



Cryosurgical Ablation of Miscellaneous Solid Tumors Outside of the Liver

Effective: June 1, 2026

Next Review: November 2026

Last Review: January 2026

IMPORTANT REMINDER

Medical Policies are developed to provide guidance for members and providers regarding coverage in accordance with contract terms. Benefit determinations are based in all cases on the applicable contract language. To the extent there may be any conflict between the Medical Policy and contract language, the contract language takes precedence.

PLEASE NOTE: Contracts exclude from coverage, among other things, services or procedures that are considered investigational or cosmetic. Providers may bill members for services or procedures that are considered investigational or cosmetic. Providers are encouraged to inform members before rendering such services that the members are likely to be financially responsible for the cost of these services.

DESCRIPTION

Cryoablation kills cells by freezing the tissue using a coolant that is circulated via a probe inserted into the tumor.

MEDICAL POLICY CRITERIA

Note: This policy does not address liver tumors (primary or metastatic). See Cross References.

- I. Cryosurgical ablation may be considered **medically necessary** for the treatment of any of the following indications:
 - A. Malignant dermatologic tumors
 - B. Uveal melanoma
 - C. Kidney tumors
 - D. Prostate tumors, when treatment is whole gland cryoablation
 - E. Cervical intraepithelial neoplasia

- F. Desmoid tumors when both of the following criteria are met:
 1. The tumor is extra-abdominal (i.e., not intrabdominal or peritoneal); and
 2. The tumor is progressive or symptomatic.
- G. Lung cancer when either of the following criteria is met:
 1. For non-small cell lung cancer when the individual has early-stage (Stage I, and selected node negative Stage IIA) non-small cell lung cancer; or
 2. The individual requires palliation for a central airway obstructing lesion.
- II. Cryosurgical ablation is considered **investigational** as a treatment for all solid tumors not meeting Criterion I, including focal cryoablation of the prostate, cryoablation of malignant or benign tumors of the breast (including fibroadenoma), pancreas, and bone.

NOTE: A summary of the supporting rationale for the policy criteria is at the end of the policy.

LIST OF INFORMATION NEEDED FOR REVIEW

It is critical that the list of information below is submitted for review to determine if the policy criteria are met. If any of these items are not submitted, it could impact our review and decision outcome.

- History and Physical
- Treatment plan including treatment area.

CROSS REFERENCES

1. [Histotripsy for Hepatic or Renal Tumor Treatment](#), Medicine, Policy No. 178
2. [Radiofrequency Ablation \(RFA\) of Tumors Other than Liver](#), Surgery, Policy No. 92
3. [Magnetic Resonance \(MR\) Guided Focused Ultrasound \(MRgFUS\) and High Intensity Focused Ultrasound \(HIFU\) Ablation](#), Surgery, Policy No. 139
4. [Microwave Tumor Ablation](#), Surgery, Policy No. 189
5. [Ablation of Primary and Metastatic Liver Tumors](#), Surgery, Policy No. 204
6. [Focal Laser Ablation of Prostate Cancer](#), Surgery, Policy No. 222

BACKGROUND

Cryosurgical ablation (also called cryosurgery, cryotherapy, or cryoablation) kills cells (cancerous and normal) by freezing target tissues, most often by inserting a probe into the tumor through which coolant is circulated. Cryosurgery may be performed as an open surgical technique or as a closed procedure under laparoscopic or ultrasound guidance.

The goals of cryosurgery may include the following:

- Destruction or shrinkage of tumor tissue
- Controlling local tumor growth and preventing recurrence
- Palliating symptoms
- Extending survival duration for patients with certain tumors.

Potential complications associated with cryosurgery in any organ include the following:

- Hypothermic damage to normal tissue adjacent to the tumor (e.g., nerve damage)
- Structural damage along the probe track
- Secondary tumors if cancerous cells are seeded during probe removal.

