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The Touch of Life

Biopsy

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Biopsy

- Biopsy is a critical procedure in the treatment of muskuloskeletal tumors.
- Biopsy is a complex procedure and can have a significant influence on the outcome .

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Hazards of Biopsy

Mankin et al		1996
Number		597
Major errors in diagnosis		13.5%
Complication rate		15.9%
Unnecessary amputations		3%

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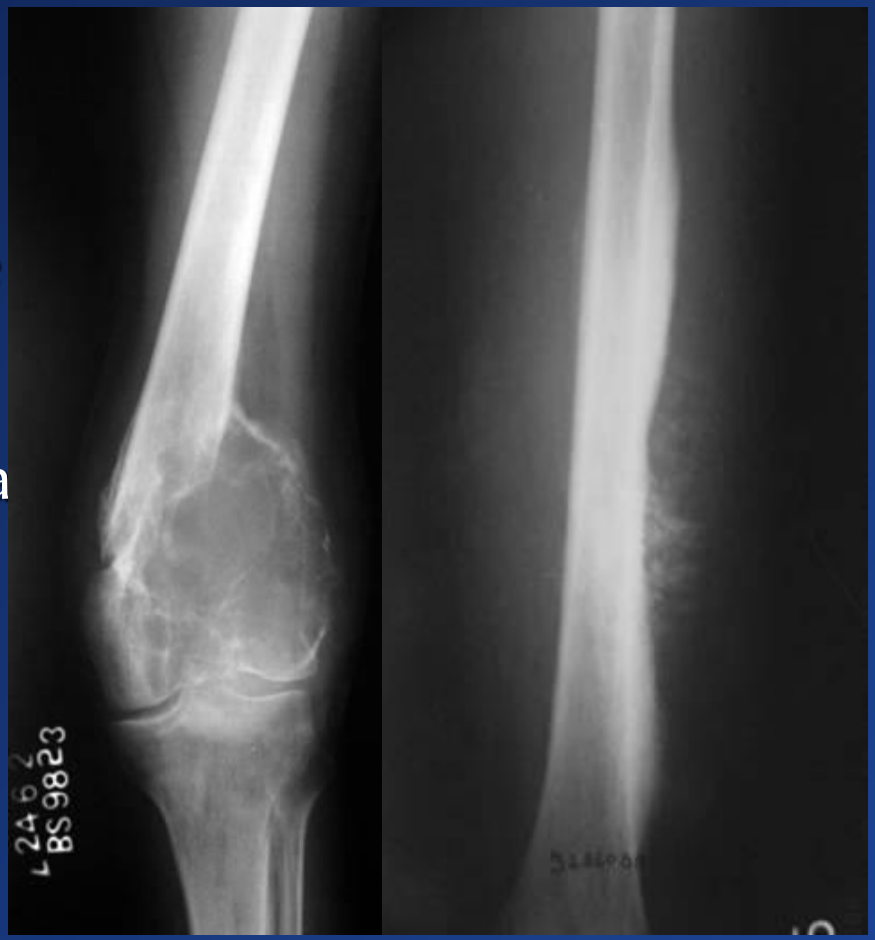
Questions

- Which lesions to biopsy ?
- Who should perform the biopsy ?
- Needle or open ?
- Correct site?
- Correct Technique ?

Which tumors to biopsy ?

- All Benign aggressive tumours
- All suspected maligna tumours



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Biopsy not reqd if…

Characteristic benign clinicoradiologic picture

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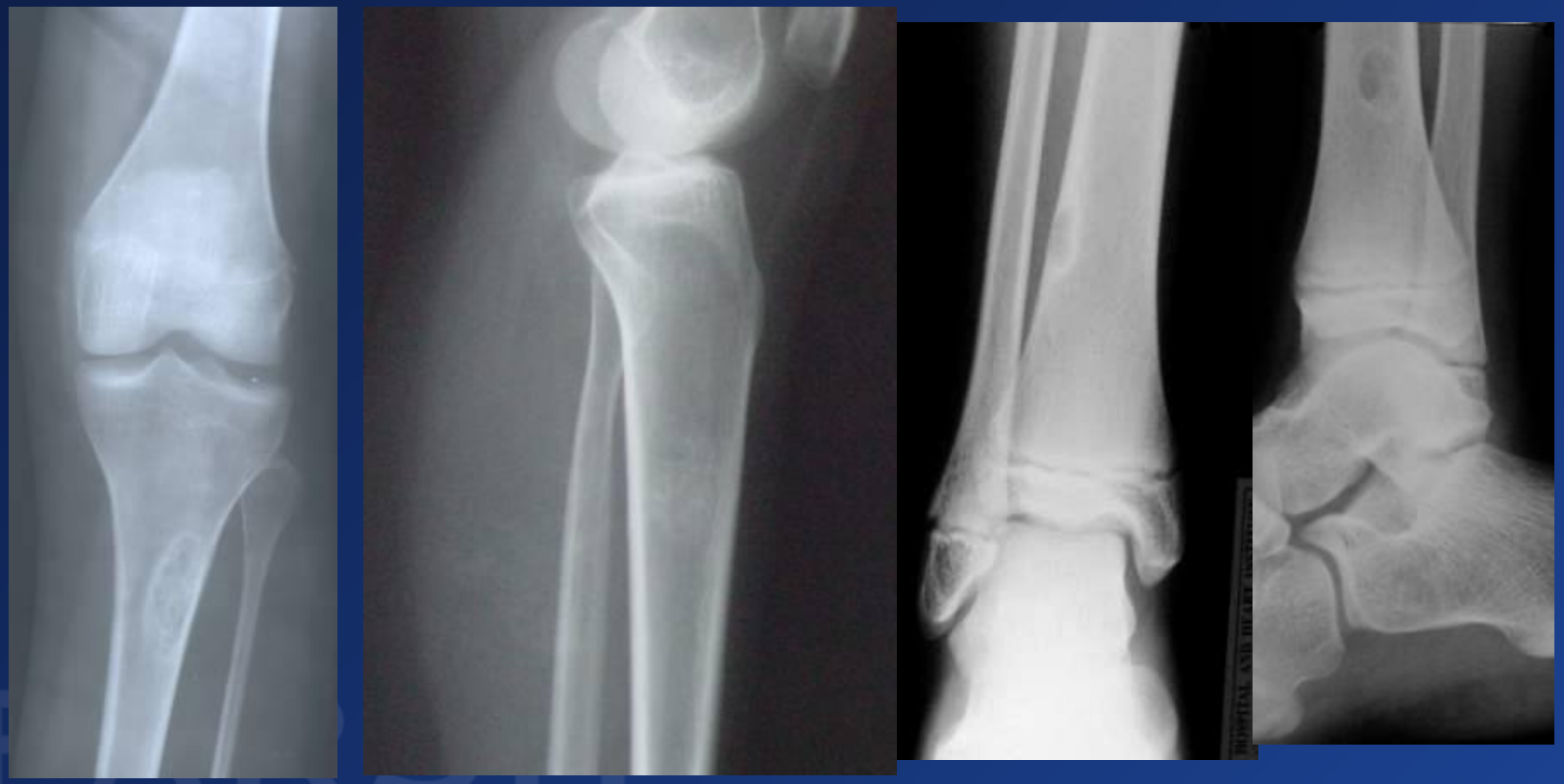
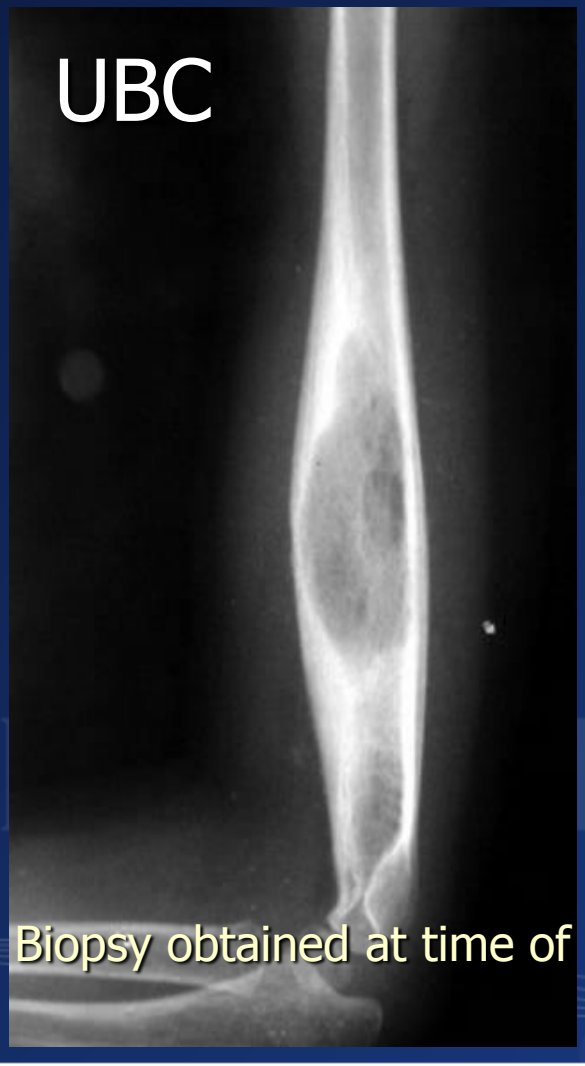
Biopsy not reqd if…

