

# Catheter Track Metastasis With Indwelling Pleural Catheter

Sara Zank, FNP, AOCNP,<sup>1</sup> Elham Abboud, MD,<sup>2</sup> Wissam Jaber, MD, FCCP,<sup>3</sup> Abdul Hamid Alraiyes, MD, FCCP<sup>1,4</sup>

<sup>1</sup>Interventional Pulmonary Section, Department of Medicine, Cancer Treatment Center of America, Zion, IL <sup>2</sup>Department of Pathology, Cancer Treatment Center of America, Zion, IL <sup>3</sup>Interventional Pulmonary Section, Department of Medicine, Cancer Treatment Center of America, Phoenix, AZ <sup>4</sup>Division of Pulmonary, Critical Care, and Sleep Medicine, Department of Medicine, Rosalind Franklin University, North Chicago, IL

## TO THE EDITOR

Catheter track metastasis (CTM) is a rare known complication of indwelling pleural catheters (IPCs). We present the case of a patient who had recurrent malignant pleural effusion secondary to endometrial cancer metastasis. The patient presented with a right chest wall mass along the track of an IPC.

## CASE REPORT

A 55-year-old female with stage IV clear cell endometrial carcinoma presented with recurrent malignant right pleural effusion. Because the patient had had recurring shortness of breath that mandated multiple thoracenteses to relieve the symptoms, an IPC was placed. The IPC was draining 500–700 mL every other day. The patient presented for a follow-up visit 6 weeks post-IPC placement. Physical examination revealed a painful, red, chest wall mass at the entry site of the IPC that was tender on palpation. Computed tomography (CT) of the chest demonstrated a 4.8 × 2.5-cm oval mass surrounding the IPC in the soft tissue of the lateral aspect of the right chest wall (Figure 1). Upon presentation, the IPC was noted to have a suture fracture with partial removal of the catheter and pleural fluid leaking around the entry site.

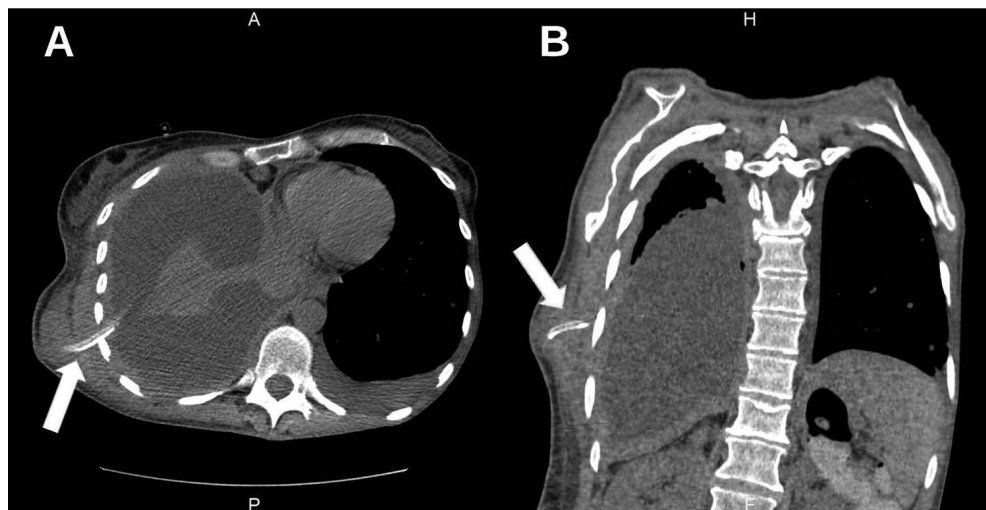
Ultrasound-guided core needle biopsy of the right chest wall mass revealed metastatic adenocarcinoma, morphologically consistent with endometrial carcinoma (Figure 2).

The patient had considerable pain at the site that was minimally relieved with analgesics. She underwent external beam radiation to the right chest wall mass, with improvement in symptomatic control.

