Mature Cystic Teratoma of the Ovary (Dermoid Cyst)

Sonja Opper, OMS IV, Lake Erie College of Osteopathic Medicine
Matthew Hartman MD, Department of Radiology, Allegheny Health Network
Kossivi Dantey MD, Department of Pathology, Allegheny Health Network
Andrew Sword MD, Department of OB/GYN, Allegheny Health Network
Nazia Khatoon MD, Department of Pathology, Allegheny Health Network

Allegheny Health Network

LECOM
LAKE ERIE COLLEGE OF OSTEOPATHIC MEDICINE

AMSER

Patient Presentation

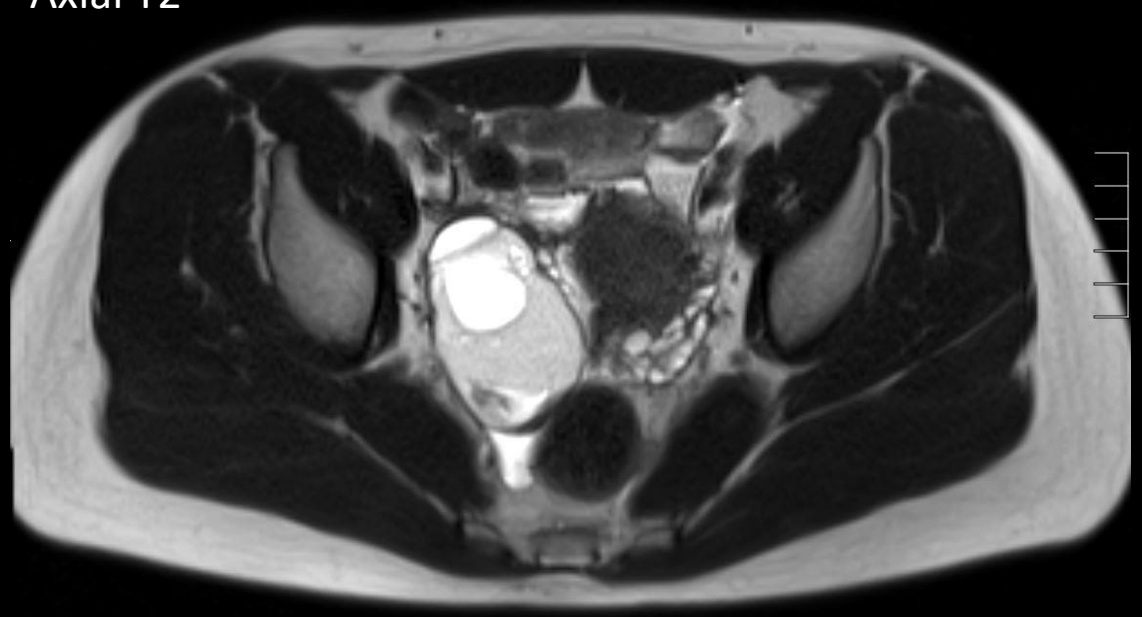
- HPI: Patient was a 25 y/o female who presented with right lower quadrant pain, worse at the time of menstruation.
- Physical Exam: Within normal limits.
- Gynecological Exam: Bimanual exam revealed a normal sized uterus without cervical motion tenderness. Adnexal exam revealed a right-sided adnexal mass which was smooth and mobile, approximately 8 cm in size, slightly tender to palpation with some fluctuance.

Labs

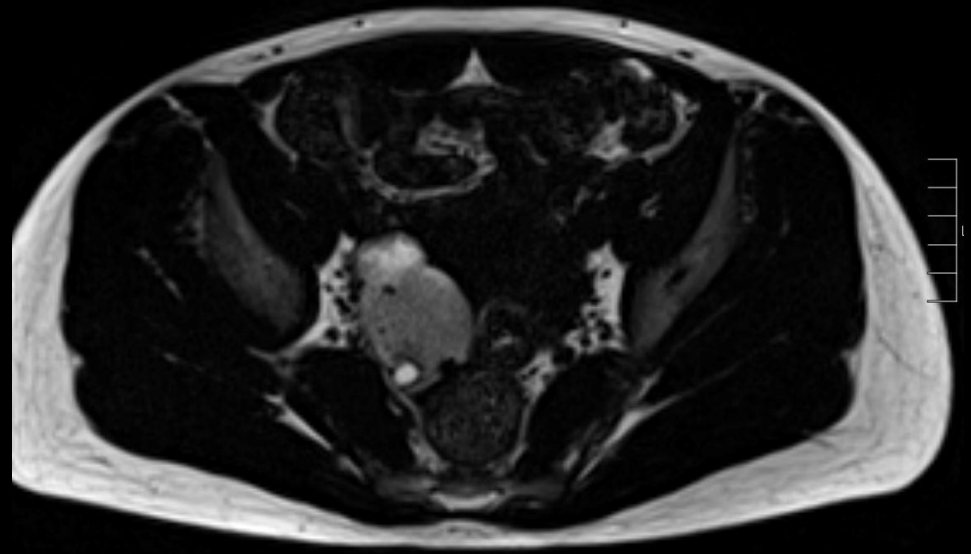
- Pap smear: Low-grade SIL
- Gonorrhea and Chlamydia: Negative
- Vaginal Culture: Bacterial Vaginosis
  - Treated with metronidazole
- CBC: Within normal limits
- Pelvic ultrasound revealed a 7cm right ovarian heterogeneous mass, possible teratoma
- Pelvic MRI was ordered.

