LES MATINÉES DE L'INNOVATION

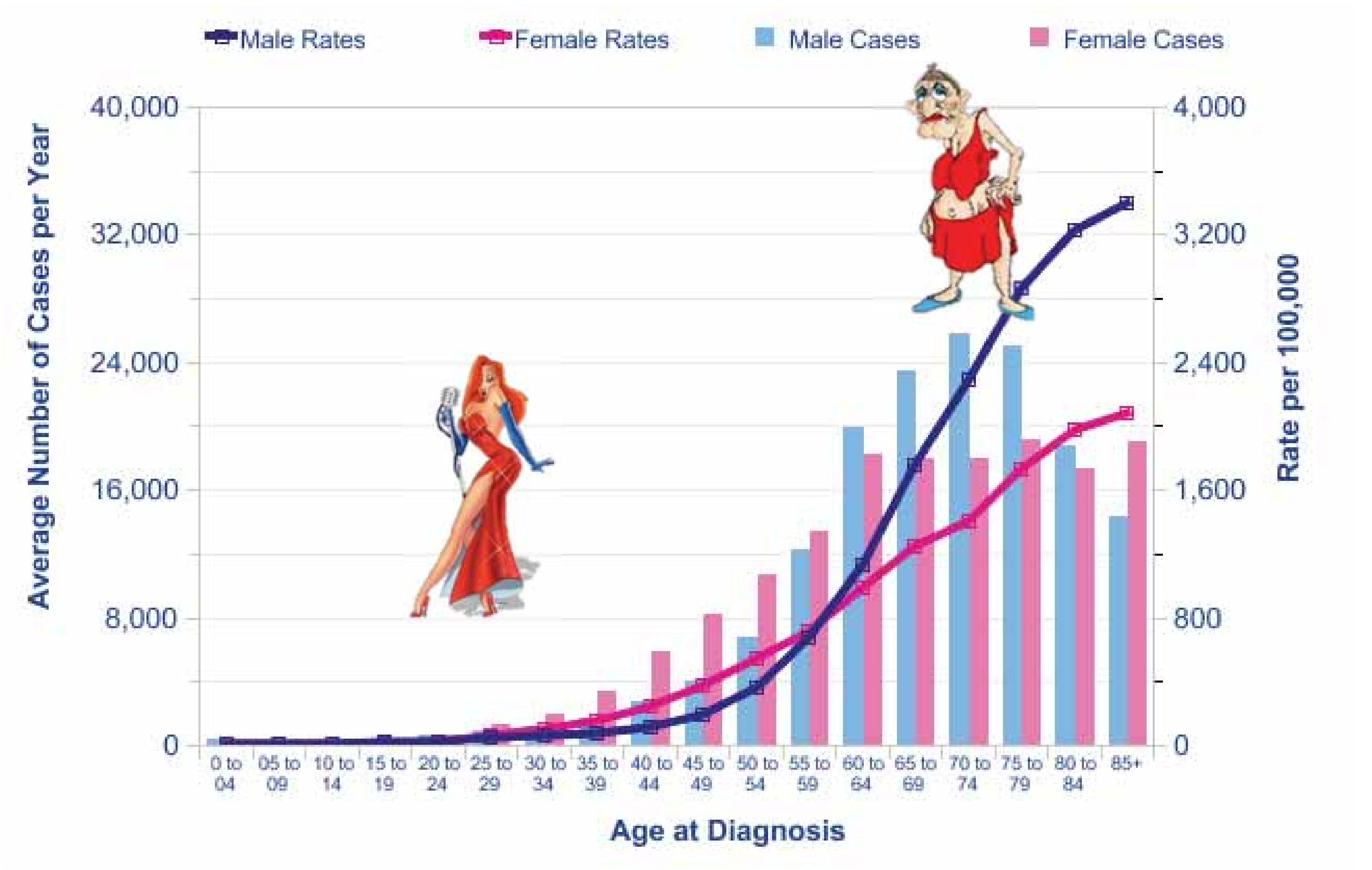
l'actualité en direct des équipes de Saint-Louis, Lariboisière, Fernand Widal

Groupe Hospitalier Universitaire
SAINT-LOUIS
LARIBOISIÈRE
FERNAND-WIDAL

Cryothérapie :
4 années de pratique, bilan et perpectives

Pr E. de Kerviler, Hôpital Saint-Louis, APHP, Université Paris Diderot

Contexte



Source : Cancer Research, UK

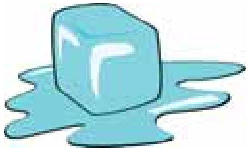
Tumor ablation: Fire or ice?

Ablation par RF ou MO

- Percutanée/chirurgicale
- Sédation ou AG
- Une ou plusieurs aiguilles
- Effet Léthal : Chaud

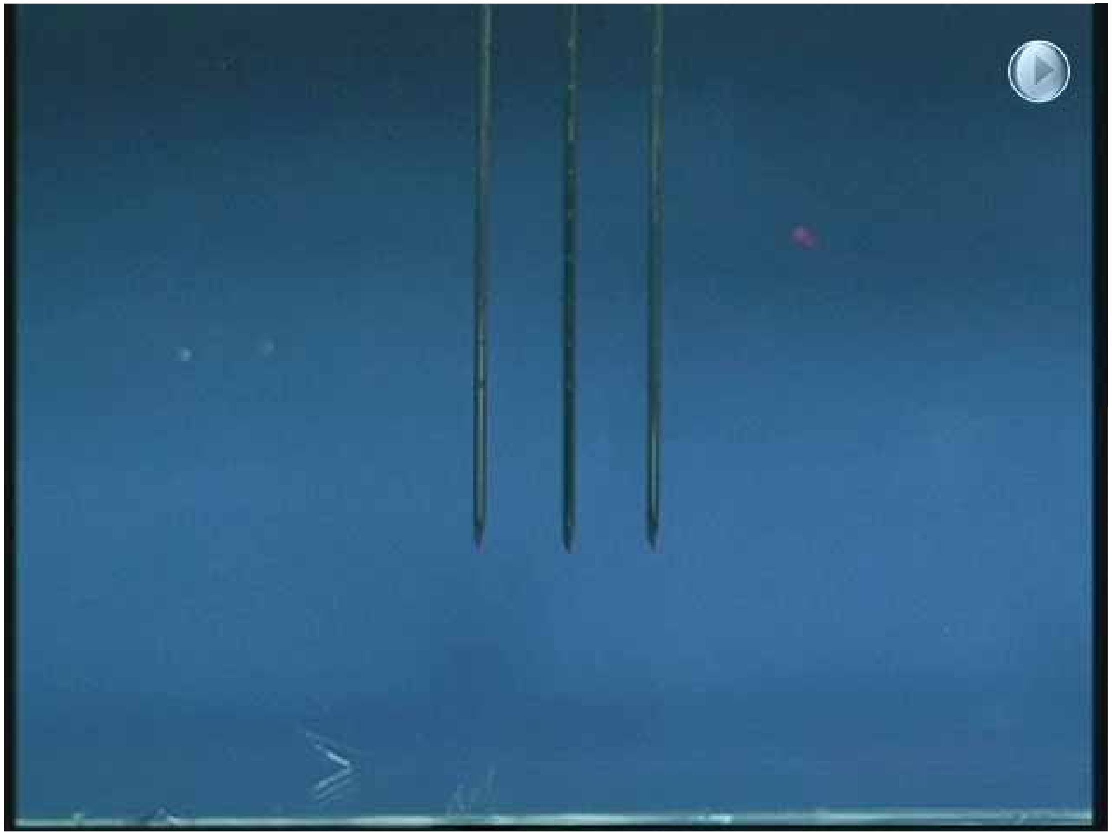
8:15
70
RADIO

Cryoablation



- Percutanée/chirurgicale
- Anesthésie locale
- Plusieurs cryoprobes
- Effet léthal : Congélation
- Ice Ball

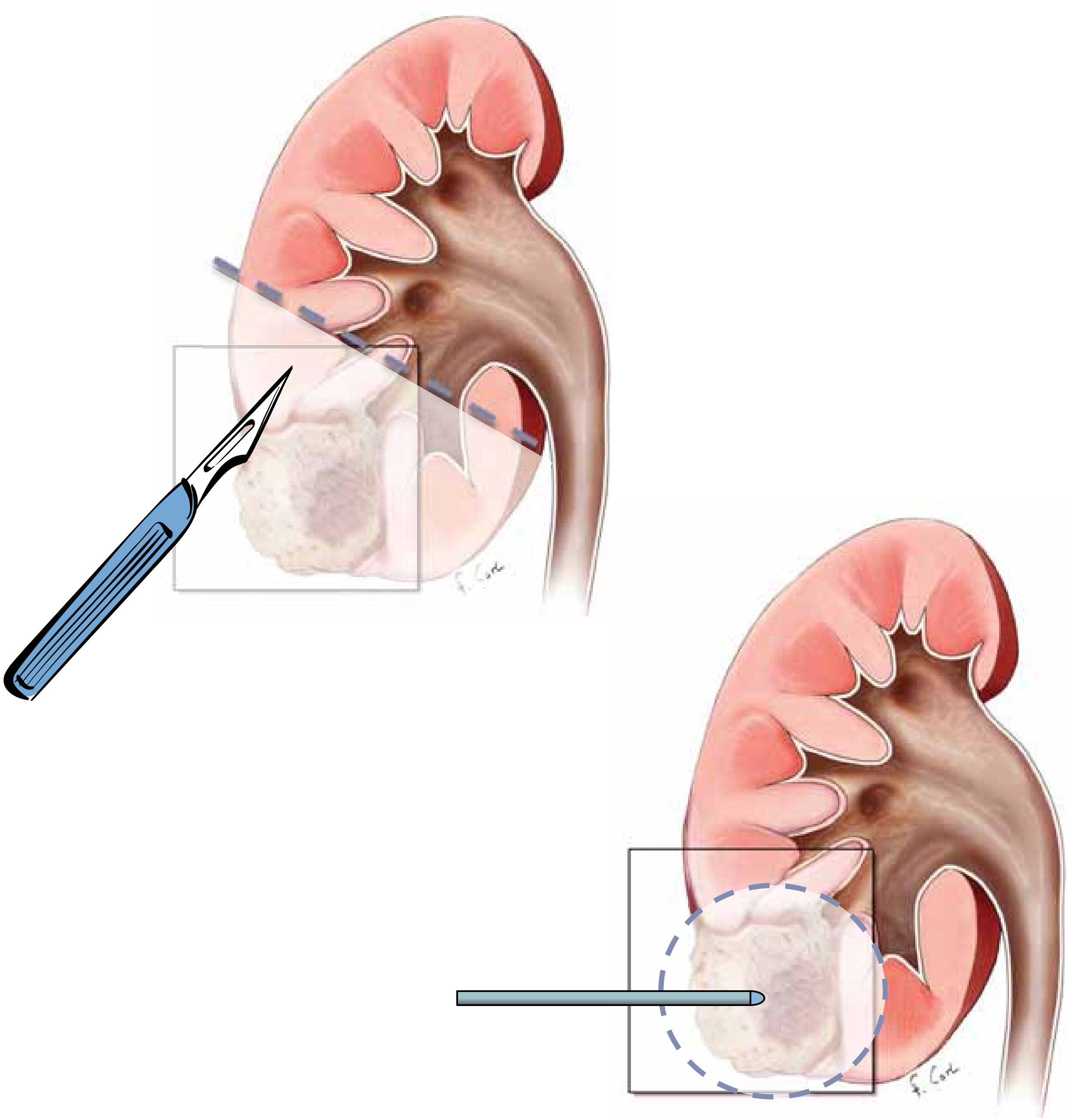
Formation de la boule de glace



A Sudden and Surprise
Visit from...
Mister Freeze!

