



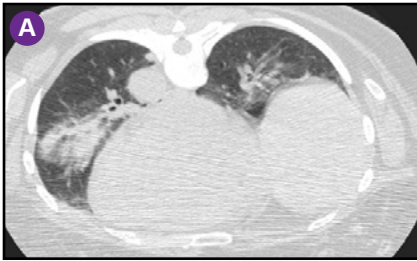
CASE STUDY: LUNG CYROABLATION

Cryoablation of mCRC in the Lung Located Adjacent to the Aorta

Professor Thierry de Baere | Gustave Roussy Cancer Institute | Villejuif, France

PRESENTATION

- 57-year-old female with history of lung metastases from colorectal cancer
 - Video-assisted thoracic surgery 20 months previously for wedge resection of single 1.2 cm lung metastasis in right upper lobe
- New 1 cm lung metastasis identified in the left lower lobe **A**



Presentation: CT in the prone position under general anaesthesia shows a 1 cm lung nodule close to the aorta



TREATMENT PLAN

- Tumor board decided on thermal ablation
 - Cryoablation was selected from the thermal ablation techniques available due to the proximity of the nodule to the aorta, which rendered it difficult to target with an expandable needle
 - For successful cryoablation, the metastasis would need to be moved away from the aorta to avoid both the possible damage to the aorta from the ice and the heat-sink effect that would reduce the chances of complete ablation

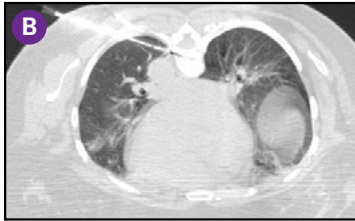
TREATMENT

- One IceSphere™ 1.5 needle was placed in the target tumor under CT guidance **B**
- 50 ml of CO₂ was injected into the pleural space using a spring-loaded needle **C**
- The IceSphere™ 1.5 needle was activated for 30 seconds at 20% maximum power to stick the needle to the tumor ("stick-mode") to allow the needle and tumor to be gently pulled back by 3 cm **D**
- An additional 250 ml CO₂ was then injected and the needle pulled back a few centimeters further **E**
- With the tumor isolated in the middle of CO₂-filled pleural cavity, away from vulnerable neighboring structures, ablation could be completed safely
- Freeze and thaw cycles were completed per lung protocol
- The iceball was visible on CT as a 'ground glass' opacity covering the tumor with appropriate 'safety' margin beyond the tumor edge

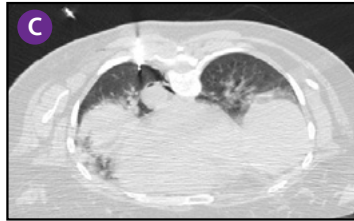


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Cryoablation: CT (axial view) showing single puncture for placement of IceSphere™ 1.5 needle in the target tumor



Cryoablation: CT (axial view) showing 50 ml of CO₂ injected into pleural space. Some CO₂ visible in the pleural space (arrow)



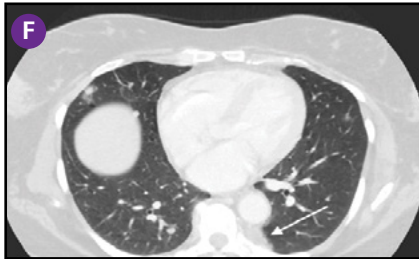
Cryoablation: After 30 seconds of activation at 20% maximum power, the IceSphere™ needle is gently pulled back by 3 cm



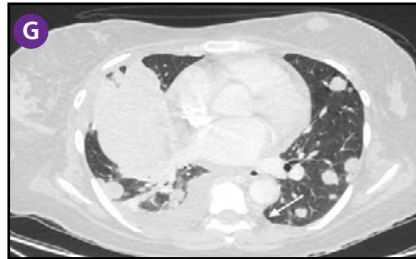
Cryoablation: Additional 250 ml of CO₂ is injected and the needle pulled back by a few more centimeters to isolate the tumor

OUTCOME

- One-month follow-up CT showed condensation at the location of the cryoablation **F**
- One-year follow-up CT showed near-complete regression of the ablation zone but unfortunately also confirmed progression of metastatic disease with appearance of multiple distant nodules **G**



Post cryoablation: One-month follow-up CT (axial view) shows condensation in the location of the cryoablation (arrow)



Post cryoablation: One-year follow-up CT shows nearly complete regression of the ablation zone (arrow) and multiple distant metastases.

