Volume 08, Issue 03 (May-June 2025), PP 01-04 www.ijmsdr.org
ISSN: 2581-902X

International Journal of Medical Science and Dental Research

Malignant Transformation of Ovarian Dermoid-A Case Report

Dr. Jeena Rattan-Consultant Radiologist-Future Teleradiology Solutions, Maharashtra, Pune.

Introduction:
Mature cystic teratomas, also called dermoids, typically make up about 20% of growths on the ovaries. These benign germ cell tumors consist of at least two of the three layers that form in early development (ectoderm, mesoderm, and endoderm).[1] In many instances, dermoids don't cause any symptoms and are found incidentally. However, they can lead to symptoms if they become large and press on nearby tissues. A serious complication that can arise from mature cystic teratomas is the development of cancer, which occurs in up to 2% of cases, with squamous cell carcinoma being the most common type (80%).[2] This case report will examine an instance where an ovarian dermoid transformed into a malignancy, along with potential treatment approaches.

Case report:
A 65 years old patient with abdominal swelling and pain was referred for CT evaluation to Future Teleradiology solutions.

Discussion:
In cases of malignant transformation, squamous cell carcinoma (SCC) represents nearly 80% of the histological types. Following SCC, other types include adenocarcinoma, carcinoid tumour, melanoma, and sarcoma.

Conclusion:
This study aims to present a case of a large ovarian teratoma that underwent malignant transformation and to discuss the findings from the CT scan.

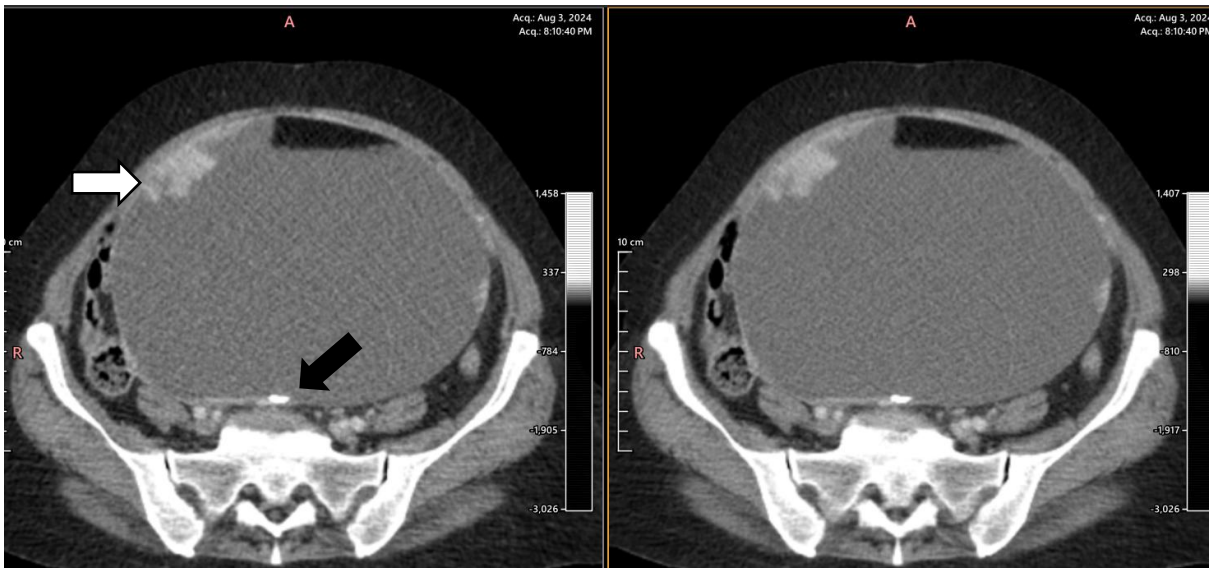
I. Introduction

Dermoid cysts, also known as mature cystic teratomas, are among the most frequent types of non-cancerous tumours found on the ovaries. These cysts can develop at any age, but they are most commonly found in young women. Dermoid cysts tend to grow slowly and are often discovered during imaging tests for other reasons. Malignant transformation of a mature cystic teratoma is uncommon, with squamous cell carcinoma being the most prevalent malignancy to arise. It's possible that prolonged exposure to various carcinogenic substances in the pelvic area of women may contribute to malignant changes in mature cystic teratomas.[3] Additionally, there might be a link between high-risk human papillomavirus (HPV) infection and the development of ovarian SCC.