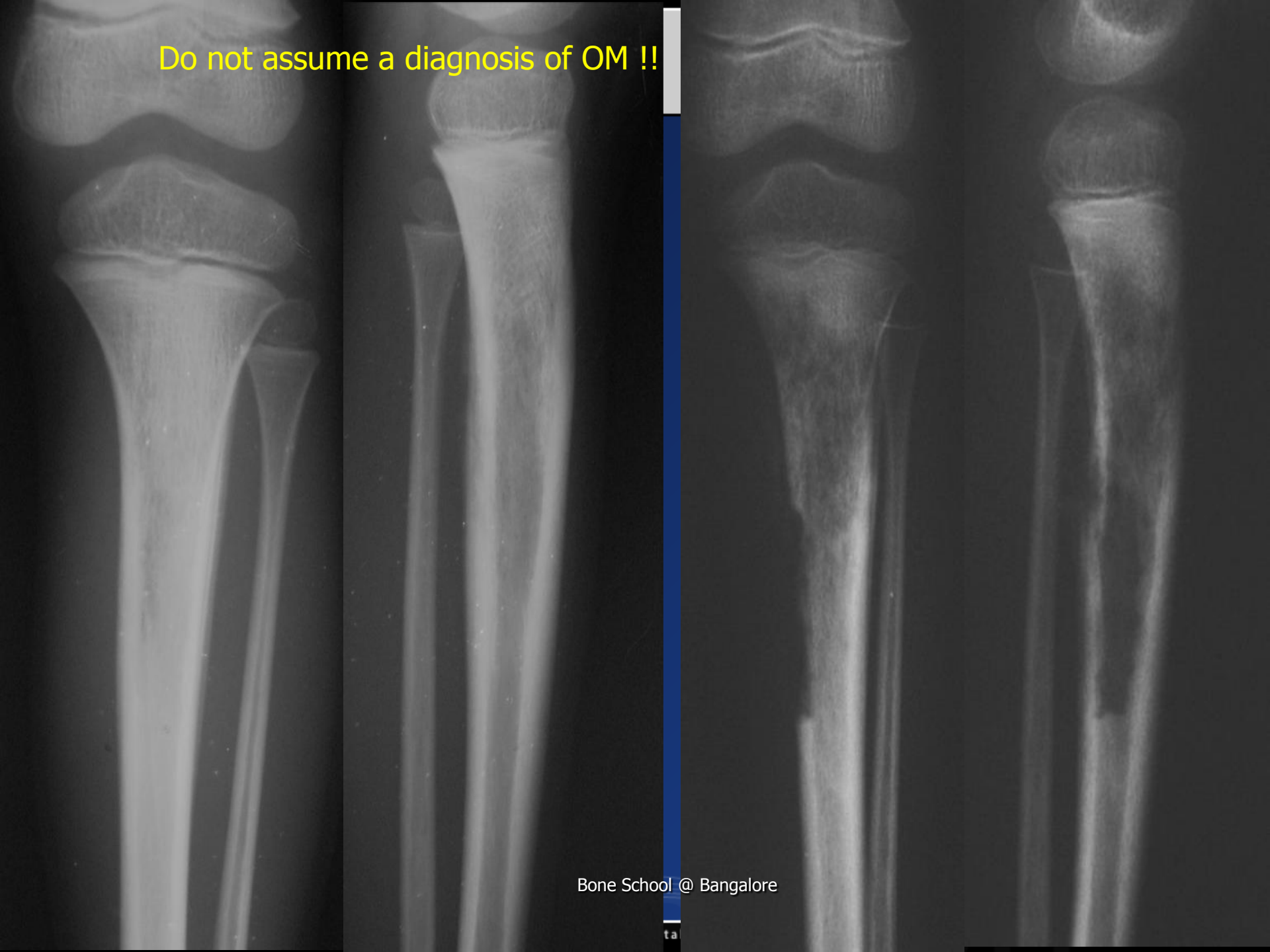


Asymptomatic benign latent lesion accidentally picked up on xray can be observed.

Biopsy



Biopsy obtained at time of steroid injection


Do not assume a diagnosis of OM !!
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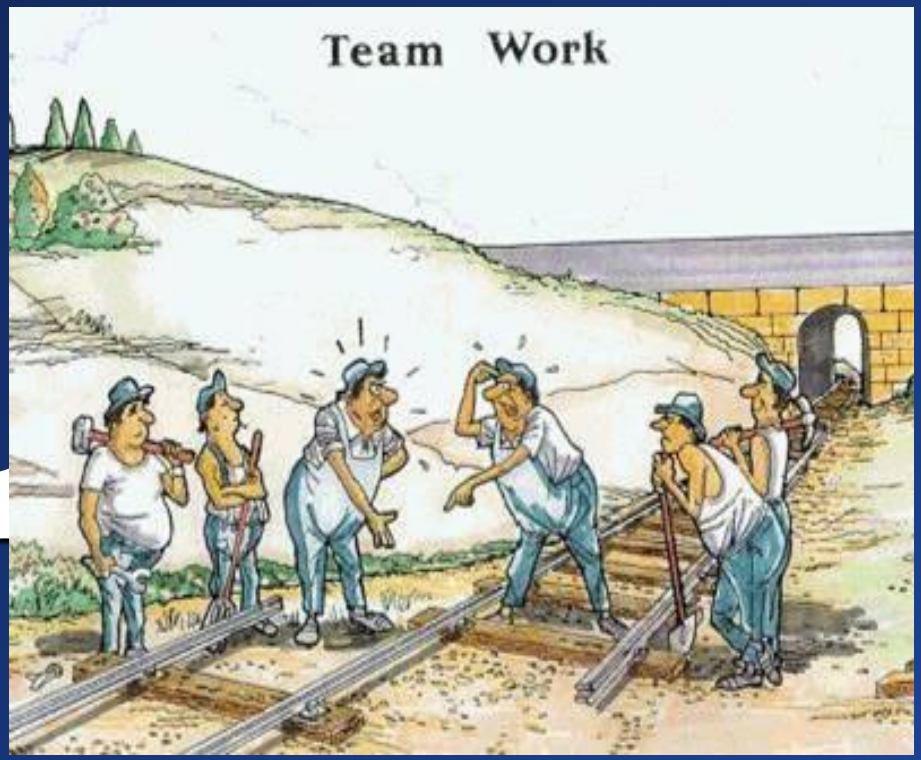
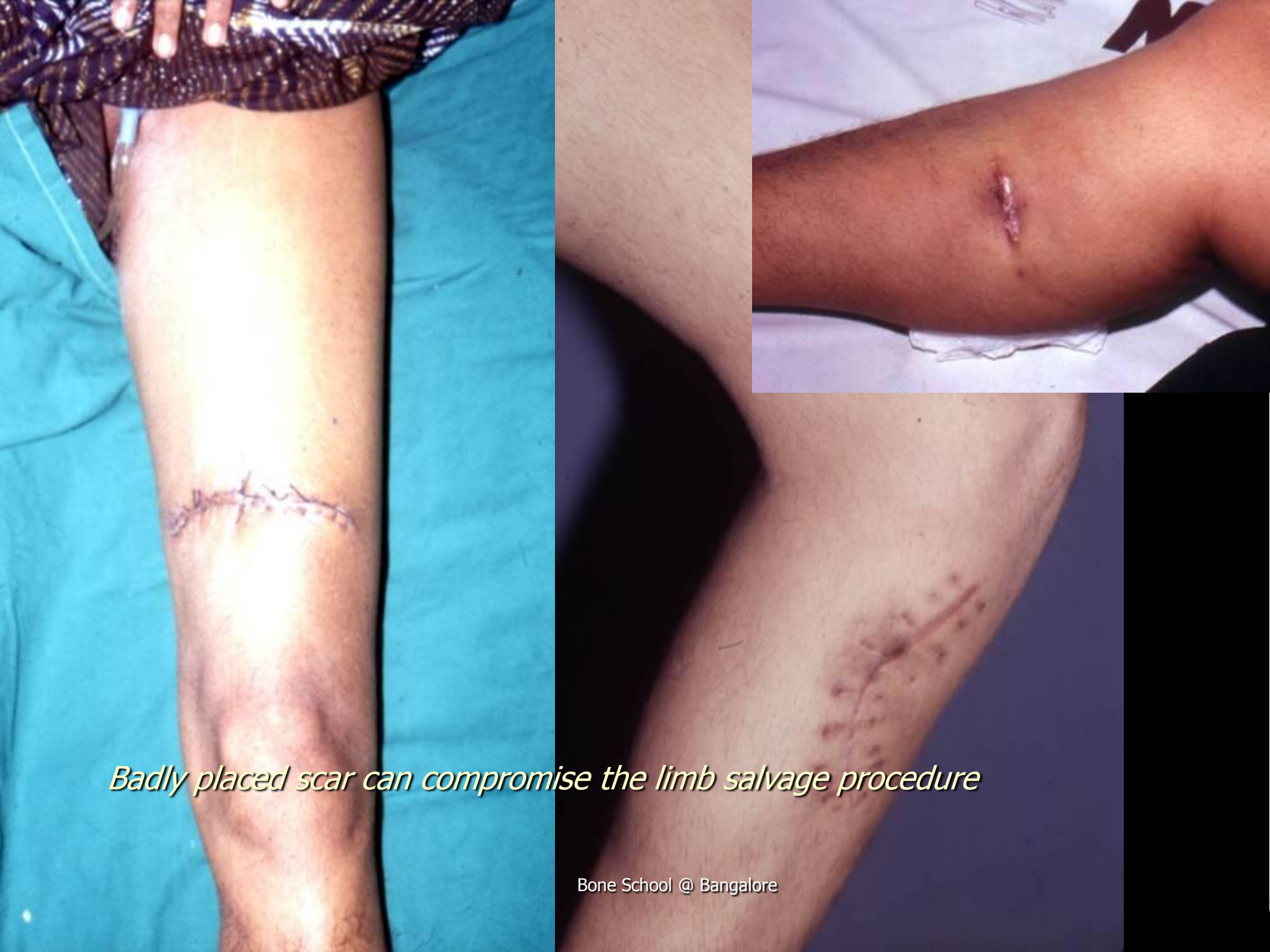
Who should do it ?

