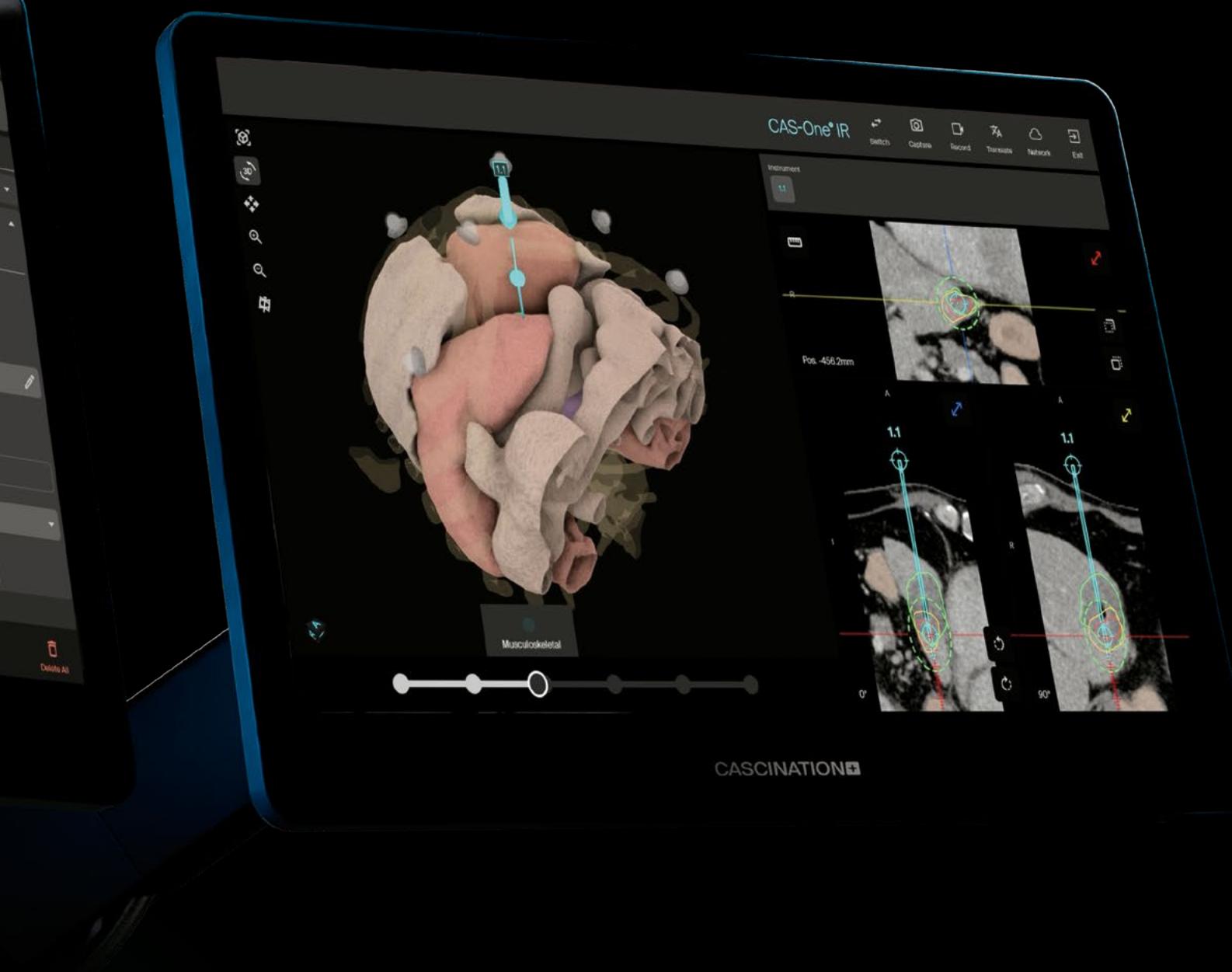




2025
top cases

Quality Ablation with
CAS-One® IR





We congratulate Dr. Marc-Antoine Jegonday and the team from CHU de Rennes, France, for winning the Top Case of 2025 (page 24). The case exemplifies the standard of 100% margins for 100% of patients.

19,500 needles delivered...
...and still counting



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IRE of an HCC recurrence in segment V with intra-arterial contrast

A 69-year-old patient diagnosed with an HCC and treated previously with a left lobectomy in 2020, underwent combined TACE and IRE after a first recurrence near the hepatic hilum. Two years later, a local recurrence at the same site was retreated with IRE under angio-CT guidance (intra-arterial contrast) using the CAS-One IR system. AblaSure® confirmed complete tumor coverage and 98% margin attainment. The procedure was rapid, uneventful, and efficient.

Initial Condition

Diagnosed in 2020 with a moderately differentiated HCC with cirrhosis, treated with a left lobectomy. In June 2023, a local recurrence in seg. V near the hepatic hilum was treated with TACE (Lipiodol® + Idarubicine) + IRE. A complete response was achieved until a new local recurrence occurred at the previously treated site in April 2025. In May 2025, the MDT recommended repeat ablation with IRE for the recurrence located at the antero-inferior margin of the previous ablation zone.

Treatment

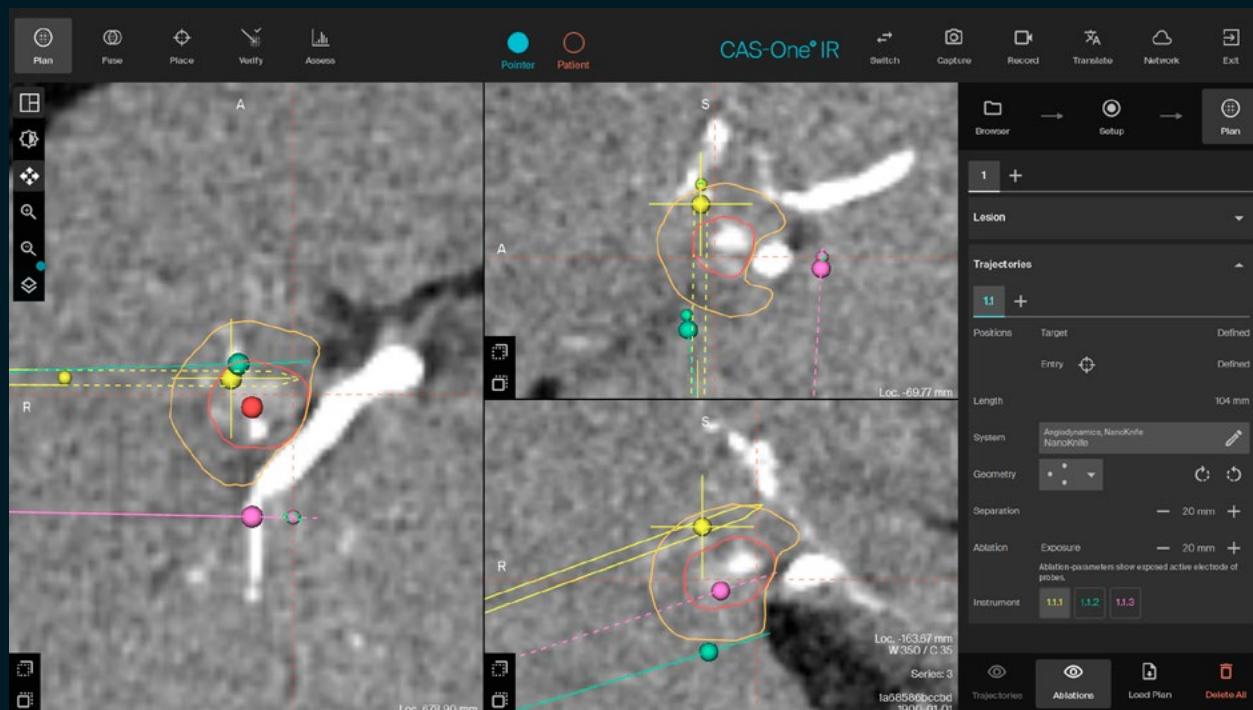
Intervention was performed at the end of June 2025 with GA in the Angio-CT room. Through femoral access, a catheter was placed in the right hepatic artery to enable intra-arterial contrast enhancement of the lesion. Repeat acquisitions with minimal contrast injection allowed precise tumor targeting and ablation monitoring. The lesion was treated with three IRE probes and a

second application was performed after probe pull-back adjustment to ensure complete margin coverage.

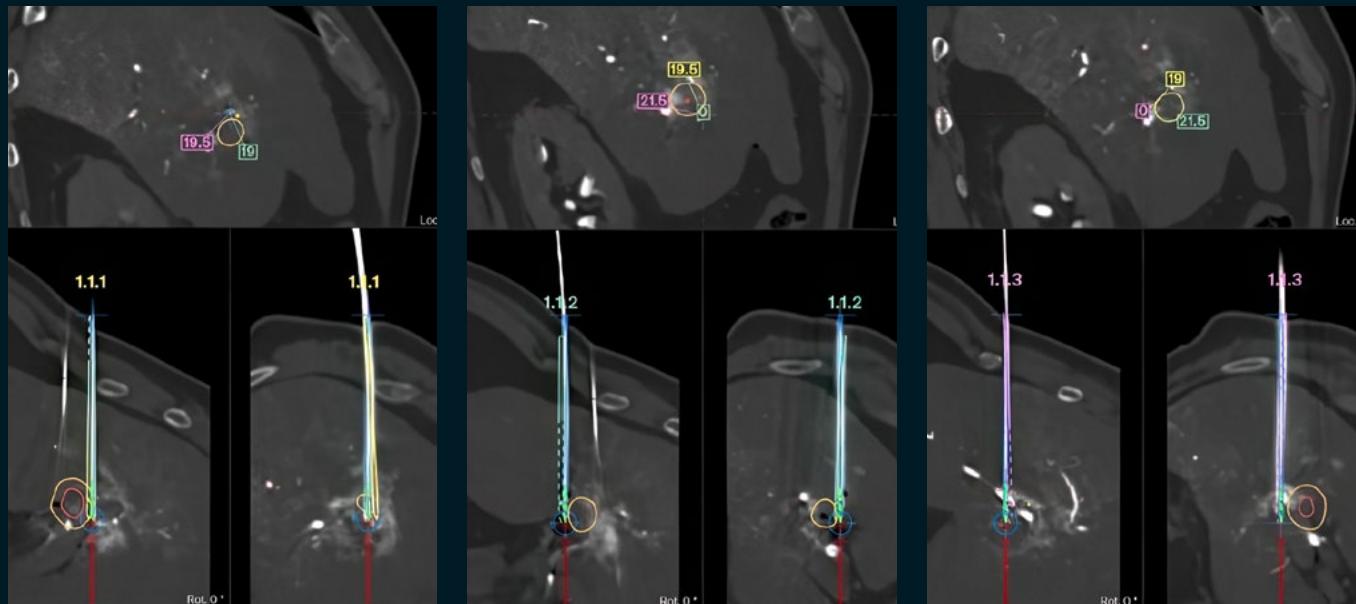
Results and Conclusion

The lesion near the hepatic hilum was accurately segmented after intra-arterial contrast injection using the SmartMargin tool. AblaSure showed 100% coverage of the lesion and 98% coverage of the margin. The patient was discharged the following day without complications. Follow-up imaging confirmed the coverage, with the appearance of a new LI-RADS 3 lesion currently under surveillance. CAS-One IR and its tools are applicable for any kind of treatment no matter the injection modality.

Dr. Chevallier said: "Being more accustomed to placing IRE probes under ultrasound and CT, I was pleasantly surprised by the speed and accuracy of probe placement using, which required minimal manual adjustment before ablation. The software also performed very well with intra-arterial contrast-enhanced angio-CT images."



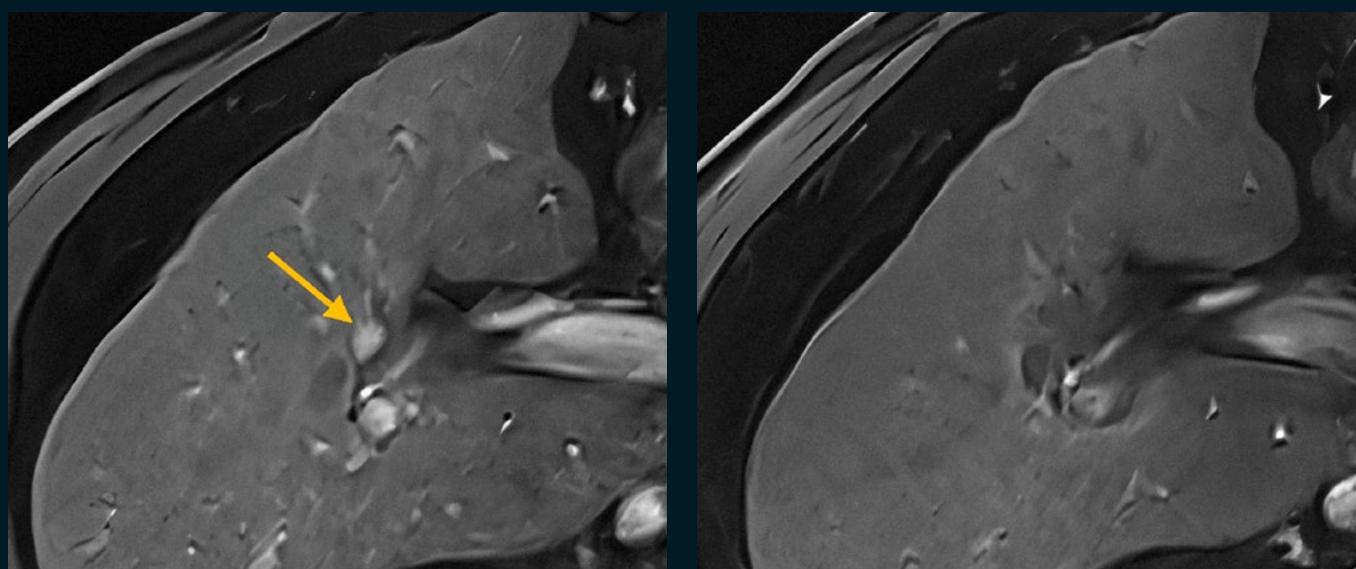
Planning scan showing the lesion and the SmartMargin tool defining the target margins while excluding the hepatic artery.



