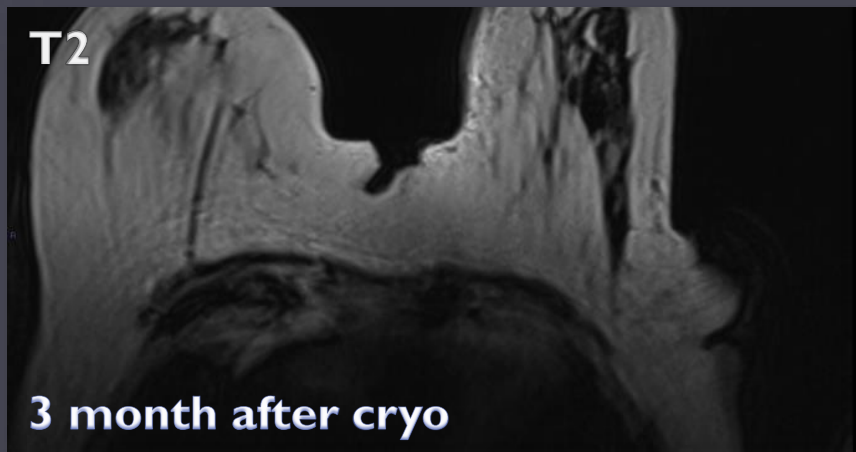
Follow up with MRI

91 yo, IDC of the left breast after a good response to the neoadjuvant hormone therapy.
Surgery is contraindicated because of respiratory failure



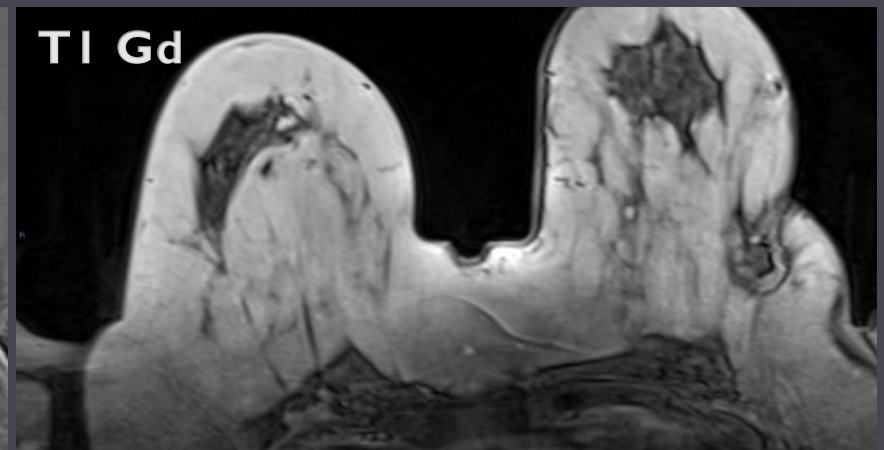
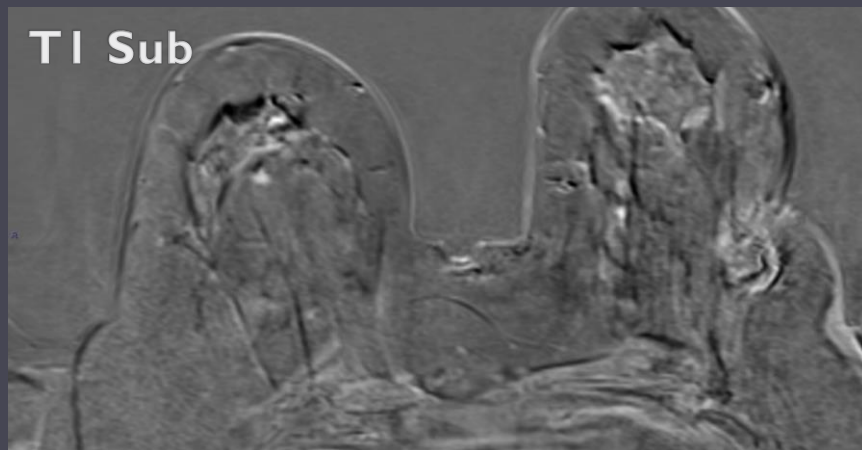
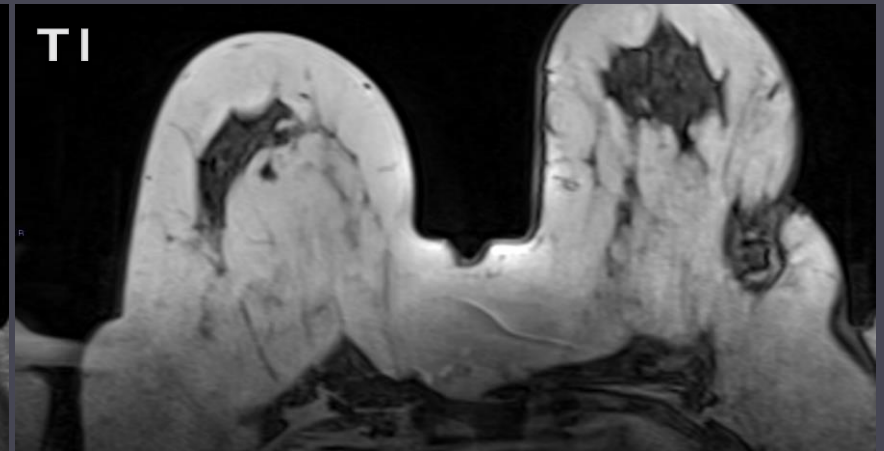
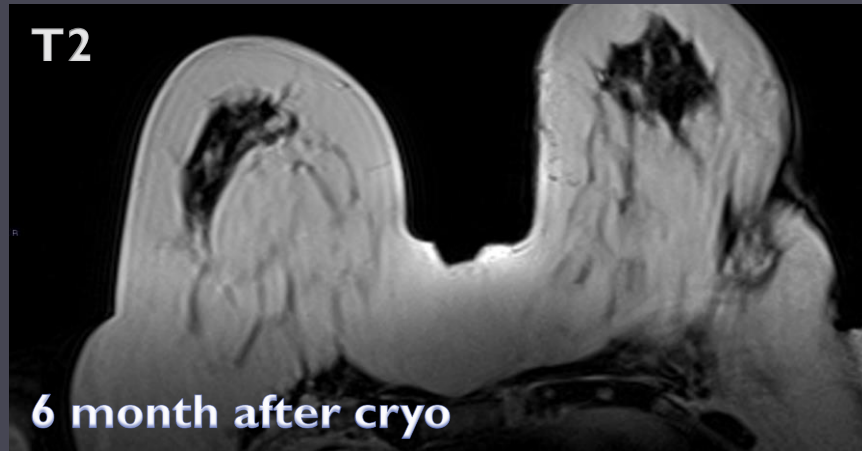
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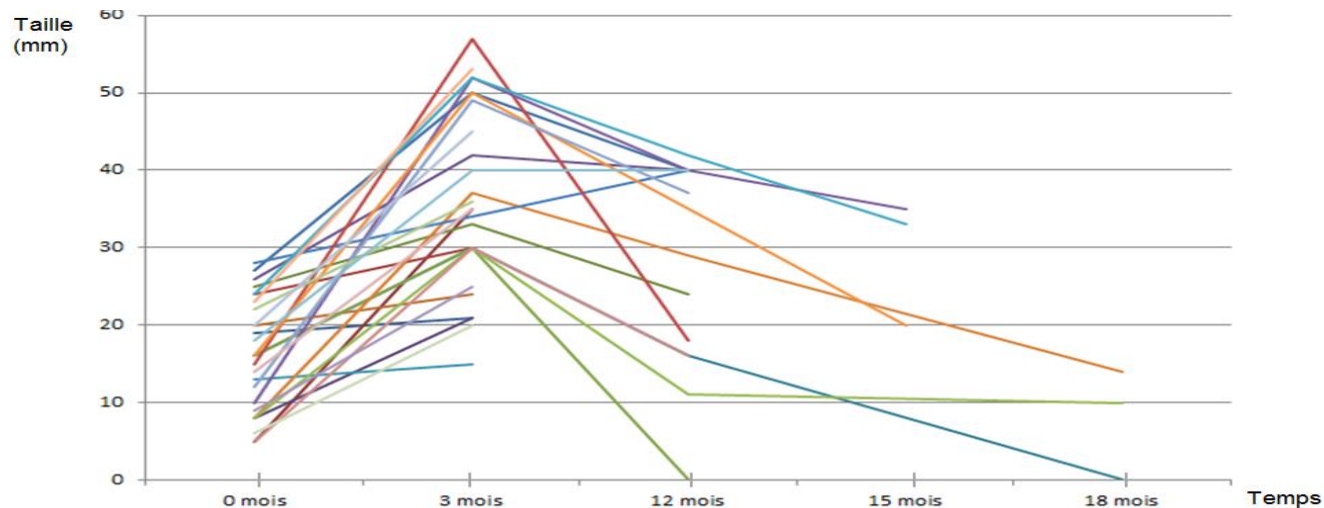
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Follow-up

