AMSER Rad Path Case of the Month June 2022

31 y.o. female with abdominal pain

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Patient Presentation

HPI: 31 y.o. G5P0414 female presented with 4 days of diffuse abdominal pain with radiation to the lower abdomen, cramping, tenesmus, and absent bowel movements. Pain was rated 9-10/10. Denied chest pain, dyspnea, nausea, vomiting, fevers, chills, vaginal bleeding or discharge. In an outside facility, she was found to have elevated WBC and subsequently started on antibiotics, fluids, and pain medications. At this time, CT pelvis showed right ovarian mass with internal fat/calcifications and TVUS was concerning for fistula formation between mass and colon.

PMH: Diabetes Mellitus, Dermoid cyst

PSHx: Total abdominal hysterectomy and bilateral salpingectomy for menorrhagia

Meds: Ceftriaxone, Flagyl, Doxycycline, Percocet and Tramadol

Allergies: Animal dander

Vitals: 37°C, BP 101/66 mmHg, RR 19/min, Pulse 105 bpm, SpO_2 92%

Physical Exam: Notable for acute distress, guarding, rebound, slight abdominal distension, skin hot to touch, tachycardia, frothy discharge from vaginal vault, and tender non-mobile, firm mass palpated in posterior cul de sac.

Pertinent Labs

- CBC
  - WBC 9.87 (on antibiotics)
    - Bands 44%
  - Hgb 12.5
  - Hct 37.0
  - MCV 86.2
  - Plt 180
- Lactic acid 2.3

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Clinical Condition: Acute Pelvic Pain in the Reproductive Age Group

Variant 2: Gynecological etiology suspected, serum β-hCG negative.

Radiologic Procedure	Rating	Comments	RRL*
US pelvis transvaginal	9	Both transvaginal and transabdominal US should be performed if possible.	O
US pelvis transabdominal	9	Both transvaginal and transabdominal US should be performed if possible.	O
US duplex Doppler pelvis	9		O
MRI pelvis without and with IV contrast	6	This procedure can be performed if US is inconclusive or nondiagnostic. See the Summary of Literature Review and *ACR Manual on Contrast Media* for the use of contrast media.	O
MRI abdomen and pelvis without and with IV contrast	6	This procedure can be performed if US is inconclusive or nondiagnostic. See the Summary of Literature Review and *ACR Manual on Contrast Media* for the use of contrast media.	O
MRI pelvis without IV contrast	4	This procedure can be performed if US is inconclusive or nondiagnostic. See the Summary of Literature Review and *ACR Manual on Contrast Media* for the use of contrast media.	O
MRI abdomen and pelvis without IV contrast	4	This procedure can be performed if US is inconclusive or nondiagnostic. See the Summary of Literature Review and *ACR Manual on Contrast Media* for the use of contrast media.	O
CT abdomen and pelvis with IV contrast	4	This procedure can be performed if US is inconclusive or nondiagnostic and MRI is not available. See the Summary of Literature Review for the use of contrast media.	☢☢☢
CT pelvis with IV contrast	4	This procedure can be performed if US is inconclusive or nondiagnostic and MRI is not available. In young women undergoing repeat imaging, the cumulative radiation dose should be considered. See the Summary of Literature Review for the use of contrast media.	☢☢☢
CT pelvis without IV contrast	2	This procedure can be performed if US is inconclusive or nondiagnostic and MRI is not available. In young women undergoing repeat imaging, the cumulative radiation dose should be considered.	☢☢☢
CT pelvis without and with IV contrast	2		☢☢☢☢
CT abdomen and pelvis without IV contrast	2		☢☢☢
CT abdomen and pelvis without and with IV contrast	2		☢☢☢☢

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate — *Relative Radiation Level

These imaging modalities were ordered by an outside facility

After OBGYN discussion with the colorectal surgeon, CT abdomen and pelvis with IV and rectal contrast ordered