Premiers pas en 2009

Tumeurs du rein



Indications

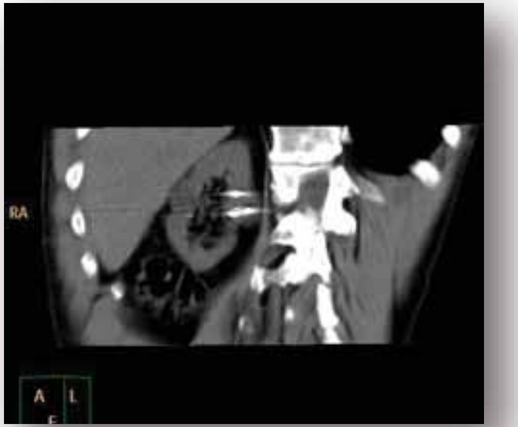
Insuffisance rénale

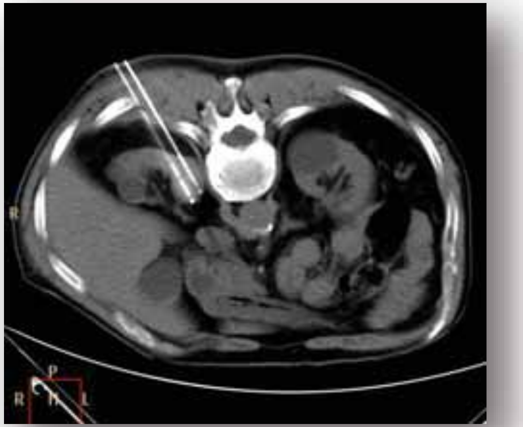
ATCD de Néphrectomie

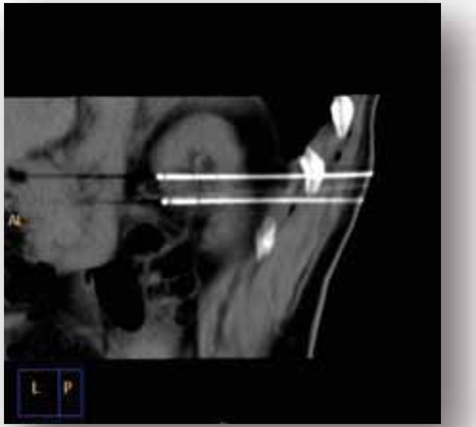
Patients âgés, comorbidités

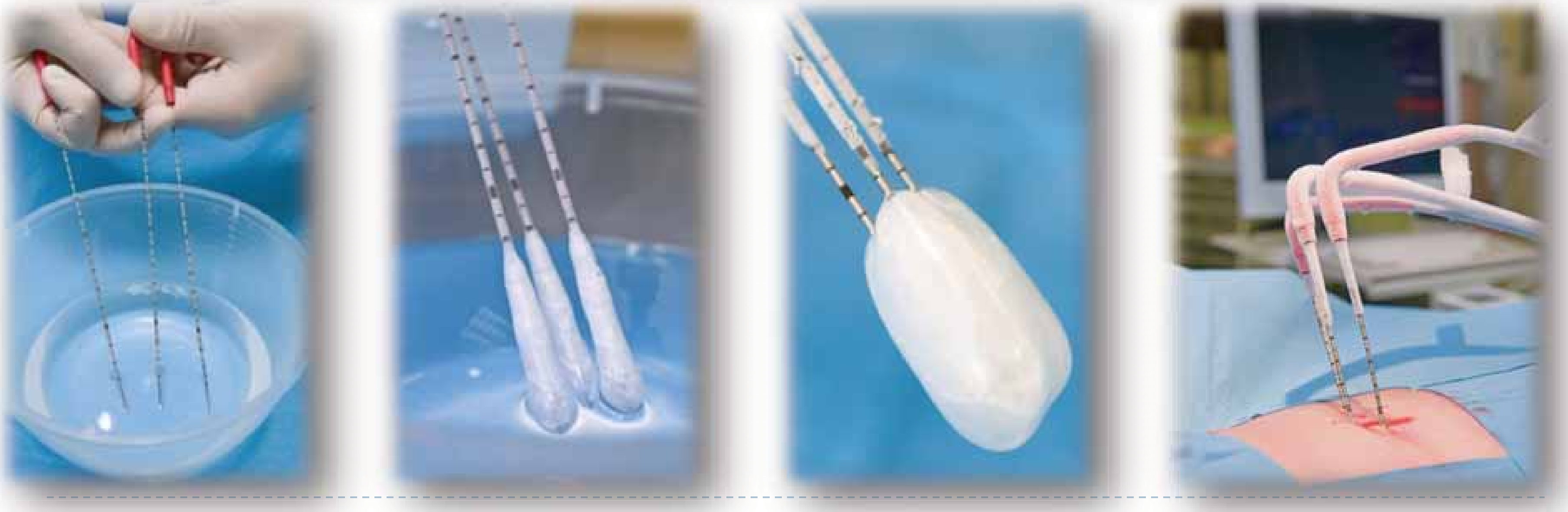
VHL

Cryoablation des tumeurs rénales

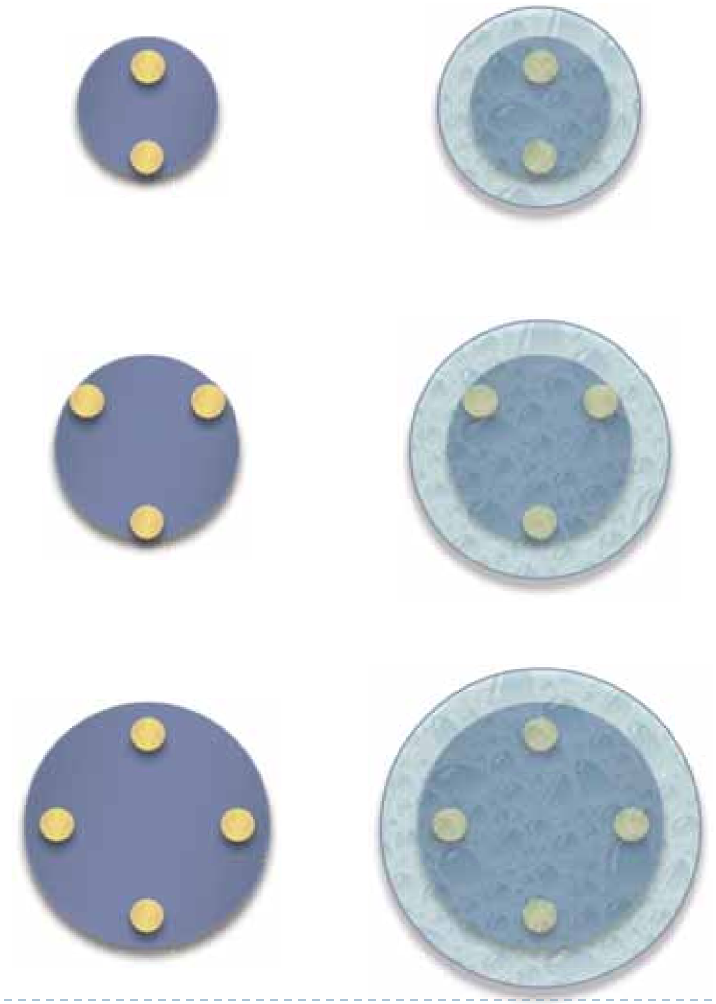


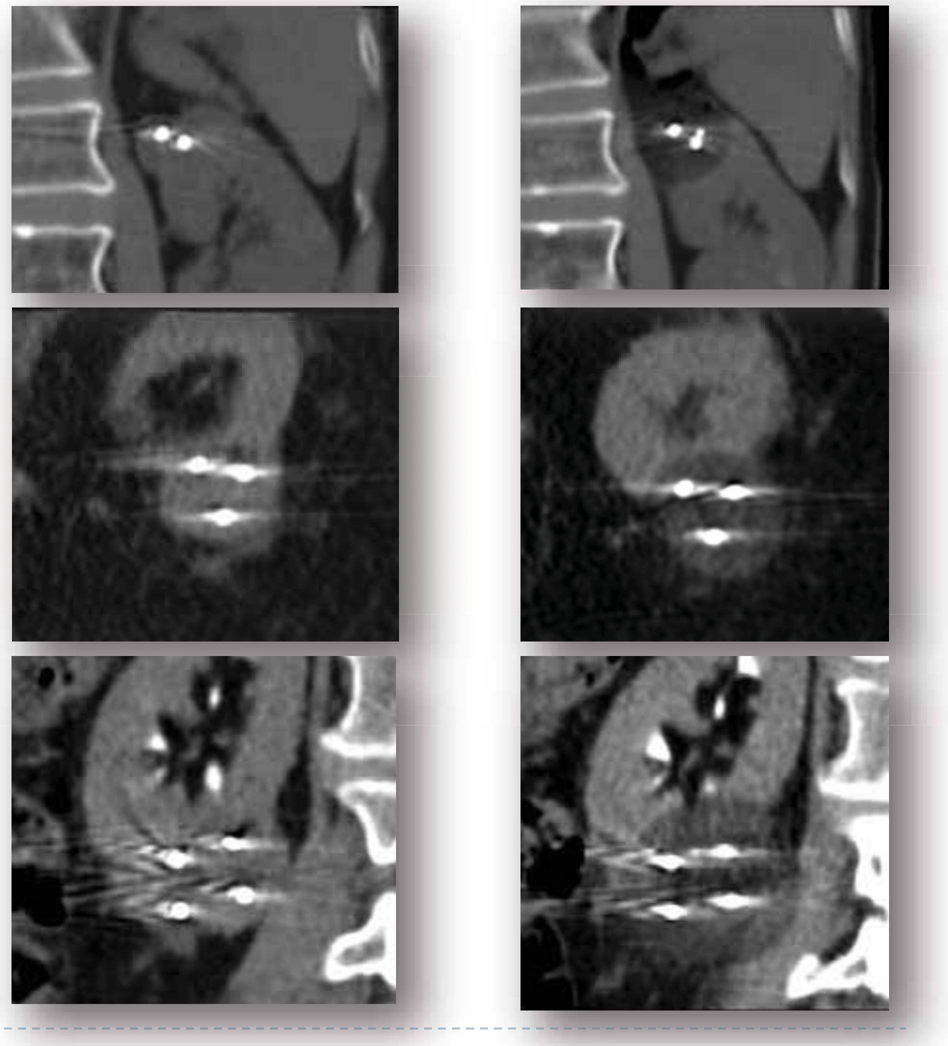




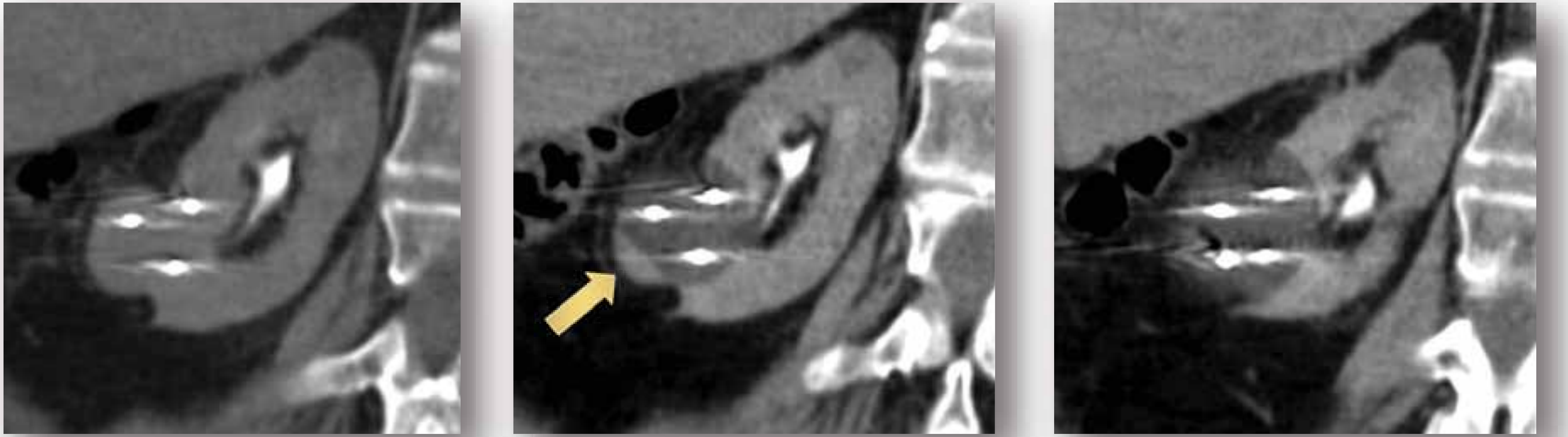


Nombre et position des aiguilles





Visibilité = Flexibilité

