Management of Trunk & Extremity Soft Tissue Sarcomas

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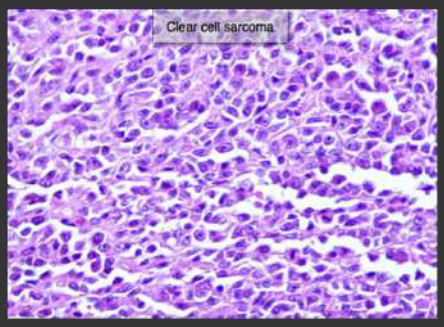

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OBJECTIVES

- Review the appropriate workup and management of a soft tissue a mass
- Learn how to avoid the common pitfalls of sarcoma surgery
  - Diagnostic Delay
  - Unplanned Excision
    - Failure to obtain advanced imaging
    - Incorrect orientation of incision
  - Patient or Physician Neglect

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TEAM approach to treatment

- Musculoskeletal Pathologist
- Musculoskeletal Radiologist
- Radiation Oncology
- Medical Oncology
- Surgery
  - Oncologic Surgeon
  - Plastic & Reconstructive Surgeon
  - Vascular Surgeon
  - Thoracic surgery
  - Spine surgery
- PT/OT and Nutrition

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Clinical evaluation

- Remember: a STS can be small and superficial
  - Usually firmer than muscle or fat
- Mass that is >5cm, firm, deep to fascia and/or painful necessitates advanced imaging
- < 3 cm and superficial, ok to perform excisional bx
- MRI entire compartment

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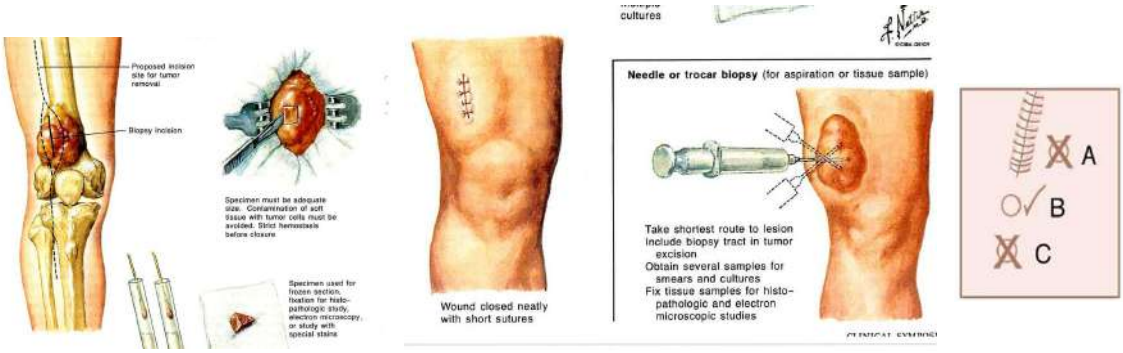
Art of the biopsy

- Use MRI/PET/CT to direct location within the mass that will be most fruitful
  - Avoid necrotic area
  - Only contaminate one compartment
- Longitudinal incision within the planned limb salvage resection incision



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Surgeon performed in-office ultrasound

- Useful to guided needle biopsies
- Helpful to initially image a soft tissue mass
- INADEQUATE for determining full extent of a large deep masses
- DOES NOT replace need for MRI w/wo contrast of the mass/extremity

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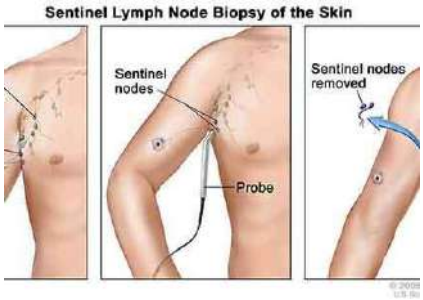
Principles of Sarcoma Surgery

