AMSER Rad Path Case of the Month:

34yo Female presenting with pelvic pain, dysmenorrhea, and urinary incontinence

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AHN

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AMSER

Patient Presentation

Clinical history

- 34 yo G0P0 presenting with pelvic pain for the past 6 mo
- Pain located in R/LLQ with radiation **to** bilateral hips and groin; described as aching and stabbing
- Reports dysmenorrhea improved with ibuprofen with concomitant constipation and nausea
- Reports urinary incontinence over the last 3 mo
- Uses depo shot for contraception

Pertinent social history

- Currently sexually active with one male partner
- Desires fertility in the future
- Misses work due to pain around menses

Pertinent physical exam findings

- Abdomen: soft, non-tender
- Pelvic exam deferred

Pertinent Labs

- Beta-hCG: <1 (ref: <5 mIU/mL)
- Ca-125: 46.8 (0.0 – 35.0 U/mL)
- CBC w/diff:
  - Hgb: 10.2 (12.3 - 15.3 g/dL)
  - MCV: 66.3 (80.0 – 96.0 fL)
  - RDW: 17.4 (11.3 - 15.3)

What test(s) do we order?

Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Fibroids suspected, initial imaging	3195269	US duplex Doppler pelvis	0 mSv O	0 mSv [ped] O	Usually appropriate
		US pelvis transabdominal	0 mSv O	0 mSv [ped] O	Usually appropriate
		US pelvis transvaginal	0 mSv O	0 mSv [ped] O	Usually appropriate
		MRI pelvis without and with IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		MRI pelvis without IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		CT pelvis with IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
		CT pelvis without IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
		CT pelvis without and with IV contrast	10-30 mSv ☢☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate

Initial imaging ordered by the gynecologic surgeon

What test(s) do we order?

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Fibroids suspected, initial imaging	3195269	US duplex Doppler pelvis	0 mSv O	0 mSv [ped] O	Usually appropriate
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		MRI pelvis without and with IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		MRI pelvis without IV contrast	0 mSv O	0 mSv [ped] O	May be appropriate
		CT pelvis with IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
		CT pelvis without IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
		CT pelvis without and with IV contrast	10-30 mSv ☢☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate

