Ovarian Dermoid Cyst Invading Into Urinary Bladder

Uddalok Das[1*]

[1]Dept of Radiodiagnosis, North Bengal Medical College and Hospital, West Bengal, India

Swiss Journal of Radiology and Nuclear Medicine - www.sjoranm.com - SJORANM GmbH - CH-6340 Baar - Switzerland

Abstract

Dermoid cysts are common ovarian lesions that are often asymptomatic and diagnosed incidentally on sonography done for some other causes. These lesions are mostly benign and have an indolent course. However, one of the rarest complications is encountered when dermoid cysts of the ovary invade into adjacent viscera making it a diagnostic dilemma for the radiologists to determine the source and nature of the lesion. Here we describe the case of a 42-year-old female who had a left ovarian dermoid cyst invading through the wall of the urinary bladder into the bladder lumen.

Keywords: *Ultrasonography, Magnetic Resonance Imaging, Dermoid Cyst, Urinary Bladder*

*Corresponding author: Uddalok Das - received: 27.04.2025 - peer reviewed, accepted and published: 30.04.2025

Introduction

Dermoid cysts are generally benign masses seen commonly in females of reproductive age groups. Ectodermal components become trapped along the lines of embryonic closure to form these benign developmental anomalies. The stratified squamous epithelium lining these benign tumors has developed skin appendages on their wall, and their lumens are packed with hair and keratin. It is believed that dermoid cysts are congenital with the majority of ovarian dermoid cysts being benign and asymptomatic (1). Complications can develop from torsion, rupture, suppuration, and malignant change and require appropriate surgical management. As much as 20% time, they are bilateral and 20% of these can undergo torsion. Unusual complications such as spontaneous rupture into the bladder are exceedingly rare. Patients frequently exhibit features of urinary tract infection like dysuria frequency and urgency along with the passage of hair in their urine combined with a chalky white color of urine which is often highly suggestive of the diagnosis (2).

Case Report

A 42-year-old woman presented to the outpatient department of the Department of Gynaecology at North Bengal Medical College and Hospital (NBMCH), West Bengal India with recurrent episodes of urinary tract infection (UTI) for a few years. She had undergone a cesarean section around 10 years back at a private hospital following which she had developed an abdominal abscess with a fistulous tract between skin and the abscess cavity. She was treated conservatively with antibiotics and discharged after a 20-day long stay but the discharge continued on and off several times each year for which she took over-the-counter antibiotics each time. On examination her abdomen was tender and she was having high fever of 101 °F (38.3 °C). Also, note the discharge from the sinus over the skin. She was immediately admitted and a bedside ultrasonography (USG) was done. USG revealed a grossly shrunken bladder with thick trabeculated walls. A 35 X 37 mm echogenic round lesion was seen in the lumen of the bladder not changing position with the movement of the patient with the central area showing posterior acoustic shadowing. Multiple reverberation artifacts were also seen in the

bladder lumen obscuring well visualization. Multiple echogenic foci and strands were also seen within the lumen along with a fistulous tract from the skin opening into the anterior wall (Figure 1).

Figure 1: USG showing Small capacity bladder with thickened walls. The central echogenic lesion is seen within the lumen. A hypoechoic serpentine tract is seen extending from the anterior abdominal wall opening into the bladder lumen (Red arrow).

A Non-Contrast Computed Tomography (NCCT) of the kidney, ureter, and bladder (KUB) region was done. NCCT KUB revealed a 38 mm X 39 mm X 40 mm lesion within the bladder lumen fixed to its posterior wall. The internal portion of the lesion was heterogeneously hypoattenuating with an average Hounsfield unit (HU) value of -79. A 15 mm X 3 mm linear area was seen in the midline of the lesion with attenuation of HU +845. Multiple linear strands of calcification were also seen in the bladder lumen. The bladder was thickened with multiple air foci within the lumen (Figure 2).

Figure 2: CT showing the intravesical mass with fat attenuation and multiple air foci in the bladder lumen with thinned anterior bladder wall.

