Perkutane stereotaktische Ablation von Leberläsionen

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IMR soH
Institut für Medizinische Radiologie

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Fortbildung Radio-Onkologie: «Mittendrin, statt nur dabei» 23.03.2024

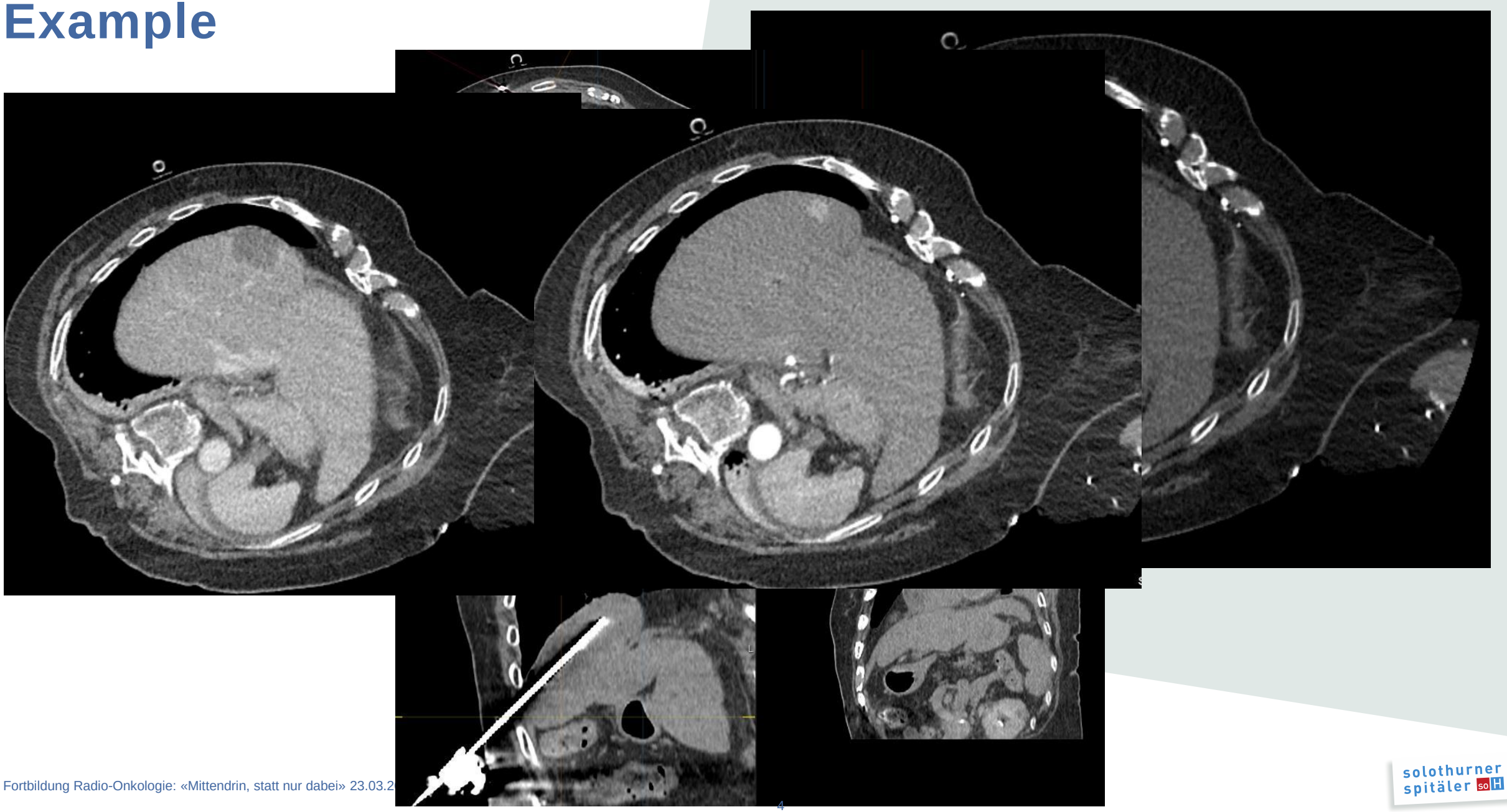
Bürgerspital Solothurn - IMR

- Departement of Medical Radiology:
  - 2 CT
  - 2 MR
  - X-Ray, Ultrasound, DXA, Mammo
  - 1 Angio and 1 Hybrid OR
  - Nuclear Medicine

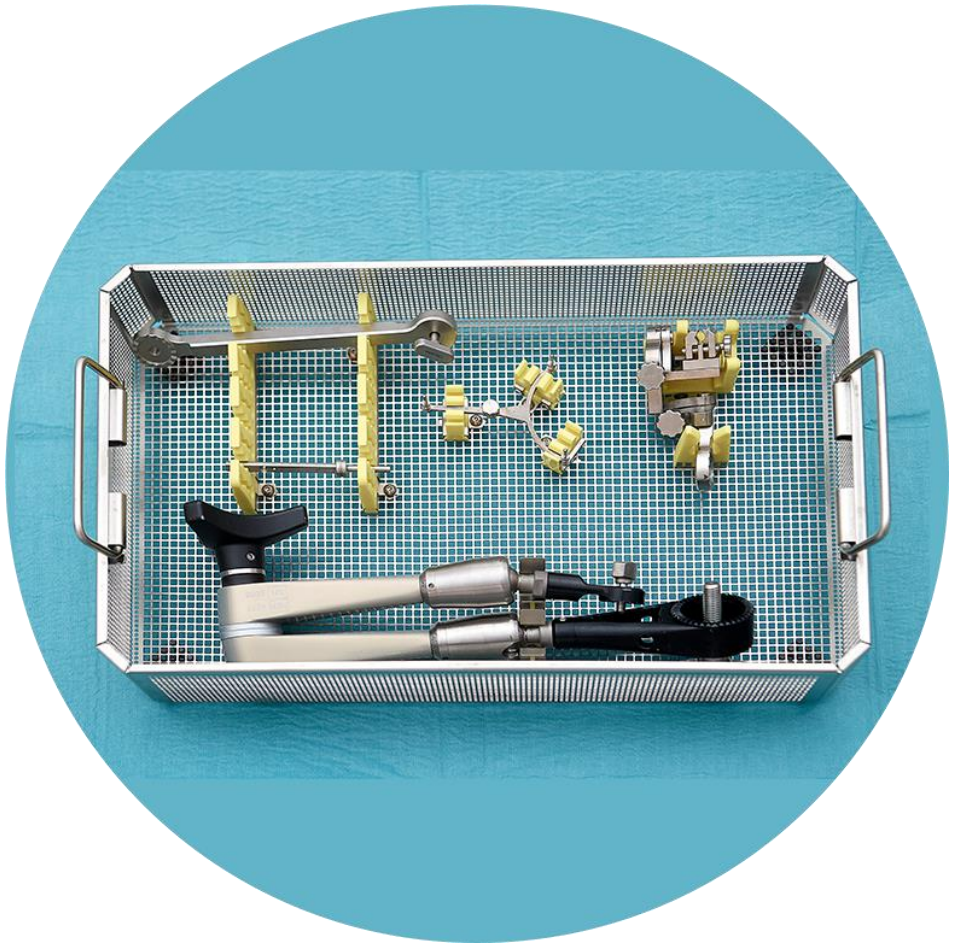
Bürgerspital Solothurn - IMR

- Interventional Oncology:
  - Biopsy
  - Ablations:
    - MWA / RFA
    - Cryoablation
    - IRE
  - Embolization
    - TACE/TAE
    - PVE / LVD

Example



How we do it: CAS ONE IR



CAS ONE IR

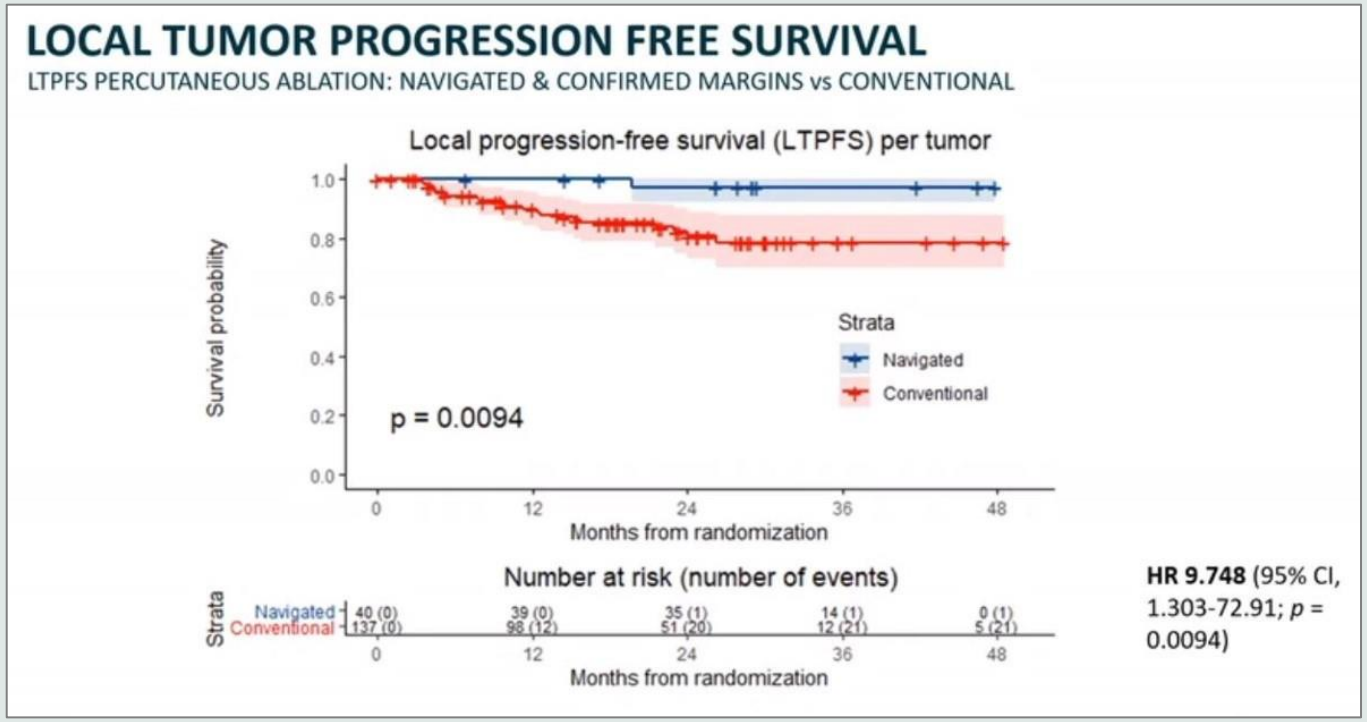
CAS ONE IR - Setup

- GA/Jet-ventilation
- Patient immobilized, position as needed
- Navigation system: e.g. Cas One IR
  - Skin-markers and aiming-device
- Ablation system
- CT + i.v. contrast pre and post ablation
- MRI Fusion

Ablations @ Solothurn

Stereotactic ablation in a non-tertiary hospital?

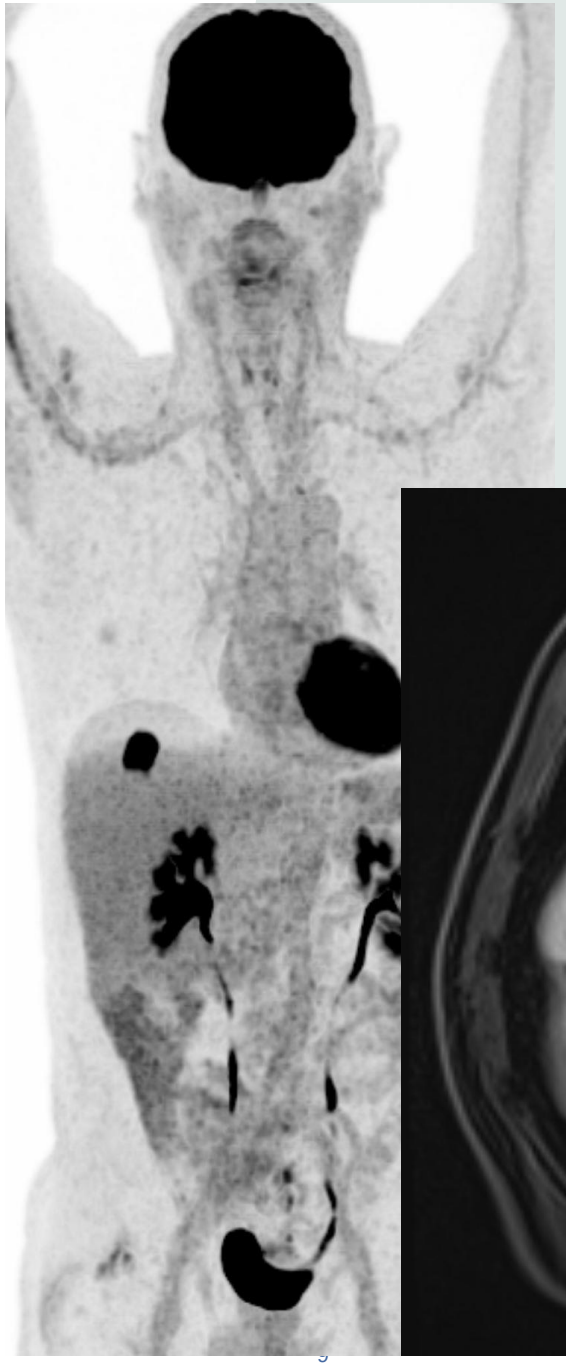
- Overcome limitations: size, location, visibility
- Expand ablatable spectrum
- Treat patients close to home according to „university standards“
- Improved outcomes

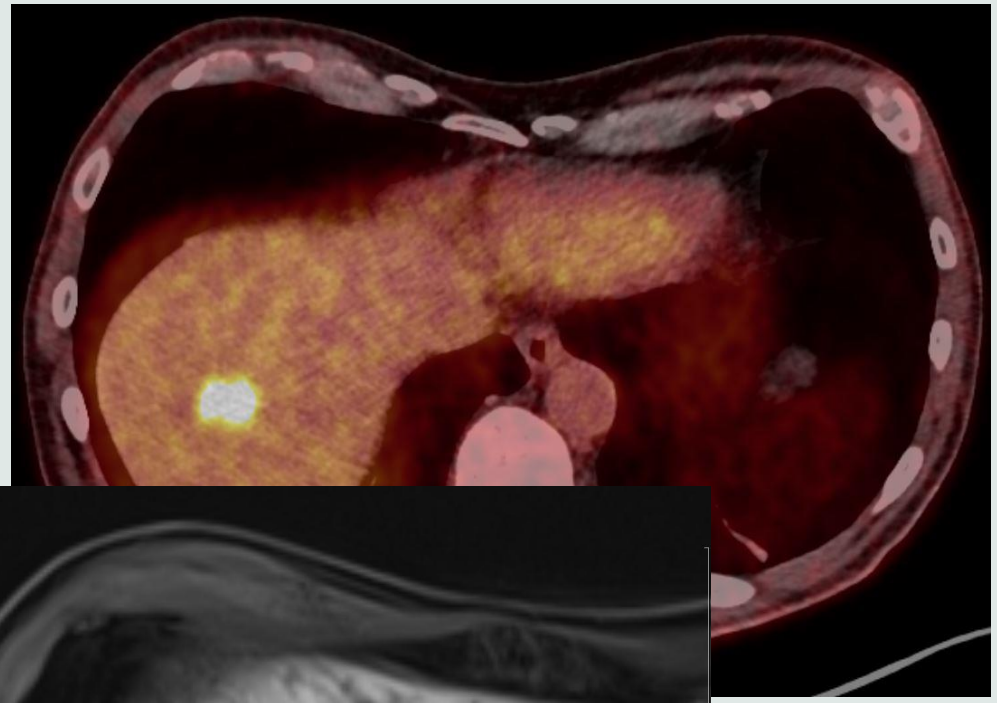


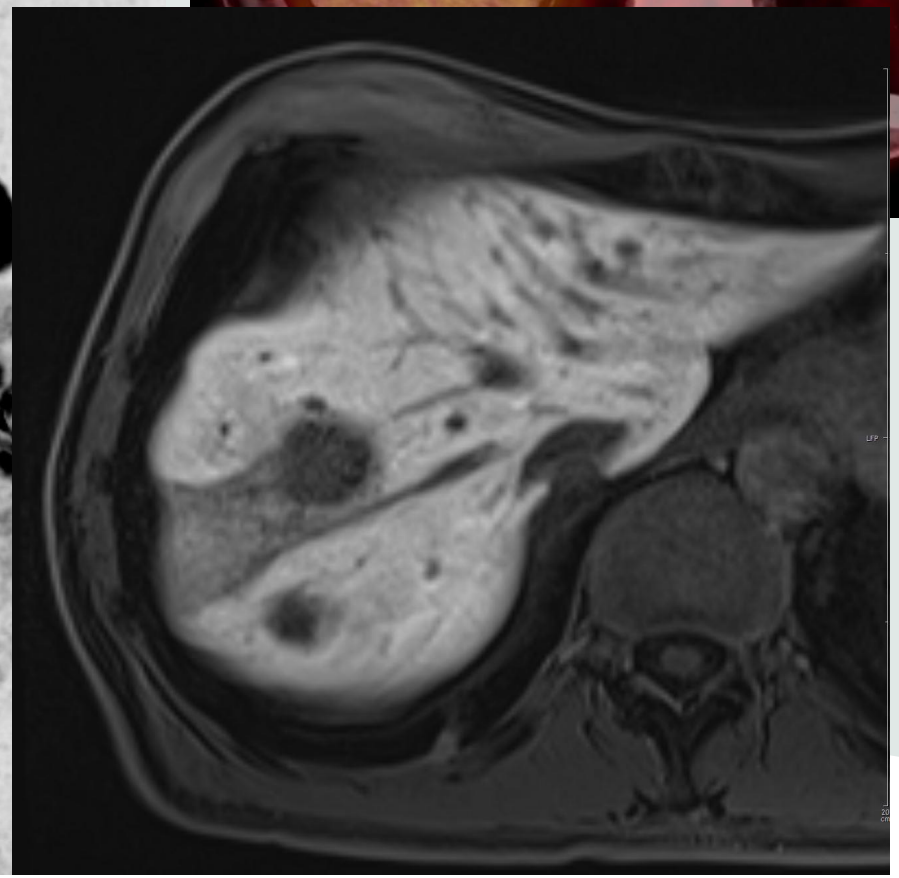
Interim analysis COLLISION trial – M. Meijerink et. al.; presented @CIRSE 2021

Case 1

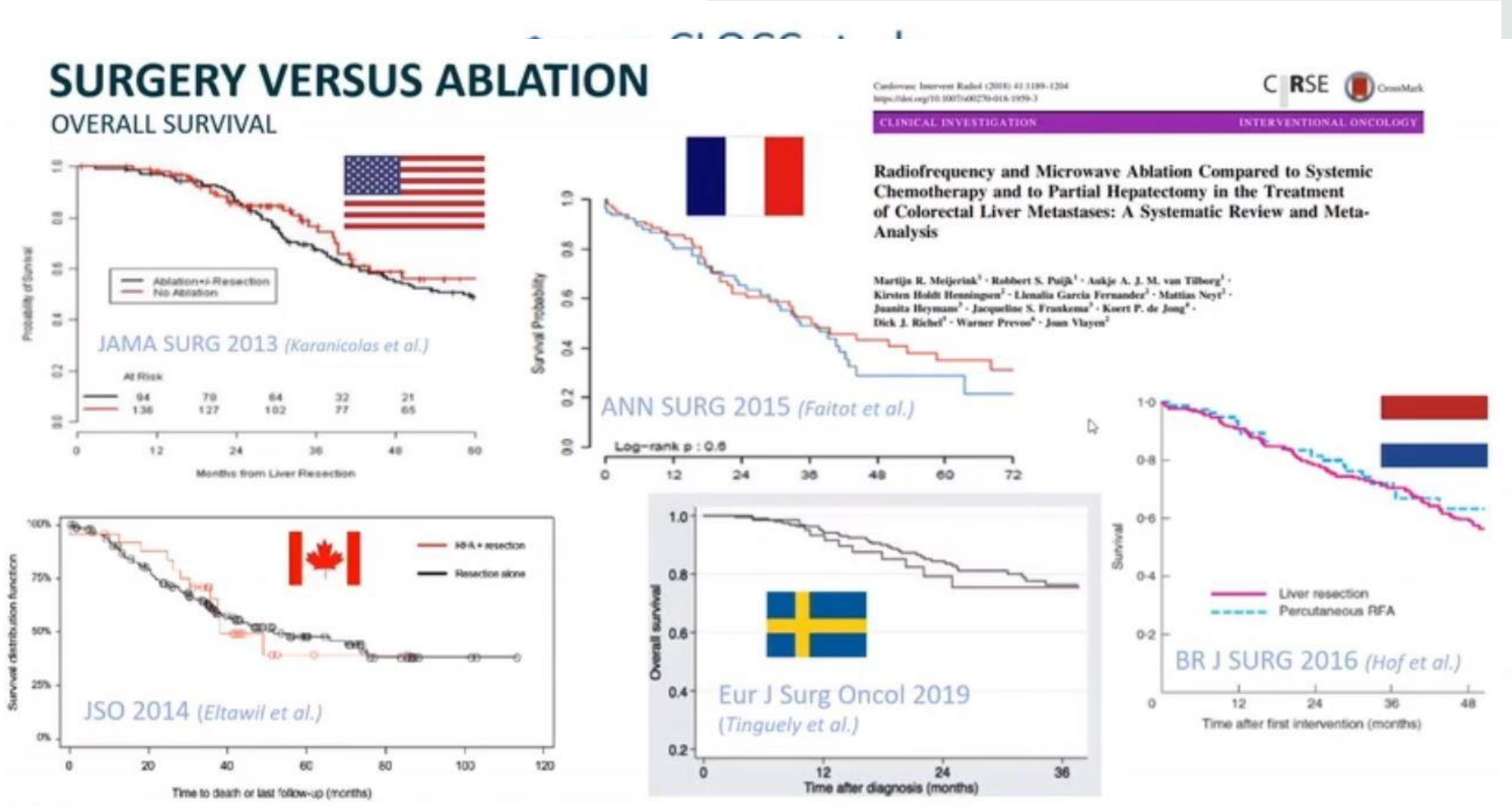
- 59y old patient
- Colon-CA pT3a pN2 cM1
- Surgery 2020
- adjuvant Chemo - complications
- 2023 new liver lesion:
  Seg. VIII central







