

Endocare Cryoablation

The evolution of cryoablation techniques, from the emergence decades ago to the recent success of new technologies has increased and enhanced the options available to physicians worldwide. Endocare's unique approach, of precise technology and accurate control have improved intervention in the treatment of benign and malignant tumors throughout the body. Endocare's cryoablation experience in open, laparoscopic and percutaneous applications spans up to 10-years of data in prostate, kidney, and liver. The continued advances, in both method and technology, of cryoablation applications show a significant difference in the future of oncology and the prospects for its patients.



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5,800,487;5,800,488;6,074,412;
6,139,544;6,251,105 and other U.S.and
foreign patents pending

PM-3436 Rev.B 03/06



PERCRYO[®]
PERCUTANEOUS CRYOABLATION

"Percutaneous Thoracic Cryotherapy"

PERCRYO PROCEDURE STUDY



“Percutaneous Thoracic Cryotherapy”

Results from a study of over 200 procedures suggest efficacy as well as safety and feasibility of percutaneous thoracic cryoablation. Since freezing does not destroy collagenous structures, an iceball of appropriate size can be sculpted almost anywhere in the lung if proper precautions are taken. Ice in soft tissue is well seen under CT guidance. Side effects tend to be minimal and short-term; rates of pneumothorax are relatively low.

Patient Inclusion Criteria

Indications:

- Tumor size <6cm.
- Stage T1-T3, N0, M0; or advanced stage if debulking is combined with XRT and/or chemotherapy.
- Any location from the lung pleura periphery to central vessels or bronchi, if access is good.
- In primary lung cancer, less aggressive carcinomas with low likelihood of multifocality or metastasis, (i.e. adenocarcinomas, squamous cell) provided there is no evidence of node involvement.
- In metastatic disease, size and location also apply, as well as considerations of local control and palliative care.
- Non-surgical candidates due to co-morbidities or who refuse surgery.
- Failure of previous treatment, or likelihood of poor response to chemotherapy.

Contraindications:

- Failure to meet all patient inclusion criteria.
- Endobronchial/transbronchial tumor involvement (i.e. negative bronchoscopy).
- Non-cooperative patients that are not candidates for general anesthesia.

Patient Management

Pre-op: Determine tolerance to anesthesia; cardiology clearance, lung status, history of hypertension, likelihood of patient anxiety during procedure negative bronchoscopy for central masses.

Intro-op: Good local anesthesia down to the pleural surface, minimal sedation so they can take direction, cushioning to minimize joint discomfort throughout procedure.

Post-op: Prepare patient for possible chronic but temporary cough, hemoptysis, exacerbation of patients chronic cough, and possible need for pleural fluid drainage.

Methods

Probe number is determined by how many are needed to generate ice that encompasses the tumor plus a 1cm margin on all sides. Avoid freezing peripheral nerves and the recurrent laryngeal nerve. Plan probe entry and placement to avoid blood vessel damage (best observed on lung windows). In a region of dense vascularity, it may be advisable to seek probe trajectory that is parallel to avoid puncturing a vessel.

Physician Skill

Those well-versed in lung Bx, and comfortable taking a core Bx with an 18 gauge needle have readily adaptable skills. While the incidence of pneumothorax are low, physicians should be prepared to manage this condition since many could be simply evacuated during the procedure without recurrence.



Physician Information

Peter Littrup, M.D. Professor of Radiology, Urology and Radiation Oncology at Wayne State University and the Karmanos Cancer Institute (Detroit MI) has translated his work with ablation imaging to his work in cryotherapy, including studies in lung cryotherapy.

Study Reference: Wang, H, Littrup PJ, Duan Y, Zhang Y, Feng H, Nie Z. Thoracic Masses Treated with Percutaneous Cryotherapy: Initial Experience with More than 200 Procedures. Radiology 2005; 235:289-298

Percutaneous Thoracic Cryotherapy Procedure

Patient Information

A 38-year old female patient with hypervascular metastases from a rare tumor, alveolar soft part sarcoma (ASPS). She had failed several chemotherapy courses, with no appreciable response to a course of aerosolized GM-CSF. A 3cm right hilar mass showed recent distinct increase. Patient refused lobectomy.

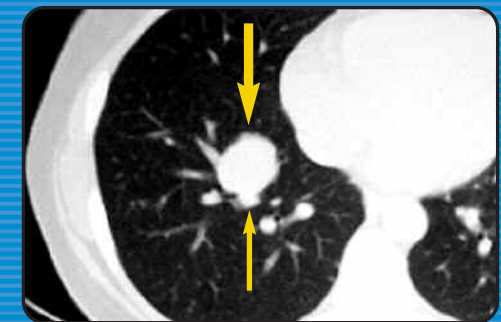
Procedure Information

Cryotherapy was administered to the 3cm mass on an outpatient basis with only local anesthesia and mild sedation. Short-term side effects, including mild productive cough for one week, were insignificant.

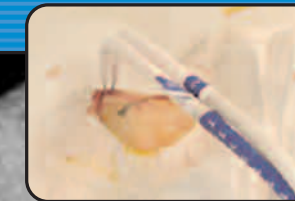
Procedure Results

Cryotherapy was shown to be safe and appropriate in this patient. Its apparent effectiveness was detectable at the 6-month follow-up where regression at the original site was observed. Two additional cryotherapy procedures for two different masses detected at time of follow-up were well-tolerated with similar results. Unfortunately, other metastatic sites continued to progress even though the dominant cryotherapy sites remained stable.

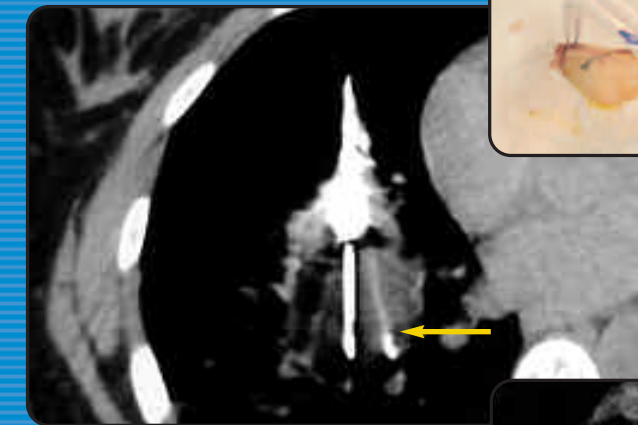
Pretreatment axial CT image of a 3cm right hilar mass showing significant lateral and posterior vasculature (small arrow).



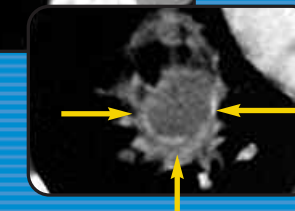
Procedure began with two probes.



Following the first freeze scan, a third probe was placed for better coverage of the medial aspect of the tumor (arrow).



Contrast-enhanced scan four hours post-procedure shows avascular appearance of the tumor and no effusion or pneumothorax with adjacent vasculature intact (arrows).



At 6 months follow-up, enhanced CT scan at the level of the previous right hilar mass shows marked reduction of the mass effect at the previous cryotherapy site (arrow).