Verification scan of the 3 probes showing accuracy and inter-probe distance



AblaSure showing a complete treatment of the tumor and 5 mm margin (100% lesion, 98% margin)



MRI Follow-up at 8 weeks showing complete treatment

Five liver metastases treated with intra-arterial contrast

An 85-year-old female was initially diagnosed with rectal cancer and was treated with resection and chemotherapy. Eight months later, several lesions appeared on a routine MRI and it was decided to ablate with CAS-One IR and intra-arterial contrast on the five remaining lesions.

The planning, and navigation functions of CAS-One IR aided in the complex locations and trajectories needed to treat, as multiple lesions were subcapsular or close to critical structures. Hydrodissection was also performed to distance one lesion from the gallbladder – which was easily visible in the 3D reconstruction.

AblaSure showed excellent coverage of all five lesions and the team was confidence there would not be recurrence. The patient currently waits for long term follow-up.

Initial Condition

The patient was initially diagnosed with rectal cancer with liver mets in November 2023. The patient had atrial fibrillation. Over the next year, they had resections combined with chemotherapy and intra-operative ablation. During a resection, more lesions were found and treated in February 2025. Afterwards, chemo started and an MRI revealed partial response in some mets, but five were not completely treated. The MDT decided to perform a CAS-One IR guided ablation due to all of the complexities of the case. A pre-op CT scan showed only two visible lesions, and the decision was made to use intra-arterial contrast during the procedure to increase visibility.

Treatment

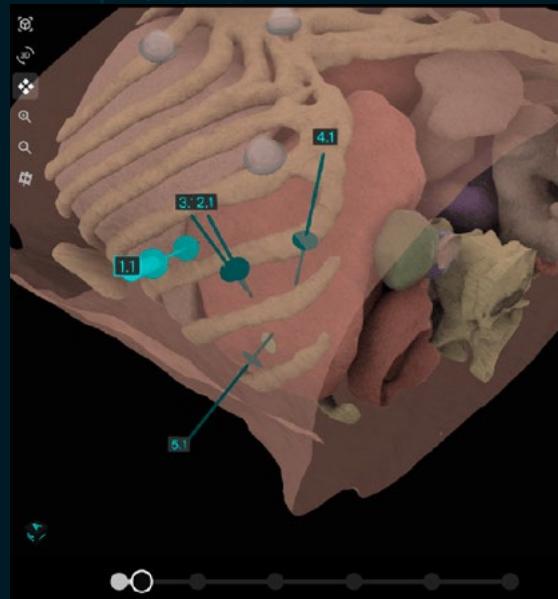
The procedure were performed under GA with HFJV. An intra-arterial catheter was placed in hepatica communis, and contrast was injected for planning, needle verification and assessment scans. Hydrodissection was also performed near the gallbladder to protect it from heat during the ablation.

Result

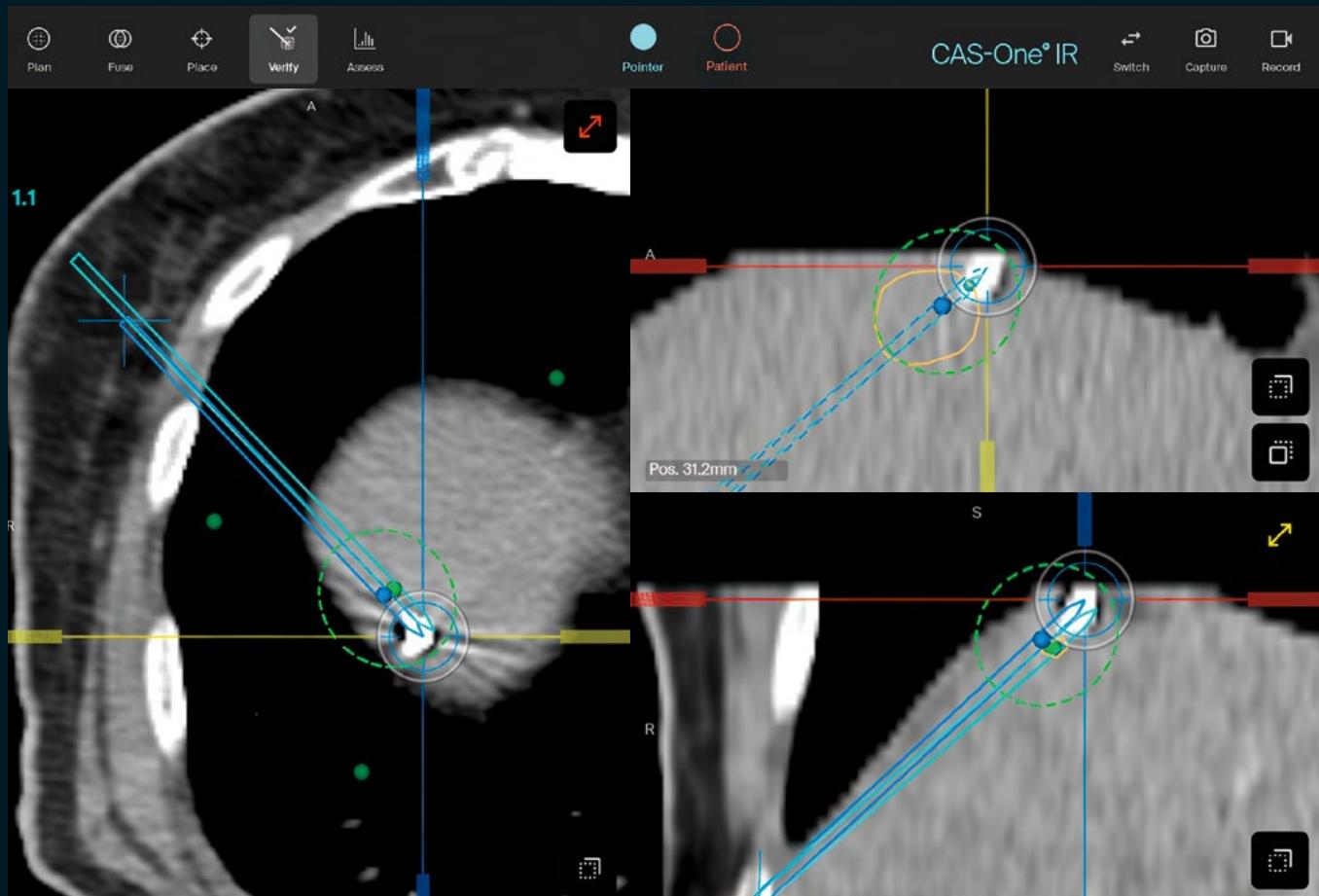
After the ablations were verified as successful with AblaSure, the hepatic catheter was removed. All lesions were successfully treated with no complications. The patient remained hospitalized overnight and was discharged the following day. 1 month follow up CT shows no signs of complications. Another follow-up CT/MRI is scheduled in 6 months.



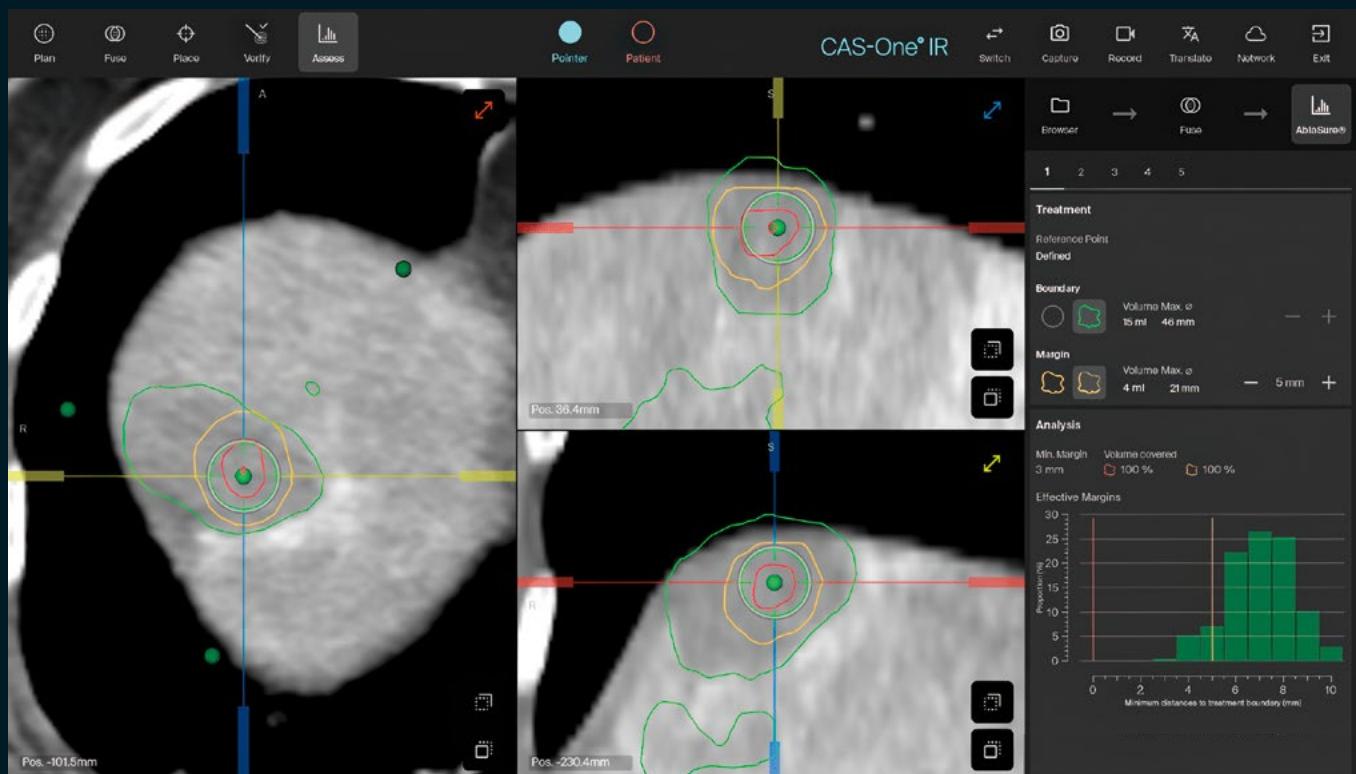
Planning and ablation simulation of one of the five lesions – showing that 1:30 at 100W should cover the desired margin (5 mm)



3D reconstruction of all five planned trajectories



Needle verification scan showing even with minimal error (2 mm) no adjustment is necessary as the margin should be met



AblaSure result of the one lesions, showing a 100% tumor coverage and 100 margin coverage

Combined biopsy and MWA on two breast cancer metastases in the liver

A 48-year-old woman was diagnosed in 2022 with breast cancer with lymphovascular invasion. In March 2025 a liver metastasis in seg. VI was discovered on the PET-CT. A biopsy with US failed because the lesion wasn't visible. A freehand CT-guided biopsy also failed multiple times. In April 2025, the MRI showed a second subcapsular metastasis. The decision was made to do the biopsy and MWA of both tumors in one session with the assistance of CAS-One IR. The patient was treated successfully and biopsy confirmed the diagnosis.

Initial Condition

Diagnosed in 2022, an R0 resection of an invasive duct breast carcinomas with lymphovascular invasion was performed. PET suggested a liver metastasis but biopsy was negative. Patient received 6 cycles of docetaxel and cyclophosphamid until November 2022, and radiotherapy in January 2023. In March 2025 a liver met in seg. VI was discovered. A biopsy with US failed due to invisibility of the tumor. A CT-guided biopsy was performed freehand and came back with normal parenchyma after multiple needle positionings. In April 2025 an MRI showed the lesion in seg. VI and a new subcapsular lesion. MDT decided on biopsy + MWA with the assistance of CAS-One IR.

Treatment

Intervention was performed end of April 2025 under GA. A successful biopsy confirmed the diagnosis of breast cancer metastasis hormone R+, HER 2 5%. The two lesions were treated with one positioning of the probe.

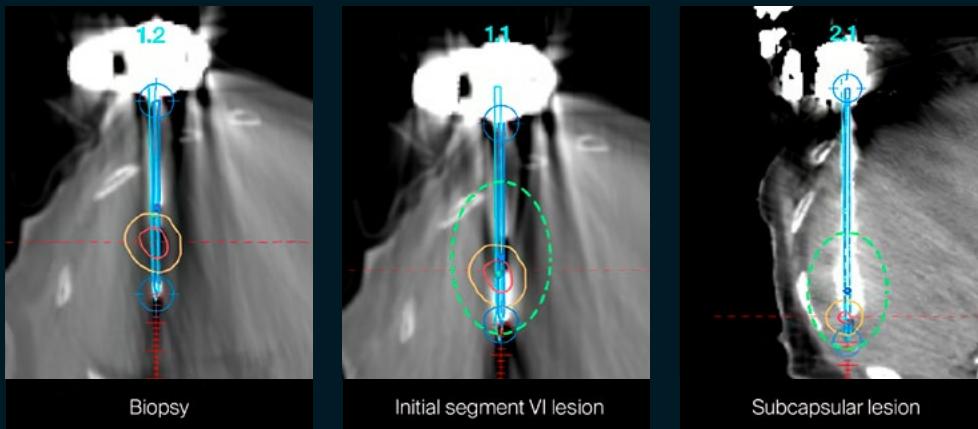
Results and Conclusion

The biopsy and both treatments realized consecutively with one probe, and completed in less than 90 minutes. AblaSure showed a complete coverage of the subcapsular lesion and a 3 mm effective ablation margin on the bigger lesion, due to a heat sink effect from the hepatic vein. A venous bleed from the capsule was seen on the control scan, which stopped after manual compression. CAS-One IR again proves that it's a complete tool allowing precise navigation to confirm diagnosis but also to perform complete ablations.

