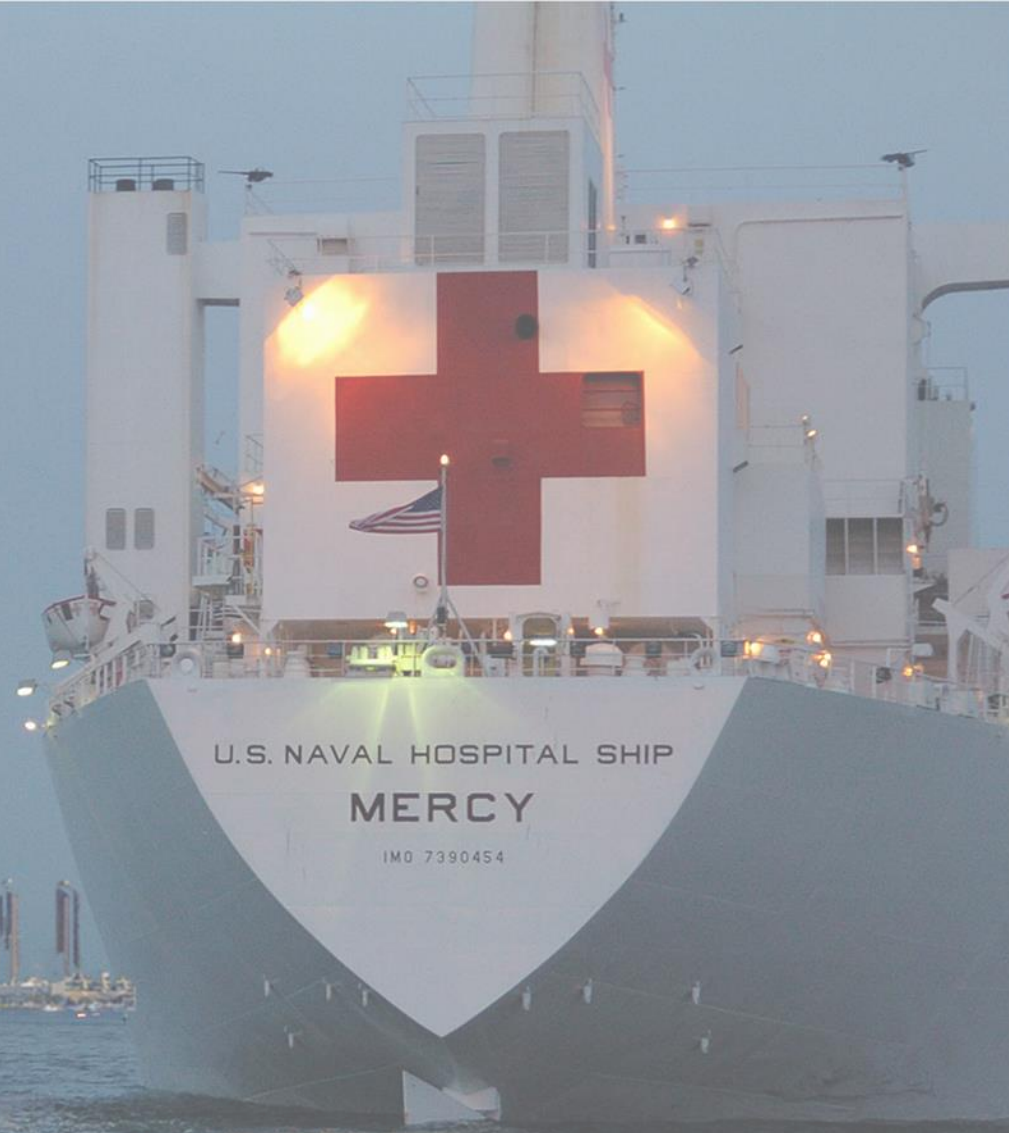


# When and How to Biopsy Bone and Soft Tissue Tumors



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# Disclosure Slide

- I have no disclosures
- The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Department of the Navy, the Department of the Army, or the Department of Defense.

- **When to Biopsy**

- Presumed benign, but symptomatic in the area
- Presumed Metastatic Disease
- Concerning history, physical examination or imaging

- **How to Biopsy**

- Core needle
- Open Biopsy



# Tumor Characteristics

- Favorable

- Small (<2cm)
- Subcutaneous
- Soft
- Mobile
- No change in size
- No pain
- No perilesional edema on MRI

- Unfavorable

- Large
- Deep to fascia
- Firm
- Fixed
- Growing
- Painful  
(rest/night/functional)
- Perilesional edema on MRI

# Tumor Characteristics

- Incorporates history, physical exam and imaging
- Observation is reasonable in almost all cases where every favorable criteria is met
- Observation means follow up, but not necessarily more imaging