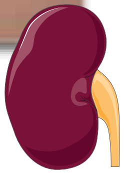


10 min

10 min

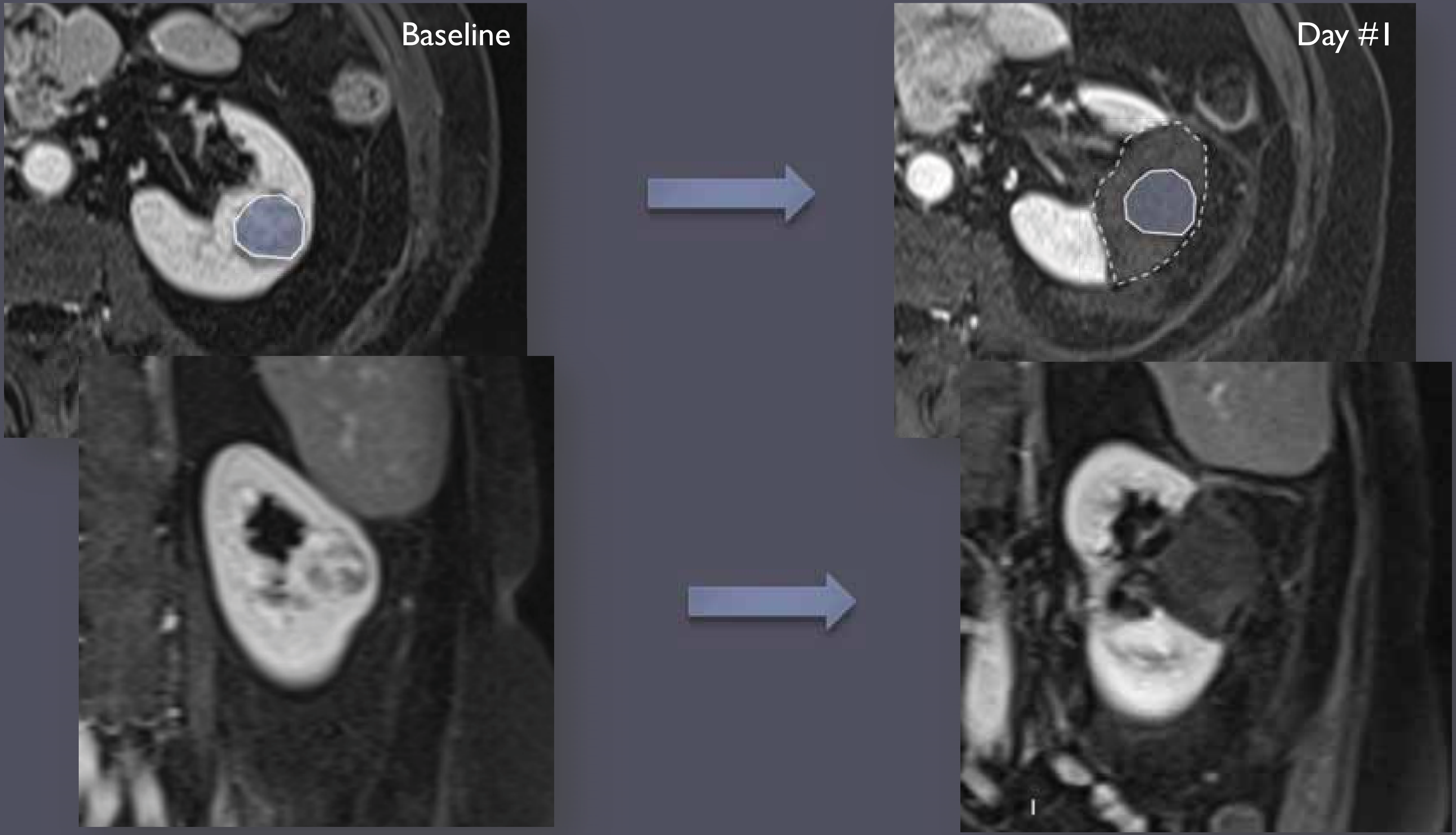
10 min

10 min



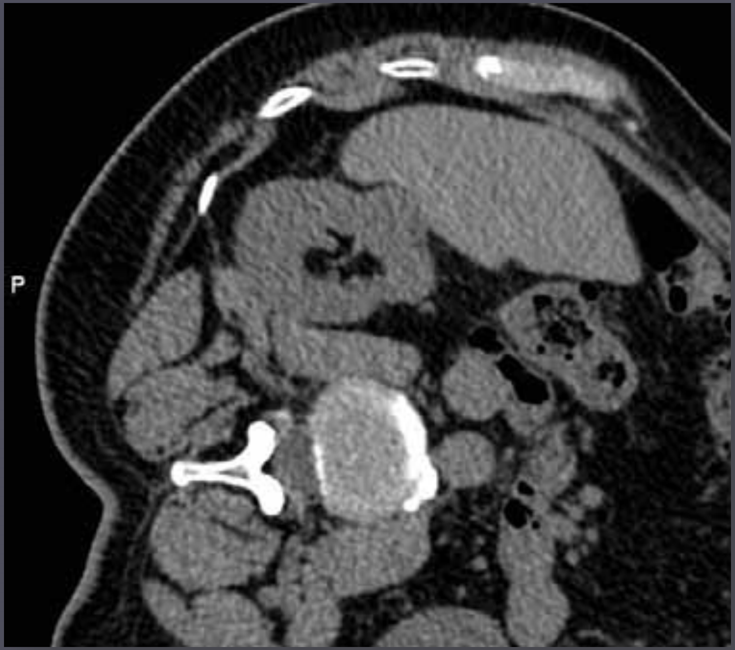
Marges d'ablation

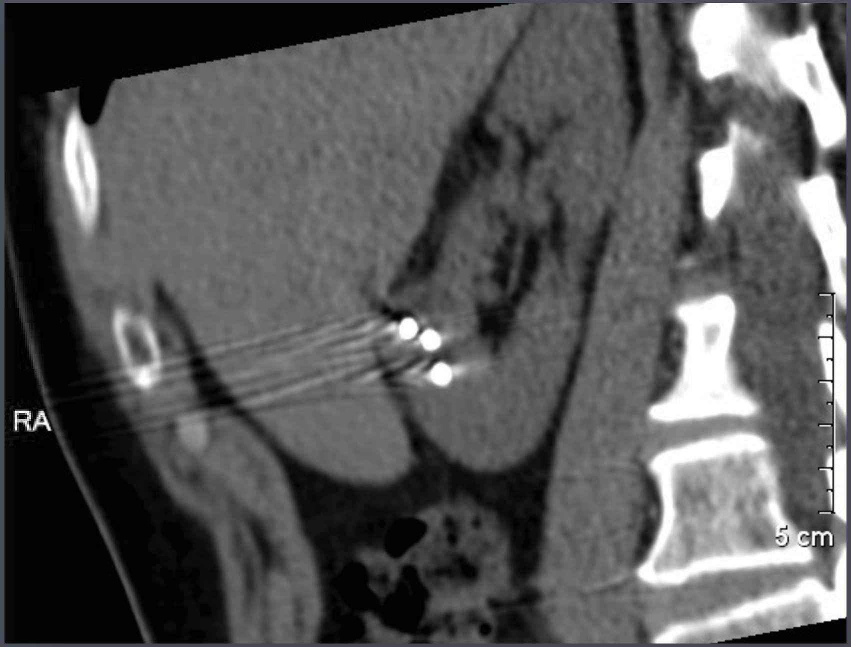
La clé du succès


Baseline
Day #1

Cryoablation: Suivi des patients

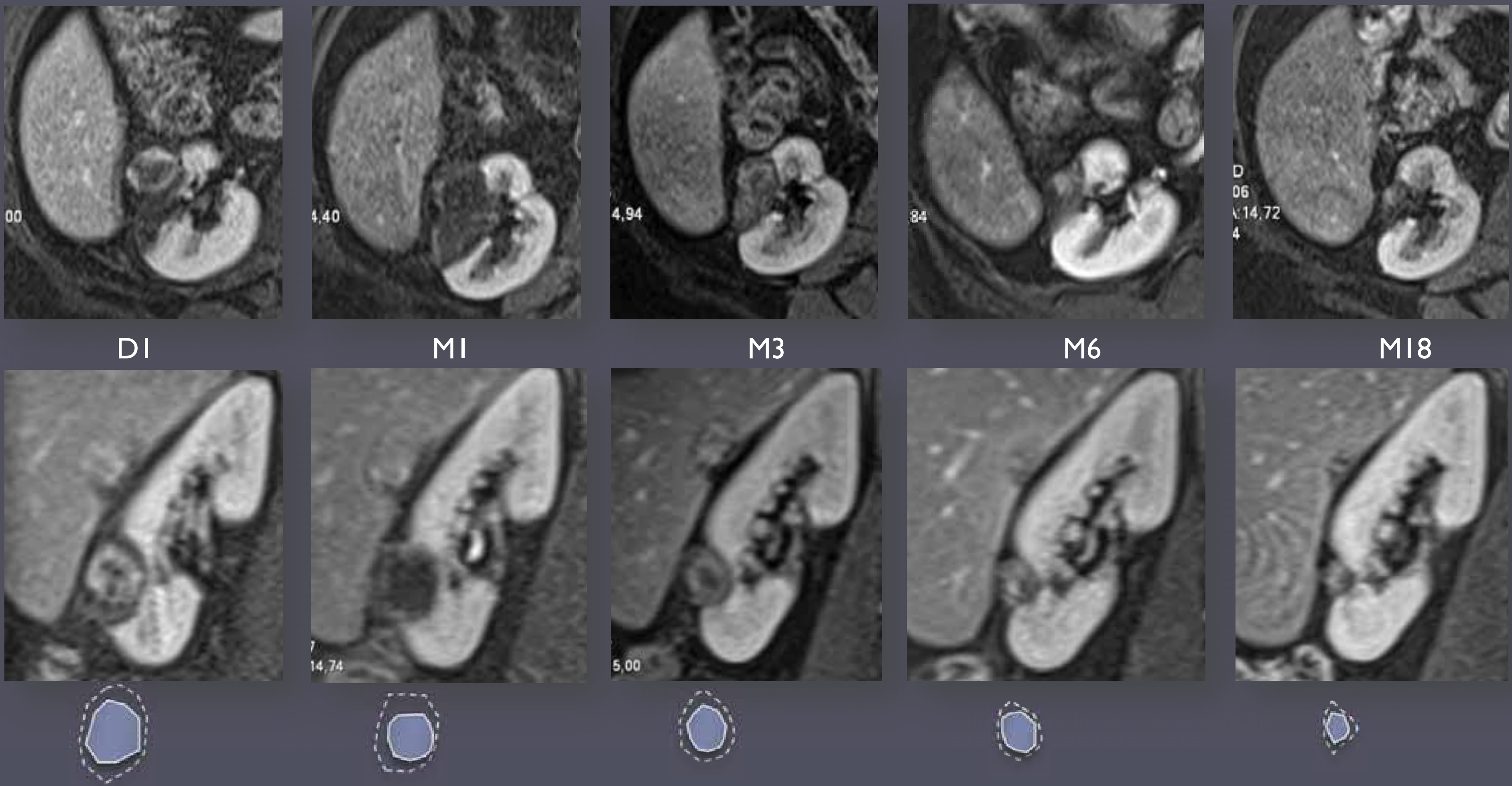
63 y/o patient





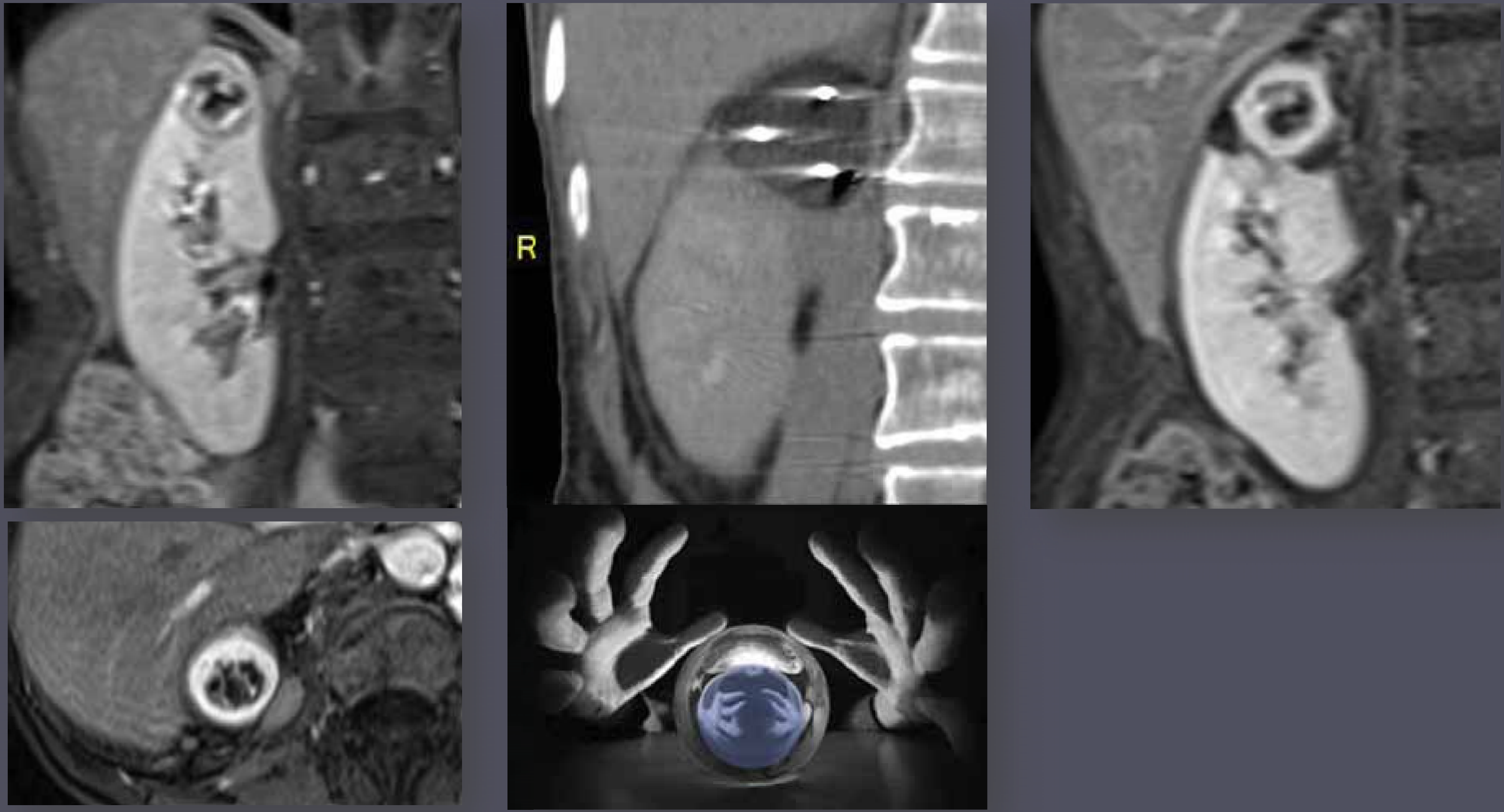
Cryoablation: Suivi des patients

Patient de 63 ans


D1
M1
M3
M6
M18

Echecs de la cryothérapie

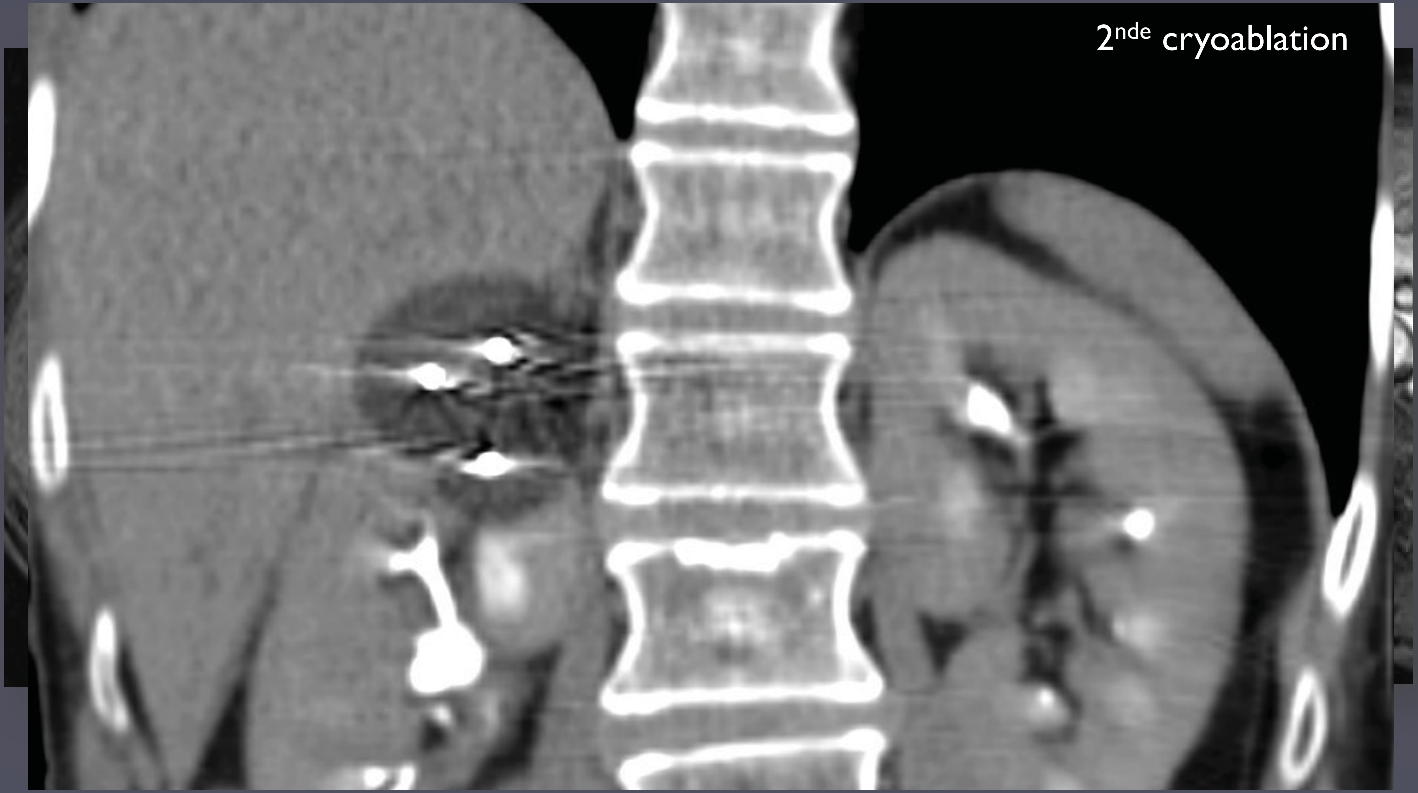