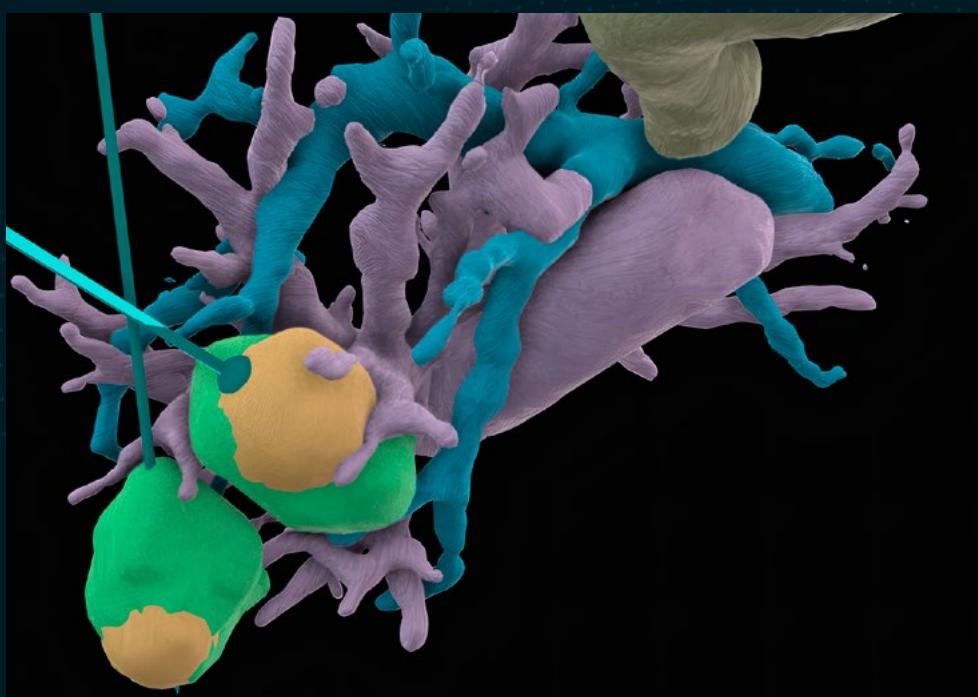
Dr. Farkas said about the case: "It was really satisfying to be able to place the probes so precisely at first try and to instantly have the perfect tissue core after multiple previous failed attempts."



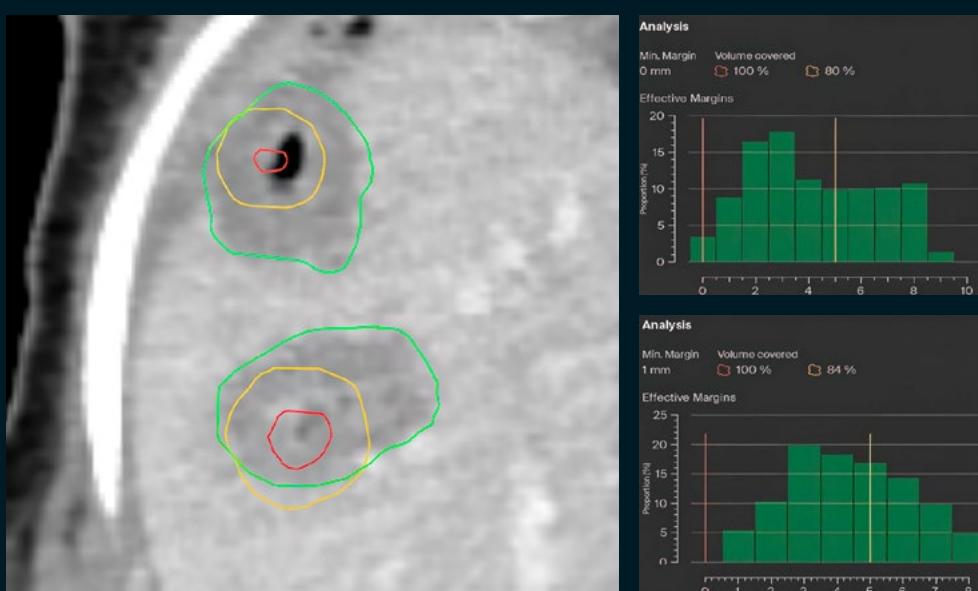
Planning scan showing the two lesions and the needle trajectories



Verification scan of the 3 probes for the biopsy and MWA of the first lesion, and treatment of the second lesion



3D segmentation showing the ablation zone



Ablasure showing 100% coverage of the lesions, with 80% and 84% margins

Invisible lesions in the pelvis treated with cryo

A 76-year-old patient with a complex, 5-year adenocarcinoma history, involving resection as well as multiple chemotherapy and radiation treatments developed recurrences in the pelvis. The lesions were invisible on CT, and the MDT recommended against additional surgery or radiotherapy due to the treatment history, and recommended cryoablation with CAS-One IR. CT/MRI fusion was performed, two needles were planned and placed and hydrodissection was performed to protect the intestines. The cryoablation treatment was a success covering 100% of the tumors, with no intraprocedural complications.

Initial Condition

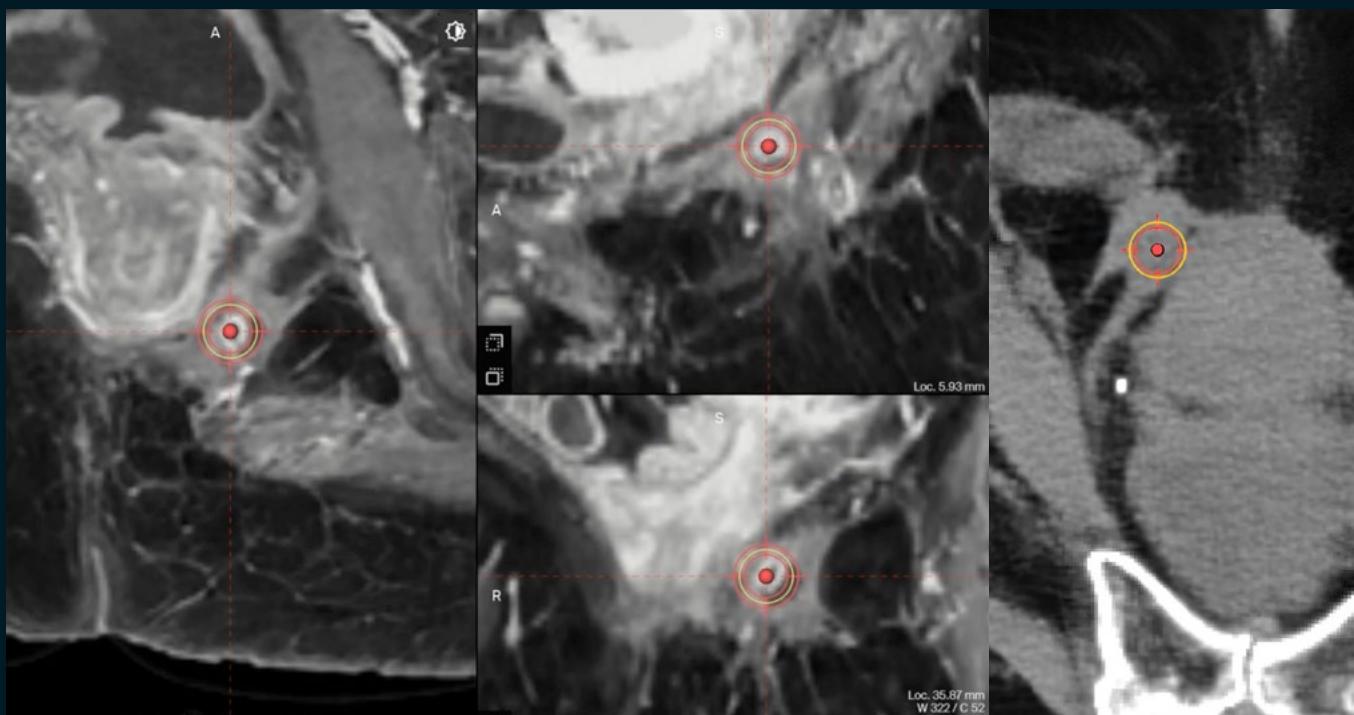
Adenocarcinoma resection with amputation with permanent left colostomy of the lower rectum, pT3 pN0 pMO in 2020. PET-CT and pelvic MRI in 2023 revealed two hypermetabolic nodular lesions suspicious for locoregional recurrence in the left ischioanal fossa and left pelvis (precoccygeal). Pathology revealed cylindrical biopsies infiltrated by colorectal-type adenocarcinoma. First-line chemo: FOLFOX + Avastin initiated with good partial response. MDT recommended two more months of chemo, followed by curative-intent chemoradiotherapy. In 2025 an MRI revealed a 6 mm ring-enhancing lesion at the irradiated site in the left ischioanal fossa—indicative of recurrence. MDT recommended cryoablation with CAS-One IR as both resection and re-irradiation were not advised due to prior treatment history.

Treatment

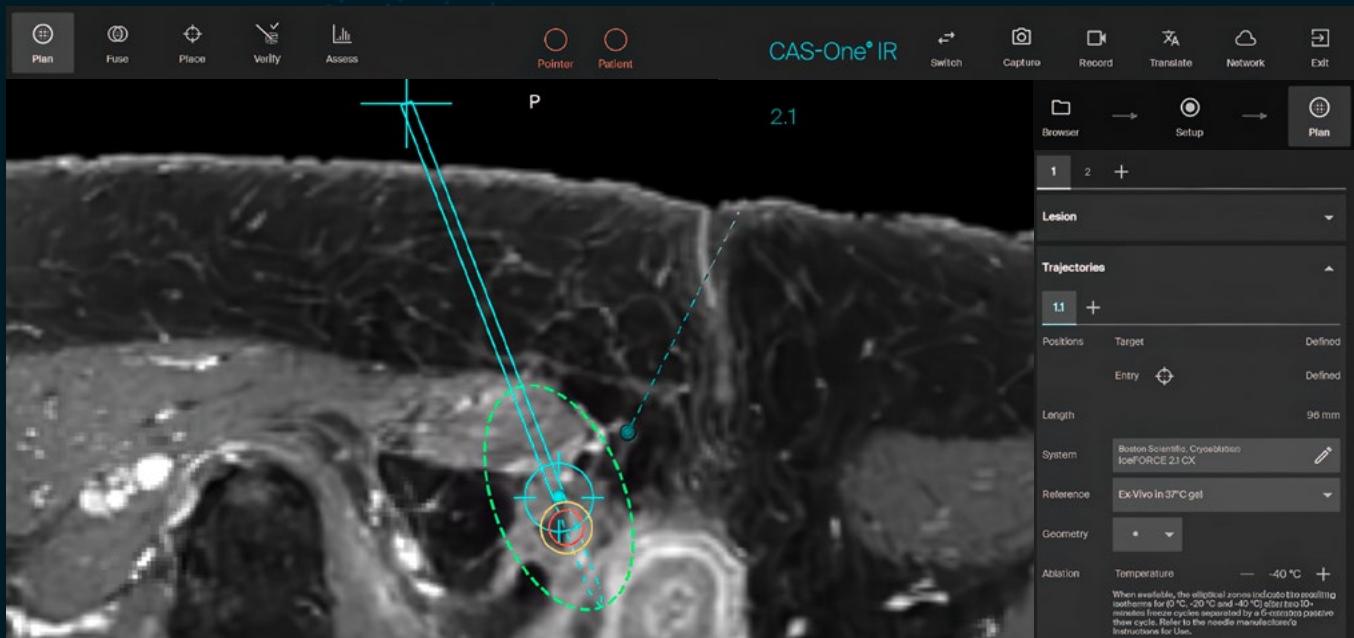
A CT-MRI was performed, as the lesions were very small (one was 6 mm) and invisible on CT. Hydrodissection was administered in order to protect the structures around the lesion. One IceSphere, and one IceRod probe were planned, simulated and placed in a converging manner. One single needle advancement was applied with each needle.

Result

Post-procedure imaging showed 100% tumor coverage with a minimal ablative margin of 6 mm. The patient remained hospitalized overnight and was discharged the following day. A follow-up CT/MRI is scheduled in three months.



