

# Largest Serous Cystadenoma in the first Trimester treated Laparoscopically: A Case Report

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## Abstract

We report the first case of a giant serous cystadenoma approximately 7.5kg in weight in a 28-year old primigravida at 8 weeks of gestation which was successfully excised laparoscopically. Postoperatively, she had a quick recovery and she was discharged on post op day 3 with an intact pregnancy and no complications. This is the largest ovarian cyst in early pregnancy that has been ever reported from our hospital. We also believe this cyst to be the largest cyst in early pregnancy ever reported in the literature that has been managed by Laparoscopy.

**Keywords:** Serous cyst adenoma, Pregnancy, largest.

## Introduction

Ovarian cysts in pregnancy are reported to occur once in every 1000 pregnancies.<sup>1</sup> The etiology of ovarian tumors usually depends on patient's age and therefore, benign masses such as functional ovarian cysts, benign cystic teratomas, and serous cystadenomas are more commonly seen in pregnancy.<sup>2</sup>

Ovarian cysts appearing during the first trimester usually regress in size by second trimester and are thus managed conservatively. Laparoscopic ovarian cystectomy performed in the second trimester has been described in the literature but this is the first case where an ovarian cyst of this size in the first trimester was managed exclusively by laparoscopy.<sup>3</sup>

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## Case Report

A 28years old primigravida at 8 weeks of gestation was referred from the local health center with a complaint of abdominal distension followed by mild generalized abdominal pain which had developed over 5 months but exaggerated in the last 2 months. Pain was non colicky in nature and was associated with nausea, occasional vomiting and breathlessness on lying flat, only in the last 2 months. She gave no history of liver or renal diseases. It was a planned pregnancy and she denied any infertility problem or use of contraceptives before pregnancy. Her gynecologic, past medical and family history were unremarkable.

When she was first seen in A&E, she looked like a pregnant lady at full term, moderately built, well oriented to time and place and not in any acute distress. Her general condition and vitals were normal. Abdominal examination revealed generalized abdominal distension with a flat umbilicus, full flanks, diffuse tenderness and a positive fluid thrill.

An immediate ultrasound of the abdomen excluded ascites and showed a huge central abdominal cystic mass spanning the whole abdomen and pelvis. Due to the huge size of the cyst, its origin could not be well defined. However, there was no evidence of any solid element or septations in the cyst. Liver, spleen and kidneys were normal, and pancreas was not seen. Overall morphological picture did not indicate malignancy. A subsequent transvaginal ultrasound confirmed an intrauterine gestational sac with a live fetus.

Her laboratory results showed mild iron deficiency anemia with normal hepatic, renal and coagulation profiles, with ESR of 09mm/hr (0-29mm/hr). Tumour markers for ovarian malignancy such as CA 125-- 27.0 U/ml, CEA-- <0.5 ug/L, Ca 19.9-- 55 U/ml, and Alpha fetoprotein-- 3.0 ug/L, were also in the normal range.

To locate the origin of the cyst, CT scan is relatively contraindicated due to her early pregnancy and she was found to be claustrophobic for an MRI scan. In view of the large size and undetermined origin of the cyst, the surgical option to remove the cyst by the laparoscopic technique was discussed with the patient, which she agreed to. Patient was counseled regarding the possible need for salpingo-oophorectomy in case the intra operative findings were suspicious of malignancy and the risk of miscarriage or preterm labor following surgery. She was operated on by a combined team of gynecologists and general surgeons.

## Operative Details

After thromboprophylaxis with low molecular weight heparin (LMWH) and appropriate pre-op care, laparoscopy was performed under general anesthesia. With patient positioned supine, peritoneum was opened through a 1cm umbilical incision by open cannulation (Hasson) method and a 10mm trocar was introduced in to the peritoneal cavity. After confirming no omental or bowel adhesions to the cyst wall, another 10mm trocar was introduced directly into the cyst positioned in the left iliac fossa, just below the line between the left anterior superior iliac spine (ASIS) and the umbilicus along the mid-clavicular line, under direct vision. Around 75L of clear fluid was aspirated with no intraperitoneal spill. Thereafter, approximately 1 liter of normal saline was introduced into the cyst and subsequently, to visualize the interior of the cyst, a 10mm telescope was introduced through the same trocar. No septations, growths or masses were seen inside the cyst. The telescope was then removed and introduced again through umbilical trocar. The contents of the cyst were now completely emptied and the trocar was taken out of the cyst under direct vision but maintained in its intra peritoneal position. This was followed by insufflation of CO<sub>2</sub> maintaining the intraperitoneal pressure at 14mm of Hg. Thereafter, a third 5mm trocar was introduced in the right iliac fossa just below the line between the ASIS and umbilical fossa along the mid-clavicular line to visualize the origin of the cyst. The cyst appeared to be arising from the left paraovarian region, from the broad ligament and was also found to be adherent to the left ovary making it difficult to ascertain the actual origin of the cyst. The entire cyst was excised enucleating it from the layers of broad ligament, preserving the tube and the ovary, using bipolar diathermy. In addition, in the whole procedure, uterus was minimally handled. The trocars were then taken out under direct vision, the gas was emptied from peritoneal cavity and the umbilical port sites were closed by 2-0 nylon. Lastly, the specimen was sent for histopathology.