Imaging

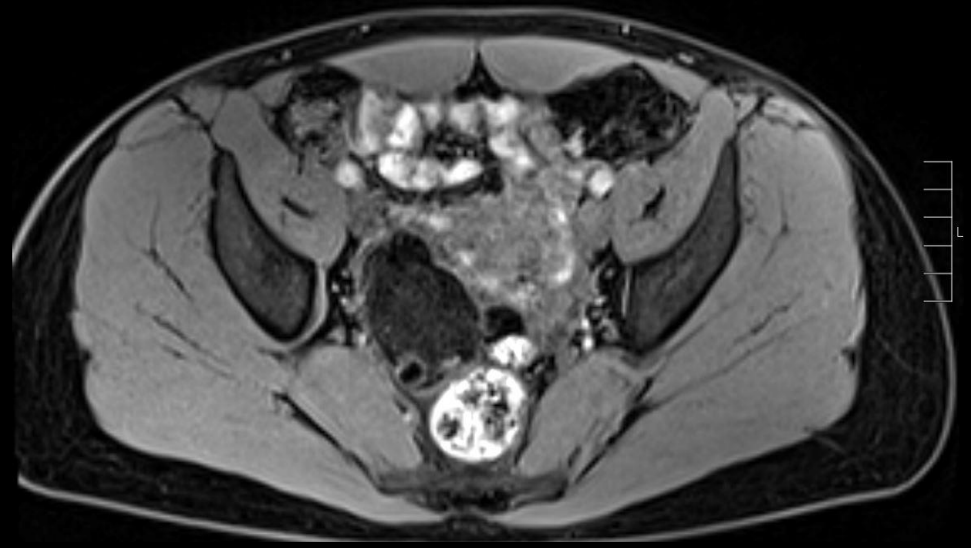
Axial T2



Axial T1

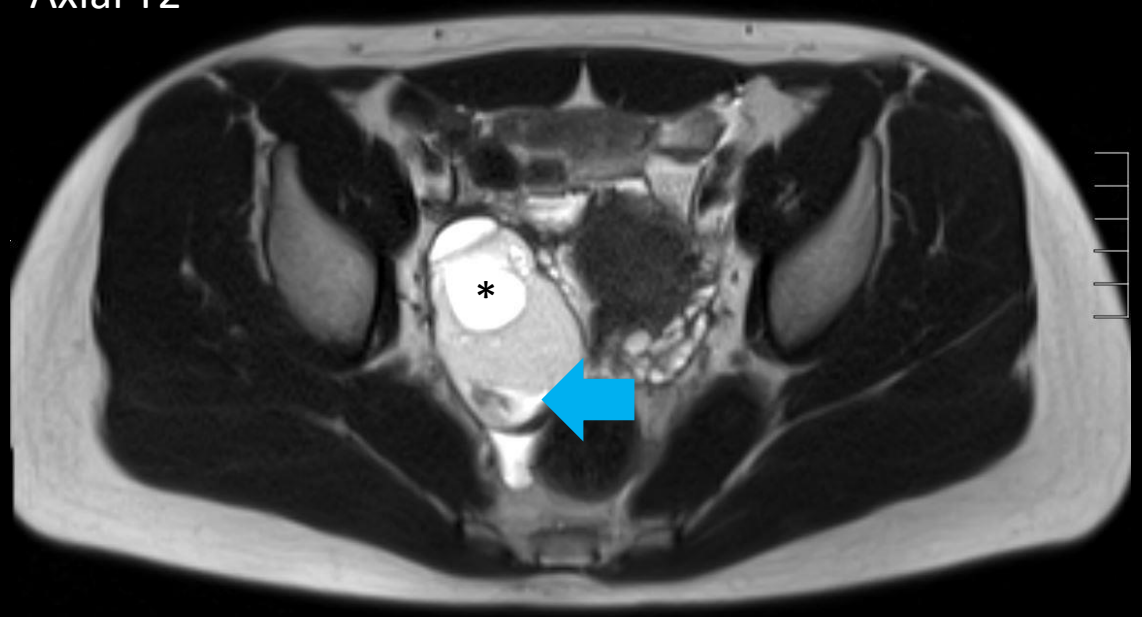


Axial T1 Fat Saturation

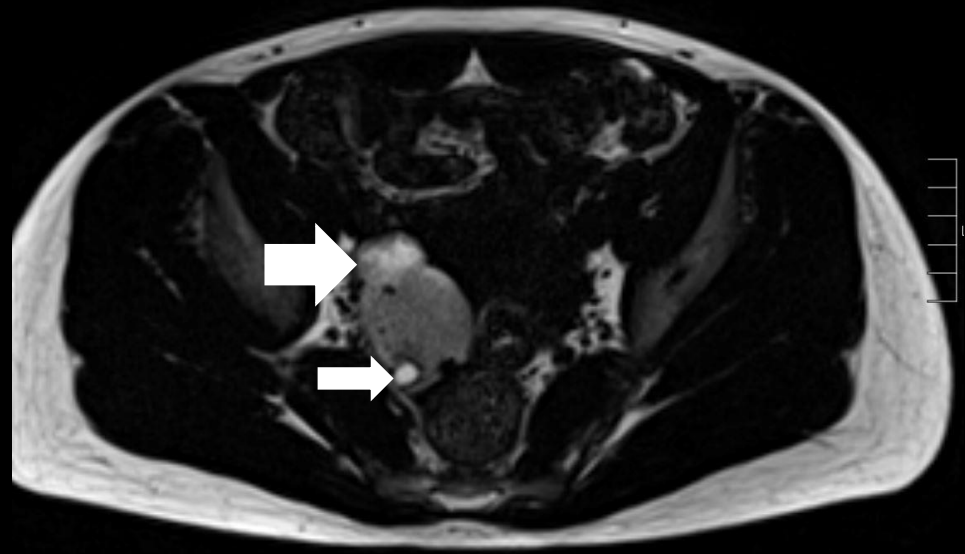


Imaging Labeled

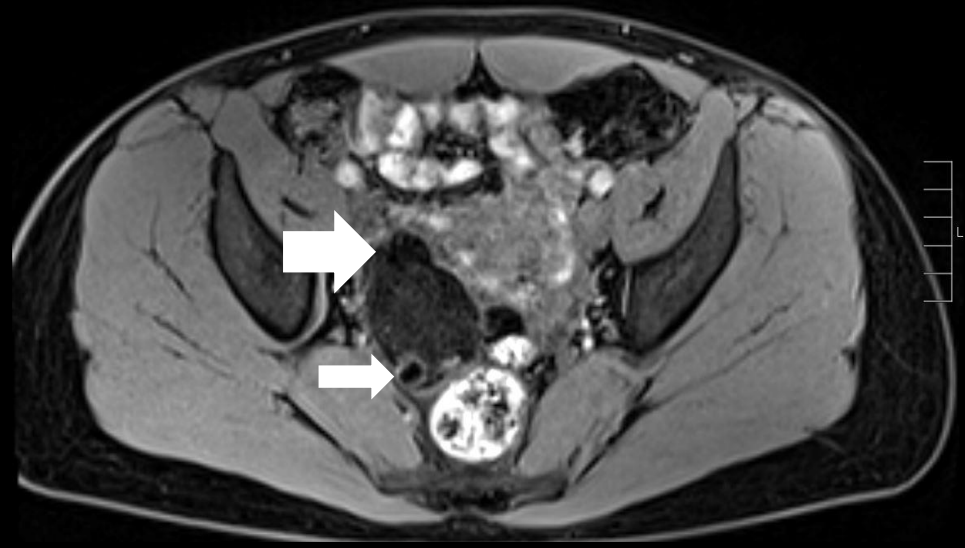
Axial T2



Axial T1



Axial T1 Fat Saturation



Heterogeneous right ovarian lesion measuring 6.8 x 4.2 x 4.2 cm with a T2 hyperintense cystic component (*)

