

# QUALITY ABLATION: TOP CASES 2020



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## Quality Ablation with CAS-One® IR

Reproducible and Standardised  
Tumour Treatments

More Patients  
Better Results\*



\*See page 16

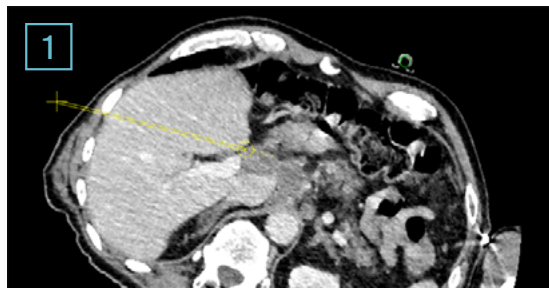


# CASE 01.

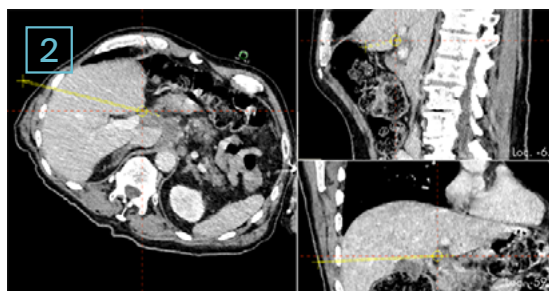
## Biopsy in a difficult localization in the liver hilum



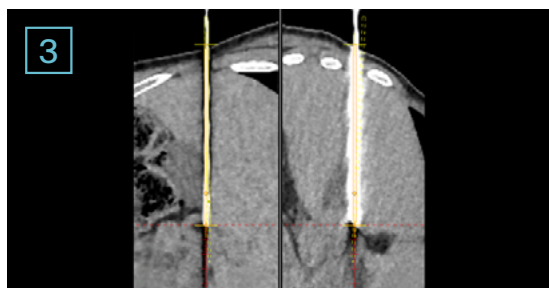
Biopsy in the liver hilum to a suspected lesion with a difficult and long pathway without passing through the portal vein or puncturing the gallbladder. Biopsy was performed with 16G co-axial system with a 18G biopsy needle. Three cylinders were taken from the suspected tissue. The pathology shows a carcinoma with little differential, expressing CDX2 which means it is probably of pancreatic-biliary origin.



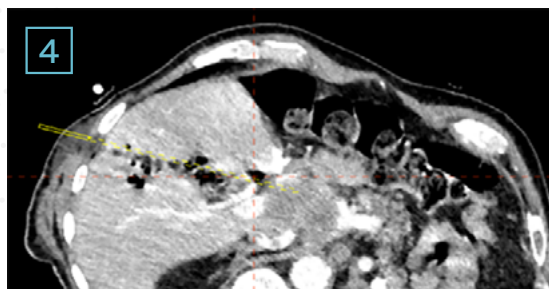
Planning scans of the biopsy showing the only possible pathway to the suspected lesion without passing through the portal vein or puncturing the gallbladder



Validation of the position of the biopsy needle



Verification after the biopsy was taken



**Name:** Dr. Lucien Widmer & Dr. Carlo Tappero

**Institution:** HFR Fribourg, Switzerland

**Patient age and sex:** 75 years, male

### Initial condition:

- The patient came to the emergency because he fell frontally on the head probably due to a vasovagal collapse from abdominal pain
- Therefore, a CT was performed which showed a non-homogeneous mass (51x22mm) with a hypodense centre located in the liver hilum
- CRP and murphy sign were negative
- Two days later in the tumour board the conclusion was to take a biopsy to get a result from the mass. Differential diagnosis was lymphoma/carcinoma

### Treatment:

- A previous attempt with ultrasound guidance failed and therefore a biopsy under general anaesthesia with high frequency jet ventilation and the support of CAS-One was considered
- Planning showed only one possible pathway to the suspected lesion, without either passing through the portal vein or puncturing the gallbladder
- Because of the precision required CAS-One IR was used for navigation
- Biopsy was performed with 16G co-axial system with a 18G biopsy needle

### Result:

- Three cylinders were taken from suspected mass
- A small bleeding appeared on the post-biopsy scan, however, the following late phase (and angiogram after) showed tamponade
- It was hypothesised that during the biopsy, even though there was a safe distance from the hepatic arteria, a small branch of it was hit
- The pathology shows a carcinoma with little differential, expressing CDX2 which means it is probably pancreatic-biliary origin

01

Biopsy in a  
difficult localization  
in the liver hilum



# CASE 02.

IRE near the portal vein plus three MWA (1/2)