II. Case report

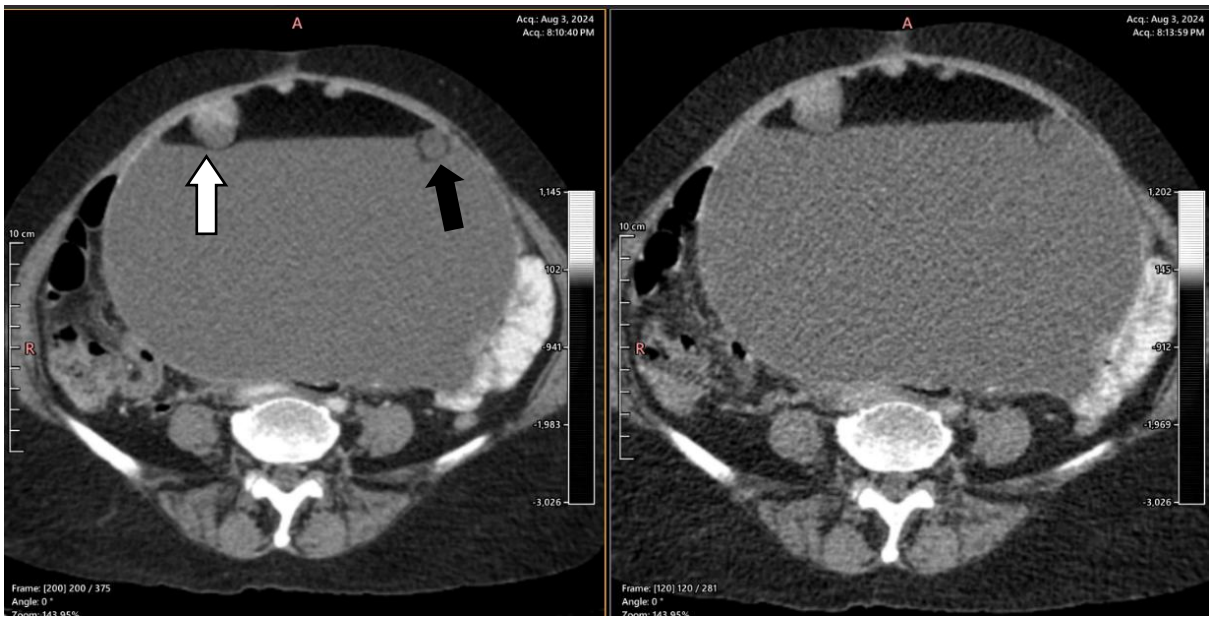
A 65-year-old woman, who had a known history of ovarian teratoma, came in with recurrent chronic pelvic pain. A physical examination of the abdomen revealed tenderness in the pelvic region and significant abdominal swelling. Upon admission, blood tests showed a haemoglobin level of 10.5 g/dL (normal range: 12–16 g/dL) and an elevated total white blood cell count of 11,500/mm3 (normal range: 4000–10,000/mm3). The C-reactive protein level was 20 mg/L (normal range: <6 mg/L). The histopathology results confirmed squamous cell carcinoma. In this particular case, the patient received neo-adjuvant chemotherapy.

IMAGE 1



Axial CECT Image 1: A large cystic lesion with low attenuation and a fat component, showing a fat-fluid level. An irregular lesion with soft tissue density (white arrow) is visible along the anterior wall and the left lateral wall. Small calcified areas (black arrow) are present along the posterior wall.

IMAGE 2



Axial CECT Image 2: Another axial image shows small round enhancing solid nodular projections (white arrow) with small dermoid plug/Rokitansky protruberance (Black arrow).

IMAGE 3

Sagittal Image 3: Coronal image shows a large cystic lesion showing fat fluid levels with soft tissue density components along the wall.

III. Discussion:

Dermoid cysts are the most common type of benign ovarian neoplasm, accounting for 10–25% of all ovarian tumors. When examined under a microscope, these cysts are lined by an epidermis-like epithelium and contain components from all three germ cell layers: mesoderm, endoderm, and ectoderm. Dermoid cysts typically exhibit slow growth and only produce symptoms when they become quite large or when complications arise, such as torsion, malignant transformation, or rupture.

Malignant transformation occurs infrequently, in only about 2% of cases. Although rare, infection can occur as a complication of a teratoma. Patients who develop malignant transformation are usually between 40 and 60 years old.[4] In more than 80% of cases, the malignancy is squamous cell carcinoma, originating from the ectoderm. The remaining cases involve carcinoid tumors or adenocarcinomas.[5] Factors that increase the risk of malignancy in a mature cystic teratoma include being over 45 years of age, having a tumor diameter greater than 10 cm, and experiencing rapid tumor growth.[6]

Ultrasound is the primary imaging technique used for investigation, and the most common finding is a cystic lesion with an echogenic nodule (known as a Rokitansky nodule) projecting into the cystic lumen. This nodule often contains elements such as teeth, hair, bony structures, or sebaceous material. Teratomas can also appear as an echogenic mass or as thin echogenic bands.

