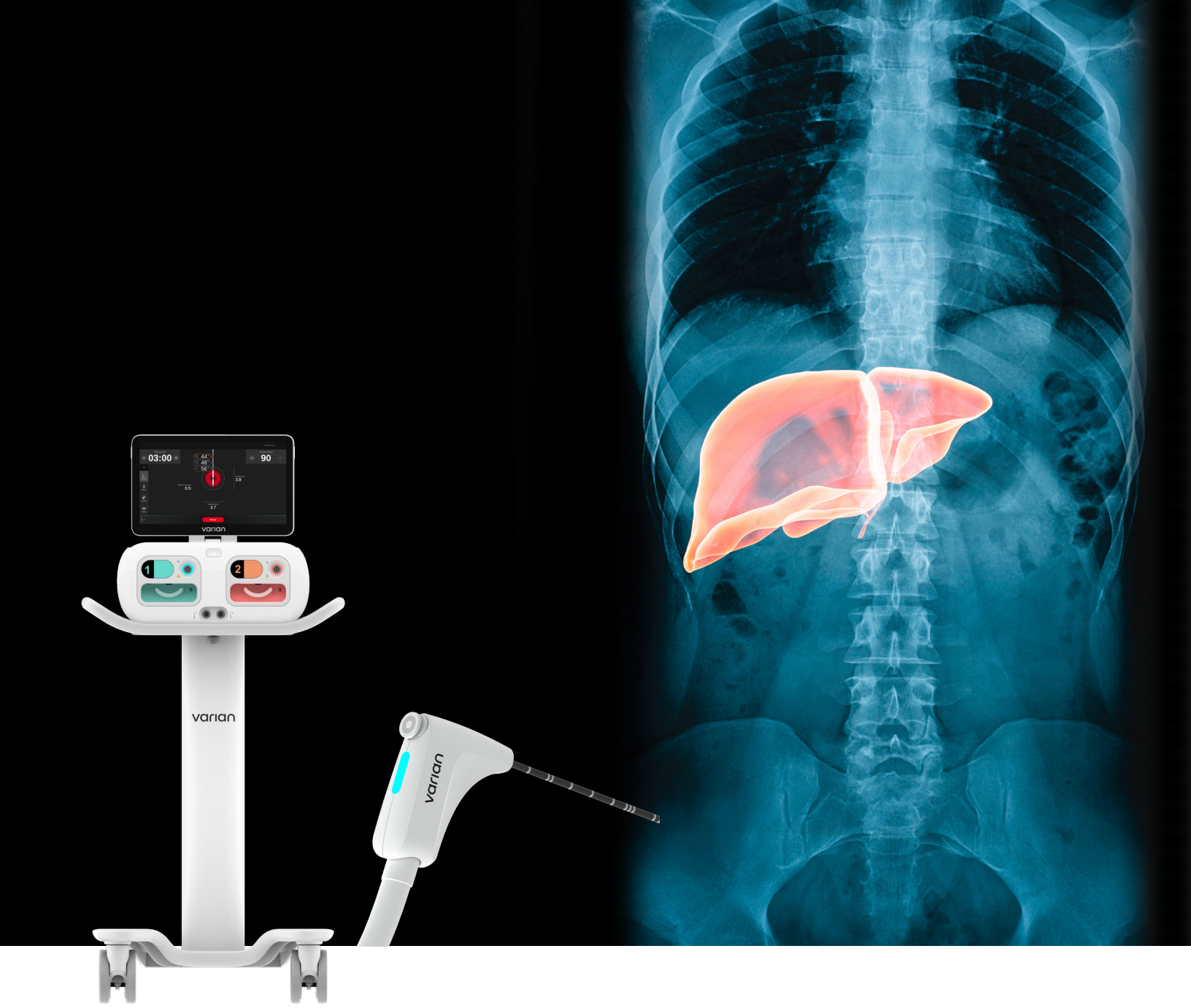


Liver

IntelliBlate Microwave Ablation System Case Study

Microwave Ablation as a Bridge to Liver Transplantation in Patient with HCC

SIEMENS Healthineers

Patient History

73 year-old male with a medical history of benign prostatic hyperplasia, coronary artery disease, hyperlipidemia, hypertension, and hepatitis C related cirrhosis. Patient was previously treated with yttrium-90 radioembolization for multifocal hepatocellular carcinoma (HCC) in the liver. A follow up MRI showed a new LR 5 lesion measuring 1.7cm at the junction of segments 2 and 4a. The patient was Child-Pugh Class A, did not have ascites; their labs indicated a bilirubin of 0.7 mg/dL, an INR of 1.2, and albumin of 4.2 g/dL, and a platelet count of 145. The patient was on the wait list for an orthotopic liver transplant.