- Surgeon
- Pathologist
- Interventional Radiologist

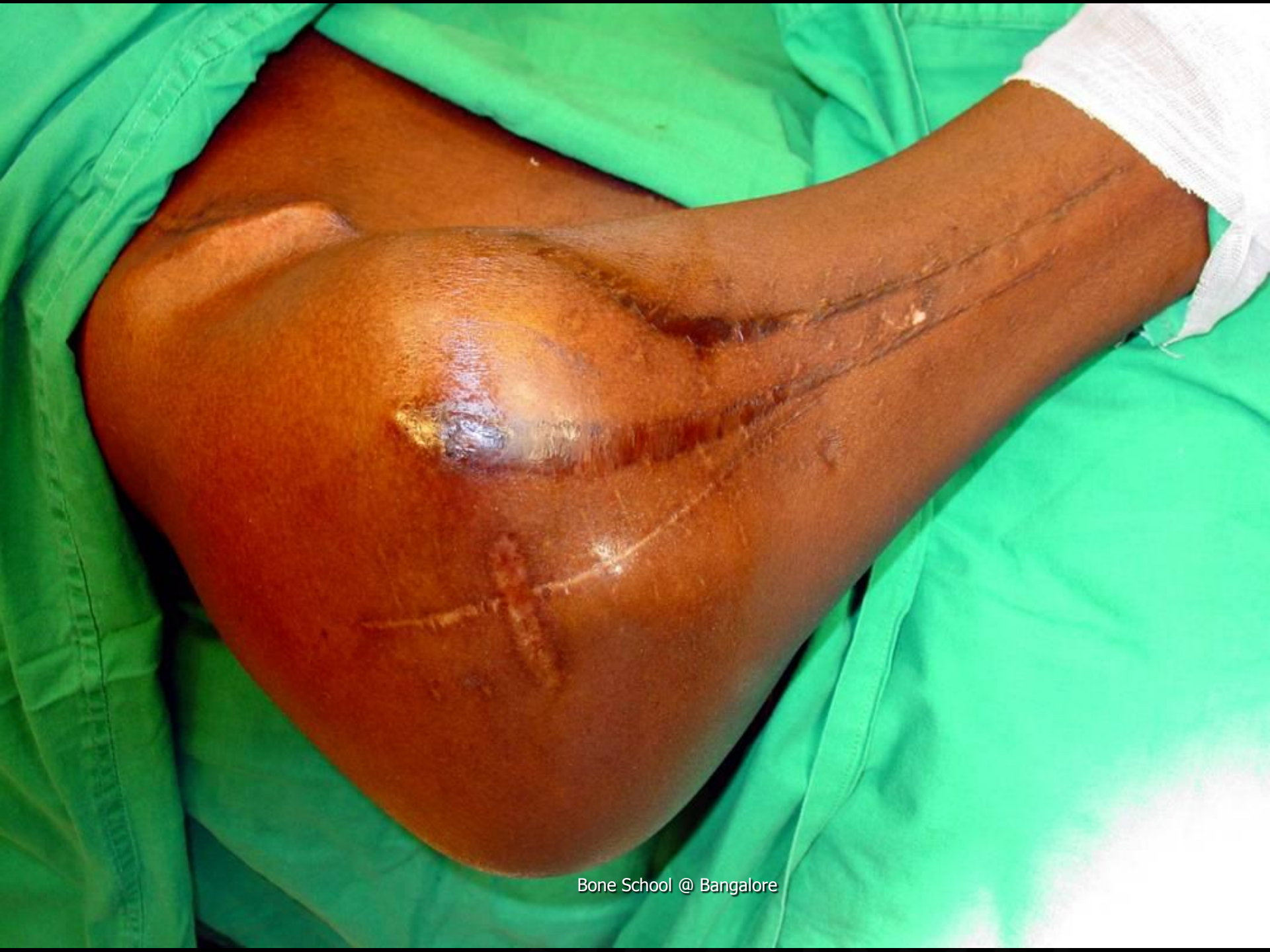


Who should do it ?

The biopsy should be performed by the surgeon who will be doing the definitive surgery