- Surgical resection with negative margins
  - If margins are positive (other than bone, vessel or nerve), re-resection should be performed
- Neoadjuvant vs adjuvant radiation therapy for intermediate & high grade, large, deep tumors
- Special consideration given for bad actors: consider sentinel lymph node
  - Epithelioid sarcoma
  - Synovial sarcoma
  - Angiosarcoma
  - Rhabdomyosarcoma
  - Clear cell sarcoma
  - PNET/Ewings family of tumors



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Abdominal wall synovial sarcoma

- Normally reconstruction occurs after final margins confirmed negative
- Neoadjuvant chemo, wide resection with frozens and immediate flap coverage

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Pitfall: Patient and Physician neglect

- Usually slowly growing & painless
- Why delay in presentation?
  - Has been seen years ago by a doctor for this condition, told not to worry about it
  - This patient was particularly adverse to physician direction
- Staging:
  - Subcentimeter pulmonary nodules bilaterally
  - No lymph nodes palpable

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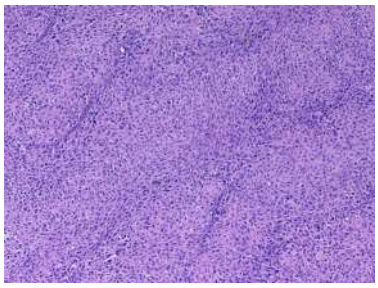
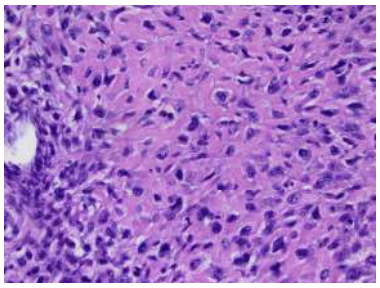
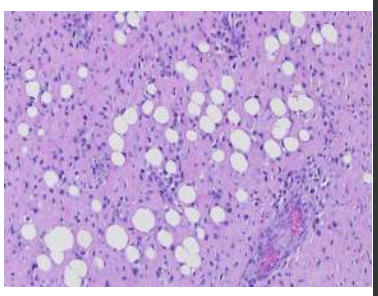
Biopsy - dedifferentiated liposarcoma

there are some parts that almost look like an extraskeletal osteosarcoma – responsible for rapid growth







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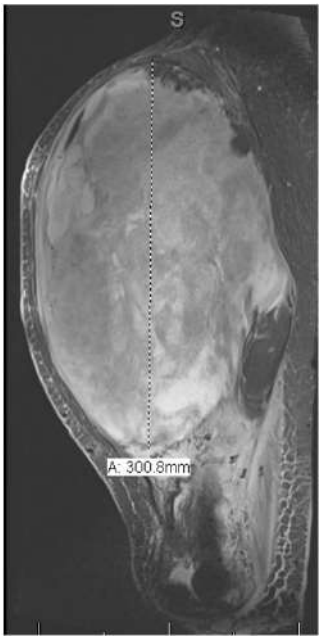

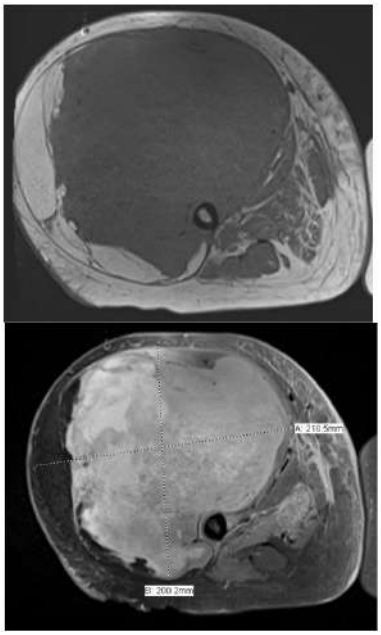

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Treatment: neoadjuvant radiation

- "Sterilize the margins" or "Rind Up"
  - Hopefully it will shrink and become more mobile
  - Overall, less radiation dose to the femur
  - Grew 5 cm in the first 7 treatments → abort & resect