Postoperatively, a transvaginal ultrasound scan confirmed an intact pregnancy. Patient's recovery was quick, without complications and she was discharged on postoperative day three. Histopathology report showed a unilocular cyst with no evidence of solid areas. Cyst wall was lined by single cuboidal epithelium and all features were consistent with benign serous cystadenoma. The benign nature was confirmed with fluid cytology that showed no evidence of atypical cells.

## Discussion

"In the reproductive age ovarian tumors are mainly unilateral benign cysts."<sup>4</sup> About 70% of all serous cystadenomas are benign tumors, 5–10% have borderline malignant potential and 20–25% are malignant. They often tend to be multilocular with papillary growths extending from both internal and external surface of the tumor, but unilocular tumors which are lined by a single layer of cuboidal epithelium are not uncommon. Furthermore, they can

grow as large as 35 cm in diameter and form spherical or ovoid masses. Such a benign, unilocular cyst with size of more than 30x40cm is reported here.<sup>5</sup>

"Surgical intervention during pregnancy is indicated for large and/or symptomatic tumors and those that appear highly suspicious for malignancy on imaging or laboratory tests. The extent of surgical intervention depends on the intra operative diagnosis of a benign versus a malignant tumor. Conservative surgery is appropriate for benign masses and borderline ovarian tumors particularly in women of reproductive age."<sup>2</sup> Benign masses are usually unilateral, smooth, cystic, and mobile, and patients mostly present with abdominal distension, abdominal pain or discomfort, and bowel or bladder symptoms. Whereas, malignant ovarian tumors are usually bilateral, solid, fixed, irregular, grow rapidly and are associated with ascites. Complications such as torsion, rupture or bleeding into the cyst are common especially in big cysts.

"Laparoscopic cystectomy in pregnancy was first reported in 1991 by Nezhath *et al.* Currently, there are almost 150 case reports of laparoscopic surgery in pregnancy in the literature."<sup>1</sup>

In 2007, Johnson *et al* reported a "successful removal of a 6198-g ovarian serous cystadenoma by use of minimally invasive techniques."<sup>3</sup> Similarly, we managed to remove the serous cyst weighing 7500-g successfully by minimally invasive technique.

According to previous recommendations, "Most surgical options for adnexal masses in pregnancy are managed ideally in the second trimester after organogenesis is complete, decreasing the risk of fetal loss, or spontaneous miscarriage and allowing for possible spontaneous regression of the mass."<sup>1</sup> However, according to the recent SAGES guidelines, laparoscopic procedures can be performed safely and effectively in a gravid patient at any trimester.<sup>6</sup> Therefore, owing to the huge size of the cyst, its undetermined origin and patient having one of the pressure symptoms, we had to surgically intervene early in the pregnancy.

Furthermore, in 2007 Tica *et al* reported conservative management of an 11cm sized serous cyst at 6<sup>th</sup> week of gestation with subsequent laparotomy and cystectomy at 16<sup>th</sup> week of gestation due to torsion.<sup>7</sup> Comparatively, we would like to emphasize our successful laparoscopic management of such a huge cyst measuring well over 30x40 cm at the 8<sup>th</sup> week of gestation with no complications. We believe that this is the first reported case of a cyst weighing 7.5kg at 8 weeks of gestation managed laparoscopically.

In view of operative details, according to the SAGES guidelines, 10-15 mmHg of CO<sub>2</sub> insufflation can be safely used to carryout laparoscopic procedures in pregnant patients, provided that a proper thrombo-prophylaxis is achieved for the patient. It is further mentioned that using intermittent pneumatic compression devices or intermittent electronic calf stimulators cannot reverse the decrease in blood flow when CO<sub>2</sub> insufflation of more than 12mmHg is used. Therefore, general principles of laparoscopic surgery should be applied for DVT prophylaxis considering pregnancy, a hypercoagulable state. So forth, in order

to have a clear view of the cyst, we insufflated 14mmHg of CO<sub>2</sub> and provided LMWH prophylaxis to the patient. Moreover, the guideline mentions that, during any operative procedures, gravid patients should be placed in the left lateral decubitus position to minimize compression of the IVC and in turn, avoid maternal hypotension and maintain placental perfusion during the surgery. However, considering that our patient was at her 8<sup>th</sup> week of gestation, positioning of the patient during surgical procedure at such an early stage was found to be insignificant, nevertheless, left lateral decubitus positioning is a must in patients undergoing laparoscopy in their 2<sup>nd</sup> and 3<sup>rd</sup> trimesters.<sup>6</sup>

Giant ovarian cysts like the one reported here are now rarely seen since the development of radiological imaging and techniques. However, even today, cases of huge ovarian cysts are encountered when patients delay to seek prompt medical care.

## Conclusions

This case demonstrates that, a laparoscopic ovarian cystectomy at 8 weeks of gestation is safe for a massive 7.5kg cyst resulting in early recovery and discharge with an intact pregnancy.

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