Uterine Fibroids: Not As Simple As You Think

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Uterine Leiomyoma

- **Most common uterine neoplasm**
  - 20-30% women >35yo
- **Under hormonal influence**
  - Enlarge during pregnancy or BCP use
  - Regress after menopause
- **Symptoms**
  - Dysmenorrhea
  - Menorrhagia
  - Infertility
  - Pressure sensation
MRI of Uterine Leiomyoma

- Low signal on T2WIs
- Round
- Mass effect
- Well defined margins often with pseudocapsule
- Lacy or confluent hyperintensity
Uterine Leiomyoma

- As they grow, they may outgrow their blood supply, resulting in various types of degeneration
  - Hyaline (homogeneous eosinophilic proteinaceous material)
  - Myxoid (hyaluronic acid-rich mucopolysaccharide gelatenuous material)
  - Cystic
  - Calcific
  - Hemorrhagic (red or carneous, occurs in pregnancy or with BCPs)
46 yo f pre-UAE

Leiomyoma with edema

smooth muscle

T2WI

edema

sub

T2WI
Uterine Leiomyoma

• Edema is common
  – Scattered or diffuse
  – Frequently prominent at periphery
  – With extensive edema, get marked enhancement due to retention of contrast material within the abundant interstitial spaces

Suspect Leiomyosarcoma

- Lyphadenopathy, ascites, or peritoneal seeding
  - Obstet Gynecol 1994;83:414-418
- Rapid growth of leiomyoma
- Hemorrhage
- High signal on T2WIs in >50% of mass
- High signal on T2WIs and intense enhancement
- Irregular or indistinct margin
Suspect Leiomyosarcoma

- Lymphadenopathy, ascites, or peritoneal seeding are unusual
- Rapid growth of leiomyoma is not useful
  - <3% of sarcomas have rapidly growing uterus
  - <1% of rapidly growing leiomyomas have leiomyosarcomas
- Hemorrhage is not useful
  - Hemorrhage is not uncommon in fibroids but unusual in leiomyosarcomas
- High signal on T2WIs in >50% of mass is not useful
  - Not uncommon in fibroids
- High signal on T2WIs and intense enhancement is not useful
  - Seen with cellular leiomyomas (composed of compact smooth muscle cells with little or no collagen)
- Irregular, nodular, or indistinct margins
Uterine Leiomyosarcoma

- Sarcomatous transformation of preexisting leiomyoma is rare
  - Diagnosis usually made as an incidental pathologic diagnosis in 0.5% or resected fibroids
- Most arise independently from myometrial smooth muscle cells
59 yo f with lung nodule ca and pelvic mass with increased uptake on PET/CT.

**Surgery: Fibroid**
51 yo f with pelvic mass

Surgery: granulosa cell tumor ovary with fibroma and thecal elements (sex cord-stromal tumor)
Exophytic fibroid or fibroma?

Fibroid

Bridging Vascular Sign

Normal ovary
Bridging Vascular Sign

- Vessels that extend from the uterus to supply a pelvic mass indicate the uterine origin of a juxtauterine mass
- Caused by feeding vessels that arise from the uterine arteries
- In one study, it was present in in 20/26 exophytic leiomyomas and absent in all other adnexal masses, resulting in a diagnostic accuracy of 80%
  

- But, ovarian malignancies that invade the uterus may also show this sign

47 yo f with pelvic pain & solid adnexal mass on US

Uterine Fibroid
Ovarian Vascular Pedicle Sign

• If you can trace gonadal veins anterior to psoas muscle and common iliac vessels into a pelvic mass, it indicates that the ovary is the organ of origin
  – Identified in 92% of ovarian masses

• Also seen in 13% of subserosal uterine myomas
  – The ovarian veins form a plexus in the broad ligament that communicates with the uterine plexus

Lee JH, et al. AJR 2003;181:131-137
44 yo f for UAE evaluation

Adenomyotic Cyst
Adenomyotic Cyst

- Also known as cystic adenomyosis
- Appears as an endometrioma-like intramyometrial hemorrhagic cyst surrounded by adenomyotic (low signal) wall
  - May be subserosal