# Presumed Benign

## Symptomatic in the Region

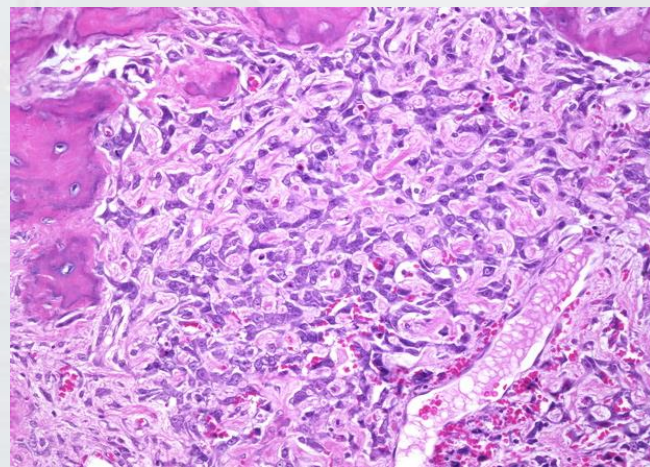
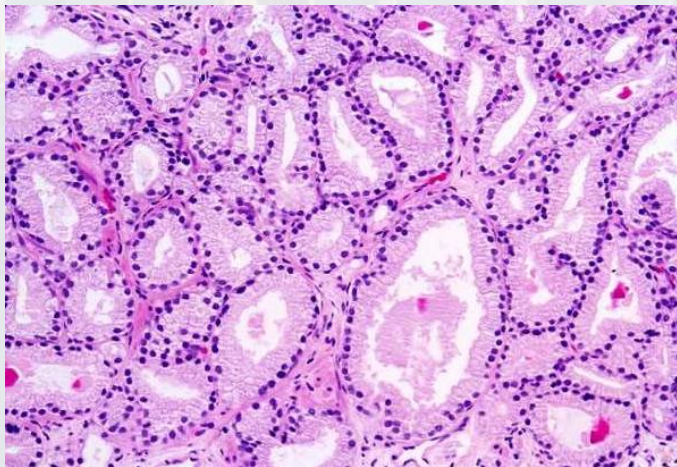
- Excisional biopsies
  - Lipomas
  - Epidermal inclusion cysts
- Incidental biopsies
  - You would be willing to operate adjacent to the lesion anyway, but you want to be thorough
    - Larger enchondroma with need for total knee replacement
    - Synovially based disease with surgical indication for other reason eg. Synovial chondromatosis
  - Don't throw away tissue

# Presumed Metastatic Disease

- Bone lesion with diagnosis of carcinoma
- Presentation
  - Remote – biopsy
  - Recent
    - Proven metastatic bone disease – no biopsy needed
    - Visceral metastatic disease with multiple bone lesions – no biopsy needed
    - Solitary bone lesion – biopsy is needed prior to definitive surgery

# Presumed Metastatic Disease

- How to biopsy
  - Most accessible lesion
  - Proximal femoral fracture can be time sensitive
    - Biopsy and wait – temporize fracture
    - Frozen section – resource dependent
      - » Glands versus spindle cells





# Concerning

- Tread Carefully
  - Only done at the center where the treatment will be if it is malignant
    - Biopsy at non-treating institution leads to higher:
      - Misdiagnosis
      - Unnecessary procedures
      - Amputation
      - Death from disease
  - Could be considered as a way to expedite care working with your eventual consultant



# Biopsy Techniques

- Core Needle

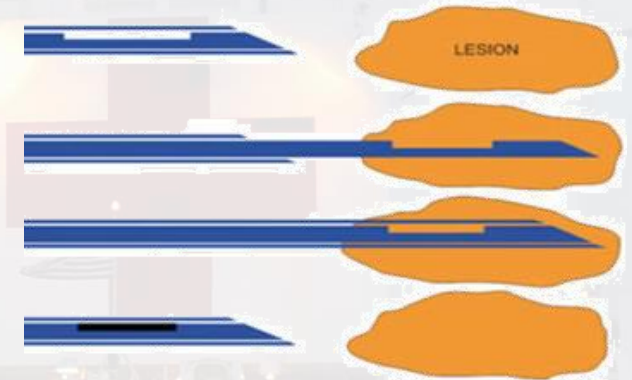
- Rapid
- Does not take an OR spot or require significant anesthesia
- High diagnostic accuracy (80%)

Layfield, Lester J., et al. "Diagnostic accuracy and clinical utility of biopsy in musculoskeletal lesions: A comparison of fine-needle aspiration, core, and open biopsy techniques." *Diagnostic cytopathology* 42.6 (2014): 476-486.

- No need to excise the track

Siddiqi, M. Ather, et al. "Association of core needle biopsy tract resection with local recurrence in extremity soft tissue sarcoma." *Skeletal Radiology* (2017): 1-6.

Binitie, Odion, et al. "Adult soft tissue sarcoma local recurrence after adjuvant treatment without resection of core needle biopsy tract." *Clinical Orthopaedics and Related Research*® 471.3 (2013): 891-898.



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# Open Biopsy

- The most likely to yield the diagnosis
  - Greater than 90 %
- The most likely to lead to unwanted outcomes if done by other than the definitive treating team if poor technique is used



# Open Biopsy Technique

- Longitudinal incision
  - In line with the eventual incision
- Take the shortest route to the lesion
  - Usually through a compartment rather than between compartments
- Stay away from neurovascular structures
- Maintain hemostasis
- Use frozen section to confirm you have obtained diagnostic tissue

# How to Stay Safe

- Refer it all
  - Your patients don't care if you need to send them to someone else.
- Core needle biopsy is safe, effective, and is extremely unlikely to cause problems down the line
  - They do make mistakes.



# How to Stay Safe On Call

- Take a careful history
- Unless the patient has biopsy proven metastatic disease to bone, biopsy the lesion and wait for the final pathology.
- Beware of a solitary bone lesion in a patient with a history of cancer many years ago

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