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Round ligament pathway revealing inguinal peritoneal implant in advanced ovarian cancer

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ABSTRACT

Ovarian cancer is frequently diagnosed at an advanced stage due to nonspecific clinical presentation. Imaging plays a central role in diagnosis and staging. We report the case of a 43-year-old woman presenting with abdominal pain and vomiting. Contrast-enhanced CT demonstrated bilateral complex adnexal masses categorized as O-RADS 5, associated with abundant ascites and diffuse peritoneal carcinomatosis. An unusual enhancing tissue lesion was identified along the round ligament pathway. Targeted ultrasound revealed a vascularized tissue mass within an inguinal hernia sac, corresponding to herniation of a peritoneal implant. This case highlights a rare route of tumor spread through the round ligament into the inguinal canal and emphasizes the importance of multimodality imaging in identifying atypical metastatic pathways.

KEYWORDS :

Ovarian cancer; O-RADS 5; Peritoneal carcinomatosis; Round ligament; Inguinal hernia; CT; Ultrasound

MAIN ARTICLE

INTRODUCTION

Ovarian cancer is one of the leading causes of mortality among gynecological malignancies, mainly due to late-stage diagnosis and nonspecific clinical presentation. Most patients present with advanced disease characterized by peritoneal dissemination. Imaging plays a crucial role in detecting adnexal masses, assessing malignancy risk, and evaluating disease extension. Ultrasound is the first-line modality, whereas contrast-enhanced CT is essential for staging and mapping peritoneal carcinomatosis [1–3].

Inguinal involvement through the round ligament is a rare and under-recognized pathway of tumor spread, which may mimic benign inguinal conditions.

CASE PRESENTATION

A 43-year-old woman presented to the emergency department with abdominal pain and vomiting. A contrast-enhanced CT scan was performed to investigate a suspected intra-abdominal pathology.

Imaging revealed two large bilateral pelvic masses, each in continuity with the corresponding ovarian pedicle, strongly suggesting ovarian origin. The lesions were predominantly multiloculated cystic with multiple internal septations and contained a small heterogeneous enhancing solid component. Based on these features and associated extra-ovarian disease, the lesions were classified as O-RADS 5, indicating a high risk of malignancy.

There was abundant intraperitoneal fluid. Multiple peritoneal implants were identified in the supra- and inframesocolic compartments as well as in the pelvis, with marked involvement of the right subphrenic region. Diffuse peritoneal thickening was also present, along with iliac lymphadenopathy. Thoracic sections demonstrated a moderate left pleural effusion. These findings were consistent with advanced peritoneal carcinomatosis associated with bilateral ovarian masses [Figure 2].

An additional enhancing tissue focus was detected along the course of the round ligament. This lesion was not consistent with nodal localization and appeared asymmetric compared to the contralateral side.

Targeted ultrasound of the inguinal region demonstrated a heterogeneous hypoechoic tissue mass with internal vascularity on color Doppler, located within an inguinal hernia sac.

Correlation with CT confirmed inguinal herniation of a peritoneal implant along the round ligament pathway [Figure 1].

Overall, imaging findings were highly suggestive of advanced bilateral ovarian malignancy with diffuse peritoneal carcinomatosis, with an unusual inguinal extension.

DISCUSSION

This case illustrates typical imaging features of advanced ovarian malignancy, including bilateral complex adnexal masses with enhancing solid components, ascites, and diffuse peritoneal implants. These findings strongly support malignant epithelial ovarian disease. According to the O-RADS classification system, the presence of peritoneal implants and ascites categorizes lesions as O-RADS 5, corresponding to a very high risk of malignancy [1,2].

Contrast-enhanced CT plays a central role in staging ovarian cancer by evaluating peritoneal dissemination, lymph node involvement, and extra-abdominal spread. It provides a comprehensive overview of disease distribution in the supra- and inframesocolic compartments and subphrenic spaces, which is essential for treatment planning [3].

The most distinctive feature of this case is the inguinal localization of a peritoneal implant via the round ligament pathway. Although rare, this pattern is anatomically plausible. The round ligament represents a potential route for tumor dissemination from the peritoneal cavity toward the inguinal canal through peritoneal or lymphatic extension [4,5].

Only a few cases of ovarian cancer presenting as inguinal or round ligament metastasis have been reported. Such atypical presentations may mimic inguinal hernia, lymphadenopathy, or soft tissue tumors, potentially leading to misdiagnosis [4,6].