AMSER

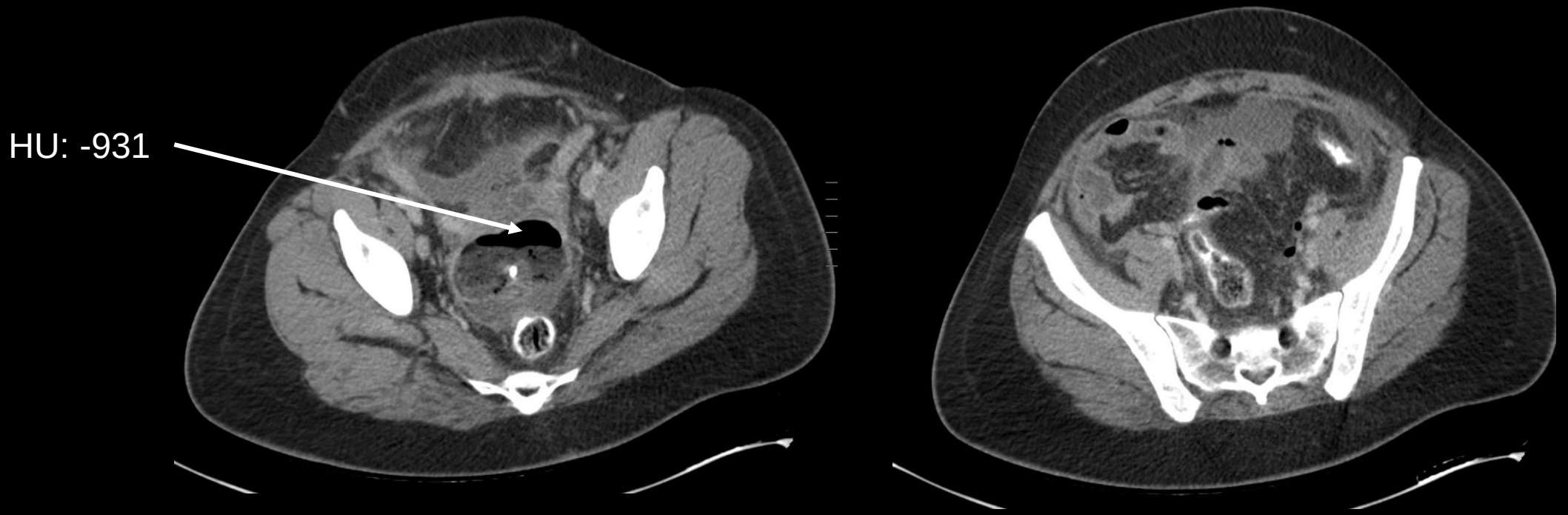
Prior Imaging (unlabeled)

CT Abdomen and Pelvis with IV Contrast

Axial

Imaging at Time of Presentation (unlabeled)

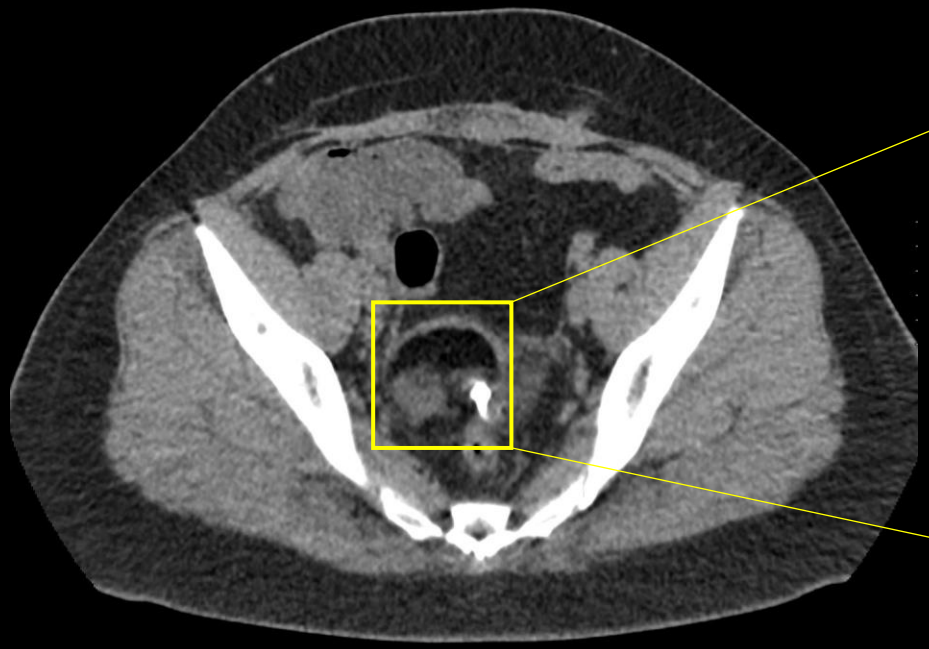
CT Abdomen and Pelvis with IV and Rectal Contrast