Follow-up imaging ordered

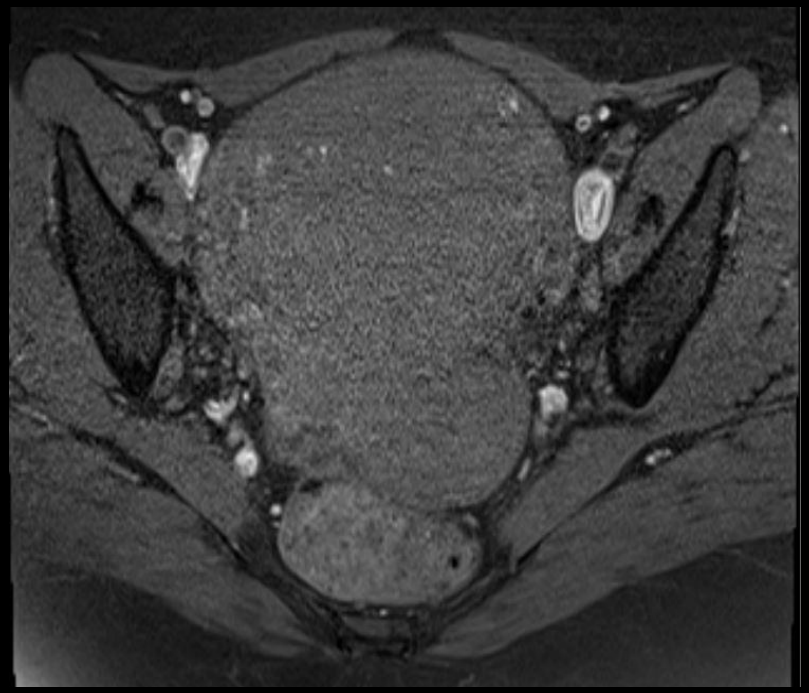
Transvaginal Ultrasonography

Transvaginal US Images, labeled

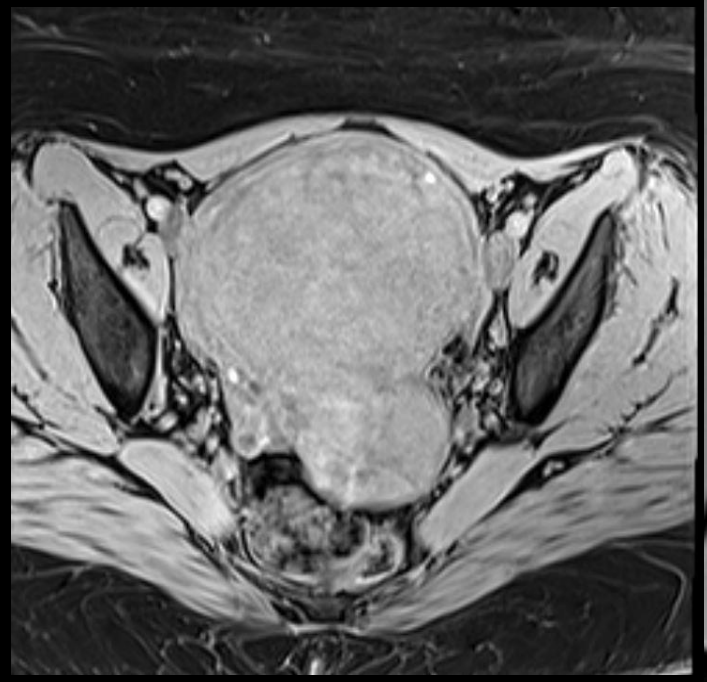
2.7 x 2.6 x 2.8cm subserosal fibroid identified in the posterior lower uterine segment