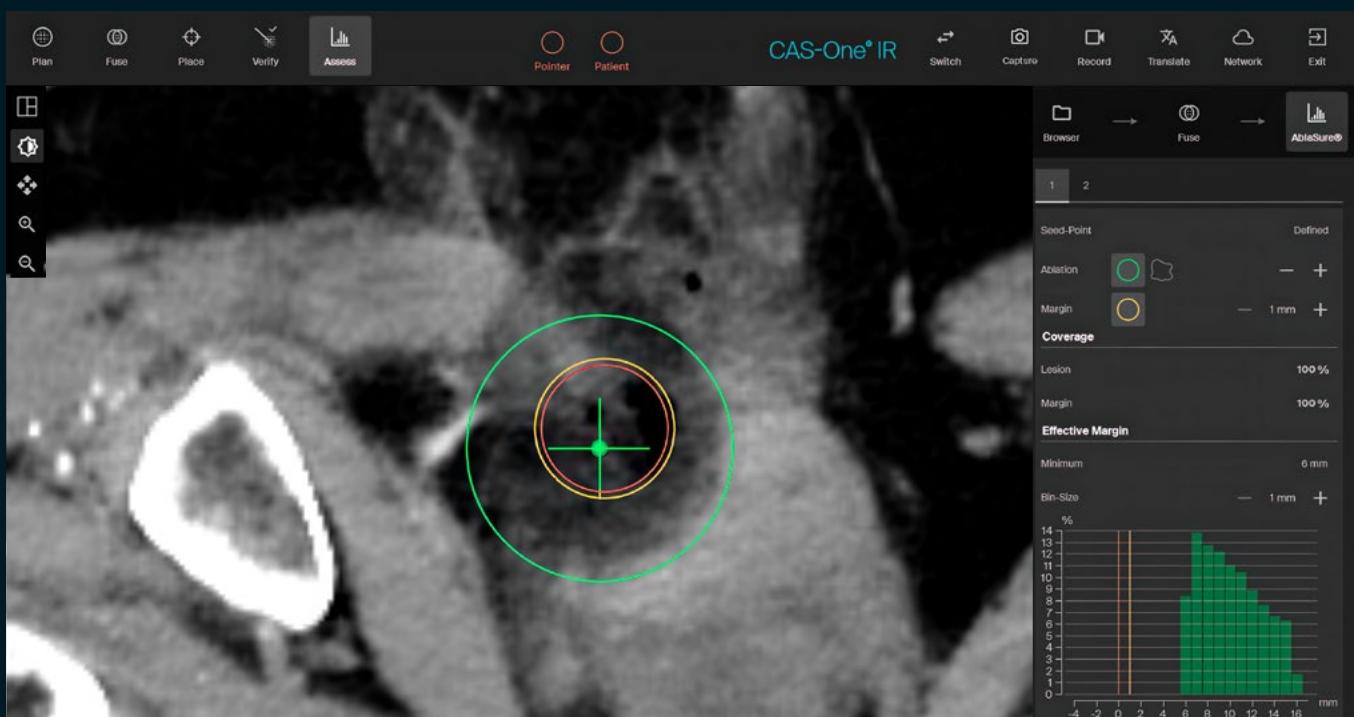
Lesion invisible on CT, but fused with MRI to make treatment possible



Planning of the first cryoablation needle



First cryoablation needle verification



Ablation Confirmation showing 100% lesion coverage with a 6 mm MAM

Two MWA in two sessions

A 69-year-old patient presented with HCC in seg. II and was initially treated with TACE. Residual tumor was seen at the 6-month follow-up, and it was decided to try ablation, with the aid of CAS-One IR due to the proximity to the patients heart. An additional lesion was later discovered in seg. VII high in the liver dome, which was also treated with the help of CAS-One IR due to the previous positive experience. Both treatments were performed safely and effectively, with AblaSure showing treatment success.

Dr. Mauda-Havakuk stated that performing procedures with CAS-One IR felt significantly easier: 'I felt light', as it eliminates additional radiation during fluoroscopy, removing the need for lead protection. This not only alleviates discomfort from heavy lead aprons but also eliminates radiation exposure for physicians—a major advancement in these procedures.

Initial Condition

The patient was diagnosed with HCC in seg. II. The lesion was initially treated with TACE, as anticoagulant therapies could not be discontinued due to recent cardiac stenting. Tumor tissue was still detected and once anticoagulant therapy could be safely paused, a MWA procedure was planned. CAS-One IR was chosen due to the lesion's proximity to the heart. In March, another lesion was discovered in seg. VII. A wait-and-see approach was initially adopted before confirming the need for treatment, and later the MDT decided for MWA.

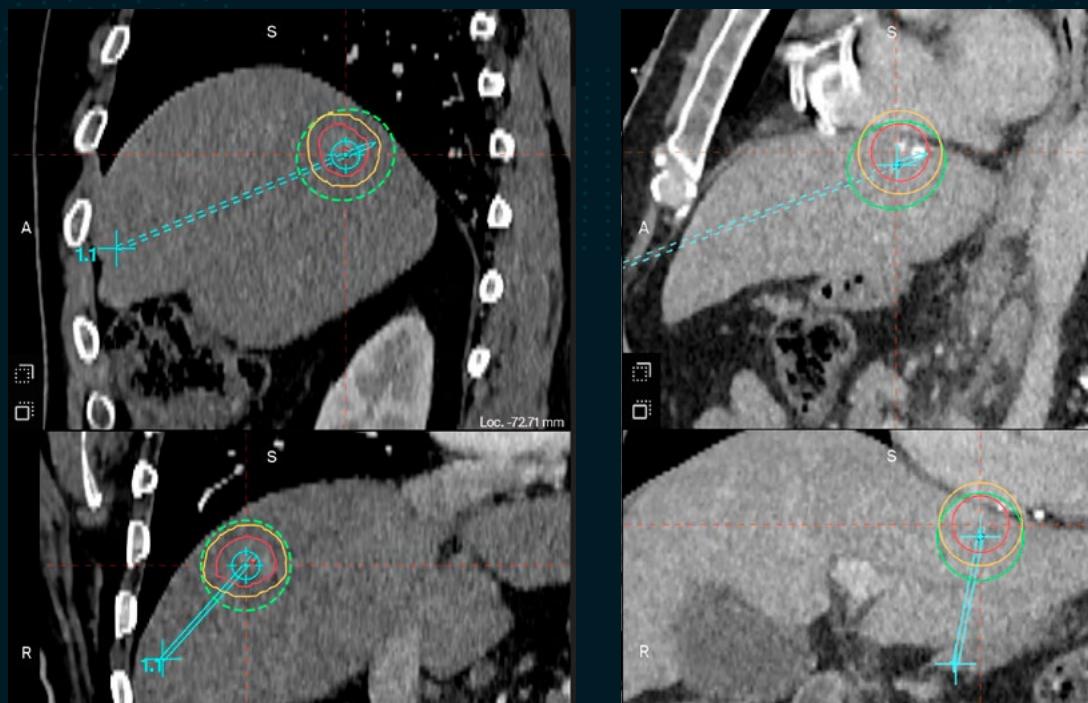
Treatment

Both procedures were performed under GA with breath hold. The first lesion was treated with 100W

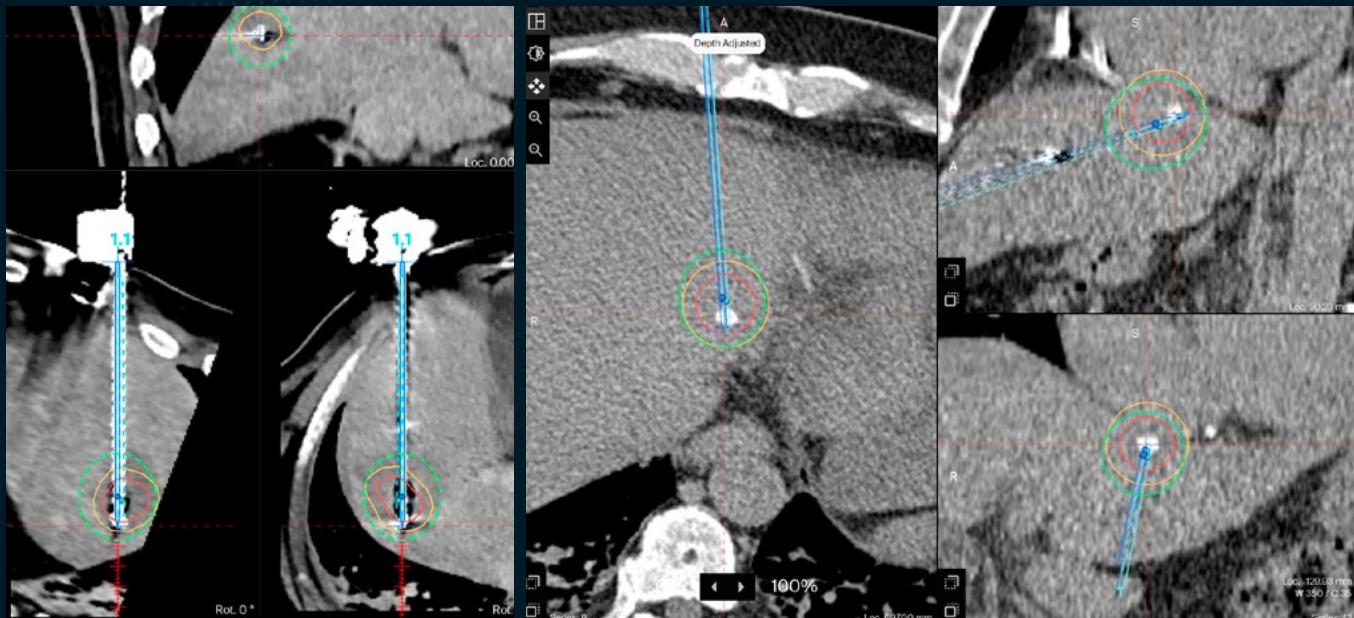
for 7 minutes. The second lesion in seg. VII was ablated at 110W for 8 minutes, followed by a pullback of 1.5 cm and an additional 8 minutes at 100 W. Due to the steep angle, the skin and liver capsule were pre-punctured with a stiff needle. One single push was applied for both lesions, with minimal (<2 mm, <1 mm) lateral displacement.

Result

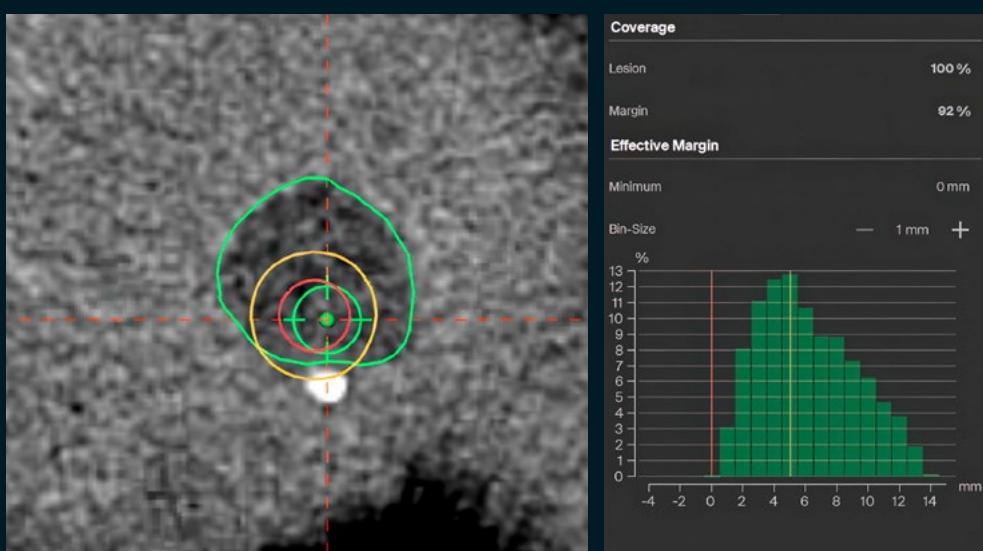
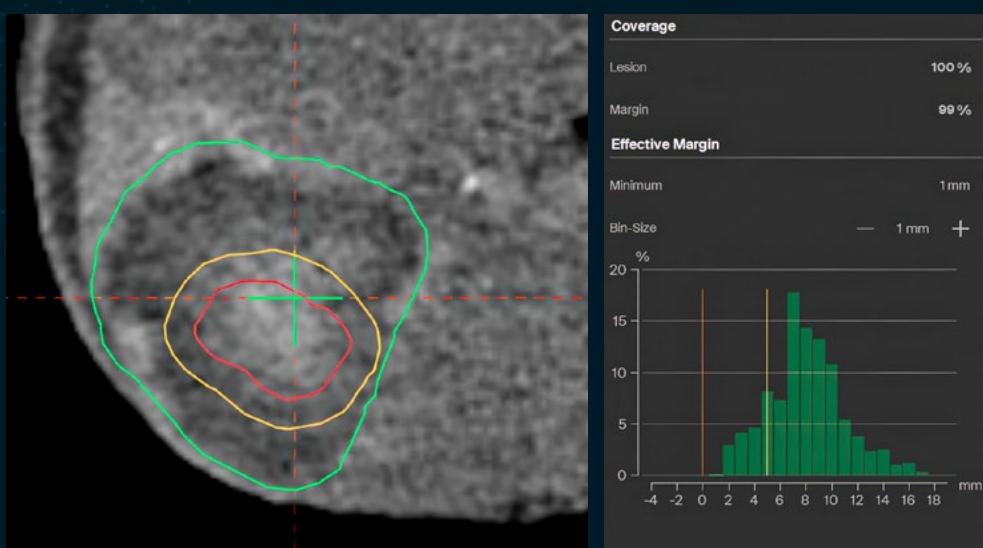
Post-procedure imaging performed one day after intervention was fused on CAS-One IR using AblaSure to assess treatment success. Both lesions were successfully treated with no complications during the procedures. The patient remained hospitalized overnight and was discharged the following day.



Planning and ablation simulation of the two lesions



Needle verification scans of the two placements, showing <1mm, and <2 mm lateral displacement



Liver lesion in segment I treated with MWA

A 61-year-old male with a complicated clinical history starting with a perforated sigmoid colon cancer in 2022 was treated with chemotherapy, surgeries, and multiple ablations. Multiple complications such as fistulas and infections occurred throughout these procedures, adding complexity to the patients history. In January 2025 the patient developed a metastasis in seg. I, and another lesion in seg. VII. MWA was selected, and due to the challenging position of the lesion in seg. I, CAS-One IR was used to plan, navigate and assess the treatments. The procedure was efficient and effective, with the ablation confirmation showing success.