Normal ovarian tissue

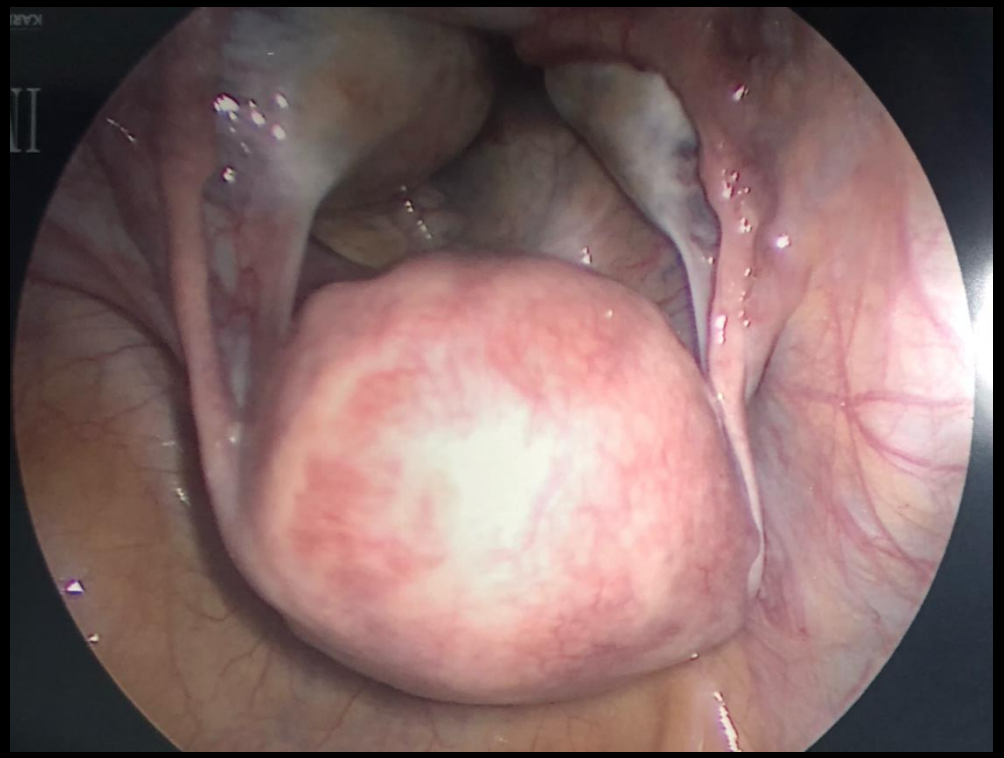
T1 hyperintense foci which drops signal on fat saturation, suggesting the presence of macroscopic fat

