Mesenchymal Tumors of the Uterus

Smooth Muscle Tumors
Stain with: Desmin, SMA, Caldesmon

Leiomyoma
Benign smooth muscle tumor. Most common uterine tumor.
If tons, particularly at a young age, consider hereditary leiomyomatosis and renal cell carcinoma (HLRCC) syndrome.
Still have metastatic potential—“Benign metastasizing leiomyoma”

Variants:
- Cellular leiomyoma—significantly increased cellularity compared to normal myometrium
- Leiomyoma with bizarre nuclei—bizarre nuclei (smudged, hyperchromatic, pleomorphic) in an otherwise normal leiomyoma (no mitoses or tumor necrosis)
- Mitotically active leiomyoma—increased mitoses, but no atypia or tumor necrosis

Smooth Muscle Tumor of Uncertain Malignant Potential (“STUMP”)
Smooth muscle tumor whose features preclude a definitive diagnosis of leiomyoma vs. leiomyosarcoma
(Either equivocal mitoses or necrosis often; Many IMT’s were previously mistakenly Dx'd as this!)
Relatively low risk of recurrence

Leiomyosarcoma
Malignant smooth muscle tumor. Typically spindle cell, but can be epithelioid.
Want to see: 1) High-grade cytologic atypia, 2) Increased mitoses (typically >2/10 HPF), and 3) Tumor-type necrosis
Genetically complex chromosomal aberrations
Very poor prognosis

Endometrial Stromal Tumors
Low-grade/benign tumors stain like normal endometrial stroma with CD10 and ER/PR; High-grade stains with Cyclin-D1

Endometrial Stromal Nodule
Benign tumor resembling proliferative endometrial stroma with a relatively well-circumscribed margin

Low-grade Endometrial Stromal Sarcoma
Malignant tumor composed of cells resembling proliferative endometrial stroma with infiltrative growth into myometrium and/or lymphovascular invasion—Often have “tongue-like” growth
Fusion of JAZF1 and SUZ12 (think “Jazzy Suzie”)
Intermediate prognosis, mostly depending on stage

High-grade Endometrial Stromal Sarcoma
Malignant tumor derived from endometrial stromal cells with high-grade round cell morphology.
Typically confluent, permeative, destructive growth. Usually high mitotic activity, necrosis, and LVI.
Fusion: YWHAE-FAM22.

Other Tumors
Undifferentiated Uterine Sarcoma
Malignant tumor arising in the endomyometrium with high-grade cytologic atypia and no specific line of differentiation.
Destructive invasion. Marked cytologic atypia and brisk mitotic activity.
IHC: Variable CD10, Often Cyclin-D1 (+). May see focal SMA.
Complex genetically
Most patients present at high stage. Poor prognosis.
Uterine Tumor Resembling Ovarian Sex Cord Tumor (“UTROSCT”)
Neoplasms resembling ovarian sex cord tumors without endometrial stromal component
Usually well-circumscribed.
IHC: Frequently WT-1 positive, variable expression of Inhibin, calretinin, and Melan-A
Benign course typically.

Rhabdomyosarcoma
Malignant tumor showing skeletal muscle differentiation (like rhabdomyosarcomas elsewhere)
IHC: (+) desmin, myogenin, MyoD1

Perivascular Epithelioid Cell Tumor (PEComa)
Mesenchymal tumor containing epithelioid cells with clear to eosinophilic, granular cytoplasm demonstrating melanocytic and smooth muscle differentiation, thought to be derived from so-called “Perivascular Epithelioid Cells.”
Mixture of spindled and epithelioid cells, many with granular cytoplasm.
IHC: (+) HMB45 and Melan-A; Variable smooth muscle markers

Inflammatory Myofibroblastic Tumor (IMT)
Spindled to polygonal cells growing in fascicles. Often have myxoid stroma.
IHC: ALK1 positive; variable smooth muscle markers
ALK molecular rearrangements.
Recurring potential.

Tumors with a Glandular Component

Carcinosarcoma
Biphasic tumor with malignant carcinomatous and sarcomatous elements.
Usually old women with a mass prolapsing out of the cervix
Carcinoma: Often serous, sometimes endometrioid
Sarcoma: Often high-grade non-specific sarcoma, but can make heterologous elements (osteosarcoma, chondrosarcoma, rhabdosarcoma, etc...)
Often advanced stage and poor prognosis

Adenosarcoma
Mixed epithelial and mesenchymal tumor with a benign epithelial component and stroma is low-grade malignant.
(Think phyllodes tumor)
Papillary/polypoid projections of cellular stroma (often with condensation, “cuffing” around glands).
Can show heterologous elements and sarcomatous overgrowth.
MDM2/CDK4 and TERT gene amplifications.

Misc.

Adenomatoid tumor
Benign tumor of mesothelial origin.
Inter-anastomosing pseudo glands with variably sized tubules (sometimes with a signet ring appearance) with associated smooth muscle hypertrophy (so can be mistaken for a mesenchymal tumor!)
IHC: Tumor cells express CK AE1/AE3 and Mesothelial markers (D2-40, WT-1, Calretinin)