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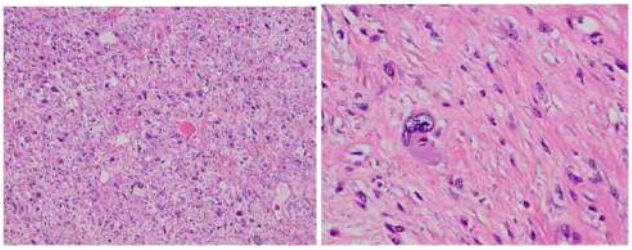
Pitfall: Patient Neglect

- 56yo RHD man with left forearm ST mass growing > 1 year
- Took 6 months after referral to get him into clinic. Pay as you go phone with no minutes.
- Staging: No distant disease
- CT guided bx: high grade UPS



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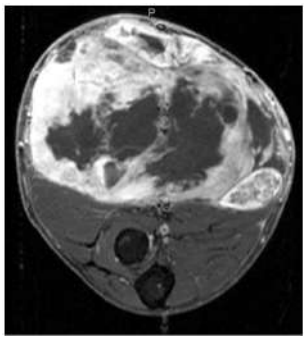

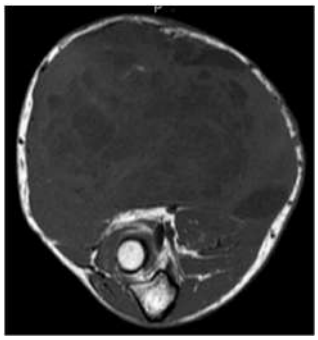

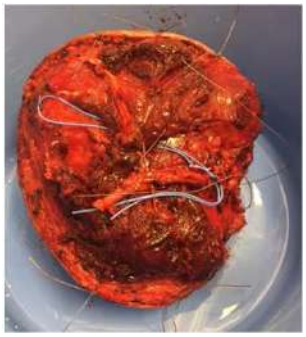

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Multidisciplinary approach

- Wound vac and wait for margins
- Latissimus flap with skin graft
- Radiation after about 1 month if flap looks good
- Current state of disease:
  - Started radiation about 6 months postop
  - No evidence of mets or local recurrence

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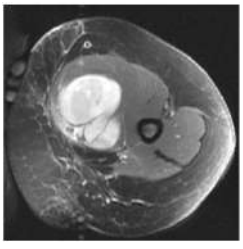
Pitfall: poorly performed biopsy

- 61 yo RHD female with 3 month history of soft tissue mass left arm. Dx at OSH 3 core biopsies were performed in the clinic
- Undifferentiated Pleomorphic Sarcoma
- Staging CT Chest: indeterminate pulmonary nodules



Anteromedial left arm with healing core biopsy sites (x3)

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Treatment

- May need a free flap - chemo
- Neoadjuvant chemo: 3 cycles of gem/tax
- Tumor grew
- Vascular bundle

IMPRESSION:

Slight increase in size of the mass in the anteromedial aspect of the biceps/brachialis muscle.

Substantial interval decrease in the degree of central enhancement of the mass, which likely correlates with increased tissue necrosis.

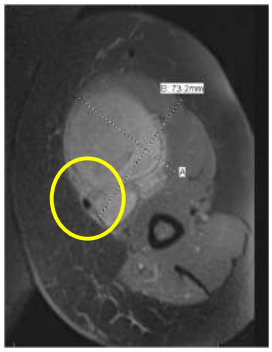
Small amount of enhancement adjacent to the brachial artery and median nerve along the proximal aspect of the mass. This is decreased in extent since the prior exam, and may represent a small amount of tumor along the neurovascular bundle.

Incidental note of a 3.4 cm intramuscular simple lipoma in the subscapularis muscle.

Mild atrophy of the deltoid muscle.

RESIDENT RADIOLOGIST: Nisha Swaminathan, M.D.