In this case, multimodality imaging was essential. CT detected the abnormal enhancing tissue along the round ligament, while ultrasound confirmed its nature by demonstrating a vascularized solid mass within an inguinal hernia sac. Doppler evaluation was particularly useful in differentiating tumoral tissue from simple hernia content. This highlights the complementary role of ultrasound in evaluating inguinal abnormalities detected on CT [2].

CONCLUSION

We report a rare imaging presentation of advanced ovarian malignancy with diffuse peritoneal carcinomatosis and inguinal herniation of a peritoneal implant through the round ligament. Recognition of this atypical dissemination pathway is important to avoid misinterpretation of inguinal lesions and to improve staging accuracy.

FIGURES

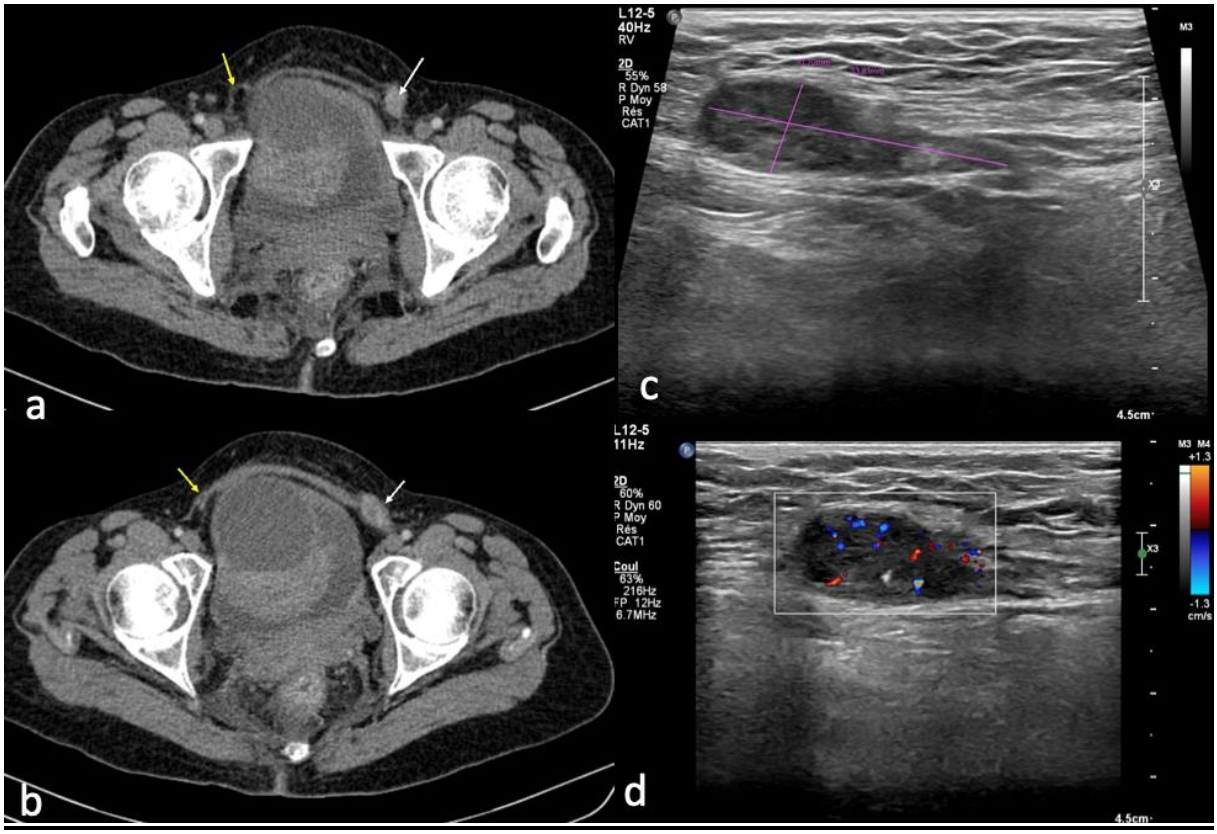

Figure 1. Inguinal peritoneal implant along the round ligament pathway

Composite multimodality imaging of an inguinal peritoneal implant.
(a,b) Axial contrast-enhanced CT images obtained at two different levels showing a small enhancing soft-tissue lesion (white arrows) extending along the expected course of the round ligament toward the inguinal canal, supporting a continuous lesion rather than nodal disease.
The contralateral round ligament (yellow arrow) shows a normal appearance for comparison.
(c) Ultrasound image without Doppler revealing a heterogeneous hypoechoic tissue mass within the inguinal canal .
(d) Color Doppler ultrasound demonstrating internal vascularization of the lesion, supporting its tumoral nature.
Findings are consistent with inguinal herniation of a peritoneal implant