Initial Condition

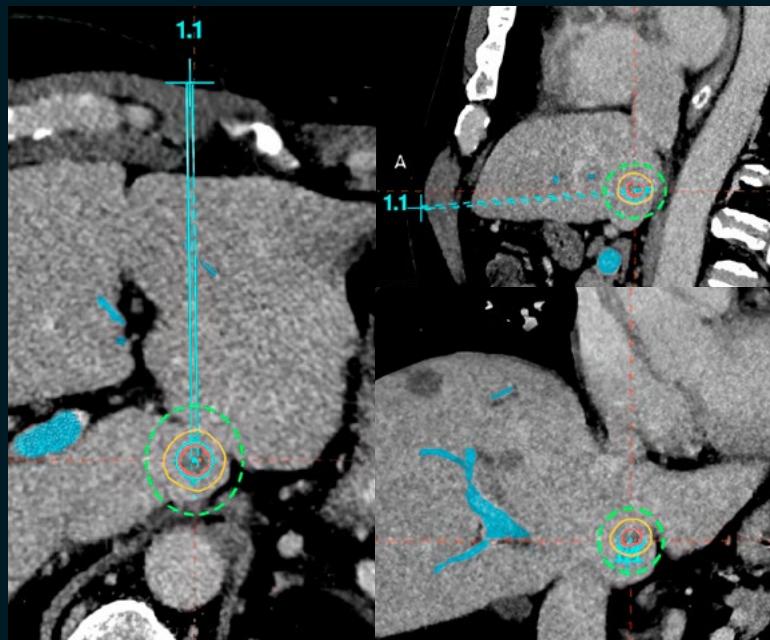
Patient initially diagnosed with perforated sigmoid colon cancer (pT4bN1a) in 2022. The history of treatment was long and complicated, involving several surgeries, rounds on chemotherapy, ablations and complications including fistulas and infections. In January 2025 two new suspicious lesions were confirmed to be malignant by CT and MRI. Lesions measured respectively 10 mm and 16 mm (seg. I, seg. VII). Due to the challenging location of the seg. I lesion, as well as the patients complicated history it was decided to to stereotactic navigated ablation with CAS-One IR.

Treatment

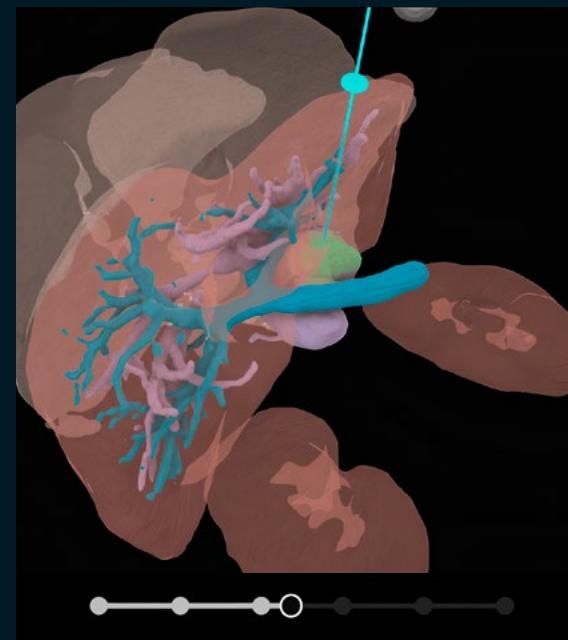
Patient was under GA with HFJV. Both lesions were planned, and due to the challenging location, the lesion in seg. I was executed first. The needle was placed accurately and the first lesion was treated at 100 W for 3.5 minutes. Immediately afterwards, the needle was placed in the second lesion which was treated at 100 W for 10 minutes.

Result

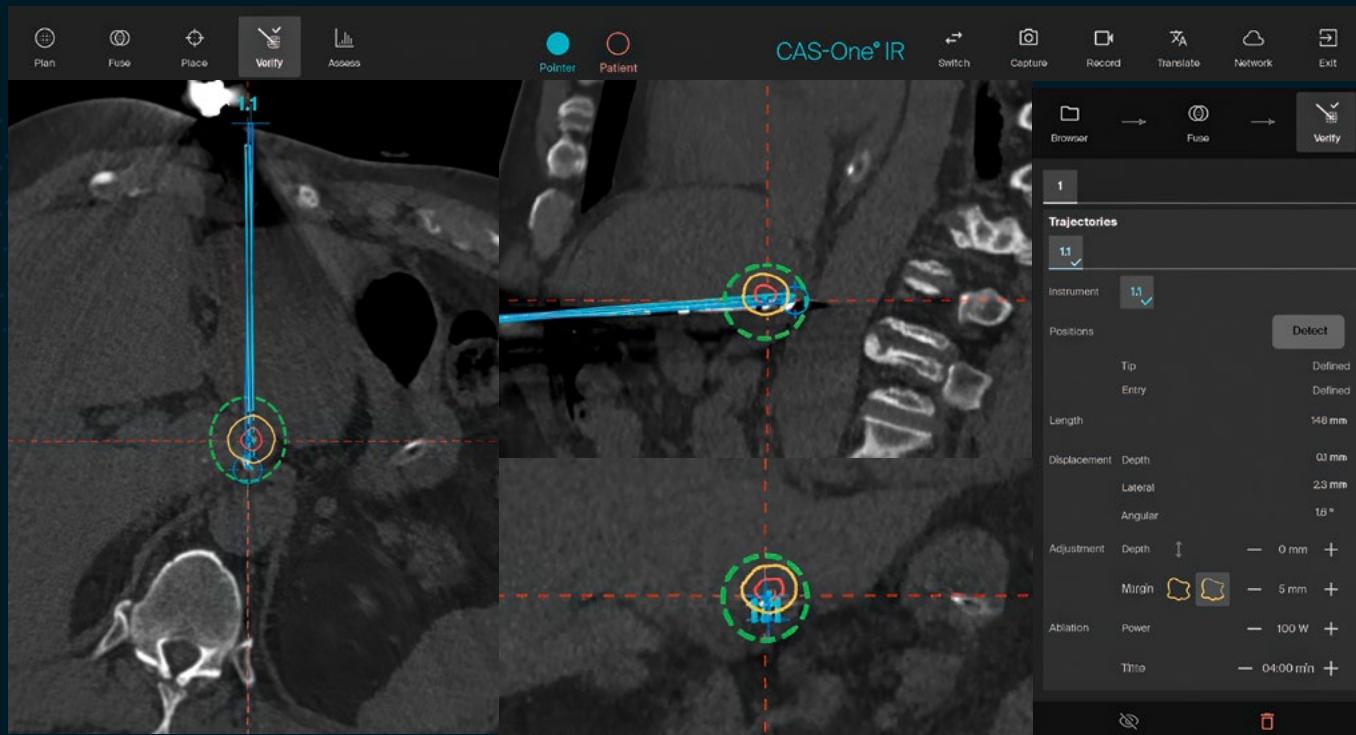
Post-ablation imaging using AblaSure confirmed treatment success. Both lesions were successfully treated with no complications during the procedures. The patient remained hospitalized overnight as of hospital routine, and was discharged the following day.



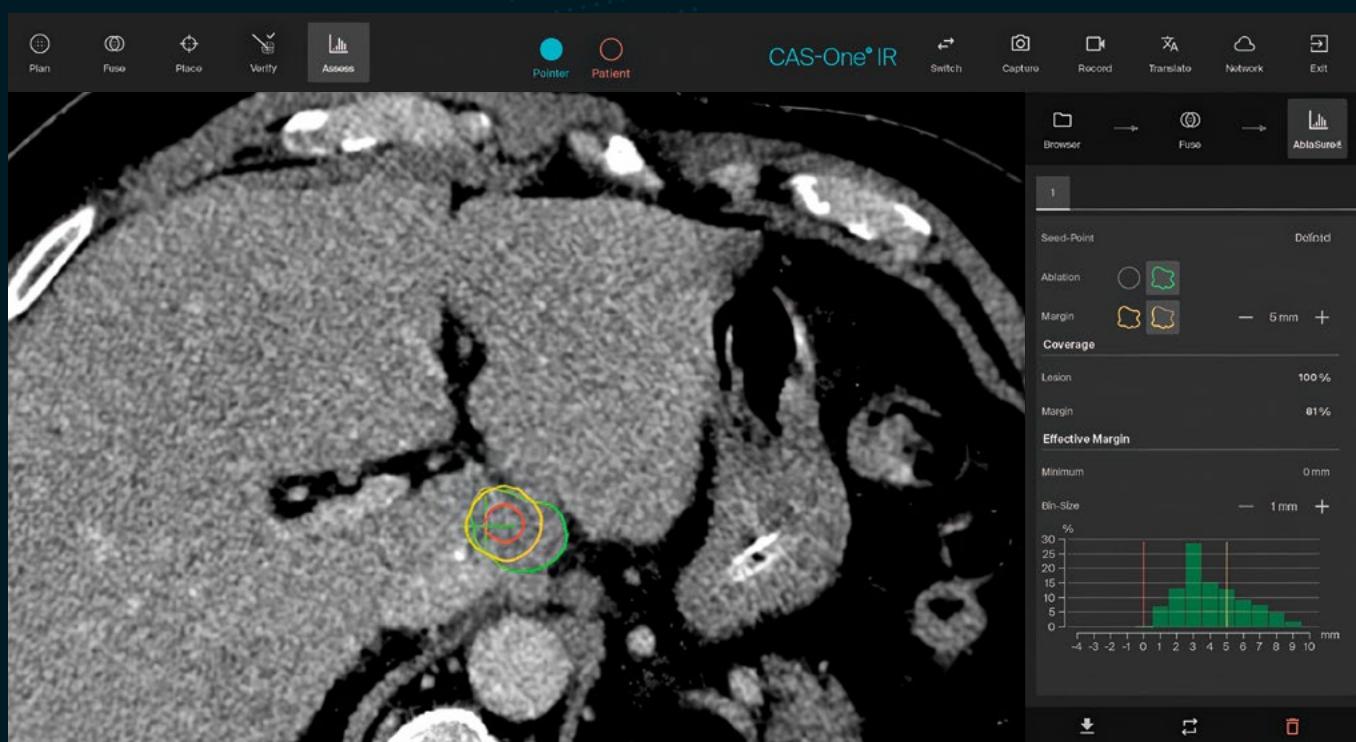
Planning simulation of lesion in seg. I



3D model of planned treatment in seg. I



Needle placement scan confirming accurate needle positioning of the lesion in seg. I



AblaSure showing adequate coverage of the lesion in seg. I

ECT of two lesions in segment IVa

A 75-year-old patient diagnosed in 2023 with a rectosigmoid cancer presented with two new hypervascular lesions in seg. IVa in a cirrhotic liver during the follow-up. The MDT decided doing electrochemotherapy (ECT) on both lesions, with a biopsy of one of them to confirm the HCC diagnosis. CAS-One IR was used to accurately place all 8 probes in optimal time. The procedure was done quickly and without any intraprocedural complications. A post-ablation MRI was taken and fused with the planning CT showing adequate coverage of the tumors, including a 5 mm margin. A 6-week follow-up MRI confirmed treatment success.

Initial Condition

Diagnosed in August 2023 with a pT4a,pN1,M0 colorectal carcinoma. Treated by resection and adjuvant chemotherapy. September 2024 follow-up MRI showed two hypervascular lesions in seg. IVa with dynamic contrast behavior in a cirrhotic liver suggesting HCC. MDT decided on an ECT of the two lesions due to their size and location (proximity to the gallbladder). A periinterventional biopsy was also planned due to history of tumor (rectosigmoid cancer) and suspected cirrhosis on MRI.

Treatment

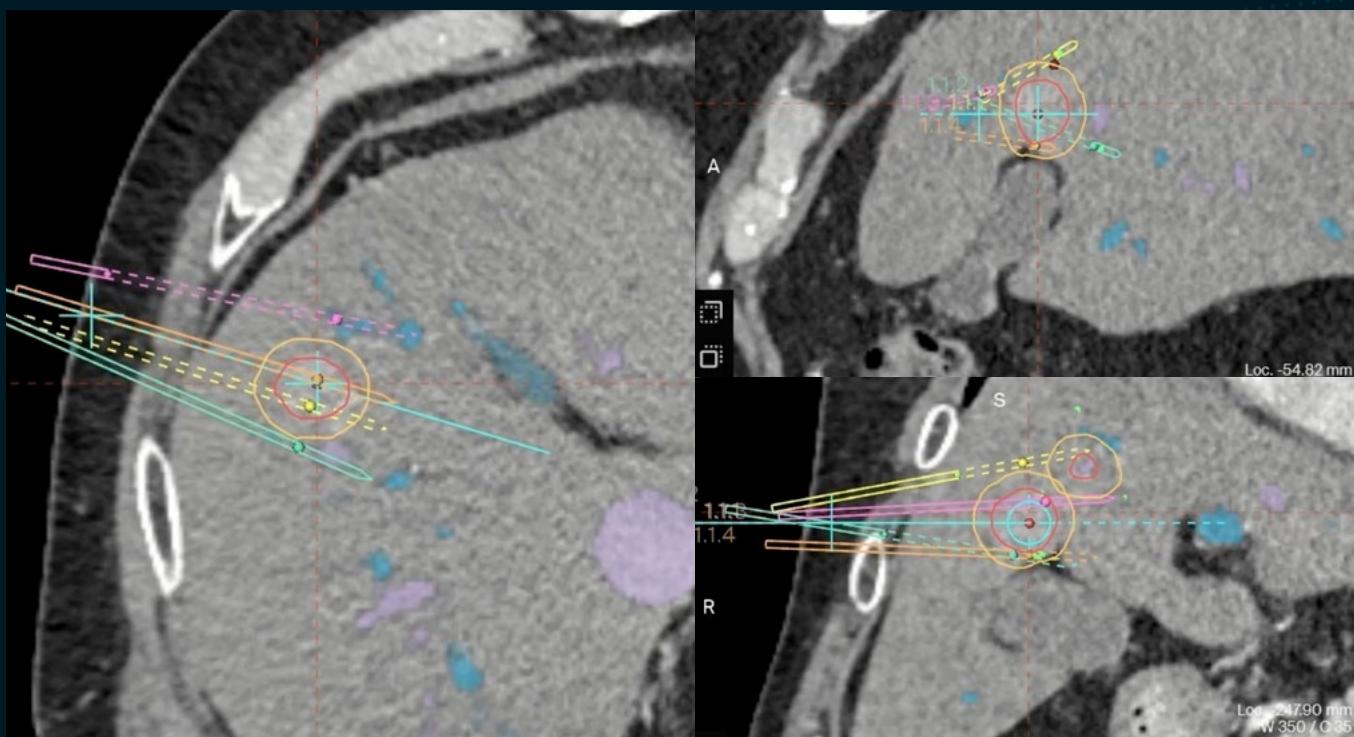
The intervention was performed under GA with apnea when needed. One 18G biopsy needle and 4 ECT probes were planned for the larger lesion, 3 ECT probes for the other. 30,000 IU of bleomycin was administered 8 minutes prior to ECT using the IGEA Cliniporator Vitae system. Planning and placement of all of the needles took about

1 hour. Visual assessment using the fusion from AblaSure confirmed complete ablation of both tumors.