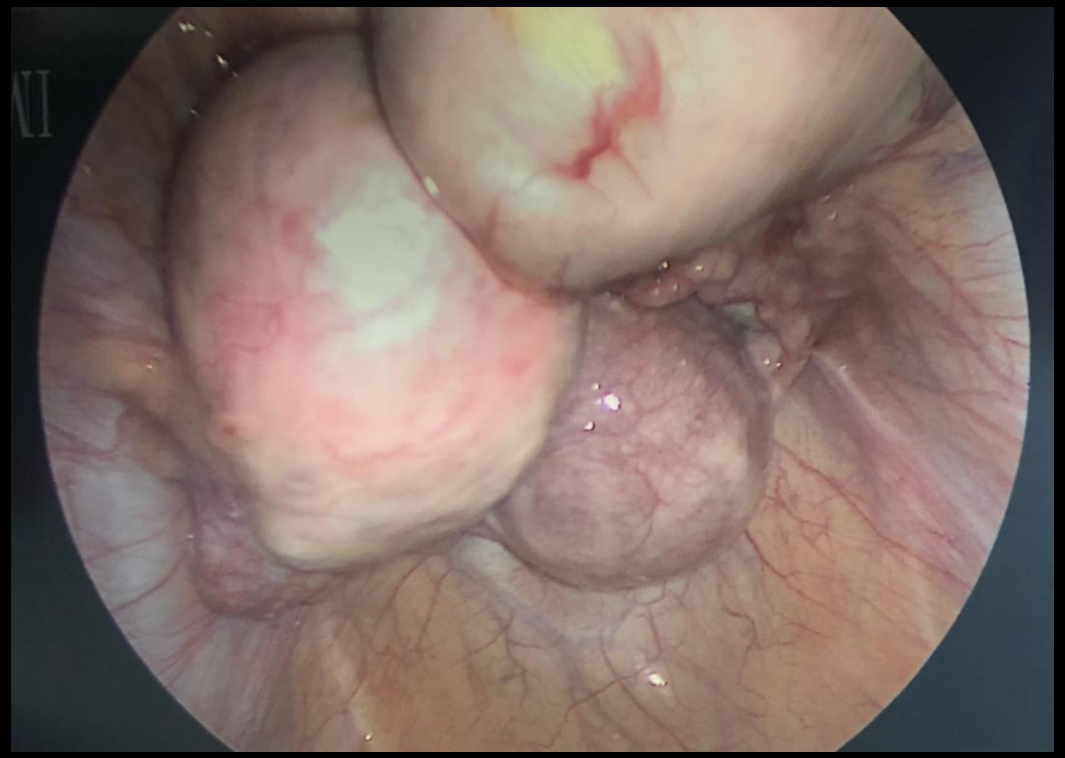
AMSER

Differential Diagnosis Based on Imaging

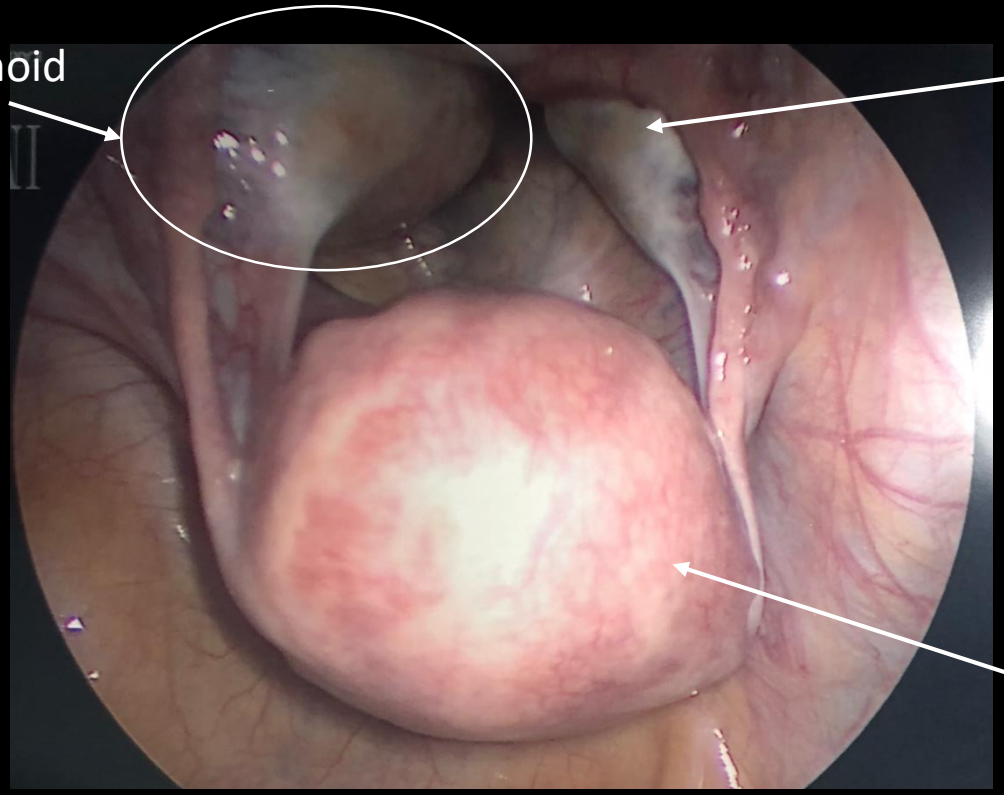
- Epithelioid cyst/mature teratoma
- Immature teratoma
- Dysgerminoma
- Simple ovarian cyst
- Mucinous/serous adenocarcinoma
- Mets/lymphoma