02

IRE near the portal vein  
plus three MWA

03

Five GIST in the liver

04

IRE of HCC



05

Biopsy and MWA of a  
residual metastasis  
in liver segment I

06

Tissue-sparing ablation  
of a liver metastasis  
near the large intestine

07

Cryoablation  
of kidney carcinoma

08

MWA of a colon  
metastasis in the lung

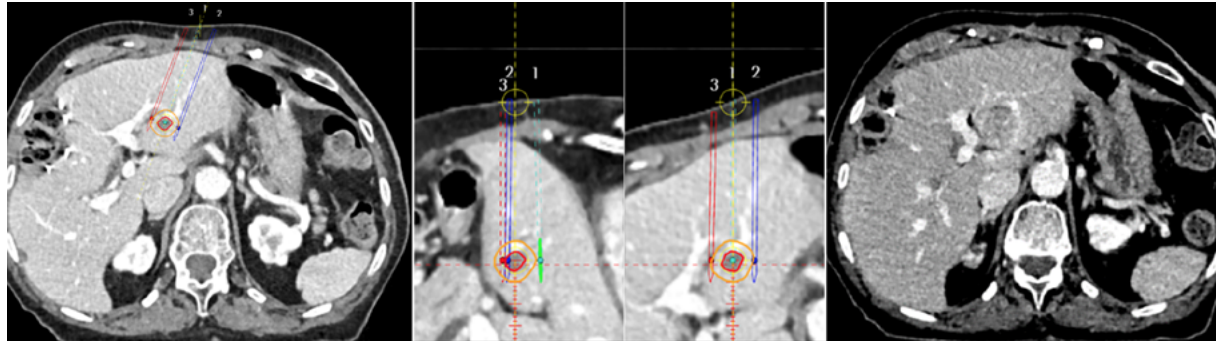
09

Ablation of an "invisible  
lesion" in liver segment  
VIII

10

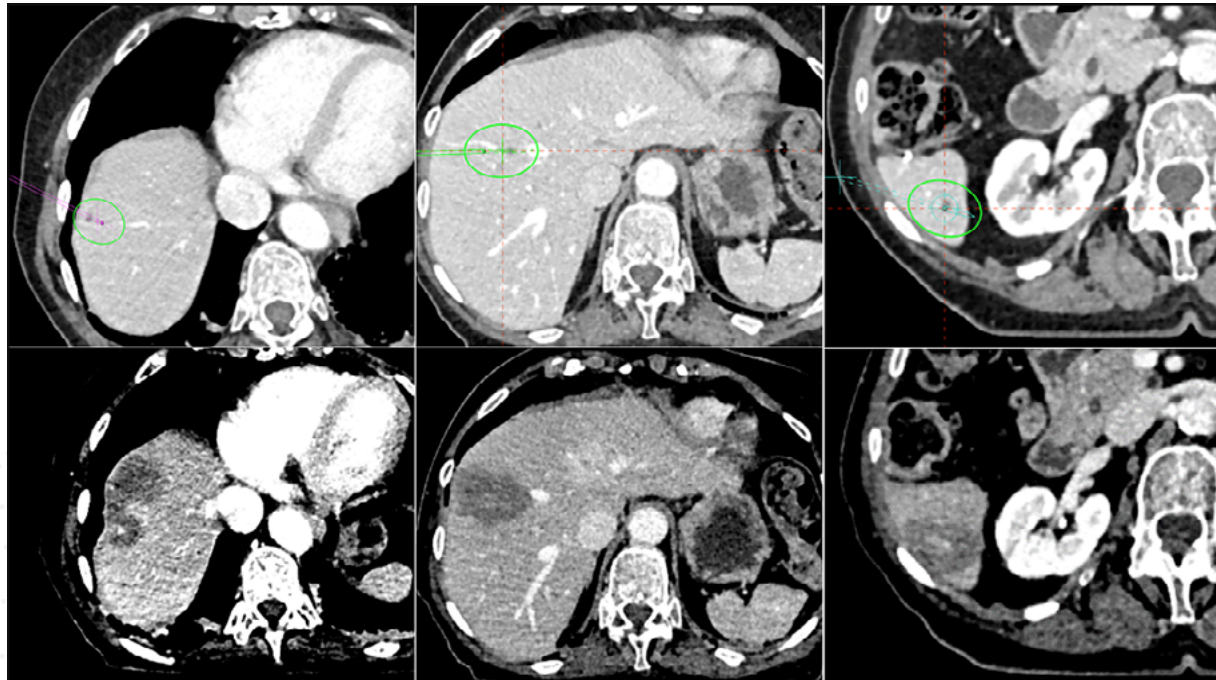
MWA near the inferior  
vena cava and portal  
vein

IRE treatment of a tumour in segment III, located near central bile ducts followed by microwave ablations of two lesions and a suspected third metastasis in proximity to the right liver vein in segment VIII. The post ablation scan shows complete ablation on all four lesions. The complete procedure took 98 minutes (153 minutes counting total anaesthesia time) and the patient stayed over night in hospital, before returning home without any early complications.



Left and center: Planning scan of IRE treatment of tumour in segment III close to bile duct.

Right: Ablation validation three months after the intervention.



Top: Planning view of 3 Microwave Ablations

Below: Ablation Validation of 3 Microwave Ablations 3 months after treatment



01

Biopsy in a  
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# CASE 02.

IRE near the portal vein plus three MWA (2/2)

02

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IRE of HCC



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Biopsy and MWA of a  
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Tissue-sparing ablation  
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metastasis in the lung

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Ablation of an "invisible  
lesion" in liver segment  
VIII

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MWA near the inferior  
vena cava and portal  
vein

**Name:** Dr. Marie Beermann, Dr. Johan Lindeberg  
& Prof. Dr. Jacob Freedman

**Institution:** Danderyd Hospital, Stockholm (Sweden)

**Patient age and sex:** 84 years, female

## Initial condition:

- 84 year old woman, who was diagnosed with rectal adenocarcinoma in 2019
- Very successful radio/chemotherapy with complete response and thereafter included in a clinical study with watchful waiting
- Six months later she was diagnosed with a gallbladder cancer and had a successful extended resection including segment IVb and V
- After six months a followup CT scan showed three small liver metastasis of up to 10mm in size located in segment III, segment VI and segment VII

## Treatment:

- The tumour in segment III was located near central bile ducts. It was biopsied whereafter a 3-electrode IRE was performed with CAS One IR targeting
- Followed by microwave ablation of the other two lesions and a suspected third metastasis in proximity to the right liver vein in segment VIII
- All ablations performed with CAS One IR for targeting
- High-frequency jet ventilation for organ motion control
- An immediate post-operative CT scan with contrast showed complete ablation at all sites
- The purpose of the treatment was curative with this treatment
- The central location of the largest metastasis was a contraindication for thermal ablation
- The other three lesions were treated with microwave ablation, the most effective modality in terms of speed and oncological outcome
- The patient had already undergone two major surgeries within one year without adverse events and could probably have tolerated another one if necessary. But in this case surgical resection was not an option because of the location and number of metastasis.

- There was good evidence that ablative treatment would produce a good oncological outcome compared to resecting the small metastasis, but at a considerably lower cost for the patient in terms of risks and length of stay and rehabilitation
- A biopsy was performed to ascertain the biology of the metastasis as the patient has had two resent primaries, colon and gallbladder. Also future treatment options rely heavily on the type of metastasis. Radiologically and clinically it was deemed most likely to be of colonic origin, which was the reason that all the visible metastasis were treated

## Result:

- The post ablation scan shows complete ablation on all four lesions. The complete procedure took 98 minutes (153 minutes counting total anaesthesia time) and the patient stayed over night in hospital, before returning home without any early complications. An elevated systolic blood pressure was noted in the postoperative period, which we have found to be common and transient but without any good explanation and difficult to reverse.



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lesion" in liver segment  
VIII

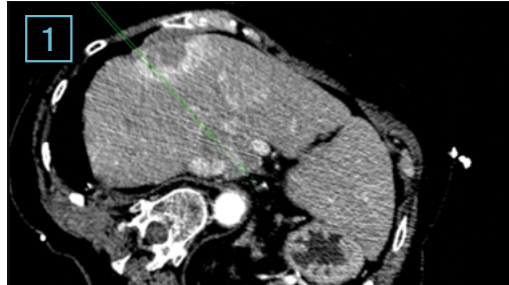
10

MWA near the inferior  
vena cava and portal  
vein

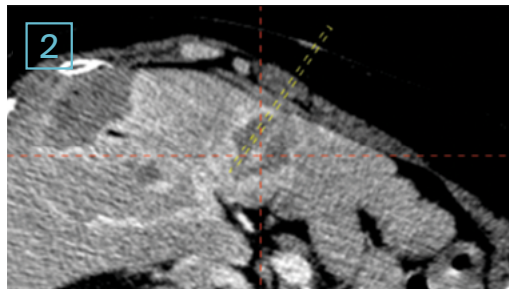
# CASE 03.

## Five GIST in the liver

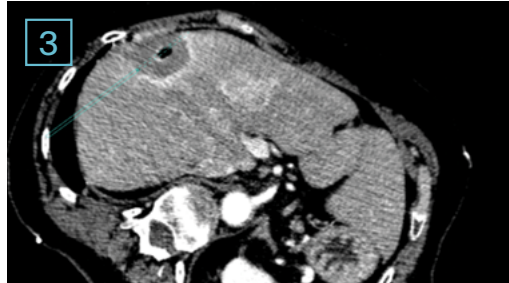
Tissue sparing approach for five metastatic liver lesions of a Gastrointestinal Stromal Tumor (GIST). All successfully treated in one continuous session. Quality Ablation was preferred over surgical resection to facilitate a speedy recovery after the intervention, offer the patient a better quality of life and preserve options for future treatment, since the patient is likely to develop more metastatic lesions over time.