ATTENDING RADIOLOGIST: Robert W Morris MD



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Resection, vascular bypass & adjuvant XRT

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Pitfall: misdiagnosis "olecranon bursitis"

- 60 yo LHD man with several month history of mass growing on elbow
- Several office visits and ED visits with 3 I&D attempts – no path sent
- Recent rapid growth & fungation
- Staging: localized disease
- Path: UPS

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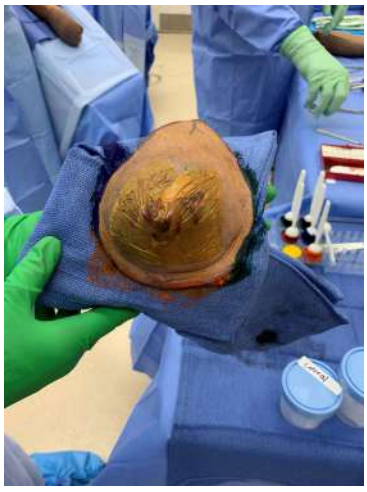
Treatment: Wide resection, flap & adjuvant XRT



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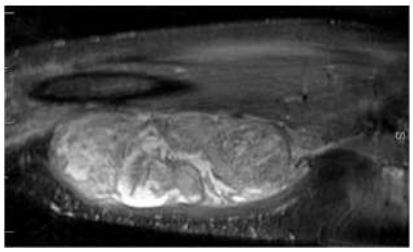
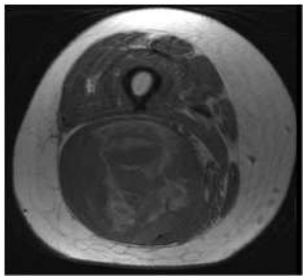
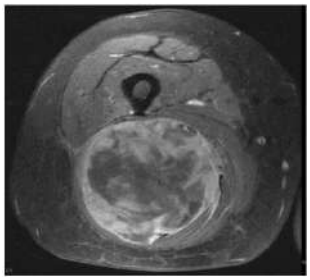
Pitfall: failure to resect the sciatic nerve

- 60yo female 25cm right posterior thigh mass
- History of BC dx 2013 s/p chemo/xrt/surgery and off therapy
- Several months of swelling and rapidly growing soft tissue mass
  - "hamstring tear"







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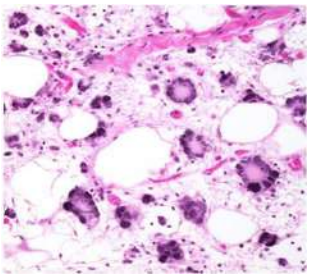
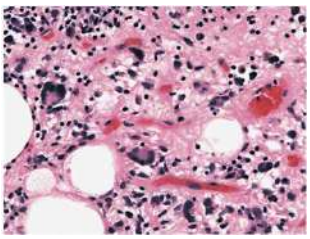
Tissue diagnosis

- Biopsy performed in clinic with tru-cut needle
  - Lots of samples – all necrotic
  - Gave option of US or CT bx, timeline unfavorable
  - Necessitated an incisional biopsy 1 week later
- Pleomorphic Liposarcoma
  - **admixture of mature adipose tissue and pleomorphic multinucleated cells**





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Downside to incisional biopsy

- Planned neoadjuvant chemo/XRT
- Unable to given rapid growth and pain as well as biopsy site fungation within 2 weeks

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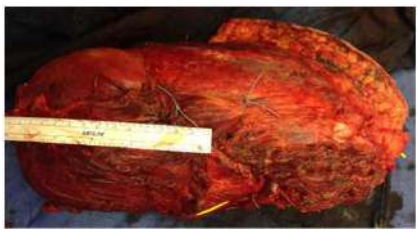
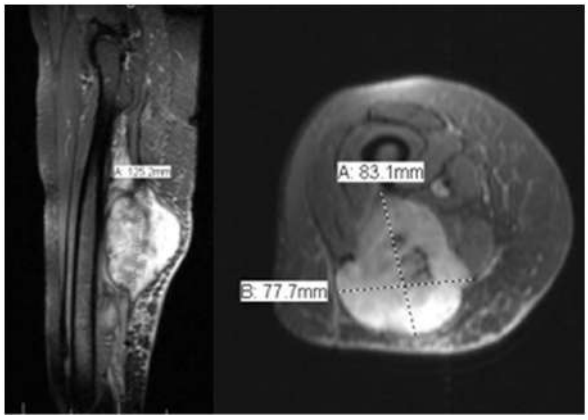
Wide Resection

