Upper limb tumours

Paul Baker – Yr 4 SpR
Craig Gerrand – Consultant Orthopaedic Surgeon
Freeman Hospital, Newcastle

Overview

- MCQs
- Tumour Basics
- Common tumours
  - Bone
  - Soft tissue
- Considerations specific to Upper Limb tumours
- Proximal humeral resection/reconstruction
- Cases
- MCQ answers

MCQs

- 1: The most common primary tumour that occurs in the bones of the hand is which of the following?

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C. Chondrosarcoma
D. Enchondroma
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- 5: Which flaps are most useful for reconstruction of full-thickness shoulder defects following tumour resection from the shoulder area?

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E. The approach should not violate a compartment that is not already occupied by the lesion

Tumour Basics

Definition:

- Mass of tissue formed as a result of abnormal excessive and inappropriate proliferation of cells, growth of which occurs indefinitely regardless of the mechanisms that control normal cellular proliferation

Tumour Basics

History/Examination

- Pain
  - Persistent, night, analgesia
- Swelling/mass
- Rate of progression
- Age
  - Young – Benign Vs Ewings / osteosarcoma
  - 40-60 – Chondrosarcoma / haemopoetic tumours
  - 70s – Metastasis / osteosarcoma / myeloma / lymphoma
- Neurologic symptoms
- Previous malignancy / radiotherapy / +ve FH

Tumour Basics

Imaging: Image whole bone affected

- What is the effect of the lesion on the bone?
  - Zone of transition / margin
  - Slow growing – narrow / sclerotic
  - Rapid growing – permeative / codmans traiangle / sunray spiculation
- What is the effect of the bone on the lesion?
- Is the lesion solitary or multiple?
- Where in the bone is the lesion

Tumour Basics

Imaging: Other studies

Characterising and Staging tumour

- CXR
- USS
- Bone Scan
- CT/MRI
- Others eg PET Scan

Bloods

- Ca^{2+}, ALP
- PSA, Electophoresis, Urine Bence-Jones

Tumour Basics

Biopsy

- Ideally surgeon who will perform resection
- Performed through muscle
- Don't expose Neurovascular bundles
- Stay within compartment
- Longitudinal not transverse incision
- Don't lift skin/tissue flaps
- Send sample for culture
- Meticulous haemostasis
- Fresh Vs Fixed

Needle (Jamshedi/Trucut/Islam) Vs Open Vs Excisional

Tumour Basics

Staging

- Why?
  - Prognostic / Guide treatment & adjuvant therapies
- Enneking
  - Grade (From Biopsy):

    Low (G1) Vs High (G2) grade
  - Site (From local imaging):

    Intracompartmental (T1) Vs Extracompartmental (T2)
  - Metastasis (From staging CT):

    No Mets (M0) Vs Mets (M1)

Tumour Basics

Stage	Grade	Site	Metastasis
IA	G1	T1	M0
IB	G1	T2	M0
IIA	G2	T1	M0
IIB	G2	T2	M0
III	Any	Any	M1

Plus graph
sarcoma.org Ch 1

Tumour Basics

Tumour Excision

Diagram sarcoma.org Ch 1

Common Bone Tumours

Osteosarcoma – Malignant spindle cell tumour

- Bimodal age distribution
- Distal femur (50%) & Prox Humerus (25%)
- X-ray – lytic/sclerotic, permeative margins, Codmans triangle, sunray spiculation
- ≈10% have lung mets at presentation
- Survival ↑ with adjuvant/neo adjuvant chemotherapy
- Poor prognosis if develops in Pagetic bone

Common Bone Tumours

Chondrosarcoma – Malignant cartilage tumour

- $4^{th}/5^{th}$ Decade
- M>F
- X-ray – patchy calcification:
  Popcorn appearance,
  endosteal scalloping
- Often slow growing with late metastasis
- Not chemo/radiosensitive

Common Bone Tumours

Ewings – Malignant small round blue cell tumour

- Assoc with (11:22) chromosome translocation
- Occurs in kids (median age 13)
- Mainly femoral / tibial diaphysis
- Often have soft tissue invasion leading to Onion skin appearance on x-ray
- Assoc systemic upset – ↑ESR, ↑Temp, pain
- Neoadjuvant Chemo highly effective in ↓tumour bulk