CLRM Ablations



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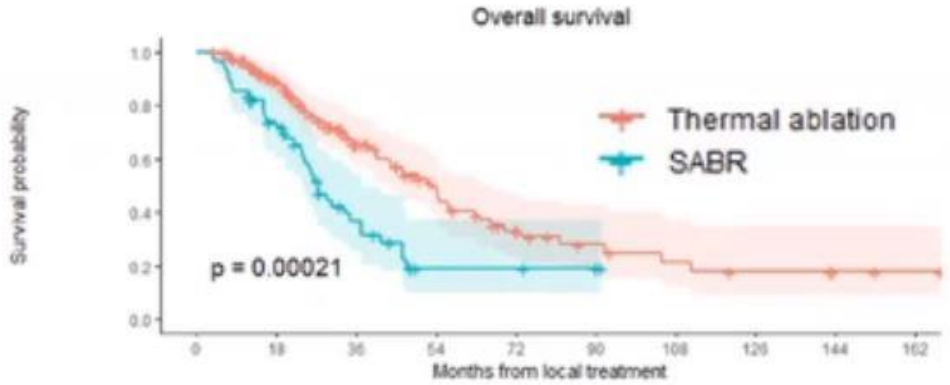

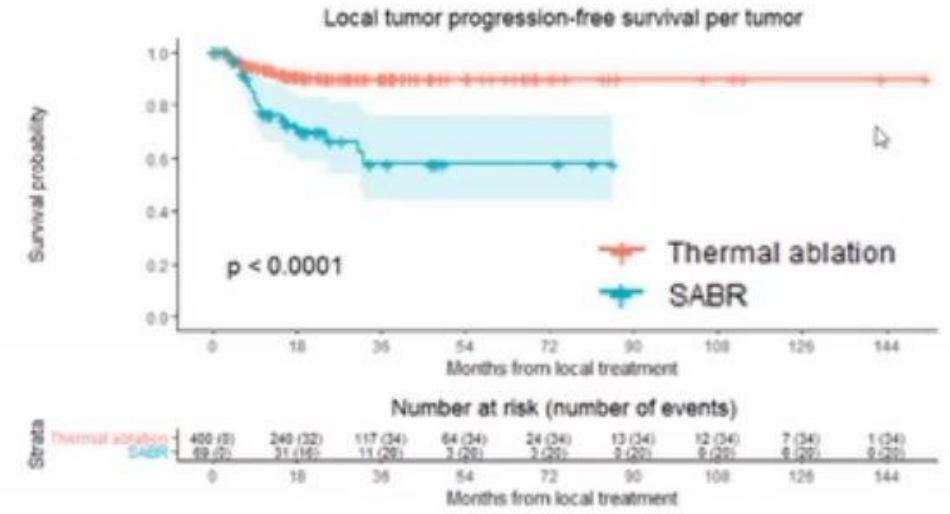

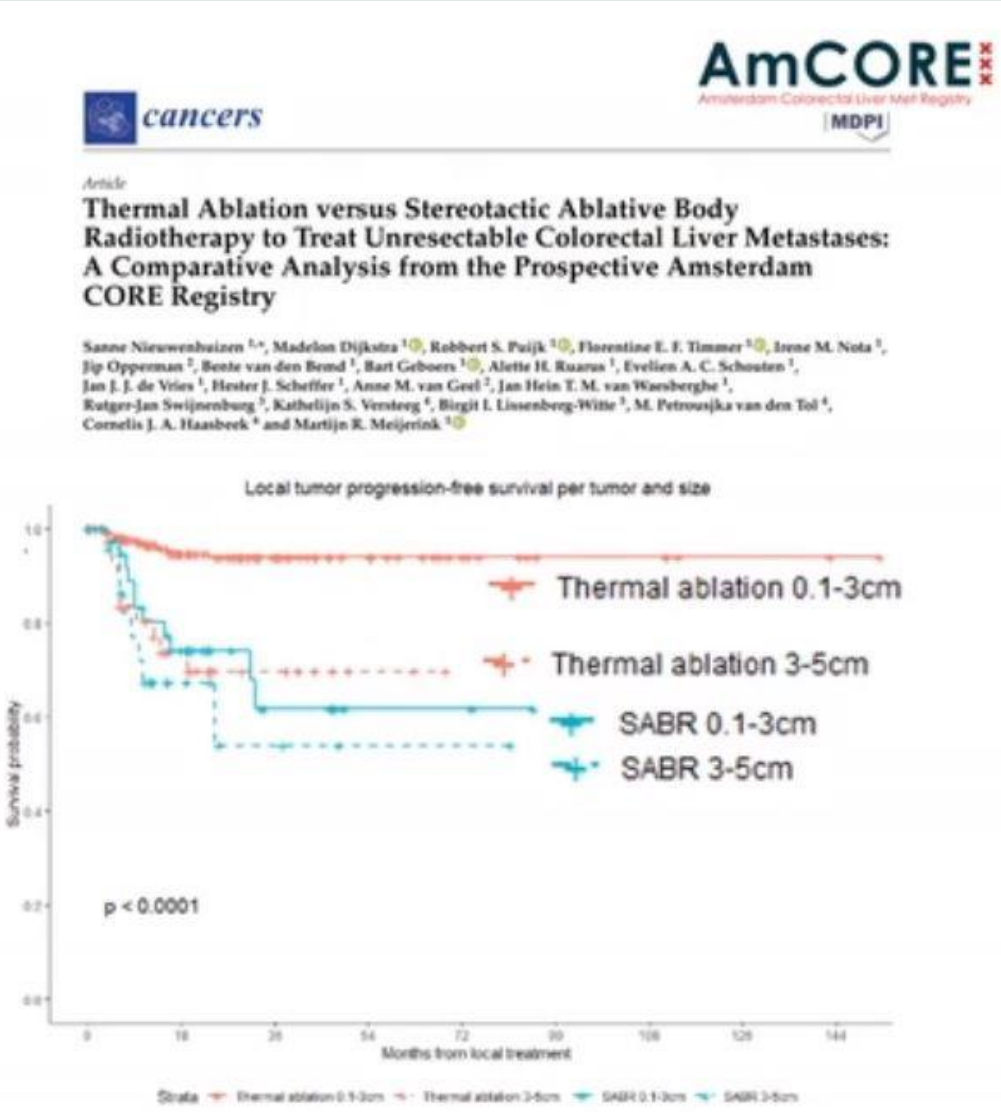

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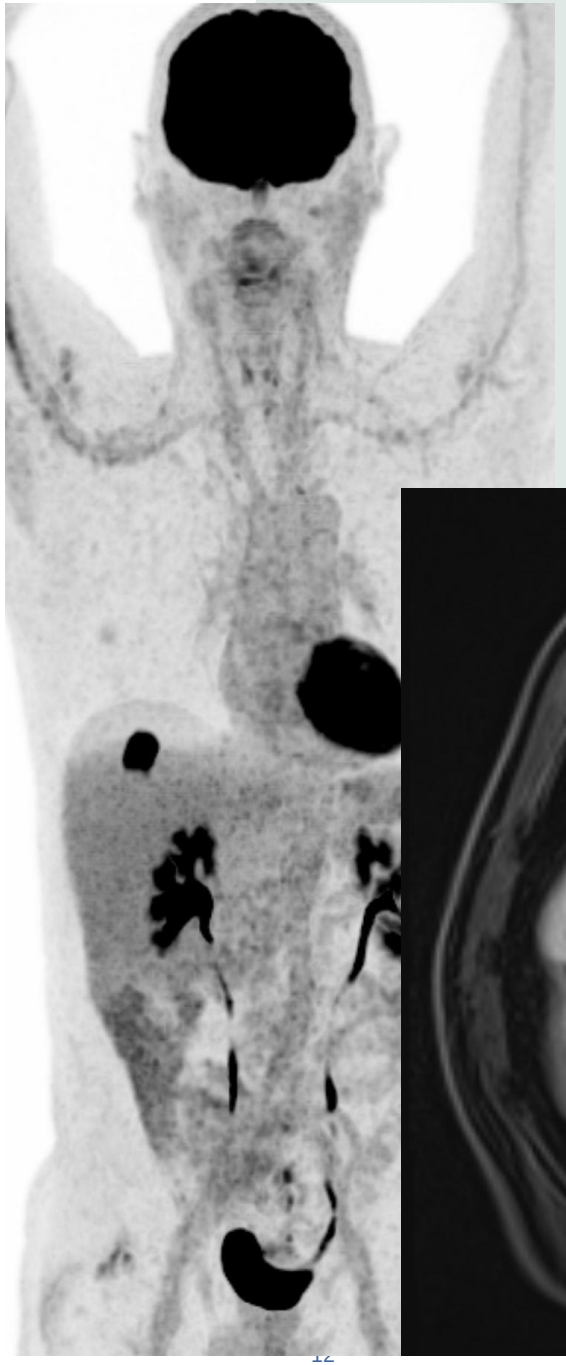

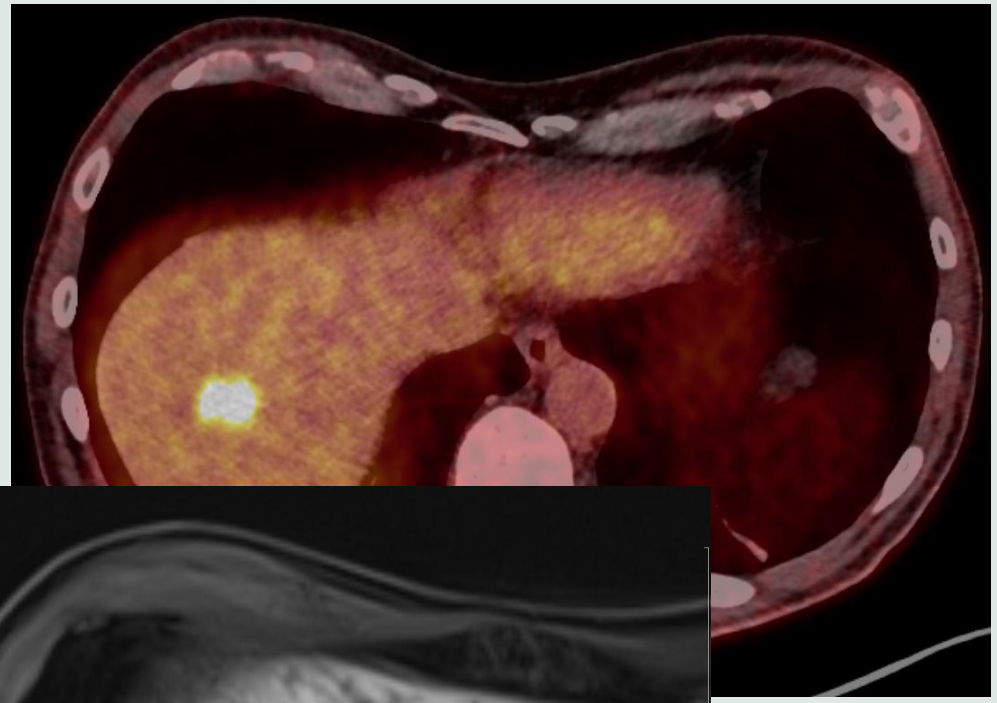

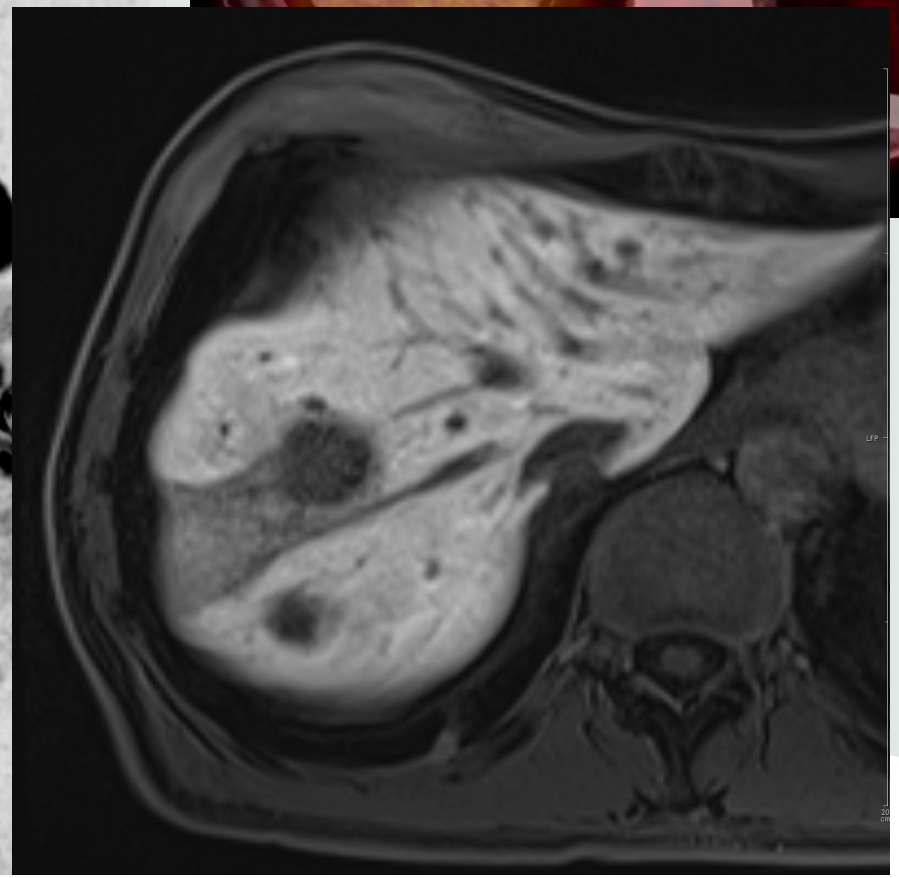

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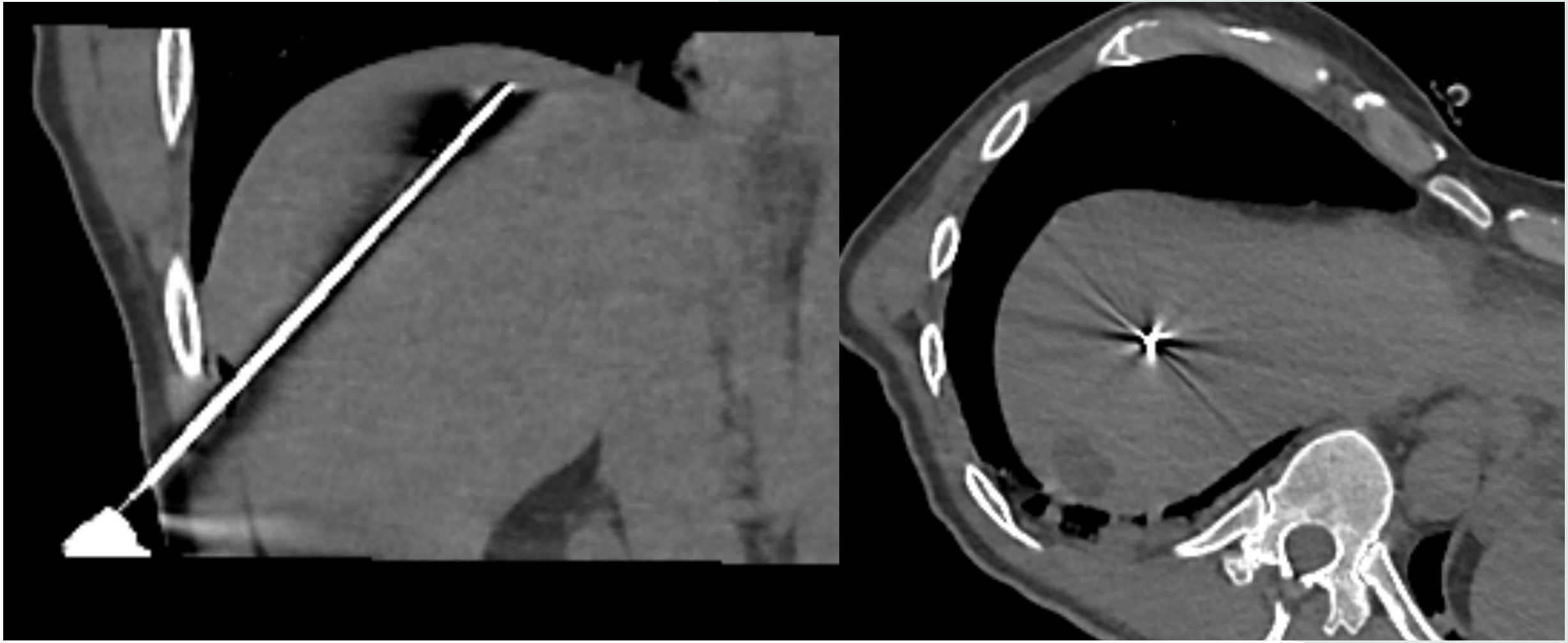