A 12mm fistulous tract was seen opening from the external opening in the skin into the bladder gut loops were seen conglomerated and lying over the dome of the bladder. Both kidneys were enlarged with grade 4 hydronephrosis and hydroureter on both sides with emphysematous pyelonephritis on the right side and air in the right collecting systems suggesting emphysematous pyelitis (Figure 3).

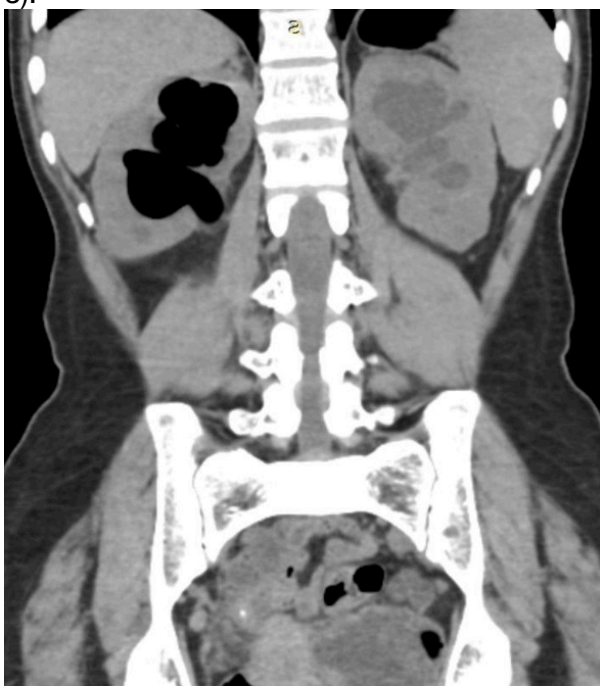

Figure 3: Air in the parenchyma of the right kidney and in the lumen of the renal pelvis extending into the ureter. Bilateral hydronephrosis with hydroureter.

Due to raised creatinine levels a Non Contrast MRI was done which revealed similar findings. The intravesical lesion was hyperintense on both T1 and T2 weighted images with suppression of high signal on fat-suppressed images. A central portion showing a low signal on all sequences was also noted which was corresponding to the hyperdense lesion on the CT scan (Figure 4a and 4b).

Figure 4a: The lesion showing a hyperintense signal on both T1WI (Fig 4a) and T2WI (Fig 4b) with suppression of signal on the fat-suppressed image (Fig 5).

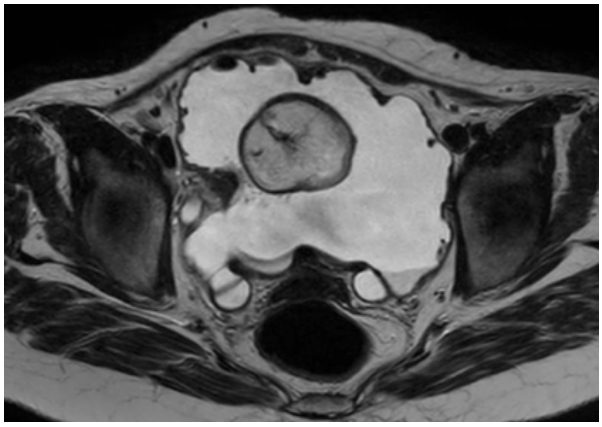

Figure 4b: The lesion showing a hyperintense signal on both T1WI (Fig 4a) and T2WI (Fig 4b) with suppression of signal on the fat-suppressed image (Fig 5).