REGULATORY STATUS

There are several cryoablation devices cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process for use in open, minimally invasive or endoscopic surgical procedures in the areas of general surgery, urology, gynecology, oncology, neurology, dermatology, proctology, thoracic surgery and ear, nose and throat. Examples include:

- Cryocare® Surgical System by Endocare;
- CryoGen Cryosurgical System by Cryosurgical, Inc.;
- CryoHit® by Galil Medical;
- IceRod® CX, IcePearl® 2.1 CX and IceFORCE® 2.1 CX Cryoablation Needles by Galil Medical;
- IceSense3™, ProSense™, and MultiSense Systems (IceCure Medical);
- SeedNet™ System by Galil Medical;
- Visica® System by Sanarus Medical;
- Visual-ICE® Cryoablation System by Galil;
- ERBECRYO 2® Cryosurgical Unit, ERBE USA Incorporated

EVIDENCE SUMMARY

Randomized controlled trials are needed to understand the impact of cryosurgical ablation on local or distant tumor recurrence and disease-free and overall survival in patients with solid tumors and compare this technique with current standard treatments. The standard treatment for most solid tumors is surgical resection. For unresectable solid tumors, alternatives to resection depend on tumor type and location, and may include thermal ablation, percutaneous ethanol injection, chemoembolization, chemotherapy, and radiation therapy.

The following literature appraisal focuses on the investigational indications noted in medical policy criteria above.

BREAST TUMORS

The standard treatment for breast cancer is surgical excision by lumpectomy or mastectomy, with or without adjuvant radiation therapy, chemotherapy, and/or hormone therapy. Fibroadenomas, benign tumors of the breast, generally do not require treatment. If treated, they are typically surgically excised.

Systematic Reviews

Ramgopal (2025) published a systematic review of breast adenoma cryoablation, which included six studies.^[1] These studies reported reductions in fibroadenoma volume and palpability, but authors noted that larger prospective trials with standardized outcomes measures were needed to validate these findings.

A systematic review by Zhao (2010), included cryoablation along with other minimally-invasive thermal ablation techniques (i.e., radiofrequency, microwave, cryoablation and high-intensity

focused ultrasound) for treatment of early-stage breast cancer.^[2] The studies on cryoablation for breast cancer were primarily limited to pilot and feasibility studies conducted in the research setting. A wide range of 36-83% was reported for complete ablation of tumors. The authors concluded that, while promising, large randomized controlled trials are needed to further evaluate patient selection criteria, techniques to ensure complete tumor ablation, and long-term outcomes compared with surgical excision of breast tumors.

Randomized Controlled Trials

There are no prospective, randomized controlled trials comparing survival and recurrence rates following cryoablation of breast tumors with surgical excision or, for unresectable tumors, with nonoperative therapies.

Nonrandomized Studies

The remaining nonrandomized evidence does not permit reliable conclusions concerning the impact of cryosurgical ablation on breast cancer survival or recurrence due to a number of methodological limitations, including: heterogeneous or unreported patient selection criteria, the use of varied cryoablation techniques, nonrandomized allocation of treatment, lack of an appropriate surgical excision control group for comparison, small subject population, and limited data on long-term outcomes.^[3-16]

PULMONARY TUMORS

Systematic Reviews

Lee (2011) conducted a systematic review of endoscopic cryoablation of lung and bronchial tumors.^[17] Included in the review were 15 case studies and one comparative observational study. Cryoablation was performed for inoperable, advanced lung and bronchial cancers in most studies. Some studies included patients with comorbid conditions and poor general health who would not be considered surgical candidates. Complications occurred in 11.1% of patients (10 studies) and consisted of hemorrhage, mediastinal emphysema, atrial fibrillation, and dyspnea. Within 30 days of the procedure, death from hemoptysis and respiratory failure, considered to be most likely related to disease progression, occurred in 7.1% of patients. Improvements in pulmonary function and clinical symptoms occurred in studies reporting these outcomes. One published review reported the outcomes of 15 case series and one comparative observational study for endoscopic cryotherapy of endobronchial tumors. Most studies were for inoperable, advanced lung and bronchial cancers. A critical analysis of the studies was not provided. However, the authors noted the significant limitations in the available evidence due to lack of control groups, lack of random treatment allocation, and heterogeneity in study methodologies, participants' characteristics (e.g., comorbid conditions, general health, cancer grade), treatment protocols, operative techniques, and outcome measures. Complications occurred in 11.1% of patients from ten studies and consisted of hemorrhage, mediastinal emphysema, atrial fibrillation, and dyspnea. Within 30 days of the procedure, death from hemoptysis and respiratory failure, considered to be most likely related to disease progression, occurred in 7.1% of patients. Improvements in pulmonary function and clinical symptoms occurred in studies reporting these outcomes. Because the studies in the review did not include control groups or compare outcomes of cryosurgery to alternative strategies for managing similar patients, no conclusions can be made on the net health outcomes of cryosurgery for lung cancer.