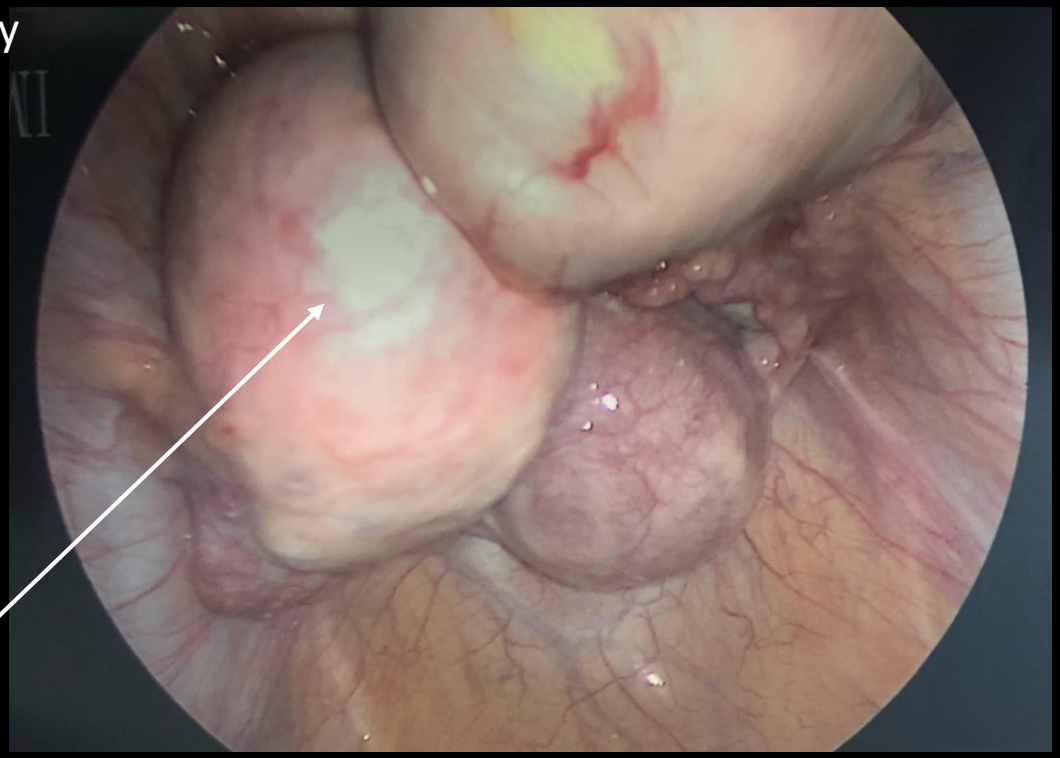
Laparoscopic Images



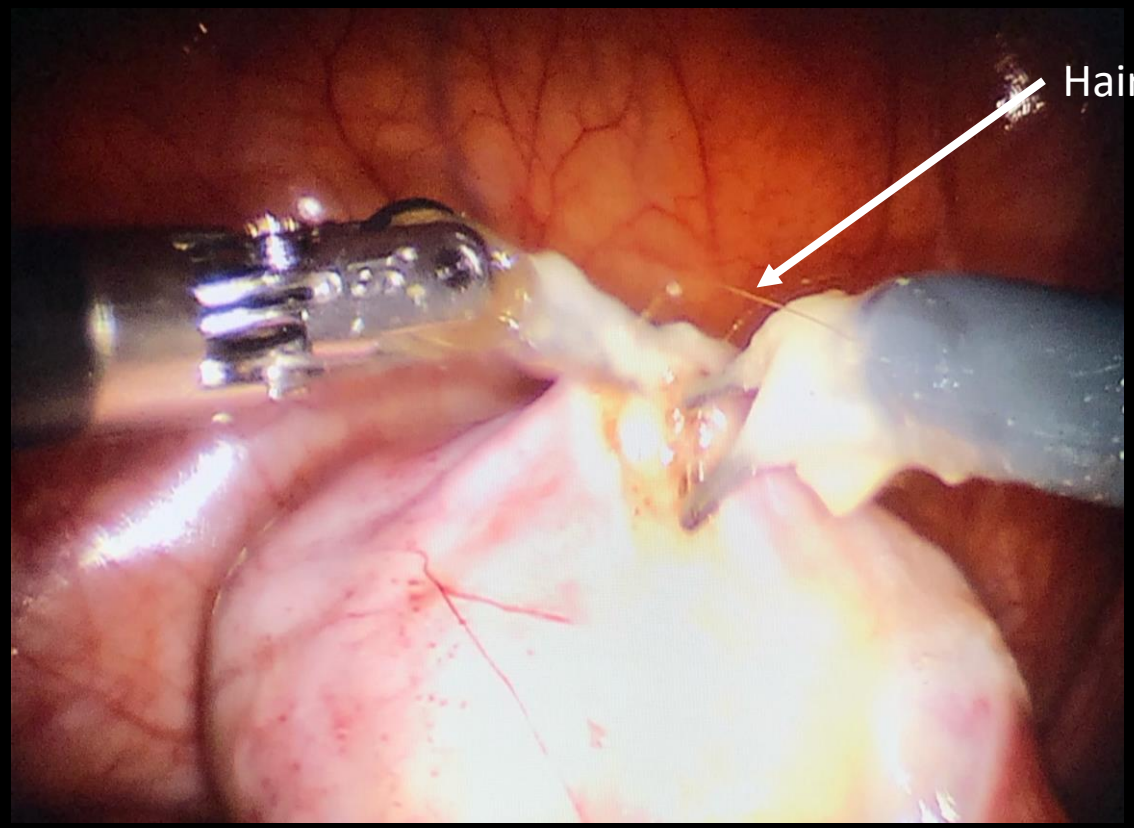


Laparoscopic Images

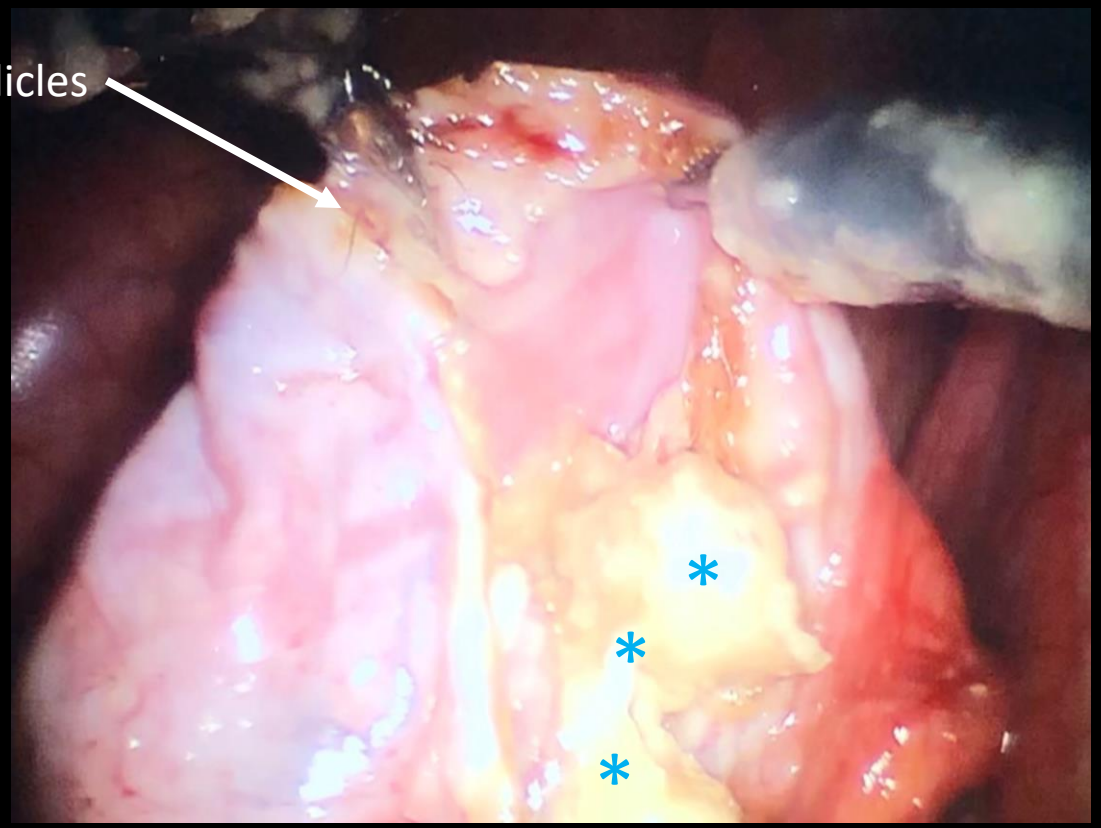




Laparoscopic Images