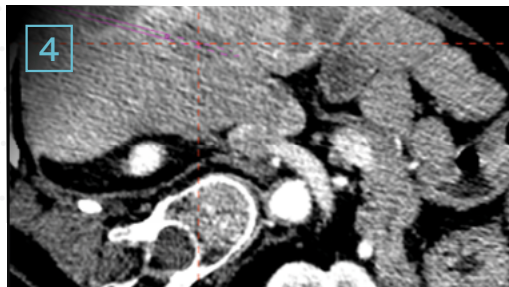
Ablation Validation  
after treatment of  
lesion in Seg I



Ablation Validation  
of lesion close to  
gallbladder



Ablation Validation of  
lesion in liver dome



Ablation Validation of  
lesion in Seg V

**Name:** Prof. Dr. Thiery Chapelle & Dr. Bart Op de Beeck

**Institution:** Antwerp University Hospital, Belgium

**Patient age and sex:** 76 years, female

### Initial condition:

- 2014, small intestine perforation with characteristics that fit a Gastrointestinal Stromal Tumor (GIST)
- Diagnosis Gastrointestinal Stromal Tumor (GIST), T2Nx was confirmed through biopsy
- After surgery start adjuvant glivec for three years
- Small intestine was resected after discovery of GIST
- Patient has arterial hypertension
- 2020, five metastatic liver lesions from the GIST

### Treatment:

- Treatment strategy: Quality Ablation or major surgical resection
- Decision for minimally invasive intervention to preserve parenchyma for future treatment options, because patient is likely to develop more metastatic lesions over time
- Resection in this case would mean removing several sections of the liver, which would affect the function of the liver and also result in a long hospitalization and recovery.

### Result:

- With Quality Ablation the most tissue sparing approach was chosen, to facilitate a speedy recovery, offer the patient a better quality of life and preserve options for future treatment, since the patient is likely to develop more metastatic lesions over time



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Tissue-sparing ablation  
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near the large intestine

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Cryoablation  
of kidney carcinoma

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MWA of a colon  
metastasis in the lung

09  
Ablation of an "invisible  
lesion" in liver segment  
VIII

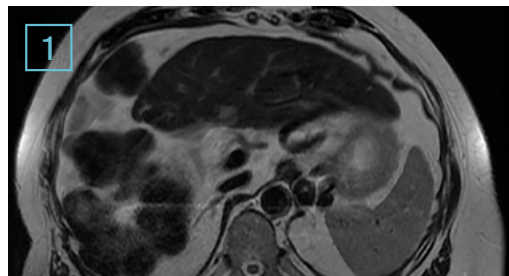
10  
MWA near the inferior  
vena cava and portal  
vein

# CASE 04. IRE of HCC

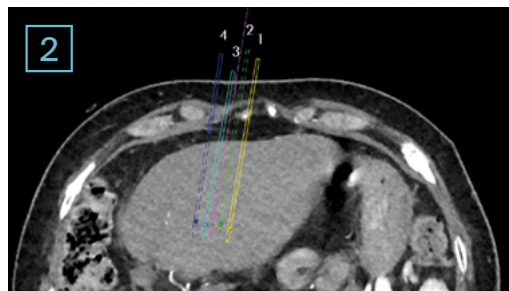
CASE  
OF THE  
YEAR - TIE



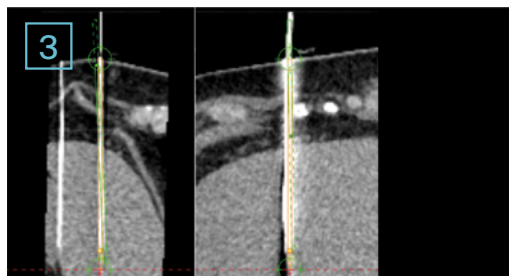
This patient presented with an 18mm Hepatocellular Carcinoma (HCC) on the posterior aspect of Segment III of the liver. The ablation technique used was Irreversible Electroporation (IRE) as the tumour was in close proximity to the stomach. Irreversible Electroporation (IRE) is an effective tissue sparing technique which targets the lesion whilst minimising damage to neighbouring structures such as the Stomach, in this particular case. Precise needle positioning is crucial for the IRE treatment to be effective and this was achieved by implementing the CT guidance and navigation capabilities of the CAS-One IR workflow.



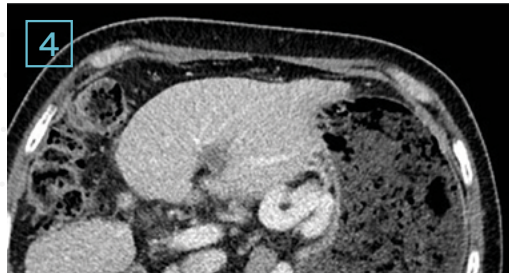
Pre-ablation MR  
scan of the HCC in  
Segment III



Transverse planning  
CT reconstruction



Needle validation  
scan showing  
inserted needles



Three months  
post ablation scan  
showing the ablation  
zone (necrosis) in  
segment III of the  
liver

**Name:** Prof. Dr. Tze Wah & Dr. James Lenton

**Institution:** St. James's Hospital, Leeds, United Kingdom

**Patient age and sex:** 64 years, male

## Initial condition:

- History of Hemochromatosis
- Type II diabetes
- Cirrhosis (secondary to Hemochromatosis)

## Treatment:

- The IRE treatment was performed under General Anaesthesia with Apnoea
- 4 needles were planned, 3 well positioned, 1 repositioned
- 2 overlapping treatments (1cm pull back on superior needles)
- 90 pulses across each pair of electrode
- 6 pairs treated in total

## Result:

- For IRE cases in particular, accurate antenna placement is crucial in order for the treatment to be effective. All trajectories have to be aligned parallel to allow the current pulses to induce tumour cell death
- Accurate needle placement is difficult when performing the procedure freehand
- CAS-One IR was used as a navigation system in order to achieve great needle-to-target precision
- The three month post ablation control scan shows a complete destruction of the HCC.
- Stomach tissue was spared and left undamaged



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Biopsy and MWA of a  
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Tissue-sparing ablation  
of a liver metastasis  
near the large intestine

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Cryoablation  
of kidney carcinoma

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MWA of a colon  
metastasis in the lung