Randomized Controlled Trials

One preliminary randomized trial studied 36 female patients with NSCLC who also had epidermal growth factor receptor gene mutations.^[18] All patients received six months treatment with molecular target therapy gefitinib, an epidermal growth factor receptor-tyrosine kinase inhibitor. Patients were randomized to either an experimental group and underwent cryoablation prior to receiving gefitinib, or to a control group in which cryoablation was not performed. At one-year follow-up, the survival rate in the cryoablation group was significantly higher than that of the control group. The findings of this preliminary study suggest that cryoablation may improve the effects of gefitinib in this patient population. Additional larger, long-term randomized trials are needed to validate these findings.

Nonrandomized Studies

The Study of Metastatic Lung Tumors Targeted by Interventional Cryoablation Evaluation (SOLSTICE) study assessed the safety and local recurrence-free survival after cryoablation for treatment of pulmonary metastases. Callstrom (2020) published this multicenter, prospective, single-arm, phase 2 study in 128 patients with 224 lung metastases ≤ 3.5 cm.^[19] Median tumor size was 1.0 cm. Local recurrence-free response was 85.1% at 12 months and 77.2% at 24 months. Secondary local recurrence-free response after retreatment with cryoablation for recurrent tumors was 91.1% at 12 months and 84.4% at 24 months. Overall survival at 12 and 24 months was 97.6% and 86.6%, respectively.

The ECLIPSE trial is prospective, multicenter trial of cryoablation for metastatic disease in the lungs, interim results at one-year follow-up were published in 2015.^[20] The trial enrolled 40 patients with 60 metastatic lung lesions who were treated with cryoablation and had at least 12 months of follow-up. Outcomes included survival, local tumor control, quality of life, and complications. Local tumor control was achieved in 94.2% (49/52) of treated lesions, and one-year OS was 97.5% (39/40). There were no significant changes in quality of life over the 12-month study. The most common adverse event was pneumothorax requiring chest tube insertion in 18.8% (9/48 procedures). Five-year results of the trial were published by de Baère (2021), which reported disease-specific survival rates of 74.8% at three years and 55.3% at five years.^[20] Three- and five-year overall survival were 63.2% and 46.7%, respectively, and there was no significant difference in quality-of-life measures.

BONE TUMORS

Systematic Reviews

A systematic review by Fallahi (2025) evaluated percutaneous cryoablation for spinal metastases in 11 studies (n=229), 10 of which were retrospective.^[21] A meta-analysis found that after a mean follow-up of 12.6 months, local tumor control was achieved in 70.5% of patients and pain scores were significantly decreased following cryoablation (mean reduction of 4.5 points, $p < 0.0001$). Pooled complication rates were 2.0% and 4.8% for major and minor complications, respectively. Study quality and risk of bias were not assessed.

Khanmohammadi (2023) published a systematic review of cryoablation for the palliation of painful bone metastases.^[22] The review included 15 studies (n=376): ten case series and five prospective interventional studies. Of these, six were scored as “good,” six as “fair,” and three as “poor” according to the NIH Study Quality Assessment Tools. A total of 436 metastatic lesions were treated, mostly in the spine, pelvic bone, and ribs. All of the studies reported a

statistically significant reduction in pain between one day and six months following the procedure. A similar systematic review by Torabi (2025) that included 12 studies also reported significant improvements in pain scores.^[23]

A systematic review by Sagoo (2022) assessed percutaneous cryoablation of spinal metastases.^[24] Eight studies, seven of which were retrospective, were included in the review, with a total of 148 patients and 187 treated lesions (3 cervical, 74 thoracic, 37 lumbar, and 17 sacrococcygeal). At one-month follow-up, the pooled mean difference in pain scores (1-10 scale) was 5.03 (95% confidence interval [CI] 4.24 to 5.82). Reported tumor control rates varied from 60% to 100% and complications were reported in 12 patients, three of which were grade III-V.