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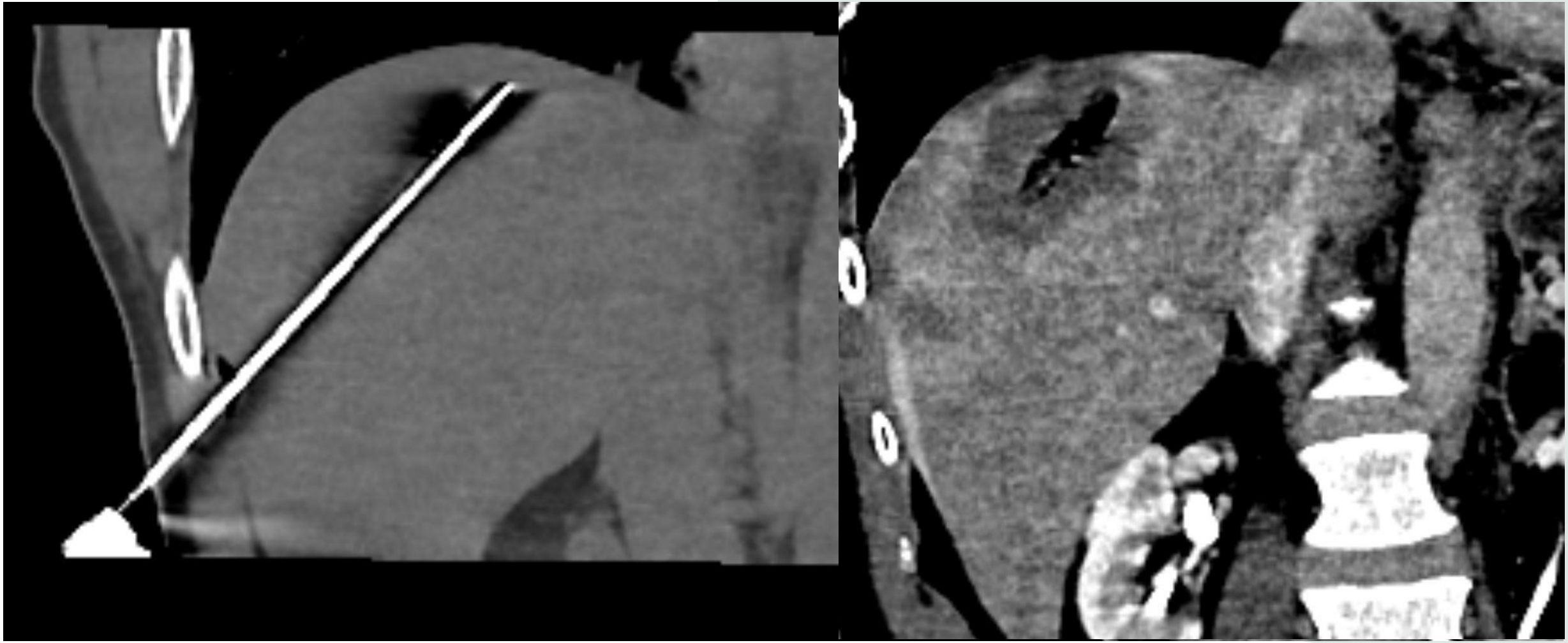
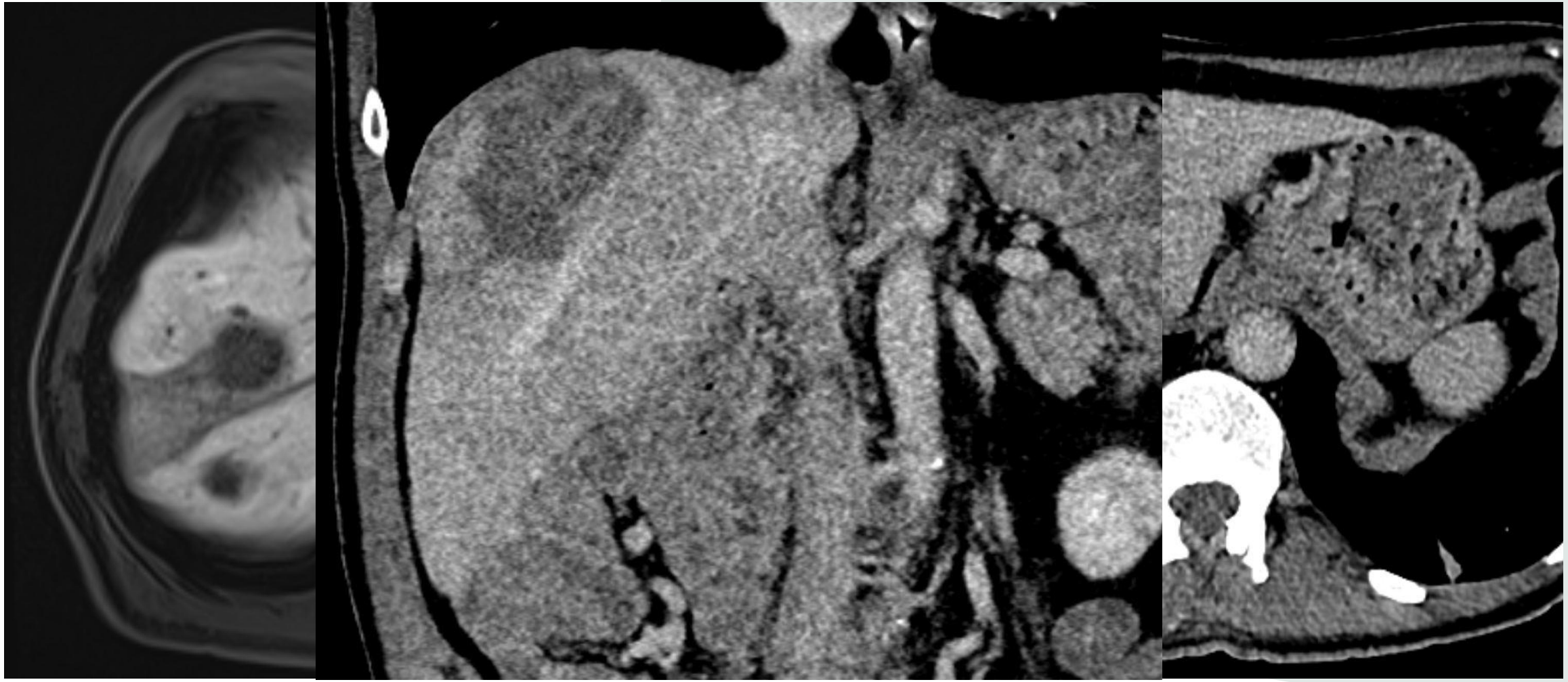
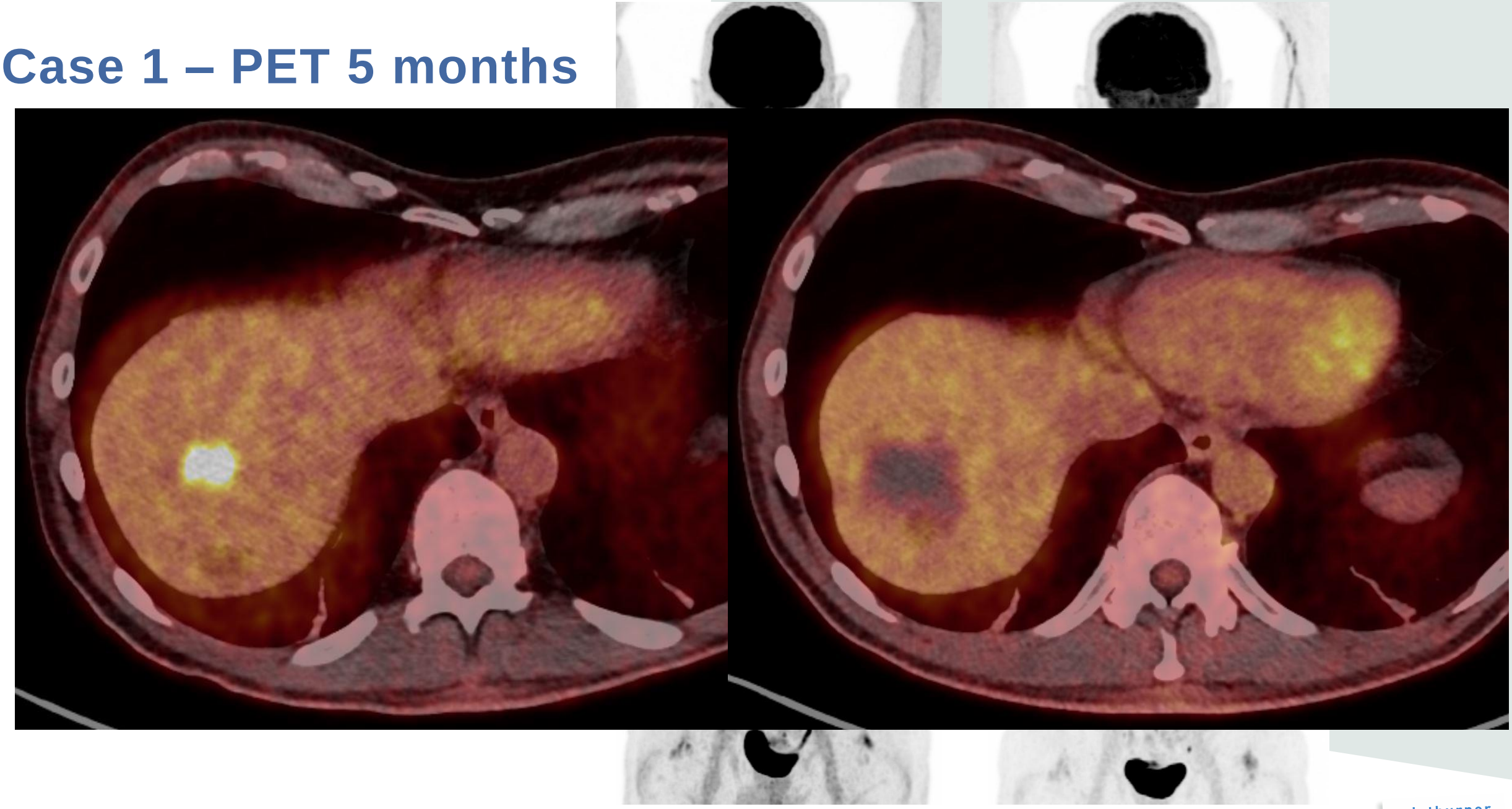


Case 1 – CT 3 months

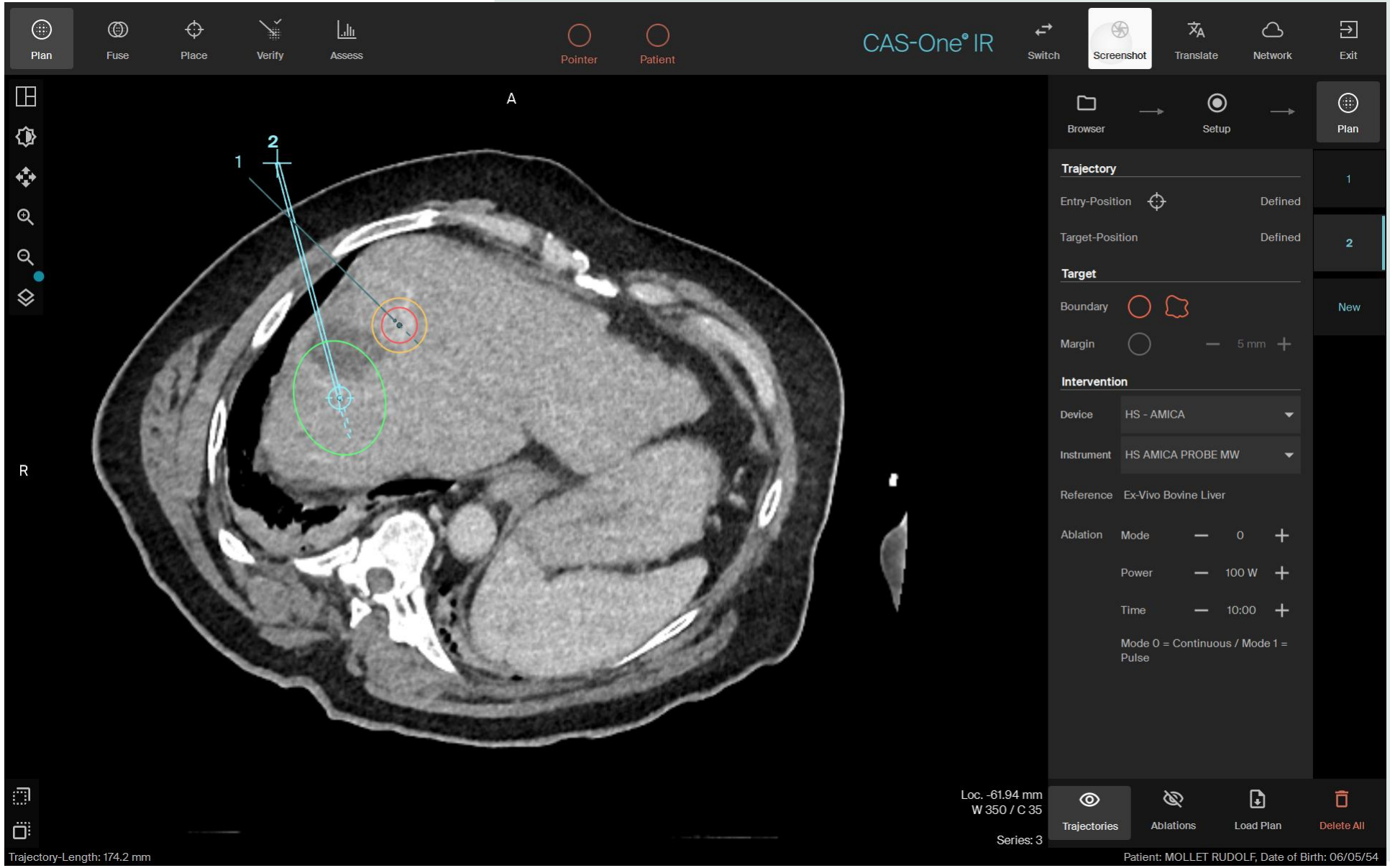


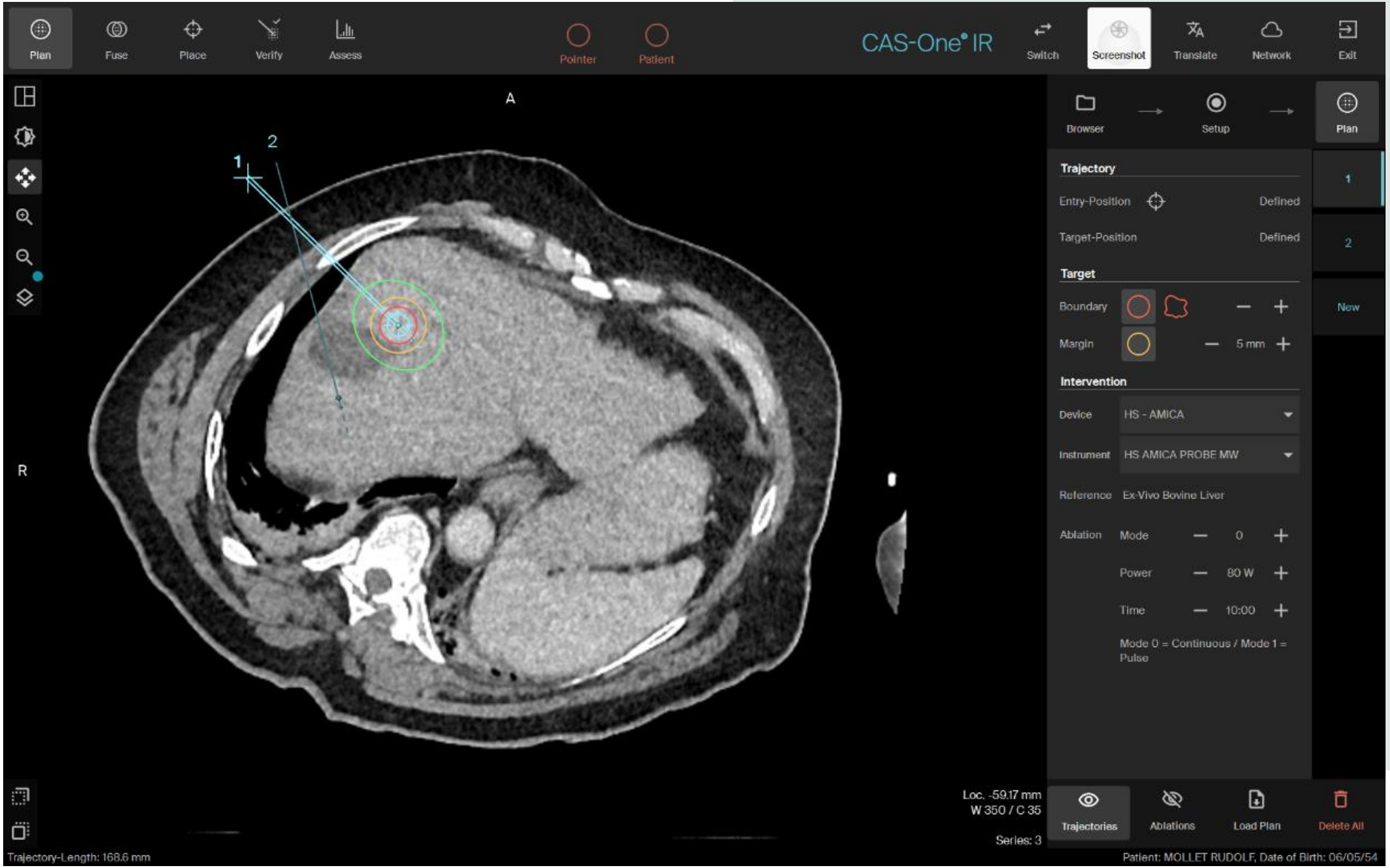
Case 1 – PET 5 months



Case 2

- Multifocal HCC





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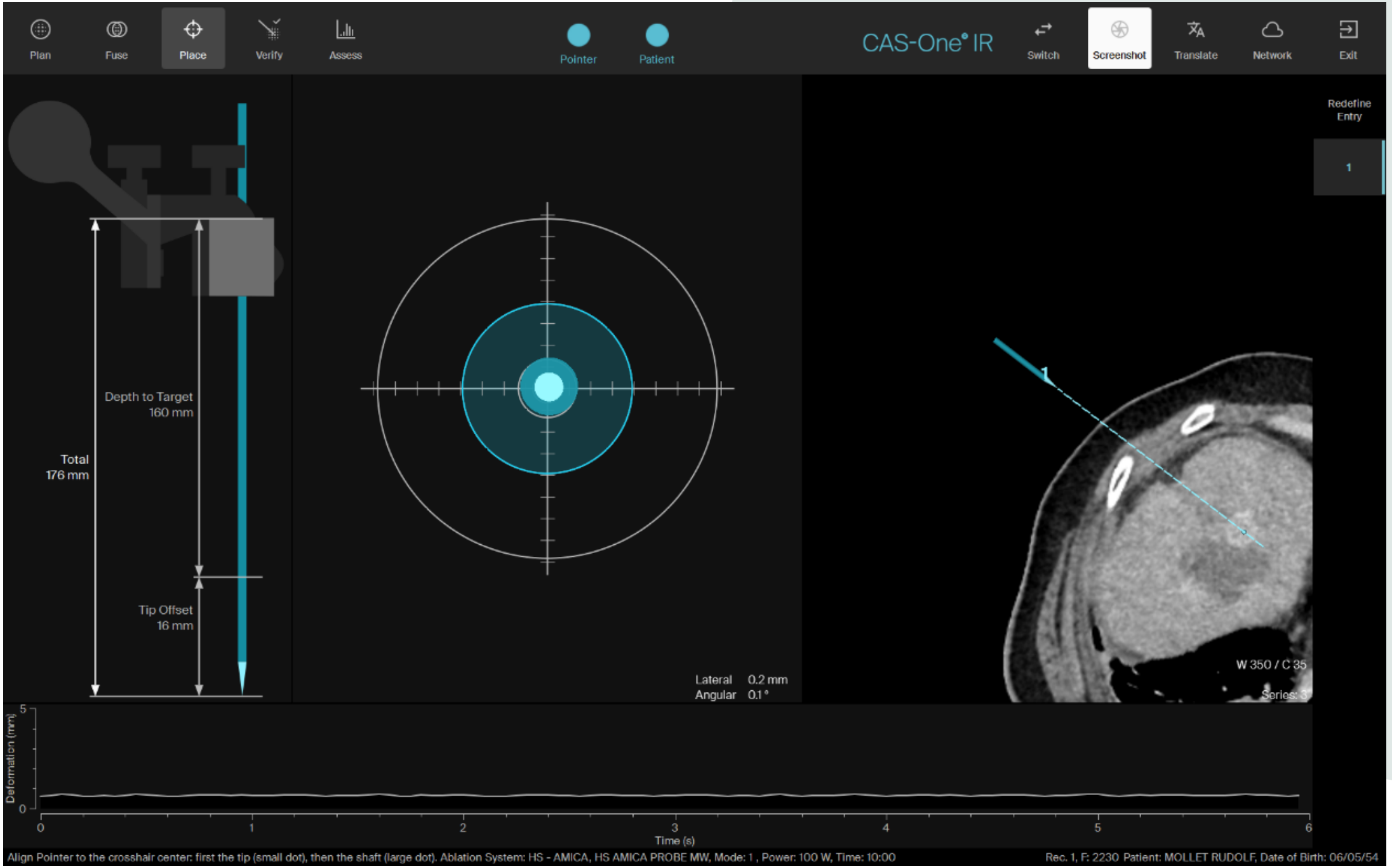