- Planned positive margin on sciatic nerve
- Rapid LR 6 weeks while on radiation
  - Mets quickly at restaging CT chest
- Palliative chemo & XRT





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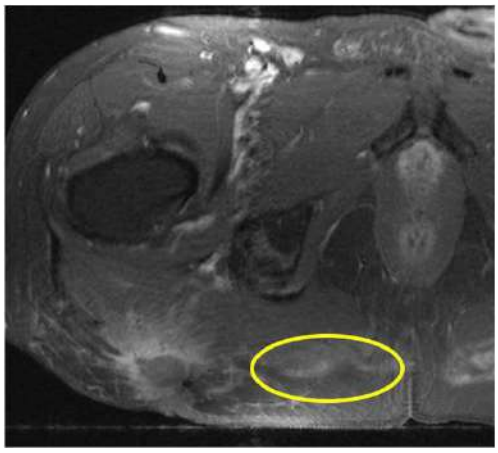
Pitfall: tension relieving sutures



2006

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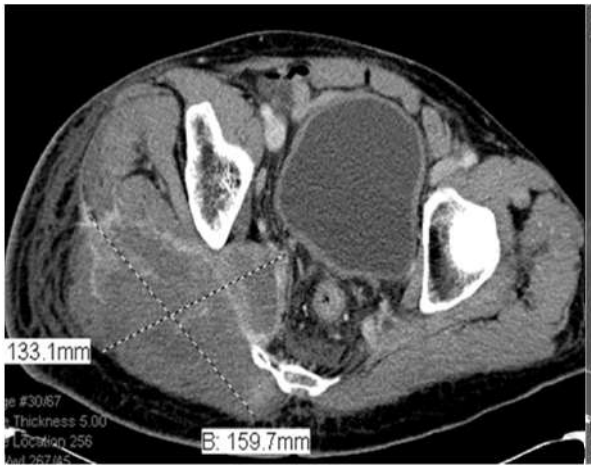
Refused partial sacrectomy, sciatic nerve resection and flap, elected for palliative care



2012

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Pitfall: horizontal incision

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Pitfall: horizontal incision

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Pitfall: unplanned resection

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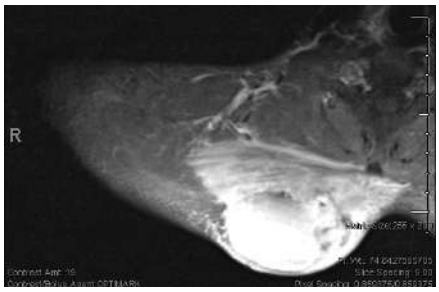
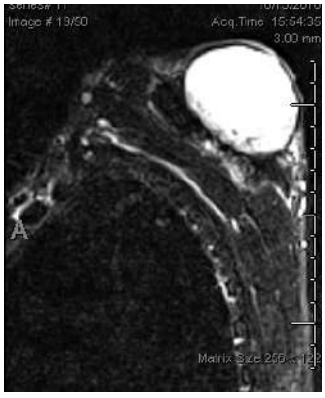
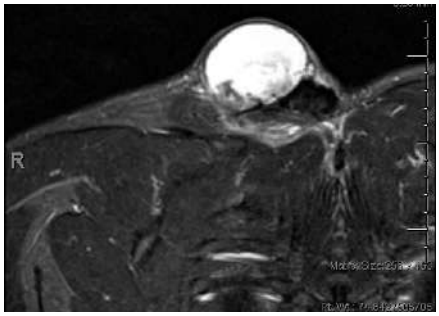
- 32 yo male with FAP mutation
- Extraosseous osteosarcoma excised with + margins.
- On adjuvant chemo x 1 year now presenting for resection