Pre- and Post-contrast MRI

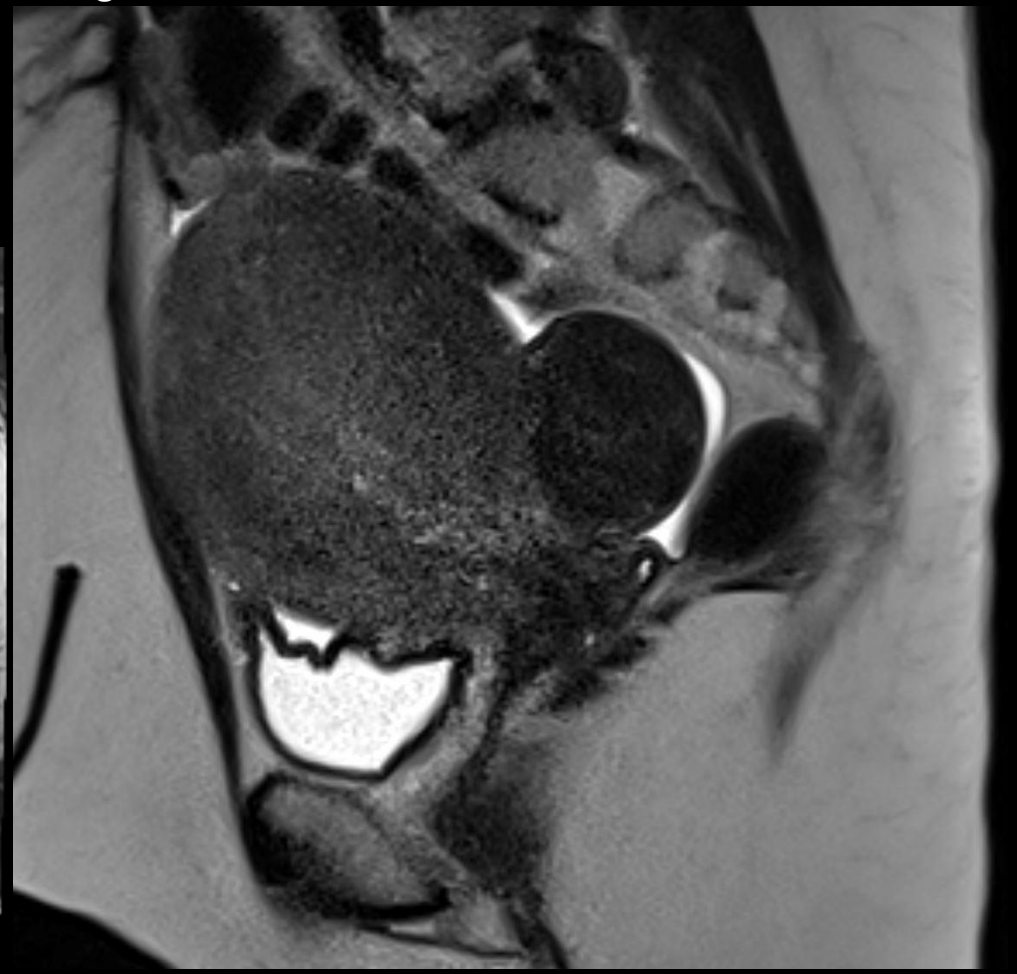
Axial T1: pre



Axial T1: post

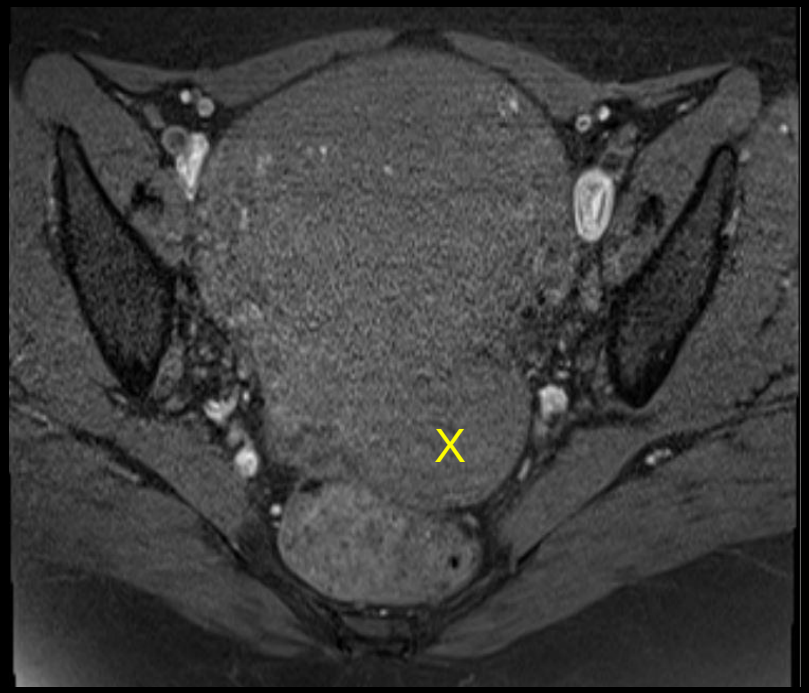


Sagittal T2

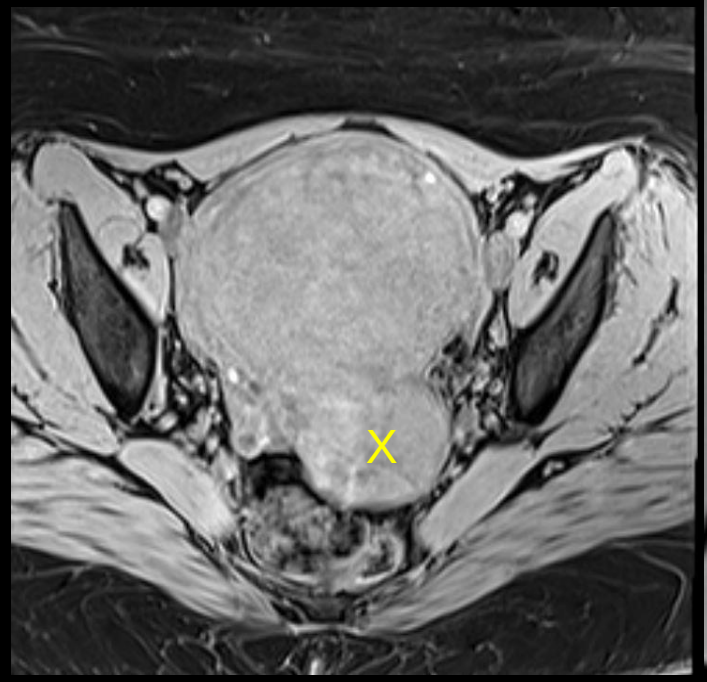


Pre- and Post-contrast MRI , labeled

Axial T1: pre



Axial T1: post



Sagittal T2

T1, T2 hypointense subserosal mass which demonstrates enhancement similar to the rest of the uterus.