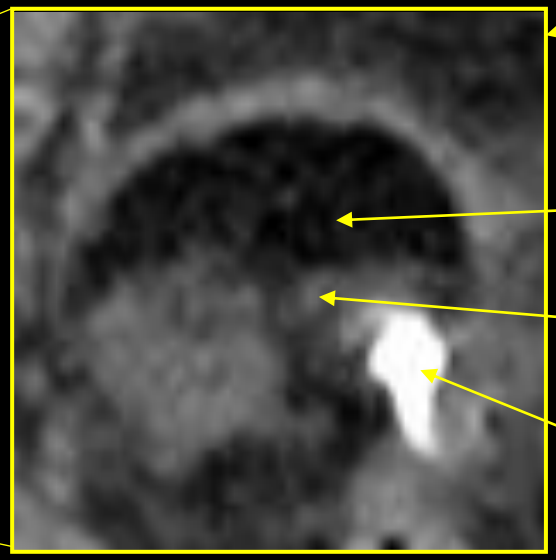
Axial

Prior Imaging (labeled)

CT Abdomen and Pelvis with IV Contrast



Axial



Encapsulated mass with different densities

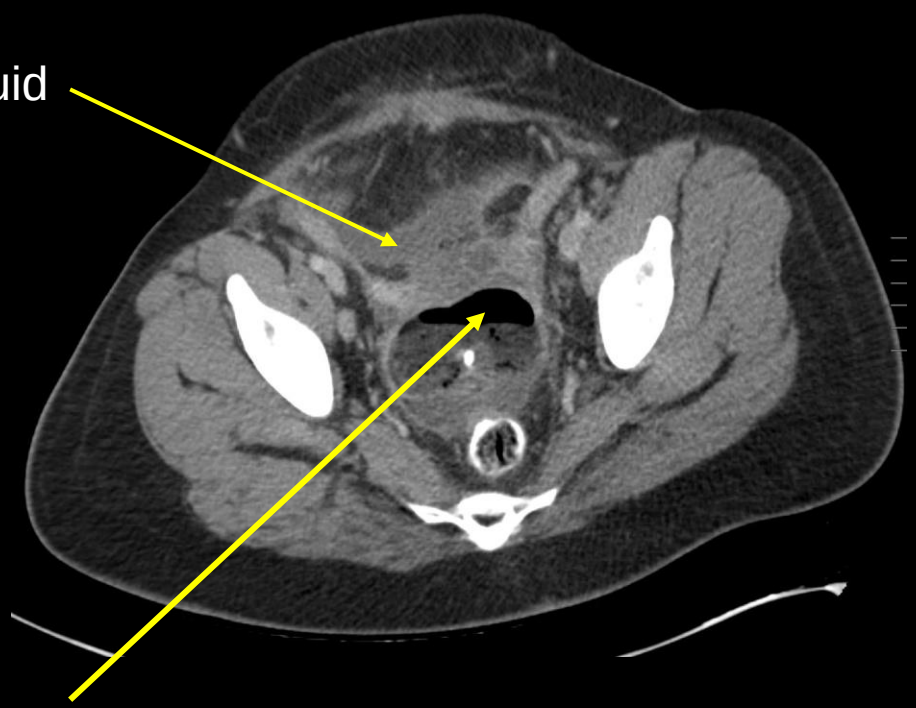
Fat

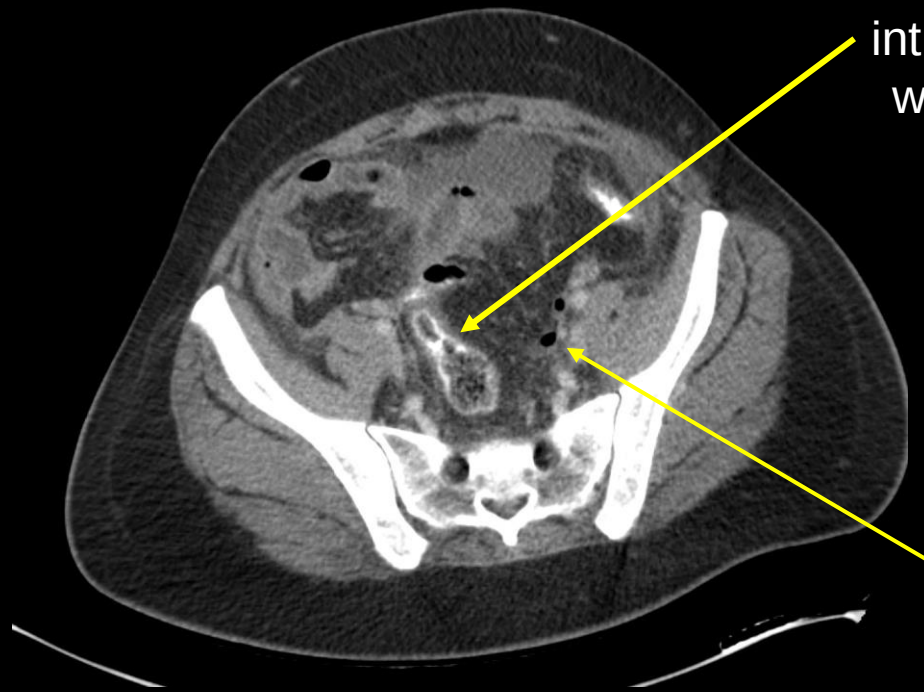
Soft tissue

High density tooth-like density

Imaging at Time of Presentation (labeled)

