

MALIGNANT MESOTHELIOMA: A TYPICAL PRESENTATION IN AN ATYPICAL PATIENT

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The donating laboratory would like to remain
anonymous.**

PATIENT HISTORY

- 28 year old female
- Lived in India until 2010
- TB+ with normal chest x-ray
- Lifelong nonsmoker
- No other significant medical history

- 2/13/2015- Visited Primary Care Provider
 - Complained of abdominal bloating
 - Given Zantac

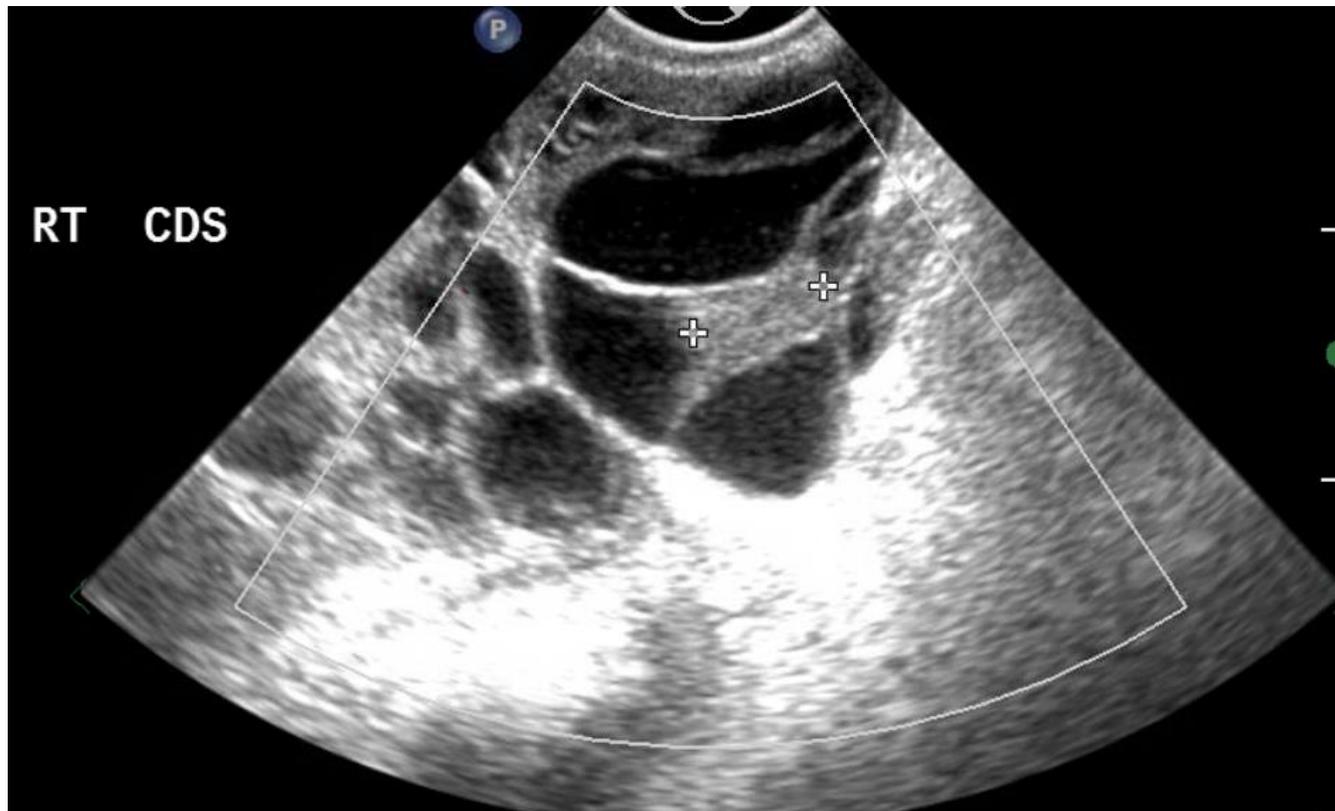
- 2/26/2015- Visited Gynecologist for annual exam
 - Complained of bloating & pelvic pain
 - Pap done → NILM
 - Pelvic transvaginal ultrasound ordered



PELVIC TRANSVAGINAL ULTRASOUND

2/26/2015

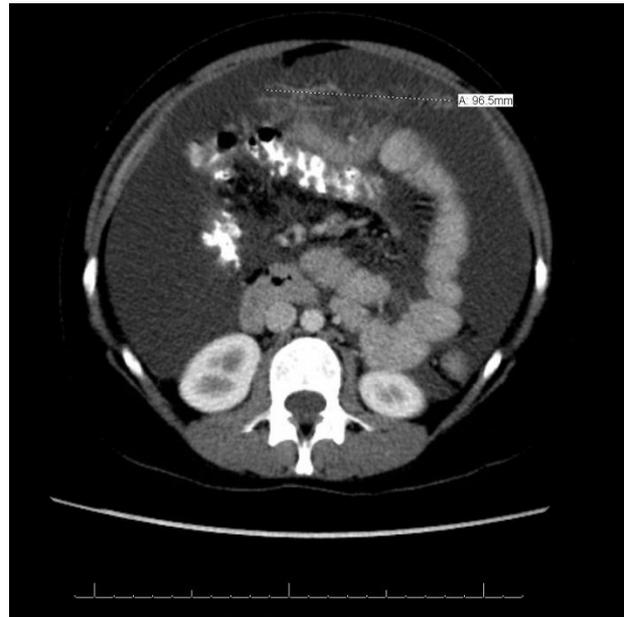
- Bilateral complex ovarian masses
 - Probable ovarian carcinoma
- Significant ascites