Note bladder (B) is T2 hyperintense

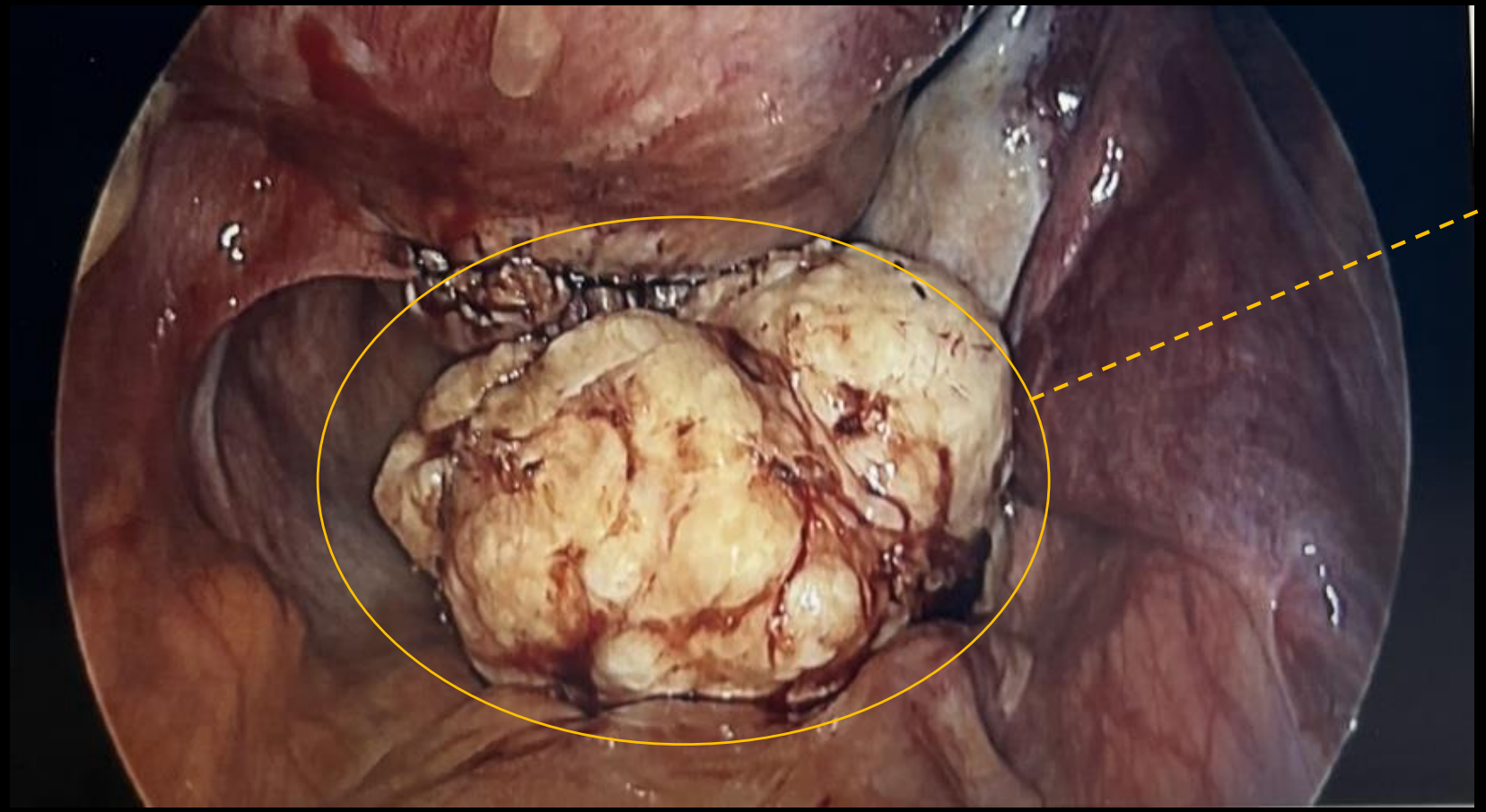
Differential Diagnosis based on imaging