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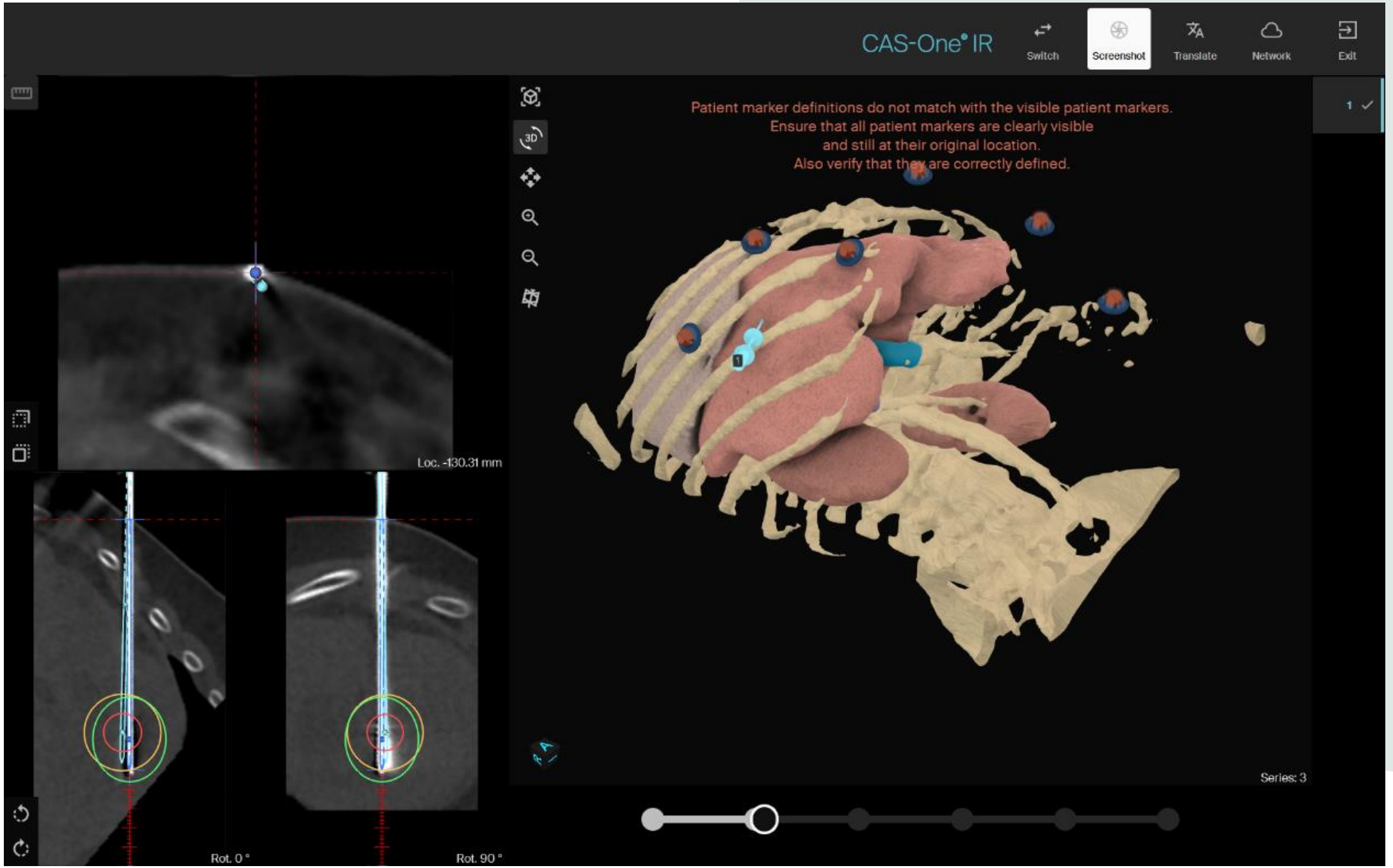
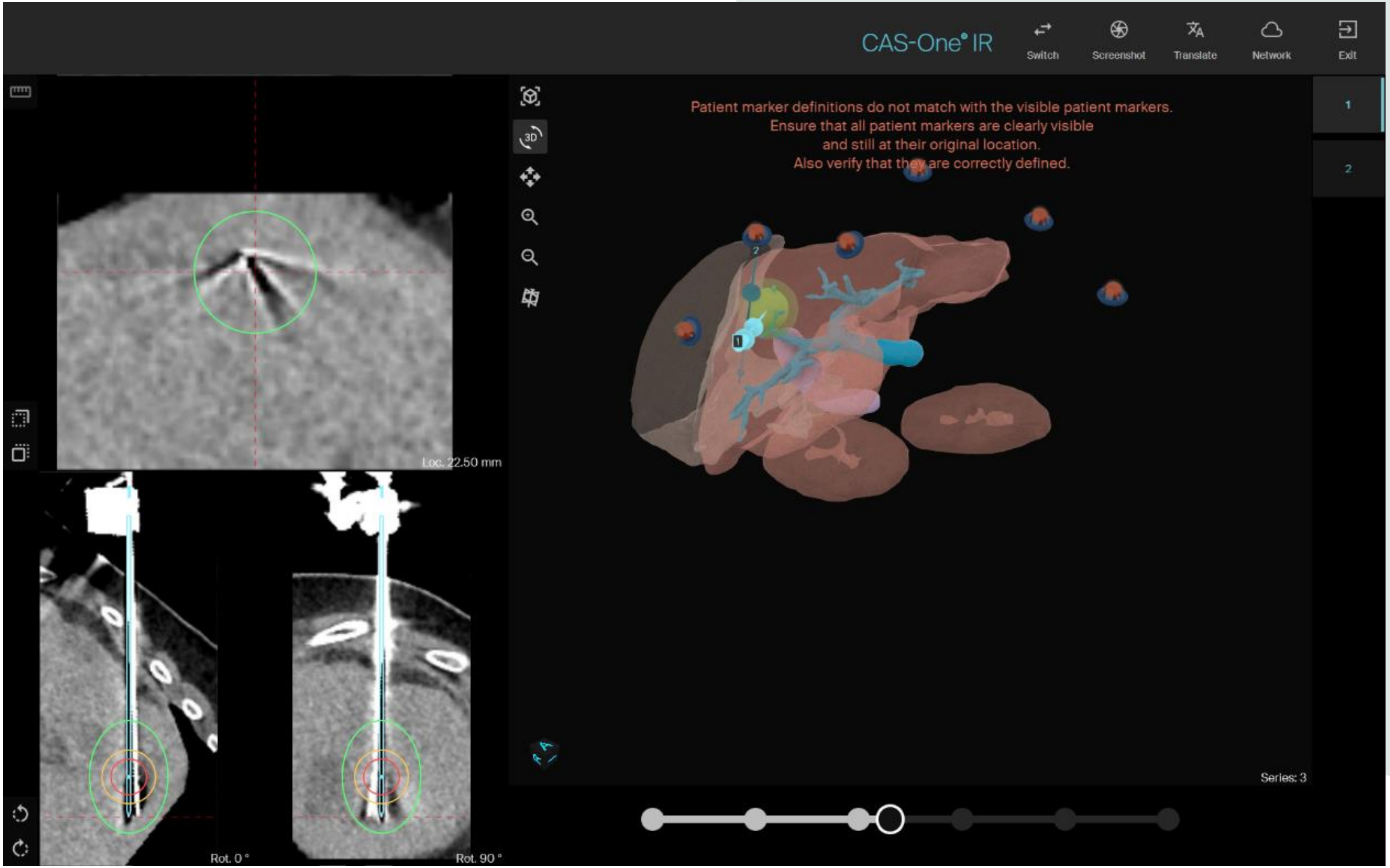

CAS-One® IR
Switch
Screenshot
Translate
Network
Exit
Patient marker definitions do not match with the visible patient markers.
Ensure that all patient markers are clearly visible
and still at their original location.
Also verify that they are correctly defined.
Loc. -130.31 mm
Rot. 0 °
Rot. 90 °
Series: 3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Switch
Screenshot
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Exit
Patient marker definitions do not match with the visible patient markers.
Ensure that all patient markers are clearly visible
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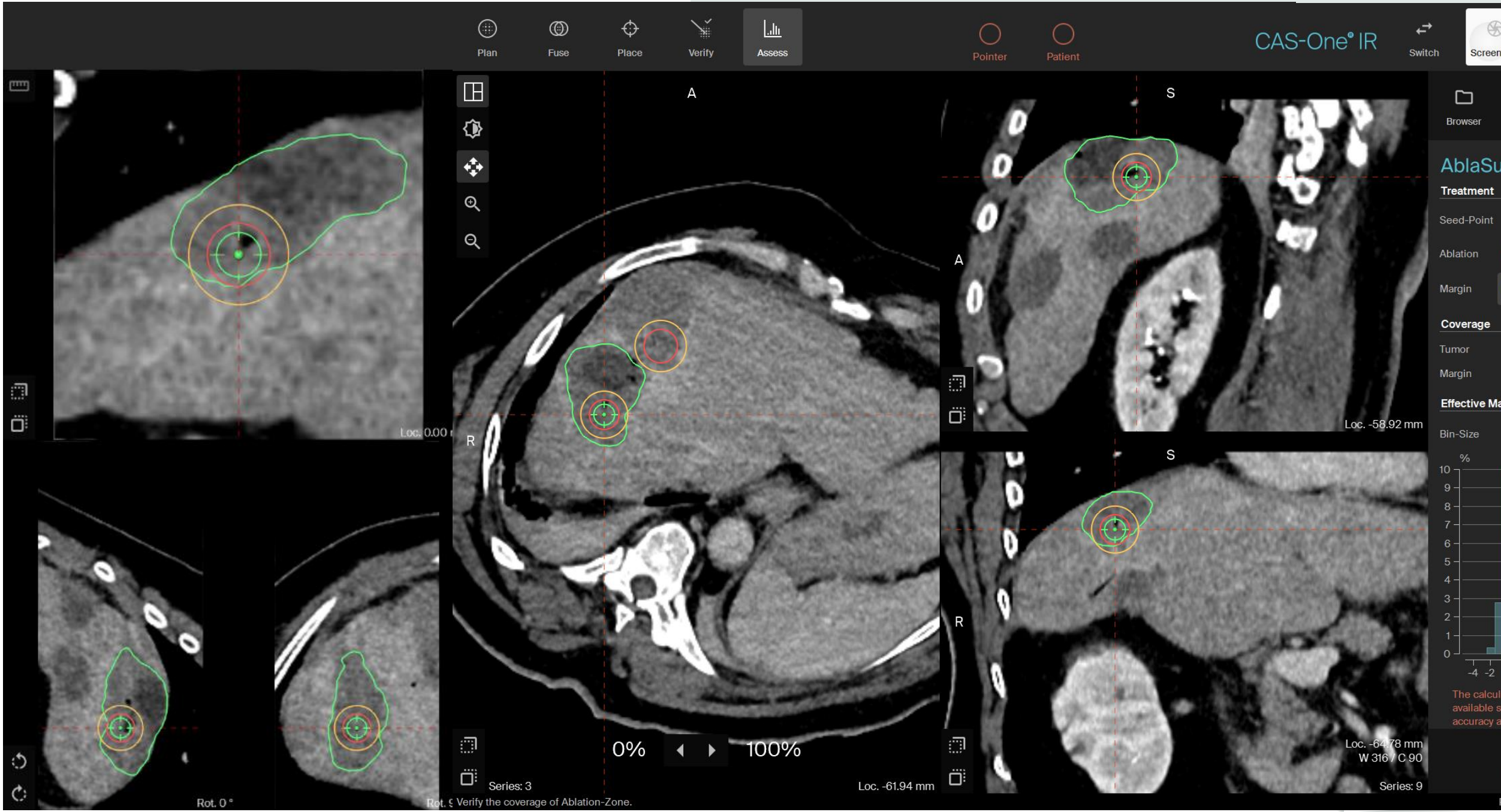
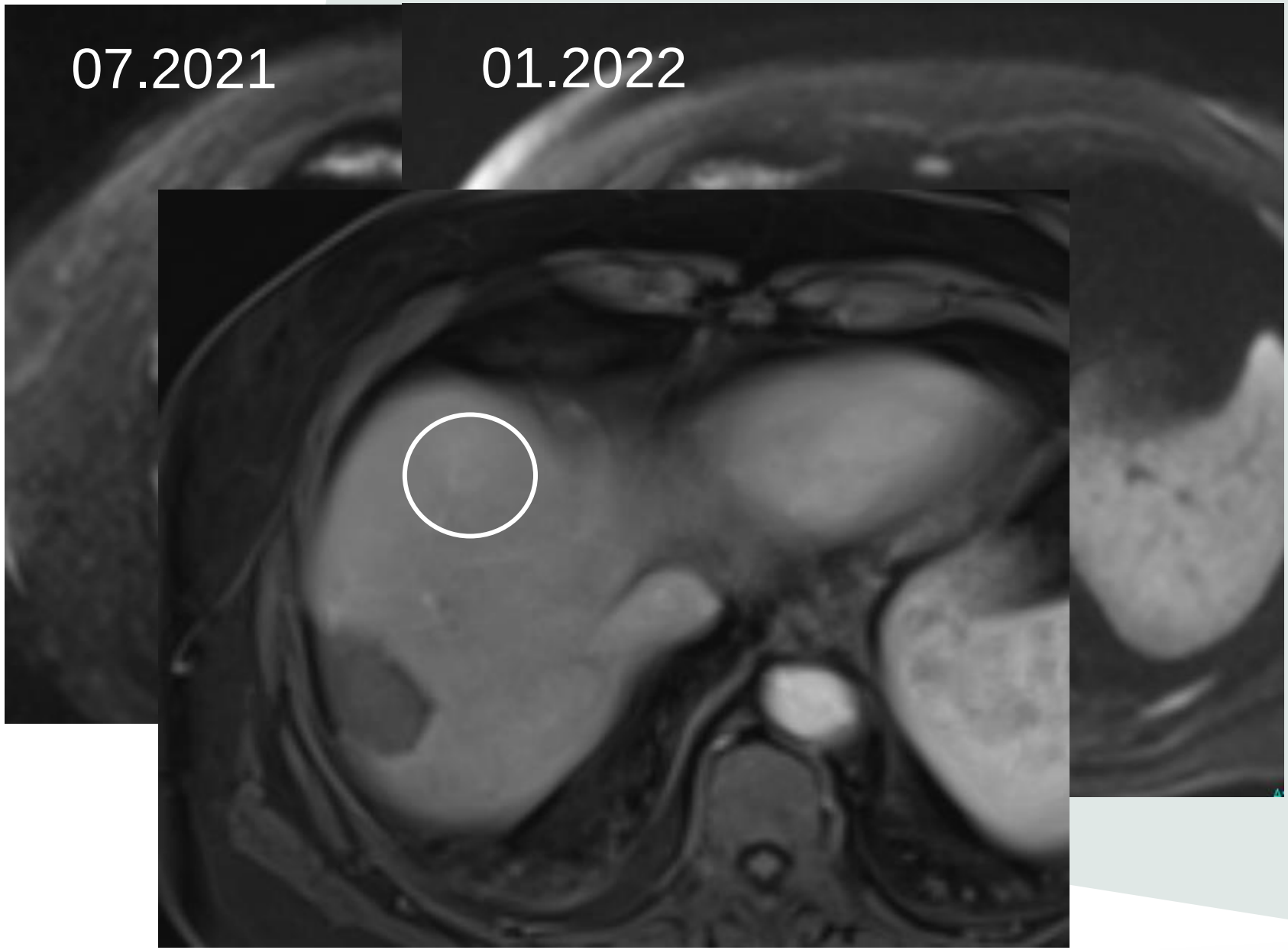
Also verify that they are correctly defined.
1
2
Loc. 22.50 mm
Rot. 0 °
Rot. 90 °
Series: 3


Plan
Fuse
Place
Verify
Assess
Pointer
Patient
CAS-One® IR
Switch
Screen
Browser
A
S
R
Loc. -58.92 mm
Loc. -61.94 mm
Loc. -64.78 mm
W 316 / C 90
Series: 3
Series: 9
0%
100%
Rot. 0 °
Verify the coverage of Ablation-Zone.
AblaSu
Treatment
Seed-Point
Ablation
Margin
Coverage
Tumor
Margin
Effective Ma
Bin-Size
%
10
9
8
7
6
5
4
3
2
1
0
-4
-2
The calcul
available s
accuracy a

Case 3

- 77y old patient
- Known HCC; 4 previous ablations
- New / enlarging Lesion:
- Seg. IVa
- detected on DWI



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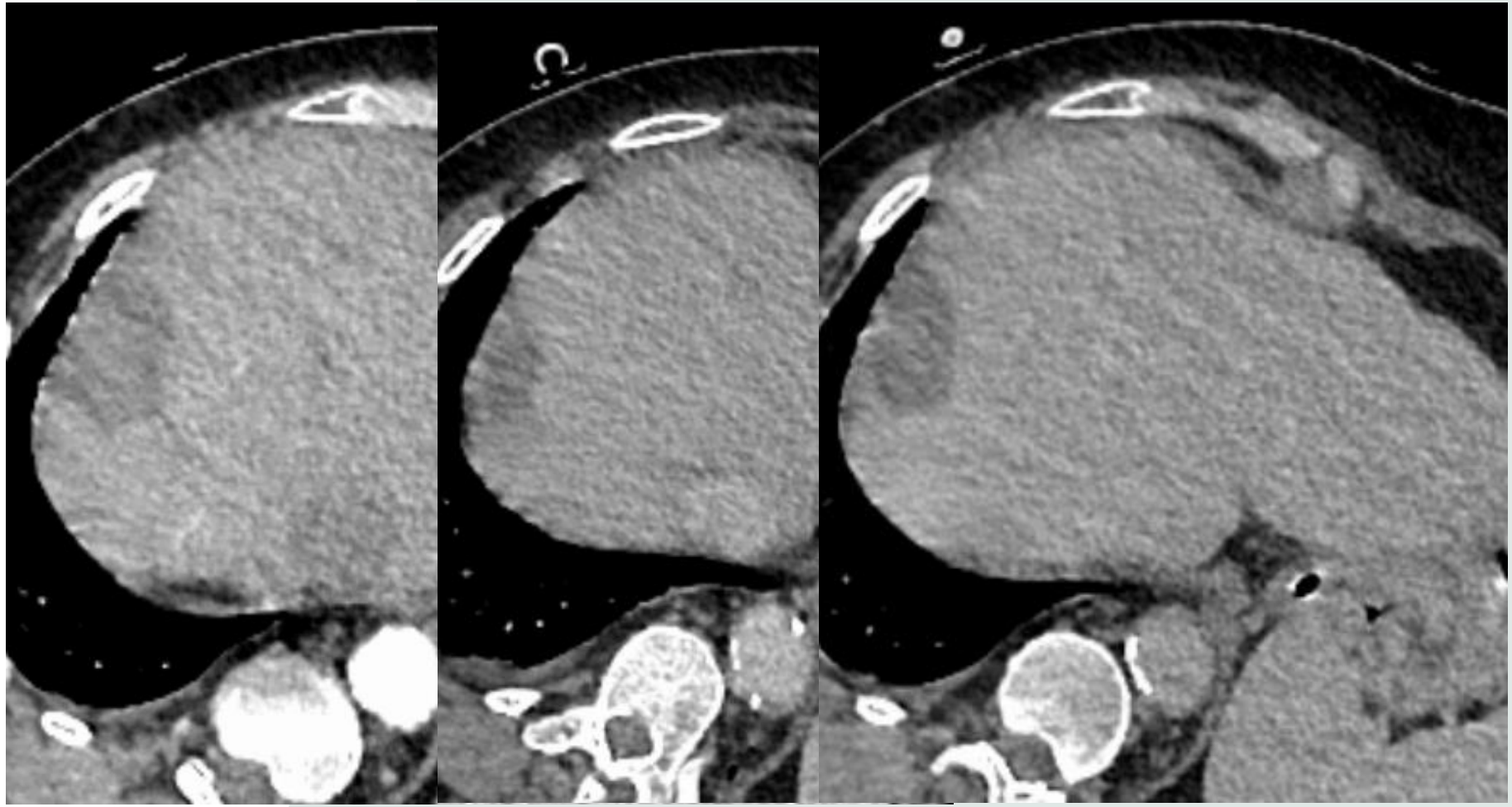

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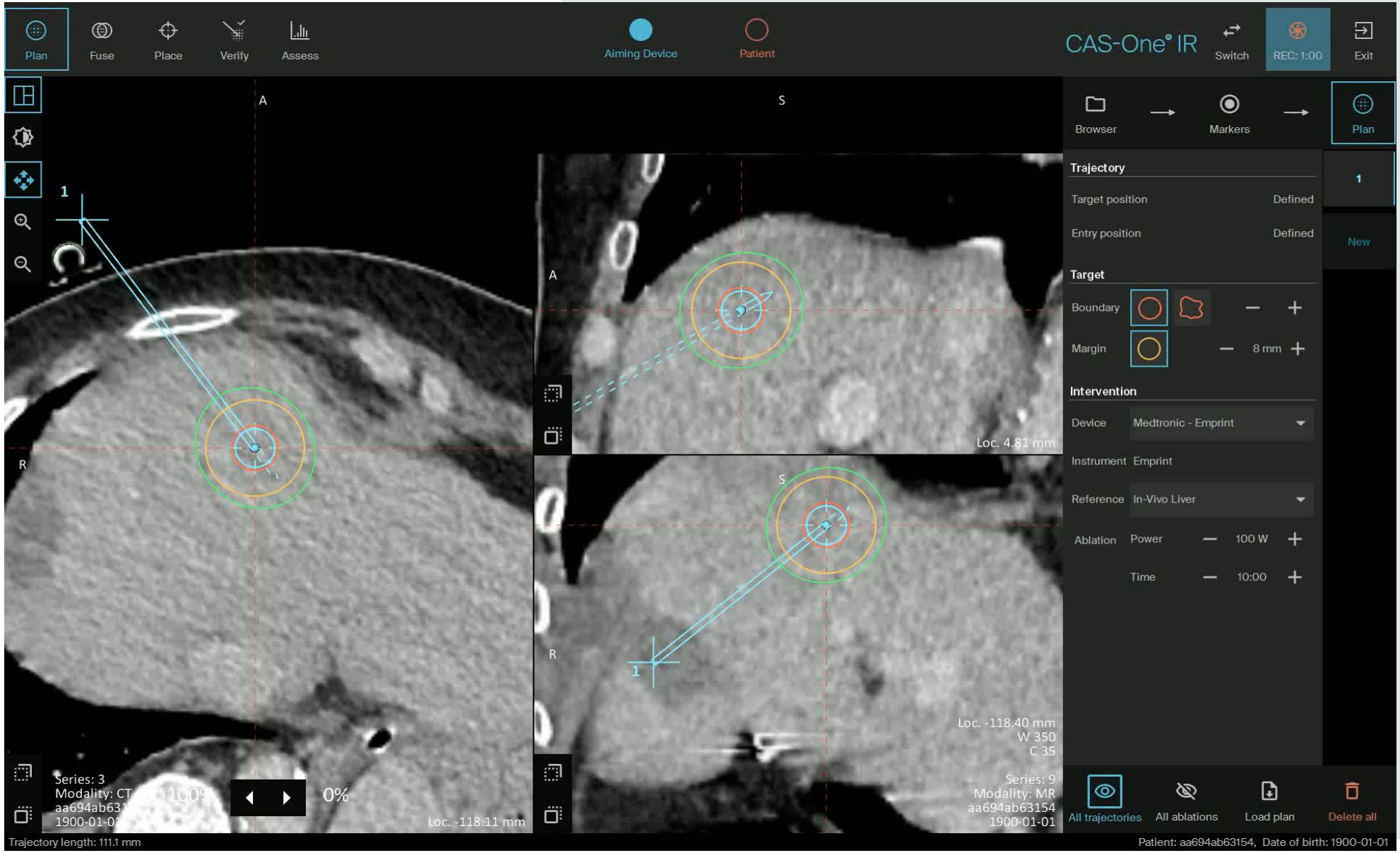
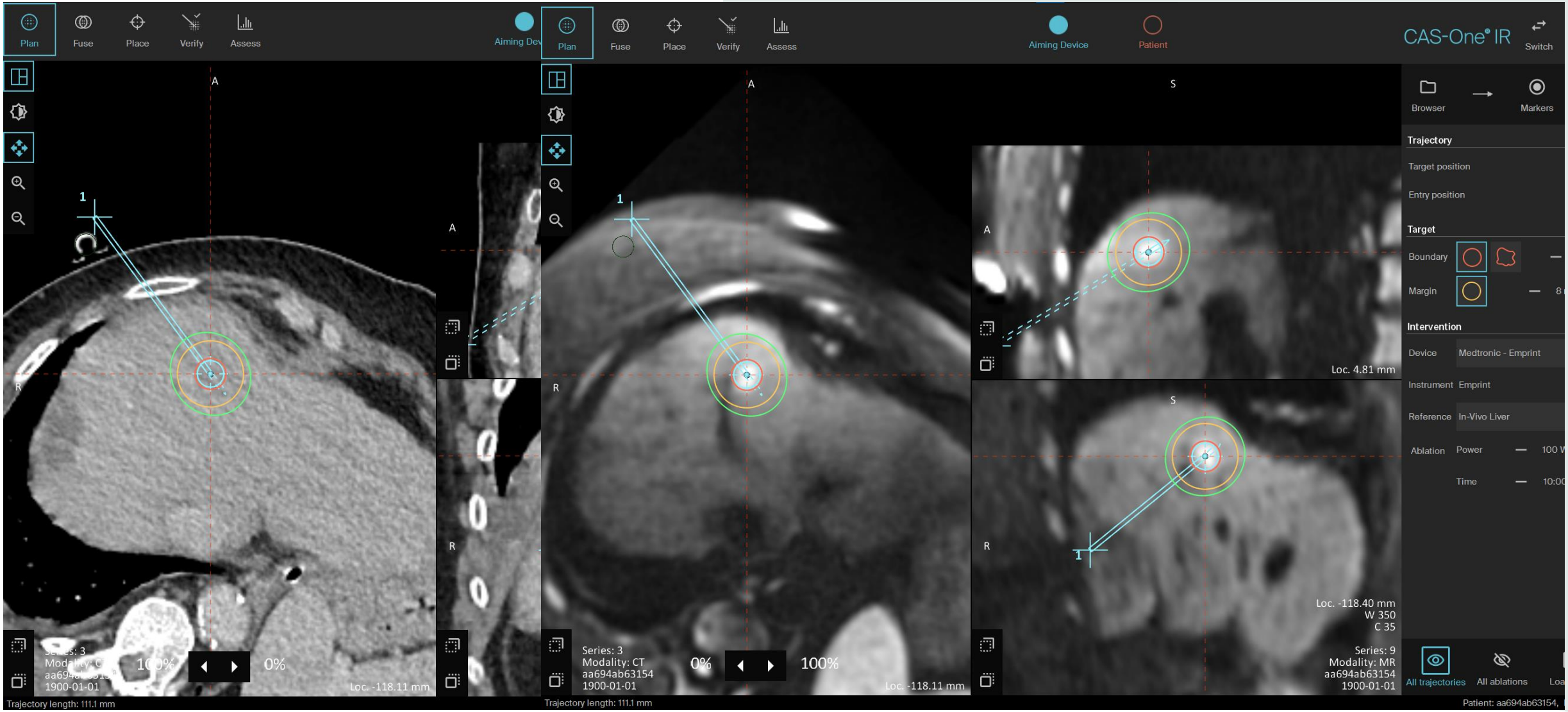