CT Abdomen and Pelvis with IV and Rectal Contrast





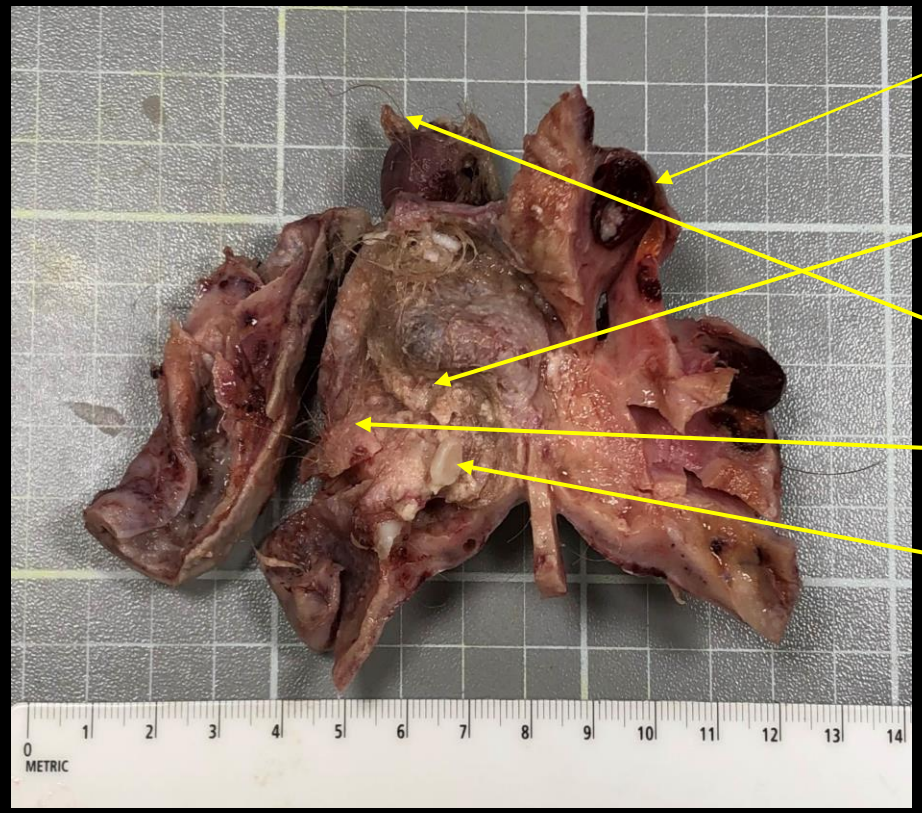
Axial

Differential Diagnosis Based on Imaging

- Ruptured Ovarian Dermoid Cyst
- Fistula from Dermoid Cyst to Colon

Gross Pathology – Right Ovary

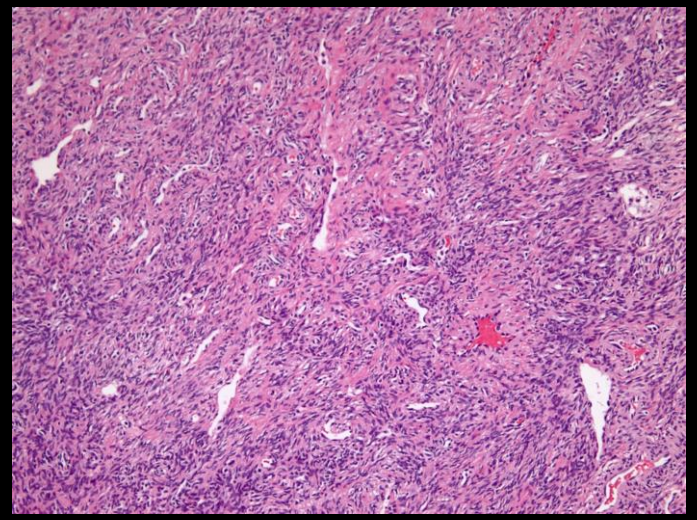
Ruptured mass of pink-tan soft tissue measuring 6.5 x 5.5 x 3.5 cm

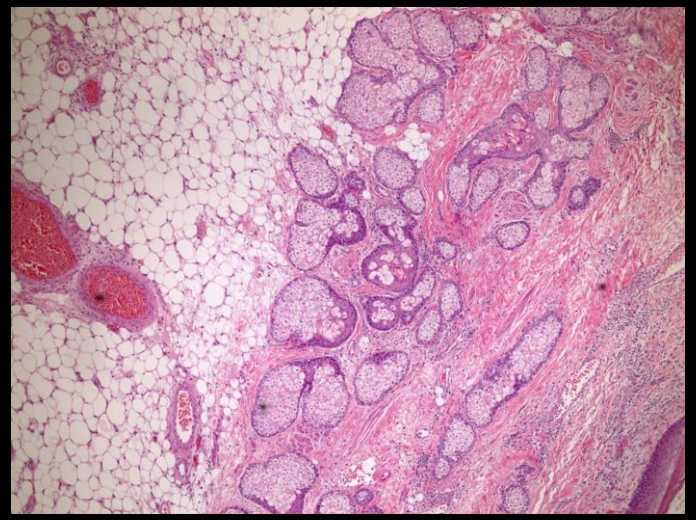


Lumen with cheesy tan material, hair, possible skin and teeth in the setting of normal ovarian parenchyma