- ▶ Duration = 14,4 month [1 - 36]
- ▶ 2 relaps
 - ▶ At 6 month: IDC, triple negative breast cancer of 26 mm
 - ▶ Only 1 cryosonde was used
 - ▶ At 24 month: IDC of 13 mm
 - ▶ Only 1 cryosonde was used
- ▶ 35 / 36 of the patient were satisfied with this treatment



Follow-up

Groups	Side effect	No progression at 24 month
Cryotherapy	2/35	8/10
Surgery + Radiotherapy + chemotherapy	1/35	39/41
<i>p</i>	0.5917	0.09333
Neoadjuvante hormonotherapy + cryotherapy	2/25	8/9
Neoadjuvante hormonotherapy + Surgery	3/16	10/11
<i>p</i>	0.3616	1



Discussion

Results

- ▶ **Cryotherapy of breast cancer in aged women is feasible under local anesthesia**
 - ▶ Few complication
 - ▶ Few relaps due to technical issue
- ▶ **Cooperation of the patient is essential**
 - ▶ Good autonomy
 - ▶ Limited comorbidity
- ▶ **Tumor characteristics**
 - ▶ Size limit: <35 mm?
 - ▶ Number limit: 2?
 - ▶ Localization: <5 mm of the skin

Limits

- ▶ Retrospective study
- ▶ Small number of patients
- ▶ Short follow-up of 14,4 month
- ▶ No pathology after cryotherapy: margins? lymph nodes?

Conclusion

- ▶ Cryotherapy of breast cancer in aged women is feasible under local anesthesia
- ▶ Further prospective studies with geriatric assessment before and after treatment are desirable
- ▶ Cryotherapy remain an alternative treatment when surgery is not possible