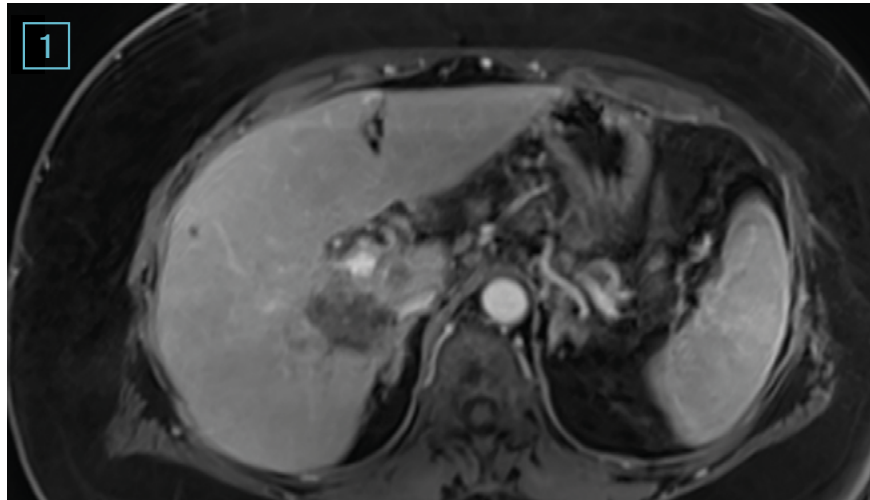
**09**  
Ablation of an "invisible  
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VIII

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MWA near the inferior  
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vein

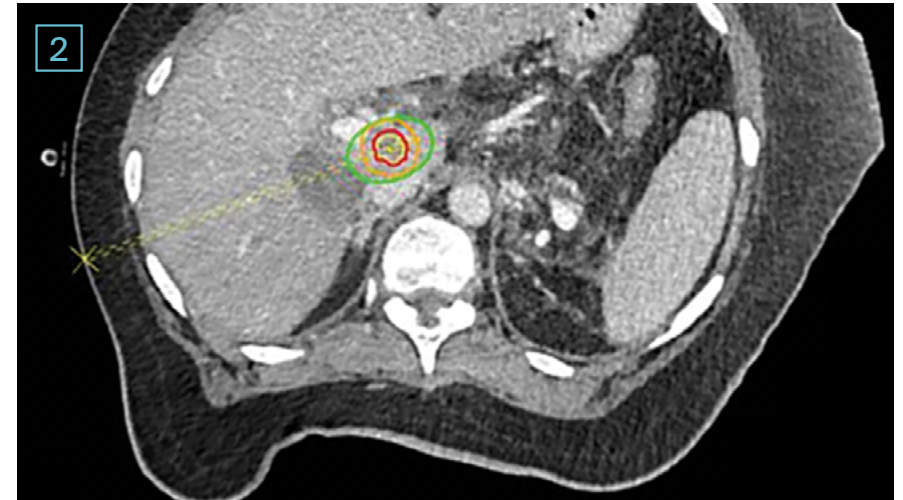
# CASE 05.

## Biopsy and MWA of a residual metastasis in liver segment I (1/2)

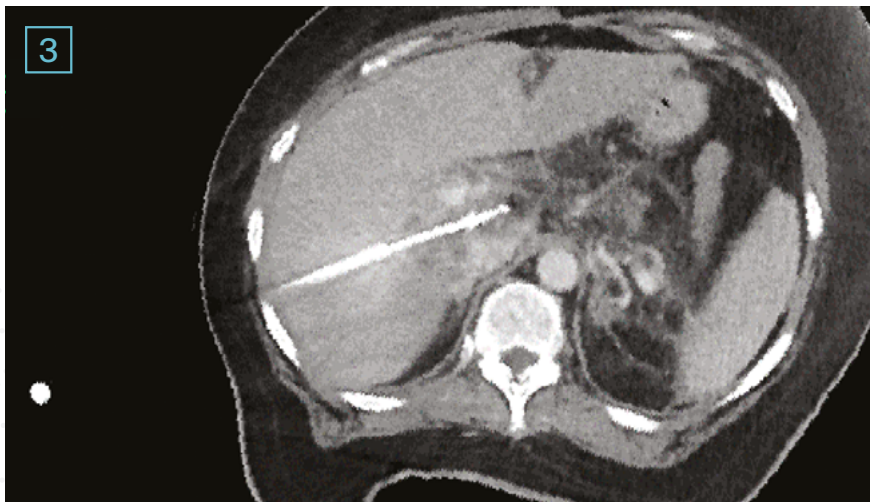
Complex treatment to help a patient with several liver metastasis. In this case a biopsy followed by a microwave ablation of a residual metastasis in segment 1 was performed. Both required extreme precision to not harm critical structures like the inferior caval vein, the right branch of the portal vein and the main bile duct. Successfull treatment was shown on control scans right after the ablation and confirmed by a MRI 6 weeks after the intervention.



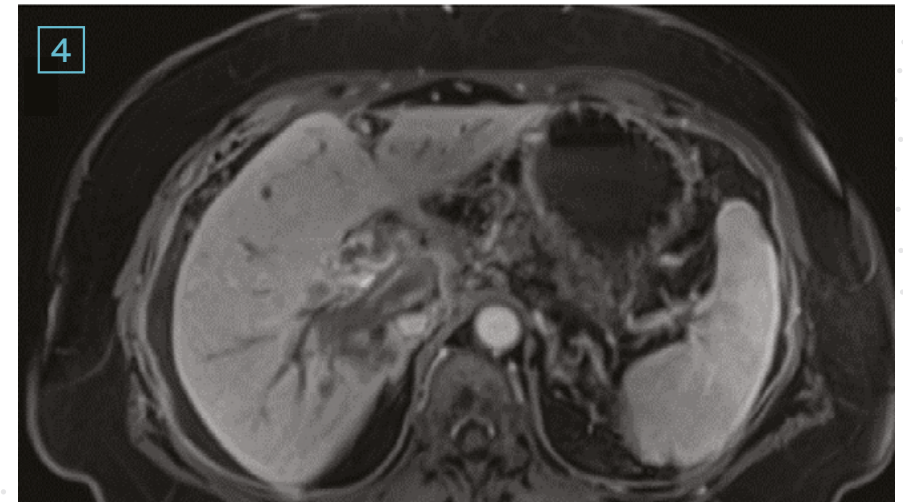
Initial MRI scan showing suspected vital tumour in segment I



Planing of the trajectory for biopsy and ablation also showing the tumour (red), the safety margin (yellow) and the expected ablation zone (green)



Needle validation scan with antenna placed in the tumour



MRI scan confirming complete ablation 6 weeks after treatment



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MWA of a colon  
metastasis in the lung

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Ablation of an "invisible  
lesion" in liver segment  
VIII

10

MWA near the inferior  
vena cava and portal  
vein

# CASE 05.

## Biopsy and MWA of a residual metastasis in liver segment I (2/2)

**Name:** Dr. Lukas Lürken

**Institution:** University Hospital Regensburg, Germany

**Patient age and sex:** 56 years, female

### Initial condition:

- Aug 2008 first diagnosis: Breastcancer left, treated with selective resection, radiotherapy and hormone therapy
- Nov 2017 diffuse spinal metastasis diagnosed, treated with radiotherapy. Systemic therapy with several changes due to adverse effects
- Oct 2019 Resection of local recurrent tumor left mamma
- Jan 2020 Liver metastasis in segment VI/I
- Apr 2020 Electrochemotherapy (ECT) of the liver metastasis
- June 2020 residual, progressive tumour tissue in Liver segment I in MRI 6 weeks after ECT