Lindquester (2020) published a systematic review evaluating percutaneous thermal ablation technologies for osteoid osteoma, which included 36 case-series (total n=1,798).^[25] While the authors stated that the studies were evaluated for quality, the results of such an evaluation were not included in the publication. An overall success rate of 91.9% was reported, which included both technical and clinical success of the procedure as well as freedom from recurrence during follow-up, however median length of follow-up in these studies was not reported. The overall complication rate was 2.5% (95% CI 1.9% to 3.3%). No significant differences were found between radiofrequency and cryoablation, but only three of the 36 studies included cryoablation; most (32 studies) were for radiofrequency ablation.

Nonrandomized Studies

Cazzato (2022) published a review of 74 patients with spinal metastases who underwent cryoablation treatment at two academic medical centers.^[26] Of these, 21 patients underwent treatment for curative purposes while 53 were treated for palliative purposes. Cryoablation was associated with a reduction in pain among those who presented with painful lesions. Local tumor control was achieved in 21 patients undergoing cryoablation with curative intent (mean follow-up of 25.9 ± 21.2 months).

Jennings (2021) reported on a multicenter, single-arm prospective study of 66 patients with metastatic bone disease who were treated with cryoablation, all of whom were not candidates for or had not benefited from standard therapy.^[27] The primary endpoint was the change in pain score from baseline to week eight and patients were followed for 24 weeks. The mean decrease in pain score from baseline to week eight was 2.61 points (95% CI 3.45 to 1.78). Pain scores decreased further after the primary endpoint and reached clinically meaningful levels (more than a two-point decrease) after week eight. This study was limited by its lack of a comparator, potential for selection bias, and lack of blinding combined with subjective outcome measures.

Callstrom (2013) reported on 61 patients treated with cryoablation for pain from 69 tumors (size 1 to 11 cm) metastatic to the bone. Before treatment, patients rated their pain with a 4+ on a 1-to-10 scale using the Brief Pain Inventory, with a mean score of 7.1 for worst pain in a 24-hour period. The mean pain score gradually decreased after cryoablation to 1.4 ($p<0.001$) at 24 weeks for worst pain in a 24-hour period. A major complication of osteomyelitis was experienced by one (2%) patient.

Meller (2008) retrospectively analyzed a single-center experience with 440 bone tumor cryosurgery procedures performed between 1988 and 2002, two-thirds of them for primary benign-aggressive and low-grade malignant lesions, and one-third for primary high-grade and

metastatic bone tumors.^[28] At a median follow-up of seven years (range 3 to 18 years), the overall recurrence rate was 8%. Based on their data, the authors suggested that the ideal case for cryosurgery is a young adult with involvement of long bone, a benign-aggressive or low-grade malignant bone tumor, a good cavity with greater than 75%-thick surrounding walls, no or minimal soft-tissue component, and at least ± 1 cm of subchondral bone left near a joint surface after curettage and burr drilling.

PROSTATE TUMOR FOCAL ABLATION

Hopstaken (2022) published an updated systematic review on focal therapy in localized prostate cancer in terms of functional and oncological outcomes that included 72 studies published between October 2015 and December 31, 2020.⁵⁵ Of the included studies, 11 evaluated cryoablation, and six of these were retrospective studies. Two studies compared whole gland with focal cryoablation, one of which reported that focal cryotherapy was associated with increased continence while the other found no difference. The authors noted that the majority of studies concerning focal therapy are still in an early research stage and that definitive proof of oncological effectiveness of focal therapy against standard of care is still pending.

OTHER TUMORS

Cryoablation for the treatment of other solid tumors has not been well-studied.

