## Introduction
- The most common type of germ cell tumor is teratoma, which is divided into four categories: mature cystic, mature solid, immature, and monodermal. The majority of teratomas are the mature cystic variant, also called mature dermoid cysts.
- Mature dermoid cysts are comprised of mature tissue originating from ectoderm, mesoderm, and endoderm. As a result, hair, teeth, and skin are often found within the cyst.
- Females with the development of dermoid cysts are asymptomatic most of the time. The presentation of symptoms generally depends on the size of the dermoid cyst. Possible complications include ovarian torsion and rupture of cyst with leakage of sebaceous fluid into the abdominal cavity.

## Epidemiology
- Adnexal masses that complicate pregnancy have an incidence that range from 0.05-2.4%. Approximately 1-6% of these masses are found to be malignant. In a review completed of seven studies, 563 adnexal masses were diagnosed in 557 women. Of these masses, 48% were simple, with 1% malignant, while 53% were complex, with 9% malignant.
- The majority of adnexal masses identified in pregnant women are benign simple cysts. Of cystic adnexal masses identified during pregnancy, about 70% are detected in the first trimester, with spontaneous resolution by the second trimester. Masses that persist are typically 5 cm or greater in diameter, identified as mature teratomas.

## Patient Description
- Patient is a 33 yo F G2P1, with PMHx of TIDM and hypothyroidism, who was found to have a simple cyst of the L adnexa incidentally during her first trimester scan, measuring 75 x 54 x 76 mm. At the time of discovery, the patient was at 12 wks gestation. Pt was asymptomatic and expectant management was recommended after counseling regarding risks of cysts during pregnancy.
- At 17 wks gestation, pt presented to Virtua Memorial Hospital ED with severe abdominal pain, rigidity, and guarding. Pt was found to have a left ovarian torsion x2 along the IP ligament, palpable in the left mid-abdomen. An emergency laparoscopic reversal of left ovarian torsion with a left ovarian cystostomy was performed. Pathology reports showed the cyst was benign in nature.
- Pt returned to the MFM at 20 wks gestation for a fetal echo with anatomy scan and was found to have a L adnexal complex septated cyst measuring 83 x 59 x 63 mm.

## Intervention
- The options for management included observation and cyst removal during C-section as well as surgical removal of mass with possible oophorectomy, possible LSO.
- Due to presence of recurrent cyst and prior history of ovarian torsion during this pregnancy, it was recommended to perform operative laparoscopy, possible laparotomy, cyst removal, possible oophorectomy, possible LSO with peritoneal washing. Risks and benefits were explained; consent obtained.
- A laparoscopic left cystectomy and partial left oophorectomy was performed with lysis of omental adhesions and peritoneal washing. The recurring simple cyst was removed, and an incidental dermoid cyst was discovered and removed as well.
- Pelvic washing submitted for cytology. Surgical specimen of left ovary sent for pathology.

## Results and Supporting Images
- Abdominal adhesions, due to prior cystotomy and fx of C-section
- L ovarian cyst visualized, prior to cystotomy and partial oophorectomy
- Enlarged gravid uterus with visualization of normal sized R ovary
- Solid component with tooth-like structure, following decalcification.

## Reports and Results
- Specimen identified as a benign mature cystic teratoma.
- Surgical Pathology report: The pieces of tissue range from 4.0 x 1.0 x0.2 cm to 6.5 x 2.5 x 2.0 cm. Smooth, tan-white external surfaces. Cyst cavity contains soft, white material and black hair. A solid component is identified measuring 2.5 x 2.5 x 1.3 cm with a firm, tooth-like structure measuring 0.5 cm.
- Cytology report: No malignant cells identified.
- R ovary was observed to be normal during the procedure.

## Why This Matters
- While most ovarian cysts are benign, the management of these cysts becomes complicated during pregnancy. Surgical resection of adnexal masses that persist past the first trimester or recur during pregnancy is the preferred method. Recurrence of cystic masses typically increases likelihood of malignancy.
- Conservative approach most often involves expectant management. Expectant management is appropriate in patients with adnexal masses that do not have concerning features, which include persistence, enlarged size, or solid components. Cyst removal at the time of C-section scheduled for appropriate obstetric indications is also an option for conservative management.
- The radical approach ranges from cystectomy to cystectomy and possible oophorectomy, especially in cases when cysts recur. The ideal time for these surgical approaches is after completion of the first trimester, with the safest time during the second trimester. By this time, the fetus is fully developed, the size of the gravid uterus is small enough to allow adequate room for port placement for laparoscopy. Understanding the incidence and potential complications of adnexal masses and recurrent mature dermoid cysts will improve pregnancy outcomes and management of these cases.

## Response to Intervention
- The patient was seen in the office for a follow-up visit 4 days s/p L cystectomy and partial L oophorectomy. She reported feeling well with minimal incisional pain.
- The patient’s pregnancy has progressed without any complications after cystectomy was performed. On subsequent routine ultrasound sounds performed, no recurrence of cystic growth or abnormalities have been noted.

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### References