CT ABDOMEN/PELVIS

3/4/2015

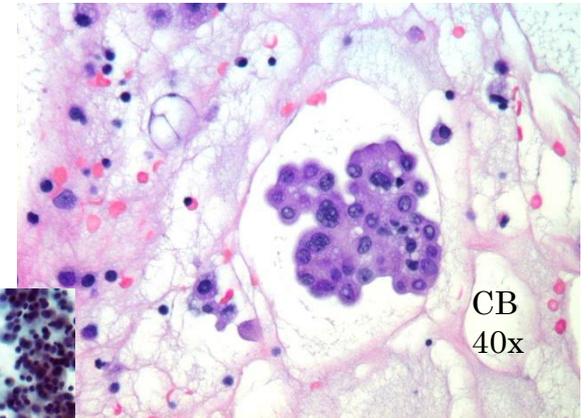
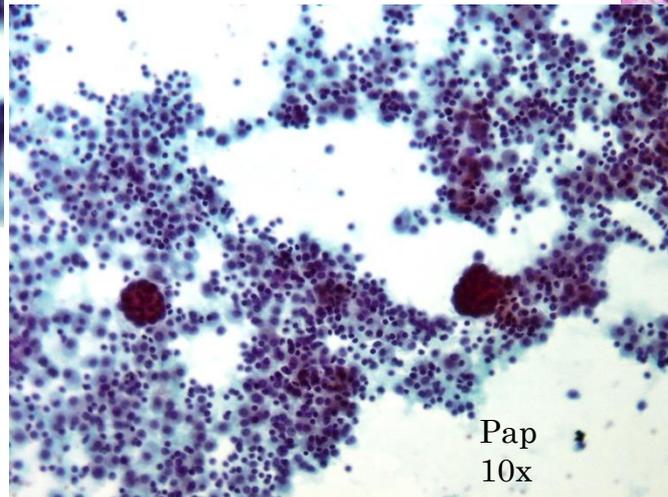
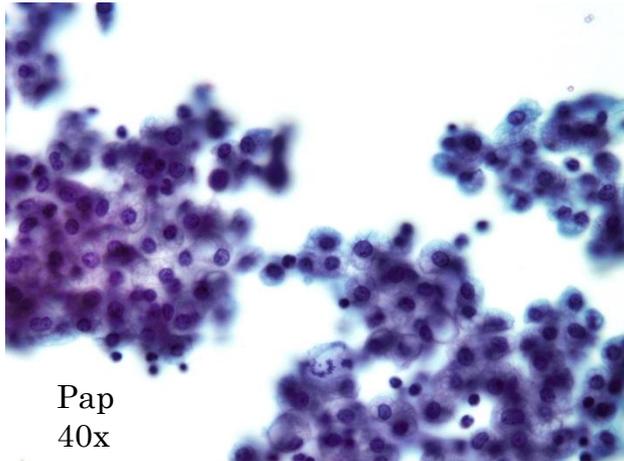
- Bilateral cystic and solid ovarian masses compatible with peritoneal carcinomatosis
- Omental caking
- Peritoneal implant