Leiomyoma

Adenomyosis

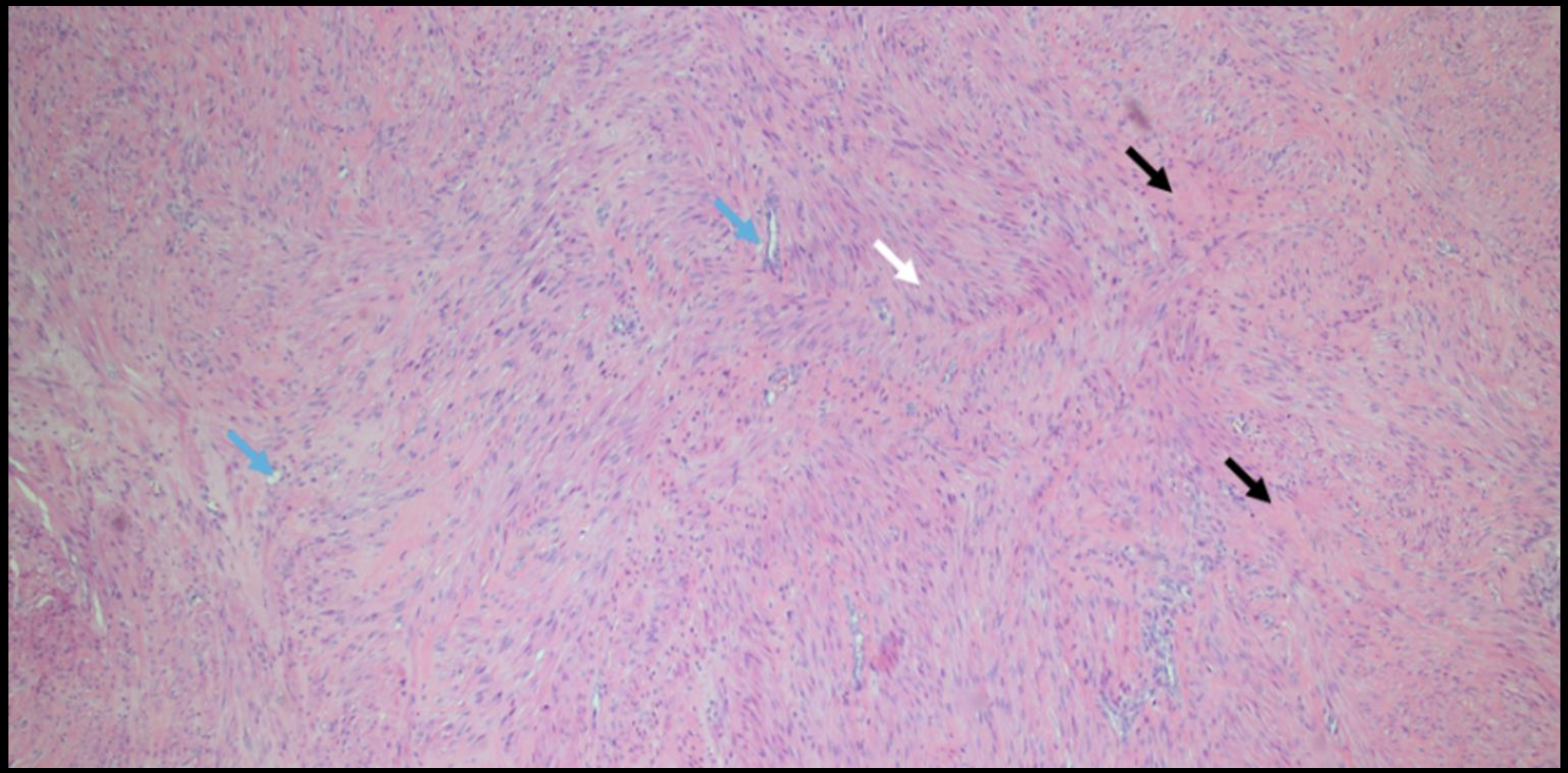
Leiomyosarcoma

Gross Pathology



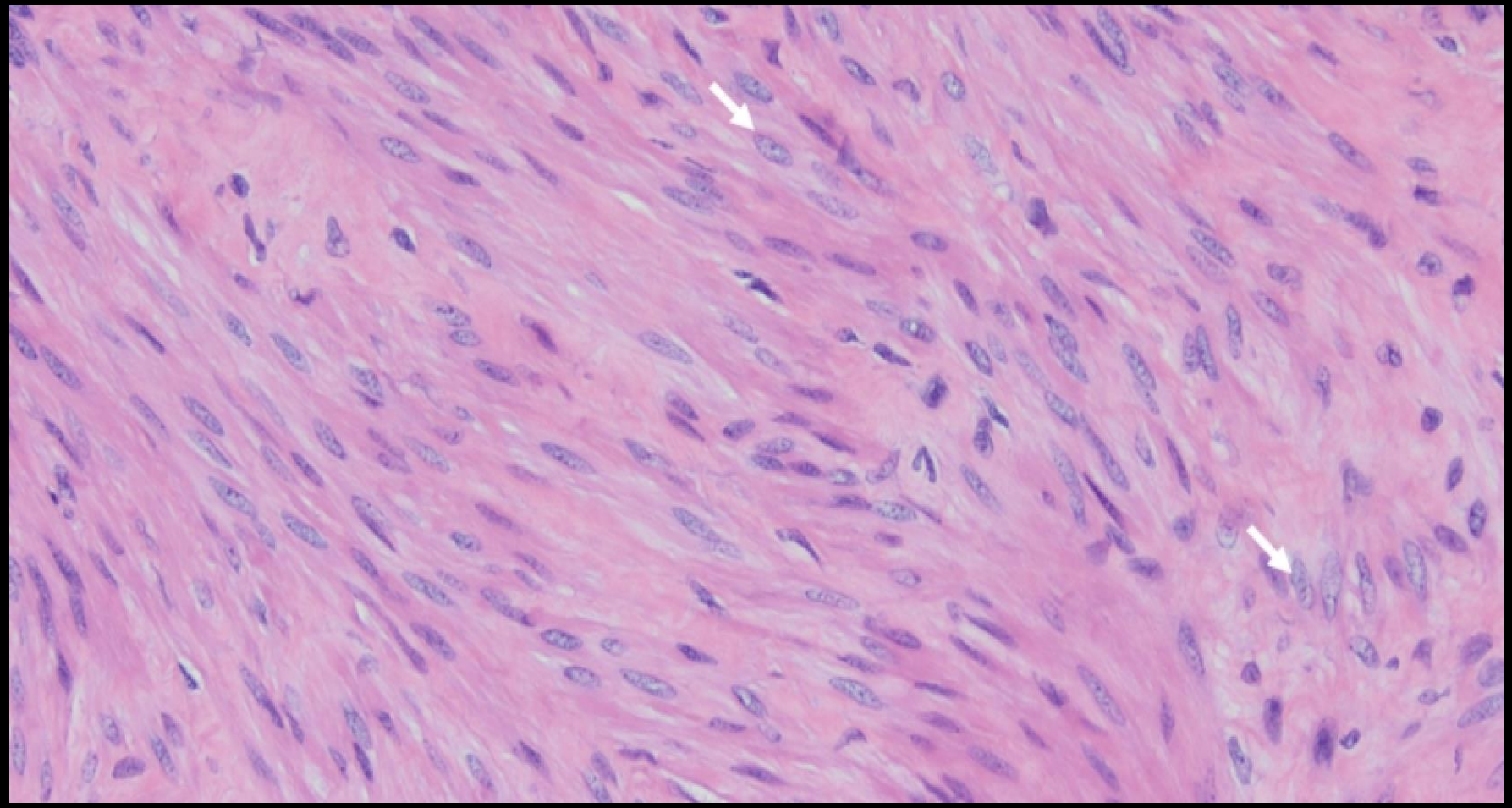
Exposed subserosal leiomyoma in the posterior lower uterine segment

Micro Path: Leiomyoma (Low Power)