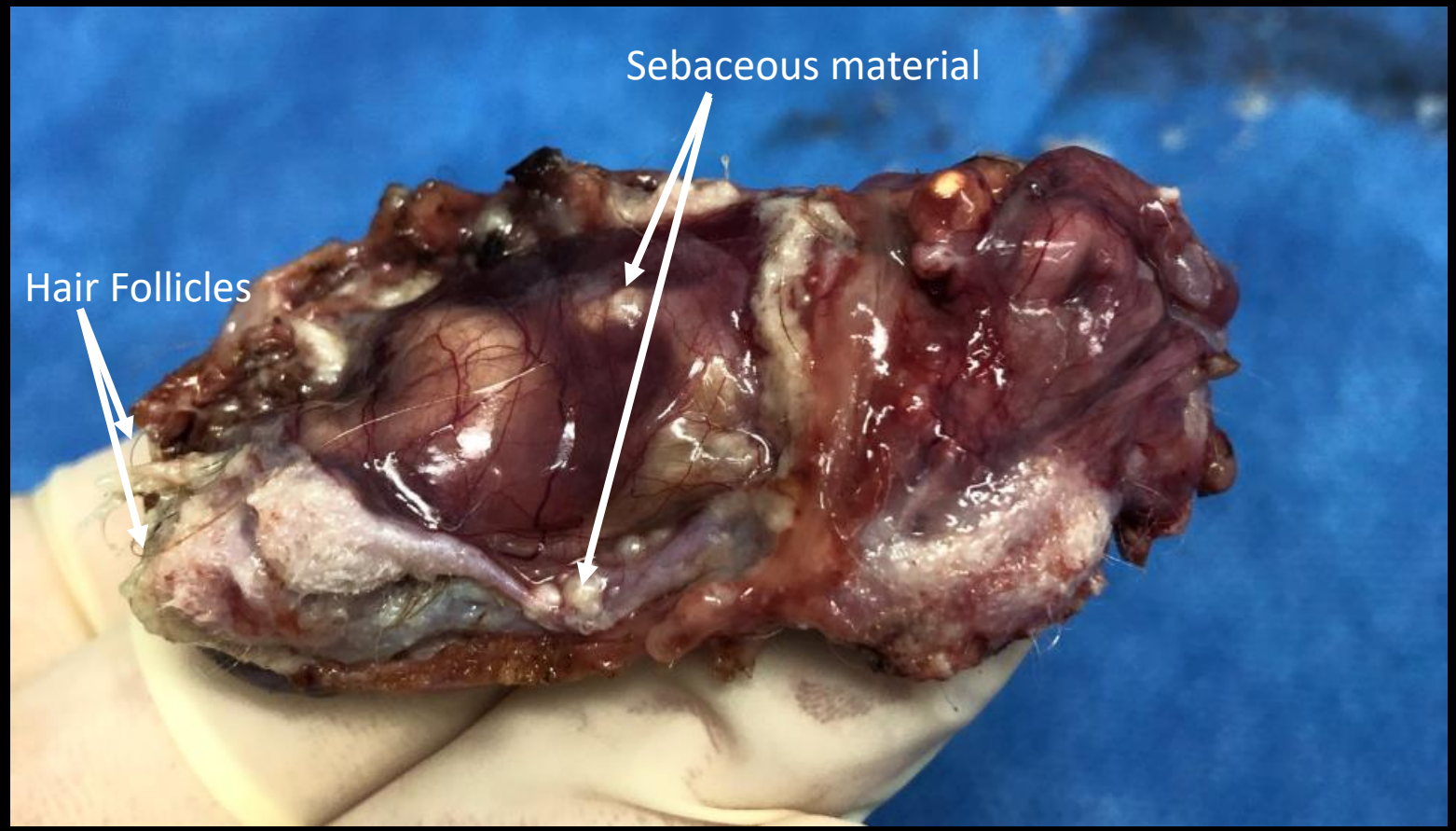
Cyst opening. Patient opted for a partial removal, sparing the ovary.



Sebaceous material that was spilled into the peritoneal cavity as the cyst opened