RLQ PARACENTESIS

3/4/2015

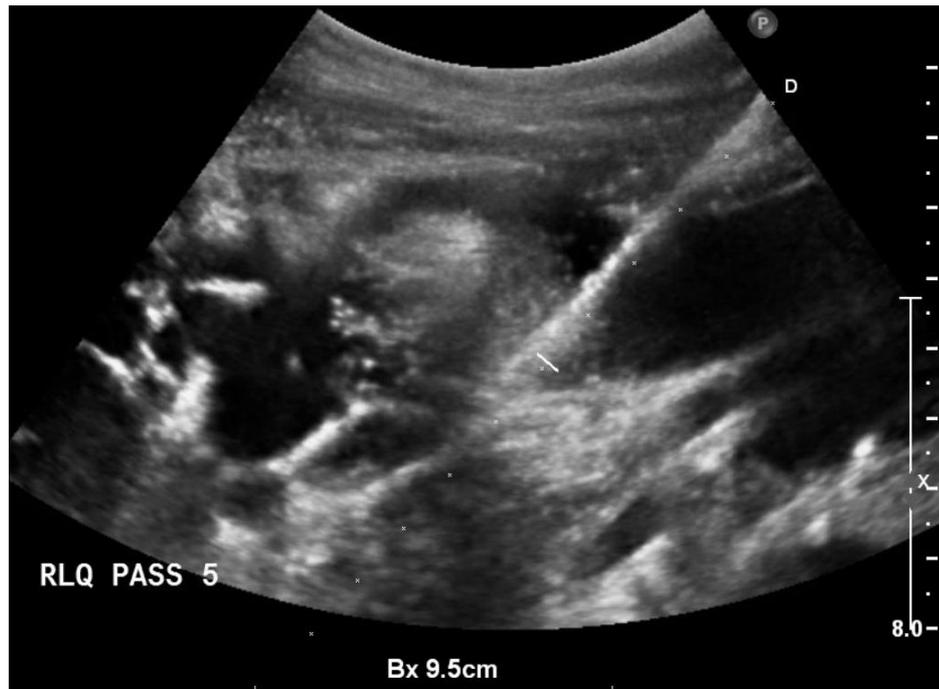
- 4.2 L drained
- Reactive mesothelial cells and histiocytes
 - IHCs: MOC31(-), BerEP4(-) – absence of malignant epithelial cells
Calretinin(+), WT1(+)
– mesothelial cells,
CD68(+)
- macrophages



OMENTAL NODULE FNA & CORE

3/11/2015

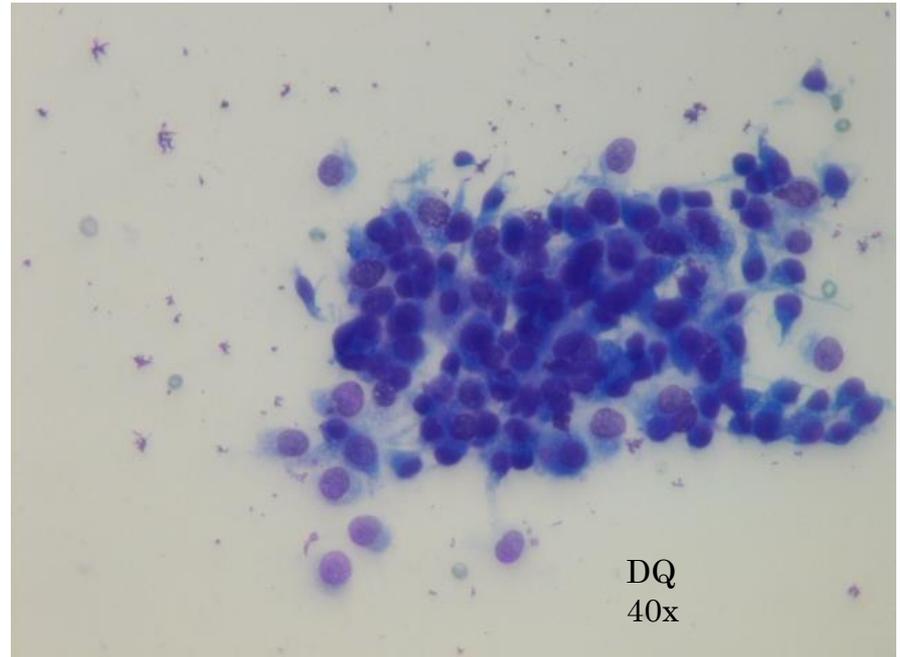
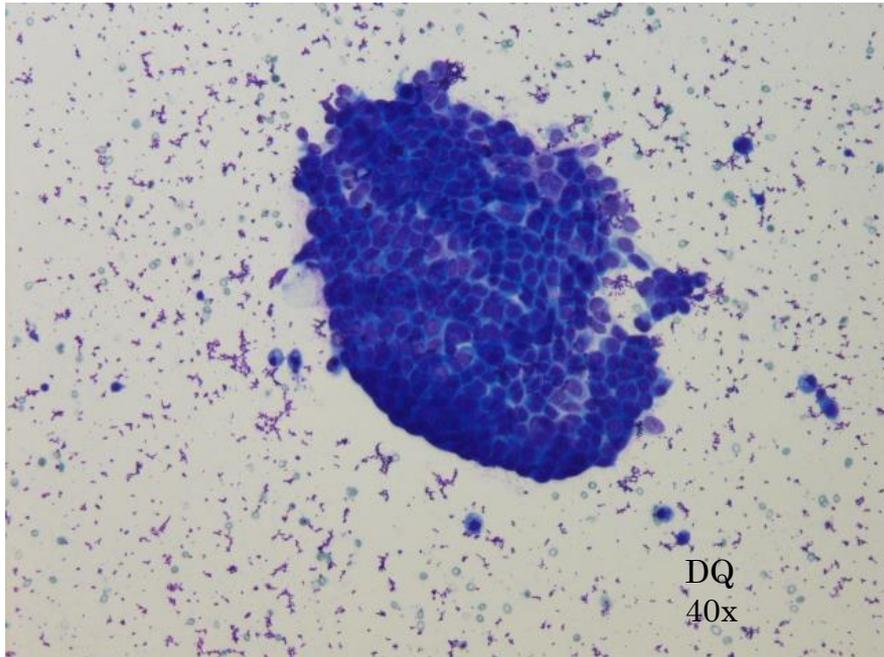
- Malignancy vs. Granulomatous Process (TB)
- Onsite Evaluation
 - Passes 1-2- Less than optimal. Defer.
 - Touch Prep- Less than optimal. Defer.