Plan
Fuse
Place
Verify
Assess
Aiming Device
Patient
CAS-One® IR
Switch
REC: 1:00
Exit
Browser
Markers
Plan
Trajectory
Target position
Defined
Entry position
Defined
Target
Boundary
Margin
8 mm
Intervention
Device
Medtronic - Emprint
Instrument
Emprint
Reference
In-Vivo Liver
Ablation
Power
100 W
Time
10:00
1
New
Loc. 4.81 mm
Loc. -118.11 mm
Loc. -118.40 mm
W 350
C 35
Series: 3
Modality: CT
Series: 9
Modality: MR
aa694ab63154
1900-01-01
0%
All trajectories
All ablations
Load plan
Delete all
Trajectory length: 111.1 mm
Patient: aa694ab63154, Date of birth: 1900-01-01

Case 2


Plan
Fuse
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Verify
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Switch
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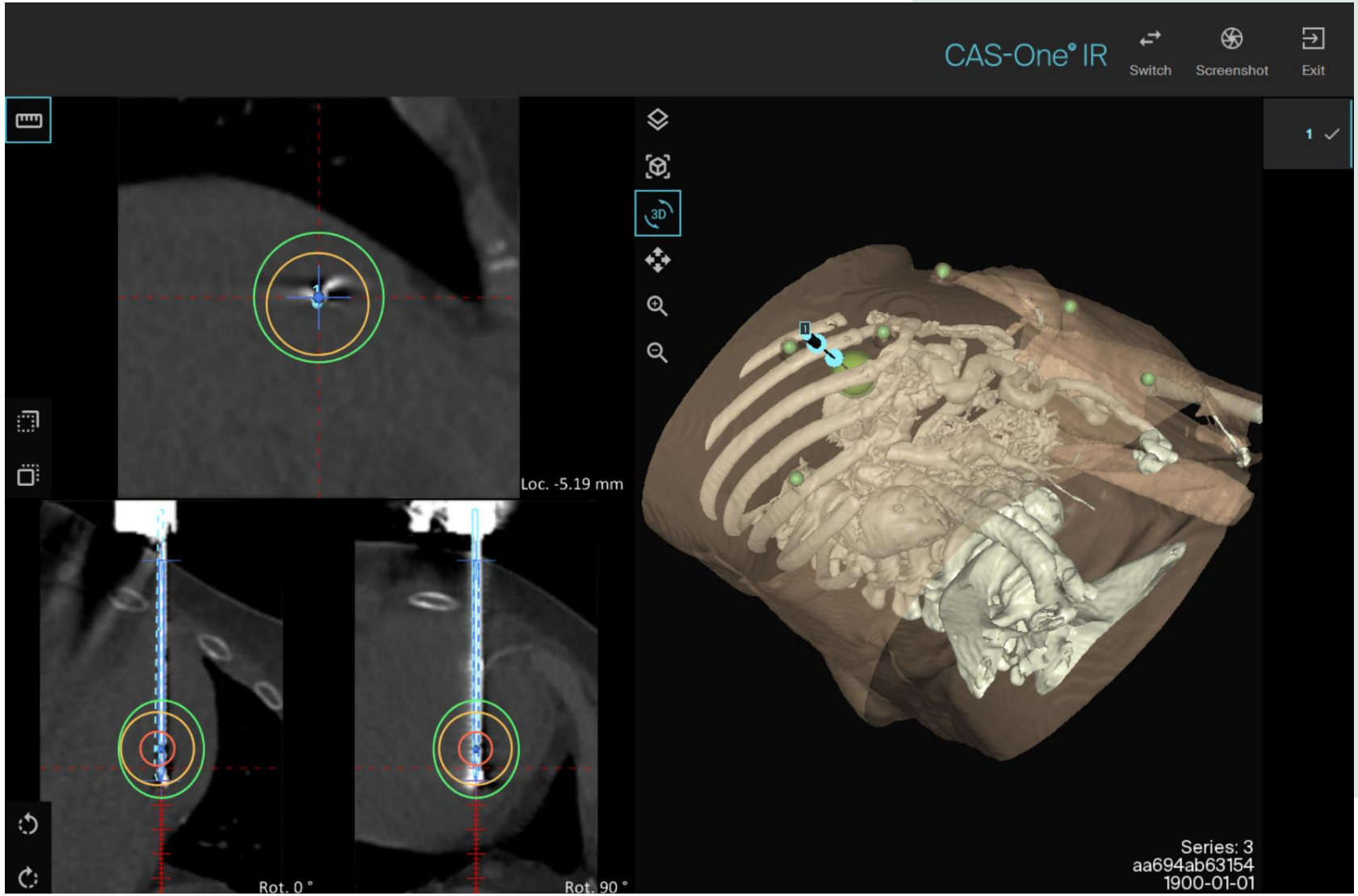
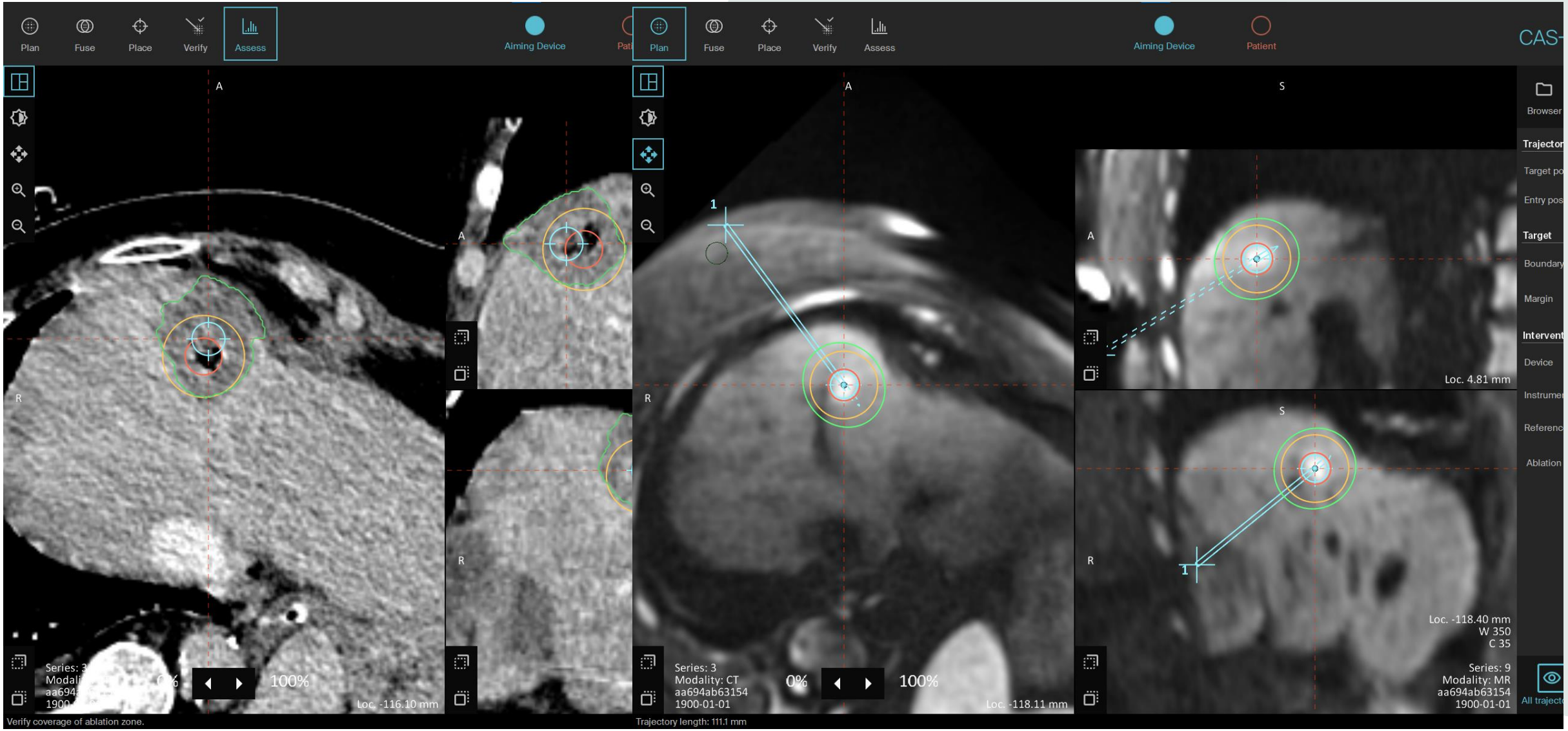
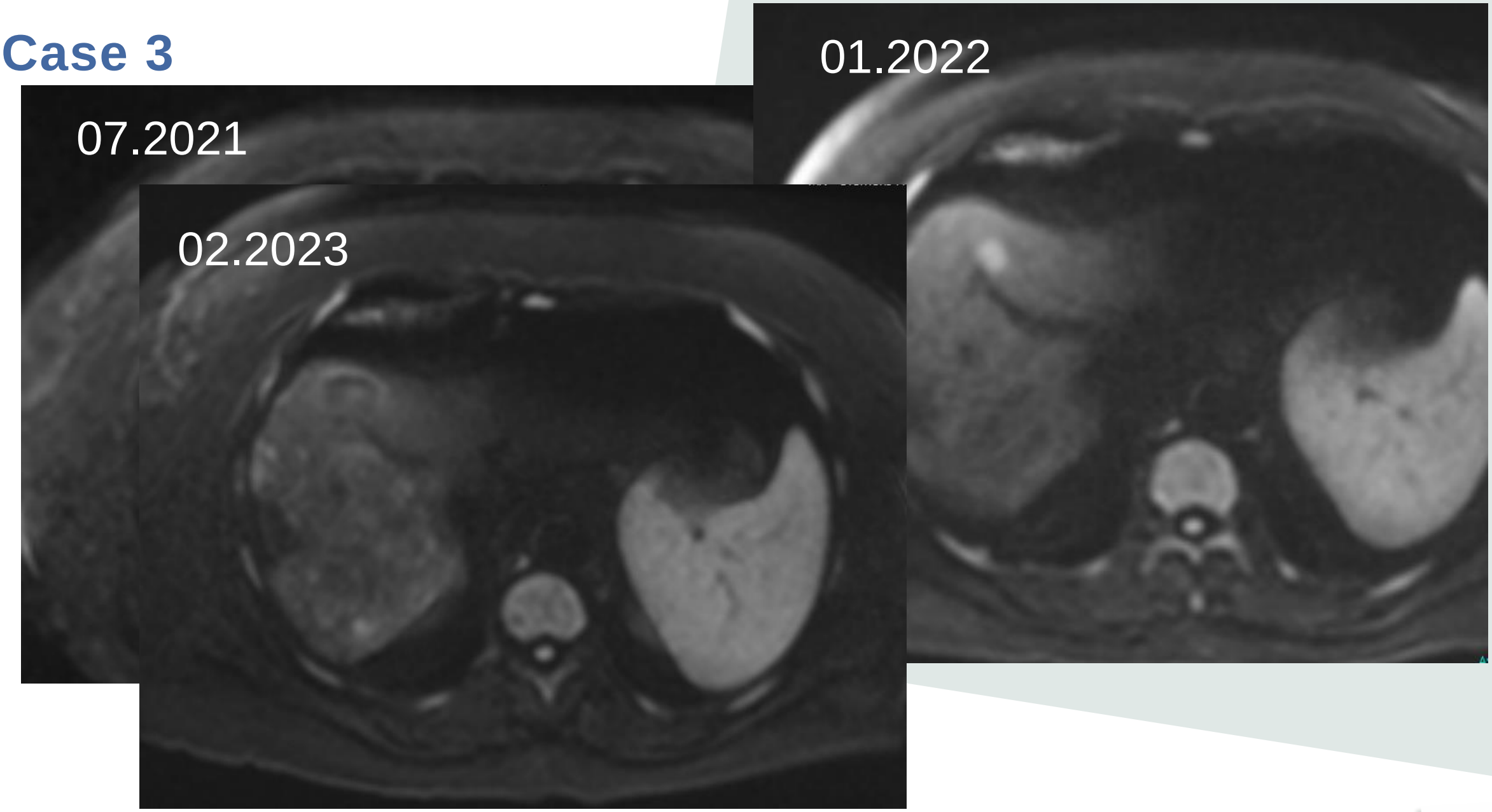
Case 3


CAS-One® IR
Switch
Screenshot
Exit
Loc. -5.19 mm
Rot. 0 °
Rot. 90 °
Series: 3
aa694ab63154
1900-01-01

Case 3

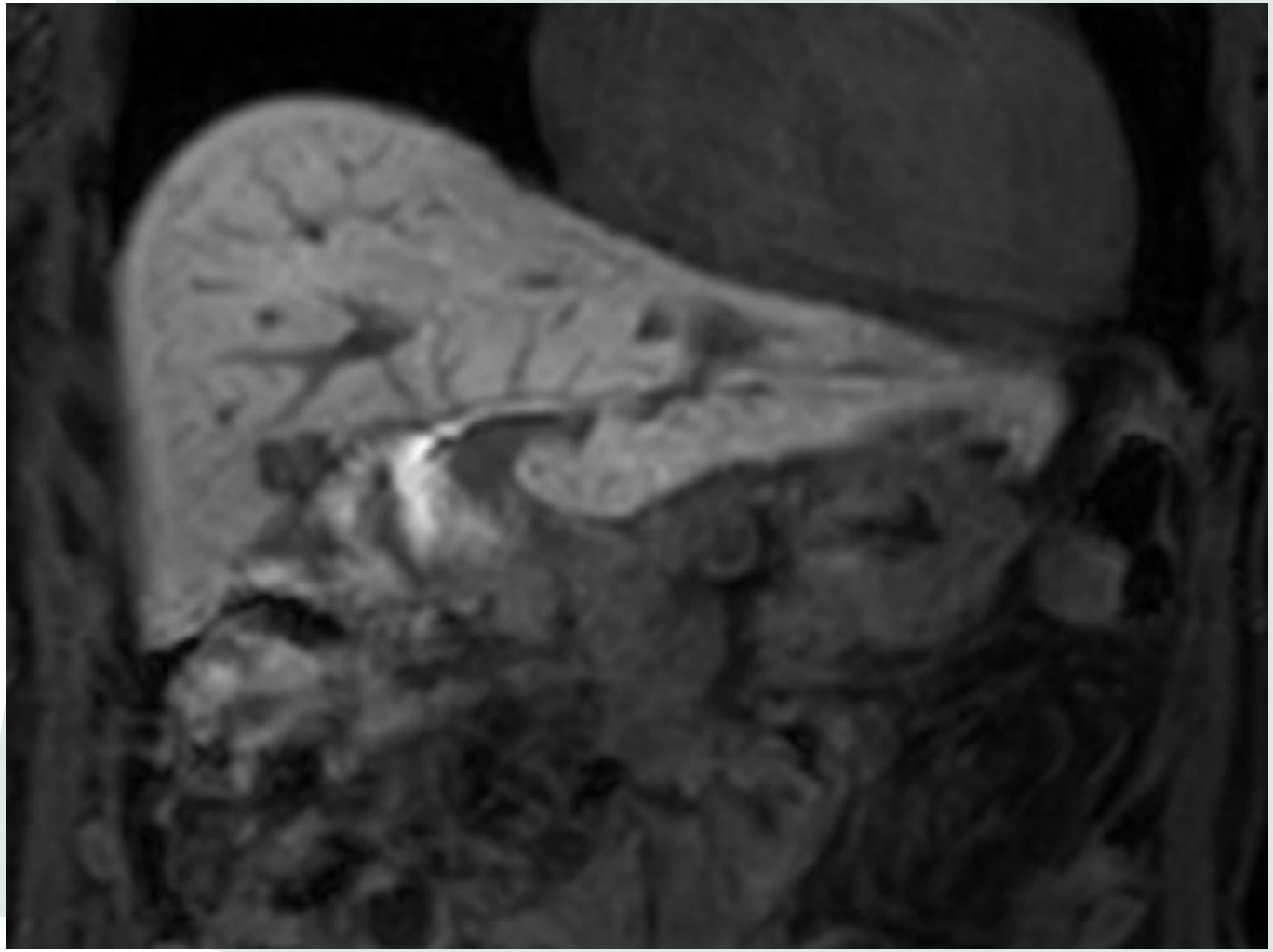

Plan
Fuse
Place
Verify
Assess
Aiming Device
Patient
Browser
Trajectory
Target
Boundary
Margin
Device
Ablation
Loc. 4.81 mm
Loc. -116.10 mm
Loc. -118.11 mm
Loc. -118.40 mm
W 350
C 35
Series: 3
Modality: CT
aa694ab63154
1900-01-01
Series: 9
Modality: MR
0%
100%
Verify coverage of ablation zone.
Trajectory length: 111.1 mm

Case 3



Case 4

- 77y old patient
- Known CCC / Klatskin Tumor
- Resektion / Anastomosis 2020
- New single hepatic lesion:
  - Seg. V
  - In close contact with anastomosis/intestines
  - PET +
- Pt. refused hemihepatectomy



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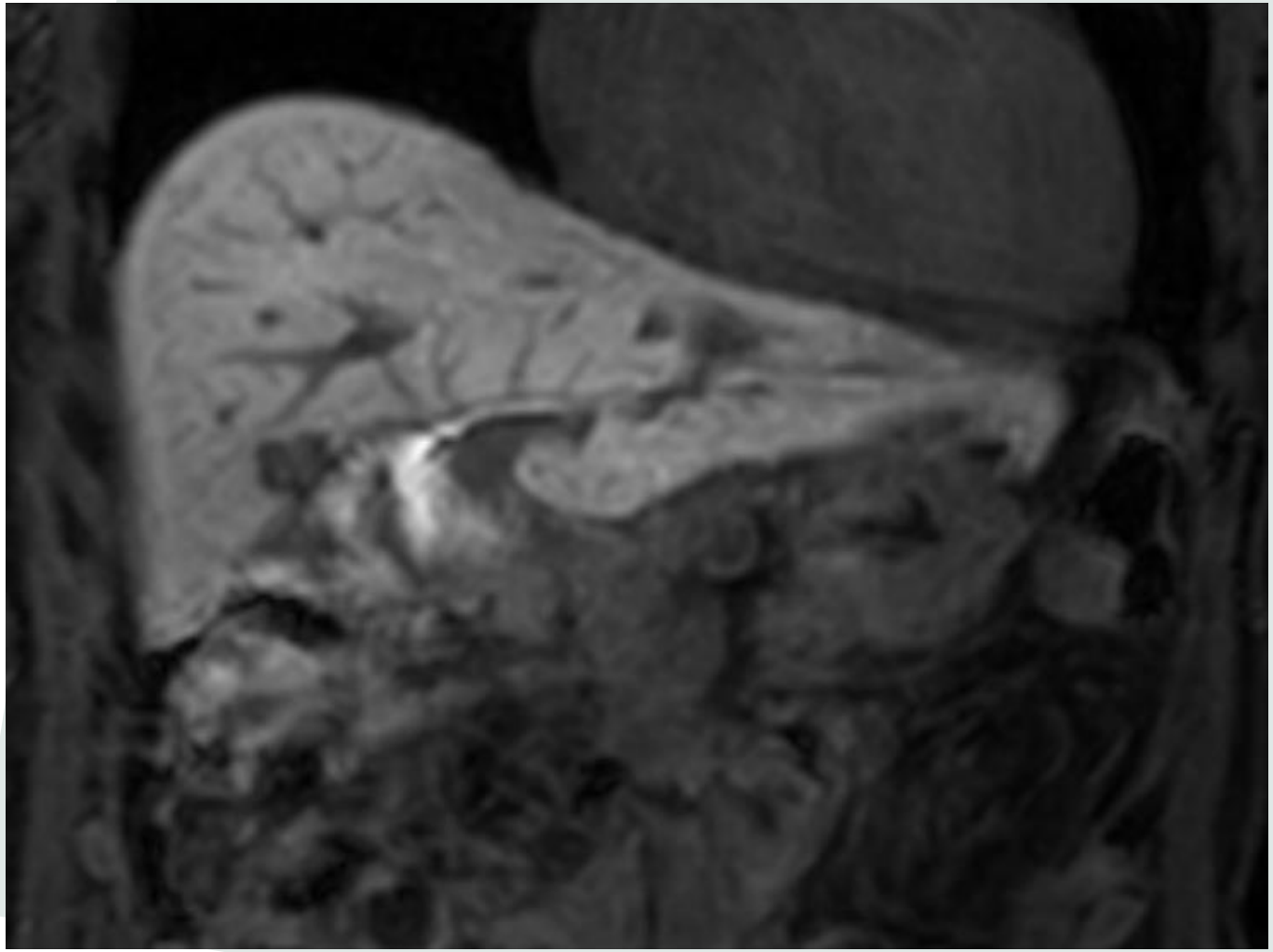

