

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/radcr](http://www.elsevier.com/locate/radcr)

## Case Report

# Remote rupture of ovarian dermoid cyst: A curious case report <sup>☆</sup>

Abhikanta Khatiwada, MD<sup>a,\*</sup>, Anamika Jha, MD<sup>a</sup>, Kundan Marasini, MD<sup>a</sup>,  
Aalok Kumar Yadav, MD<sup>a</sup>, Rajiv Paudel, MS<sup>b</sup>, Sharada KC, MD<sup>c</sup>

<sup>a</sup>Department of Radiology, Tribhuvan University Teaching Hospital, Kathmandu, Nepal

<sup>b</sup>Department of Obstetrics and Gynecology, Tribhuvan University Teaching Hospital, Kathmandu, Nepal

<sup>c</sup>Department of Internal Medicine, NAIHS, Kathmandu, Nepal

## ARTICLE INFO

## Article history:

Received 19 September 2024

Accepted 28 September 2024

## Keywords:

Ovarian mature teratoma

Ruptured dermoid

Iatrogenic rupture

Peritoneal implants

Adhesions

## ABSTRACT

Ovarian dermoid cysts are usually asymptomatic and detected incidentally. However, they can have variable presentation especially when they are associated with complications. Spontaneous rupture of ovarian dermoid cyst is a rarely encountered complication as dermoid cyst usually have a thick capsule. Here we present a mysterious case of a postmenopausal female who had a remote iatrogenic rupture of ovarian dermoid cyst with multiple peritoneal and liver surface implants. Clinical history, classical imaging findings with correlated histopathological reports made it possible to reach the final diagnosis in this case. This case highlights one of those rare occurrences of remote rupture of dermoid cyst with patient remaining asymptomatic for a long period of time.

© 2024 The Authors. Published by Elsevier Inc. on behalf of University of Washington.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

## Introduction

Dermoid cysts are the most common ovarian tumors, accounting for approximately 15% of all ovarian neoplasms [1]. They are usually asymptomatic unless complicated, and are often detected incidentally. Some common complications associated with dermoid cysts include torsion, rupture, malignant transformation, and infection. The spontaneous rupture of a dermoid cyst is a recognized complication, occurring in 1%–2% of cases [2,3]. A ruptured dermoid cyst may present with either acute peritonitis, due to the sudden release of its contents, or more commonly as chronic granulomatous

peritonitis with adhesions and peritoneal implants, resulting from chronic leakage [4,5]. Here, we present a case of a postmenopausal female with a remote iatrogenic rupture of an ovarian dermoid cyst, accompanied by multiple peritoneal and liver surface implants. This case highlights the typical radiological findings of a remote ruptured ovarian dermoid cyst.

## Case report

A 64-year-old female from rural Nepal presented with lower abdominal discomfort for several weeks. She had undergone