OMENTAL NODULE FNA & CORE

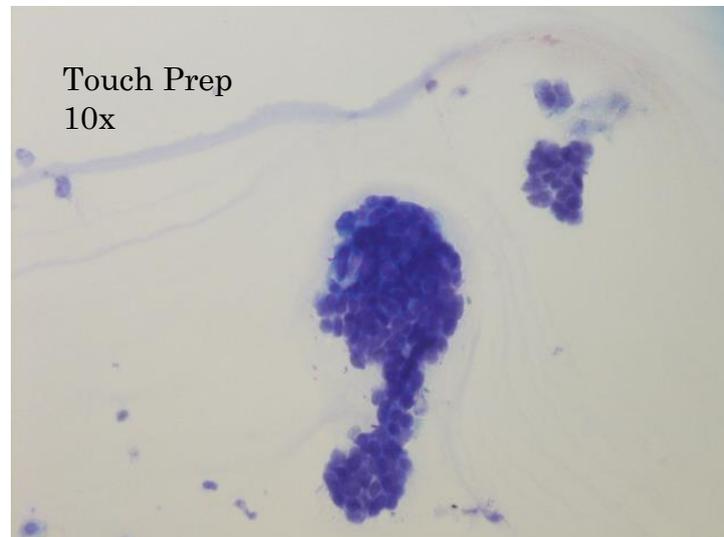
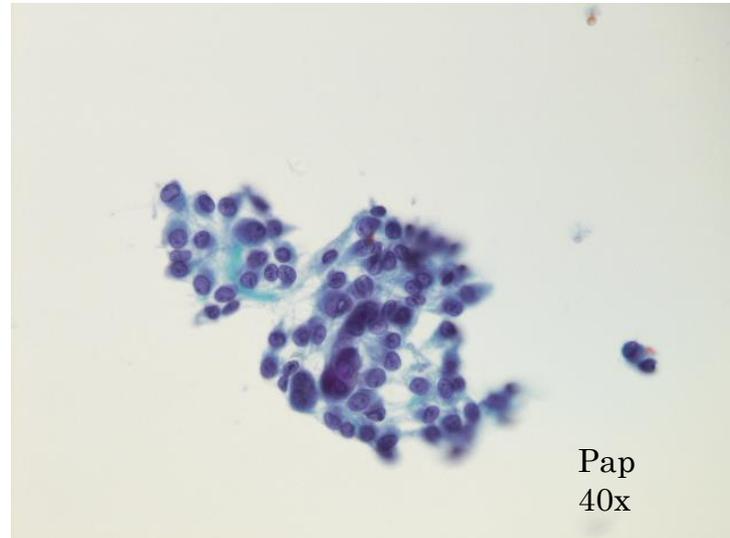
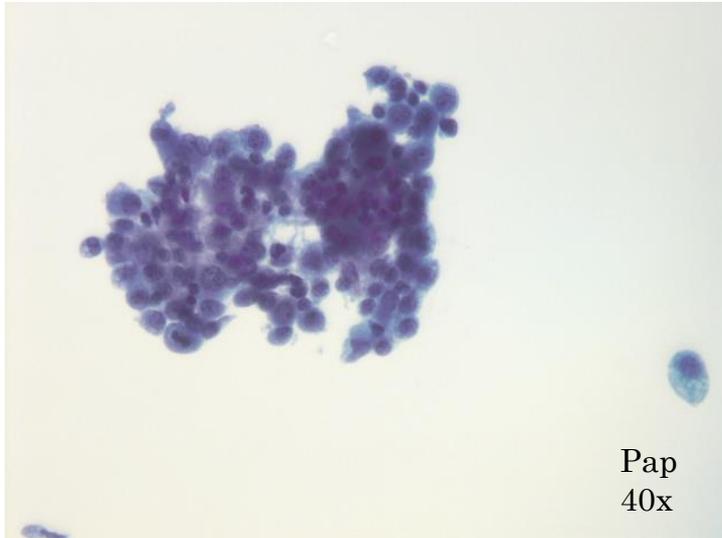
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- Passes 1-2
 - 1 Diff-Quick & 1 Pap each