### Treatment:

- Biopsy of the ablation defect in segment VI as well as biopsy of the suspected vital tumour in segment I, followed by microwave-ablation of the tumour
- Stereotactic navigation with Cas-One IR due to the complicated local tumour situation in Segment I with long trajectory and several "no-go" structures close to the target lesion, such as the inferior caval vein, the right branch of the portal vein and the main bile duct
- First, a 13 G 10 cm coaxial needle was introduced into the liver tissue next to the ECT-Necrosis in segment 6. After biopsy of the necrotic defect with a 14 G SABD biopsy device, the coaxial needle was advanced in the same direction until next to the tumour lesion in segment I, where another biopsy was performed. The biopsy device was removed and a 20 cm microwave antenna was inserted through the coaxial needle. The coaxial needle was retracted for about 5 cm and microwave ablation was performed for 5 minutes with 65 Watts. Control scans directly after the ablation showed complete ablation of the residual tumour. Malignancy of the suspected residual tumour in segment I was confirmed by pathology. The biopsy of the necrotic area in Segment VI showed no vital tumor tissue

### Result:

- Complete ablation was achieved, a follow up MRI after 6 weeks confirmed complete ablation
- Unfortunately, the patient's outlook is not good, since she has a multisystemic metastatic disease, which showed recurrency under several systemic therapeutic regimes. Follow up MRI after 6 weeks showed several new liver metastases and a probably new supraphrenic lymph node metastasis. The patient also developed cholestasis due to the new liver tumors, requiring percutaneous transhepatic cholangiodrainage therapy
- A new regime of combined systemic therapy was discussed



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Biopsy and MWA of a  
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**06**  
Tissue-sparing ablation  
of a liver metastasis  
near the large intestine

**07**  
Cryoablation  
of kidney carcinoma

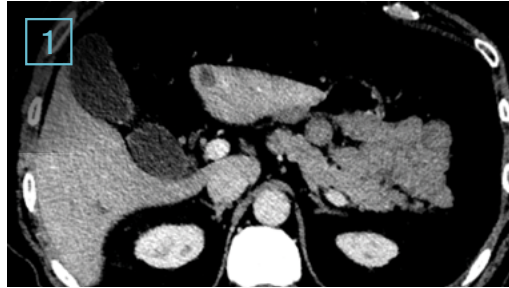
**08**  
MWA of a colon  
metastasis in the lung

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Ablation of an "invisible  
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VIII

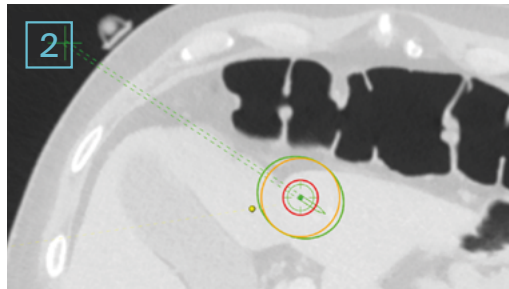
**10**  
MWA near the inferior  
vena cava and portal  
vein

# CASE 06. Tissue-sparing ablation of a liver metastasis near the large intestine

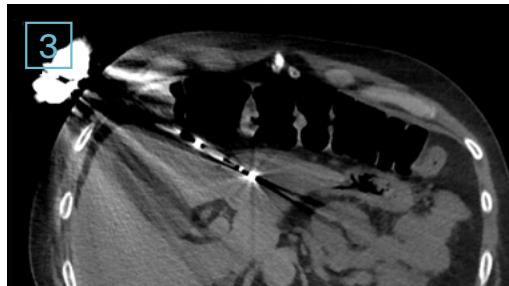
CT-guided microwave ablation of two liver metastasis in the left hepatic lobe in segments III and IVa. Due to the patient history, a tissue-sparing procedure was indicated to keep options for further treatment open. At the same time, the ablation in segment III (shown in this case report) in close proximity to the colon requires high precision of the procedure in order to achieve a complete ablation of the malignant tissue without harming the colon.



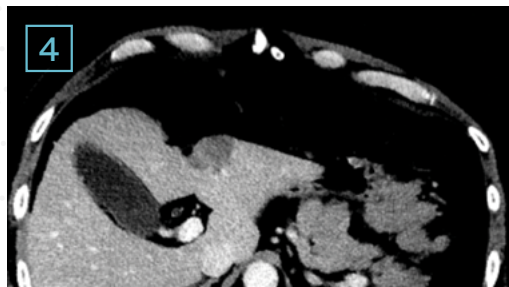
Pre intervention CT scan showing the lesion in segment III of the liver



Lung window image in CT showing the planned intervention with the tumor (red), the safety margin (yellow), the ablation area (green) and adjacent colon



Axial view with trajectory and lesion in segment IVa



Clear markings of the necrotic area at the liver margin

**Name:** Prof. Dr. Christoph L. Zollikofer

**Institution:** Kantonsspital Baden, Switzerland

**Patient age and sex:** 56 years, male

## Initial condition:

- 12 - 2018 Initial diagnosis: primary hepatic and lymphogenic metastatic adenocarcinoma of the sigmoid, TNM stage: pT3, pN2a (4/40), G2, L1, V0, pN1, M1
- 01 - 2019 Laparoscopic hemicolectomy left and appendectomy
- Second colon carcinoma in the area of the descendsigmoidal transition, pT1, pN2a (4/40), G2, LO, V0, PN
- 02 - 2019 Conversion chemotherapy ongoing (04 - 2019)

## Treatment:

- The patient is assigned to a bilateral interventional and surgical procedure. First, microwave ablation of the liver metastasis in the left hepatic lobe in segments III (shown in this report) and IVa, followed by a right-sided portal vein embolization preoperatively to enlarge the left hepatic lobe

## Result:

- Metabolically inactive ablated metastasis in segment III
- Suspected recurrence of metastasis adjacent to the ablated metastasis in segment IVa
- No evidence of extrahepatic metastasis



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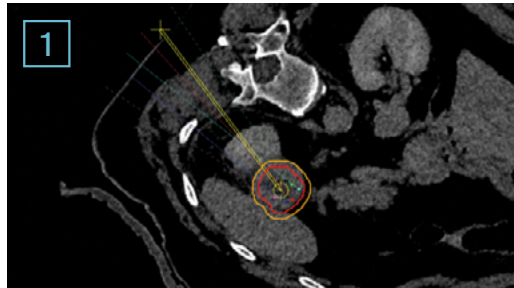
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MWA near the inferior  
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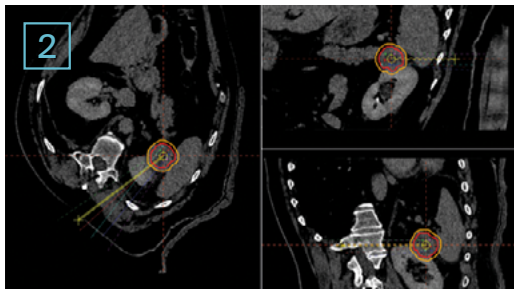
# CASE 07.