AMSER

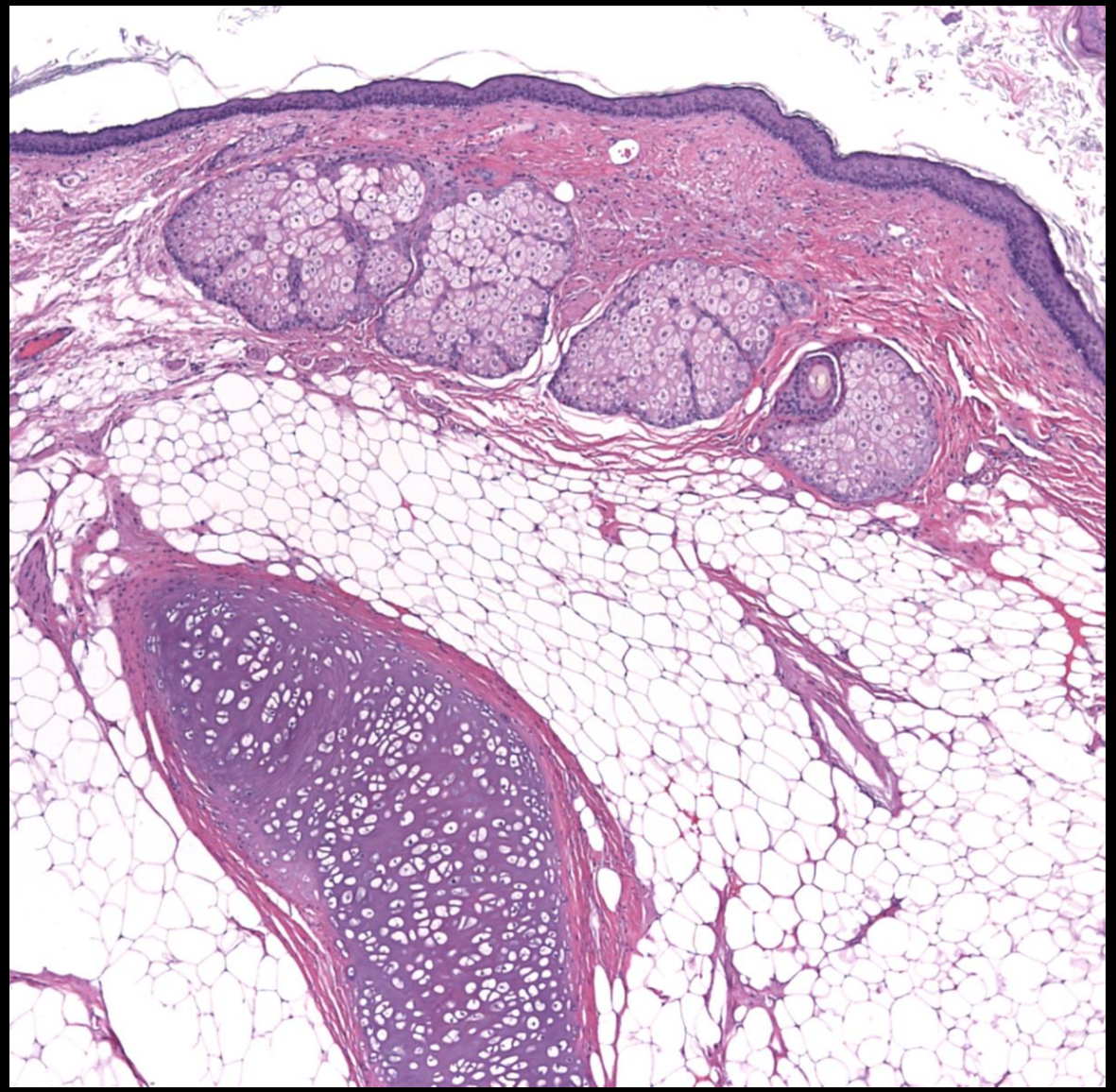
Gross Pathology

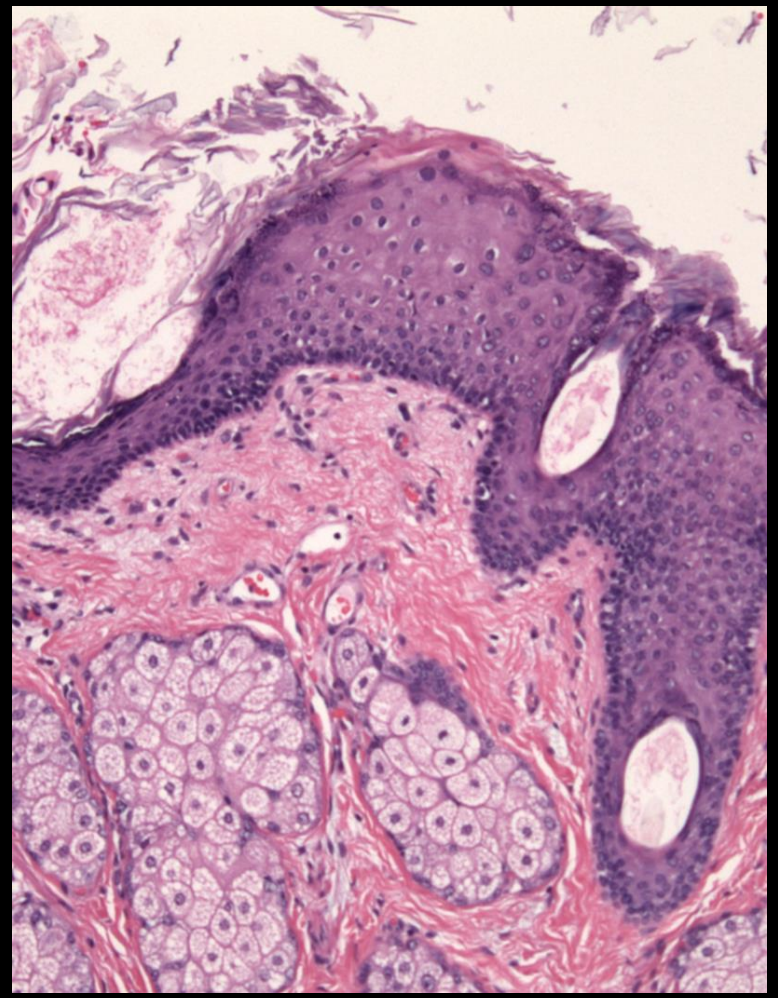


Pathology Report:

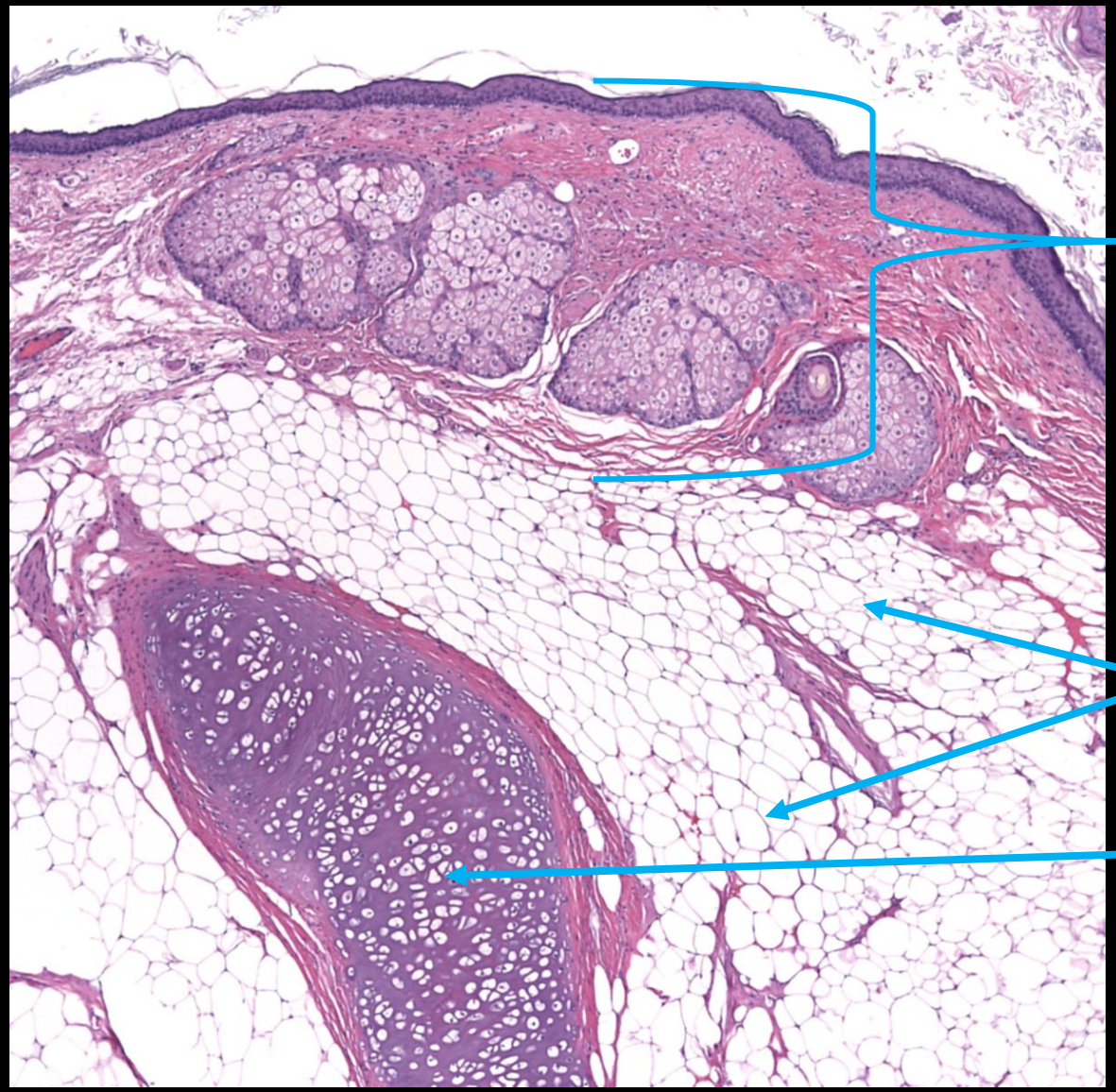
The specimen consisted of a 5 x 4.5 x 2.5 cm previously opened, multiloculated cyst. The external surface was glistening, tan-pink and smooth. The internal surface was also smooth with tan-yellow sebaceous material, hair and adipose tissue identified. There was also potential tan skin grossly identified.