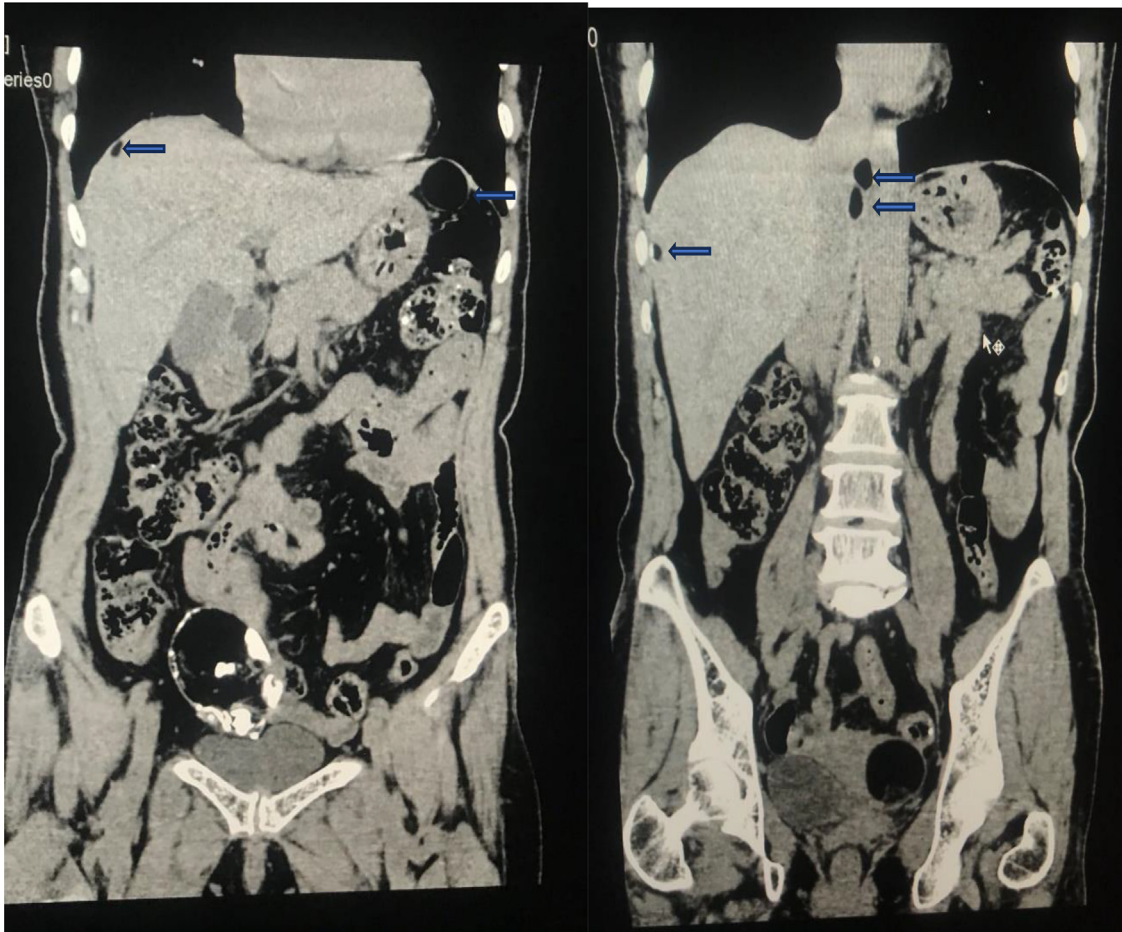
<sup>☆</sup> Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

\* Corresponding author.

E-mail address: [avikant12@gmail.com](mailto:avikant12@gmail.com) (A. Khatiwada).

<https://doi.org/10.1016/j.radcr.2024.09.142>

1930-0433/© 2024 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)



**Fig. 1 – (A) Abdomen and pelvic non contrast CT coronal image showing right adnexal dermoid cyst. Note the fatty implants in peritoneum and liver surface (blue arrows). (B) Abdomen and pelvic CT coronal image showing left adnexal dermoid cyst. Note the fatty implants in peritoneum and liver surface (blue arrows).**

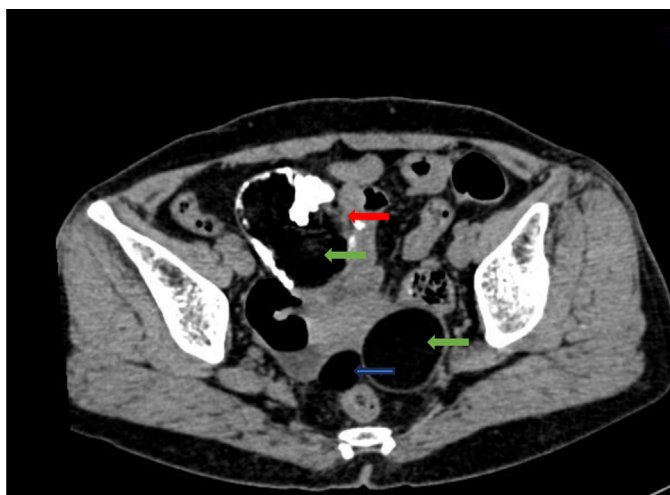
menopause 10 years prior and had an obstetric history of Para 7 and living 7 (P7L7). There was no history of postmenopausal bleeding. On per vaginal examination, fullness was noted in both the right and left vaginal fornices, with a mobile mass palpable through each. An abdominal and pelvic ultrasound revealed echogenic cystic lesions with calcified components in both adnexae, consistent with dermoid cysts. Laboratory investigations showed mildly elevated leukocyte counts, while serum tumor markers were within normal limits.