CT findings of a teratoma may include fat, fat-fluid levels, calcifications, Rokitansky protuberance, and hair tufts. Rokitansky protuberances, also called dermoid plugs, are typically well-defined, round to oval lesions located at the fat-fluid interface or along the cyst wall.

MR imaging can confirm the presence of fat using fat suppression techniques and in and out-of-phase imaging. Solid nodular lesions tend to appear heterogeneous and show varying degrees of enhancement after the administration of contrast agents. The prognosis for these tumors has historically been poor, with a five-year survival rate of only 15–30%. However, a better prognosis has been reported when the squamous component is present compared to adenocarcinoma or sarcoma.[7]

The surgical treatment for these cases is similar to that for ovarian carcinoma, involving primary debulking surgery with the goal of complete resection. When complete resection or effective reduction to <1 cm of disease is achievable, neo-adjuvant chemotherapy should be followed by interval debulking surgery.[8] Compared to radiotherapy, chemotherapy using alkylating agents improves the prognosis for advanced stages.[9] Treatment decisions should be based on the patient's clinical symptoms, the risk of malignancy, the patient's age, and the desire to preserve fertility.[10] In cases of advanced disease or when primary surgery is not feasible, neo-adjuvant chemotherapy is preferred, followed by interval debulking surgery.[11]

IV. Conclusion:

Malignant transformation of the dermoid cyst remains a very rare complication. It occurs often due to larger size, old age. The best choice of investigation is contrast enhanced CT.The risk of malignant transformation depends on age of patient, size of lesion predominantly.

REFERENCES:

[1] Outwater EK, Siegelman ES, Hunt JL. Ovarian teratomas: tumor types and imaging characteristics. *Radiographics.* 2001;21:475–490.
[2] Amerigo J, Nogales FF, Jr, Fernandez-Sanz J, et al: Squamous cell neoplasms arising from ovarian benign cystic teratoma. Gynecol Oncol 8(3):277–283, 1979.
[3] Mai KT, Yazdi HM, Bertrand MA, LeSaux N, Cathcart LL. Bilateral primary ovarian squamous cell carcinoma associated with human papilloma virus infection and vulvar and cervical intraepithelial neoplasia. A case report with review of the literature. *Am J SurgPathol.* 1996;20:767–772.
[4] Kikkawa F, Ishikawa H, Tamakoshi K, Nawa A, Suganuma N, Tomoda Y. Squamous cell carcinoma arising from mature cystic teratoma of the ovary: a clinico pathologic analysis. Obstet Gynecol1997;89:1017—22.
[5] Hirakawa T, Tsuneyoshi M, Enjoji M. Squamous cell carcinoma arising in mature cystic teratoma of the ovary: clinicopathologic and topographic analysis. Am J SurgPathol 1989; 13: 397–405.
[6] Lucksom, Pesona& Sebastian, Nikhil & Pradhan, Dipika & Ritu, Rashmi. (2013). Malignant transformation of ovarian dermoid: a rare case. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2. 698.
[7] Chen R-J, Chen K-Y, Chang T-C, Sheu B-C, Chow S-N, Huang S-C. Prognosis and treatment of squamous cell carcinoma from a mature cystic teratoma of the ovary. J Formos Med Assoc. 2008;107(11):857–68.
[8] Lheureux S, Braunstein M, Oza AM. Epithelial ovarian cancer: Evolution of management in the era of precision medicine. CA Cancer J Clin. 2019 Jul;69(4):280-304.
[9] Tangjitgamol S., Manusirivithaya S., Sheanakul C., Leelahakorn S., Thawaramara T., Jesadapatarakul S. Squamous cell carcinoma arising from dermoid cyst: case reports and review of literature. *International Journal of Gynecological Cancer.* 2003;**13**(4):558–563. doi: 10.1136/ijgc-00009577-200307000-00027.
[10] Cong L, Wang S, Yeung SY, Lee JHS, Chung JPW, Chan DYL. Mature Cystic Teratoma: An Integrated Review. Int J Mol Sci. 2023 Mar 24;24(7):6141.
[11] Vergote I, Denys H, De Greve J, Gennigens C, Van De Vijver K, Kerger J, Vuylsteke P, Baurain JF. Treatment algorithm in patients with ovarian cancer.