A Giant Ovarian Fibrothecoma Arising From Residual Ovarian Tissue Mimicking Advanced-Stage Ovarian Malignancy: A Short Report of Demons–Meigs Syndrome

Ann. Ital. Chir., 2026 97, 8: 1337–1339
https://doi.org/10.62713/aic.4596

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To the Editor,

Ovarian fibrothecomas are uncommon benign neoplasms arising from the ovarian stroma and account for approximately 4–6% of all primary ovarian tumors [1,2]. Histologically, they represent a spectrum between fibromas, which are composed of spindle-shaped cells within a collagenous stroma, and thecomas, which contain lipid-rich theca cells [2]. Although they are usually small, asymptomatic, and diagnosed in postmenopausal women, they may rarely reach massive dimensions [3]. When associated with ascites and pleural effusion, these tumors may present as Demons–Meigs syndrome, a rare clinical entity that can closely simulate advanced ovarian malignancy [4].

The combination of a giant pelvic mass, ascites, hydrothorax, and elevated serum cancer antigen 125 (CA-125) creates a major diagnostic challenge, particularly in postmenopausal women, because it may strongly resemble disseminated ovarian cancer [5,6,7]. We present a rare case of a giant ovarian fibrothecoma arising from residual ovarian tissue after previous adnexal surgery, with marked biochemical and radiological mimicry of advanced-stage ovarian malignancy.

A 54-year-old postmenopausal woman presented with progressive abdominal distension and exertional dyspnea that had persisted for approximately one year. Her history was notable for hysterectomy and right salpingo-oophorectomy performed in 2011 for abnormal uterine bleeding, without suspicion of malignancy at that time. She had no known chronic disease, and her obstetric history was gravida 4, para 3.

Physical examination revealed marked abdominal distension resembling advanced pregnancy, with diffuse dullness on percussion. Initial transabdominal ultrasonography demonstrated free fluid in the right paracolic and perihepatic regions and a heterogeneous hypoechoic mass measuring approximately 11 × 10 × 23 cm, extending from the pelvis to the epigastrium.

Further evaluation with oral and intravenous contrast-enhanced thoracoabdominopelvic computed tomography (CT) revealed a giant, well-circumscribed, heterogeneous abdominopelvic mass measuring approximately 25 × 23 cm, composed predominantly of solid areas with focal cystic components. The lesion displaced the adjacent bowel loops without clear radiological evidence of direct invasion. Diffuse intra-abdominal ascites and right-sided pleural effusion were also present (Fig. 1). No definite peritoneal implants, omental caking, or distant metastatic lesions were clearly identified on the available computed tomography (CT) images.

Laboratory evaluation showed a markedly elevated serum CA-125 level of 222 U/mL. Given the coexistence of a giant solid-cystic pelvic mass, massive ascites, pleural effusion, and elevated CA-125 in a postmenopausal patient, advanced-stage ovarian malignancy was considered in the preliminary differential diagnosis [7].

Exploratory laparotomy and complete tumor excision were performed. Gross examination revealed a lobulated solid mass measuring 25 cm, with a smooth, tense serosal surface and prominent superficial vascularization. The cut surface was homogeneous, firm, and gray-white, with a fibrous appearance and no necrosis. Histopathological examination confirmed a benign spindle-cell mesenchymal neoplasm within a collagenous stroma, without nuclear pleomorphism, mitotic activity, or cytological atypia [1]. The tumor cells had uniform elongated nuclei and were negative for desmin on immunohistochemical analysis. These findings were consistent with ovarian fibrothecoma (Fig. 2). The patient recovered rapidly after surgery, and complete postoperative resolution of both ascites and pleural effusion confirmed the diagnosis of Demons–Meigs syndrome [4].

The principal clinical importance of this case lies in its close resemblance to advanced ovarian malignancy. In postmenopausal patients, a large adnexal mass accompanied by ascites, pleural effusion, and elevated CA-125 often raises a strong suspicion for disseminated ovarian carcinoma [5].