CONCLUSION

- The unique “stick-mode” feature offered by cryoablation allows the tumor to be moved away from vulnerable adjacent organs, and consequently for technically challenging lung tumors to be treated safely and effectively

CRYOABLATION NEEDLES (IceSeed 1.5, IceSphere 1.5, IceSphere 1.5 CX, IceRod 1.5, IceRod 1.5 PLUS, IceRod 1.5 i-Thaw, IceRod 1.5 CX, IcePearl 2.1 CX and IceForce 2.1 CX) and ICEPFX and VISUAL ICE CRYOABLATION SYSTEMS

INDICATIONS: The Galil Medical Cryoablation Needles and Systems are intended for cryoablative destruction of tissue during surgical procedures. The Cryoablation Needles, used with a Galil Medical Cryoablation System, are indicated for use as a cryosurgical tool in the fields of general surgery, dermatology, neurology (including cryoanalgesia), thoracic surgery (with the exception of cardiac tissue), ENT, gynecology, oncology, proctology, and urology. Galil Medical Cryoablation Systems are designed to destroy tissue (including prostate and kidney tissue, liver metastases, tumors and skin lesions) by the application of extremely cold temperatures. A full list of specific indications can be found in the respective Galil Medical Cryoablation System User Manuals.

CONTRAINDICATIONS: There are no known contraindications specific to use of a Galil Medical Cryoablation Needle. **POTENTIAL ADVERSE EVENTS:** There are no known adverse events related to the specific use of the Cryoablation Needles. There are, however, potential adverse events associated with any surgical procedure. Potential adverse events which may be associated with the use of cryoablation may be organ specific or general and may include, but are not limited to abscess, adjacent organ injury, allergic/anaphylactoid reaction, angina/coronary ischemia, arrhythmia, atelectasis, bladder neck contracture, bladder spasms, bleeding/hemorrhage, creation of false urethral passage, creatinine elevation, cystitis, diarrhea, death, delayed/non healing, disseminated intravascular coagulation (DIC), deep vein thrombosis (DVT), ecchymosis, edema/swelling, ejaculatory dysfunction, erectile dysfunction (organic impotence), fever, fistula, genitourinary perforation, glomerular filtration rate elevation, hematoma, hematuria, hypertension, hypotension, hypothermia, idiosyncratic reaction, ileus, impotence, infection, injection site reaction, myocardial infarction, nausea, neuropathy, obstruction, organ failure, pain, pelvic pain, pelvic vein thrombosis, penile tingling/numbness, perirenal fluid collection, pleural effusion, pneumothorax, probe site paresthesia, prolonged chest tube drainage, prolonged intubation, pulmonary embolism, pulmonary insufficiency / failure, rectal pain, renal artery/renal vein injury, renal capsule fracture, renal failure, renal hemorrhage, renal infarct, renal obstruction, renal vein thrombosis, rectourethral fistula, scrotal edema, sepsis, skin burn/frostbite, stricture of the collection system or ureters, stroke, thrombosis/thrombus/embolism, transient ischemic attack, tumor seeding, UPJ obstruction/injury, urethral sloughing, urethral stricture, urinary fistula, urinary frequency/urgency, urinary incontinence, urinary leak, urinary renal leakage, urinary retention/oliguria, urinary tract infection, vagal reaction, voiding complication including irritative voiding symptoms, vomiting, wound complication, and wound infection. **PI-719210-AA**

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