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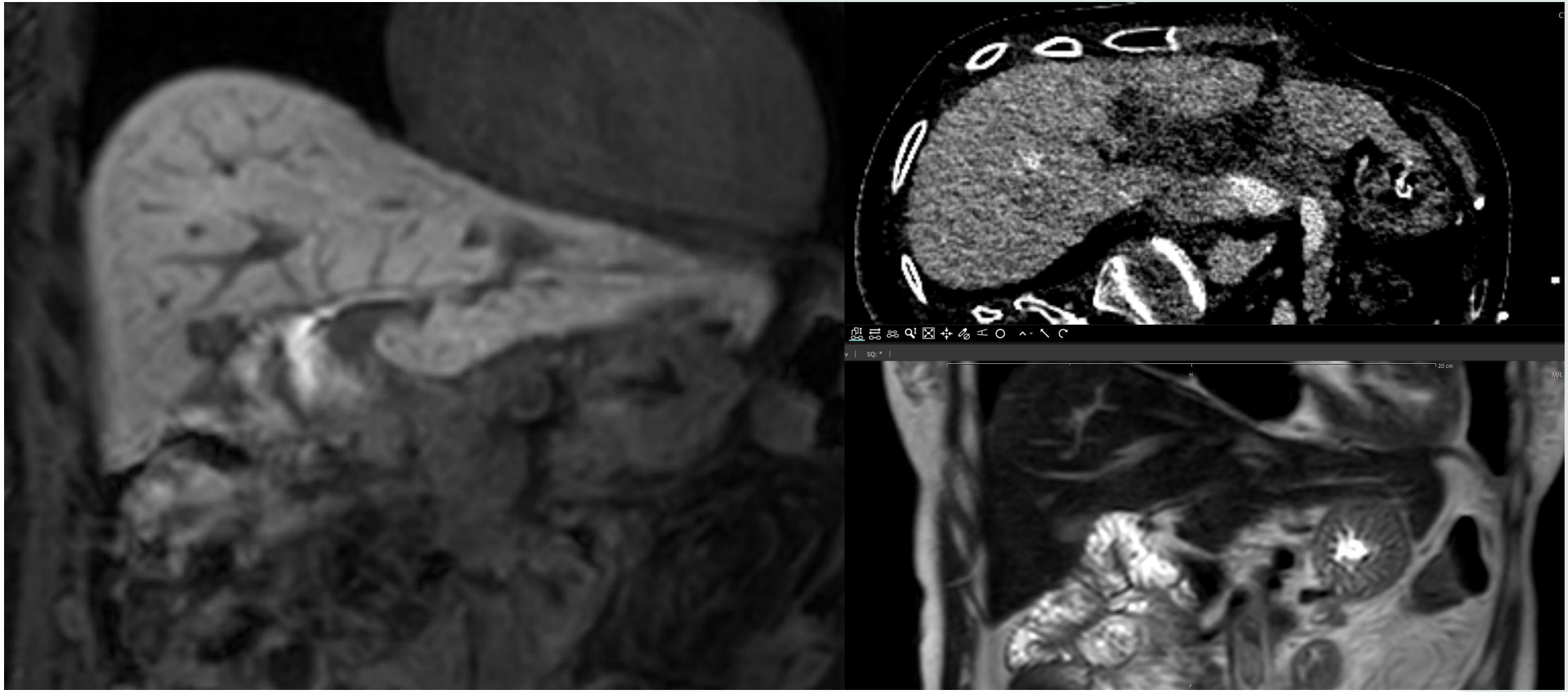

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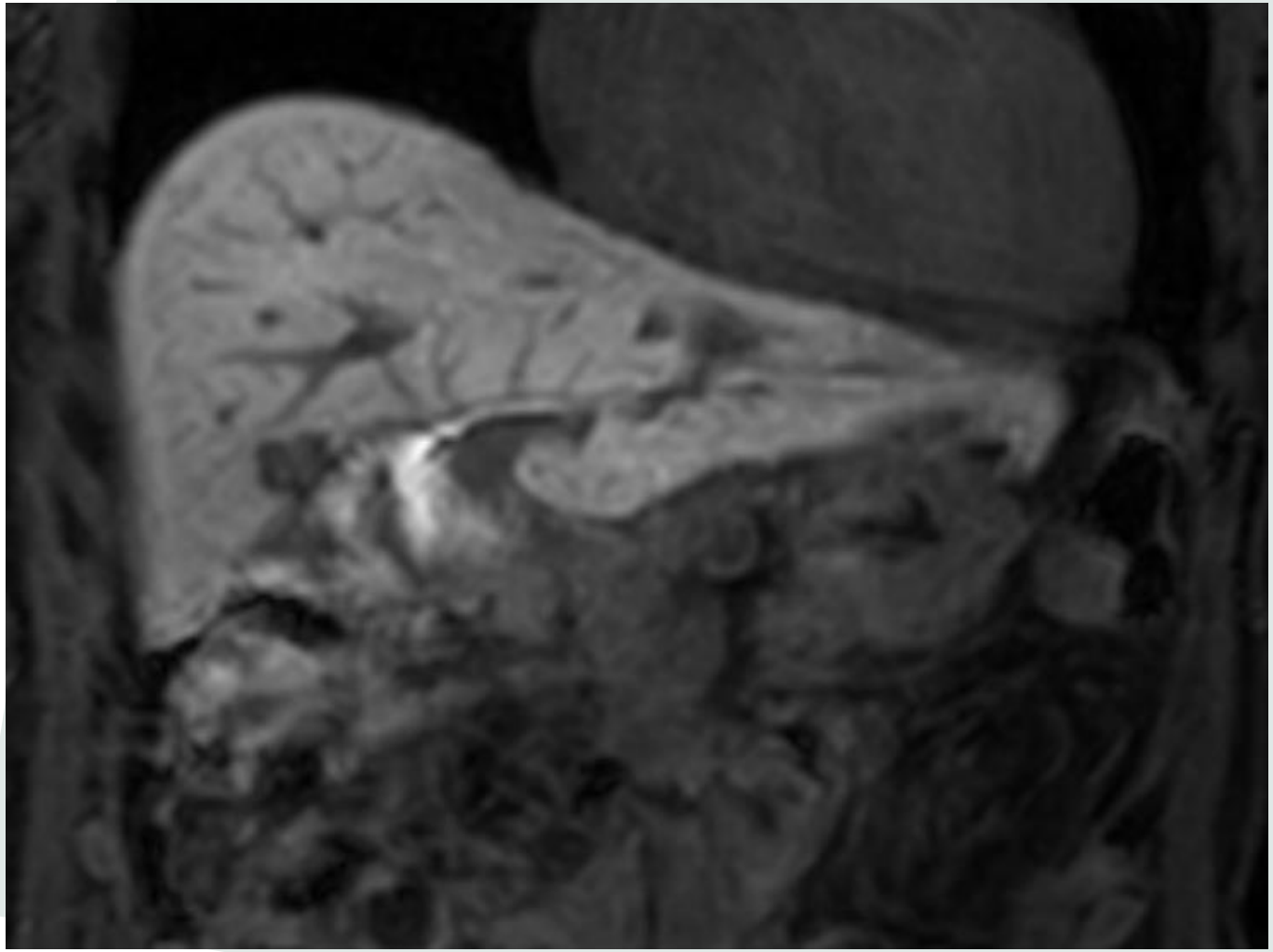
- Pt. refused hemihepatectomy
- Options - IRE



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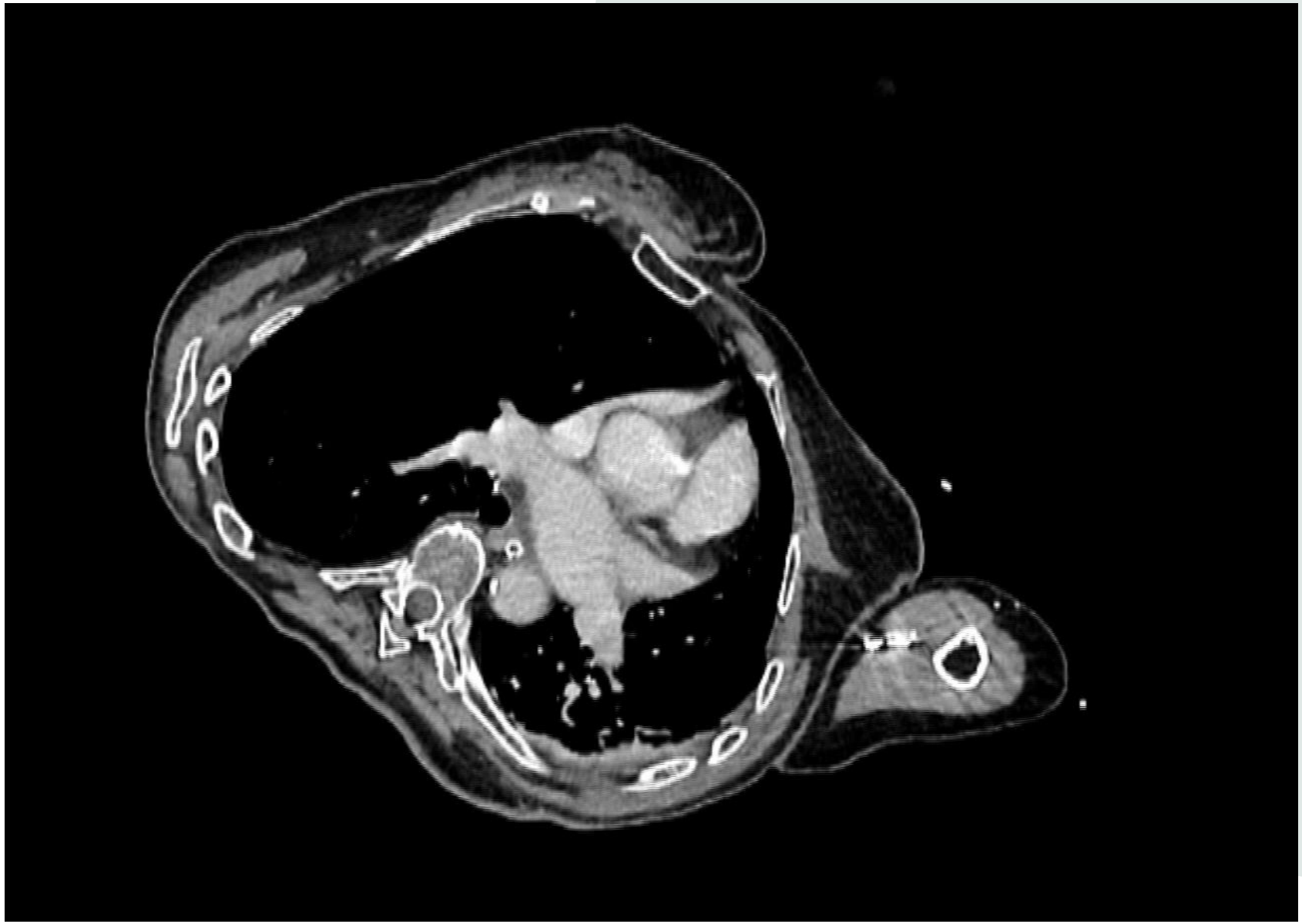

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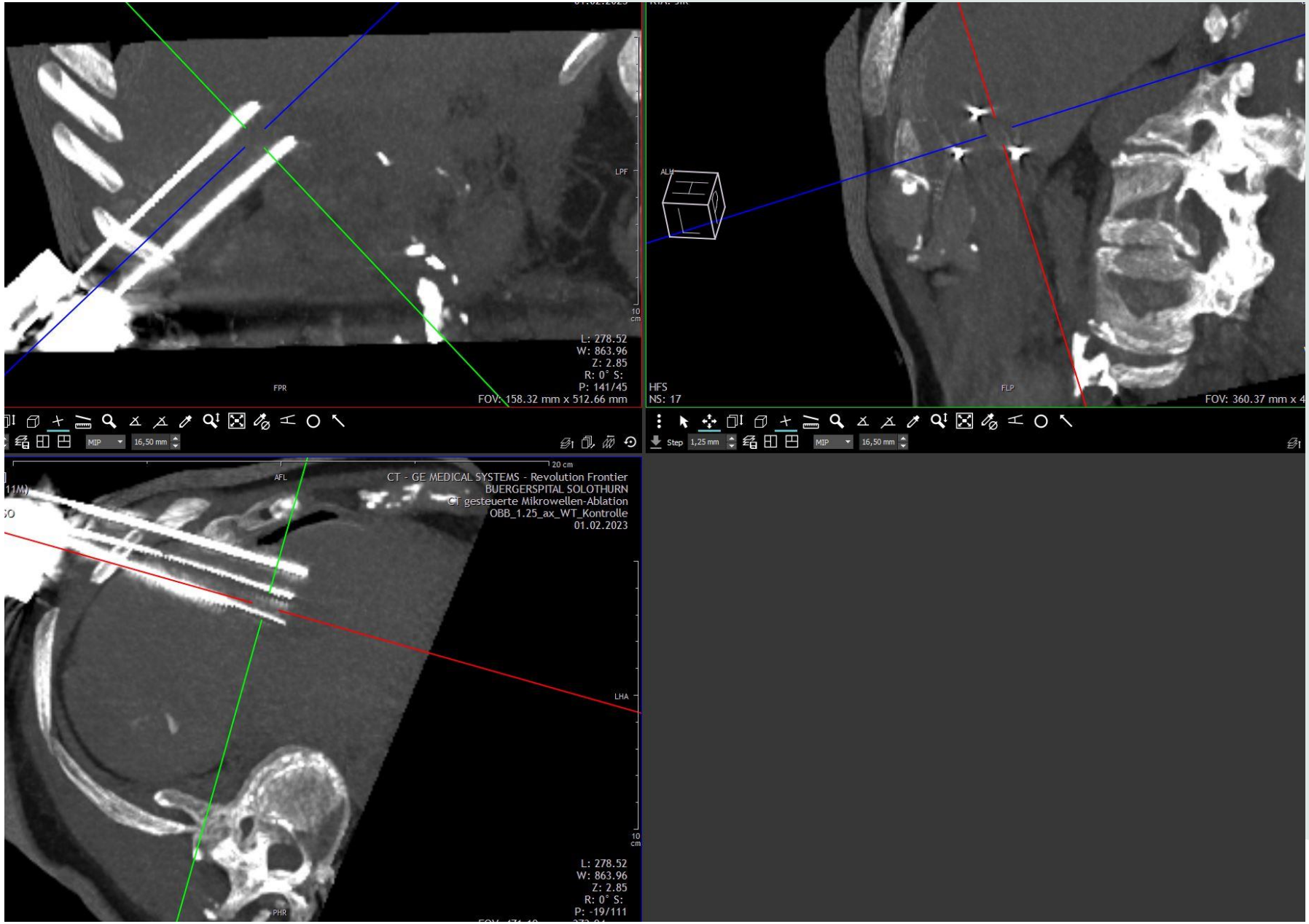
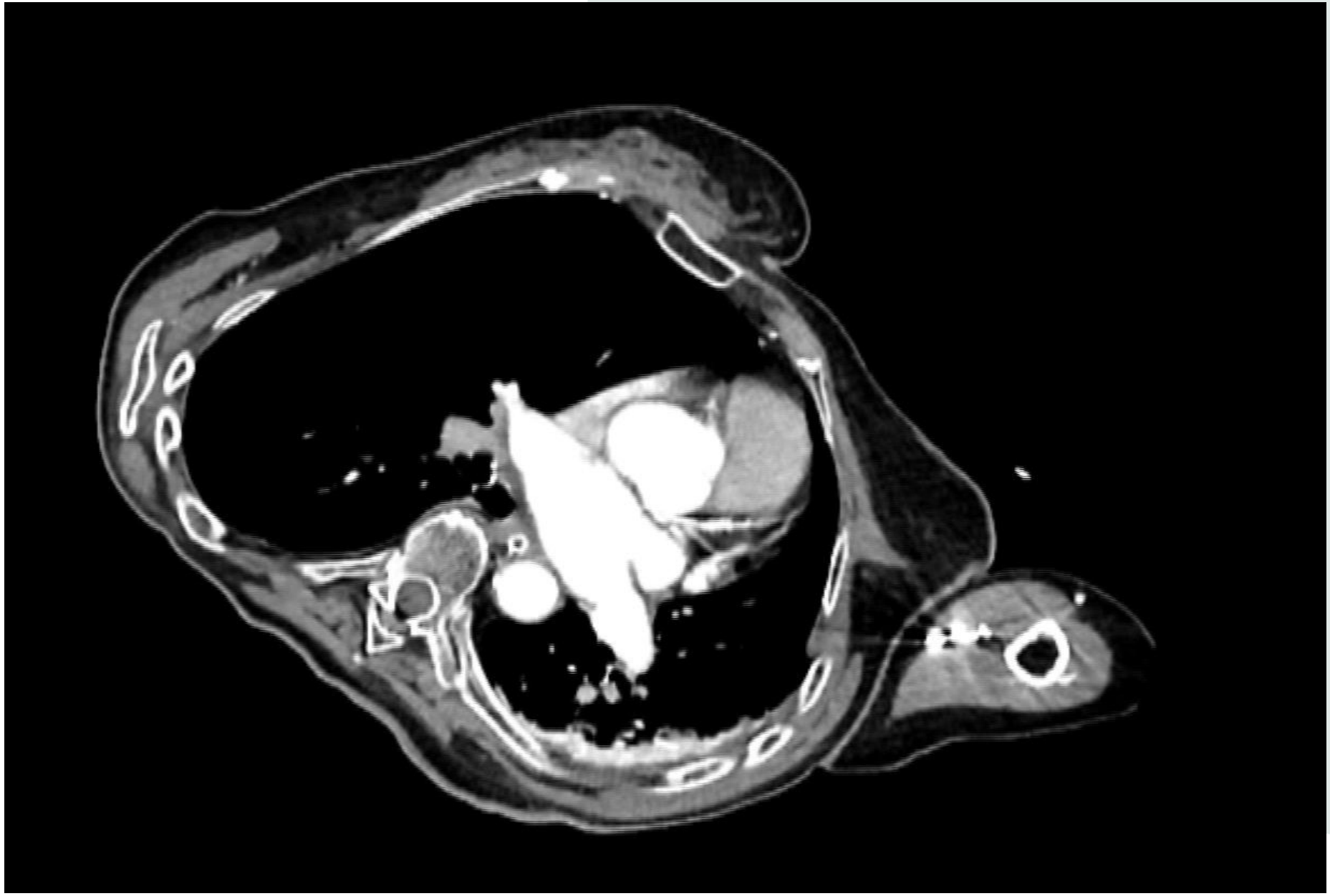

L: 278.52
W: 863.96
Z: 2.85
R: 0° S:
P: 141/45
FOV: 158.32 mm x 512.66 mm
HFS
NS: 17
CT - GE MEDICAL SYSTEMS - Revolution Frontier
BUERGERSPITAL SOLOTHURN
CT gesteuerte Mikrowellen-Ablation
OBB_1.25_ax_WT_Kontrolle
01.02.2023
L: 278.52
W: 863.96
Z: 2.85
R: 0° S:
P: -19/111