## Cryoablation of kidney carcinoma

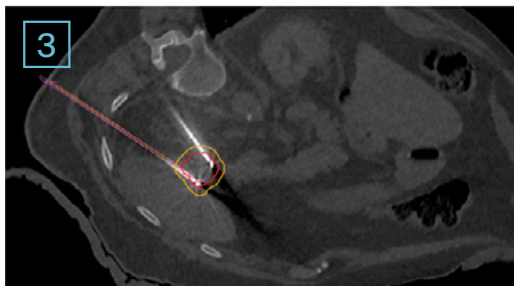
**Complex percutaneous intervention with six needles and long trajectories. Cryoablation of a renal cell carcinoma close to pancreatic tail and spleen. CT-guidance and CAS-One IR allowed a very precise placement of all six needles and in result a complete ablation of the entire tumour.**



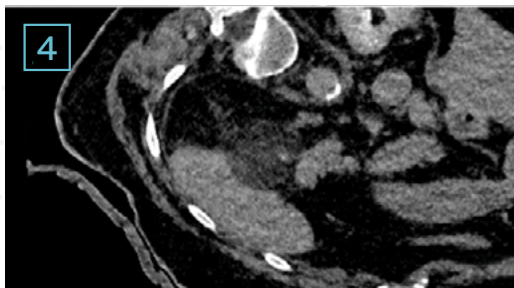
Planning view of the  
intervention (Axial)



Planning view of the  
intervention (MPR  
view)



Needle Placement  
Control showing  
high accuracy of  
probe placement



Confirmation of the  
cryoablation (Axial)

**Name:** Prof. Dr. Tze Wah & Dr. Jon Smith

**Institution:** St. James's Hospital, Leeds, United Kingdom

**Patient age and sex:** 67 years, male

### Initial condition:

- The patient is an ex-smoker with a history of IHD, obesity, COPD, claudication
- Had a femoral stent inserted 17 years ago
- This is a co-morbid patient, not fit for surgery
- Patient presents with a 4.2cm Renal Cell Carcinoma, close to pancreatic tail and spleen
- Upon arrival, an ASA Physical Status Classification of 3 was recorded

### Treatment:

- 6 ICE force probe needles (18cm trajectories) were planned using CAS-One IR. Additionally, a tumour biopsy was performed. Once inserted, needle validation showed that needles 1-4 had a lateral error of 2mm and needle 5-6 had a lateral error of 6mm. The 6mm lateral error was due to the difficulty in inserting needles because of needle crowding

### Result:

- This was considered a complex case as the tumour was in close proximity to spleen and pancreas. However, overall needle planning and insertion was facilitated using CAS-One IR



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of a liver metastasis  
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Cryoablation  
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MWA of a colon  
metastasis in the lung

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Ablation of an "invisible  
lesion" in liver segment  
VIII

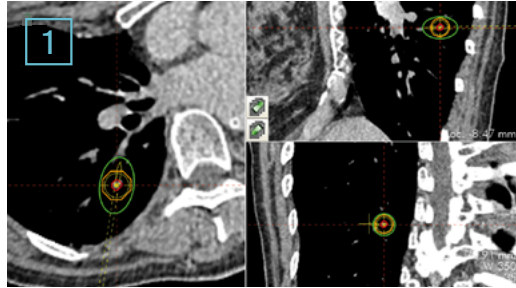
10

MWA near the inferior  
vena cava and portal  
vein

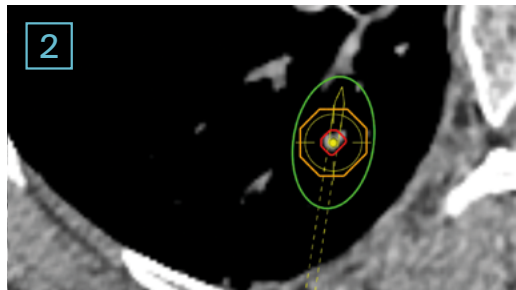
# CASE 08.

## MWA of a colon metastasis in the lung

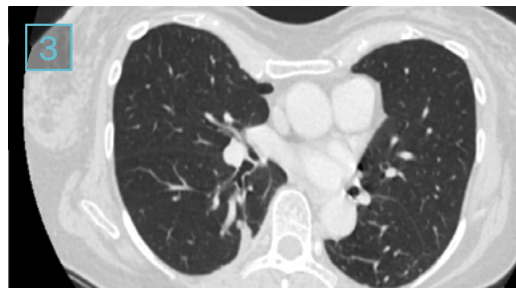
Navigated microwave ablation of a metastasis of the colon that has settled in the lower left lobe of the lung. Planning of the procedure, ablation and verification with CAS-One IR. The CT control scan taken three months after surgery shows no signs of local tumor activity.



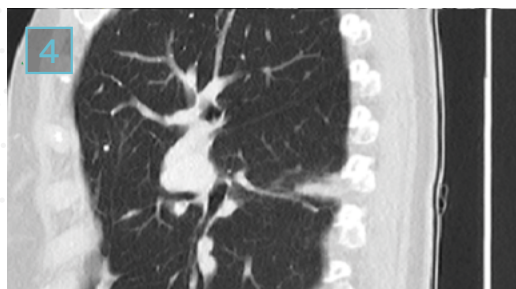
Planning scan of  
the intervention  
(MPR) showing the  
tumor (red), safety  
margin (yellow) and  
the desired ablation  
area (green)



Planning axial view  
with the tumor clearly  
visible



Control scan three  
months after  
surgery: No sign of  
tumor activity (axial  
view)



Control scan three  
months after  
surgery: No sign  
of tumor activity  
(sagittal view)

**Name:** PD Dr. Anja Lachenmayer & Prof. Dr. Dr. Martin Maurer

**Institution:** Inselspital, Bern, Switzerland

**Patient age and sex:** 72 years, female

### Initial condition:

- Metastatic carcinoma of the sigmoid colon cT4 cN0 cM1, diagnosed 06/2017
- Histology: moderately differentiated adenocarcinoma of the sigmoid (G2), diameter 5.5cm, tumor-free oral aboral and circumferential resection margin
- Emergency laparoscopically assisted oncological sigmoid resection, descendo rectostomy, hysterectomy, bilateral salpingectomy following tumor rupture in uterus
- Atypical partial liver resection segment II/III (2x), segment IVa, segment V, segment IVb, segment I following bilateral liver metastases
- CT thorax/abdomen/pelvis (02/2019): Slight increase in size of the known intrapulmonary round foci in the left upper lobe dorsobasal and lower lobe dorsobasal. Subcapsular hematoma in liver segment VI, constant in size compared to the previous examination. No evidence of newly occurring liver metastases
- Uniportal, anatomical segment VI resection and radical mediastinal lymphadenectomy left with pulmonary metastasis in the apical lower lobe on the left