Badly placed scar can compromise the limb salvage procedure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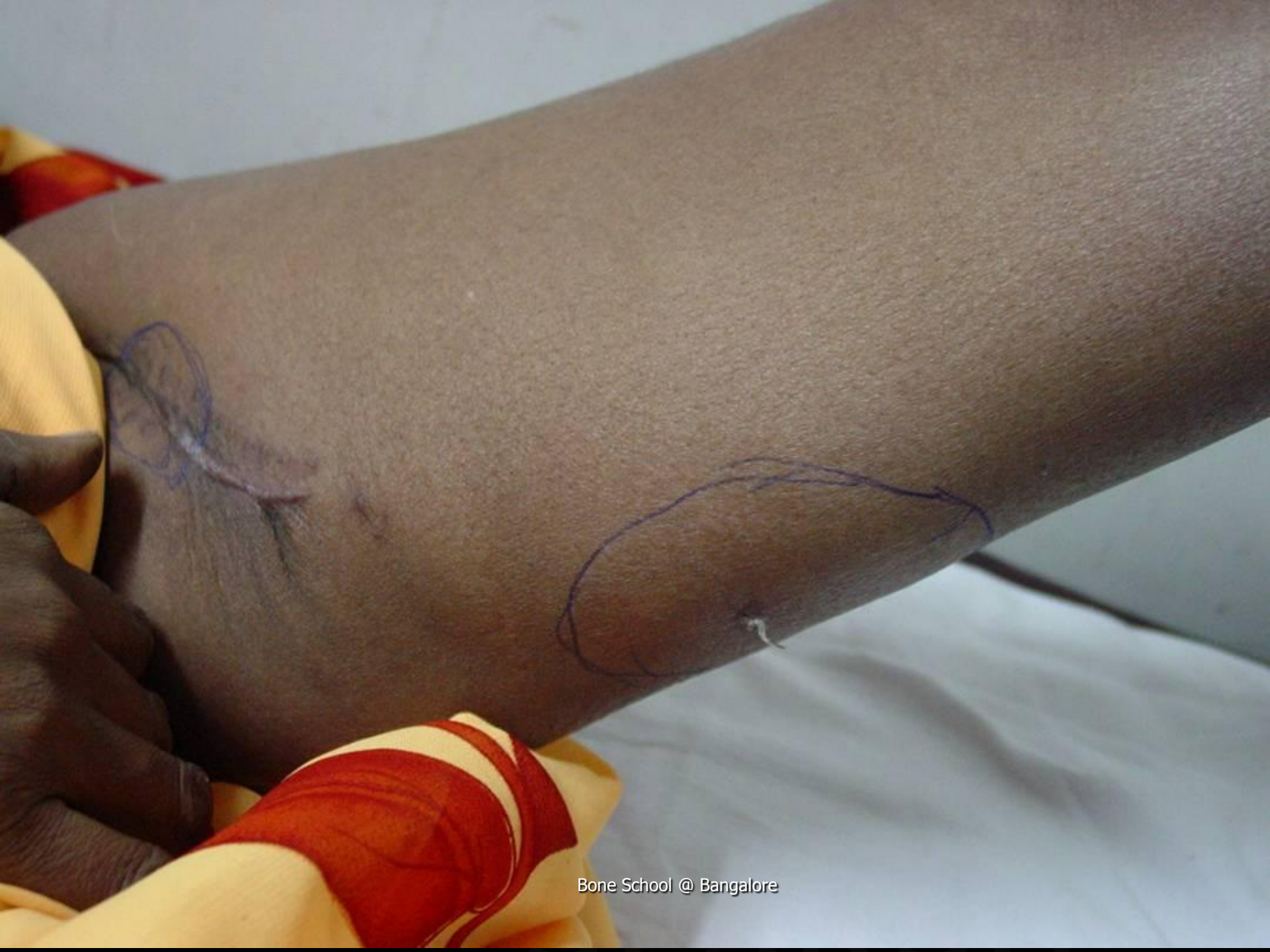
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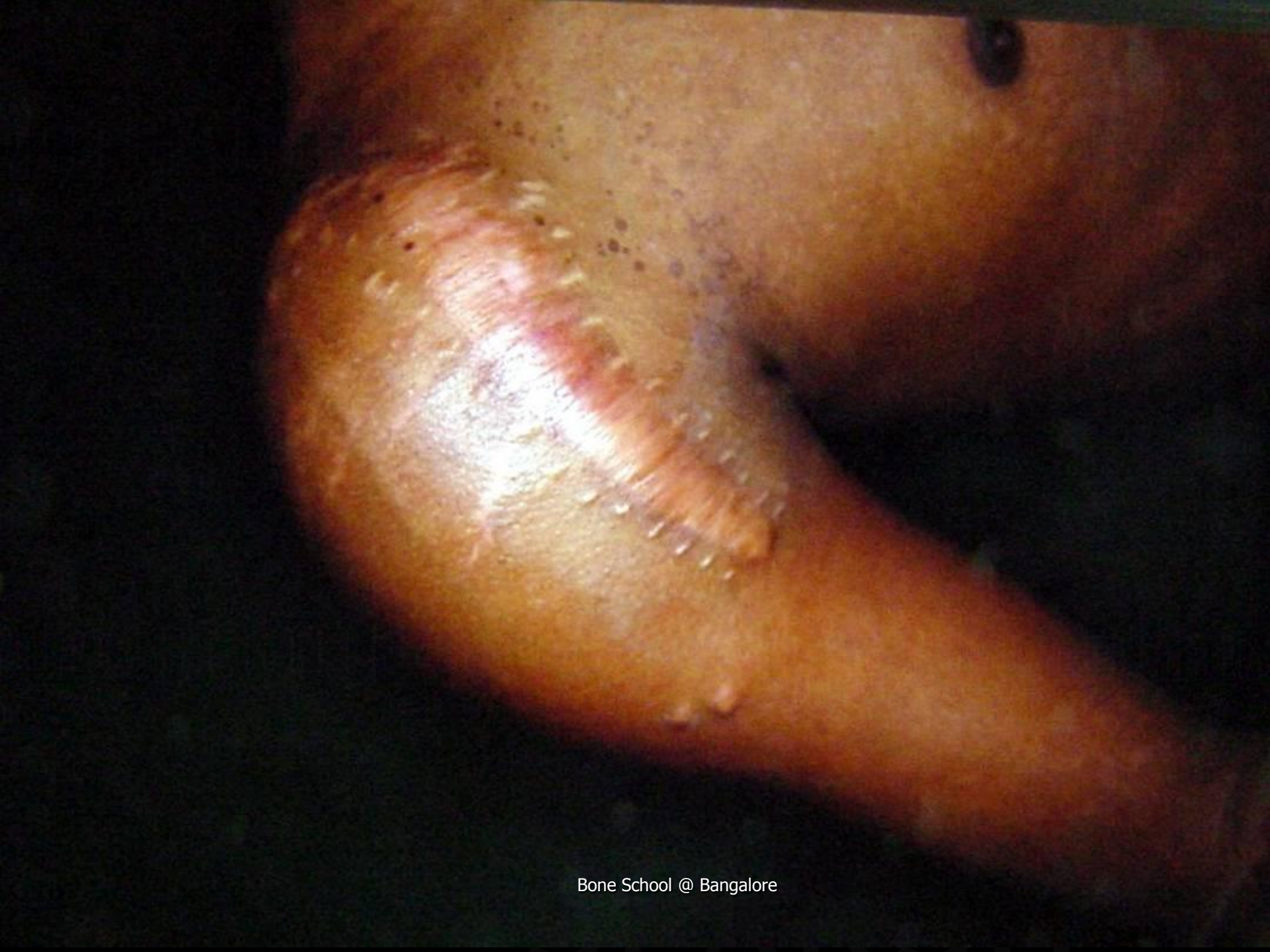
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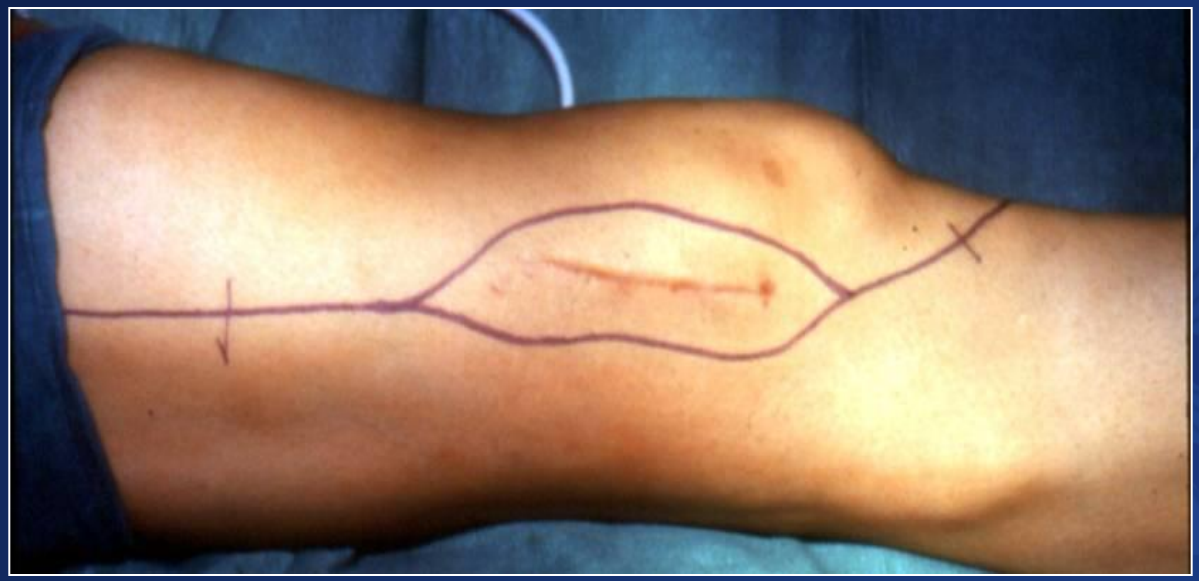
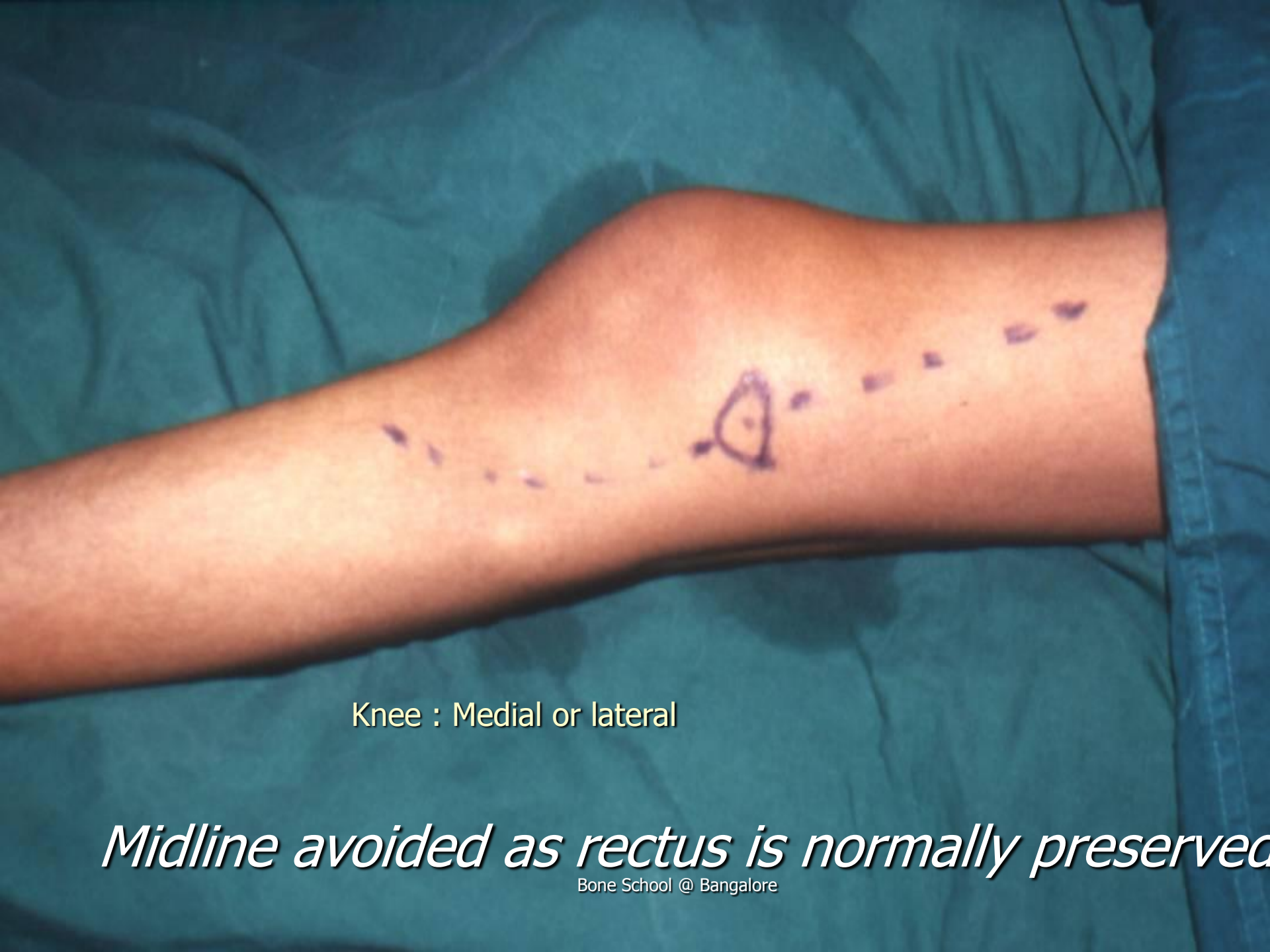
Correct Site