Procedure performed by:

Abhishek Kumar, MD

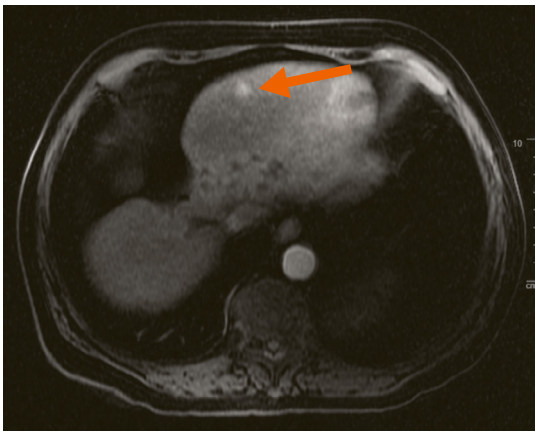
Associate Professor of Radiology Division Chief of Vascular and Interventional Radiology

Rutgers New Jersey Medical School

Newark, New Jersey

Assessment and Treatment Selection

The patient was referred to interventional radiology for treatment. Percutaneous image-guided microwave ablation (MWA) has been shown to be an effective treatment option for patients with HCC awaiting liver transplant and can prevent disease progression.1,2 A recent study reported that MWA can be an effective bridging therapy to transplantation with high overall and disease specific survival rates post-transplantation.1 Following assessment, a decision was made to treat the tumor using MWA due to its proximity to the dome of the liver. The IntelliBlate System is a next-generation microwave ablation platform for the treatment of soft-tissue tumors, including liver lesions like HCC.



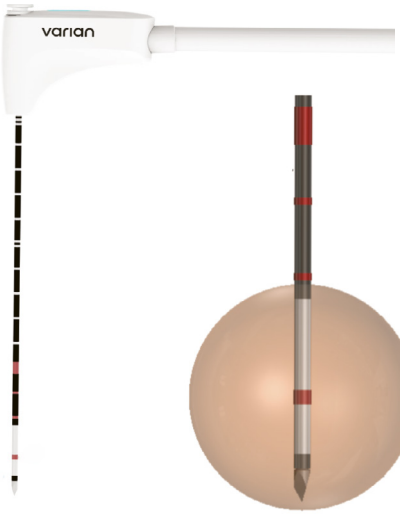
Pre-procedure MRI

Arrow above shows location of liver mass

"The IntelliBlate System enabled the positive outcome of complete tumor ablation while also protecting the liver capsule."

-Dr. Abhishek Kumar

The Ximitry probe is designed to produce consistent thermal delivery to produce a uniform spherical ablation zones providing consistent tumor coverage. These probes also have three integrated thermocouples to monitor the ablation zone and the temperature in adjacent healthy tissue and vital structures. The IntelliBlate System also has a "tract ablate" feature which cauterizes along the needle tract to reduce the risk of bleeding and tract seeding.



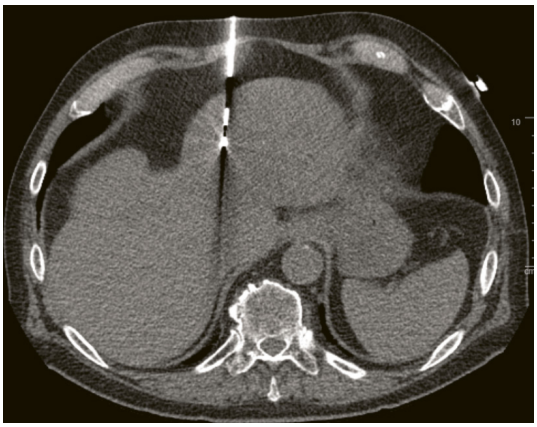
The Ximitry probe produces a spherical ablation zone and has 3 separate thermocouples for real-time temperature monitoring.