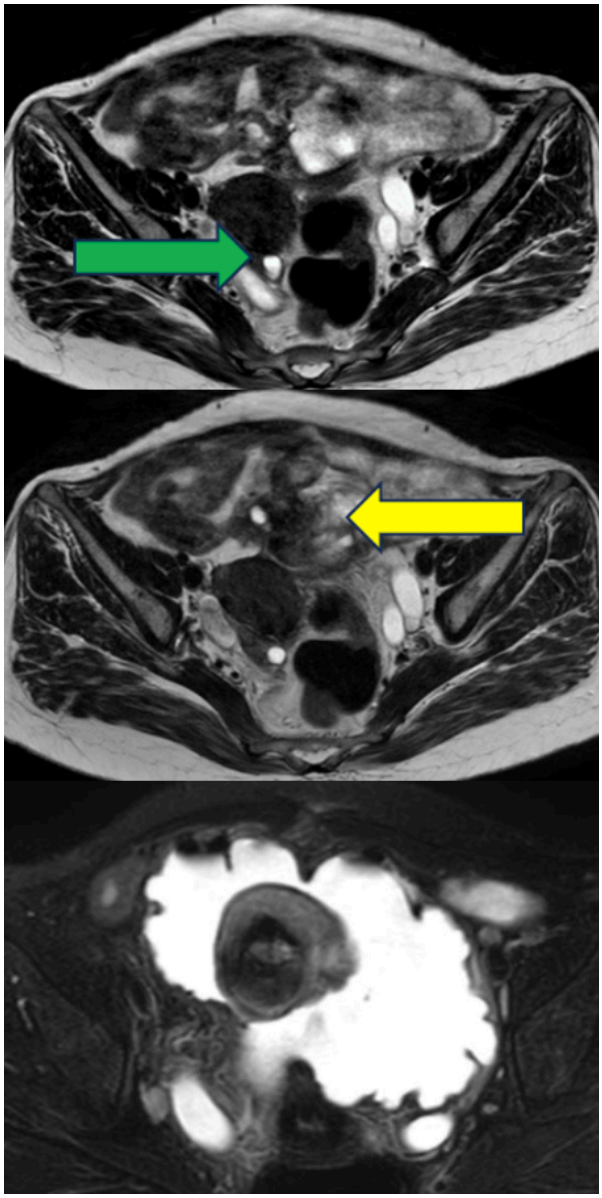

Figure 5: The right ovary (green arrow) is seen separate from the mass. The left ovary (yellow arrow) is seen over the dome of the bladder with loss of fat plane with the bladder wall and the mass suggesting an ovarian origin of the intravesical mass.

The left ovary appeared to be fixated on the dome of the bladder adjacent to the intravesical lesion with an absence of a fat plane between the bladder and the ovary. The adjacent bladder wall appeared thickened, as well as a follicular cyst measuring 35 mm in diameter (Figure 5).

A provisional diagnosis of right ovarian dermoid cyst with invasion of the bladder wall was made along with a vesico-cutaneous fistula. Also was diagnosed the presence of emphysematous pyelonephritis and emphysematous pyelitis with hydronephrosis and hydroureter.

The patient took leave against medical advice and took treatment from a private hospital. She came back a month later to our institute for follow-up. A total abdominal hysterectomy with bilateral salpingo-oophorectomy was done along with resection of the mass and bladder wall repair under general anesthesia. The intraoperative findings corroborated with the radiological findings and the histopathology reports came back as mature cystic teratoma of the left ovary.

Discussion

Mature cystic teratomas, also known as ovarian dermoid cysts, are the most common ovarian germ cell tumors in young women. These tumors are formed by tissues derived from three germ layers and can contain sebaceous materials. Around the third or fifth week of embryonic life, when the neural tube closes, aberrant germ cells are thought to be the cause of midline teratomas. Simple ovarian dermoid cysts are typically asymptomatic; symptoms typically surface as a result of subsequent problems. Torsion, rupture, malignant transformation infection, and invasion into surrounding viscera, are among the reported consequences. They usually contain hair and calcified substances (3). Histologically they are characterized by the presence of skin, fibroblastic tissue, adipose tissue, and skin adnexal structures (sweat glands, hair follicles) (4). Patients may complain of features of lower urinary tract infection along with pilimiction (hair in the urine), pyuria, hematuria, or passage of other material from a dermoid cyst when the cyst spontaneously bursts into the bladder. But pathognomonic is pilimiction. Persistent leaking seems to be a prevalent factor in

fistulation with neighboring viscera that is not malignant (5).
Although the exact reason for the communication between the dermoid and the surrounding viscera is still unknown, some authors believe that fistula formation and contents leakage are caused by trauma, torsion, infection, and prolonged friction or pressure (6). The treatment of choice is surgical excision of the tumor along with bladder repair; a histological analysis is necessary to rule out malignant changes precise preoperative diagnosis can aid in surgical planning and allow for the adoption of a cautious strategy. Histopathology is helpful to diagnose the nature of the lesion and to exclude malignant transformation (7).