### Treatment:

- Navigated microwave ablation of a colon metastasis in the lower left lobe of the lung

### Result:

- The control CT three months after treatment shows no tumor activity



01

Biopsy in a  
difficult localization  
in the liver hilum



02

IRE near the portal vein  
plus three MWA

03

Five GIST in the liver

04

IRE of HCC



05

Biopsy and MWA of a  
residual metastasis  
in liver segment I

06

Tissue-sparing ablation  
of a liver metastasis  
near the large intestine

07

Cryoablation  
of kidney carcinoma

08

MWA of a colon  
metastasis in the lung

09

Ablation of an "invisible  
lesion" in liver segment  
VIII

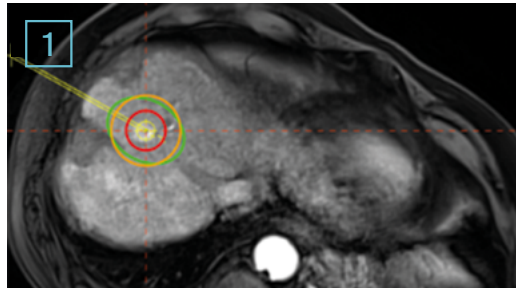
10

MWA near the inferior  
vena cava and portal  
vein

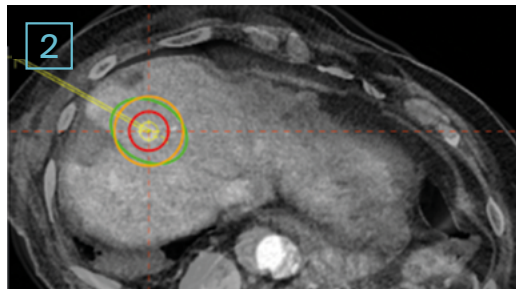
# CASE 09.

## Ablation of an "invisible lesion" in liver segment VIII

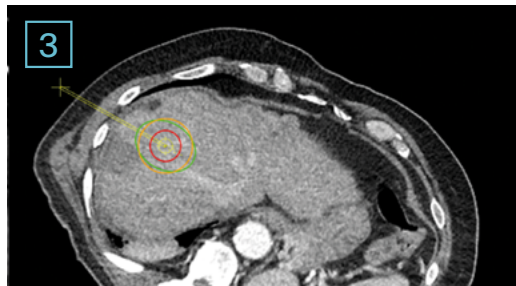
CT-guided and navigated biopsy followed by microwave ablation of a hepatocellular carcinoma. Treatment thanks to image fusion of MRI and CT imaging on CAS-One IR. Control MRI shows complete necrosis of HCC in segment VIII.



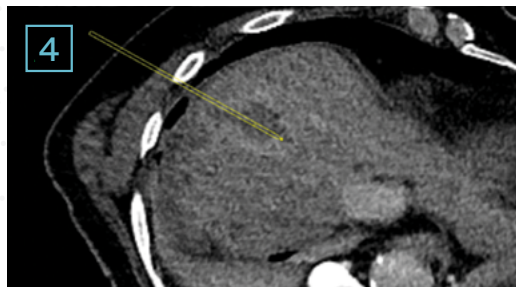
MRI scan showing  
the lesion in the  
center of the three  
circles: red (tumour),  
yellow (safety  
margin), green  
(ablation volume)



50/50 MRI and CT  
scan



CT scan not showing  
the lesion



Control scan after  
the ablation showing  
the necrosis at the  
treatment area

**Name:** PD Dr. Anja Lachenmayer & Dr. Nando Mertineit

**Institution:** Inselspital, Bern, Switzerland

**Patient age and sex:** 63 years, male

### Initial condition:

- Initial diagnosis: Multifocal hepatocellular carcinoma (HCC), stage BCLC B
- Admission of the patient to hepatology. Diagnosis: cirrhotic liver and multifocal HCC. Start of systemic therapy with sorafenib and recommendation for accompanying microwave ablation for local tumor control
- Aim of «downstaging» in order to qualify the patient for liver transplantation according to the Milan criteria
- Microwave ablation in segments IVb and VI (In the course of treatment CAS-One IR was used for all ablations)
- Additional HCC suspect lesions in segments II, III and VII

### Treatment:

- CT-guided and navigated biopsy followed by microwave ablation of an «invisible» lesion in liver segment VIII. Fusion of MRI and CT imaging to treat the lesion

### Result:

- The «invisible» lesion was completely ablated (Figure 4). Subsequently, the patient is examined for HCC suspicious lesions at regular appointments to check whether the criteria for his classification have changed or whether new ablations/treatments are necessary.