- Shortest route to tumour
- Violate only one compartment
- As distant from N-V bundle as possible
- Avoid joint contamination

Correct site



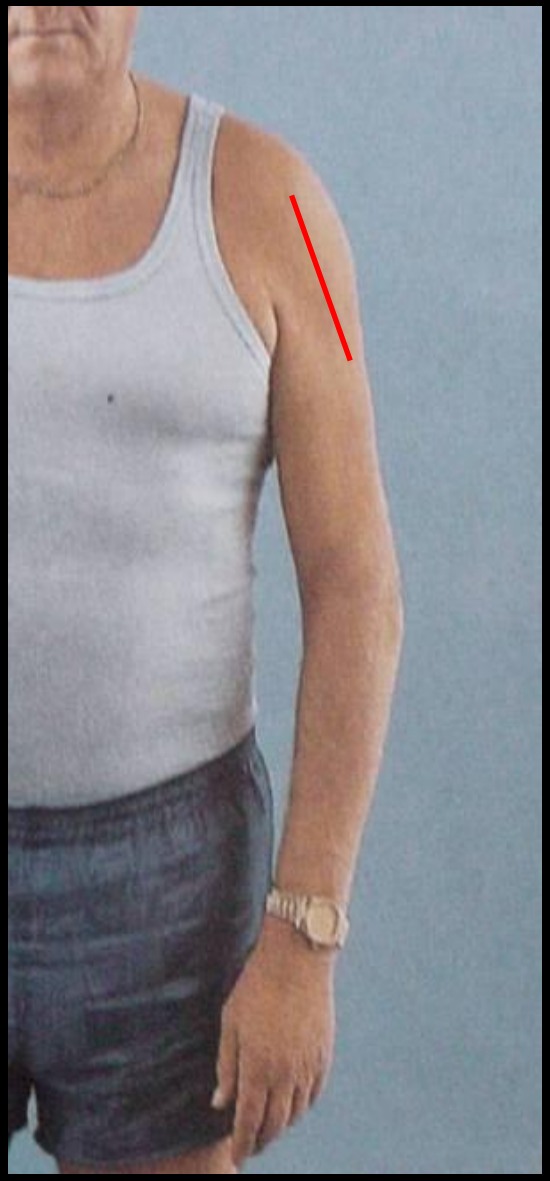
In line with the proposed incision for final limb salvage surgery so that biopsy tract can be excised with the tumour specimen at final surgery.



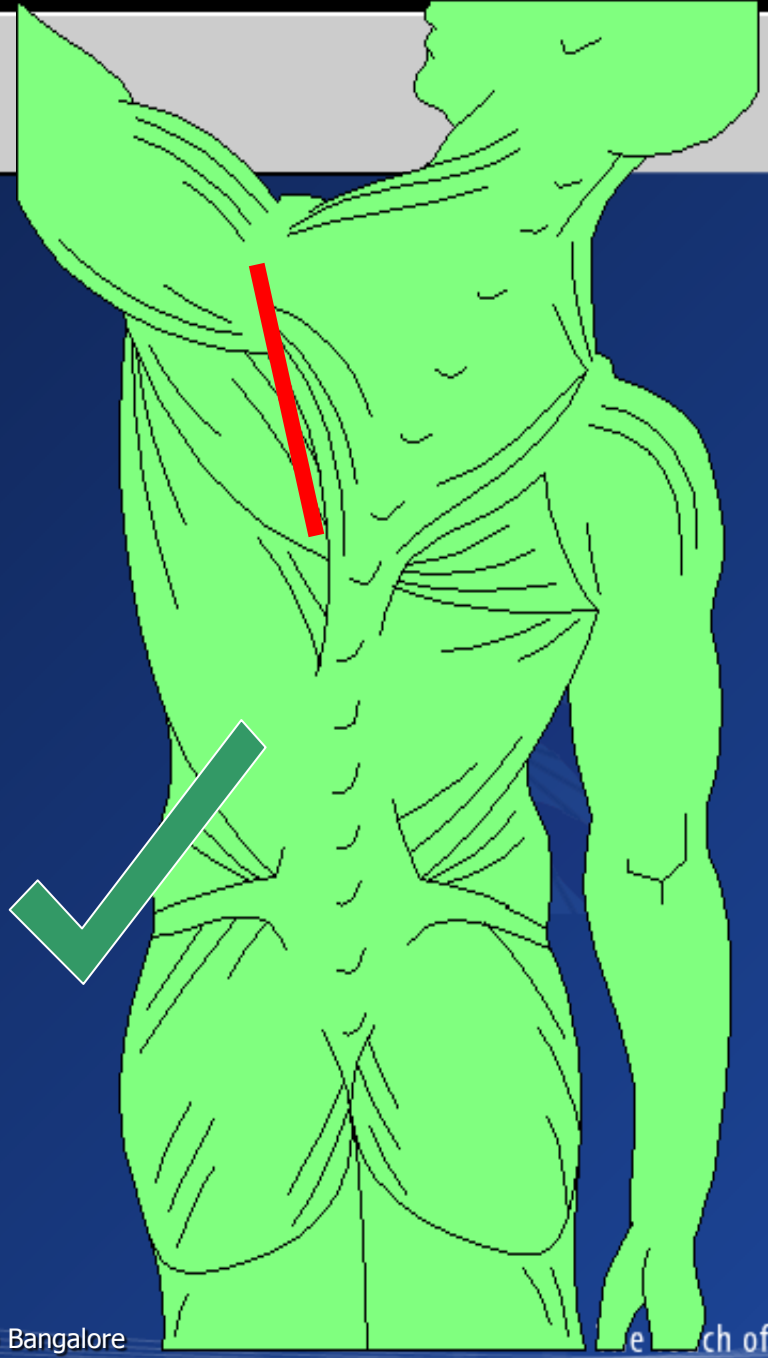
Midline avoided as rectus is normally preserved

Proximal Humerus : Through anterior deltoid

Not through standard D-P groove as any hematoma will contaminate several tissue planes



