

## CYBERKNIFE® EXPERIENCE: RECURRENT LIVER METASTASIS

*This case study demonstrates the versatility of the CyberKnife® Treatment Delivery System enabling treatment to be delivered to complex and challenging cases.*

### WHO/WHERE

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Epic Care, Walnut Creek, CA

### ABOUT EPIC CARE

Epic Care began as a physician practice in San Leandro, CA and grew into a multi-specialty, multi-site practice which offers outpatient infusion, radiation therapy, lab and diagnostic imaging services, across the San Francisco Bay area.

### TECHNOLOGY SOLUTIONS

Accuray CyberKnife® Solution

### CHALLENGE

Provide treatment of a patient with recurrent, metastatic colorectal cancer to the liver after a partial hepatectomy.

### WHAT IS THE CYBERKNIFE SYSTEM:

The CyberKnife System is a non-invasive treatment for cancerous and non-cancerous tumors and other conditions where radiation therapy is indicated. It is used to treat conditions throughout the body, including the prostate, lung, brain, spine, head and neck, liver, pancreas, and kidney, and can be an alternative to surgery or for patients who have inoperable or surgically complex tumors. CyberKnife treatments are typically performed in 1 to 5 sessions. The CyberKnife System has more than two decades of clinical proof and has helped thousands of cancer patients.

### WHY WE CHOSE TO TREAT WITH CYBERKNIFE:

Epic Care is a multi-specialty practice with five community cancer centers each with its own linac. We have 17 Medical Oncologists and 5 Radiation Oncologists. We needed our ablative platform to have the following features:

- Able to treat the entire body
- Was not just a linac with added SRS capability
- Minimize clinical overlap and cannibalization of our existing linacs
- Have marketing cachet and bring in self-referred patients
- Technology with regional market distinction

**THE PURPOSE OF THESE CASE STUDIES IS TO HIGHLIGHT COMPLEX AND CHALLENGING CYBERKNIFE CASES, SO CALLING THEM OUT IS HELPFUL.**

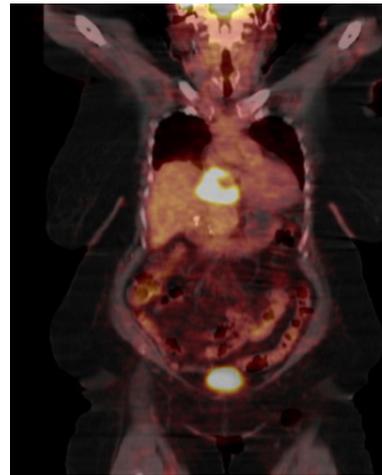
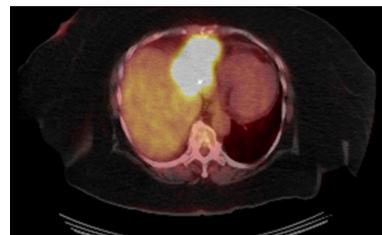


Figure 1: Cross section of PET/CT pre- treatment



The Patient had a history of Stage II colorectal cancer which was surgically resected. Due to risk factors, she was recommended to undergo adjuvant chemotherapy but declined.

Two years later she had a solitary recurrence in the left liver which was treated by a partial hepatectomy. Margin resection was close at 1 mm but was confirmed R0 negative.

