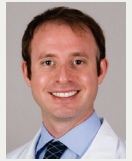
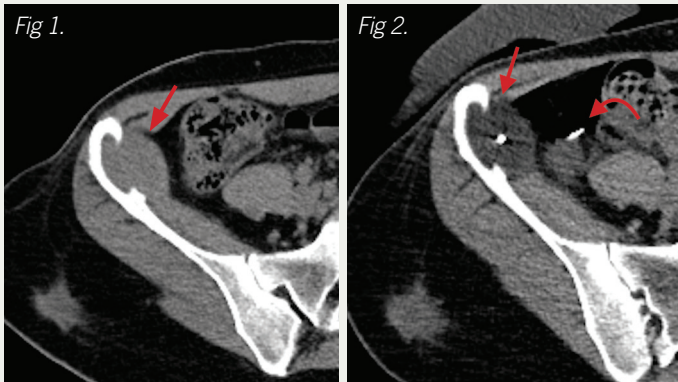


# Two Thermal Ablation Therapies Treat Pain from Bone Metastases

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UCLA has established a clinical program using thermal ablation to provide palliative care to patients who suffer uncontrolled pain from bone metastases. Two different technologies are utilized — cryoablation and Magnetic Resonance-guided Focused Ultrasound (MRgFUS). Uniquely among interventional radiology cancer therapies, these thermal ablation procedures aim not just to slow or reverse tumor growth, but to reduce pain as much — and for as long — as possible.



*Fig 1. Patient with a history of metastatic thyroid carcinoma with a painful right iliac metastasis (red arrow) refractory to radiation and chemotherapy. Palliative cryoablation of the lesion was performed with a single probe.*  
*Fig 2. A low-density ice ball encompasses the entire lesion (straight red arrow). A catheter was inserted (curved red arrow) to displace the adjacent colon with air and saline. Following the ablation, the patient experienced a significant decrease in pain.*

“Eighty percent of cancer patients who develop metastatic disease ultimately develop bone metastases,” says Scott Genshaft, MD, assistant professor of radiology. “Half of the patients with bone metastases at some point in their disease have uncontrolled pain.”

Both ablative procedures are well tolerated and can provide early and durable relief of pain symptoms, usually within a week and sometimes immediately. Palliative thermal ablation can ease suffering during a long battle with cancer or at the end of life while reducing or eliminating the need for narcotics.

Both cryoablation and MRgFUS have been studied at UCLA as part of multicenter clinical trials. The Multicenter Study of Cryoablation for Palliation of Painful Bone Metastases (MOTION) employed cold-based ablation therapy delivered directly to the targeted tissue using a cryotherapy probe. The interventional radiologist first determines that the patient’s pain is related to a known site of metastatic disease and marks the treatment location. Under guidance of CT, ultrasound or both, a probe cooled to extremely low temperatures by circulated gas is used to selectively freeze the targeted tissue. The treatment is performed as an outpatient procedure in the hospital under moderate sedation.

An advantage of cryoablation over thermal ablation procedures that use heat to destroy tissue is that cryoablation is less painful and does not require general anesthesia. “Instead of being activated by heat, the nerves are numbed by cold temperatures,” explains Dr. Genshaft. “We’re able to not only kill the majority of the tumor in the target area, but also the nerves that are transmitting the pain signals.”

Another study in which UCLA is participating uses focused ultrasound energy (MRgFUS) to ablate tumor and nerve cells without the need to introduce any probes into the patient’s body. The Magnetic Resonance-guided High Intensity Focused Ultrasound for Palliation of Painful Skeletal Metastases trial is a stage IV multicenter study that is currently enrolling patients.

The interventional radiologist marks the target area corresponding to a known area of metastatic disease. Using ultrasound guidance, the physician performs a nerve block with a long-lasting anesthetic. After an anesthesiologist administers general or monitored anesthesia care, the patient is positioned in an MRI scanner over an array of ultrasound transducers that deliver the ablative energy to the tumor without the need for any device to be placed inside the patient’s body. MRI is used to guide the ultrasound treatment and to perform real-time thermal mapping of the target area to confirm the ablation’s success. The MRgFUS treatment is performed in an outpatient setting.

“The MRgFUS treatment is exciting because it has the potential to help many new patients,” says Dr. Genshaft. “The non-invasive treatment appeals to patients, and with this therapy we can offer patients another alternative to radiation therapy.” Dr. Genshaft also points out that MRgFUS has already won FDA approval for this indication.

“Both of these treatments can eliminate pain or reduce it to a level that allows for a very good quality of life,” states Dr. Genshaft. Both can be repeated if needed to treat the same focal trigger point of disease, or focal points that are unmasked after a successful initial treatment. Dr. Genshaft and his colleagues are available for consultation for all patients who are suffering from pain due to their bone metastases to evaluate whether they may benefit from these therapeutic procedures. 