Scapula : Oblique line from acromion tip to medial side of tip of scapula



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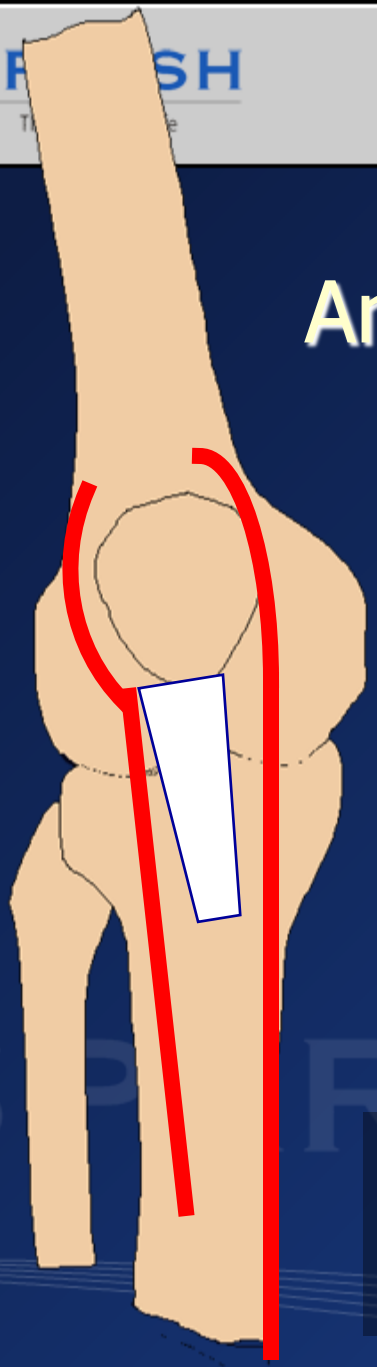
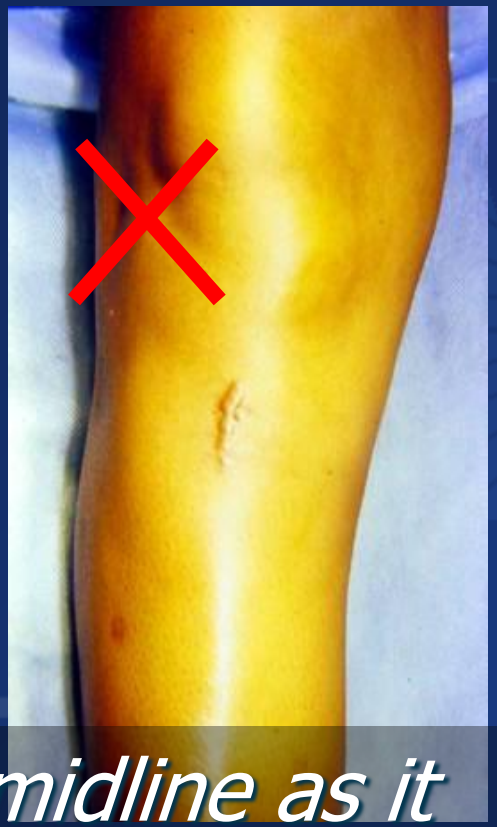
Proximal Tibia

Anteromedial or anterolater





Never midline as it violates patellar tendon

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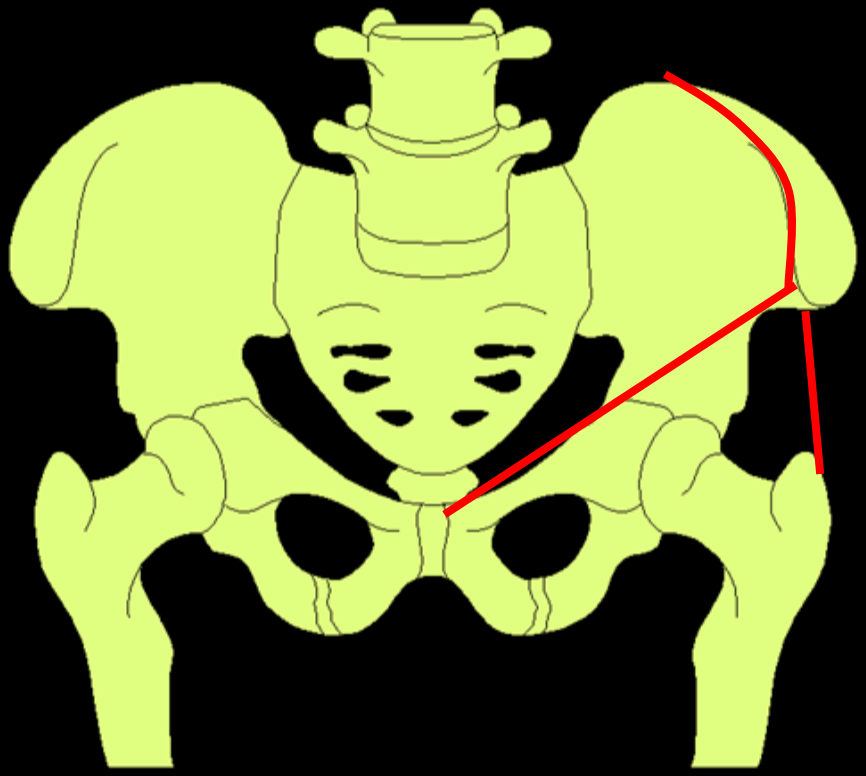
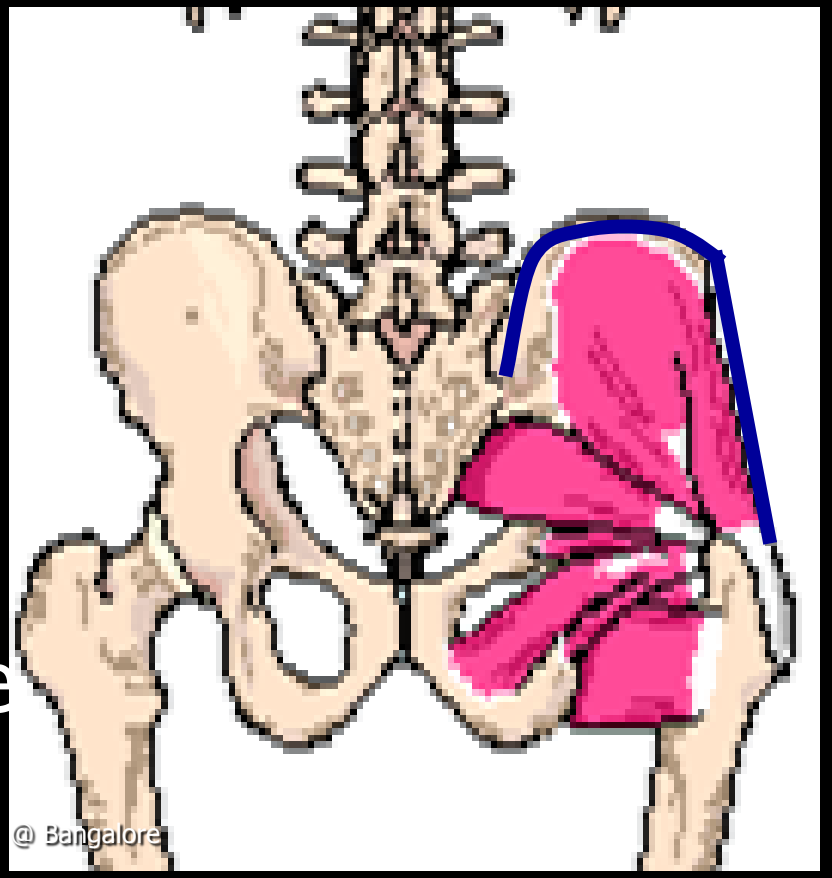


Pelvis



Site in line of incision of definitive procedure

Which area to biopsy ?

- Extraosseous soft tissue component is preferred
  - As representative as intraosseous part
  - Bone integrity not compromised – less risk for pathological fracture
- Solidly calcified or necrotic areas avoided

Which area to biopsy ?