Case 4

Case 4



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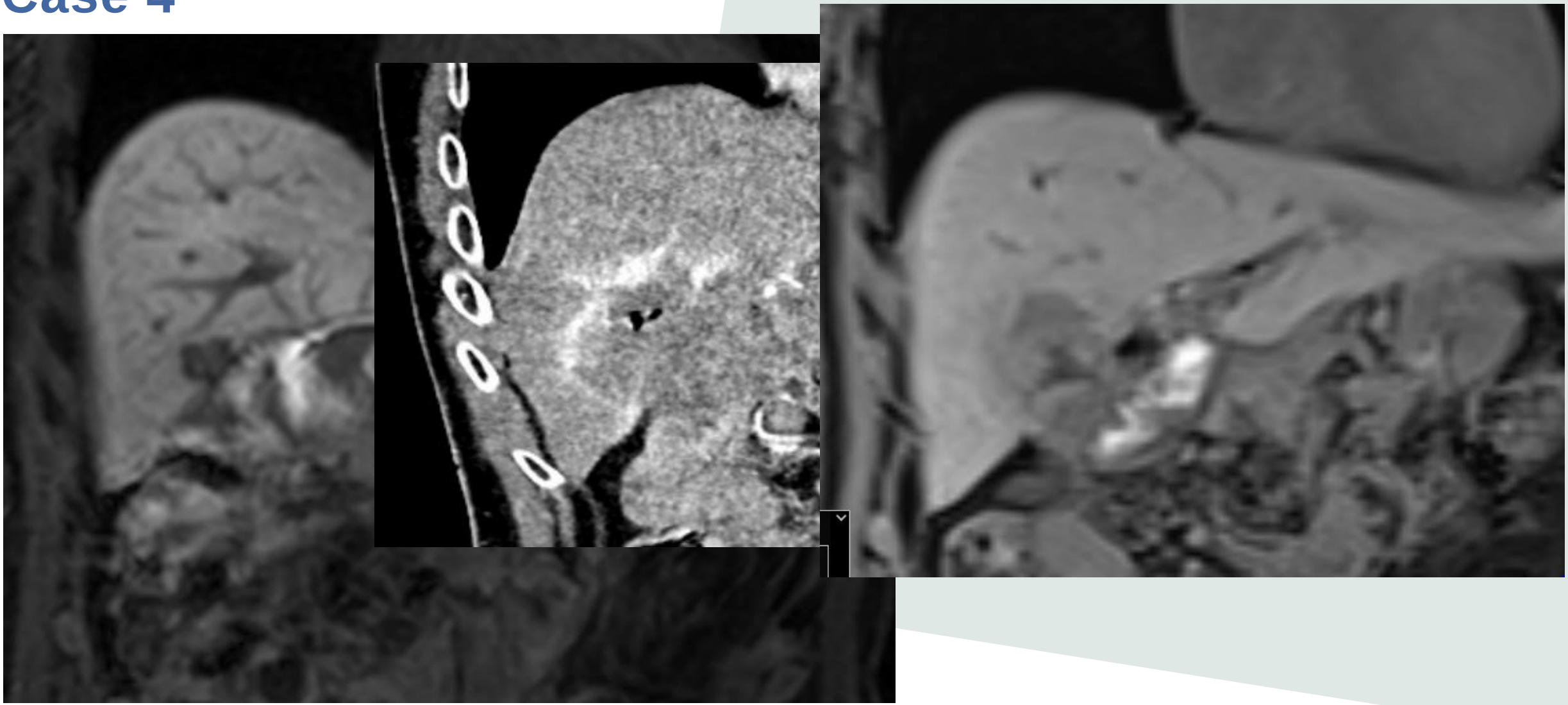

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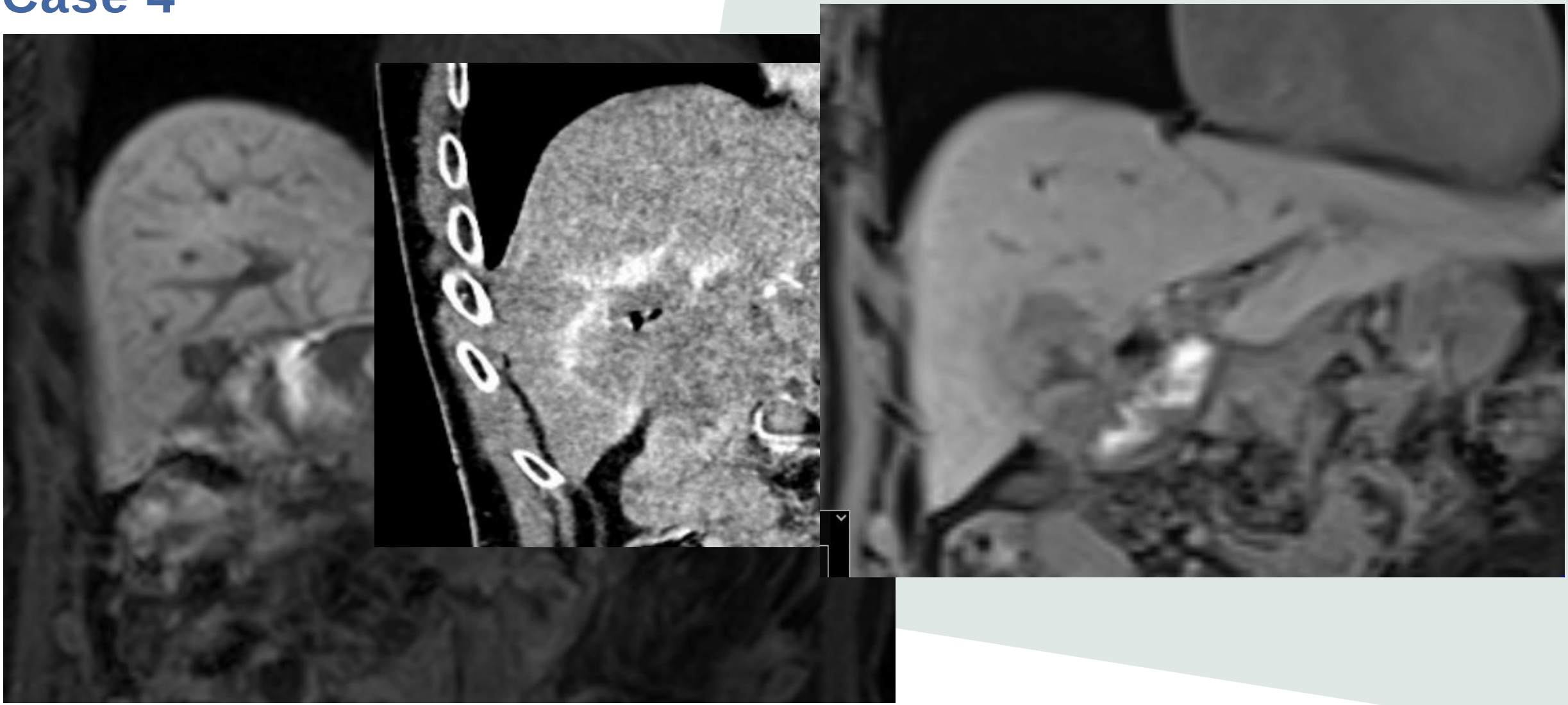
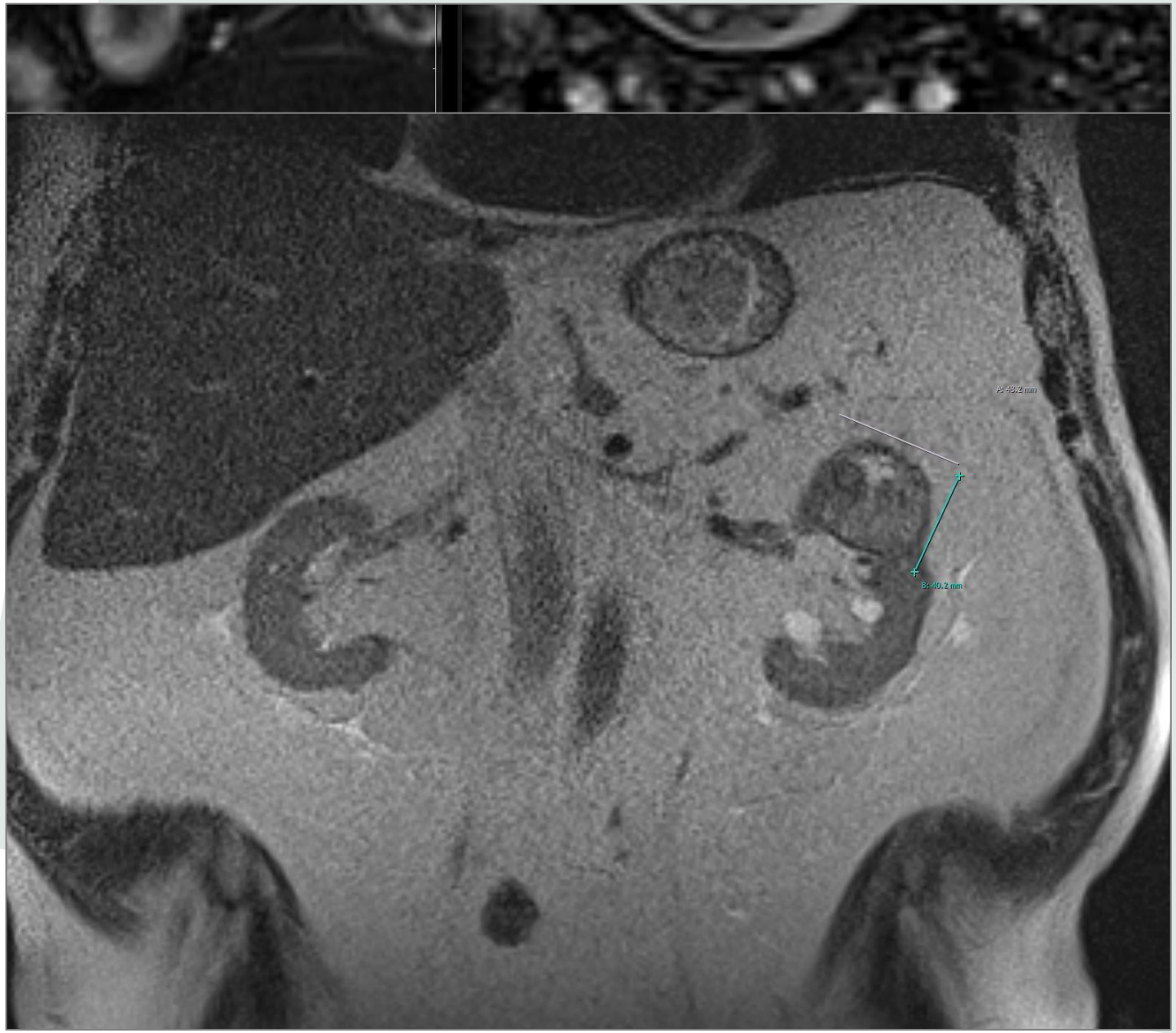


Case 5

- 83yrs old patient
- Enlarging 5cm RCC left kidney
- Cardiac comorbidities, obese, surgically unfit

- Minimal-invasive alternative:
  - Embolization first
  - Cryoablation



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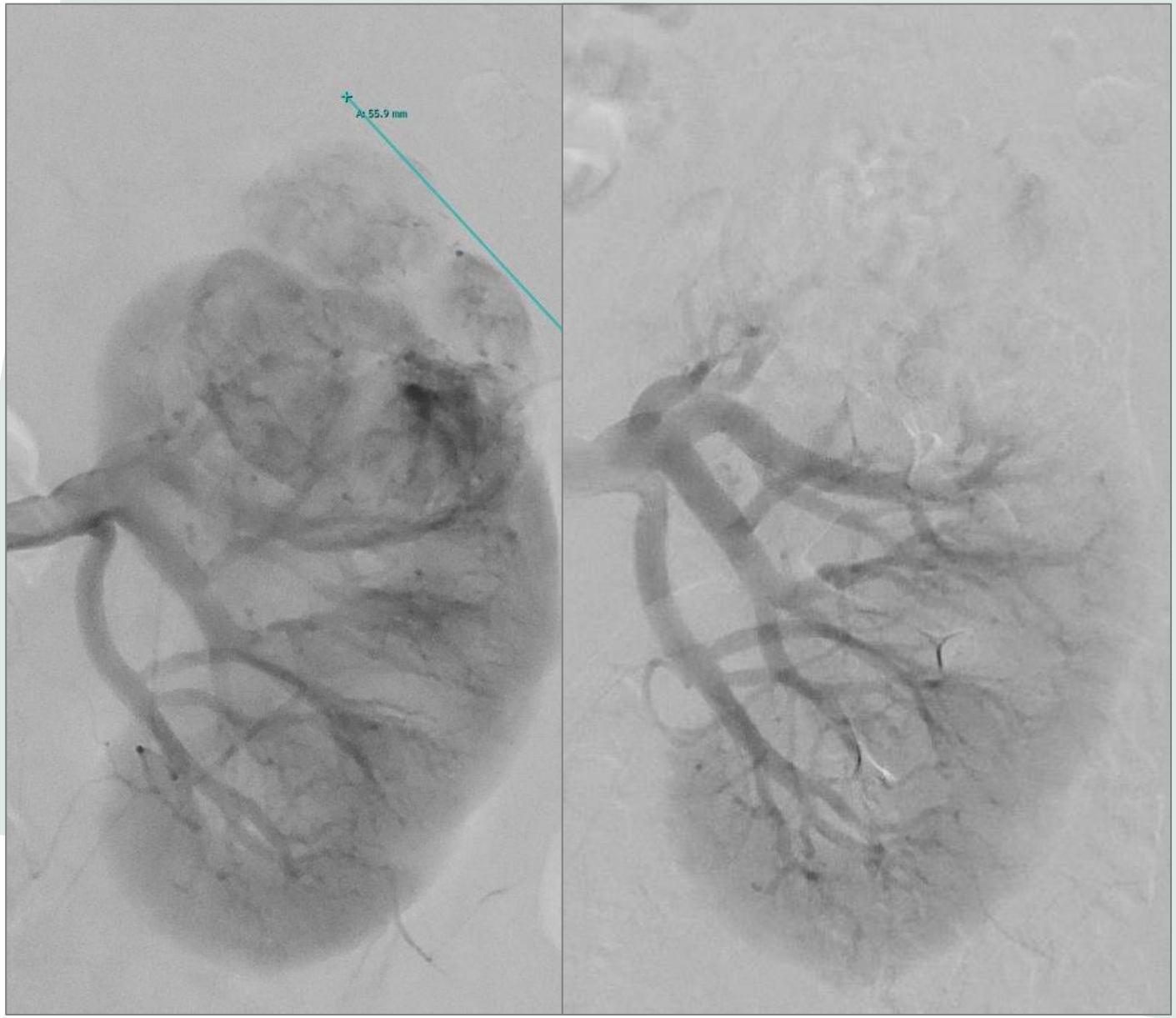

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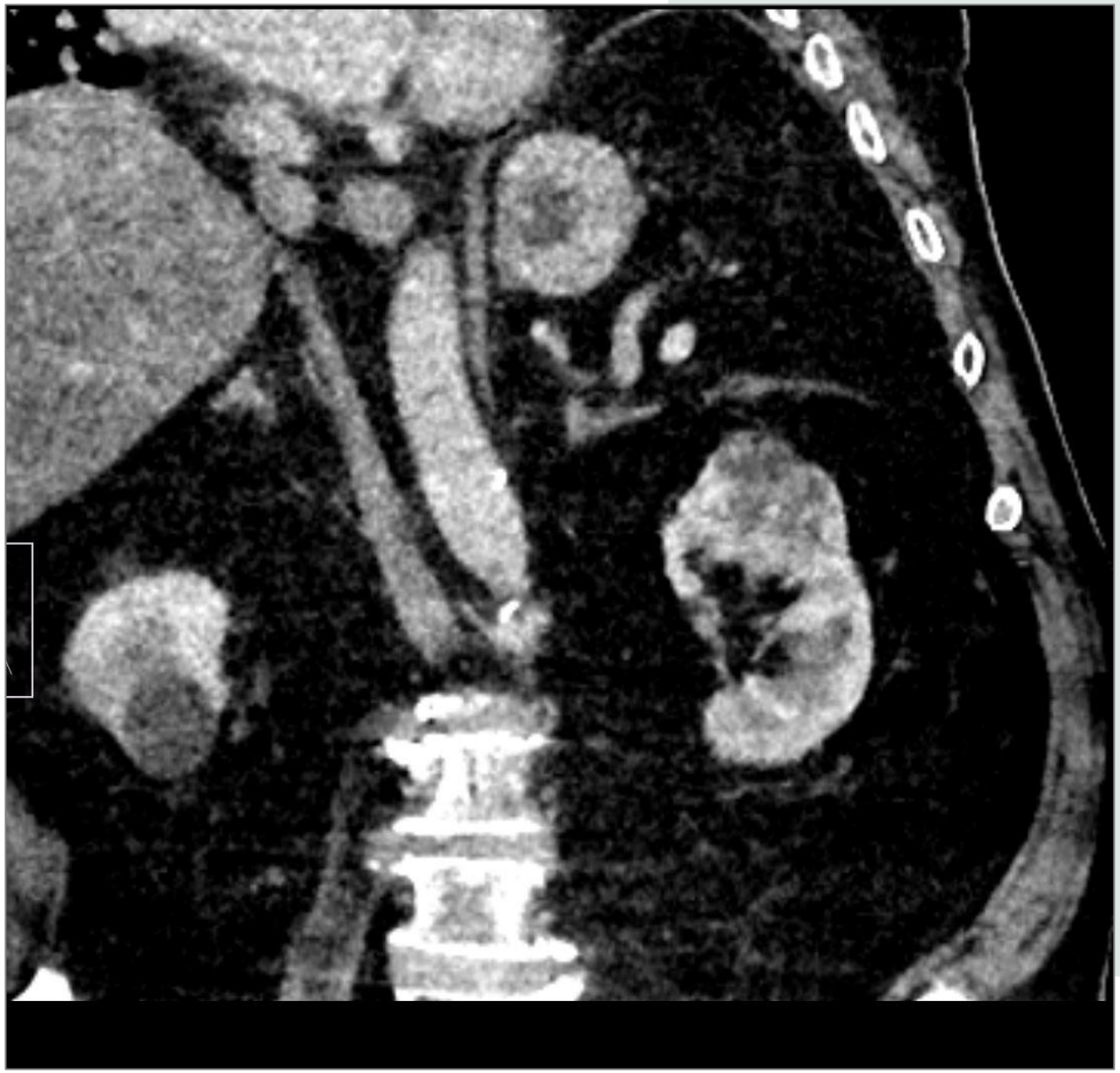

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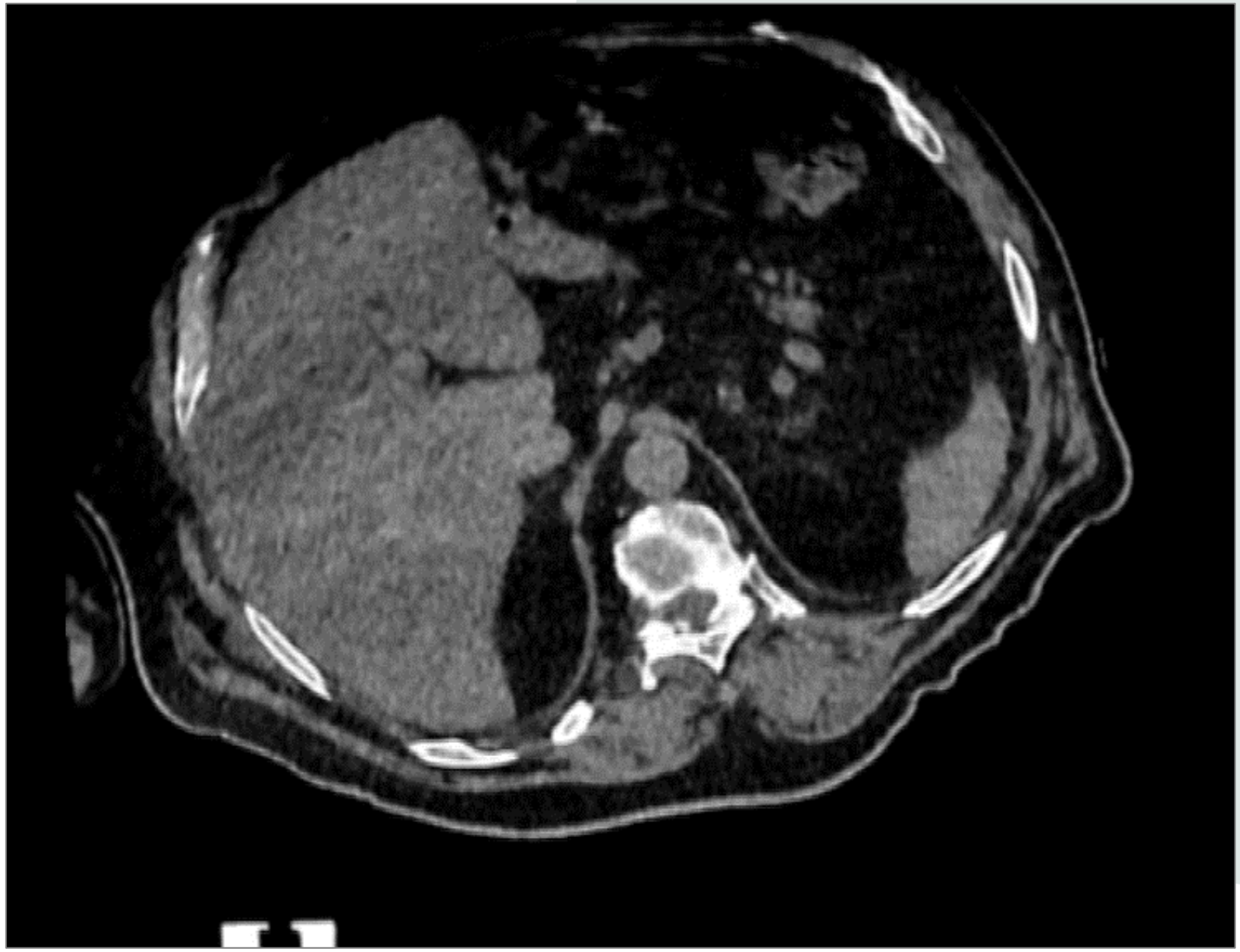