Conclusion

Dermoid cysts of the ovary invading the urinary bladder are very rare. Imaging findings typical of dermoid, when seen in the bladder, should raise suspicion of this entity. A combination of USG, CT, and MRI with fat suppression techniques can be used to provide a confident diagnosis. Definitive treatment is resection of the mass and histopathological analysis.

Declarations

Consent for publication: The author clarifies that written informed consent was obtained and the anonymity of the patient was ensured. This study submitted to Swiss J. Rad. Nucl. Med. has been conducted in accordance with the Declaration of Helsinki and according to requirements of all applicable local and international standards.
Competing interests: No competing interests.
Funding: No funding resources.

Correspondence to

Dr. Uddalok Das
MBBS, MD, Senior Resident
https://orcid.org/0000-0001-6970-7520
Dept of Radiodiagnosis, North Bengal Medical College and Hospital, West Bengal, India

Conflict of interest:

The authors declare that there were no conflicts of interest within the meaning of the recommendations of the International Committee of Medical Journal Editors when the article was written.

Disclaimer/Publisher's Note:

The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Swiss J. Radiol. Nucl. Med. and/or the editor(s). Swiss J. Radiol. Nucl. Med. and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

License Policy:

SJORANM-LinkedIn:

Check out our journal's *LinkedIn* profile with over 8'000 registered followers from the Radiologic & Nuclear Medicine Imaging field: LinkedIn

References

1. Shareef S, Ettefagh L. Dermoid Cyst. 2023 Aug 28. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan–. PMID: 32809408. https://europepmc.org/article/nbk/nbk
2. Meena J, Shekhar B, Singhal S, Kumar S, Roy KK, Singh N. Pilimiction: A Rare Presentation of Ovarian Dermoid. J Obstet Gynaecol India. 2019 Aug;69(4):377-379. doi: 10.1007/

s13224-019-01245-z. Epub 2019 Jun 7. PMID: 31391748; PMCID: PMC6661053.

3. Tandon A, Gulleria K, Gupta S, Goel S, Bhargava SK, Vaid NB. Mature ovarian dermoid cyst invading the urinary bladder. Ultrasound Obstet Gynecol. 2010 Jun;35(6):751-3. https://doi.org/10.1002/uog.7524. PMID: 20069670.

4. Kido A, Togashi K, Konishi I, Kataoka ML, Koyama T, Ueda H, Fujii S, Konishi J. Dermoid cysts of the ovary with malignant transformation: MR appearance. AJR Am J Roentgenol. 1999 Feb;172(2):445-9. https://doi.org/10.2214/ajr.172.2.9930800. PMID: 9930800.

5. Benjaporn Nitinavakarn, Vitoon Prasertjaroensook, Churairat Kularkaew. Spontaneous rupture of an ovarian dermoid cyst associated with intra-abdominal chemical peritonitis: characteristic CT findings and literature review. Journal of the Medical Association of Thailand Chotmaihet thangphaet. 2006 Apr 1;89(4):513–7. https://www.researchgate.net/profile/Benjaporn-Nitinavakarn/

6. Nagamani T, Vani I, Nimmana SP, et al. Ovarian cystovesical fistula causing pilimiction: an unusual complication of ovarian cyst. Ann Women Child Health. 2015;1(1):C1–C4.

7. Godinjak Z, Bilalović N, Idrizbegović E. Laparoscopic treatment of ovarian dermoid cysts is a safe procedure. Bosn J Basic Med Sci. 2011 Nov;11(4):245-7. https://doi.org/10.17305/bjbms. 2011. 2559. PMID: 22117832; PMCID: PMC4362580.