# Diagnostic, imaging, and surgical challenges of giant ovarian mucinous cystadenoma in a premenopausal woman: A case report

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## Abstract

**Background:** About 20% of women may experience at least one pelvic mass in their lifetime, making ovarian cysts a common gynecological diagnosis. Fortunately, today with women receiving annual gynecological exams, the occurrence of large ovarian cysts has significantly decreased.[1] However, diagnosing and treating large ovarian cysts remain a challenge within the gynecological field. The objective of this report is to describe the case of a giant ovarian cyst, as well as to highlight the limitation of diagnostic imaging, surgical considerations, and the importance of continuous clinical monitoring of ovarian cysts.

**Case:** A 48-year-old G1P1 premenopausal woman presented for gynecological evaluation due to progressive abdominal distension, early satiety, and unintended weight gain. She reported being diagnosed with a 9 cm left ovarian cyst approximately two years prior; however, she did not undergo subsequent clinical surveillance. Subsequent imaging showed a 30 cm x 20 cm x 13 cm pelvic cystic mass originating from the left ovary with a few intervening septations and no nodular solid components or focal wall thickening. Measurement of a serum CA-125 was within normal range. With imaging suggestive of a benign lesion favoring a serous cystadenoma, surgical intervention was considered. Due to the patient's age approaching menopause, no stated desire for future fertility, the size of the mass, and risk reduction with definitive surgery, a total hysterectomy with bilateral salpingectomy was elected. During the procedure, to allow for complete excision of the cyst and simultaneously preventing spillage, a controlled-drainage approach was used. Approximately three liters of mucinous fluid were drained from the cyst. Tissue pathology confirmed a unilocular mucinous cystadenoma without atypia or malignancy. Additionally, although imaging was initially suggestive of a cyst consistent with macrolobulated masses and septations, a single cystic cavity was noted on pathology. The patient's postoperative course was unremarkable with complete symptom relief.

**Conclusion:** The case of a 48-year-old premenopausal woman presenting with non-specific symptoms, later diagnosed with a 30cm ovarian mucinous cystadenoma, highlights both the surgical management of a giant ovarian cyst using a controlled-drainage technique, as well as the imaging limitations associated with accurately characterizing the architecture of ovarian masses. The consideration of continuous clinical surveillance of ovarian masses may help in the recognition of rapid growth sooner, allowing for surgical intervention prior to the progression of a giant ovarian cyst.

## Introduction

Ovarian cysts are a frequent gynecological diagnosis with approximately 20% of women experiencing a pelvic mass in their lifetime.[1] Ovarian cysts are hard to diagnose for several reasons, including often being asymptomatic. However, when symptoms do present, they are often non-specific and have a wide differential diagnosis. Due to the increase in routine gynecological examinations and imaging, the occurrence of large ovarian cysts has significantly decreased.[1]

Of the many different types of ovarian tumors, epithelial ovarian cysts, including benign, borderline, and malignant subtypes, represent 60% of all ovarian tumors.[2] There are several different types of epithelial ovarian cysts, with the two most common being serous and mucinous cystadenomas.[2] There is no universally accepted definition of giant ovarian cysts in the literature though they are most often defined as cysts that are at least 10cm in diameter. Giant mucinous ovarian cystadenomas, a specific subtype of these large ovarian cysts, are rare.

Ovarian cysts can lead to complications such as malignancy or torsion. Although the risk of malignancy or acute complications is low, the incidence of torsion increases as size increases.[3] This emphasizes that conservative management is often appropriate, but observation and follow up are key components in patient care.

Since giant ovarian cysts are uncommon, there is limited standardization in diagnosis and imaging guidelines. Ovarian mass studies have demonstrated that computed tomography (CT) is most commonly used as a secondary imaging modality following transvaginal ultrasound; however, data suggest that magnetic resonance imaging (MRI) has an advantage over CT in the evaluation of ovarian masses when available.[4] The aim of this report is to present a case of a giant ovarian cystadenoma, which demonstrates limitations of diagnostic imaging, highlights relevant surgical considerations, and emphasizes the importance of careful clinical observation of ovarian cysts.

## Case Presentation

A 48-year-old G1P1 premenopausal female with an intrauterine device presented for evaluation of progressive abdominal distension and discomfort. She admitted to early satiety and unintended weight gain. She denied nausea, abdominal pain, and abnormal bleeding. Notably, the patient had been diagnosed a couple of years earlier with a 9cm left ovarian cyst, in which subsequent clinical monitoring did not occur. On physical exam, a large abdominal mass extending above the umbilicus was palpable.

CT of the abdomen and pelvis with contrast revealed a macrolobulated cystic mass arising from the left ovary measuring up to 30cmx20cmx13cm. The mass was noted to contain a few intervening septations without solid nodular components or focal wall thickening. The uterus was displaced to the left. No ascites was noted (Figure 1A-C). Serum CA-125 was 12.6U/mL, falling within normal limits (0 – 35 U/mL).

Given the size and imaging findings suggesting benign pathology, surgical removal was recommended, and the patient underwent a total hysterectomy with bilateral salpingectomy and removal of the left adnexal mass via laparotomy.

A controlled-drainage technique was utilized due to the constrained operative space and the risk for spillage from a mucinous cyst (Table1). The remainder of the procedure proceeded without complication.