01

Biopsy in a  
difficult localization  
in the liver hilum



02

IRE near the portal vein  
plus three MWA

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Five GIST in the liver

04

IRE of HCC



05

Biopsy and MWA of a  
residual metastasis  
in liver segment I

06

Tissue-sparing ablation  
of a liver metastasis  
near the large intestine

07

Cryoablation  
of kidney carcinoma

08

MWA of a colon  
metastasis in the lung

09

Ablation of an "invisible  
lesion" in liver segment  
VIII

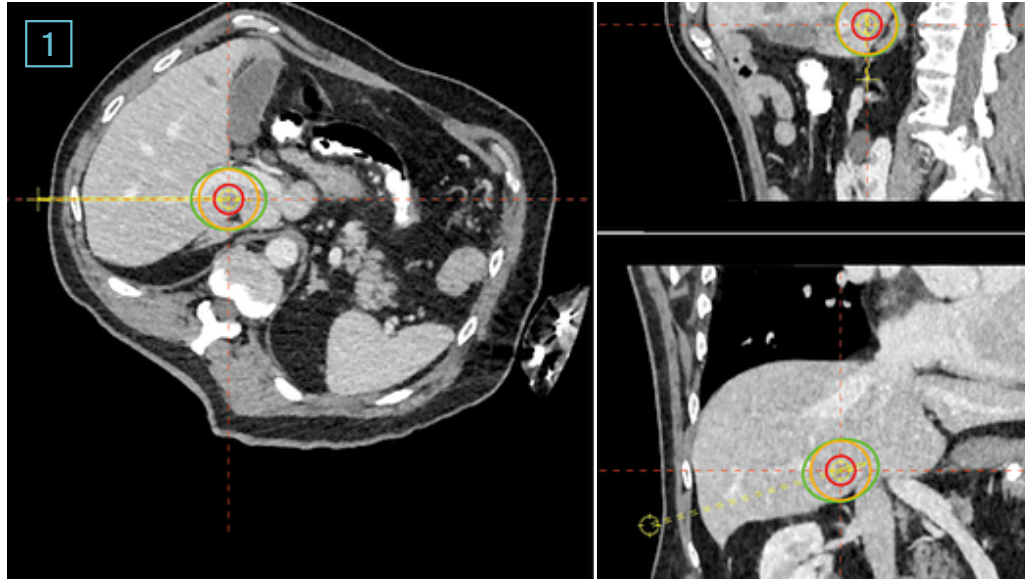
10

MWA near the inferior  
vena cava and portal  
vein

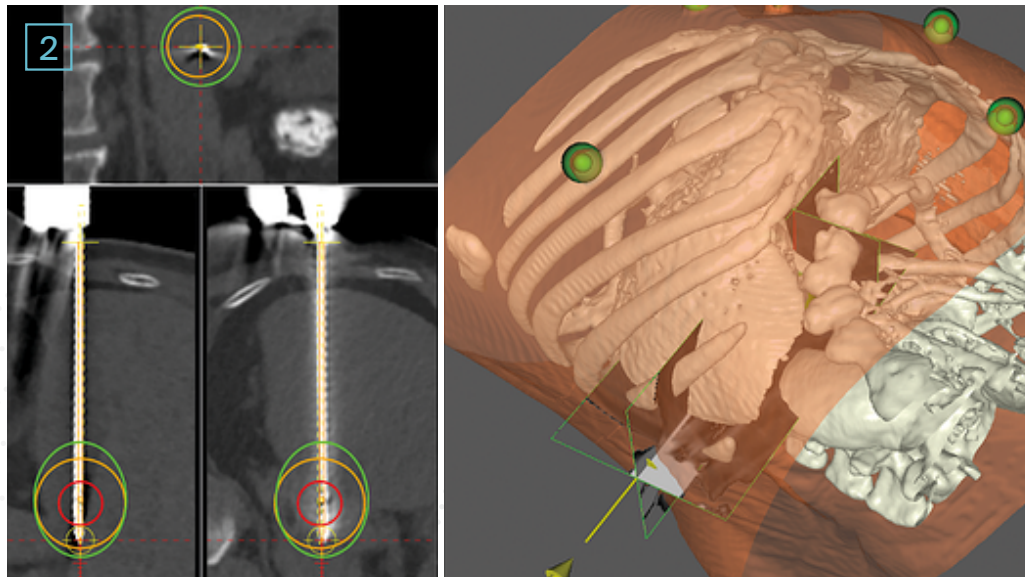
# CASE 10.

## MWA near the inferior vena cava and portal vein (1/2)

Navigated ablation of a difficultly located lesion in segment VI of the liver under the glisson capsule between the portal vein and the vena cava. Ablation was the only possible treatment because the patient refused chemotherapy. No vessels damaged during intervention. Complete ablation of the lesion on the control CT.



Planning scan of the  
intervention (MPR)



Validation of needle  
trajectory and needle  
position



**01**  
Biopsy in a  
difficult localization  
in the liver hilum



**02**  
IRE near the portal vein  
plus three MWA

**03**  
Five GIST in the liver

**04**  
IRE of HCC



**05**  
Biopsy and MWA of a  
residual metastasis  
in liver segment I

**06**  
Tissue-sparing ablation  
of a liver metastasis  
near the large intestine

**07**  
Cryoablation  
of kidney carcinoma

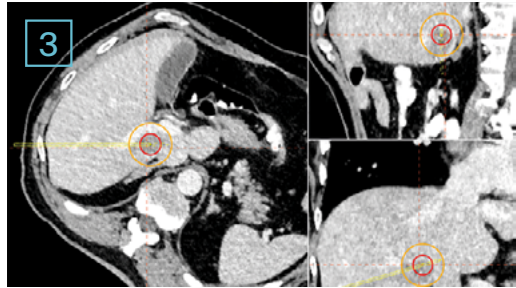
**08**  
MWA of a colon  
metastasis in the lung

**09**  
Ablation of an "invisible  
lesion" in liver segment  
VIII

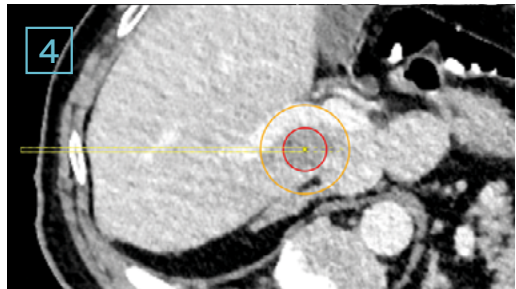
**10**  
MWA near the inferior  
vena cava and portal  
vein

# CASE 10.

## MWA near the inferior vena cava and portal vein (2/2)



CT scan after  
ablation with  
complete tumor  
treatment in axial,  
sagittal and coronal  
view



CT scan directly  
after ablation with  
ablation zone  
(hypodense) and  
planned safety  
margin (yellow)

**Name:** Dr. Carlo Tappero

**Institution:** HFR Fribourg, Switzerland

**Patient age and sex:** 58 years, male

### Initial condition:

Moderately differentiated adenocarcinoma of the lower rectum, classified as cT3 uN1 cM0, mutated KRAS gene, diagnosed quarter 2, 2018

- MRI of the pelvis, quarter 2, 2018: Tumour of the lower rectum, located about 5.5 cm from the anal edge and 2 cm from the upper part of the anal sphincter. The tumour infiltrates the right perirectal fat, which is classified as T3 N+ in the lower pole and is located 2 cm above the upper part of the anal sphincter
- Post-Radiochemotherapy status with Xeloda, quarter 2, 2018
- Ultra-low anterior post-resection status by laparotomy with manual colo-anal anastomosis and protective ileostomy, quarter 3, 2018, complicated by the conservatively treated anastomosis load. Postoperative stage ypT3 ypN1c (tumour deposition) (0/25) RO VO pNO RO. Tumour regression degree TR3
- Status after 9 cycles of palliative chemotherapy with FOLFOX (refusal of treatment with Avastin), quarter 4, 2018 to quarter 1 2019 followed by 6 cycles of chemotherapy with 5-FU / Leucovorin until quarter 2, 2019

### Treatment:

- Decision for a navigated procedure with CAS-One because the lesion is located in segment VI of the liver, under the glisson capsule and between the portal vein and the vena cava. Although the lesion was clearly identifiable under ultrasound, no access could be planned without damaging other vessels. With CAS-One, optimal access to the lesion could be planned and the procedure performed according to plan.
- Ablation was the only possible treatment as the patient refused chemotherapy.

### Result:

- The control CT shows the complete ablation of the lesion



## Benefits of Quality Ablation with CAS-One® IR



Enhanced Reliability and  
Accuracy with CT/MRI Planning  
& Navigation<sup>1-3</sup>



Treat More Patients with  
Challenging Tumour Cases<sup>2-4</sup>



Consistently low complication  
and significantly reduced  
recurrence rates<sup>3-5</sup>



1. Wallach D et al.: Comparison of freehand-navigated and aiming device-navigated targeting of liver lesions. Int J Med Robot. 2014
2. Beyer LP et al.: Stereotactically-navigated IRE compared to conventional IRE, PeerJ 2016
3. Tinguely P et al.: Stereotactic Image-Guided Microwave Ablation for Malignant Liver Tumors, Front. Oncol 2020
4. Lachenmayer et al.: Stereotactic image-guided microwave ablation of hepatocellular carcinoma, Liver Int. 2019
5. Beermann, M., et al.: 1000 consecutive ablation sessions in the era of computer assisted image guidance, Euro J Rad O 2018



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