

Ureteral Obstruction and Renal Complications in a 35-Year-Old Woman with a Large Mature Cystic Teratoma

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Introduction:

Obstructive uropathy resulting from mature cystic teratomas is a rare complication that has received limited attention in the literature. We describe a case of unilateral ovarian teratoma presenting with acute flank pain and renal involvement.

Case Report:

A 35-year-old nulligravida woman presented at the emergency department with acute right-sided flank pain radiating to the groin. Her last menstrual period was three weeks prior to presentation, and she had no significant medical or surgical history. Physical examination revealed right costovertebral angle (CVA) tenderness and a palpable mass in the right adnexa and the patient had experienced two episodes of non-bilious emesis. Laboratory evaluation, including renal function tests, was unremarkable. A computed tomography (CT) study of the abdomen and pelvis showed a remarkably large mass in the right adnexa (Fig. 2,3). The mass exhibited characteristics consistent with a large teratoma, measuring approximately 7 x 7 cm, containing fat, soft tissue, calcification, and fluid (Fig. 2). The teratoma caused displacement of the uterus to the left (Fig. 2) and resulted in pyelocalyceal rupture on the right side. This rupture led to the development of a urinoma in the right perinephric region (Fig. 1). A renal ultrasound confirmed the renal involvement, showing increased cortical echogenicity, parenchymal hyperemia, and a small complex multiseptated right perinephric fluid collection consistent with a urinoma (Fig. 1). Given the patient's clinical presentation and imaging findings, a multidisciplinary team was involved in the management. The patient underwent a robot-assisted right salpingo-oophorectomy, cystoscopy, and retrograde cystogram. Remarkably, despite her lack of prior surgical history, the surgical procedure revealed the necessity for extensive adhesiolysis due to the presence of dense adhesions encasing the right adnexa. These adhesions, possibly resultant from inflammatory processes, previous pelvic infections, or the teratoma itself, posed a significant challenge. The urologist's insights during the operation indicated that the ureter was not just displaced but compressed due to the mass, which in turn led to the renal complications. This compression can be attributed to the significant displacement of the uterus caused by the teratoma. This displacement might have led to the kinking of the ureter, and the potential inflammatory or reactive changes in the surrounding tissues could have contributed to its adherence and impact. To ensure free urine flow and mitigate further postoperative complications, a temporary ureteral stent was placed. The teratoma was successfully dissected, revealing a 7 x 7 cm mass with hair present. No ascites or peritoneal implants were observed. The pathology report confirmed the diagnosis of a mature and multi-tissue ovarian teratoma. The patient had an uncomplicated postoperative course and recovered well. Follow-up evaluations were scheduled to monitor her progress.

Discussion:

Mature cystic teratomas, also known as dermoid cysts, are the most common ovarian neoplasms in women of reproductive age, accounting for over 95% of all ovarian tumors (1). While often asymptomatic, these teratomas can cause lower abdominal pain and abdominal fullness as they progressively enlarge and disturb adjacent structures (2). Complications associated with dermoid cysts include ovarian torsion, which occurs in approximately 16% of cases and presents with acute abdominal pain, nausea, and vomiting (2, 3). Ruptured dermoid cysts can lead to spillage of sebaceous fluid into the abdominal cavity, resulting in peritonitis, and rare complications may involve rupture into the intestines, rectum, or bladder (3). Malignant degeneration can occur in 1-2% of teratoma cases (2). Large ovarian teratomas can compress abdominal organs and vasculature, causing complications such as small bowel obstruction, pelvic vein thrombosis, lower extremity lymphedema, and hydronephrosis (4, 5).

To aid in the diagnostic workup of mature cystic teratomas, various imaging modalities play a crucial role. Transvaginal ultrasound (TVUS), computed tomography (CT), and magnetic resonance imaging (MRI) are commonly employed. TVUS provides rapid visualization and exhibits a sensitivity ranging from 58% to 92.7% (2). Notably, ultrasound imaging reveals the characteristic "dot-dash" sign, representing echogenic bands caused by hair within the cystic lumen. The presence of a dense echogenic tubercle, known as the Rokitansky nodule, is a common feature observed in 81-86% of dermoid cysts (7). CT and MRI exhibit greater sensitivity due to their ability to visualize the fat content in sebaceous material (2, 7, 8). CT imaging, in particular, is commonly utilized for the diagnosis of mature cystic teratomas and offers a higher sensitivity (93-98%) compared to ultrasound (7).

Obstructive uropathy caused by mature cystic teratomas is a rare complication that has received limited attention in the literature. Our comprehensive literature review identified only a few cases reporting hydronephrosis resulting from the compressive effect of large mature cystic teratomas. For example, Adnan et al. reported a case of bilateral hydronephrosis and pelvic vein thrombosis caused by a giant dermoid cyst in a 45-year-old woman (4). Two other case reports identified evidence of hydronephrosis resulting from compression by an ovarian teratoma in teenage patients (5, 6). To the best of our knowledge, the current case represents the first documentation of a mature cystic teratoma complicated by unilateral ureterohydronephrosis, pyelocalyceal rupture, and subsequent urinoma formation in an adult woman.

In our presented case, a large mature cystic teratoma measuring 7 x 7 cm caused distal obstruction of the right ureter, leading to the development of ureterohydronephrosis and urinoma. The considerable size of the mass resulted in displacement of the uterus and compression of the right ureter, causing distal obstruction and interruption of urinary flow. This rare complication, ureterohydronephrosis, was evident on both ultrasound and CT imaging. Additionally, the identification of a developing urinoma resulting from pyelocalyceal rupture indicated the severity of the patient's clinical presentation, emphasizing the need for prompt treatment.

Surgical management is the definitive treatment for ovarian teratomas, and the approach depends on the size of the teratoma. Surveillance is recommended for teratomas measuring [?] 5-6 cm, while oophorectomy is considered the standard treatment for large mature teratomas in both pre-menopausal and post-menopausal women (9). However, the involvement of the genitourinary system adds complexity to the management of patients with mature cystic teratomas, necessitating early diagnosis and intervention. In situations where a ruptured renal pelvis emerges due to obstruction, prompt intervention becomes paramount. The primary goal is to alleviate the obstruction, which in this case was achieved by surgically excising the teratoma and placing a temporary ureteral stent. Preventative measures against potential infections, such as administering antibiotics, coupled with diligent renal function monitoring, are essential.

Conclusion:

This case report highlights a rare but significant complication of a large mature cystic teratoma leading to ureterohydronephrosis, pyelocalyceal rupture, and urinoma in an adult woman. Our findings emphasize the critical role of imaging for early diagnosis and the necessity for prompt surgical intervention. The case serves as a cautionary tale that even benign ovarian neoplasms like teratomas can cause severe complications requiring multidisciplinary management.

Conflict Of Interest

Authors declare no conflict of interest.

Source Of Support

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Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Author Contributions

All authors have made substantial contributions to the conception, design, acquisition of data, and analysis and interpretation of the case report. Specifically, each author was involved in reviewing radiologic and pathological findings and synthesizing the case into a comprehensive report for academic dissemination. All authors contributed to drafting the manuscript and revising it critically for important intellectual content. They have given final approval of the version to be published and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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None.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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