Surgical Pathology- H&E Stain

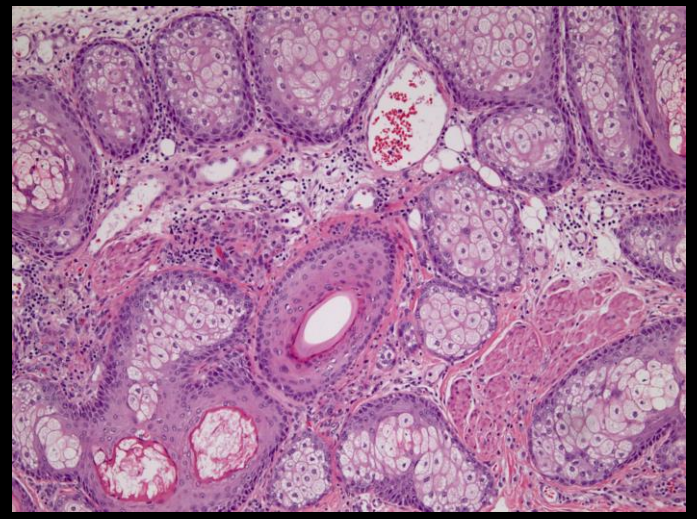
Normal Ovarian stroma (4x)

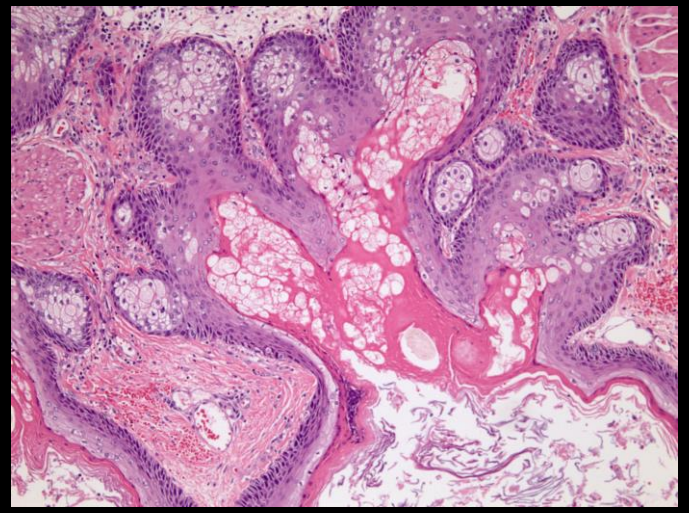




Adipocytes and Sebaceous glands (10x)

Sebaceous glands and Squamous Epithelium (10x)





Sebaceous glands and Squamous Epithelium (10x)

Final Dx:

Rupture of Infected Mature Ovarian Dermoid Cyst

Case Discussion

- Epidemiology
  - Most common type of ovarian germ cell tumor (20%)
    - Mature cystic teratoma being the most common
  - Often seen in younger age (mean age of 30)
  - Bilateral occurs 10-15%
- Features
  - Generally benign, asymptomatic, grows slowly at a rate of ~2mm/year
  - Usually large by the time of dx
  - Derived from mature cells from at least two germ cell layers
  - Often incidentally discovered

Case Discussion (cont.)

- Diagnosis
  - Ultrasound (preferred initial evaluation)
    - Heterogeneous mass with echogenic focus producing acoustic shadowing due to calcification and fat
  - Histopathological evaluation is gold standard
- Management
  - Surveillance: pre-menopausal women who wish to become pregnant without symptoms
    - Cyst size <6cm and growth <2cm/year
  - Surgery (laparoscopy is gold standard): pre-menopausal woman who is symptomatic
    - <5cm: Cystectomy
    - 5-6cm: Oophorectomy
- Complications
  - Torsion (16%), rupture (1-4%), malignant transformation (1-2%), infection (1%) paraneoplastic syndrome

Case Discussion (cont.)

- Outcome
  - Patient underwent exploratory laparotomy with right oophorectomy and abdominal washout
    - Retroperitoneum significantly inflamed, deflated ovarian mass present, evacuated purulent ascites from abdomen and pericolic gutters
  - Flexible sigmoidoscopy did not reveal any perforations or evidence of diverticulitis
  - Cytopathology of fluid
    - Negative for malignant cells, rare reactive mesothelial cells, marked acute and chronic inflammation
    - Culture showed many WBCs and few propionibacterium

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