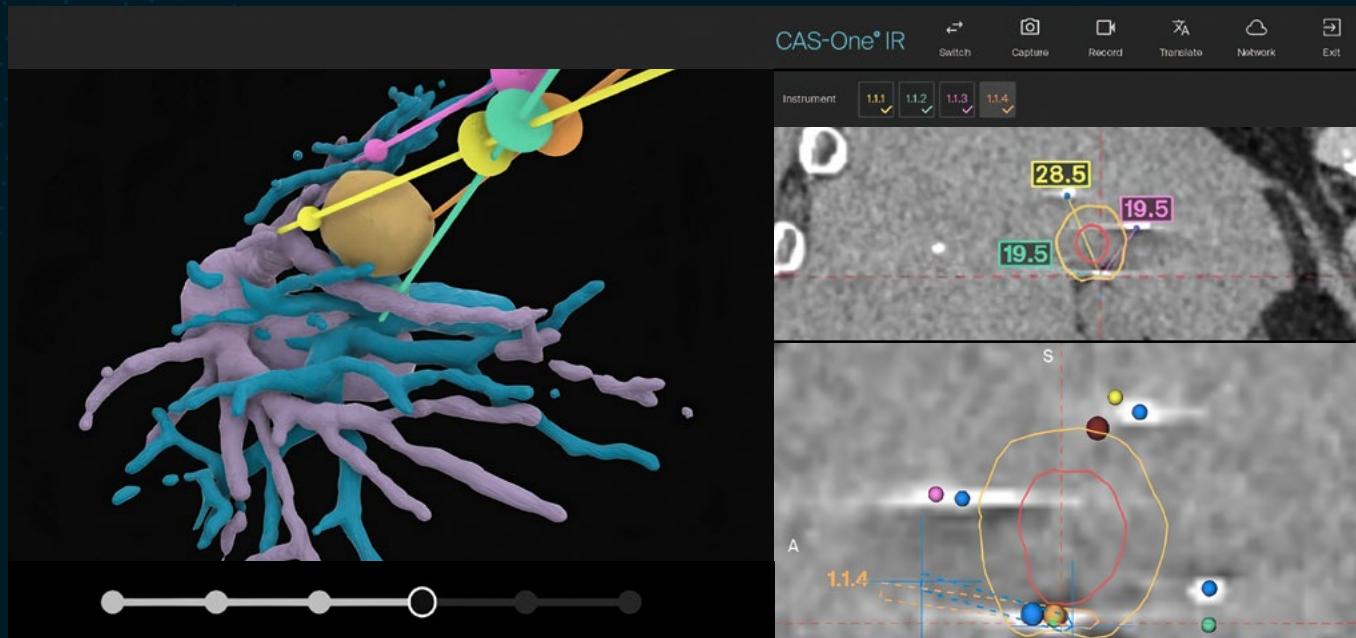
Results and Conclusion

Treatment and biopsy were completed with a total of 8 probes placement in approximately 3 hours. An MRI the next day confirmed the complete coverage of both tumors. Patient was discharged in good condition 2 days after the procedure with no peri- or post-interventional complications. Pathology confirmed the diagnosis of HCC. 6 week follow-up MRI confirmed complete treatment.

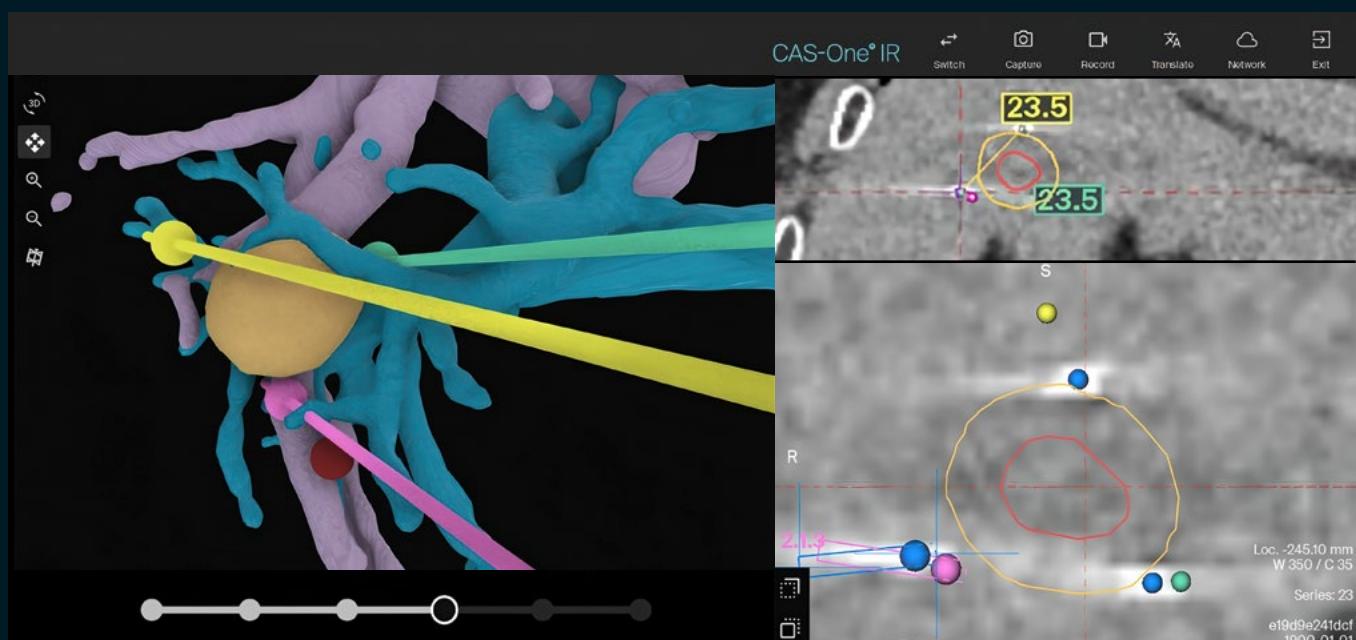
Dr. Goetz said about the case "With the support of CAS-One IR, we successfully treated two HCC lesions with ECT in a single session – overcoming the challenges of precise placement of multiple electrodes in complex anatomical locations and the time constraints imposed by the bleomycin efficacy window."



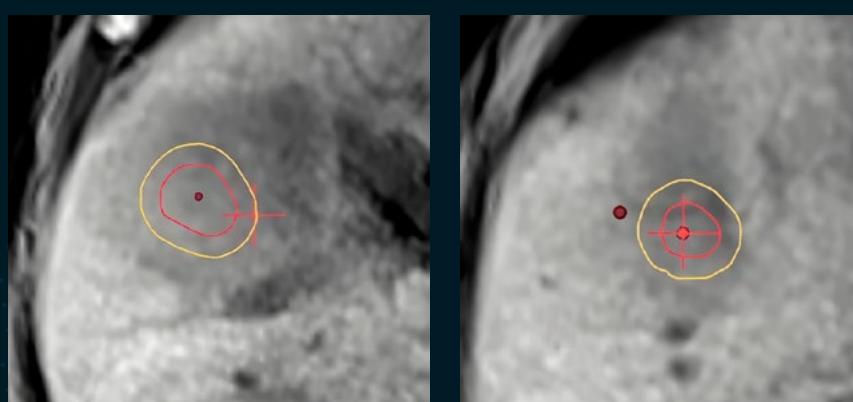
Planning scan of the 1st lesion showing the biopsy needle and the 4 ECT probes and the second lesion with 3 ECT probes.



Verification scan with the 4 probes on the first lesion showing a separation of 19.5 mm between the probes.



Verification scan with the 3 probes on the second lesion showing a separation of 23.5 mm between each probe.



Perfect parallelism in the upper pole of the left kidney

The patient presented for follow-up regarding ongoing imaging for active surveillance of an unclear renal mass suspected to be papillary RCC in the left kidney. Initial imaging identified a malignancy-suspect lesion (20 mm) in the dorsal upper pole.

Previously, a rad. onc. evaluated stereotactic radiation due to dual antiplatelet therapy. The patient declined intervention pending further imaging. Partial nephrectomy is not advised due to comorbidities. The patient was referred to IR for consultation and in the end with CAS-One IR. The planning, navigation, and post ablation assessment were performed successfully and the patient left the hospital the following day.

Initial Condition

Suspected Papillary RCC, Left Kidney (Diagnosed 11/2021)

Imaging Timeline:

- 10/2021 (CT): Unclear mass in mid-left kidney; protein-rich cyst suspected.
- 10/2021 (Ultrasound): Multiple left kidney cysts; one multilocular (Bosniak 2F).
- 11/2021 (CT): Suspect lesion in left kidney's upper pole, likely papillary RCC.
- 6/2022 (MRI): Stable tumor in left kidney staged as T1aNOMO.
- 10/2024 (MRI): Tumor progression to 31mm.

MRI Findings (10/28/2024):

- Left Kidney: Tumor enlargement to 31 x 22 x 31 mm; heterogeneity and restricted diffusion noted.
- Other: Stable aortic aneurysm; no enlarged lymph nodes.

Tumor Board Recommendations (12/12/2024):

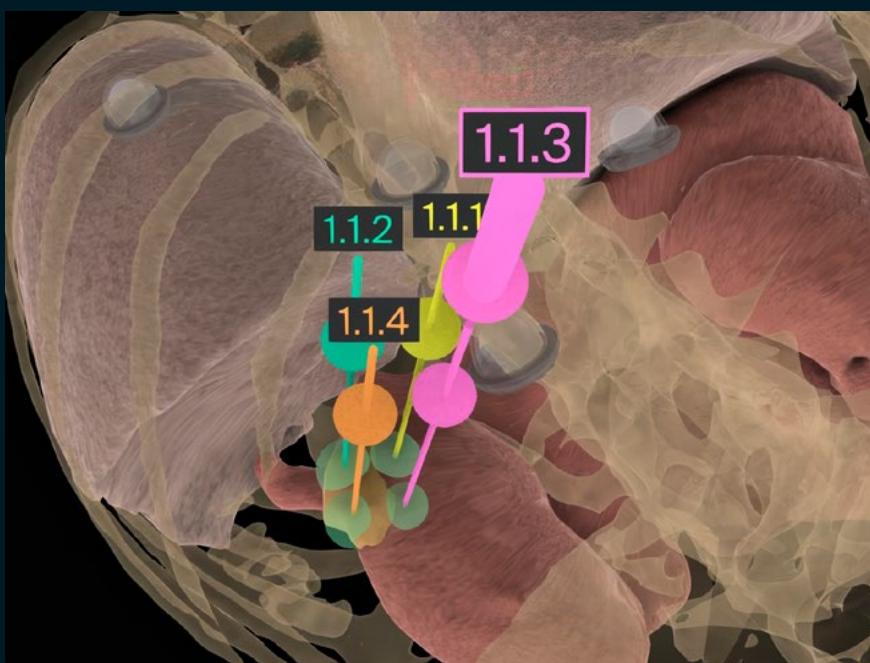
- Partial nephrectomy not advised refer to IR for cryo.

Treatment

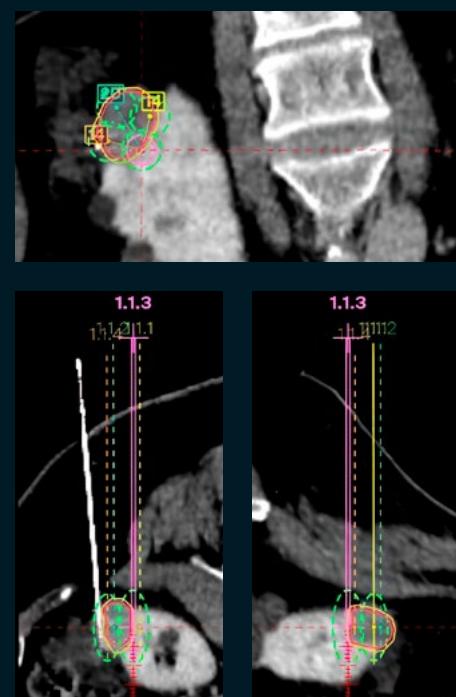
Procedure was performed under GA. The lesion was visible on CT and a four needle cryo treatment was planned and simulated to cover the tumor. Cryo was performed with four probes. Due to the proximity to the colon, a hydrodissection was performed. The four needles show excellent parallelism.