Gross pathological examination revealed a unilocular ovarian cyst with pink-purple to yellow-pink glistening to minimally granular inner surface and no excrescences. Minimal clear mucoid material was present.

Microscopic evaluation confirmed a benign mucinous cystadenoma without atypia or malignancy. Cytology noted rare small papillary groups with small nuclei, abundant reactive mesothelial cells, and proteinaceous material.

Postoperatively, the patient recovered well without complications. Her weight decreased from 60.3kg preoperatively to 59.8kg at 1-week follow up and then to 57.4kg at 1-month follow up. She also demonstrated reduced abdominal distention and reported the return of her appetite without early satiety.

| Step | Description | Technical Considerations |
|---|---|---|
| 1 | Expose the cyst and pad dry thoroughly. | Optimizes visualization and maintains a clean operative field. |
| 2 | Apply a sterile transparent adhesive dressing to the cyst wall. | Creates a secure seal to minimize cyst fluid spillage. |
| 3 | Place a purse string suture (using 0-Vicryl) around the adhesive dressing. | Secures the dressing. |
| 4 | Make a small incision through the adhesive dressing. | Prepares for immediate suction access. |
| 5 | Insert suction immediately through the opening and secure with a purse-string suture cinched tightly around the suction. | Ensures immediate aspiration with minimal risk of spillage. |
| 6 | Drain cyst contents (approximately three liters) until cyst collapses. | Reduces mass size in preparation for excision. |

**Table 1.** Stepwise controlled-drainage technique for giant ovarian cyst excision.

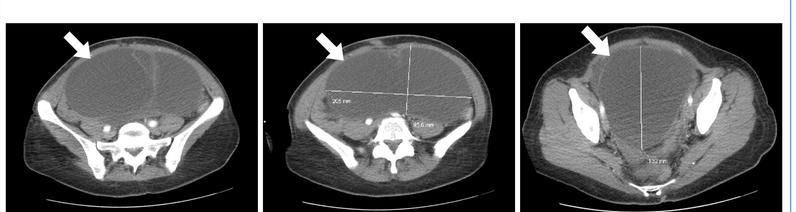


**Figure 1A.** **Figure 1B.** **Figure 1C.**

**Figure 1.** Axial CT images of the abdomen and pelvis demonstrating a giant left ovarian cystic mass. The represented lesion is macrolobulated with visible septations causing mass effect on adjacent pelvic structures, without ascites or solid nodularity.

## Discussion

This case reviews a 48-year-old premenopausal woman who presented with progressive abdominal distension, early satiety, and unintended weight gain secondary to a giant ovarian cyst. CT imaging demonstrated a giant pelvic cystic mass originating from the left ovary with macrolobulated masses and septations. However, tissue pathology confirmed a unilocular mucinous cystadenoma without atypia or malignancy. Surgical intervention was performed using a controlled-drainage technique to limit spillage of cystic contents.

Giant ovarian cysts are considered uncommon in regions with adequate healthcare facilities due to routine gynecological examinations and early imaging.[1] However, when they do occur, they pose diagnostic and surgical challenges due to nonspecific symptoms. This contributes to a delayed presentation, allowing more time for the progression of the lesion.[5]

Differentiating between benign and malignant masses pre-operatively, particularly large ovarian cysts, remains challenging, even with advanced technology.[6] A large volume cyst may be misrepresented on imaging due to compression, folding, or effects of the large volume. In this case, CT imaging described the cyst to have macrolobulation and septations, associating it with concern for a complex cyst; however, upon microscopic and pathological examination, the cyst proved to be a unilocular mucinous cystadenoma without atypia. This discrepancy demonstrates how cross-sectional imaging, such as CT, comes with limitations in characterizing and overestimating the architecture of an internal cyst, especially as the size of the cyst increases. This supports the argument that MRI may have an advantage over CT when it comes to diagnosing large adnexal masses. MRI allows for superior soft-tissue contrast, which would help differentiate true septations versus compressed/folded cyst walls, which was seen in this case.

The optimal surgical approach for giant ovarian cysts remains ambiguous. While many cases have reported success with minimally invasive techniques, laparotomy is often preferred due to the risk of rupture and the limited operative space due to cyst size.[7] The rupture of mucinous cysts carries a risk for pseudomyxoma peritonea and chemical peritonitis. To avoid these risks and the possibility of spillage, a controlled-drainage technique was used in this case. This allowed for the decompression of approximately three liters of cystic fluid while minimizing spillage. In addition, given the patient's age and no further desire for fertility, definitive surgery with total hysterectomy and bilateral salpingectomy was elected secondary to risk of recurrence.

Giant ovarian cysts have the potential to cause significant mass effects resulting in nonspecific symptoms, such as abdominal distention, early satiety, and weight gain, often leading to the delay in diagnosis. This highlights the importance of considering an adnexal pathology in the differential diagnosis for patients who present similarly. Earlier identification of adnexal pathology as a potential etiology of patients who present with these symptoms allows for proper planning as far as imaging and operative procedures. Timely intervention is critical when it comes to helping resolve the patient's symptoms. The patient in this case had a rapid return to baseline post-operatively, further supporting that with select and careful operative planning, surgical management of giant ovarian cysts can be safe and effective.

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