Systematic Reviews

Keane (2014) reported on a systematic review of ablation therapies, including cryoablation, for locally advanced pancreatic cancer.^[29] The review noted studies have demonstrated ablative therapies, including cryoablation, are feasible but larger studies are needed. No conclusions could be made on whether ablation resulted in better oncologic outcomes than best supportive care.

Tao (2012) reported on a systematic review of cryoablation for pancreatic cancer.^[30] The authors identified 29 studies from the literature search and included five of these studies in the review. The five studies were all case series and considered to be of low quality. Adverse events, when mentioned in the studies, included delayed gastric emptying (0% to 40.9% in three studies), pancreatic leak (0% to 6.8% in four studies), biliary leak (0% to 6.8% in three studies), and one instance of upper gastrointestinal hemorrhage. Pain relief was reported in three studies and ranged from 66.7% to 100%. Median survival times reported in three studies ranged from 13.4 to 16 months. One-year total survival rates reported in two studies were 57.5% and 63.6%. The authors noted that studies had demonstrated ablative therapies, including cryoablation, are feasible, but larger studies are needed. No conclusions could be made on whether ablation resulted in better outcomes than best supportive care. A similar systematic review was conducted by Xue (2024) in patients with locally advanced pancreatic cancer, with similar conclusions.^[1]

Nonrandomized Studies

The remaining published literature is limited to case series and retrospective reviews.^[31-40] As discussed above, these studies do not permit reliable conclusions concerning the impact of cryoablation on health outcomes.

Clinical practice guidelines from U.S. professional associations recommend cryoablation as a treatment option for uveal melanoma, certain extra-abdominal desmoid tumors, certain NSCLC tumors, and for tumors of the kidney.^[41-47]

The National Comprehensive Cancer Network (NCCN) guidelines for prostate cancer (v.4.2026) state that focal therapy, including focal cryotherapy “is an experimental and emerging technology for the initial treatment of localized prostate cancer that lacks randomized controlled trial evidence with long-term follow-up showing its superiority or noninferiority to current recommended management strategies.”^[48] The guidelines discourage focal therapy for both low- and high-risk cancers, and additionally recommend that focal therapy should only be utilized for intermediate-risk patients in the context of a clinical trial, due to insufficient comparative evidence.

No clinical practice guidelines or position statements based on research from U.S. professional societies were identified that specifically recommend cryoablation for the treatment of solid tumors other than those listed above, including guidelines from the NCCN for pancreatic, breast, and bone cancers.^[49-51]

SUMMARY

Cryosurgical ablation has become a recognized standard of care in the management of tumors of the skin, kidney, uveal melanoma, extra-abdominal desmoid tumors, cervical intraepithelial neoplasia, and carefully selected individuals with lung tumors, as well as whole gland cryoablation for prostate cancer. Therefore, this technique may be considered medically necessary in the treatment of these tumors when criteria are met.

There is not enough research to show that cryosurgical ablation can improve health outcomes for individuals with solid tumors that do not meet policy criteria, including those with malignant or benign tumors of the breast (including fibroadenoma), pancreas, and bone; and as a focal therapy for prostate cancer. Therefore, cryosurgical ablation for these indications is considered investigational.

REFERENCES

1. Xue K, Liu X, Xu X, et al. Perioperative outcomes and long-term survival of cryosurgery on unresectable pancreatic cancer: a systematic review and meta-analysis. *Int J Surg.* 2024;110(7):4356-69. PMID: 38537056
2. Zhao Z, Wu F. Minimally-invasive thermal ablation of early-stage breast cancer: a systemic review. *Eur J Surg Oncol.* 2010;36(12):1149-55. PMID: 20889281
3. Pfleiderer SO, Freesmeyer MG, Marx C, et al. Cryotherapy of breast cancer under ultrasound guidance: initial results and limitations. *Eur Radiol.* 2002;12(12):3009-14. PMID: 12439583
4. Suzuki Y. Cryosurgical treatment of advanced breast cancer and cryoimmunological responses. *Skin Cancer.* 1995;10:19-26. PMID: No PMID Entry
5. Morin J, Traore A, Dionne G, et al. Magnetic resonance-guided percutaneous cryosurgery of breast carcinoma: technique and early clinical results. *Can J Surg.* 2004;47(5):347-51. PMID: 15540687