- Centre of the tumour is often necrotic or ossified
- Sarcomas grow centripetally – periphery has the most undifferentiated cells

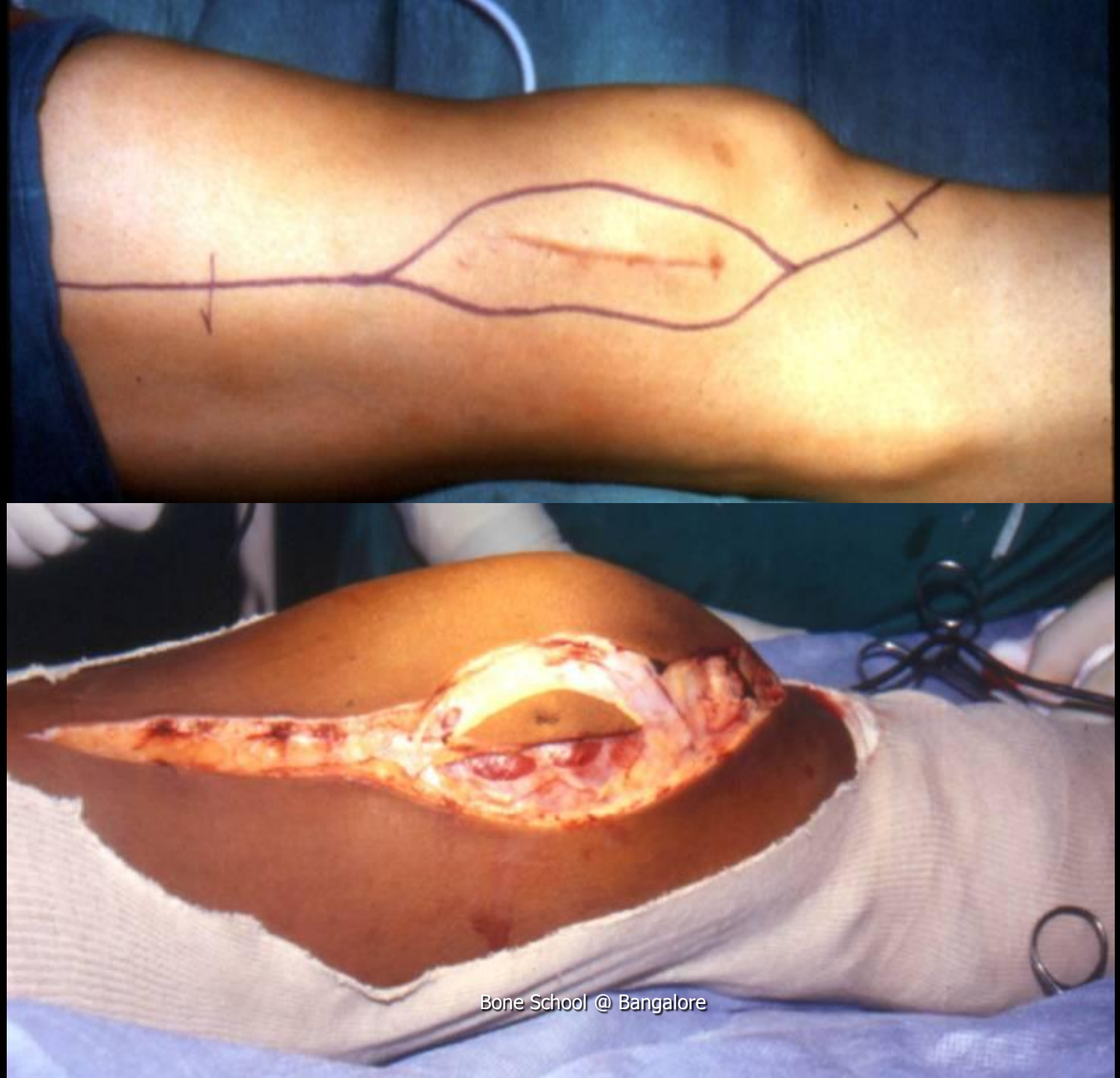
Needle or open biopsy ?

Open Biopsy

- More Representative Tissue
- Higher Accuracy of Diagnosis
- Correct diagnosis even with an average pathologist

Open Biopsy

- Traumatic
- Tissue contamination
- Skin loss during final surgery
- Hematoma, Infection
- Fractures
- GA required
- More OT Time
- Higher costs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Needle Biopsy

- OPD procedure, Local Anaesthesia
- Can be IITV or CT guided
- Practically no infection
- Very little tissue contamination
- Much smaller risk of causing fracture
- Cores from depth of the tumour

Disadvantages ofNeedle Biopsy

- May not yield adequate Tissue
- May be difficult to make a diagnosis
- Only one area sampled : diagnosis may be missed
- Experienced pathologist required to be able to give a diagnosis on small quantity of tissue

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Core Needle Biopsy

- Which needle ?
- What is the correct technique ?
- What is the learning curve ?
- Does it give representative tissue ?
- How accurate is the diagnosis ?
- What are the problems ?

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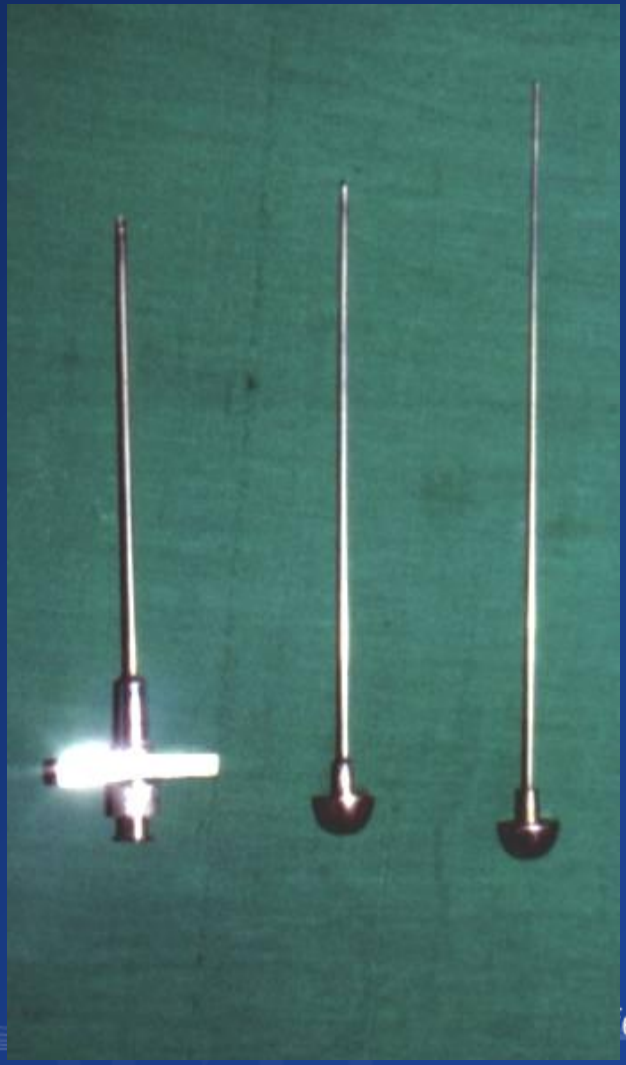
Jamshedi Needle

- Stainless steel
- Sharp enough to pierce bone
- 2-4mm diameter cores
- Cannula, trocar and pushing stilette.



How to send the sample?

- Formaldehyde solution 40%

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How much Tissue ?