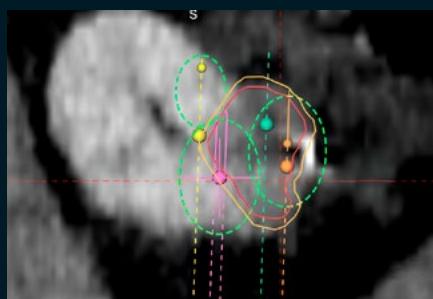
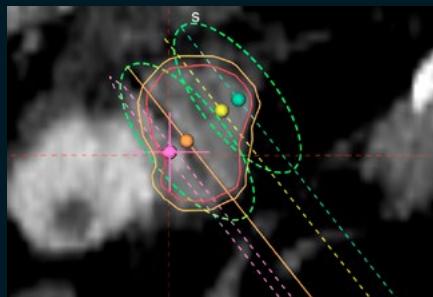
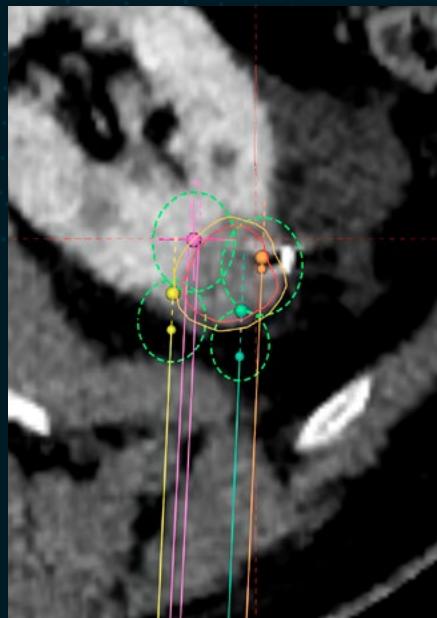
Result

The lesion was successfully treated and iceballs were evaluated on post-ablation scans. The patient stayed as an in-patient after the procedure, and left the hospital the day after. A 3-month follow up CT/MRI is planned.

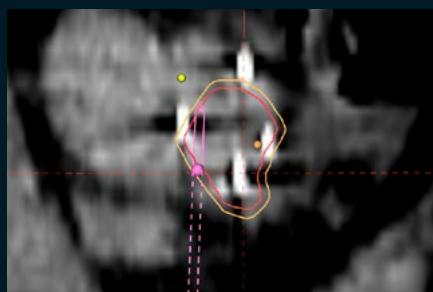
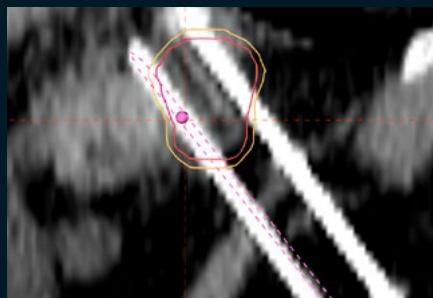
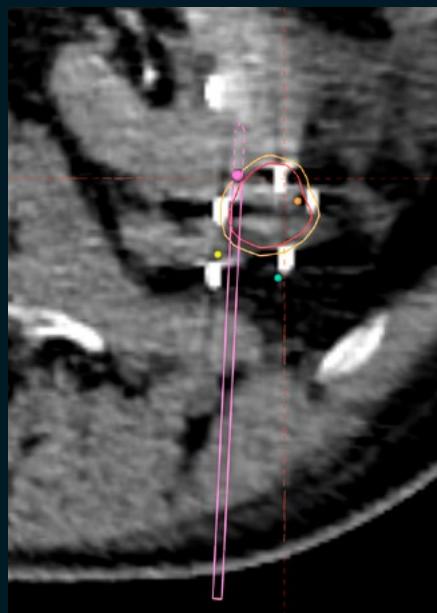


Planning scan segmentation and 3D reconstruction showing the bracket of four needles

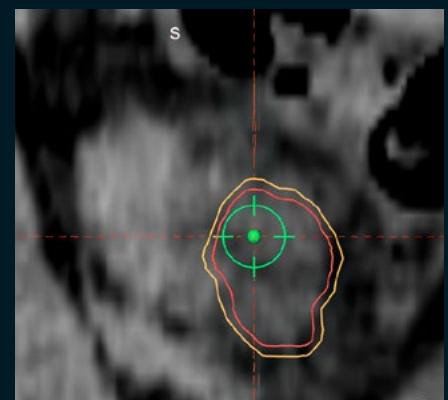
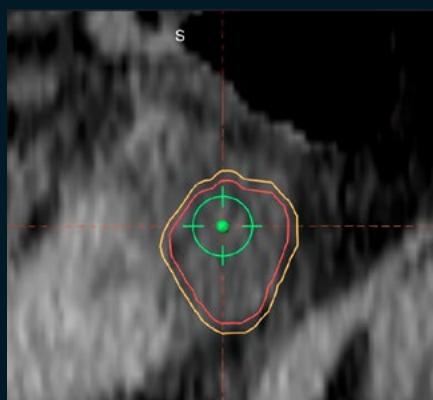
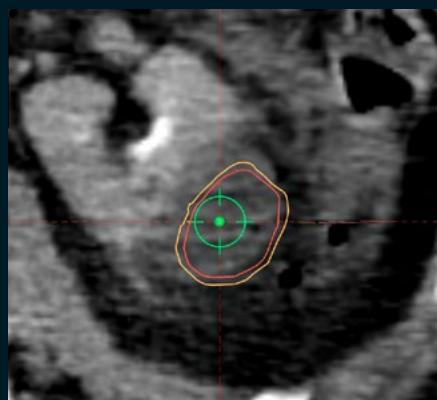




Planning scan showcasing the simulation of four overlapping ablation zones in MPR view



Needle validation shows excellent placement and parallelism



Post-treatment assessment of the iceballs

Multiple probe RFA of HCC in segment IV

A 64-year-old was diagnosed with cirrhosis due to alcohol and hepatitis C in 2022 and was treated with anti-virals. Two suspected-HCC lesions were detected in seg. IV in October 2024. After the lesions were shown growing quickly, the MDT decided in March 2025 on RFA as the patient would wait for a transplant.

CAS-One IR was needed to confidently place the needles with 10 mm separation to cover both lesions which were irregularly shaped, and to confirm complete coverage with maximum margin. The procedure was done quickly and safely, and AblaSure showed 100% tumor coverage with a MAM of 6 mm. A 3-month follow up confirmed these results.

Initial Condition

Diagnosed in 2022 with cirrhosis (Child-Pugh A stage 5) related to chronic alcohol-use and Hepatitis C. In October 2024 two adjacent lesions of 13 and 9mm in seg. IV were found on imaging, suggesting HCC. In January 2025 the decision was made to ablate under ultrasound but the tumor appeared different than previous MRI and decision was made to do a biopsy. In March 2025 the lesions increased to 18 and 15mm and patient was referred to Ramón y Cajal Hospital for treatment. Decision was made by the MDT in June 2025 to do a RFA with CAS-One IR and await transplantation. Multiprobe RFA was chosen because of the unusual lesion shape.

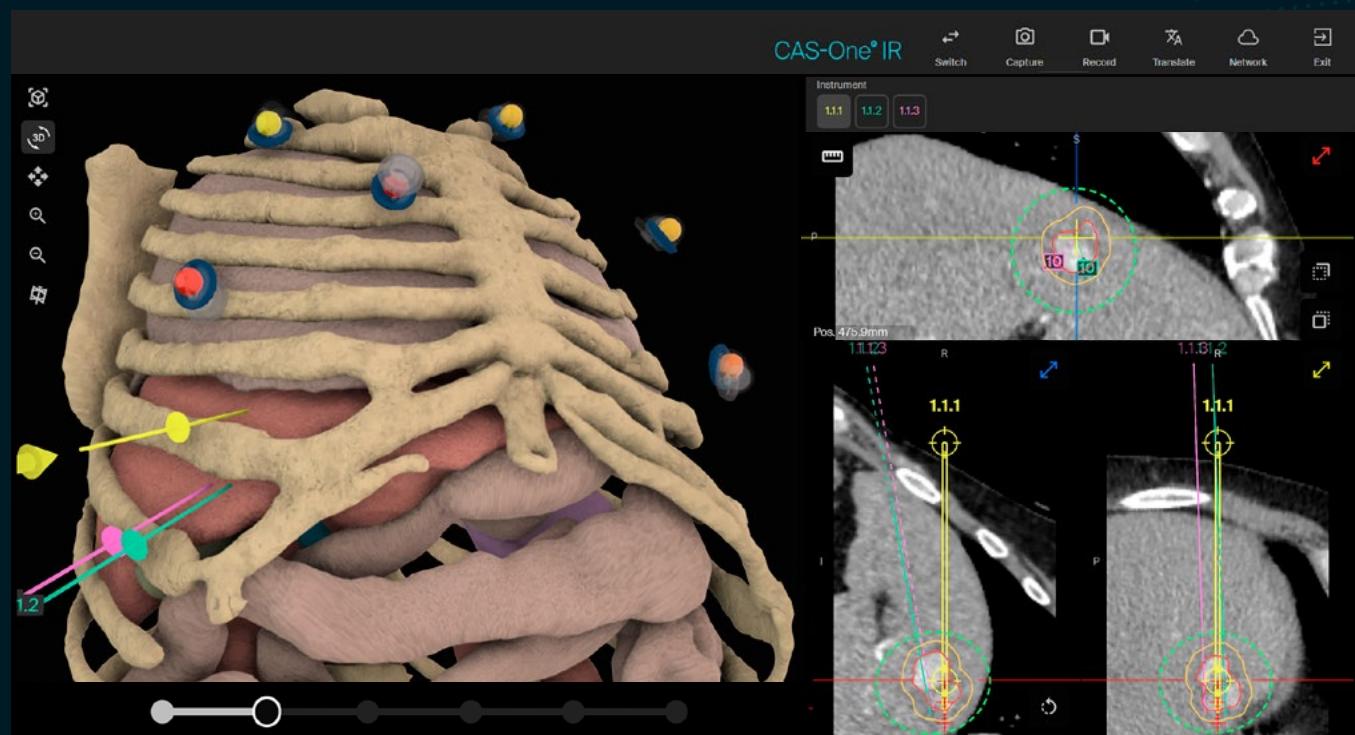
Treatment

With the patient under GA, CAS-One IR was used to plan, and place the probes with a 10cm separation, and assess the ablation afterwards.

Results and Conclusion

The 3 probes were placed in 20 minutes. AblaSure demonstrated what appeared to be complete coverage of the lesion and a MAM of 6mm. The patient was discharged the following day without complications. Follow-up imaging confirmed full coverage of the treated lesion at 3 months and patient was taken off the transplant list.

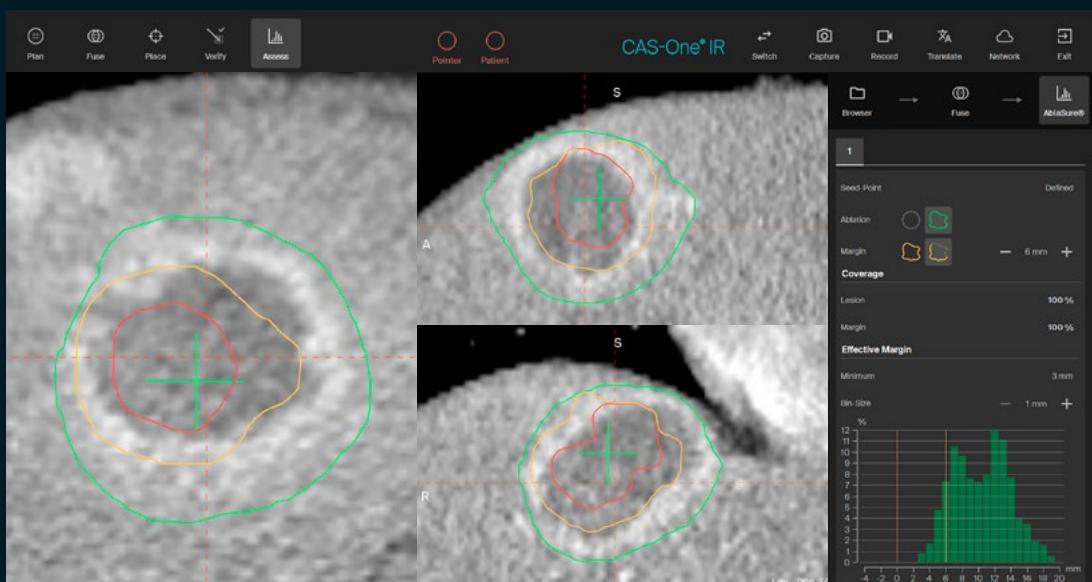
Dr. Olavarria said of the case "CAS-One IR is ideal in situations like this to not only plan to cover an unusually shaped lesion, but to place multiple probes quickly with single-insertions, and most importantly to use ablation confirmation to ensure the proper treatment has been achieved".



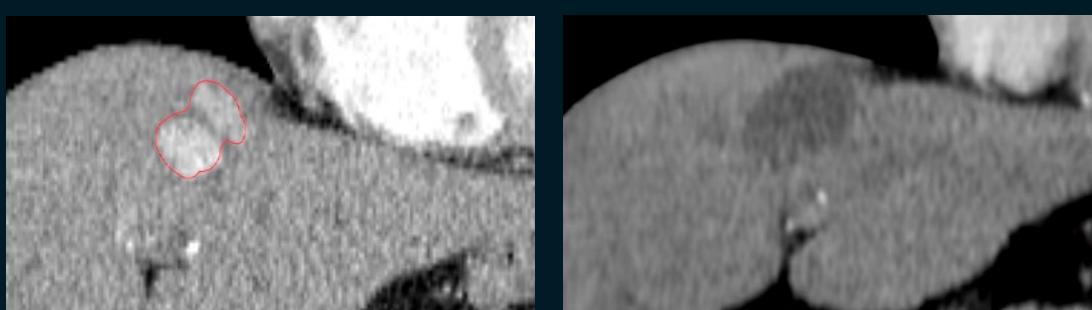
The planning scan showing the 3 RFA probes with 10 mm separation



Verification scan of the 3 probes showing accuracy and inter-probe distance – no adjustments necessary



AblaSure showing a complete treatment of the lesion with a 6 mm safety margin



CT Follow-up at 3 months showing complete response



Immediate re-ablation of an HCC in segment II

An 87-year-old patient was diagnosed in 2022 with liver cirrhosis and two atypical nodules in seg. II and VII. In early 2025 an MRI revealed that one nodule had turned into an HCC lesion and the MDT decided on MWA. The treatment was initially scheduled for an ultrasound-guided MWA with hydrodissection of the stomach. However, the Quality Ablation program in the hospital had just started and the decision was changed to use CAS-One IR. The planning simulation allowed visualization that the stomach was a safe distance away from the ablation zone, and AblaSure showed an immediate re-ablation was necessary. With the re-ablation workflow, another ablation was planned and executed quickly, and the subsequent AblaSure showed 100% tumor and margin coverage.