Marges d’ablation insufisantes → 5% de récidives



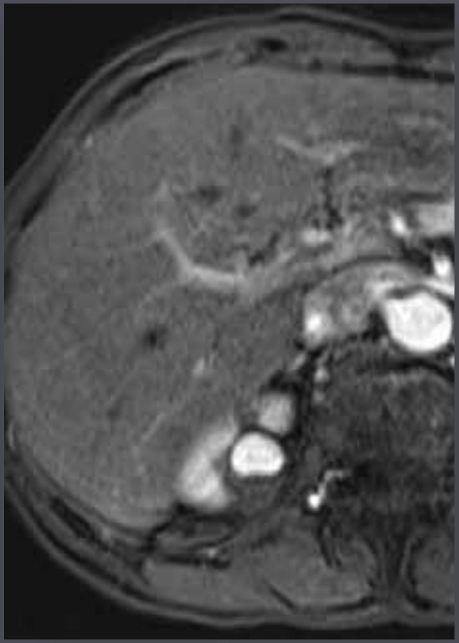
Weber SM et al. Radiology 1998; 207:73-7

Récidive

Environ 5% des cas



2nde cryoablation



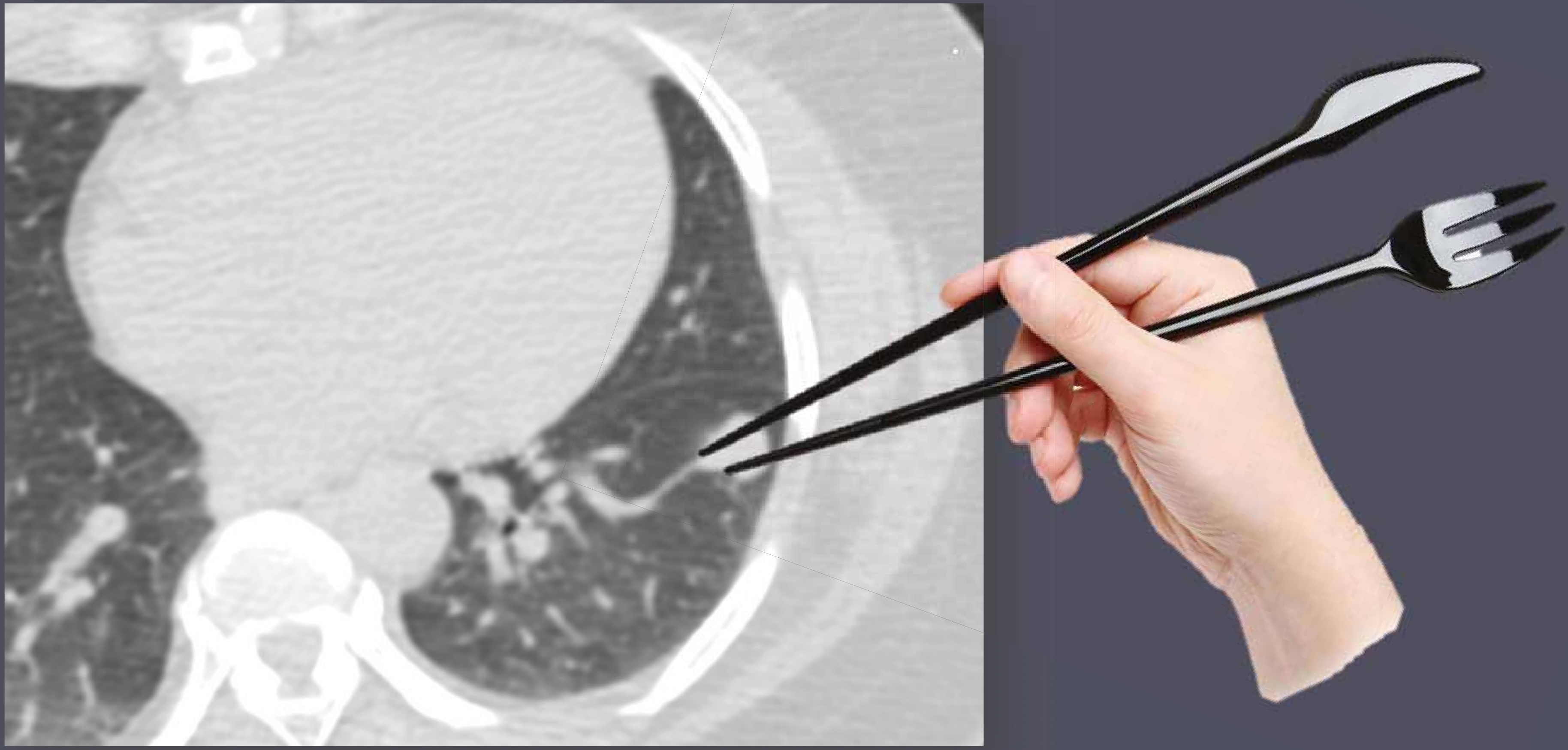
M12

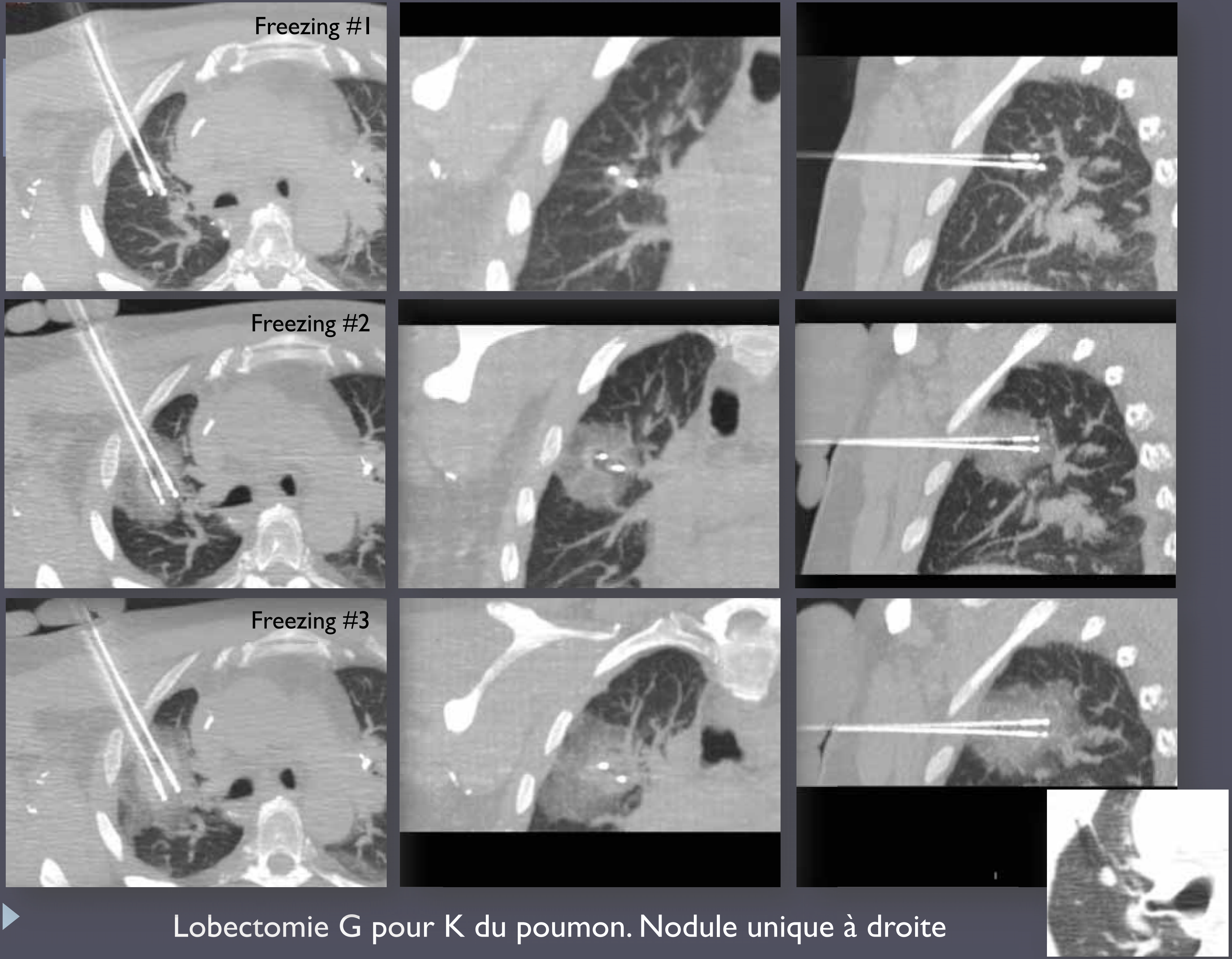
Depuis 2011, de nouvelles indications

Les métastases

Métastases pulmonaires

Ou comment se servir de baguettes

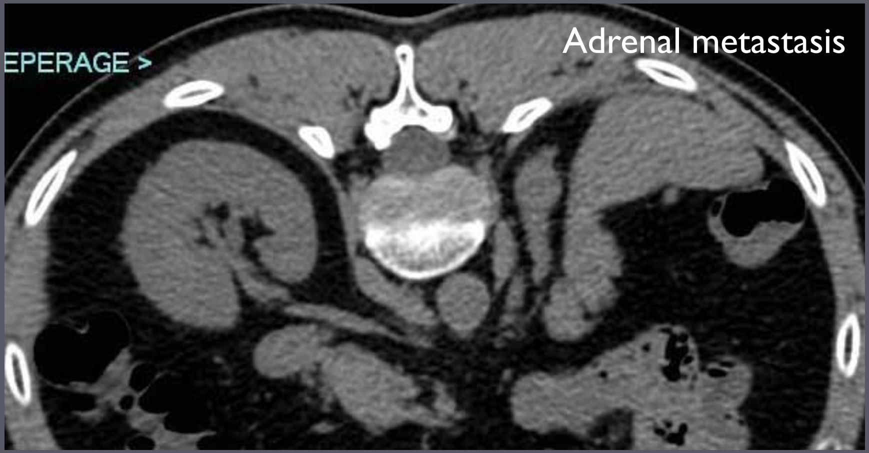



Freezing #1
Freezing #2
Freezing #3

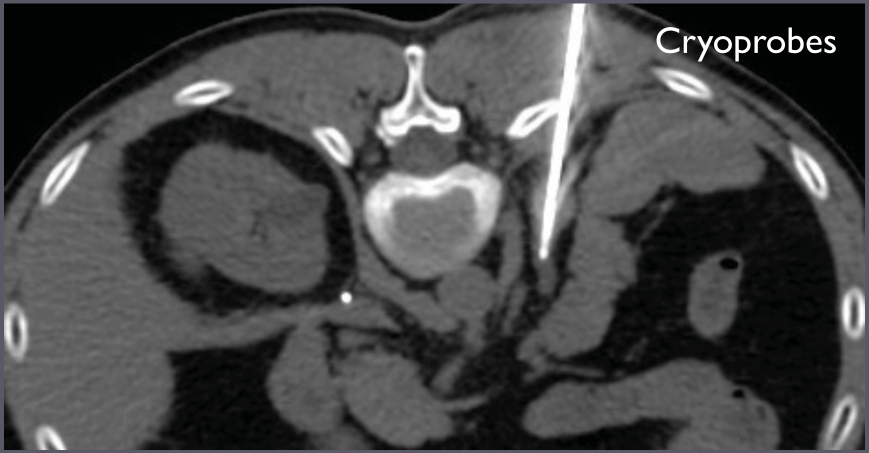
Lobectomie G pour K du poumon. Nodule unique à droite

