



# **Diagnosis and Management of a Spontaneously Ruptured Ovarian Mature Cystic Teratoma: A Case Report**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors SR and RS drafted the manuscript. Author DS was involved in editing and revising the manuscript. All authors read and approved the final manuscript.*

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**Case Report**

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## **ABSTRACT**

**Aims:** Spontaneous rupture of an ovarian mature cystic teratoma is a very uncommon event. Rupture of ovarian teratoma causes leakage of the liquefied sebaceous contents into the peritoneum, which irritates the peritoneum and leads to acute or chronic inflammation associated with chemical peritonitis.

**Case Presentation:** We report a case of a 23 year old unmarried woman who presented with abdominal pain, distension and fever. The CT scan showed a thick irregular cystic lesion in the pelvis of approximately 11×8 cm with features suggestive of dermoid cyst. There was focal defect in the superior aspect of the wall of the cyst which appeared to be the likely rupture site along with features suggestive of chemical peritonitis. She underwent emergency laparotomy followed by right side salpingo-oophorectomy, adhesiolysis, and peritoneal lavage. Postoperatively, she developed paralytic ileus which was managed conservatively and chest infection was treated with antibiotics and physiotherapy. She also developed surgical site infection which was managed with antibiotics and daily dressing. She was discharged on the 48<sup>th</sup> postoperative day in a good state of health.

**Conclusions:** This case report shows the advantages of early diagnosis and management of

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ruptured ovarian mature cystic teratoma which otherwise could have led to increased morbidity associated with chemical peritonitis.

*Keywords: Chemical peritonitis; ovarian mature cystic teratoma; spontaneous rupture.*

## 1. INTRODUCTION

Mature cystic teratoma is the most common type of ovarian teratoma and ovarian germ cell neoplasm. It represents approximately 20% of all ovarian neoplasms and occurs most commonly during the reproductive years. It is often discovered as an incidental finding. Rupture of mature cystic teratoma is an uncommon complication, occurring in approximately 1% of cases. Rupture of the tumor into the peritoneal cavity may be followed by chemical peritonitis caused by spillage of tumor contents [1].

## 2. CASE PRESENTATION

A 23 year old unmarried woman was admitted to our emergency department with complaints of intermittent abdominal pain for one and a half month and increasing in intensity for the last 7 days. Pain was localized at the right lower quadrant. It was associated with nausea and vomiting. She also complained of distension for the past 3 days and fever (100 °F) for 1 day. Her last menstrual period was 19 days before admission and her cycles were regular. On examination, her general condition was fair. Her vital signs were stable and had no fever. The abdomen was soft and non tender. There was mild abdominal distension but no mass could be appreciated. The patient was admitted and a full medical work up was made. Urine pregnancy test was negative. Ultrasonography revealed a cystic lesion of approximately 6×6 cm in right adnexa with internal echoes and septations, along with mild fluid collection with echoes in abdomen and pelvis. On the third day of hospital stay, she started complaining of aggravation of abdominal pain which was increasing in intensity. She was restless. Her pulse rate was 120/min and blood pressure 100/80mmhg. The abdomen was tense and distended. Guarding sign was present. An urgent Contrast enhanced Computed Tomography (CECT) scan showed a thick irregular walled cystic lesion of around 11×8cm with fat and soft tissue like component with a focus of calcification within (rokitsky nodule) in right adnexa. These features were suggestive of dermoid cyst. There was a focal defect in the superior aspect of the cystic wall which appeared

as the likely site of rupture. CT also showed diffusely thickened peritoneal lining along with inflamed mesentery with moderate free fluid in abdomen and pelvis with focal fat attenuating areas in bilateral sub-diaphragmatic regions suggestive of chemical peritonitis.

The patient was prepared for emergency laparotomy. Laparotomy was performed under general anesthesia. A midline vertical abdominal incision revealed yellowish plaque-like lesions in the abdominal cavity. There was omental caking of yellowish plaque-like material with adhesions to the anterior abdominal wall. On further exploration, a right ovarian multi-loculated cyst of approximately 15×15 cm was found containing hair and yellowish plaque-like material with an anterior wall defect of around 1×1cm [Fig. 1]. The right fallopian tube appeared edematous. The uterus was normal in size and the left fallopian tube and ovary appeared normal. The mesentery appeared inflamed and there were adhesions of bowel loops. There were yellowish plaque-like lesions in all quadrants of abdomen and pelvis. Right Salpingo-oophorectomy followed by lysis of adhesions and peritoneal lavage with 20 litres of normal saline was done. Hemostasis was secured and drain was placed. After surgery, she was admitted to the maternal intensive care unit. On the second postoperative day, she developed abdominal distension likely due to paralytic ileus which resolved by the fourth postoperative day on conservative management. On the 9<sup>th</sup> post op day she developed shortness of breath likely infective in origin which resolved with medical management on treatment with antibiotics and respiratory physiotherapy. She also developed surgical site infection on the 9<sup>th</sup> postoperative day which healed with antibiotics and daily dressing. She was discharged on the 48<sup>th</sup> postoperative day in a good state of health with 30 days postoperative Clavein-Dindo complication Grade II [2]. Histopathology report of the cyst confirmed the diagnosis of mature cystic teratoma of ovary.