Initial Condition

Diagnosed in 2022 with cirrhosis and two atypical nodules in seg. II and VII with decision to watch and wait. In January 2025, the MRI showed evolution of the nodule in seg. II to HCC. MDT decided on MWA under ultrasound guidance and new MRI to assess the lesion. In August 2025 the lesion was stable at 18 mm and the patient was scheduled for ablation. The patient was scheduled for MWA with CAS-One IR on the first day the device was in the hospital.

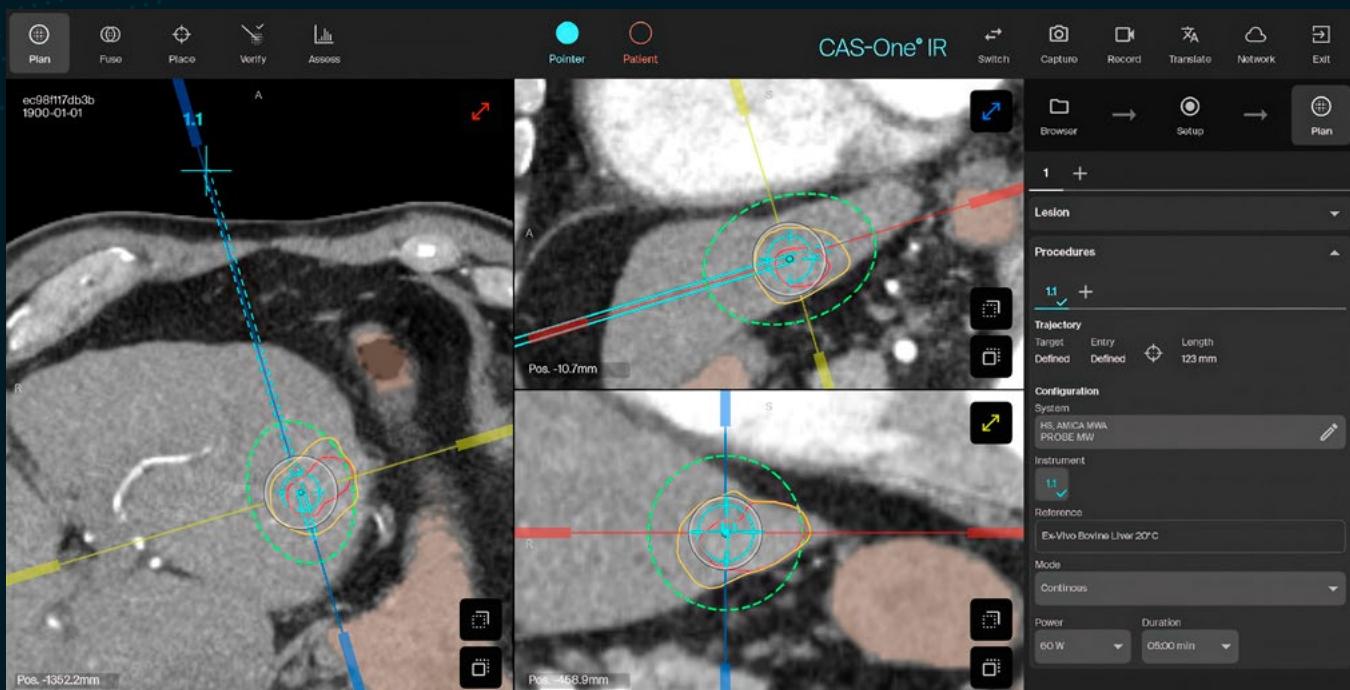
Treatment

In September 2025 the patient was treated with MWA under GA. CAS-One IR was used to properly plan the probes in order to avoid hydrodissection of the stomach.

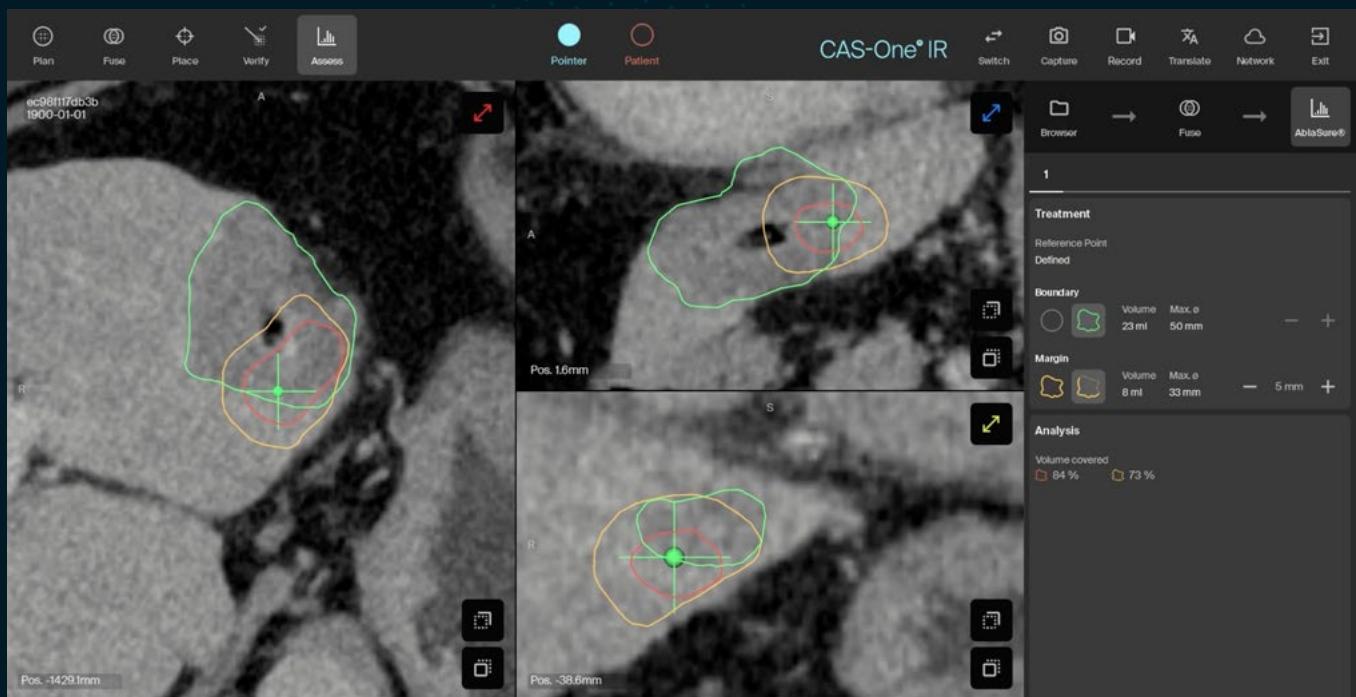
Results and Conclusion

Both probes were accurately positioned with no correction needed and no need of hydrodissection. AblaSure analysis showed an incomplete ablation after first treatment and re-ablation was immediately performed in under 15 minutes. The second analysis showed complete coverage of the tumor and 5 mm margin. The patient was discharged the following day without complications. Follow-up imaging confirmed full coverage of the treated lesion at 3 months.

Dr. Jegonday said about this case "From the first case - the utilization of CAS-One IR was decisive and effective - starting with the simulation of the ablation to preserve the stomach, to the ablation confirmation with AblaSure, and the quick reablation ability which is built in to ensure 100% margin coverage".



The planning scan showing the initial treatment planning



The first AblaSure result and immediate decision to re-ablate



AblaSure result after the second ablation

Clinical evidence publications and cases

For over a decade, CAS-One IR has revolutionized percutaneous tumor treatment, validated through rigorous scientific research and clinical studies. None of these studies were sponsored by the company.

Discover our comprehensive publication database and monthly spotlight on exceptional cases, showcasing CAS-One IR's expertise in percutaneous tumor ablation.

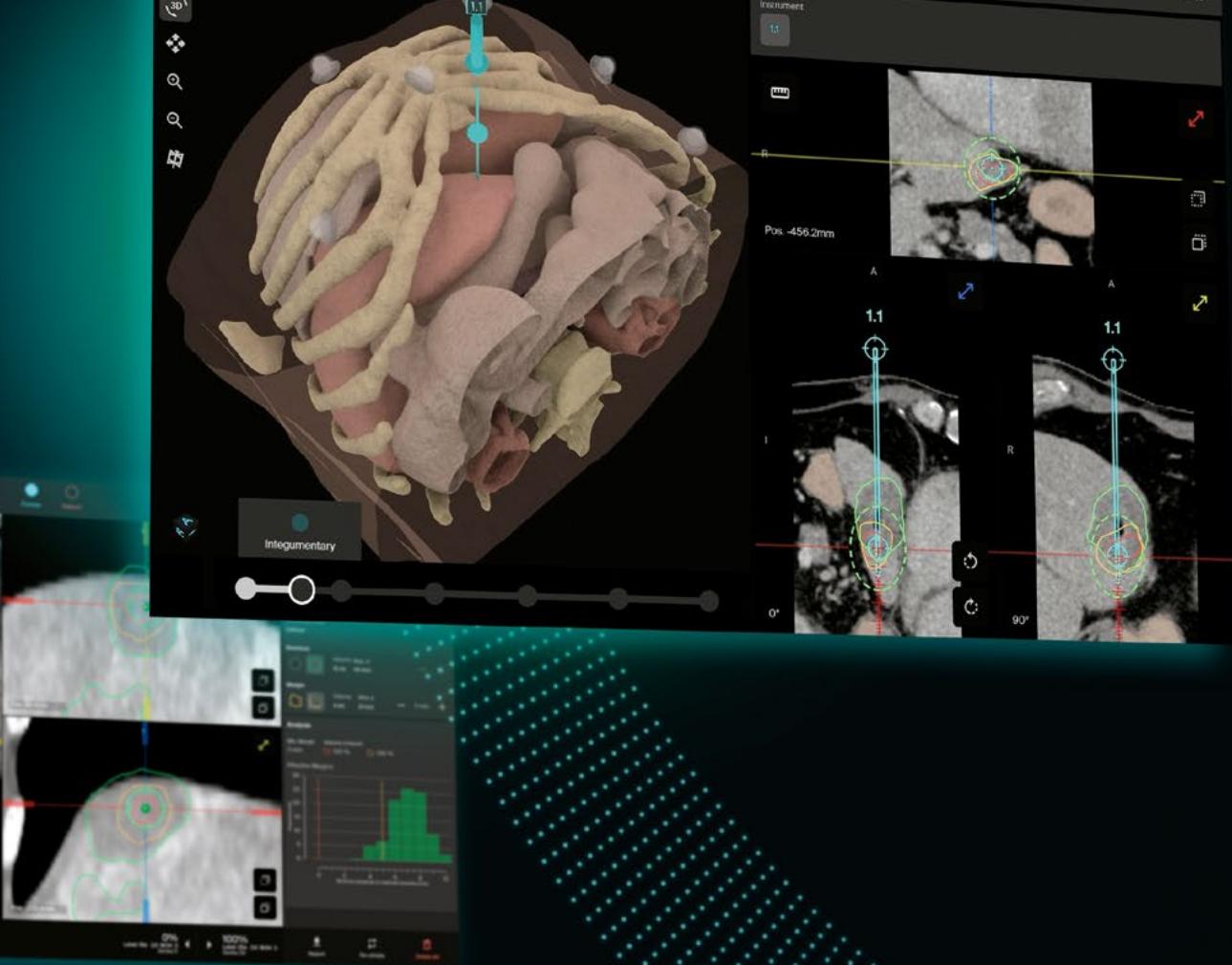


Publications



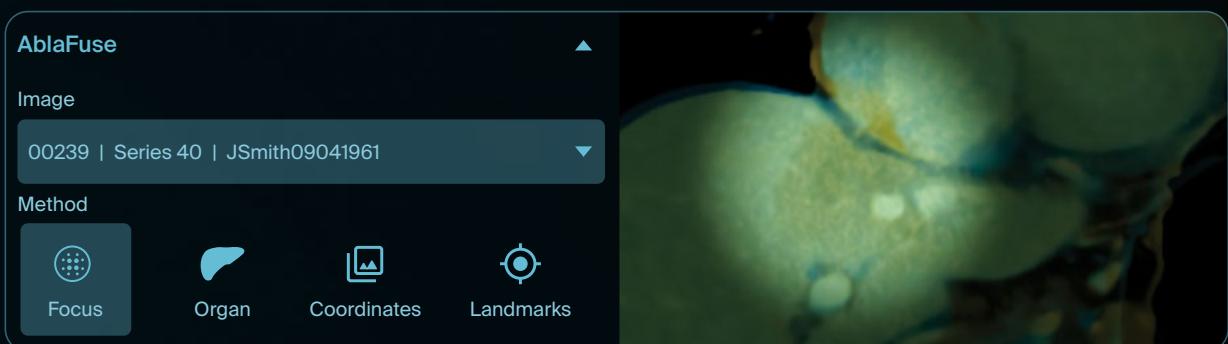
Top Cases





CAS-One® IR upcoming software release

Automatic Fusion for Margin Confirmation



ablation unlocked over 12,000 patients treated

Musculoskeletal



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