Métastase surrénalienne

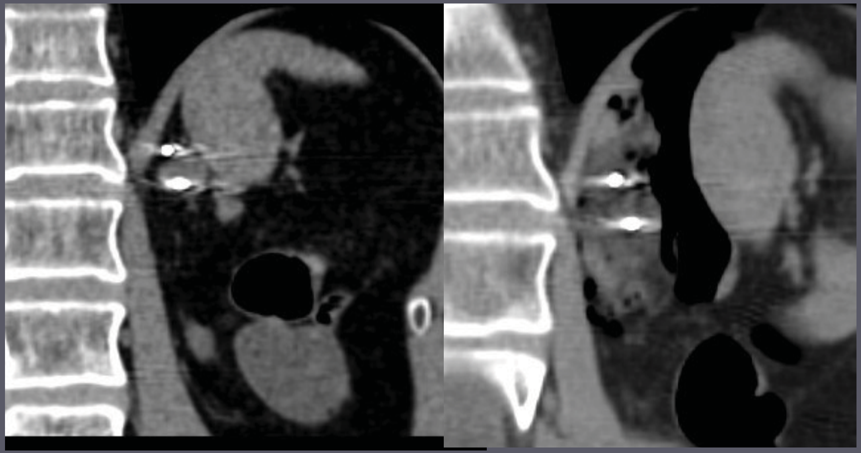
ATCD de néphrectomie G pour K du rein

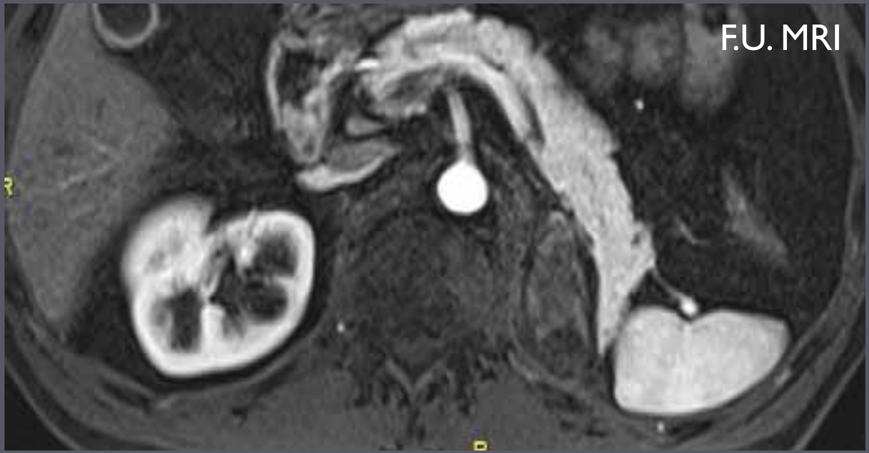


Adrenal metastasis



Cryoprobes



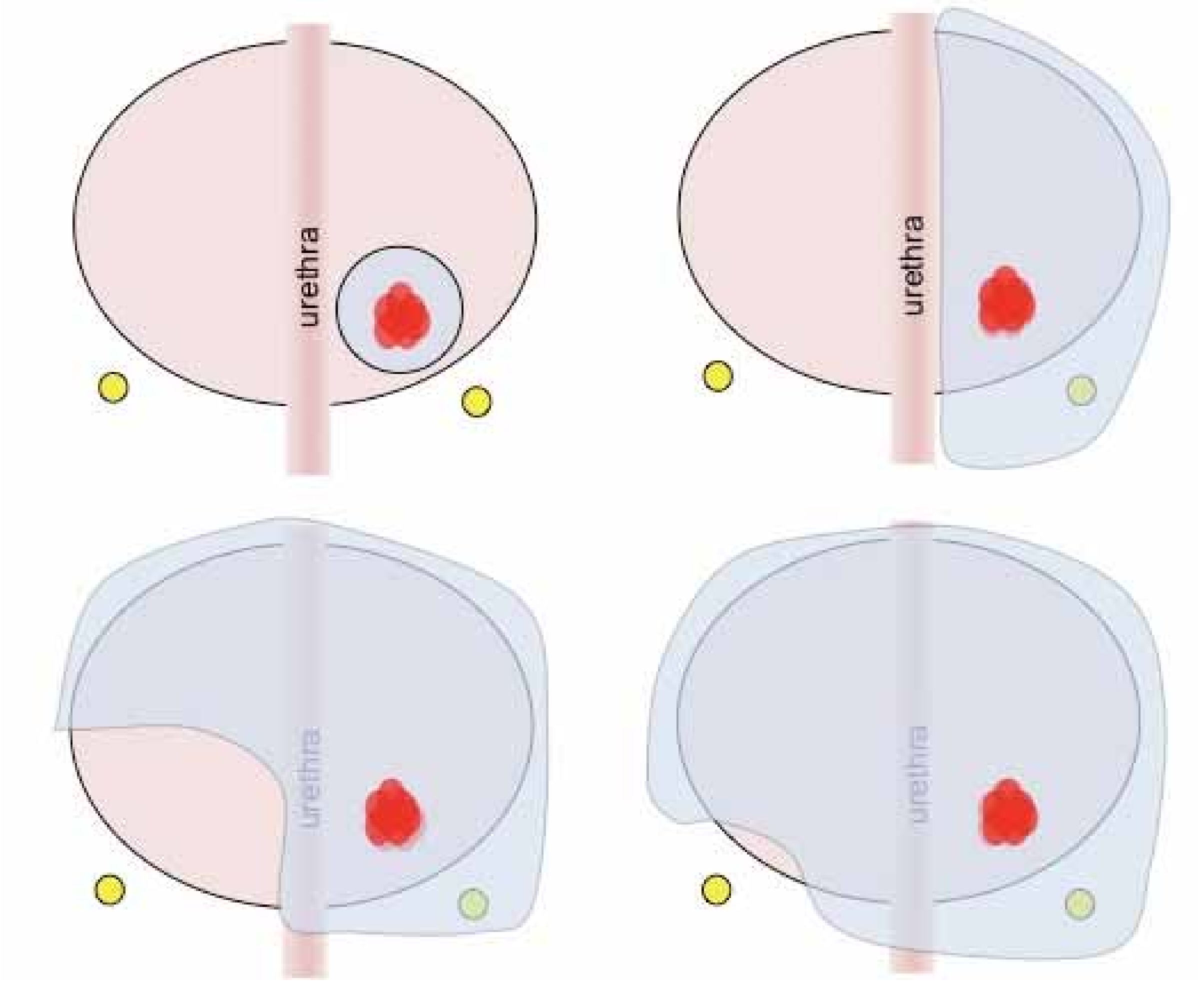


F.U. MRI

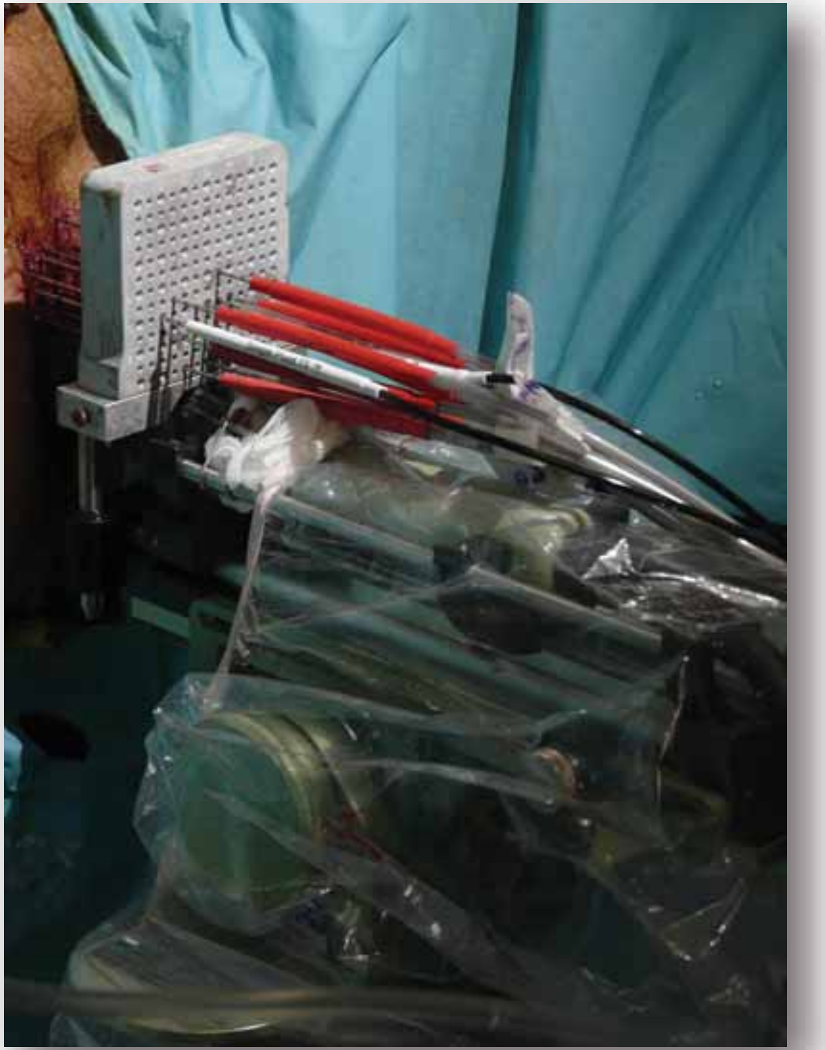
Perspectives

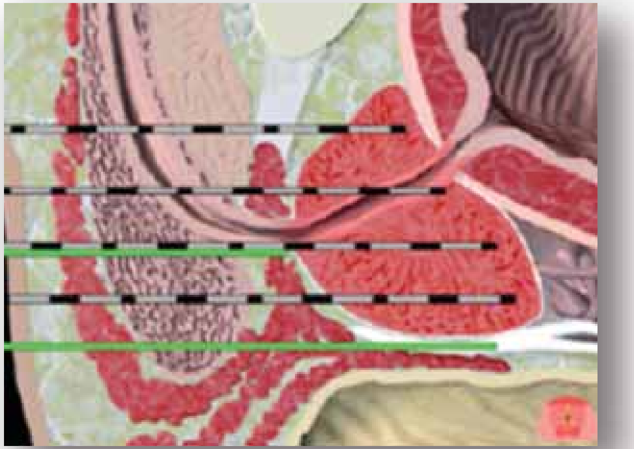
La prostate — La douleur

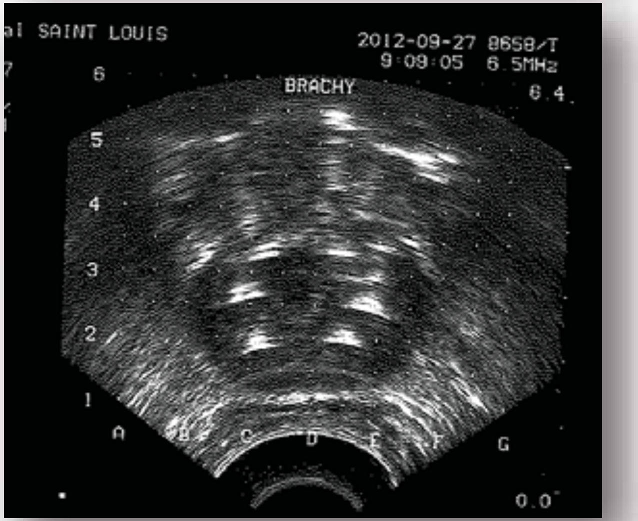
Traitement focal du K de prostate

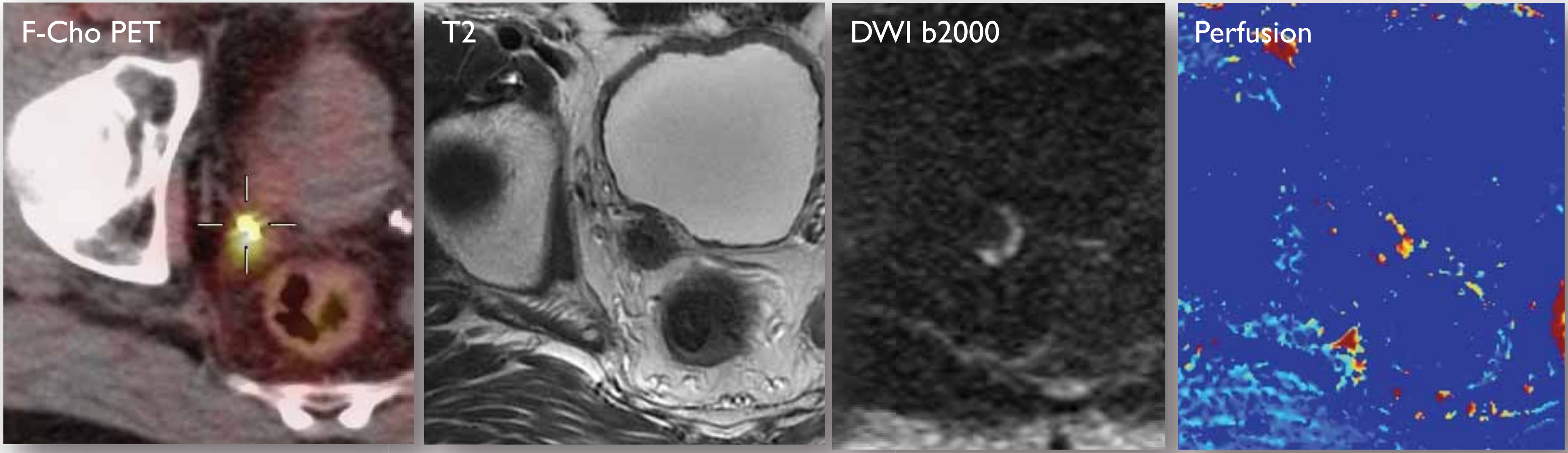

urethra
urethra
urethra
urethra

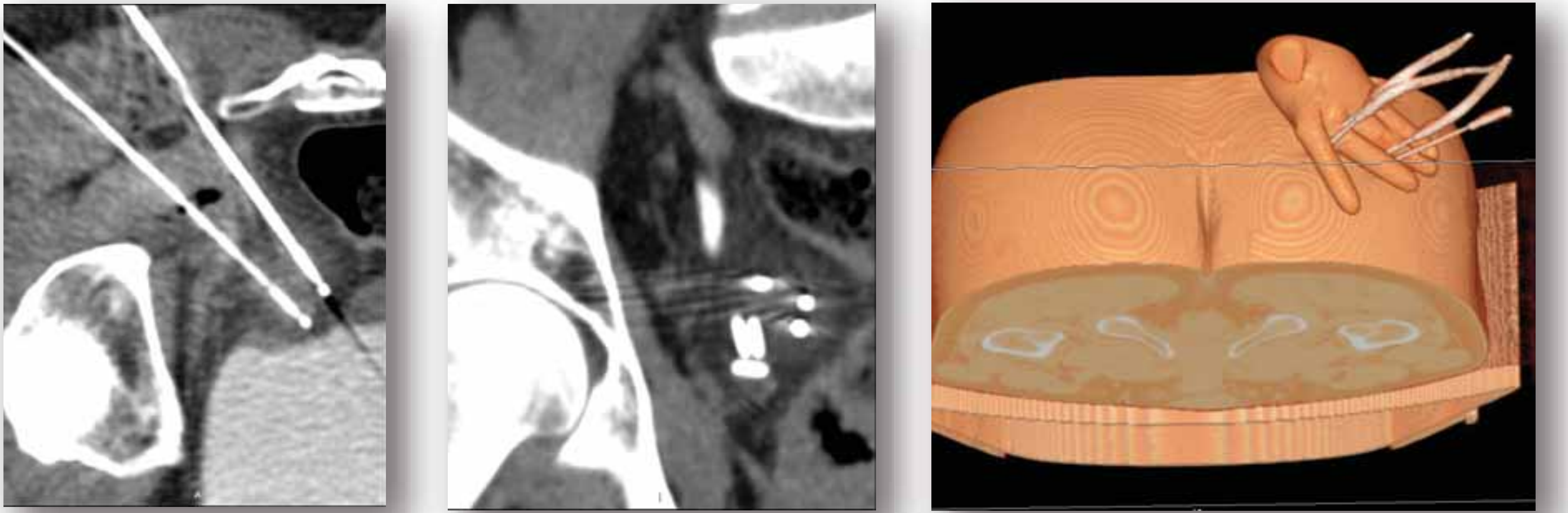
Traitement de rattrapage du K de prostate