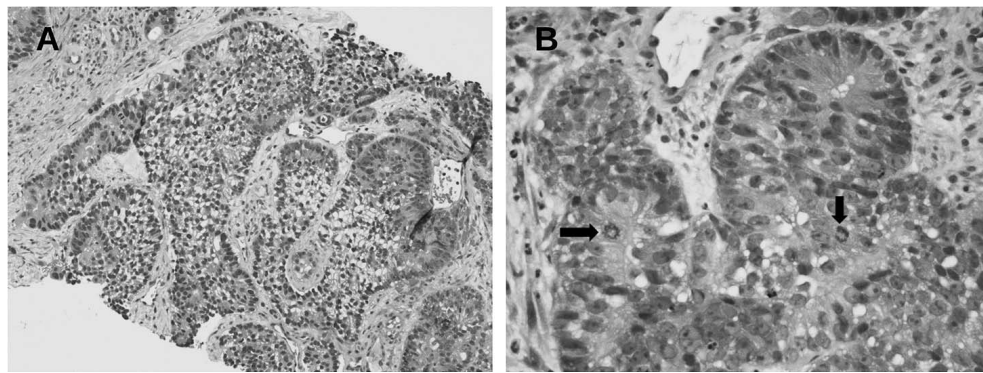
## DISCUSSION

This case demonstrates the occurrence of chest wall CTM from a metastatic malignant pleural effusion secondary to gynecologic malignancy. Wrightson et al reported that the incidence of CTM associated with IPCs is <5%.<sup>1</sup> In a randomized study, CTM was reported in 1 of the 52 IPC-treated patients.<sup>2</sup> In another study, the incidence of CTM was higher—up to 10%—but 60% of the patients had mesothelioma.<sup>3</sup> A systematic review by Lui et al showed that the variable incidence of CTM may be related to the differences among primary malignancies, the definition of CTM, and/or a difference in awareness of CTM.<sup>4</sup>

The etiology of CTM is unknown. One hypothesis is that tumor cells metastasize along the puncture points at the parietal pleura to the nearby subcutaneous tissue, and the presence of an IPC may encourage inflammation and vascularization along the tract, potentiating tumor spread.<sup>5</sup> Mesothelioma is known for its tendency to spread along pleural puncture tracts and accounts for the majority of cases in the studies on IPC-related CTM.<sup>1–3</sup> On the other hand, CTM from other cancers, such as lung, breast, and ovary, has also been reported.<sup>3</sup>



**Figure 1.** Transverse (A) and coronal (B) computed tomography images of catheter track metastasis around the indwelling pleural catheter (arrows).



**Figure 2. Right chest wall mass core biopsy showing (A) adenocarcinoma with focal clear cell features morphologically consistent with endometrial carcinoma (magnification  $\times 20$ ) and (B) adenocarcinoma and atypical mitosis (arrows) (magnification  $\times 40$ ).** (To see this image in color, click to <https://education.ochsner.org/publishing-services/toc/alraiyes-17-0078-fig2>.)

Patients with CTM typically present with a new and often painful subcutaneous nodule/mass near the IPC insertion site or its subcutaneous tract.<sup>4</sup> The nodules are often recognized on CT imaging as soft tissue opacity that initially resembles scarring and, later, as nodularity with or without peripheral invasion.<sup>6</sup>

IPCs are a common and effective palliative intervention for pleural effusions with a low-risk of serious complications.<sup>7</sup> However, with an increasing incidence of CTM and so few studies aimed at prevention and management of complications, this letter emphasizes the importance of considering the threat of metastasis from IPCs. Studies are needed to identify risk factors and understand the pathophysiology of CTM to optimize patient outcomes.

## REFERENCES

1. Wrightson JM, Fysh E, Maskell NA, Lee YC. Risk reduction in pleural procedures: sonography, simulation and supervision. *Curr Opin Pulm Med*. 2010 Jul;16(4):340-350. doi: 10.1097/MCP.0b013e32833a233b.
2. Davies HE, Mishra EK, Kahan BC, et al. Effect of an indwelling pleural catheter vs chest tube and talc pleurodesis for relieving dyspnea in patients with malignant pleural effusion: the TIME2 randomized controlled trial. *JAMA*. 2012 Jun 13;307(22):2383-2389. doi: 10.1001/jama.2012.5535.
3. Thomas R, Budgeon CA, Kuok YJ, et al. Catheter tract metastasis associated with indwelling pleural catheters. *Chest*. 2014 Sep; 146(3):557-562. doi: 10.1378/chest.13-3057.
4. Lui MMS, Thomas R, Lee YCG. Complications of indwelling pleural catheter use and their management. *BMJ Open Res*. 2016;3:e000123. doi: 10.1136/bmjresp-2015-000123.
5. Janes SM, Rahman NM, Davies RJ, Lee YC. Catheter-tract metastases associated with chronic indwelling pleural catheters. *Chest*. 2007 Apr;131(4):1232-1234.
6. Thomas JM, Musani AI. Malignant pleural effusions: a review. *Clin Chest Med*. 2013 Sep;34(3):459-471. doi: 10.1016/j.ccm.2013.05.004.
7. Khair F, Shawwa K, Alokla K, Omballi M, Alraiyes AH. Tunneled pleural catheter for the treatment of malignant pleural effusion: a systematic review and meta-analysis. *Am J Ther*. 2016 Nov/Dec; 23(6):e1300-e1306.