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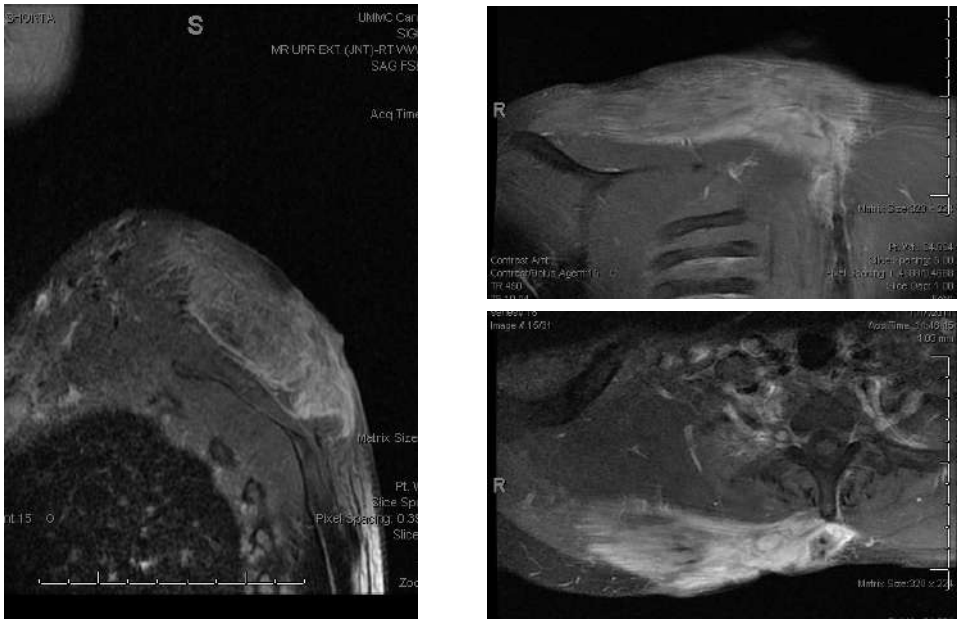

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- Coverage with bilateral trapezius flaps with STSG

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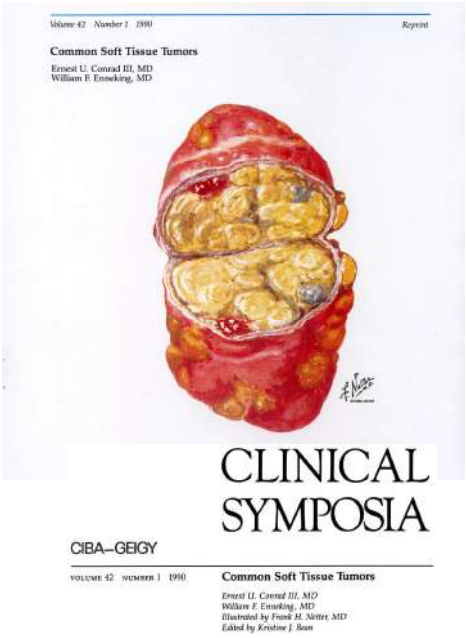
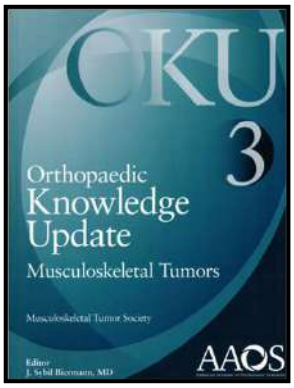
Resources





ORTHO BULLETS

Soft Tissue Sarcoma

Author: Patrick O'Donnell

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www.tumorsurgery.org

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Jennifer Barr 601-842-2744

- There is no such thing as a stupid question or a stupid referral
- If it is benign, I will follow it
- If it is malignant, I will treat & perform surveillance
- I can help you devise a surgical or medical treatment plan

MRI

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