6. Littrup PJ, Jallad B, Chandiwalla-Mody P, et al. Cryotherapy for breast cancer: a feasibility study without excision. *J Vasc Interv Radiol*. 2009;20(10):1329-41. PMID: 19800542
7. Sabel MS, Kaufman CS, Whitworth P, et al. Cryoablation of early-stage breast cancer: work-in-progress report of a multi-institutional trial. *Ann Surg Oncol*. 2004;11(5):542-9. PMID: 15123465
8. Kaufman CS, Bachman B, Littrup PJ, et al. Office-based ultrasound-guided cryoablation of breast fibroadenomas. *Am J Surg*. 2002;184(5):394-400. PMID: 12433600
9. Kaufman CS, Littrup PJ, Freman-Gibb LA, et al. Office-based cryoablation of breast fibroadenomas: 12-month followup. *J Am Coll Surg*. 2004;198(6):914-23. PMID: 15194073
10. Kaufman CS, Bachman B, Littrup PJ, et al. Cryoablation treatment of benign breast lesions with 12-month follow-up. *Am J Surg*. 2004;188(4):340-8. PMID: 15474424
11. Littrup PJ, Freeman-Gibb L, Andea A, et al. Cryotherapy for breast fibroadenomas. *Radiology*. 2005;234(1):63-72. PMID: 15550369
12. Kaufman CS, Littrup PJ, Freeman-Gibb LA, et al. Office-based cryoablation of breast fibroadenomas with long-term follow-up. *Breast J*. 2005;11(5):344-50. PMID: 16174156
13. Nurko J, Mabry CD, Whitworth P, et al. Interim results from the FibroAdenoma Cryoablation Treatment Registry. *Am J Surg*. 2005;190(4):647-51; discussion 51-2. PMID: 16164941
14. Manenti G, Perretta T, Gaspari E, et al. Percutaneous local ablation of unifocal subclinical breast cancer: clinical experience and preliminary results of cryotherapy. *Eur Radiol*. 2011;21(11):2344-53. PMID: 21681574
15. Pusztaszeri M, Vlastos G, Kinkel K, et al. Histopathological study of breast cancer and normal breast tissue after magnetic resonance-guided cryotherapy ablation. *Cryobiology*. 2007;55(1):44-51. PMID: 17604016
16. Simmons RM, Ballman KV, Cox C, et al. A Phase II Trial Exploring the Success of Cryoablation Therapy in the Treatment of Invasive Breast Carcinoma: Results from ACOSOG (Alliance) Z1072. *Ann Surg Oncol*. 2016;23(8):2438-45. PMID: 27221361
17. Lee SH, Choi WJ, Sung SW, et al. Endoscopic cryotherapy of lung and bronchial tumors: a systematic review. *Korean J Intern Med*. 2011;26(2):137-44. PMID: 21716589
18. Gu XY, Jiang Z, Fang W. Cryoablation Combined with Molecular Target Therapy Improves the Curative Effect in Patients with Advanced Non-small Cell Lung Cancer. *J Int Med Res*. 2011;39(5):1736-43. PMID: 22117974
19. Callstrom MR, Woodrum DA, Nichols FC, et al. Multicenter Study of Metastatic Lung Tumors Targeted by Interventional Cryoablation Evaluation (SOLSTICE). *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer*. 2020;15(7):1200-09. PMID: 32151777
20. de Baere T, Tselikas L, Woodrum D, et al. Evaluating Cryoablation of Metastatic Lung Tumors in Patients--Safety and Efficacy: The ECLIPSE Trial--Interim Analysis at 1 Year. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer*. 2015;10(10):1468-74. PMID: 26230972
21. Fallahi MS, Maroufi SF, Parmis Maroufi S, et al. Percutaneous cryoablation in the management of spinal metastases: a comprehensive systematic review and meta-analysis. *J Neurooncol*. 2025;174(2):303-14. PMID: 40358802
22. Khanmohammadi S, Noroozi A, Yekaninejad MS, et al. Cryoablation for the Palliation of Painful Bone Metastasis: A Systematic Review. *Cardiovascular and interventional radiology*. 2023;46(11):1469-82. PMID: 36631660