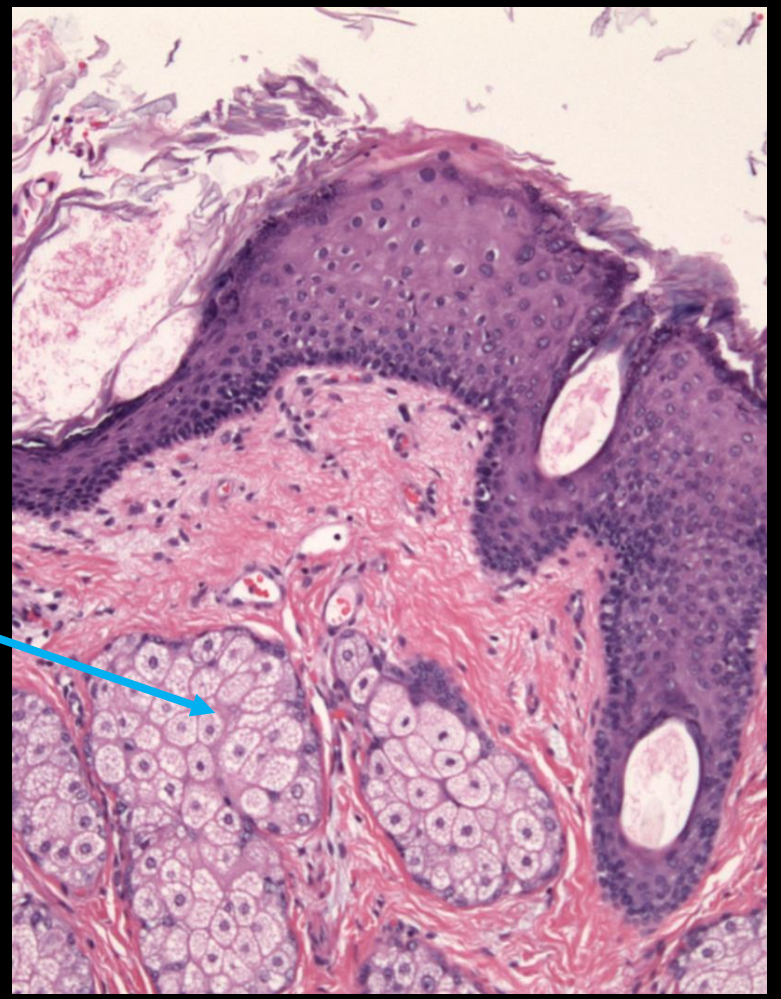
Histology H&E Stain





Histology H&E Stain





AMSER

Final Diagnosis

- Mature Cystic Teratoma of the Ovary (Dermoid Cyst)

Mature Teratoma of the Ovary

- Epidemiology: Most common tumor in women ages 20-30. Simple cysts comprise 70% of tumors in this age group.
- Typical Presentation: Most are asymptomatic and present as a finding on physical examination. They may also present with ovarian torsion (16%), rupture (1-4%), or with malignant transformation (1-2%). Usually present unilaterally (88%) and more frequently on the right side (72.2%).

Mature Teratoma of the Ovary

- Pathology: The mature teratoma must contain at least two well-differentiated germ cell layers. They often containing fat (93%), hair, skin and cartilage. Cyst walls are usually lined by squamous epithelium with hyalinized, compressed ovarian stroma covering the external surface. When ectodermal tissues predominate, the cyst is referred to as a dermoid cyst. Mesodermal tissues are present in 90% of cases, with ectodermal tissue also being a common finding.
- Ectoderm structures: Skin, hair, sebaceous glands.
- Mesoderm structures: Cartilage, bone, connective and adipose tissue.
- Endoderm structures: The digestive tract lining and organs, commonly found is thyroid, pancreatic, bladder and lung tissue.

Mature Teratoma of the Ovary

- Treatment
  - Ovarian cystectomy is the preferred treatment to make a final diagnosis and to avoid complications such as ovarian torsion, rupture or development of malignancy (0.2-2%).
  - Benign cystic teratomas do not recur after surgical removal.
  - For women who have completed child bearing, a salpingo-oophorectomy is often performed.
  - Can be removed via laparoscopy or laparotomy
  - Irrigation of the abdomen is necessary to prevent chemical peritonitis from the sebaceous cyst spillage.

Other Ovarian Germ Cell Tumors

- Teratomas
  - Mature – discussed above
  - Immature – shows undifferentiated germ cell layers, more commonly malignant.
- Dysgerminomas – female equivalent of the male seminoma, composed of immature germ cells. Can produce testosterone or estrogen, LDH and ALP.
- Yolk sac tumors – carcinomas that differentiate toward yolk sac or primitive placental forms. Elevated AFP.
- Mixed germ cell tumors – combinations of a teratoma with either a yolk sac, dysgerminoma and/or an embryonal carcinoma.
- Rare tumors: Pure embryonal carcinomas, non-gestational choriocarcinomas and pure polyembryoma

References

- DiSaia PJ, Creasman WT. Germ cell, stromal and other ovarian tumors. In: Clinical Gynecologic Oncology, 7th, Mosby-Elsevier, 2007. p.381.
- Saba L, Guerriero S, Sulcis R, Virgilio B, Melis G, Mallarini G. Mature and immature ovarian teratomas: CT, US and MR imaging characteristics. Eur J Radiol. 2009;72:454–463.
- Sahin H, Abdullazade S, Sanci M. Mature cystic teratoma of the ovary: a cutting edge overview on imaging features. *Insights Imaging*. 2017;8(2):227-241.
- Talerman A. Germ cell tumours of the ovary. In: Blaustein's Pathology of the Female Genital Tract, Kurman RJ (Ed), Springer Verlag, New York 1994. p.849.
- Tewari K, Cappuccini F, Disaia PJ, Berman ML, Manetta A, Kohler MF. Malignant germ cell tumors of the ovary. Obstet Gynecol. 2000;95(1):128.