Submitted: 13 February 2026 Revised: 15 June 2026 Accepted: 17 June 2026 Published: 13 August 2026
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Editor: Roberto Cirocchi

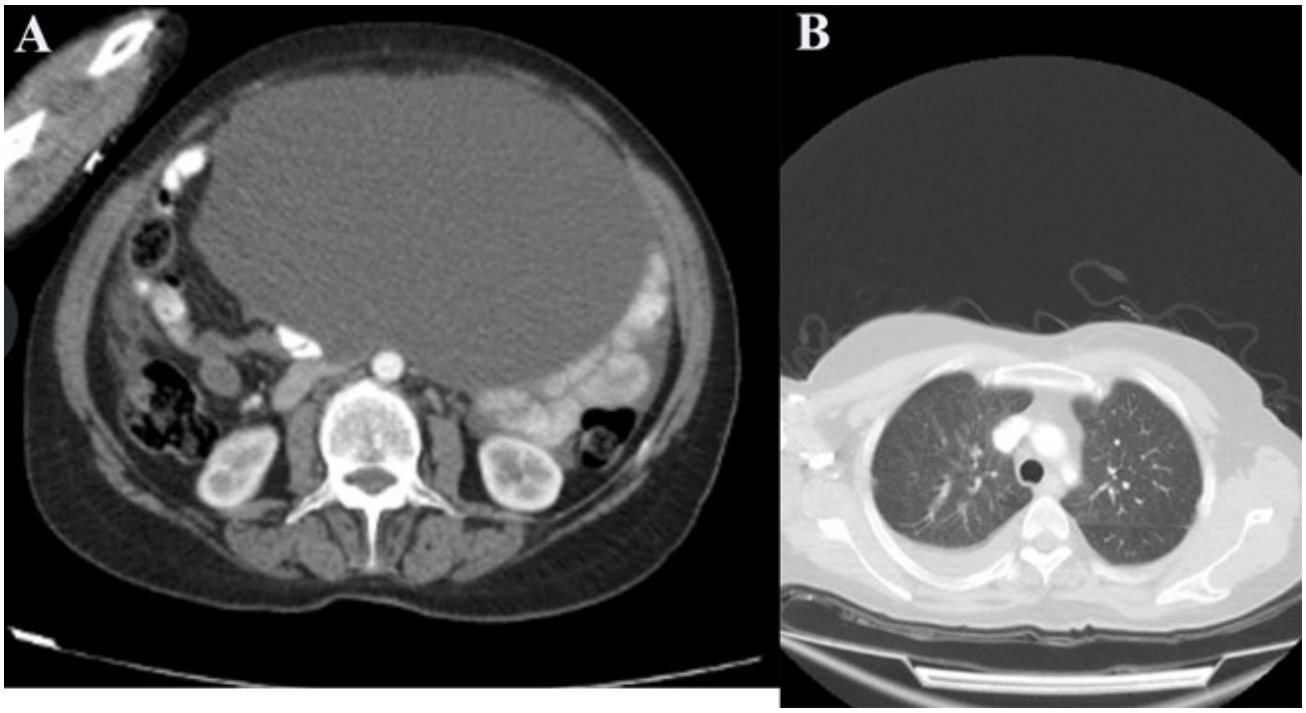

Fig. 1. Contrast-enhanced computed tomography findings. (A) Axial abdominal computed tomography (CT) image showing a giant, well-circumscribed heterogeneous abdominopelvic mass displacing adjacent bowel loops, accompanied by intra-abdominal ascites. No definite peritoneal implants or omental caking are clearly visible on the provided image. (B) Axial thoracic CT image showing right-sided pleural effusion with mild adjacent compressive atelectasis; no definite pulmonary nodules, masses, or mediastinal lymphadenopathy are identified on the provided image.