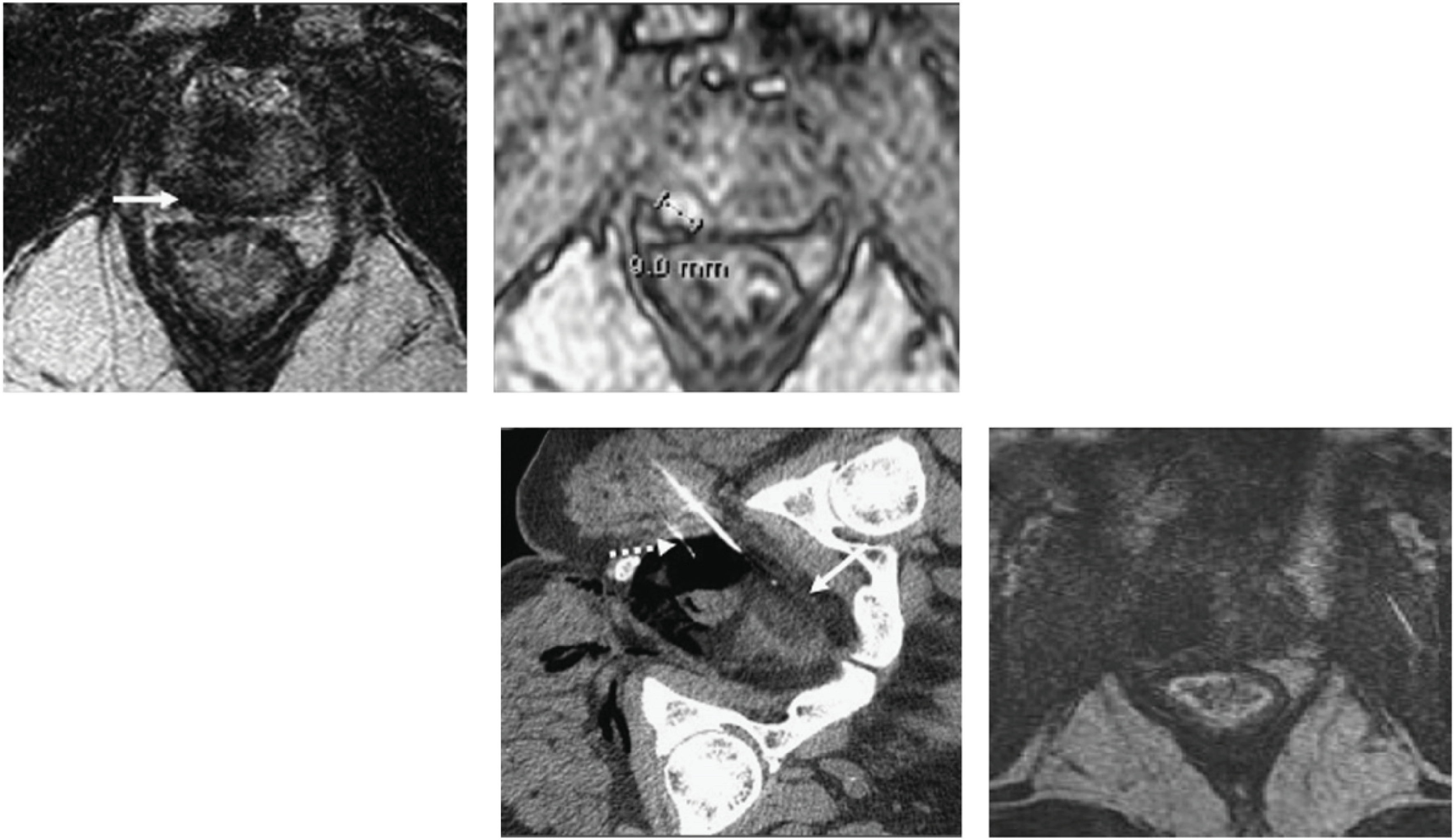



al SAINT LOUIS
2012-09-27 8658/T
9:09:05 6.5MHz
BRACHY
6.4
7
6
5
4
3
2
1
A
B
C
D
E
F
G
0.0

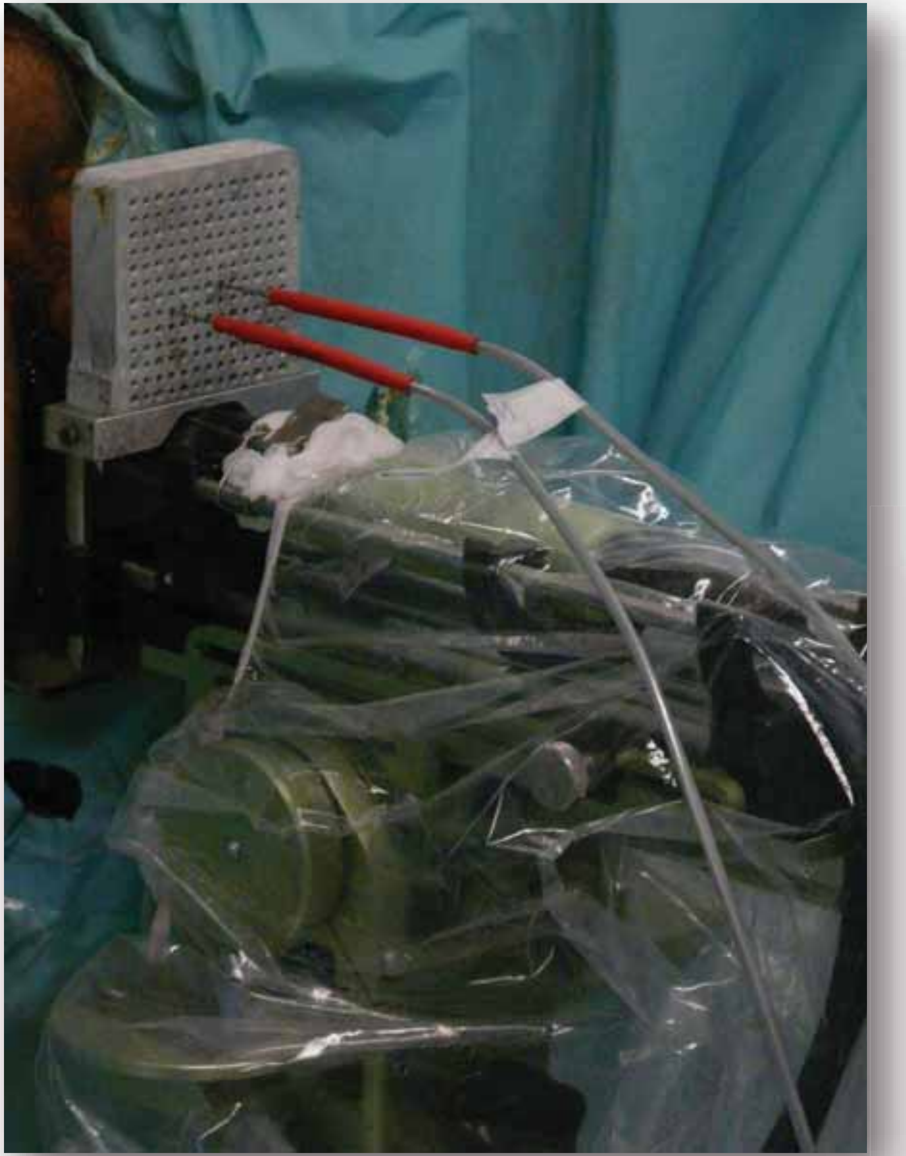

F-Cho PET
T2
DWI b2000
Perfusion

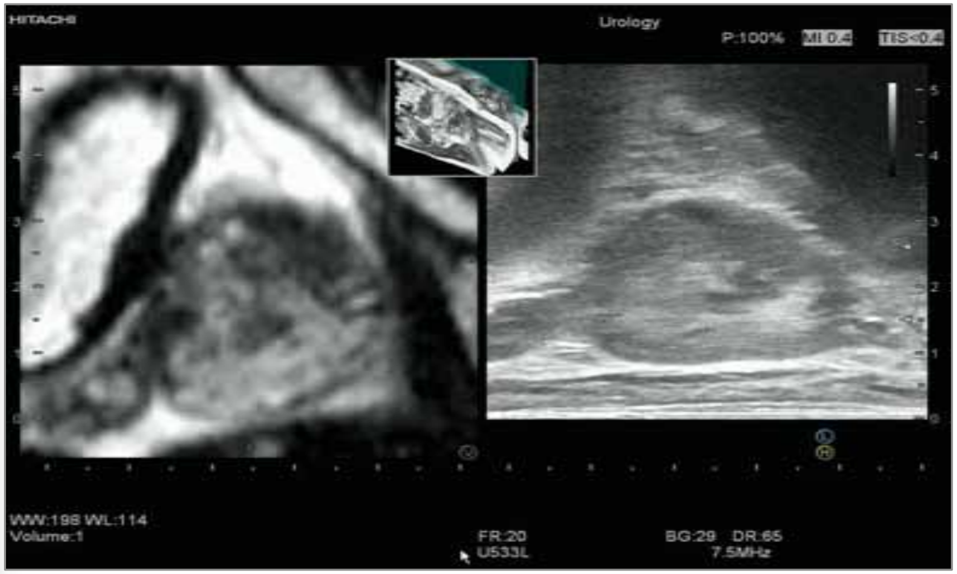


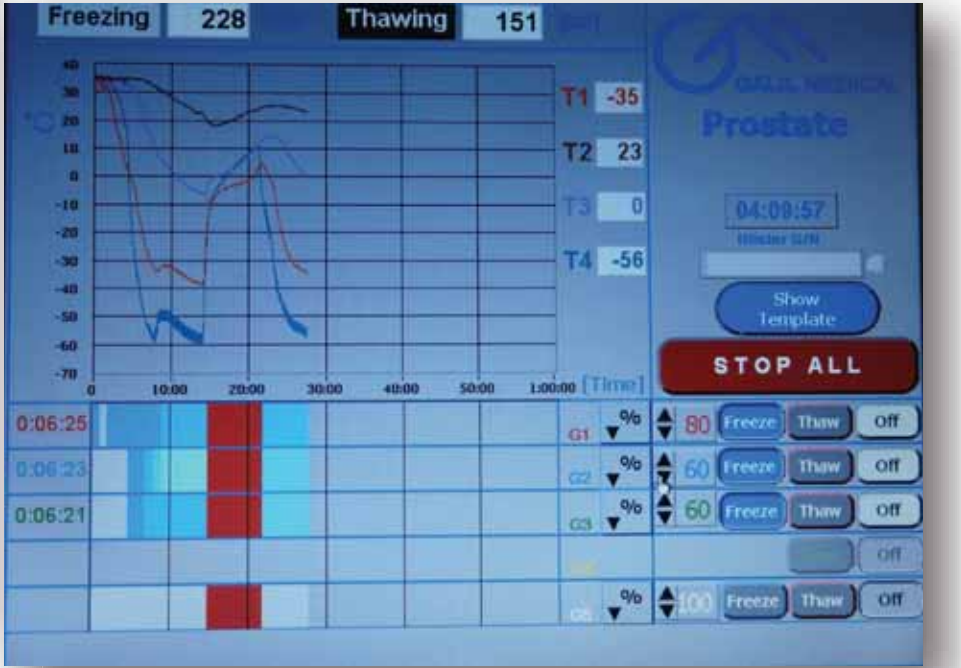
Cryothérapie focale sous scanner



Cornelis F et al. JVIR 2013;24:685-9

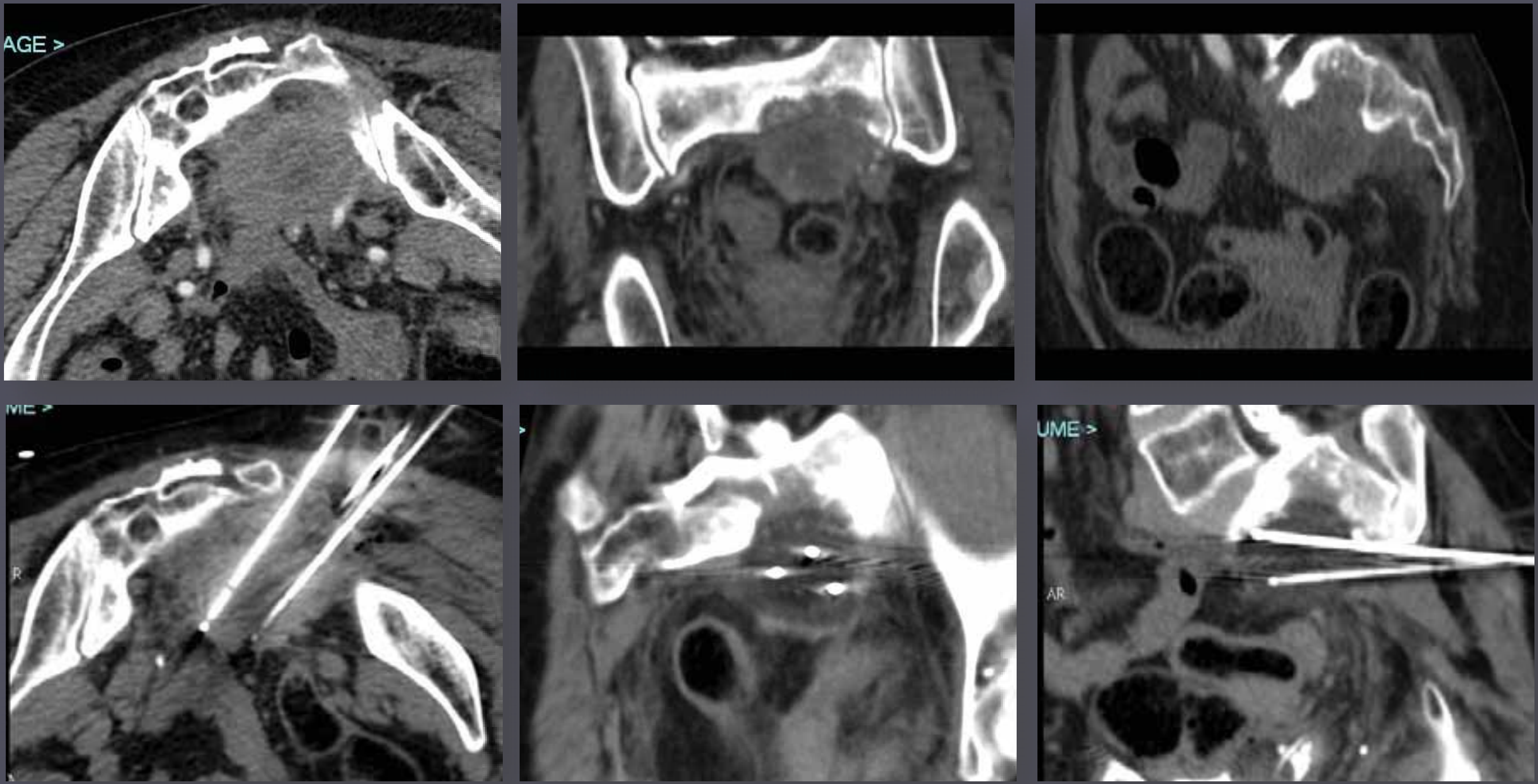



HITACHI
Urology
P:100%
MI 0.4
TIS<0.4
WW:198 WL:114
Volume:1
FR:20
U533L
BG:29 DR:65
7.5MHz


Freezing
228
Thawing
151
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
0
10:00
20:00
30:00
40:00
50:00
1:00:00
[Time]
T1 -35
T2 23
T3 0
T4 -56
Prostate
04:09:57
Show Template
STOP ALL
0:06:25
0:06:23
0:06:21
G1
G2
G3
%