Common Bone Tumours

Giant cell tumour – Benign but aggressive tumour

- 80% occur in the mature skeleton
- Varied behaviour
  - Latent vs active vs aggressive
- Pathology: Multinucleated giant cells & stomal cells
- Epiphyseal abutting subchondral bone
- Treatment: excision preserving joint / reconstruction

Common Bone Tumours

Enchondroma – Benign Cartilage tumour

- Islands of persisent cartilage in metaphysis due to defective endochonral ossification
- Lesions in hand/feet – benign
- Lesions in pelvis/long bones more concerning
- Single Vs Multiple (Olliers) Vs + Haemangiomas (Maffuccis)

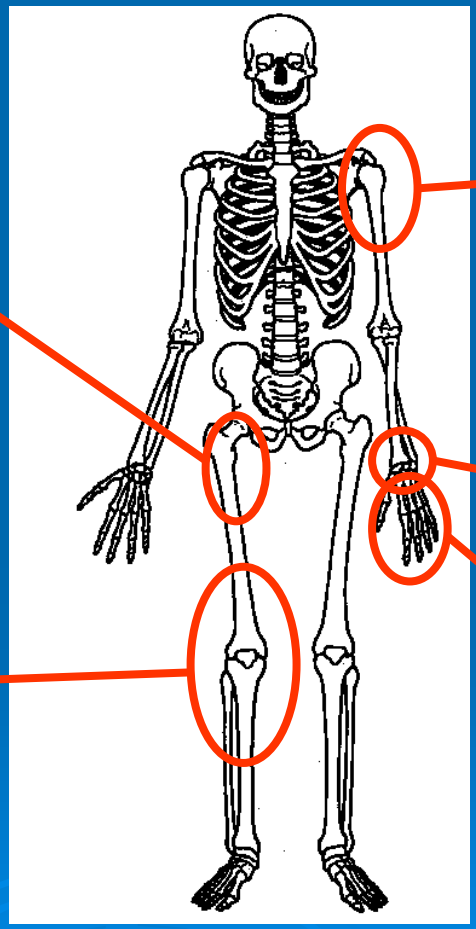
Common Bone Tumours

Osteochondroma (Exostosis) – Benign bone surface tumour

- Commonest benign bone tumour
- Solitary Vs Multiple (Diaphyseal acalasis)
- Bone stalk with cartilage cap
- Should stop growing when parent bone stops growing
- Low risk of malignant change
- Concern if ↑size or cap >1cm

Common Bone Tumours

Osteosarcoma
Chondrosarcoma
Ewings
Enchondroma
Osteochondroma



Osteosarcoma
Chondrosarcoma
Ewings
Enchondroma
Osteochondroma
GCT

GCT

Osteosarcoma
Chondrosarcoma
Ewings
Enchondroma
Osteochondroma
GCT

Enchondroma

Common Bone Tumours

Metastasis

- Lung, Breast, Prostate, Kidney, Thyroid

Principles:

- Control pain
- Control mass of deposits
- Treat fractures
- Treat ↑$Ca^{2+\#}$
- Prophylactic stabilisation

Soft Tissue Tumours

- Soft Tissue Sarcomas in upper limb

	UL (%)	LL (%)
Malignant fibrous histiocytoma	40	31
Liposarcoma	15	25
Synovial Sarcoma	10	5
Malignant PNST	7	7
Lieomyosarcoma	7	8
Fibrosarcoma	7	3
Epithelioid sarcoma	3	1
Other	11	20

Gerrand et al: The influence of Anatomic location in patients with STS of the extremity. CANCER 2003 97(2): 485

Soft Tissue Tumours

- Benign “lumps and bumps”
  - Synovium : Ganglia, GCT tendon sheath, PVNS
  - Fat : Lipoma
  - Vascular : AV malformations, Haemangiomas, Glomus tumour
  - Fibrous tissue : Fibroma, Fibromatosis
  - Neural : Schwanoma, Neurofibroma
  - Others : Post traumatic conditions, epidermal cysts, CMC Boss

Considerations specific to UL STS

- UL Vs LL
  - Smaller lesions at presentation
  - Less likely to be deep to or involving the investing fascia
  - Higher rate of unplanned excision before referral
  - Tumours of different histological types
  - Higher rate of local recurrence
    - ?Related to:
    - Histological type
    - Unplanned excisions
    - Anatomy
    - Use of adjuvant modalities