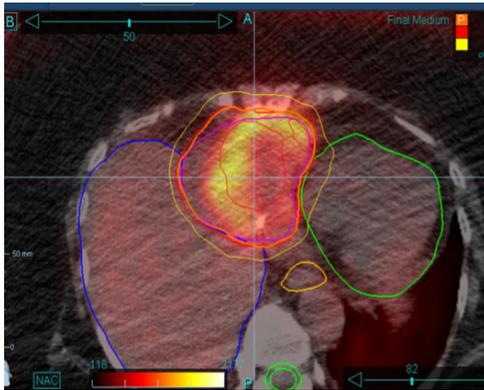


Figure 2a: Treatment plan isodoses

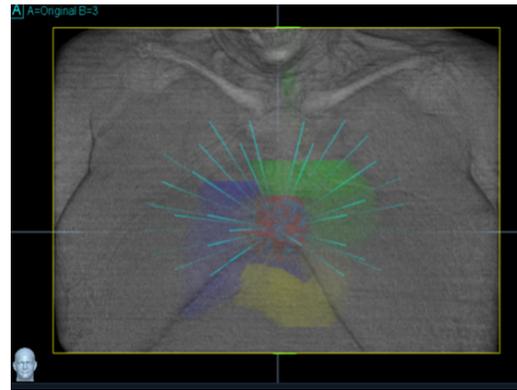


Figure 2b: Beam geometry for CyberKnife®

The patient was offered adjuvant chemotherapy at this time but this was declined. She was followed-up with regular imaging.

Two years after hepatic resection she had a recurrence that arose from the left lobe of her liver which grew medially and superiorly. It was a large lesion physically

displacing the liver, heart, and diaphragm.

The patient was reviewed by the surgical team and was deemed inoperable. She was then referred to Radiation Oncology for consideration of radiotherapy using the CyberKnife System.

**TREATMENT PREPARATION:**

An interventional radiologist placed three fiducial markers prior to treatment.

**TREATMENT PLANNING AND DELIVERY:**

- 39 robotically delivered non-coplanar beams
- 40 Gy in 5 fractions; a highly conformal plan surrounded by critical structures on all sides
- OARs: Dose constraints to the heart were challenging but achieved

**POST-TREATMENT:**

Patient experienced no acute toxicity.

Three-month follow-up imaging demonstrated a complete metabolic and anatomic response.

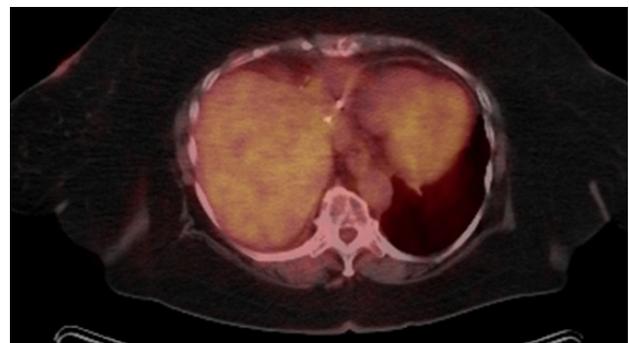
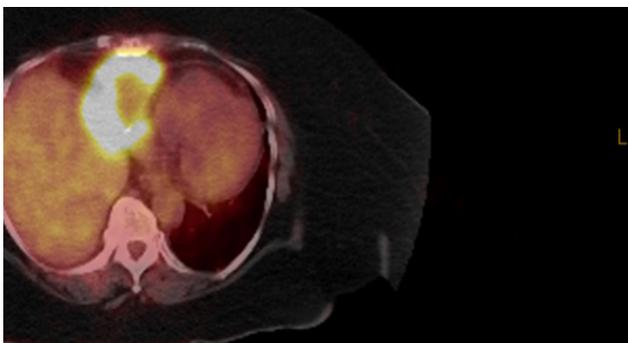


Figure 3: Comparison of pre-treatment PET/CT (left) and post-treatment PET/CT (right)

**Important Safety Information**

Most side effects of radiotherapy, including radiotherapy delivered with Accuray systems, are mild and temporary, often involving fatigue, nausea, and skin irritation. Side effects can be severe, however, leading to pain, alterations in normal body functions (for example, urinary or salivary function), deterioration of quality of life, permanent injury, and even death. Side effects can occur during or shortly after radiation treatment or in the months and years following radiation. The nature and severity of side effects depend on many factors, including the size and location of the treated tumor, the treatment technique (for example, the radiation dose), and the patient's general medical condition, to name a few. For more details about the side effects of your radiation therapy, and to see if treatment with an Accuray product is right for you, ask your doctor. Accuray Incorporated as a medical device manufacturer cannot and does not recommend specific treatment approaches. Individual results may vary.

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