23. Torabi S, Ahmadzade M, Ghorani H, et al. Image-guided cryoablation for palliation of painful bone metastases: a systematic review and meta-analysis. *Skeletal Radiol*. 2025;54(8):1715-27. PMID: 39890640
24. Sagoo NS, Haider AS, Ozair A, et al. Percutaneous image-guided cryoablation of spinal metastases: A systematic review. *J Clin Neurosci*. 2022;96:120-26. PMID: 34840092
25. Lindquester WS, Crowley J, Hawkins CM. Percutaneous thermal ablation for treatment of osteoid osteoma: a systematic review and analysis. *Skeletal Radiol*. 2020;49(9):1403-11. PMID:
26. Cazzato RL, Jennings JW, Autrusseau PA, et al. Percutaneous image-guided cryoablation of spinal metastases: over 10-year experience in two academic centers. *Eur Radiol*. 2022;32(6):4137-46. PMID: 35028752
27. Jennings JW, Prologo JD, Garnon J, et al. Cryoablation for Palliation of Painful Bone Metastases: The MOTION Multicenter Study. *Radiol Imaging Cancer*. 2021;3(2):e200101. PMID: 33817650
28. Meller I, Weinbroum A, Bickels J, et al. Fifteen years of bone tumor cryosurgery: a single-center experience of 440 procedures and long-term follow-up. *Eur J Surg Oncol*. 2008;34(8):921-7. PMID: 18158228
29. Keane MG, Bramis K, Pereira SP, et al. Systematic review of novel ablative methods in locally advanced pancreatic cancer. *World J Gastroenterol*. 2014;20(9):2267-78. PMID: 24605026
30. Tao Z, Tang Y, Li B, et al. Safety and effectiveness of cryosurgery on advanced pancreatic cancer: a systematic review. *Pancreas*. 2012;41(5):809-11. PMID: 22695092
31. Kovach SJ, Hendrickson RJ, Cappadona CR, et al. Cryoablation of unresectable pancreatic cancer. *Surgery*. 2002;131(4):463-4. PMID: 11935137
32. Xu KC, Niu LZ, Hu YZ, et al. A pilot study on combination of cryosurgery and (125)iodine seed implantation for treatment of locally advanced pancreatic cancer. *World J Gastroenterol*. 2008;14(10):1603-11. PMID: 18330956
33. Li J, Chen X, Yang H, et al. Tumour cryoablation combined with palliative bypass surgery in the treatment of unresectable pancreatic cancer: a retrospective study of 142 patients. *Postgrad Med J*. 2011;87(1024):89-95. PMID: 21131612
34. Thacker PG, Callstrom MR, Curry TB, et al. Palliation of painful metastatic disease involving bone with imaging-guided treatment: comparison of patients' immediate response to radiofrequency ablation and cryoablation. *AJR Am J Roentgenol*. 2011;197(2):510-5. PMID: 21785102
35. Masala S, Guglielmi G, Petrella MC, et al. Percutaneous ablative treatment of metastatic bone tumours: visual analogue scale scores in a short-term series. *Singapore Med J*. 2011;52(3):182-9. PMID: 21451927
36. Welch BT, Atwell TD, Nichols DA, et al. Percutaneous image-guided adrenal cryoablation: procedural considerations and technical success. *Radiology*. 2011;258(1):301-7. PMID: 20971772
37. Yamauchi Y, Izumi Y, Kawamura M, et al. Percutaneous cryoablation of pulmonary metastases from colorectal cancer. *PLoS One*. 2011;6(11):e27086. PMID: 22096520
38. Callstrom MR, Dupuy DE, Solomon SB, et al. Percutaneous image-guided cryoablation of painful metastases involving bone: multicenter trial. *Cancer*. 2013;119(5):1033-41. PMID: 23065947
39. Poplack SP, Levine GM, Henry L, et al. A Pilot Study of Ultrasound-Guided Cryoablation of Invasive Ductal Carcinomas up to 15 mm With MRI Follow-Up and Subsequent Surgical Resection. *AJR Am J Roentgenol*. 2015;204(5):1100-8. PMID: 25905948