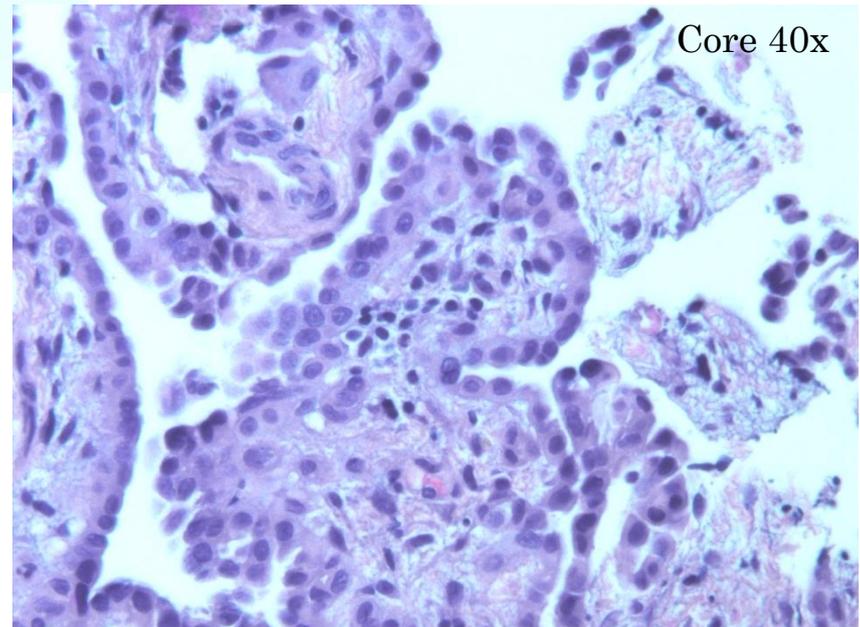
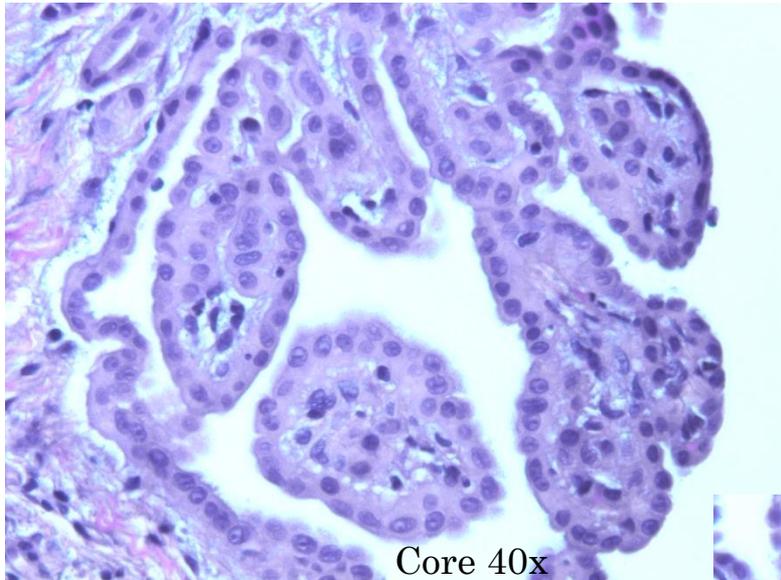
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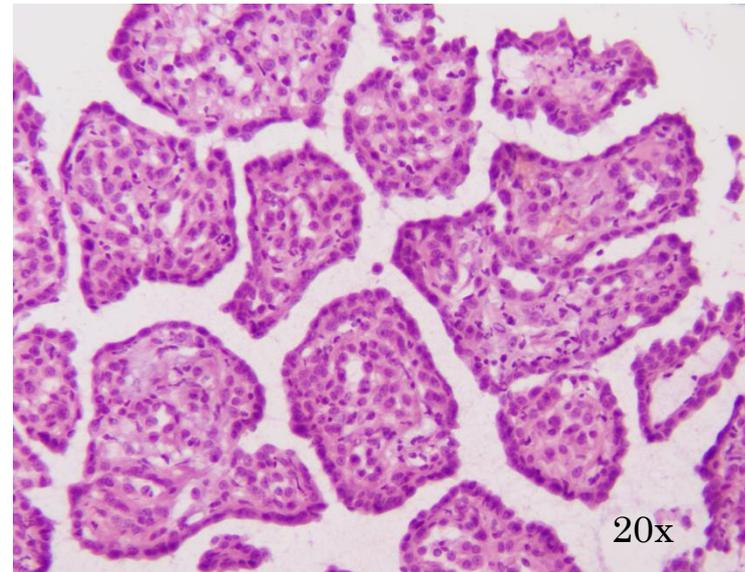
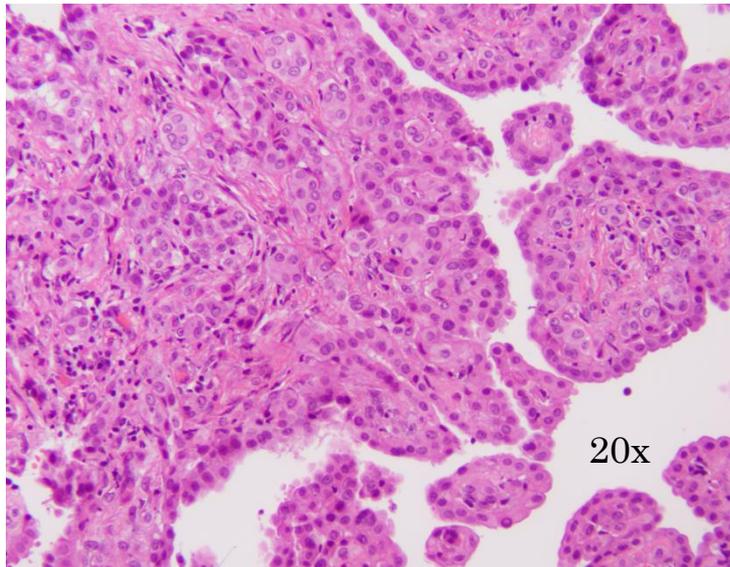
- Mildly atypical mesothelial cells and macrophages
 - IHCs: Ber-EP4 (-)
MOC31 (-)
TAG-72 (-)
Calretinin (+)
WT-1 (+)
Thrombomodulin (+)
Inhibin (-)
CD68 – Highlights macrophage
Acid-Fast, Grocott, & PAS (-)
- Differential Diagnosis:
 - benign reactive papillary mesothelial hyperplasia
 - well-differentiated papillary mesothelioma
 - malignant mesothelioma
- Recommendation of acquiring a larger tissue fragment for a more definitive diagnosis