A contrast-enhanced computed tomography (CT) scan of the abdomen and pelvis (Figs. 1–3) demonstrated nonenhancing, fat-attenuating cystic lesions with internal calcifications in both adnexae, consistent with teratomas. The medial wall of the right adnexal teratoma appeared irregular and had an indistinct plane with the adjacent bowel loops. Additionally, multiple fatty implants, some with internal calcifications, were observed in the peritoneum and on the surface of the liver. These imaging findings suggested a provisional diagnosis of remote rupture of an ovarian dermoid cyst. However, considering the patient's postmenopausal status, recent symptom changes, the indistinct medial margin with bowel loops, and the presence of multiple peritoneal implants, the

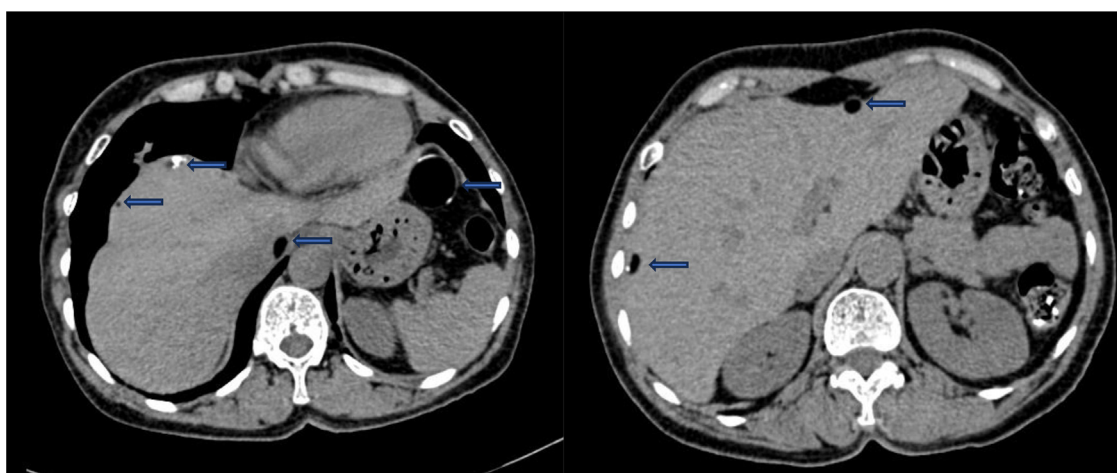
possibility of an immature teratoma with metastasis could not be ruled out.

Further inquiry with the patient revealed a history of significant abdominal distension approximately 12 years earlier, for which she sought treatment from a “dhami” (a traditional healer), a practice still common in rural Nepal. According to her, the “dhami” made a small incision in her abdomen, released some greasy material with tufts of hair, sealed the wound, and provided pain medications. Following this incident, she remained asymptomatic until the recent onset of discomfort. Based on this history and the imaging findings, a diagnosis of iatrogenic remote rupture of a dermoid cyst was made.

Given the patient's postmenopausal age and recent symptom changes, surgery was planned. A total hysterectomy with salpingo-oophorectomy was performed. Intraoperative findings (Figs. 4A–C) revealed bilateral adnexal cysts, with adhesions between the right ovarian cyst and adjacent bowel. The remaining peritoneal implants could not be removed due to dense adhesions. A cut section of the bilateral ovarian cysts showed fatty and calcific components, along with tufts of hair in the right ovarian cyst. The specimen was sent for



**Fig. 2 – Abdomen and pelvic CT axial image showing bilateral adnexal dermoid cyst. (green arrow). Note the irregularity in the medial wall of right dermoid cyst having indistinct fat plane with the adjacent bowel loop (red arrow). There is another small fat attenuating cyst in left adnexa (blue arrow).**



**Fig. 3 – (A and B) Abdomen and pelvic CT axial image showing multiple fatty implants with some showing internal calcifications over surface of liver and peritoneum.**

histopathological examination, which revealed mature glial tissue, adipocytes, bony tissue, and pilosebaceous units, consistent with a mature teratoma.