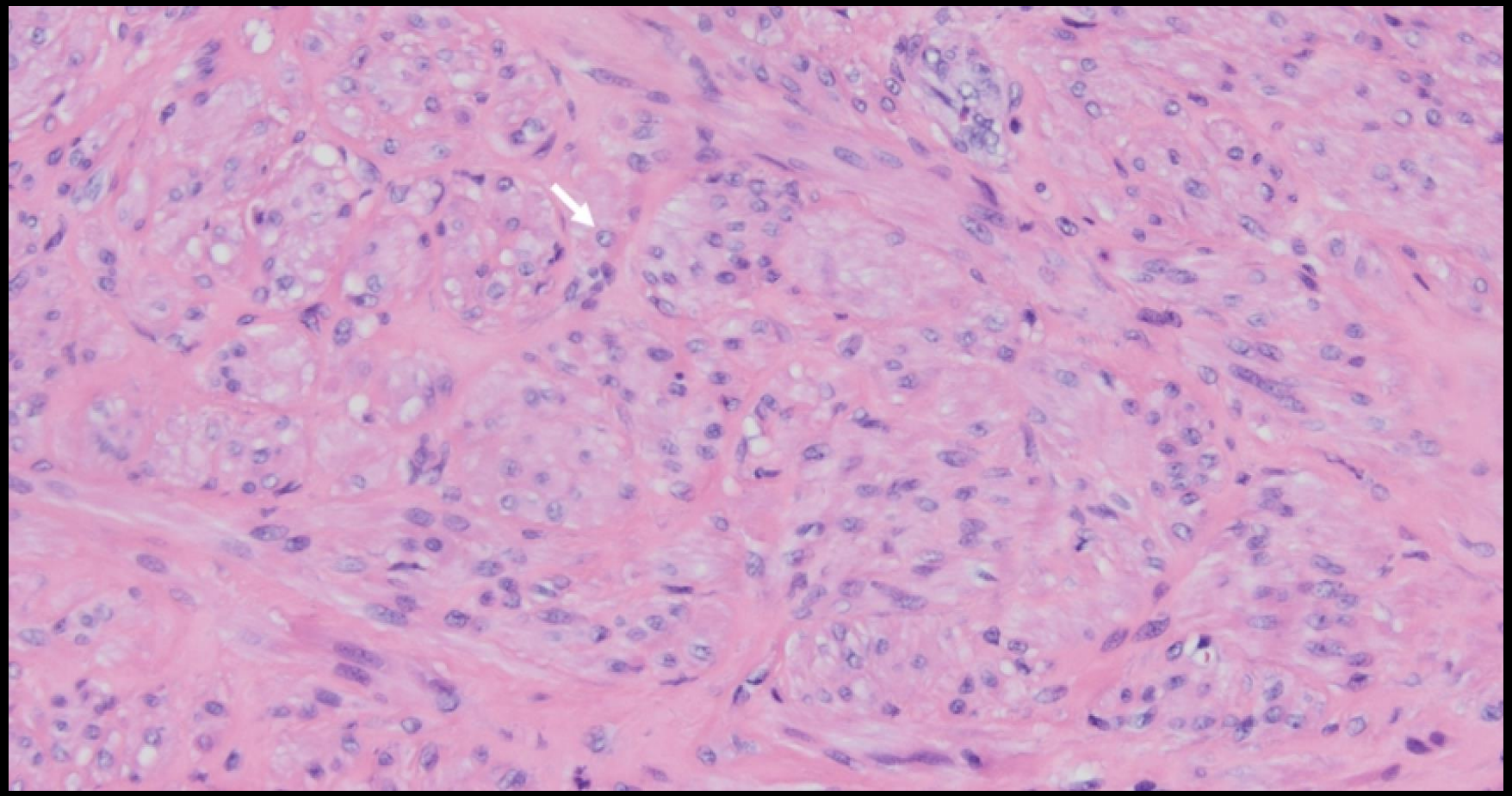
Intersecting fascicles of spindle cells (white arrow) with collagen deposition (black arrows) and blood vessels (blue arrows)

Micro Path: Leiomyoma (High Power)



Cells have indistinct borders, eosinophilic fibrillary cytoplasm, and elongated (cigar-shaped) nuclei, fine nuclear chromatin, and small nucleoli (white arrows)

Micro Path: Leiomyoma (High Power)



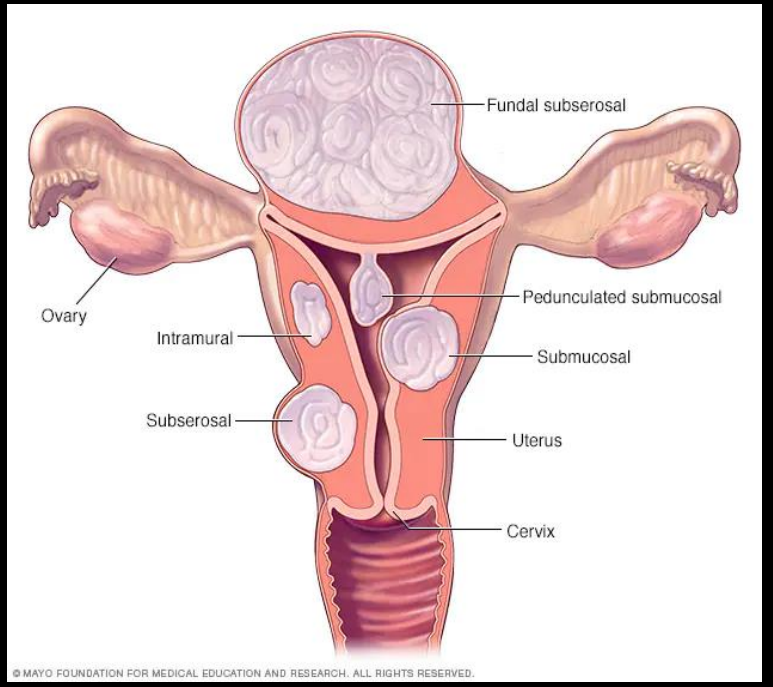
Epithelioid cells with eosinophilic or clear cytoplasm, uniform round nuclei and small nucleoli (white arrows)