PERITONEAL BIOPSY

03/23/2015

- Malignant mesothelioma, epithelioid and papillary type involving fibrous tissue
 - No granulomas identified. No organisms are identified by acid fast stains.



RADICAL PERITONEAL DEBULKING PROCEDURE

4/6/2015

- Malignant mesothelioma, epithelioid type, with tubulopapillary features, involving:
 - Uterine serosa
 - Bilateral fallopian tubes
 - Peritoneum of right hemidiaphragm
 - Rectal serosa
 - Omentum and splenic capsule
 - Ileal, colonic, and appendiceal serosa
 - One peri-colonic lymph node positive for tumor
 - Bilateral ovaries



RADICAL PERITONEAL DEBULKING PROCEDURE

4/6/2015

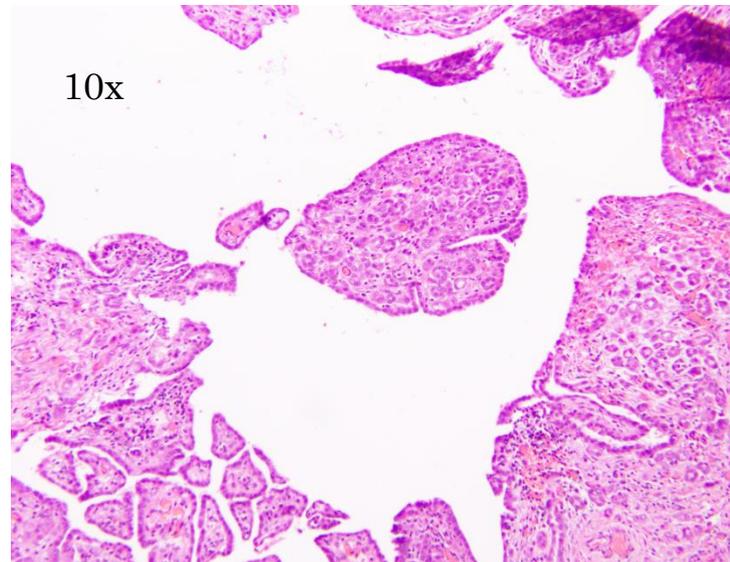
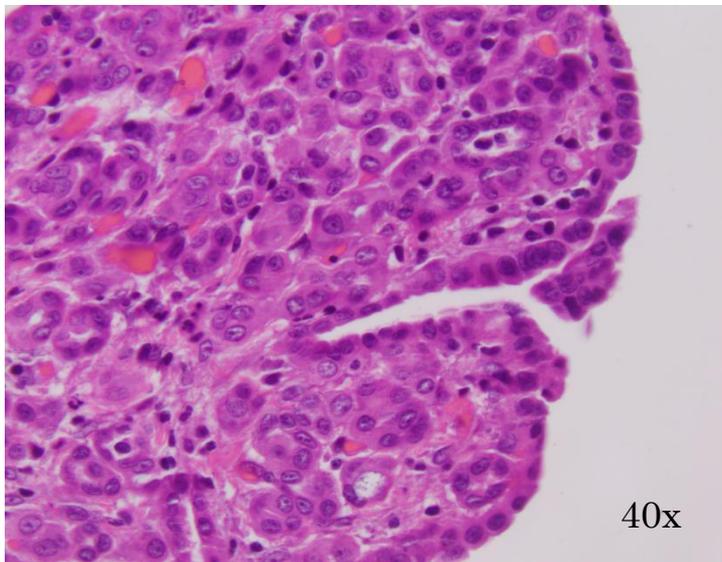
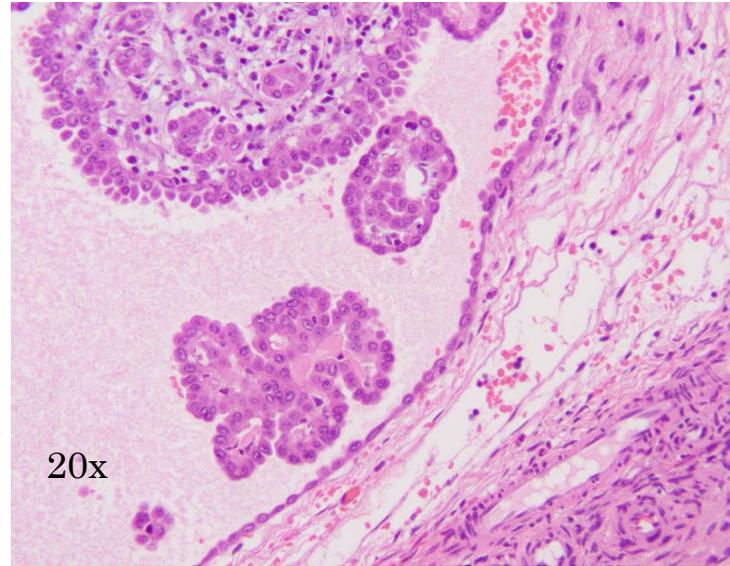
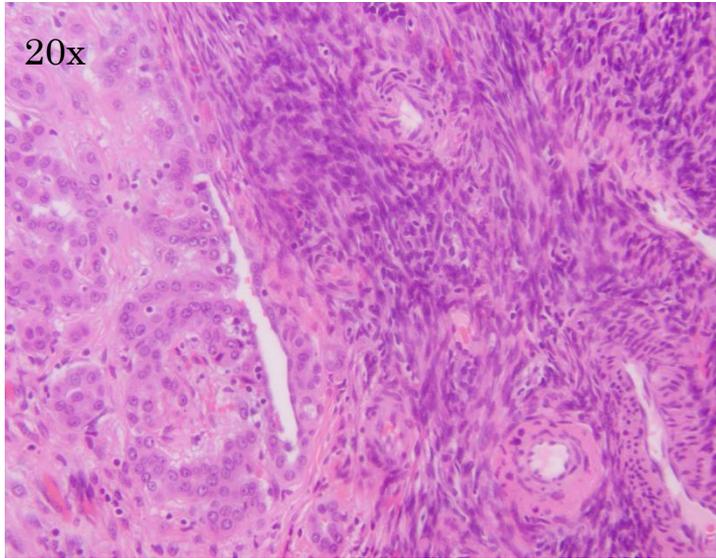
○ Pathologic Parameters