80
60
60
100
Freeze
Thaw
Off

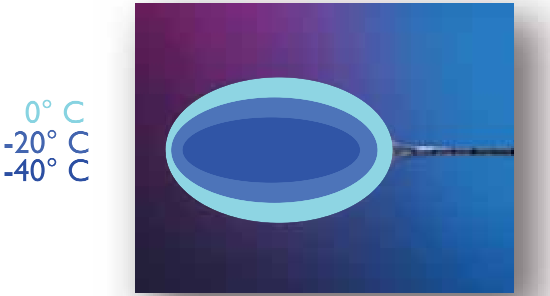
Les douleurs cancéreuses rebelles

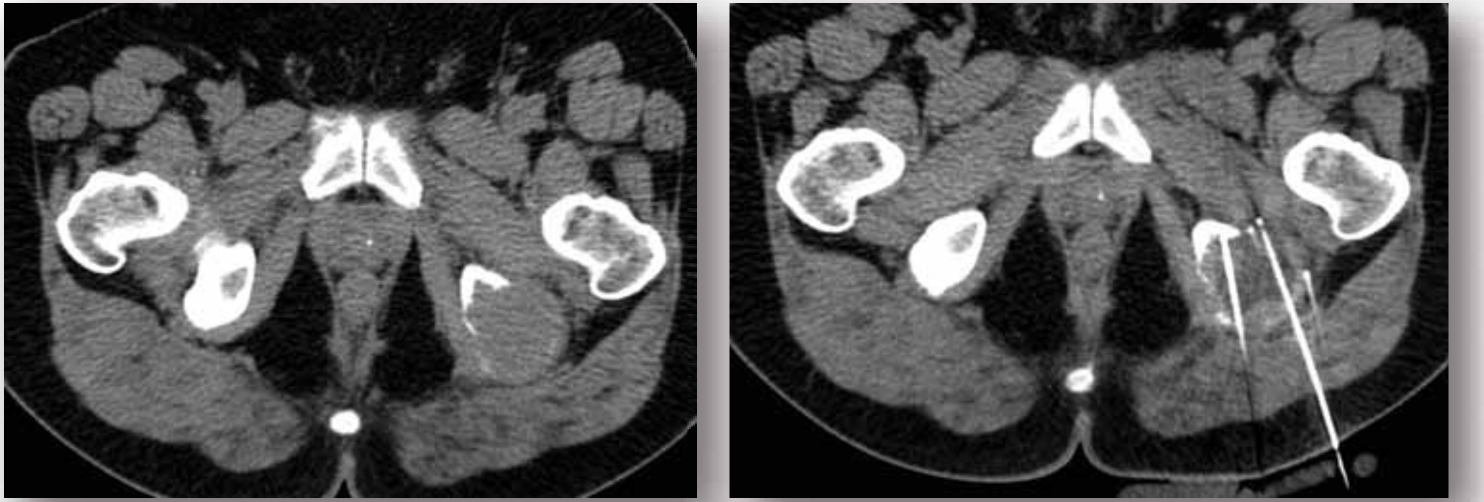
Sacral metastasis of lung cancer. Palliative procedure for pain relief.


AGE >
ME >
R
>
UME >
AR

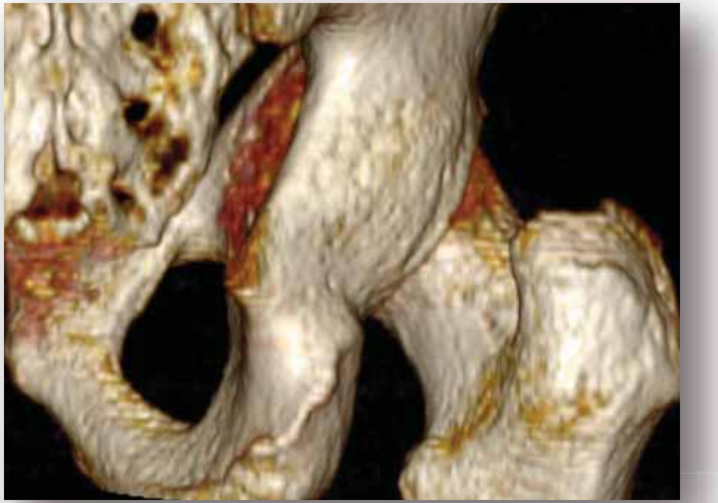
Effet sur les nerfs

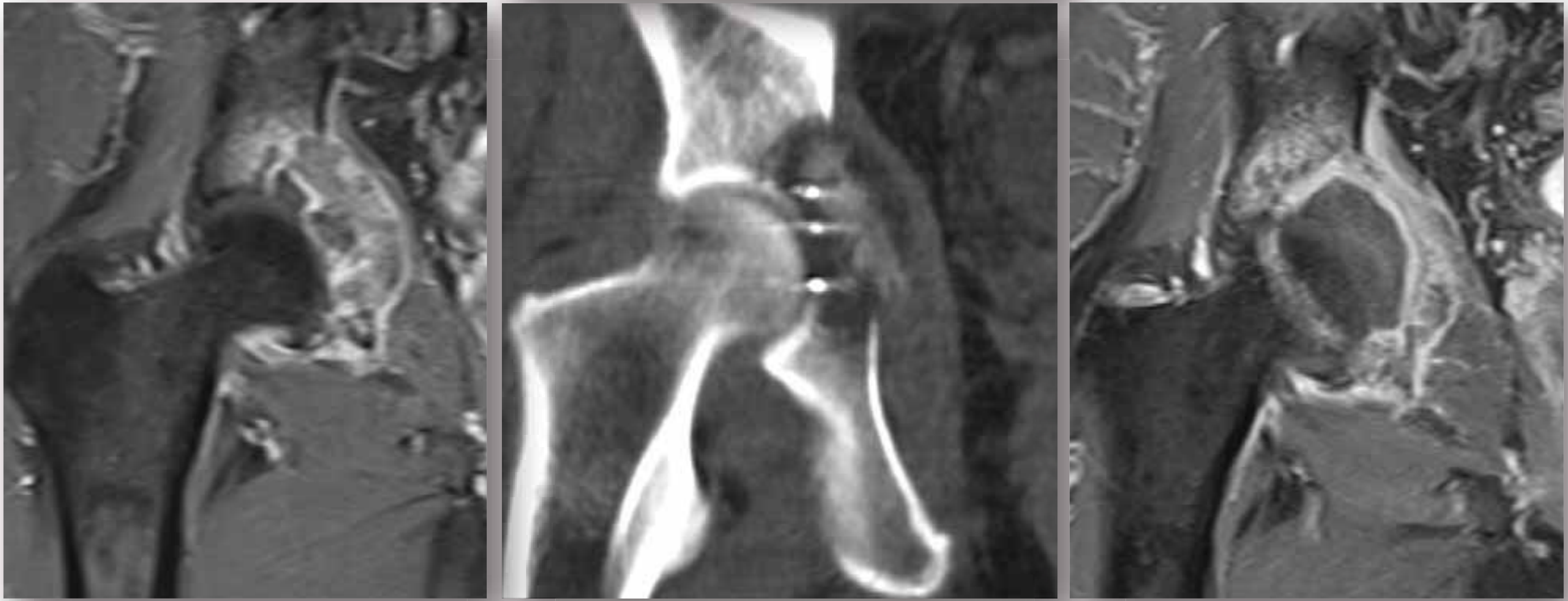
- Désensibilisation temporaire entre -5° et 0°C
  - Réversible rapidement si réchauffage
- Désensibilisation prolongée si <-5°C
  - Réversible +/- rapidement
- Désensibilisation définitive si <-15°C
  - Irréversible

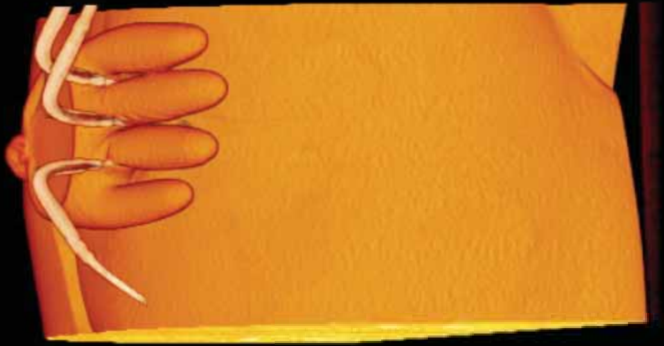


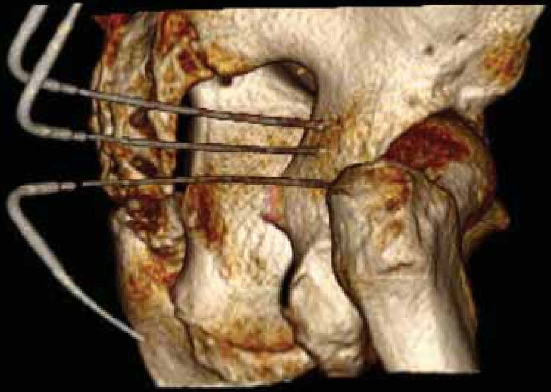


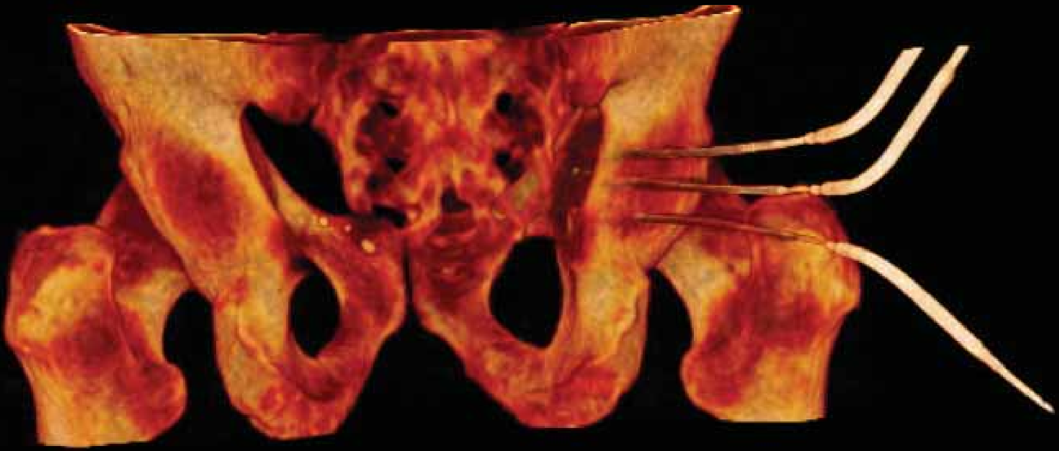
- Gage AA et al. Cryobiology 2009 ; 59:229