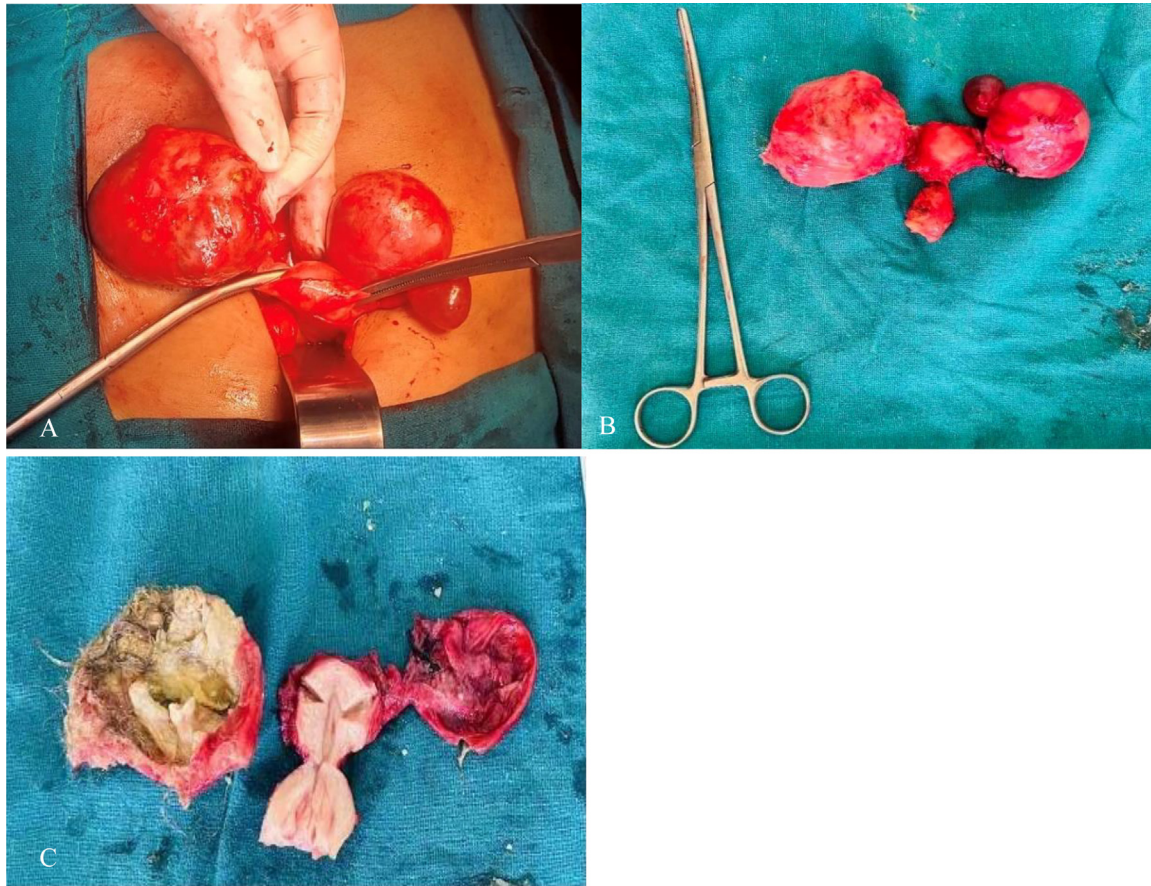
## Discussion

Dermoid, or mature ovarian teratoma, is the most common ovarian tumor and can affect a wide range of age groups. Typical imaging findings in cases of ovarian dermoid include a cystic lesion with a mural nodule (Rokitansky nodule), calcific components, fat components with a fat-fluid level, tufts of hair, and sometimes the floating ball appearance [6]. Spontaneous rupture of a dermoid cyst is a rare complication, as dermoid cysts usually have a thick capsule. Acute rupture presents with a sudden onset of intense pain, whereas chronic rupture follows a more gradual and intermittent course. While

acute rupture causes immediate peritoneal irritation and chemical peritonitis, chronic rupture leads to slow-developing inflammation, often accompanied by granulomatous changes over time [7].

CT is the imaging modality of choice to detect the features of a ruptured dermoid cyst and the associated chemical peritonitis [8,9]. In cases of acute dermoid rupture, imaging typically reveals free fluid in the abdomen, often fat-laden due to the spillage of dermoid cyst contents such as sebaceous material. Fat-fluid levels may be visible in the pelvis or near the ruptured cyst. Additionally, signs of adjacent organ irritation, such as in the small bowel or omentum, are commonly observed. In rare instances, gas or calcifications may be detected within the peritoneal cavity, reflecting more severe or unusual cases of rupture [7,9]. In contrast, imaging findings in chronic dermoid rupture often display evidence of chronic spillage, which can lead to the formation of adhesions or even a pseudotumor due to prolonged inflammation. Imaging may show a more diffuse