40. Zheng Z, Zhao Y, An Y, et al. Efficacy of argon-helium cryoablation and its effects on immune function of patients with neck malignant tumors. *Clinical otolaryngology : official journal of ENT-UK ; official journal of Netherlands Society for Oto-Rhino-Laryngology & Cervico-Facial Surgery*. 2020. PMID: 32920994
41. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Kidney Cancer. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Kidney Cancer [cited 1/7/2026]. 'Available from:' http://www.nccn.org/professionals/physician_gls/pdf/kidney.pdf.
42. Babaian RJ, Donnelly B, Bahn D, et al. Best practice statement on cryosurgery for the treatment of localized prostate cancer. *J Urol*. 2008;180:1993-2004. PMID: 18817934
43. Sun F, Oyesanmi O, Fontanarosa J, et al. 2014. PMID: 25610935
44. Campbell SC, Novick AC, Belldgrun A, et al. Guideline for management of the clinical T1 renal mass. *J Urol*. 2009;182(4):1271-9. PMID: 19683266
45. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Non-small cell lung cancer. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Non-small cell lung cancer [cited 1/7/2026]. 'Available from:' http://www.nccn.org/professionals/physician_gls/pdf/nscl.pdf.
46. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Uveal Melanoma. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Uveal Melanoma [cited 1/7/2026]. 'Available from:' https://www.nccn.org/professionals/physician_gls/pdf/uveal_blocks.pdf.
47. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Soft Tissue Sarcoma. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Soft Tissue Sarcoma [cited 1/7/2026]. 'Available from:' https://www.nccn.org/professionals/physician_gls/pdf/sarcoma.pdf.
48. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Prostate Cancer. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Prostate Cancer [cited 1/7/2026]. 'Available from:' http://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf.
49. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Bone Cancer. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Bone Cancer [cited 1/7/2026]. 'Available from:' https://www.nccn.org/professionals/physician_gls/pdf/bone.pdf.
50. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Pancreatic Adenocarcinoma. Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Pancreatic Adenocarcinoma [cited 1/7/2026]. 'Available from:' https://www.nccn.org/professionals/physician_gls/pdf/pancreatic.pdf.
51. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Breast Cancer. . Secondary National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology™. Breast Cancer. [cited 1/7/2026]. 'Available from:' http://www.nccn.org/professionals/physician_gls/pdf/breast.pdf.

CODES

Codes	Number	Description
CPT	0581T	Ablation, malignant breast tumor(s), percutaneous, cryotherapy, including imaging guidance when performed, unilateral
	17260-17286	Destruction, malignant lesion (eg, laser surgery, electrosurgery, cryosurgery, chemosurgery, surgical curettement)
	19105	Ablation, cryosurgical, of fibroadenoma, including ultrasound guidance, each fibroadenoma
	20983	Ablation therapy for reduction or eradication of 1 or more bone tumors (eg, metastasis) including adjacent soft tissue when involved by tumor extension, percutaneous, including imaging guidance when performed; cryoablation
	31641	Bronchoscopy, rigid or flexible, including fluoroscopic guidance, when performed; with destruction of tumor or relief of stenosis by any method other than excision (eg, laser therapy, cryotherapy)
	32994	Ablation therapy for reduction or eradication of 1 or more pulmonary tumor(s) including pleura or chest wall when involved by tumor extension, percutaneous, including imaging guidance when performed, unilateral; cryoablation
	50250	Ablation, open, 1 or more renal mass lesion(s), cryosurgical, including intraoperative ultrasound guidance and monitoring, if performed
	50542	Laparoscopy, surgical; ablation of renal mass lesion(s), including intraoperative ultrasound guidance and monitoring, when performed
	50593	Ablation, renal tumor(s), unilateral, percutaneous, cryotherapy
	55873	Cryosurgical ablation of the prostate (includes ultrasonic guidance and monitoring)
	55899	Unlisted procedure, male genital system
	57511	Cautery of cervix; cryocautery, initial or repeat
HCPCS	None	

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