Treatment

Under general anesthesia, a single Ximitry probe was inserted via an anterior approach and advanced to the tumor under ultrasound guidance. The device was set to deliver 90W over 8 minutes for adequate tumor coverage and an ablation zone to ensure margins.

The probe's integrated temperature sensors allowed for real time monitoring during the case. The desired temperature of >60° C was achieved at both the T1 and T2 thermocouples, with the latter being outside of the desired ablation zone. The temperature for the T3 thermocouple was maintained at <60° C to protect the liver capsule.

A post-treatment dual phase CT scan performed immediately following the ablation showed no hemorrhage and an ablation zone sufficiently wide to encompass lesion while also providing good margins. The IntelliBlate System's tract ablate features was used to prevent bleeding. There were no adverse events. The patient was discharged 4-hours following the procedure and did not require narcotics for pain.



CT scan showing microwave antenna during ablation procedure

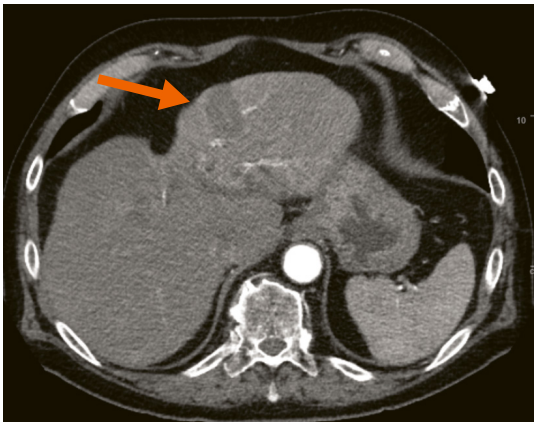
Post-Procedural Results

Follow up arterial and venous phase MRIs at 5 months showed a complete response. The patient underwent a successful and uneventful liver transplant 6 months following the ablation procedure. Pathology analysis of the excised liver showed no viable tumor in the ability cavity.

Real-time procedural feedback from temperature sensors as shown on the IntelliBlate System interface

Discussion

The IntelliBlate System enabled the positive outcome of complete tumor ablation while also protecting the liver capsule. Monitoring of the output from the device's thermocouples during treatment ensured the avoidance of burning past capsule or skin. The patient was able to remain on the transplant list following the procedure and subsequently received the planned liver transplant.



Post-ablation dual-phase arterial CT scan showing complete tumor ablation with sufficient margins

Scan this QR code to learn more about the IntelliBlate Microwave Ablation System

Intended Use Summary
The IntelliBlate Microwave Ablation System is intended for coagulation (ablation) of soft tissue in laparoscopic, intraoperative, and percutaneous ablation procedures, including partial or complete ablation of non-resectable liver tumors.
The IntelliBlate Microwave Ablation System is not intended for use in cardiac procedures.

The IntelliBlate Ximitry Probe Assembly, used with the IntelliBlate Microwave Ablation System is intended for coagulation (ablation) of soft tissue in laparoscopic, intraoperative, and percutaneous ablation procedures, including partial or complete ablation of non-resectable liver tumors.
The Ximitry Probe Assembly is not intended for use in cardiac procedures.

Medical Advice Disclaimer
Rx only.

Indications, contraindications, warnings, and instructions for use can be found in the product labeling supplied with each device.

Varian Medical Systems, Inc. as a medical device manufacturer cannot and does not recommend specific treatment approaches. Specifications subject to change without notice. Not all features or products are available in all markets and are subject to change.

References

[1] *Couillard AB, et al. Microwave ablation as bridging to liver transplant for patients with hepatocellular carcinoma: A single-center retrospective analysis. J Vasc Interv Radiol. 2022;33:1045-1053.*

[2] *Som A, et al. Microwave ablation as bridging therapy for patients with hepatocellular carcinoma awaiting liver transplant: A single center experience. Cardiovasc Intervent. Radiol. 2021;44:1749-1754.*

Varian Medical Systems USA,
Corporate Headquarters
Palo Alto, CA
Tel: 650.424.5700
800.544.4636

Varian Medical Systems
Interventional Solutions
Headquarters and manufacturer
9825 Spectrum Drive
Building 2
Austin, TX 78
Tel: 877.467.2009

RAD11532
QR700026752

SIEMENS Healthineers