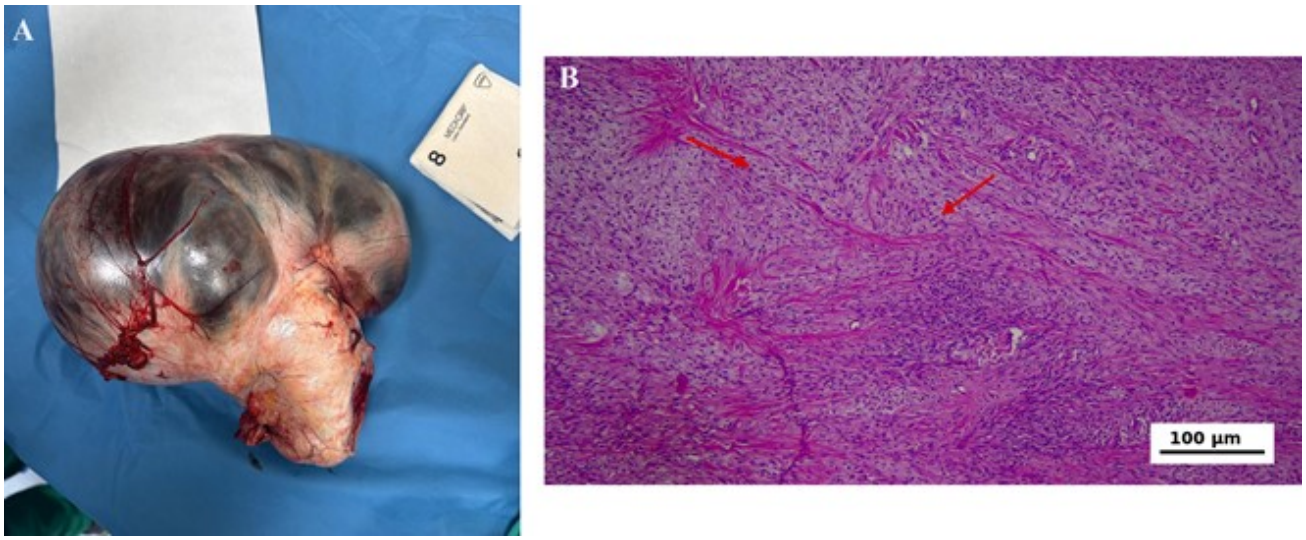

Fig. 2. Gross and microscopic features of the tumor. (A) Gross specimen showing a large lobulated solid ovarian mass with a smooth serosal surface and prominent superficial vascularization. (B) Hematoxylin and eosin-stained histopathological section demonstrating uniform spindle-shaped tumor cells embedded in a collagenous stroma, without cytological atypia, nuclear pleomorphism, or increased mitotic activity (original magnification ×100; scale bar = 100 µm). Arrowheads indicate representative spindle-cell areas.

However, benign ovarian stromal tumors, particularly fibromas and fibrothecomas, should remain in the differential diagnosis when imaging shows a well-circumscribed mass without definite invasive features, peritoneal implants, omental caking, or distant metastases. Awareness of this possibility is essential to avoid premature assumptions of malignancy, unnecessary psychological burden, and inappropriate therapeutic strategies.

The pathophysiology of ascites and pleural effusion in Demons–Meigs syndrome remains incompletely under-

stood. Proposed mechanisms include transudation from the tumor surface, lymphatic obstruction caused by the large pelvic mass, and increased vascular permeability mediated by inflammatory factors [6]. Pleural effusion is believed to result from the passage of ascitic fluid through diaphragmatic lymphatic channels or small congenital diaphragmatic defects. The rapid disappearance of both ascites and pleural effusion after tumor removal, as observed in the present case, supports these mechanisms and remains a defining feature of the syndrome.

CA-125 elevation in this setting should also be interpreted cautiously. Although CA-125 is widely used as a biomarker in epithelial ovarian cancer, it may increase in benign conditions associated with irritation of mesothelial surfaces, including peritoneal, pleural, or pericardial inflammation. In Demons–Meigs syndrome, elevated CA-125 is thought to result mainly from mesothelial activation induced by large-volume ascites rather than direct tumor secretion. Therefore, CA-125 elevation alone should not be regarded as definitive evidence of malignancy when radiological and histological findings are not concordant with cancer.

This case is clinically relevant for three reasons. First, the exceptional size of the tumor is unusual for ovarian fibrothecoma [3]. Second, its development from residual ovarian tissue after previous adnexal surgery highlights an important diagnostic consideration in patients with prior gynecological operations. Third, the combination of massive ascites, pleural effusion, and elevated CA-125 produced a profound mimicry of advanced ovarian carcinoma despite the benign histology of the lesion.

A limitation of this report is that the radiological assessment relied on a single CT image slice, which inherently restricts comprehensive evaluation of the tumor's internal characteristics and limits the ability to definitively exclude occult peritoneal metastases; a more extensive multiplanar review would be required to fully characterize these features.

In conclusion, a giant ovarian fibrothecoma arising from residual ovarian tissue may closely mimic advanced-stage ovarian carcinoma both clinically and biochemically. Recognition of benign ovarian stromal tumors and Demons–Meigs syndrome is important to prevent overtreatment and reduce unnecessary patient anxiety.

Availability of Data and Materials

All data generated or analyzed during this study are included in this article.

Author Contributions

MÇ, UT and CKP conceived and designed the study. KD collected the data. ÖBG and DG performed the pathological evaluation. İA and SG performed the surgical procedure. UT and CKP supervised the study. All authors contributed to drafting and critically revising the manuscript for important intellectual content and approved the final version to be published. All authors agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

The study conformed to the provisions of the Declaration of Helsinki. Due to its nature as a single-patient short report without any experimental intervention, this study was exempted from ethics review by the Cukurova University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee. Written informed consent was obtained from the patient for publication.

Acknowledgment

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest.

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