## 3. DISCUSSION

Mature cystic teratoma of the ovary, also known as dermoid cyst, accounts for up to 20% of

ovarian neoplasms. These benign germ cell tumors are composed of at least two of the three germ cell layers (ectoderm, mesoderm and endoderm). Mature cystic teratomas are bilateral in 8-15% of cases. Complications of mature cystic teratoma of the ovary are torsion, rupture, infection, hemolytic anemia, paraneoplastic encephalitis and development of malignancies [1]. Rupture of mature cystic teratoma is rare because of its thick wall. It may present with both acute and chronic clinical forms. Acute peritonitis is caused by the sudden rupture of the tumor with contents extrusion in association with torsion, trauma, infection or labor and may result in acute abdominal crisis and shock. Chronic granulomatous peritonitis results from chronically leaking cystic teratoma and it is the more common presentation [3].

Chronic granulomatous peritonitis, known as gliomatosis is characterized by numerous nodules of mature glial tissue implant on peritoneum and dense adhesions. These simulate carcinomatosis or tuberculous peritonitis. Initially patients may present with

subtle signs and symptoms but eventually patient would complaint of progressive abdominal pain, abdominal distension associated with nausea and vomiting [4]. This correlates with our case in which the patient initially had insidious onset abdominal pain and progressed in intensity.

Although transvaginal ultrasound is the best modality for detecting unruptured dermoid cysts, its accuracy detecting cystic rupture is low. CT scan is highly sensitive for diagnosing rupture [5]. The presence of intra-abdominal collection/ascites and a distorted or flattened shape of the tumor suggest tumor rupture, thereby indicating surgery. Acute or chronic peritonitis can manifest as ascites, diffuse or focal omental infiltration, and inflammatory masses involving the omentum and bowel; these findings mimic peritoneal carcinomatosis and tuberculous peritonitis [6]. Therefore, when these images are seen in a case of ovarian teratoma, the possibility of rupture should be kept in mind [7]. CT findings indicating fatty-fluid and ascites in the peritoneum could be a reliable sign of intraperitoneal rupture of abdominal teratoma



**Fig. 1. Intraoperative findings showing ruptured ovarian mature cystic teratoma covered by diffuse, thick, yellowish white plaque-like lesions**

(dermoid) and subsequent chemical peritonitis [8]. Similarly, in our case, although the initial ultrasound showed a right adnexal mass but, it was not able to identify suggestive rupture features. Later contrast enhanced CT scan showed a thick irregular walled cystic lesion around 11×8 cm with features suggestive of ruptured dermoid cyst.

Once rupture of mature cystic teratoma is diagnosed, immediate surgical intervention is necessary. In cases of spontaneously ruptured ovarian cystic teratoma without obvious signs of peritonitis have favourable prognosis as prompt removal of spontaneously ruptured ovarian cystic teratoma with thorough peritoneal lavage is sufficient to prevent prolonged chemical peritonitis [9]. There is very limited data in published literature for management of chronic granulomatous peritonitis following rupture of an ovarian cystic teratoma. Surgical management by both laparoscopy and laparotomy is successful, with laparotomies more likely to be performed [4]. Our patient underwent laparotomy because of the urgent need for surgery, size of the ruptured dermoid and the widely disseminated spread of sebaceous content. This approach provided us with the optimum route for right sided salpingo-oophorectomy of the ruptured ovarian dermoid, adhesiolysis of the bowel loops and meticulous peritoneal lavage. Although studies have shown that ruptured dermoid can be managed effectively with laparoscopy, some cases had to be converted to laparotomy [3,4,6]. Experienced laparoscopic surgeons should consider laparoscopy as an alternative to laparotomy in management of ovarian dermoid in selected cases [10]. Laparoscopic management of dermoids is safe and cost effective, and provides patients the benefit of a shorter hospital stay and recovery time [11].

Although spontaneous rupture of ovarian dermoid is a rare entity, there have been cases reported where the ovarian dermoid cyst spontaneously ruptured into the adjacent viscera like bowel and bladder [12]. There are few cases reported where symptomatic patients with residual chronic granulomatous peritonitis post-operatively required oral steroids [4]. A case has been reported of rupture of ovarian cystic teratoma in pregnancy with diffuse peritoneal reaction mimicking advanced ovarian malignancy [13]. Sclerosing encapsulating peritonitis has also been reported as a complication secondary to dermoid cyst rupture [14]. Our patient

developed surgical site infection on the 9<sup>th</sup> post operative day which was treated with antibiotics and daily dressing. But she was discharged on the the 48<sup>th</sup> post operative day with 30 days postoperative Clavein-Dindo complication Grade II. The delayed wound healing could be attributed to the chemical peritonitis caused by spontaneous rupture of mature cystic teratoma.

#### 4. CONCLUSION

This case report emphasizes the significance of early and correct diagnosis of rupture of ovarian mature cystic teratoma which is essential not just for planning the optimum approach for surgery but also for preventing long term morbidity associated with rupture-related chemical peritonitis.

#### CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the authors.

#### ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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