- Depth of invasion: Superficially invasive (≤ 0.5 mm)
- Prominent desmoplasia: No
- Mitotic count: $\leq 5/50$ high power field
- Nuclear grade: Low
- Lymph node metastases: yes
- Sarcomatoid component: No
- CDKN2A/p16 at 9p21 by FISH: Negative for deletion



RADICAL PERITONEAL DEBULKING PROCEDURE

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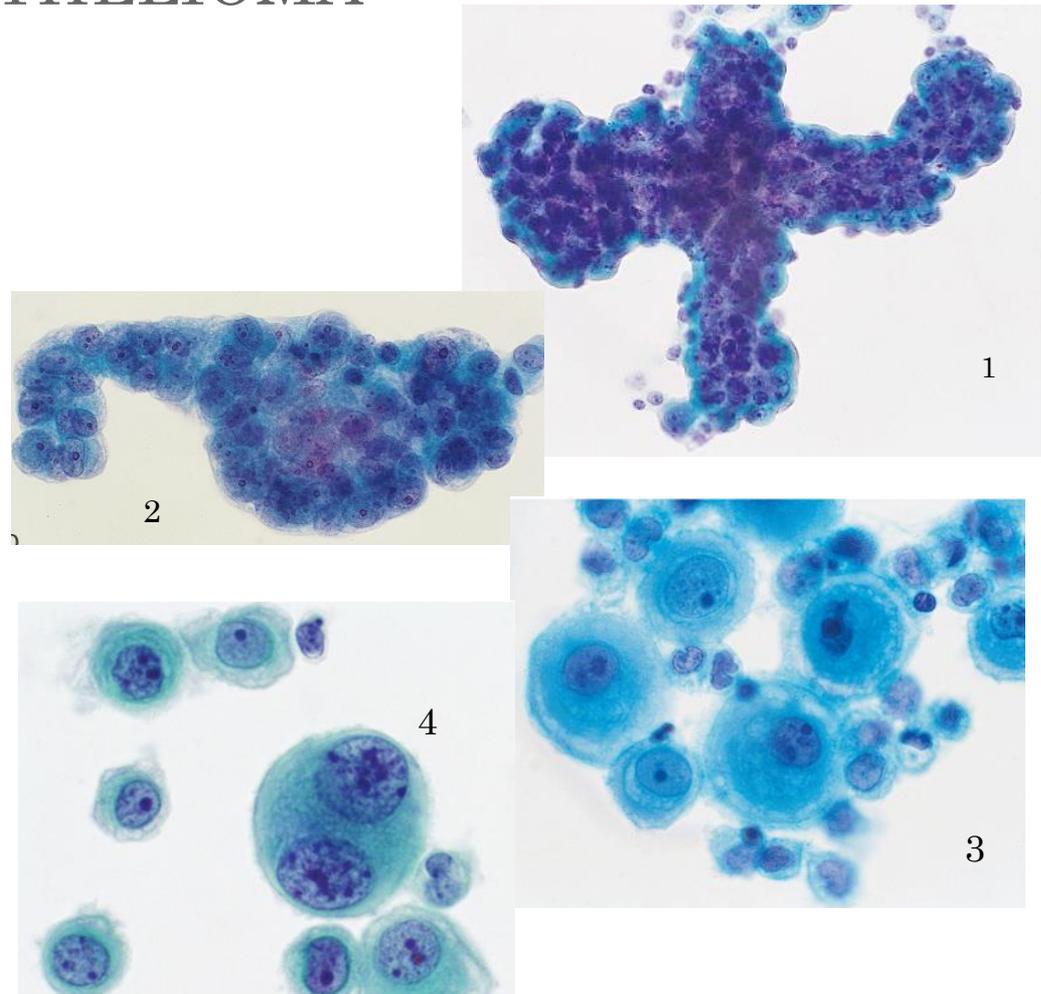
MALIGNANT MESOTHELIOMA