Final Dx:

Leiomyoma

Adenomyosis

Case Discussion: Leiomyomas



- Etiology

Leiomyomas (“fibroids”) arise from monoclonal cells of the myometrium and can present subserosally, intramurally, or intracavitary (image). Despite being the most common benign gynecological tumor in premenopausal women, continued research is needed to determine their exact etiology.

- Pathophysiology

Leiomyomas are highly sensitive to the effects of steroid hormones with increased expression of estrogen and progesterone receptors compared to normal myometrium. The concentration of ovarian steroid promote growth with eventual decline in size after menopause

- Epidemiology

Diagnosed in ~70% of Caucasian women and 80% of African-American women by age 50. Several factors are attributed with increased risk of developing leiomyomas including early menarche, increased BMI, and use of oral contraceptive before age 16

Case Discussion: Leiomyomas

- Clinical presentation

Presentation is variable, with the incidence of symptoms being 2x greater in African-American patients. Symptoms range from absent to recurrent and progressive that interfere with activities of daily living. Most common symptoms are pain, pressure, and abnormal vaginal bleeding. The location, size and number of leiomyomas are important determinants of clinical presentation. Physical exam typically reveals and enlarged, irregular uterus.

- Imaging

As outline by the ACR appropriateness criteria, a clinical diagnosis is most easily confirmed via pelvic ultrasonography. MRI may be useful for determining vascularization and/or degeneration of the leiomyomas in addition to better defining their placement in relation to the serosal and mucosal surfaces. There are no current guidelines for surveillance imaging

Case Discussion: Leiomyomas

- Management

Initial discussions surrounding management must include consideration of a patient's age and reproductive goals. Initial interventions often include medical management for individuals with symptoms and includes hormonal therapy, NSAIDs, and/or HPG-axis modulation. However, these medications are not meant for long-term use and symptoms often resurface upon cessation. Surgical intervention for those desiring future fertility is typically myomectomy, though many patients will require subsequent procedures for recurrent fibroids. Uterine artery embolization reduces blood flow, and thus growth, of the fibroids and may mitigate symptoms but effects on fertility is unclear. Hysterectomy is the only definitive intervention.

Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Reproductive age female with uterine fibroids (leiomyomas), symptomatic with heavy uterine bleeding or bulk symptoms (e.g., pressure, pain, fullness, bladder or bowel symptoms), and a desire to preserve fertility. Initial therapy.	3196890	Hysteroscopic myomectomy			Usually appropriate
		Laparoscopic or open myomectomy			Usually appropriate
		Medical management			Usually appropriate
		MR-guided high-frequency focused ultrasound ablation			Usually appropriate
		Uterine artery embolization			Usually appropriate
		Laparoscopic uterine artery occlusion			Usually not appropriate
		Endometrial ablation			Usually not appropriate
		Hysterectomy			Usually not appropriate

References:

ACR AC Portal. (n.d.). https://gravitas.acr.org/ACPortal/GetDataForOneTopic?topicId=124

Florence, A. M. (2023b, July 17). *Leiomyoma*. StatPearls [Internet]. https://www.ncbi.nlm.nih.gov/books/NBK538273/

Sharma, R. (2024, August 15). *Uterine Leiomyoma: Radiology Reference Article*. Radiopaedia. https://radiopaedia.org/articles/uterine-leiomyoma?lang=us

Tzanis, A. A., Antoniou, S. A., Gkegkes, I. D., & Iavazzo, C. (2024). Uterine artery embolization vs myomectomy for the management of women with uterine leiomyomas: A systematic review and meta-analysis. *American Journal of Obstetrics and Gynecology*, *231*(2). https://doi.org/10.1016/j.ajog.2024.01.014