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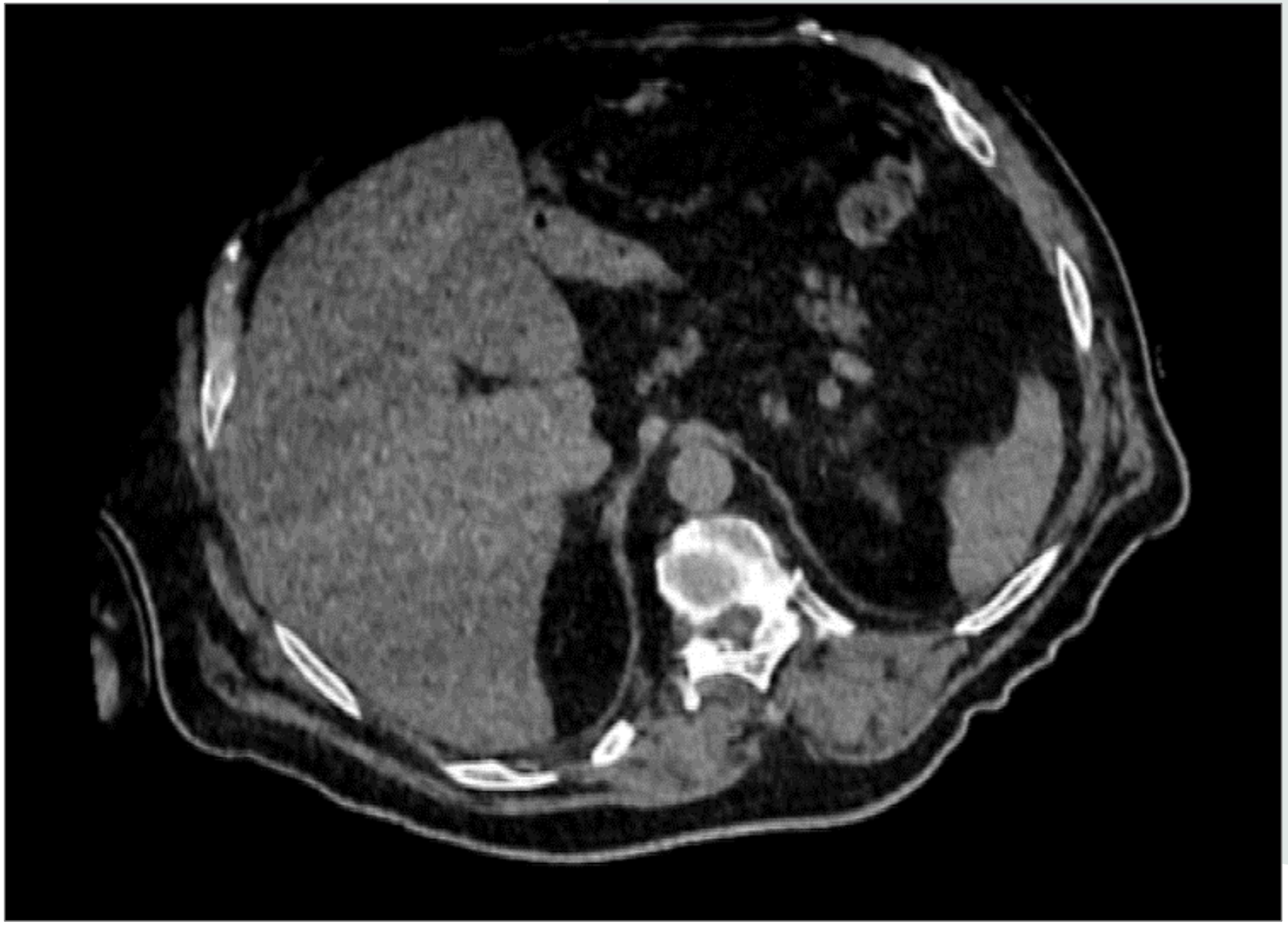
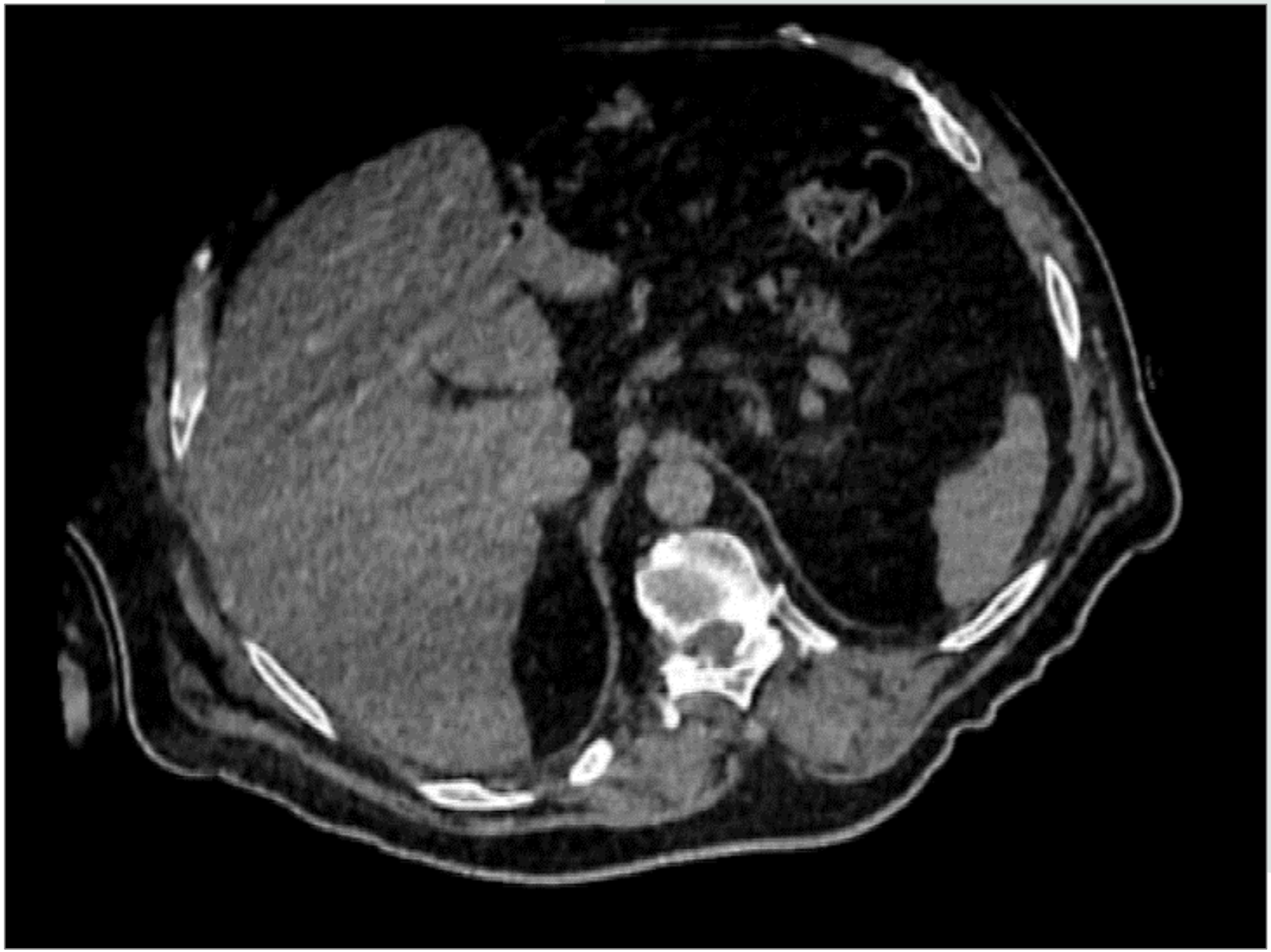
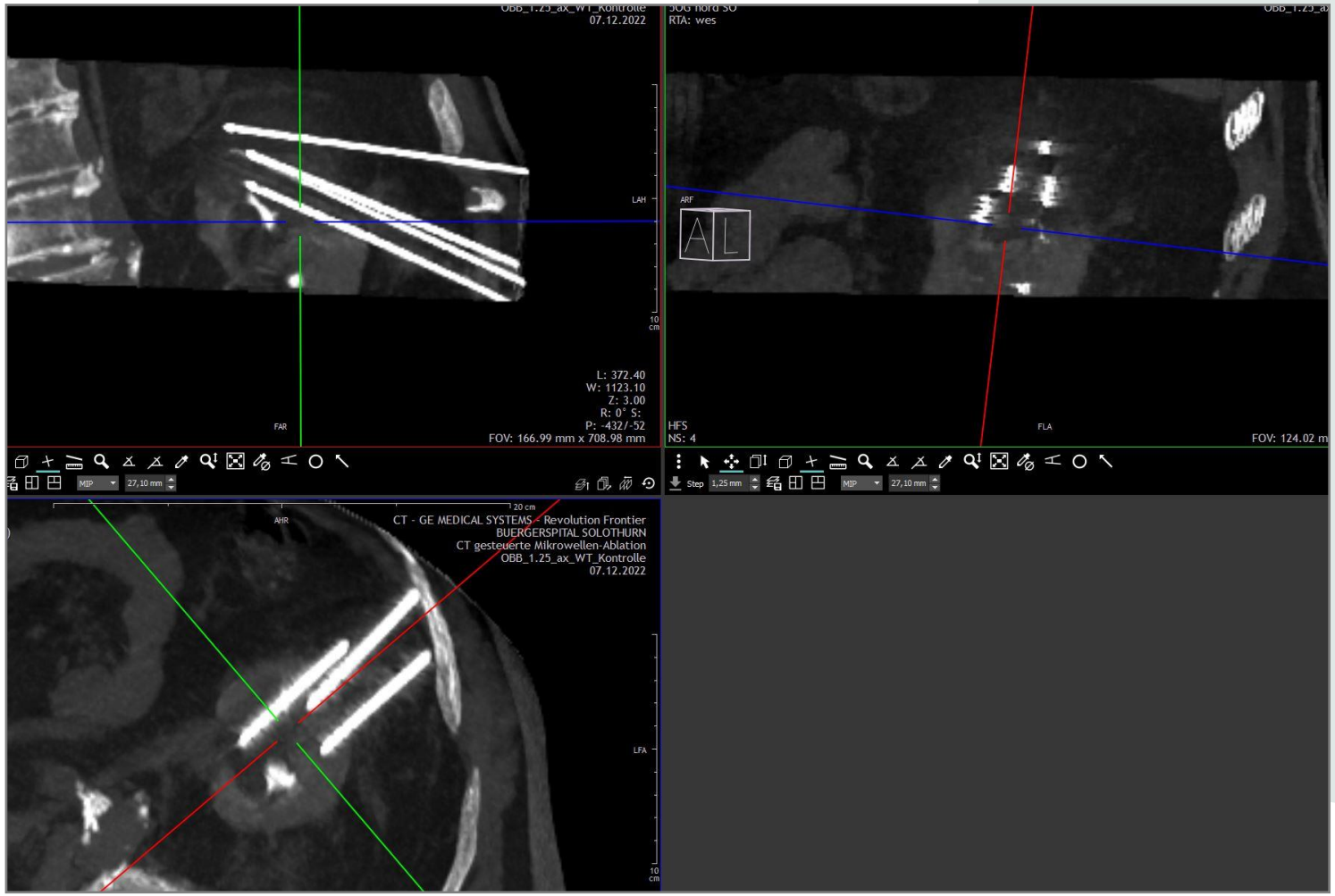
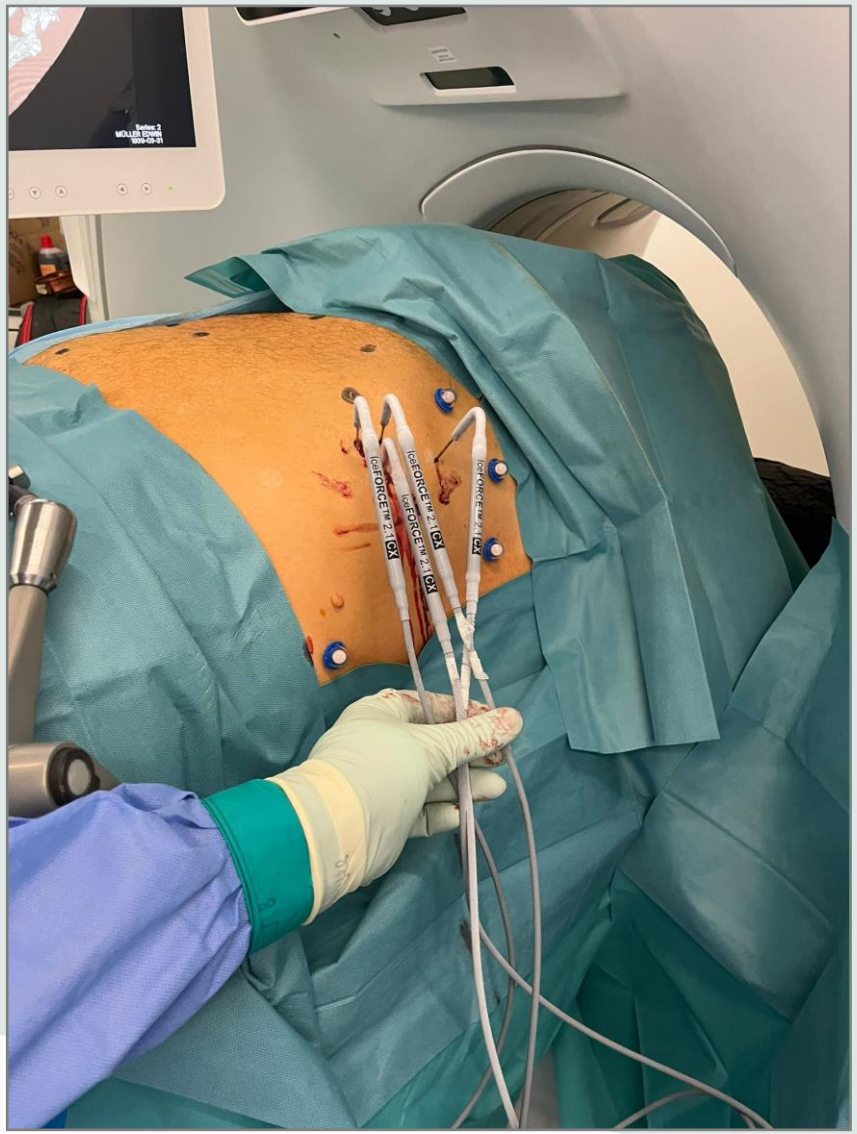


Case 5

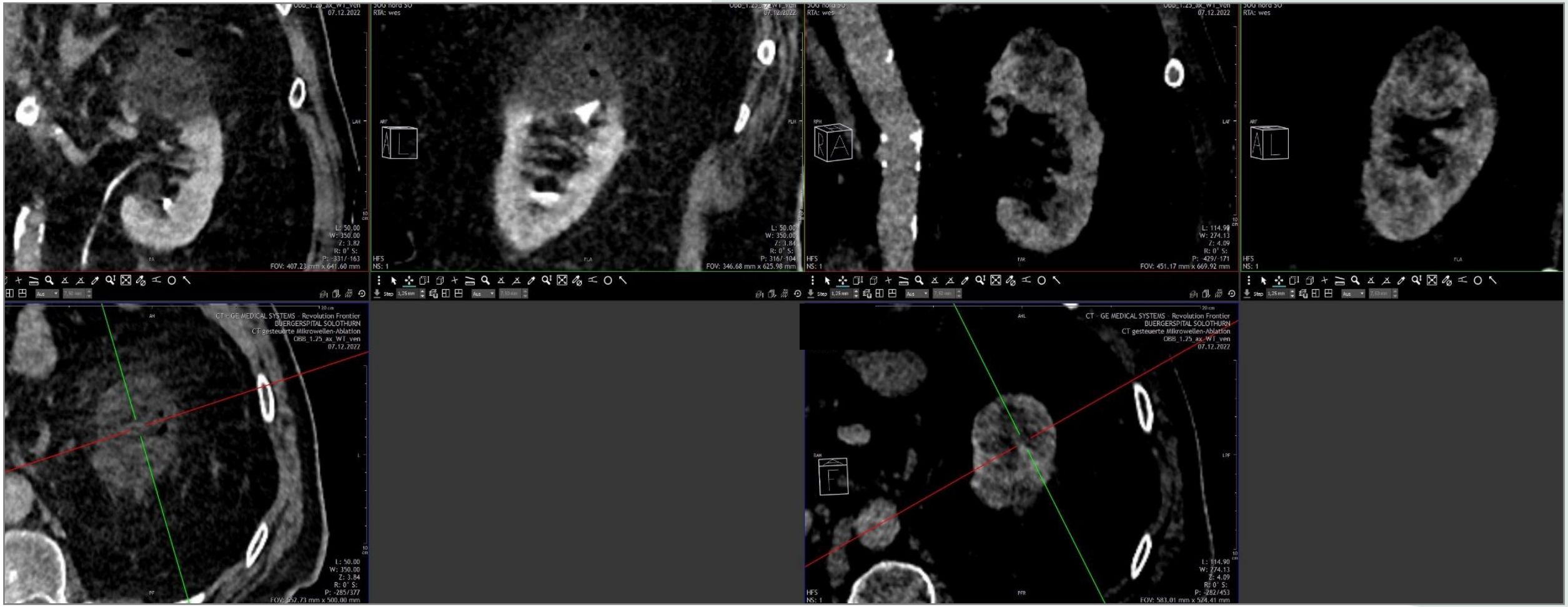


Case 5

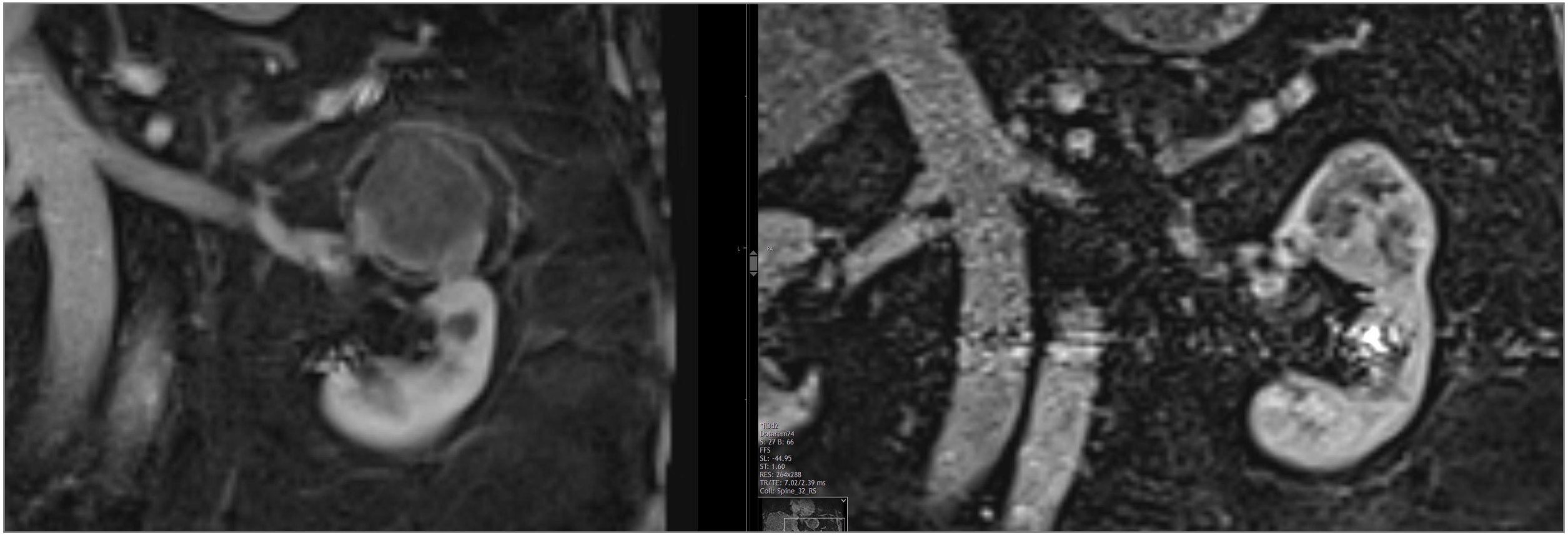

07.12.2022
RTA: wes
L: 372.40
W: 1123.10
Z: 3.00
R: 0° S:
P: -432/-52
FOV: 166.99 mm x 708.98 mm
HFS
N5: 4
FOV: 124.02 m
CT - GE MEDICAL SYSTEMS - Revolution Frontier
BUERGERSPITAL SOLOTHURN
CT gesteuerte Mikrowellen-Ablation
OBB_1.25_ax_WT_Kontrolle
07.12.2022



Case 5


CT - GE MEDICAL SYSTEMS · Revolution Frontier
BUERGERSPITAL SOLOTHURN
CT gesteuerte Mikrowellen-Ablation
07.12.2022

Case 5 – FUP @ 6 Months



Percutaneous stereotactic ablation of liver lesions

- Single Session
- Biopsy
- Exzellent results up to 3 cm

- Less «invasive» than surgery
- More «invasive» compared to SBRT
- Multiple ablations possible

- Always interdisciplinary treatment approach
- Patient centered

Danke für die Aufmerksamkeit

Source: Sbb.ch