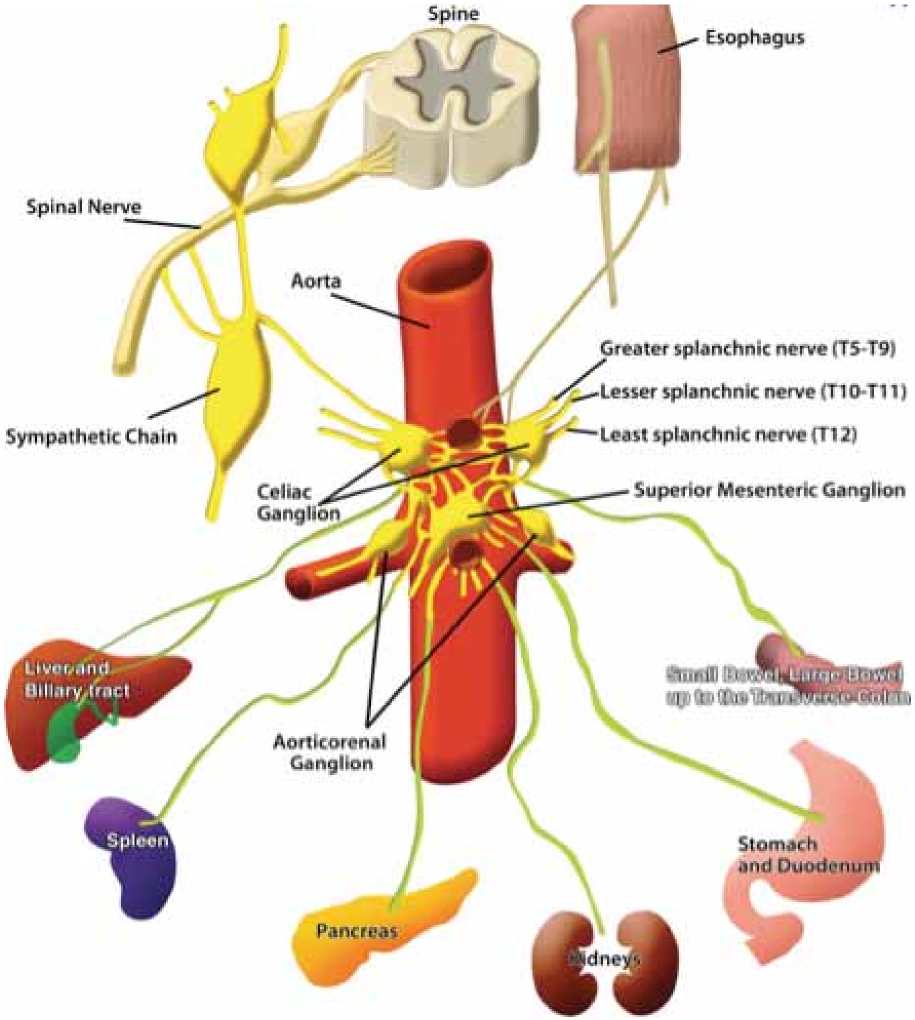


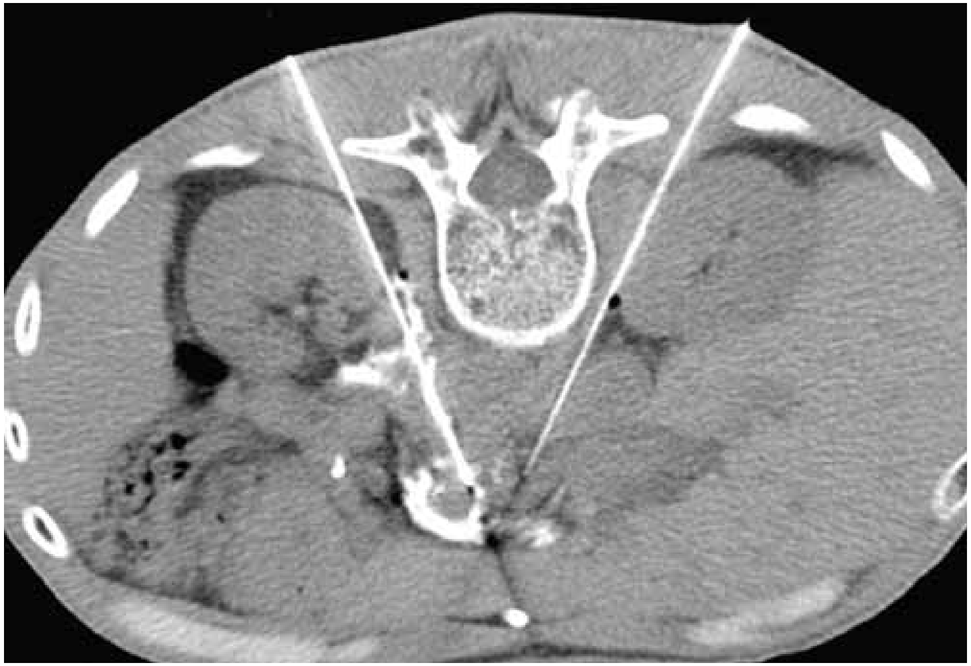


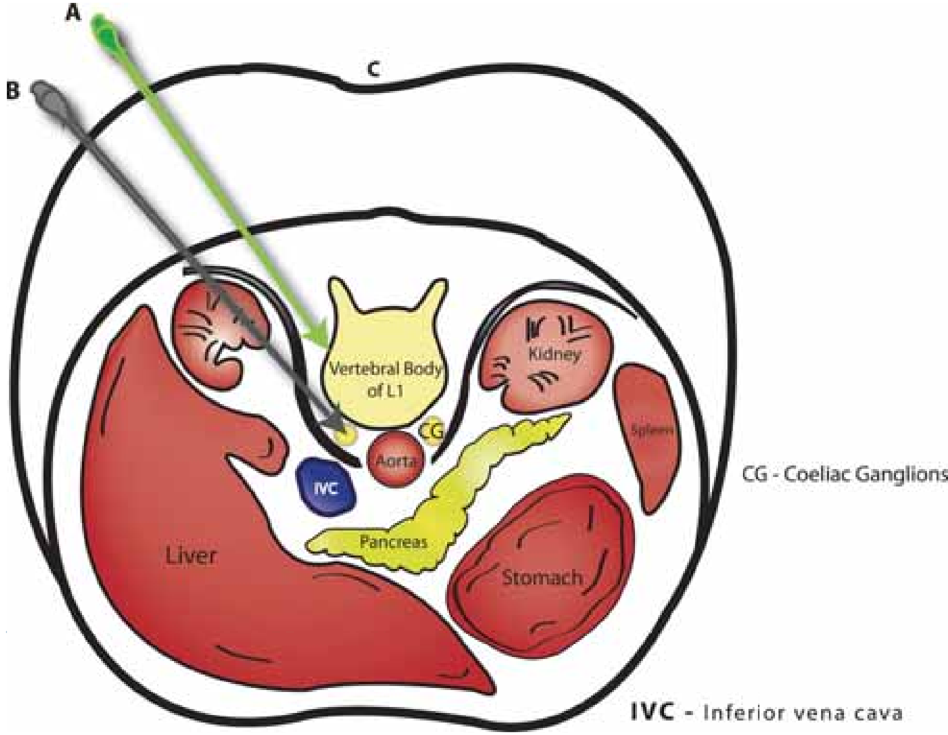

PG

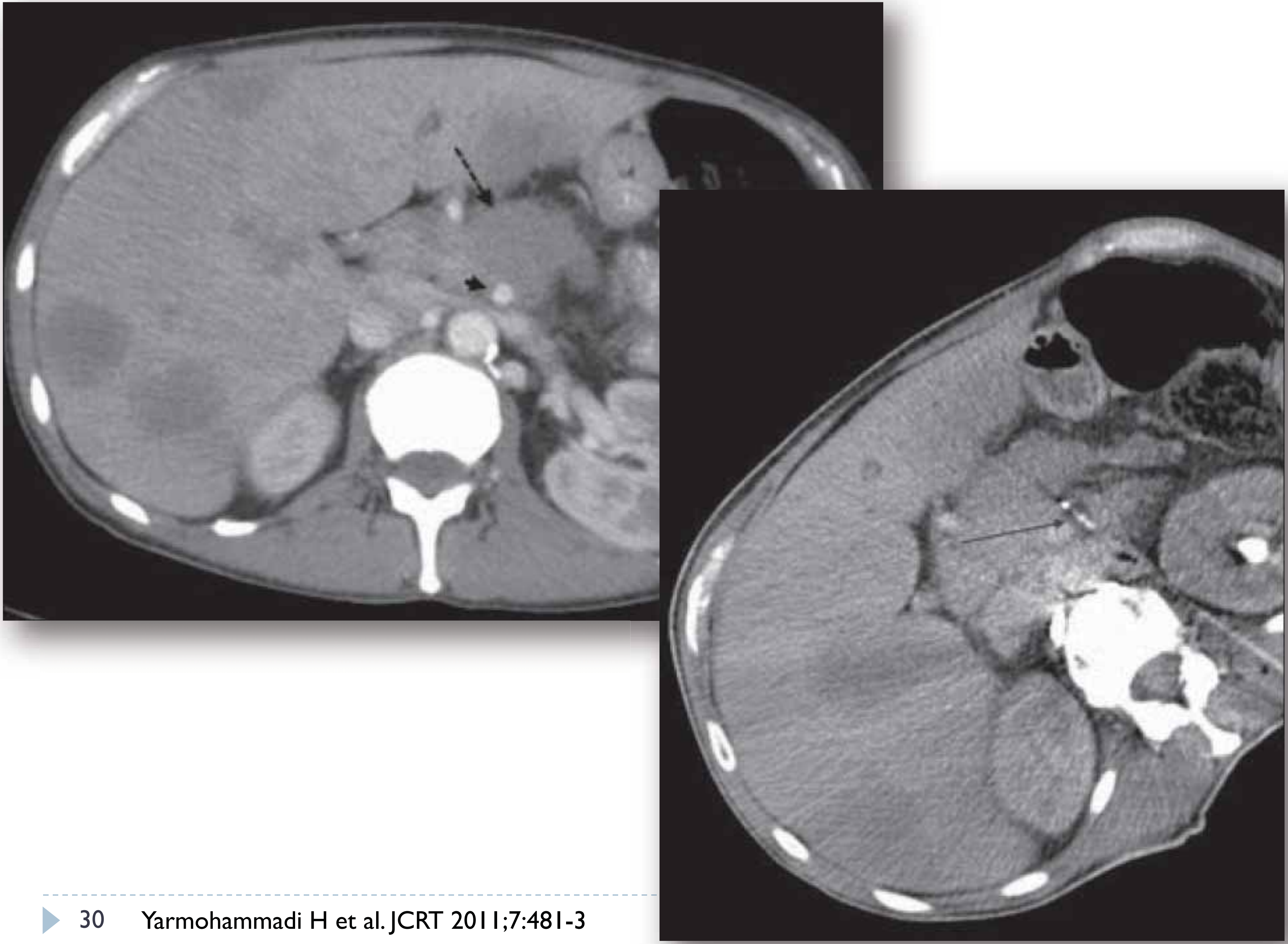

PG


GA
DP


Spine
Esophagus
Spinal Nerve
Aorta
Greater splanchnic nerve (T5-T9)
Lesser splanchnic nerve (T10-T11)
Least splanchnic nerve (T12)
Sympathetic Chain
Celiac Ganglion
Superior Mesenteric Ganglion
Liver and Biliary tract
Small Bowel, Large Bowel up to the Transverse Colon
Aorticorenal Ganglion
Spleen
Stomach and Duodenum
Pancreas
Kidneys




A
B
C
Vertebral Body of L1
CG
Kidney
Spleen
Aorta
IVC
Pancreas
Liver
Stomach
CG - Coeliac Ganglions
IVC - Inferior vena cava



Yarmohammadi H et al. JCRT 2011;7:481-3

Conclusion

- Bilan
  - Plus de 200 procédures réalisées (150 tumeurs du rein)
  - 2ème centre en France
- Perspectives
  - Traitement focal du K de prostate
  - Traitement de la douleur
- Limites
  - Temps → Scanner interventionnel
  - Valorisation de l’activité CCAM et GHM

ICE AGE 5
2015