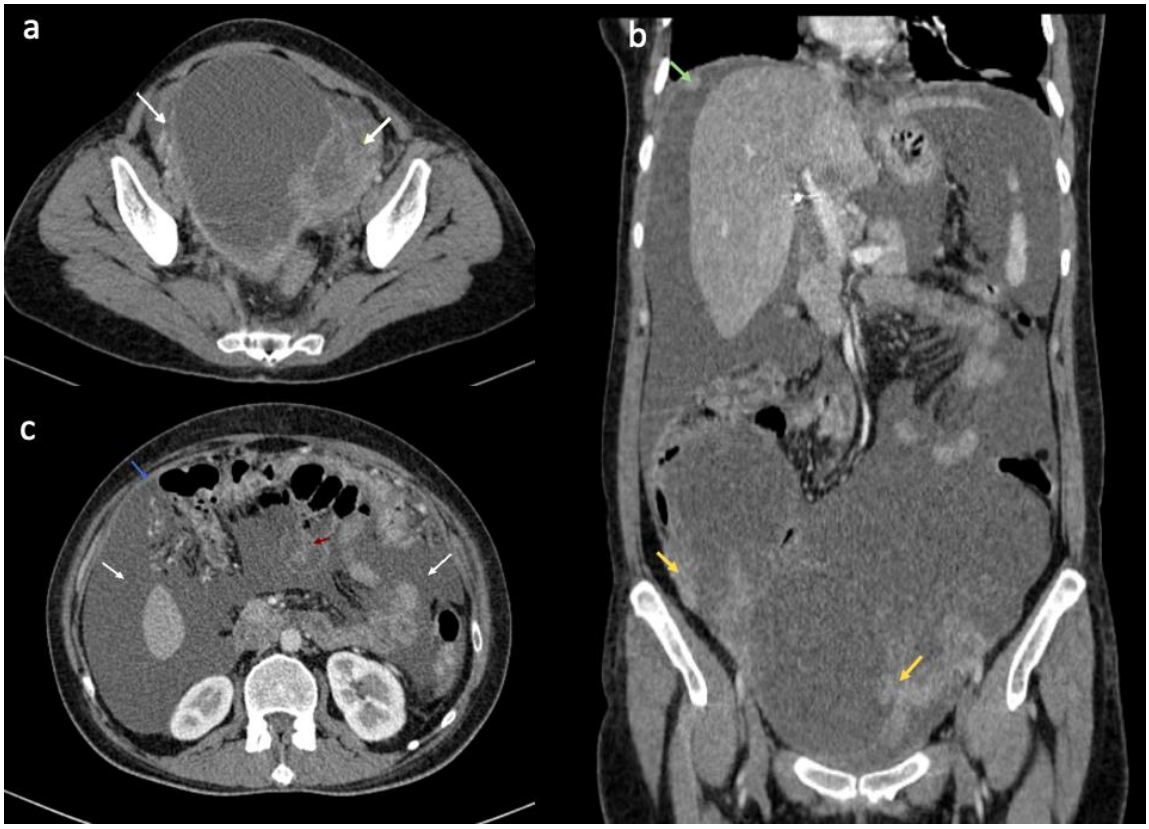

Figure 2. Advanced ovarian malignancy with diffuse peritoneal carcinomatosis
(a) Axial contrast-enhanced CT image showing bilateral complex adnexal masses (arrows) with cystic and enhancing solid components.
(b) Coronal reconstruction illustrating extensive peritoneal implants in the supramesocolic (green arrow) and inframesocolic compartments (yellow arrows).
(c) Axial image demonstrating diffuse peritoneal thickening (blue arrow) and additional peritoneal implants (red arrow), associated with abundant ascites (white arrows).
Overall findings are consistent with ***advanced ovarian malignancy with diffuse peritoneal carcinomatosis****.*

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The authors declare that they have no conflicts of interest.

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