- 75-80% occur in men
- Median age is mid 60s
- Most often associated with extensive asbestos exposure
 - Other possible causes: radiation, silica, beryllium, and Simian Virus 40
- Pleural mesothelioma is most common
- Peritoneal mesothelioma often presents with abdominal cramps, diarrhea, bowel obstruction, or ascites



MALIGNANT MESOTHELIOMA CYTOLOGY

- “More and bigger cells, in more and bigger clusters”
- Irregular papillae, 3-D clusters(knobby)
- Cell-in-cell
- N/C ratio relatively constant
- Bi- and trinucleation common
- Subtle malignant features
- Cytoplasm may show two tone staining
- Windows, skirts, blebs
- Fine vacuoles
- +/- chronic inflammation in background



Images - Cibas E, Ducatman B. Cytology: Diagnostic Principles and Clinical Correlates. 4th ed. Philadelphia. Elsevier Saunders; 2014:127.

Text - DeMay R.. The Art & Science of Cytopathology: 1 Exfoliative Cytology. 2nd ed. Chicago: American Society of Clinical Pathology Press; 2012:312-331.

IS IT MESOTHELIAL OR EPITHELIAL?

	Mesothelioma	Adenocarcinoma
Calretinin	+	-
WT-1	+	-
CEA	-	+
Ber-EP4	-	+
BG-8	-	+
MOC-31	-	+

MESOTHELIAL: IS IT REACTIVE OR MALIGNANT?

	Favors Rx	Favors CA
EMA	-	+
CK 7	-	+
TERT	-	+
Desmin	+	-



TREATMENT OPTIONS & PROGNOSIS

○ Treatment

- Cytoreductive surgery (CRS)
- Hyperthermic intraperitoneal chemoperfusion (HIPEC)

○ Poor Prognosis

○ Estimated survival of one year

○ Recent studies using a combo of CRS and HIPEC have shown increased survival time

- Epithelial & multicystic types

Hubert J, Thiboutot E, Dube P, Cloutier A, Drolet P, Sideris L. Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy with oxaliplatin for peritoneal mesothelioma: Preliminary results and survival analysis. *Surg Oncol*. [accessed 2015 April 29]; 24: 41-46. doi:10.1016/j.suronc.2014.12.002

Magge D, Zenati M, Austin F, Mavanur A, Sathaiah M, Ramalingam L, Jones H, Zureikat A, Holtzman M, Ahrendt S, Pingpank J, Zeh H, Bartlett D, Choudry H. 2014. Malignant peritoneal mesothelioma: prognostic factors and oncologic outcome analysis. *Ann Surg Oncol*. [accessed 2015 April 29]; 21: 1159-1165. doi: 10.1245/s10434-013-3358-y



PATIENT FOLLOW UP

- Patient received CRS and HIPEC w/ cisplatin on 4/03/2015
- Currently continuing chemotherapy and is in stable condition



REFERENCES

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- Hubert J, Thiboutot E, Dube P, Cloutier A, Drolet P, Sideris L. Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy with oxaliplatin for peritoneal mesothelioma: Preliminary results and survival analysis. *Surg Oncol*. [accessed 2015 April 29]; 24: 41-46. doi:10.1016/j.suronc.2014.12.002
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Images

- 1-4. Cibas E, Ducatman B. *Cytology: Diagnostic Principles and Clinical Correlates*. 4th ed. Philadelphia. Elsevier Saunders; 2014:127.