**Fig. 4 – (A)** Intraoperative findings of the same case where bilateral ovarian cysts are noted. Note the adhesion of right ovarian cyst with the adjacent bowel loops. **(B)** Excised surgical specimen of uterus with bilateral adnexa with cysts. **(C)** Cut section of bilateral adnexal cysts with uterus. Note the greasy material with tufts of hairs and calcifications in right ovarian cyst.

mixture of fat and soft tissue components in the pelvis, contrasting with the more localized fat-fluid levels seen in acute cases. Fatty implants may be present on the peritoneum and the surfaces of the liver or bowel, and calcifications from the dermoid contents may be more widespread throughout the peritoneal cavity in cases of chronic rupture [8,9]. Additionally, loculated fluid collections or a thickened peritoneum are commonly seen, reflecting ongoing inflammatory processes [7–9].

In this case, a remote iatrogenic rupture of a dermoid cyst was observed, with imaging findings consistent with those of a chronic ruptured dermoid cyst. There was irregularity in the medial wall of the right adnexal dermoid cyst, with adhesion to the bowel loops and multiple peritoneal fatty implants. However, the patient remained completely asymptomatic, with no other associated features of chemical peritonitis.

Most cases of ruptured dermoid cysts described in the literature feature chemical peritonitis. A case described by Kuo et al. [10] involved an asymptomatic ruptured dermoid cyst, which was detected as residual dermoid implants by CT scan 4 years after surgery. The usual treatment for ruptured dermoid cysts involves surgery, and associated peritonitis is treated with vigorous irrigation.

## Conclusion

This case highlights one of those rare occurrences of remote rupture of dermoid cyst with patient remaining asymptomatic for a long period of time. The clinical history, typical imaging findings with correlated histopathological reports is valuable in reaching to final diagnosis in such cases.

## Patient consent

Written informed consent was obtained from the patients for publication of this case report and any accompanying images.

## REFERENCES

- [1] Demont F, Fourquet F, Rogers M, Lansac J. [Epidemiology of apparently benign ovarian cysts]. *J Gynecol Obstet Biol Reprod (Paris)* 2001;30(1 Suppl):S8–11.

- 
- [2] Fibus TF. Intraperitoneal rupture of a benign cystic ovarian teratoma: findings at CT and MR imaging. *Am J Roentgenol* 2000;174(1):261–2.
- [3] Peterson WF, Prevost EC, Edmunds FT, Hundley JM, Morris FK. Benign cystic teratomas of the ovary; a clinico-statistical study of 1,007 cases with a review of the literature. *Am J Obstet Gynecol* 1955;70(2):368–82.
- [4] Nitinavakarn B, Prasertjaroensook V, Kularkaew C. Spontaneous rupture of an ovarian dermoid cyst associated with intra-abdominal chemical peritonitis: characteristic CT findings and literature review. *J Med Assoc Thail Chotmaiher Thangphaet* 2006;89(4):513–17.
- [5] Pantoja E, Noy MA, Axtmayer RW, Colon FE, Pelegrina I. Ovarian dermoids and their complications. Comprehensive historical review. *Obstet Gynecol Surv* 1975;30(1):1–20.
- [6] Patel MD, Feldstein VA, Lipson SD, Chen DC, Filly RA. Cystic teratomas of the ovary: diagnostic value of sonography. *AJR Am J Roentgenol* 1998;171(4):1061–5.
- [7] Outwater EK, Siegelman ES, Hunt JL. Ovarian teratomas: tumor types and imaging characteristics. *Radiographics* 2001;21(2):475–90.
- [8] Yang HS, Song TH, Bang HC, Park JH, Lee CH, Roh JW, et al. Persistent chemical peritonitis resulting from spontaneous rupture of an ovarian mature cystic teratoma. *Korean J Obstet Gynecol* 2011;54(11):726.
- [9] Park SB, Kim JK, Kim KR, Cho KS. Imaging findings of complications and unusual manifestations of ovarian teratomas. *RadioGraphics* 2008;28(4):969–83.
- [10] Kuo H-W, Chan C-Y, Lim K-E, Chang H-C. Ruptured ovarian cystic teratoma with peritoneal reaction: a case report. *放射線學雜誌* 2015;40(2):87–91.