- Needle Biopsy

  2-3 cores from different directions

- Open Biopsy

  Adequate depth – often only reactive zone is sampled

Open Biopsy

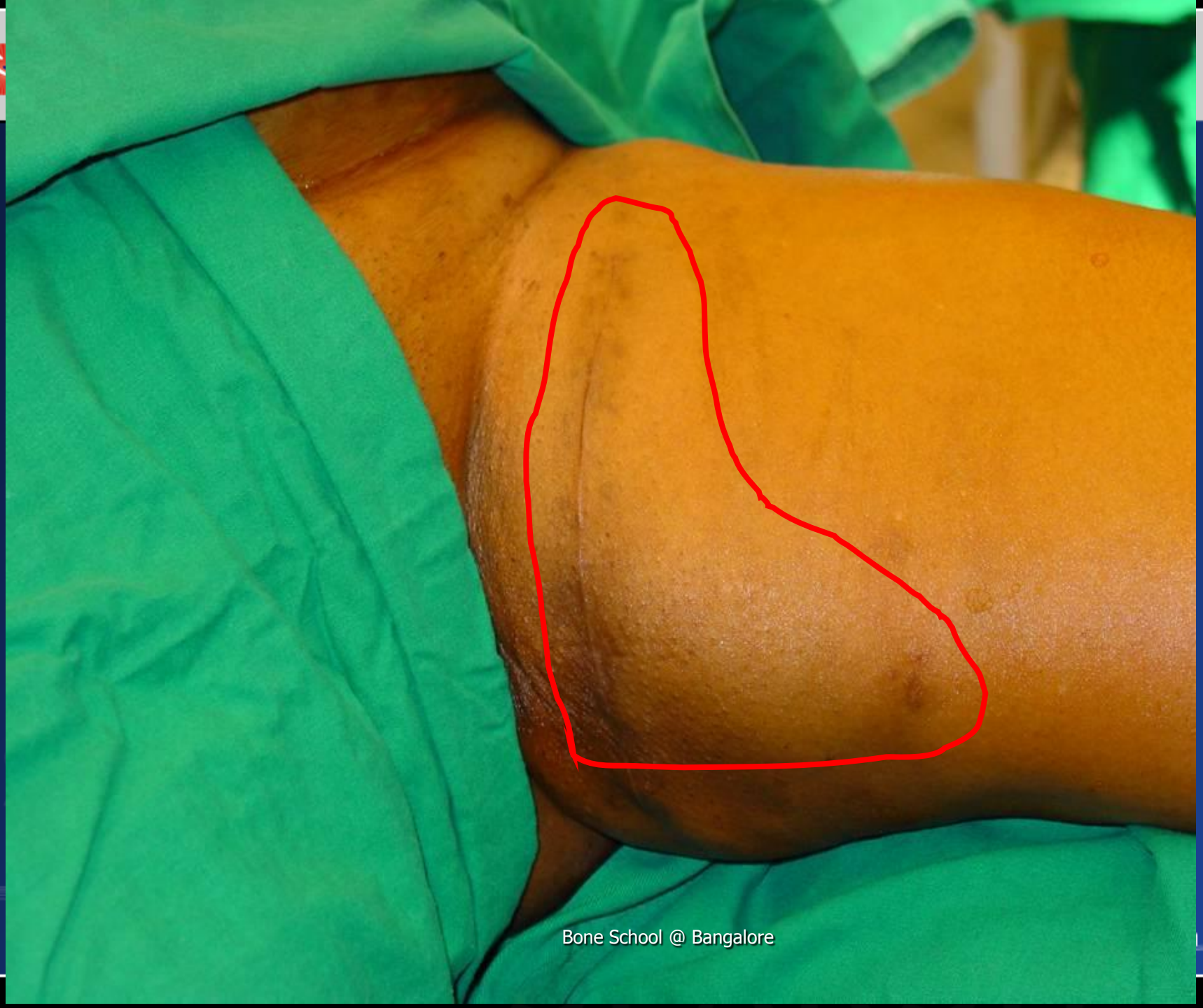
Principles

- Incision in line of incision of definitive procedure
- no transverse incisions
- no flaps raised

Open Biopsy

Principles

- biopsy from viable area (centre may be necrotic)
- good hemostasis
- if drain is used, it must exit close to incision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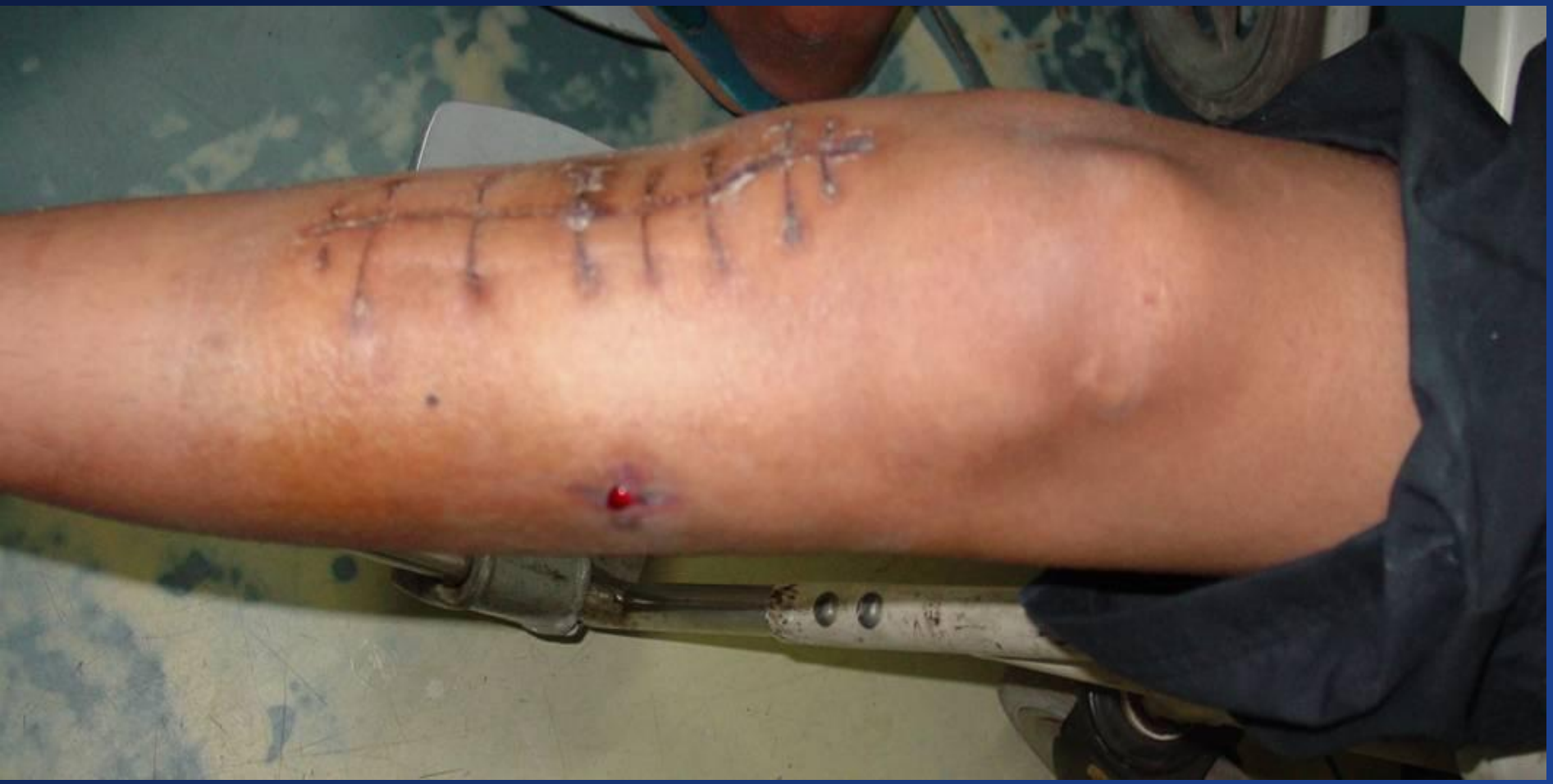


Open Biopsy

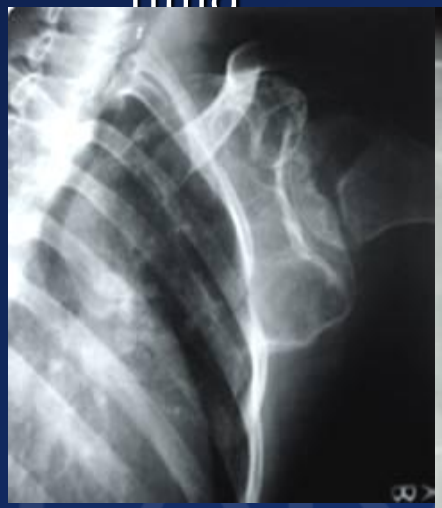
Bone Window

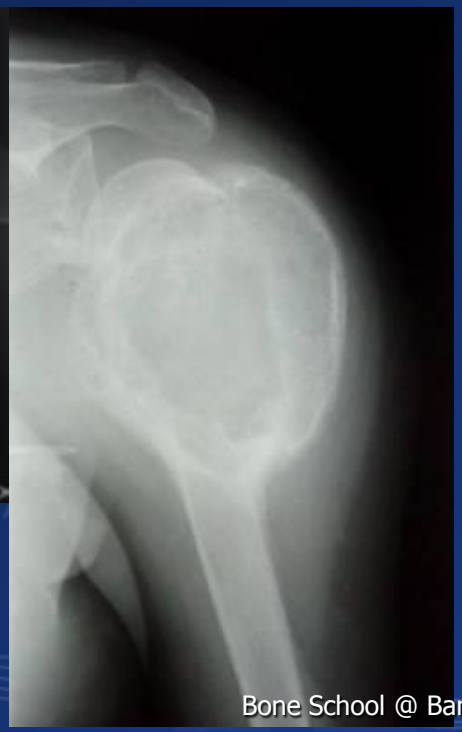
- Window made should be oblong with rounded corners
- Window longer but narrower
- Plug window with PMMA

Non diagnostic Bx

Cystic lesions

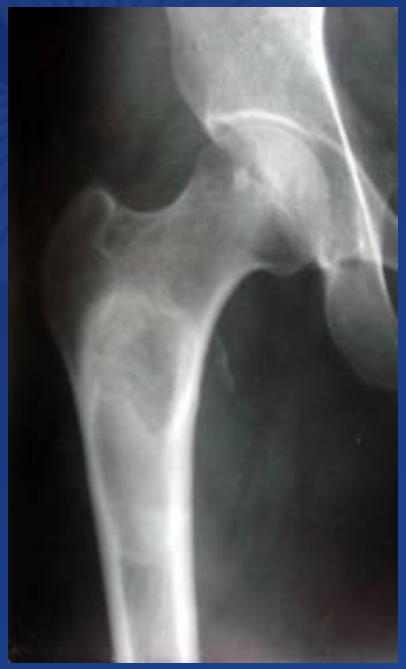
- Poorly Cellular
- Only fibrin, blood, serous fluid





Benign Tumors

- FD
- Chondroma



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Minimising failure

Diagnosis should be strongly suspected prior to biopsy by proper history and imaging . Biopsy must merely confirm the suspicion

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Thank you