Considerations specific to UL STS

- Preservation of function is key consideration
  - Less likely to amputate
  - Preference for WLE and reconstruction
- Treatment of 2ndry boney metastasis
  - UL not weight bearing
  - Can therefore consider use of conservative measures eg protection in sling, immobilisation for fractures etc

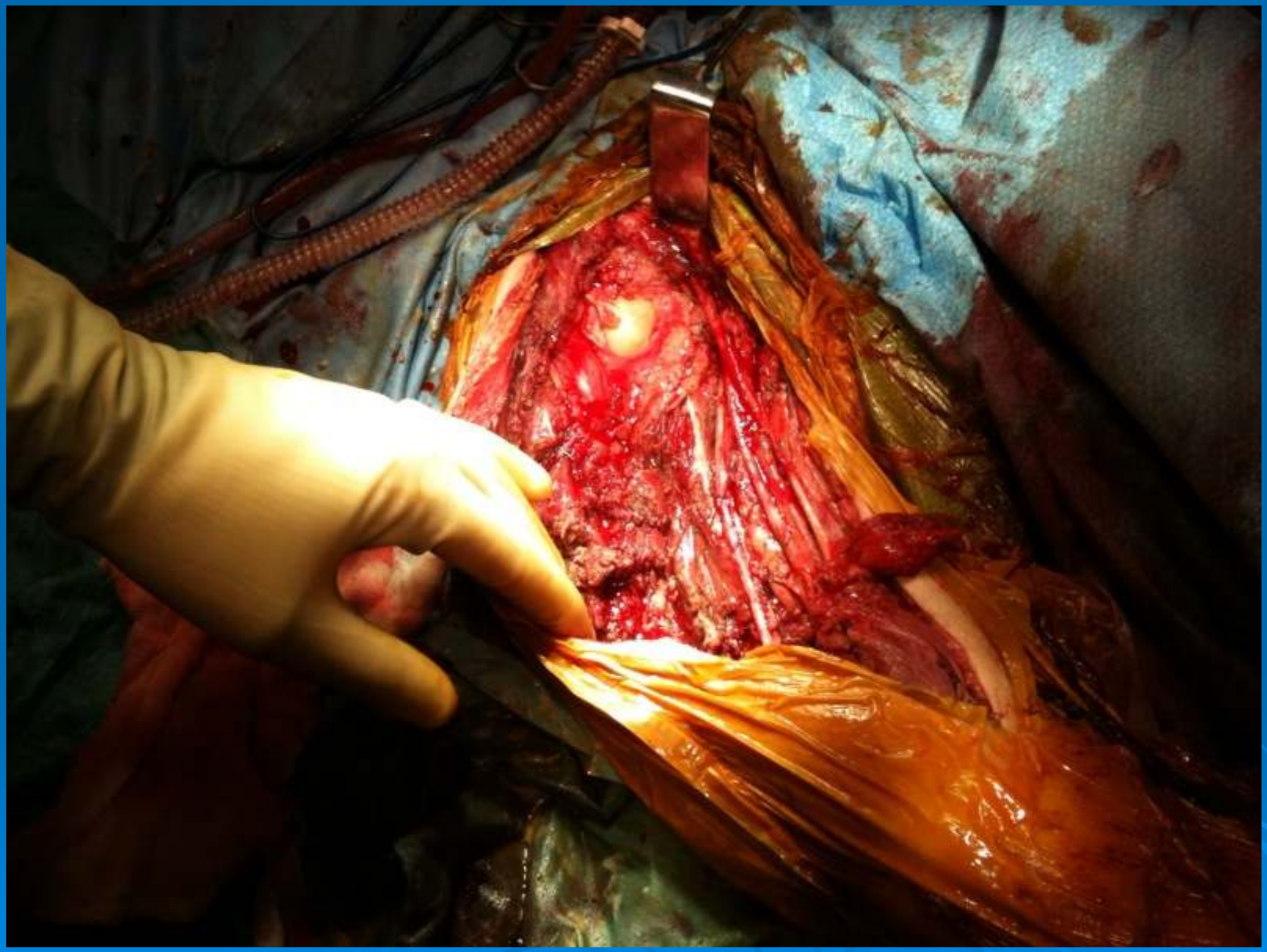
Proximal humeral reconstruction

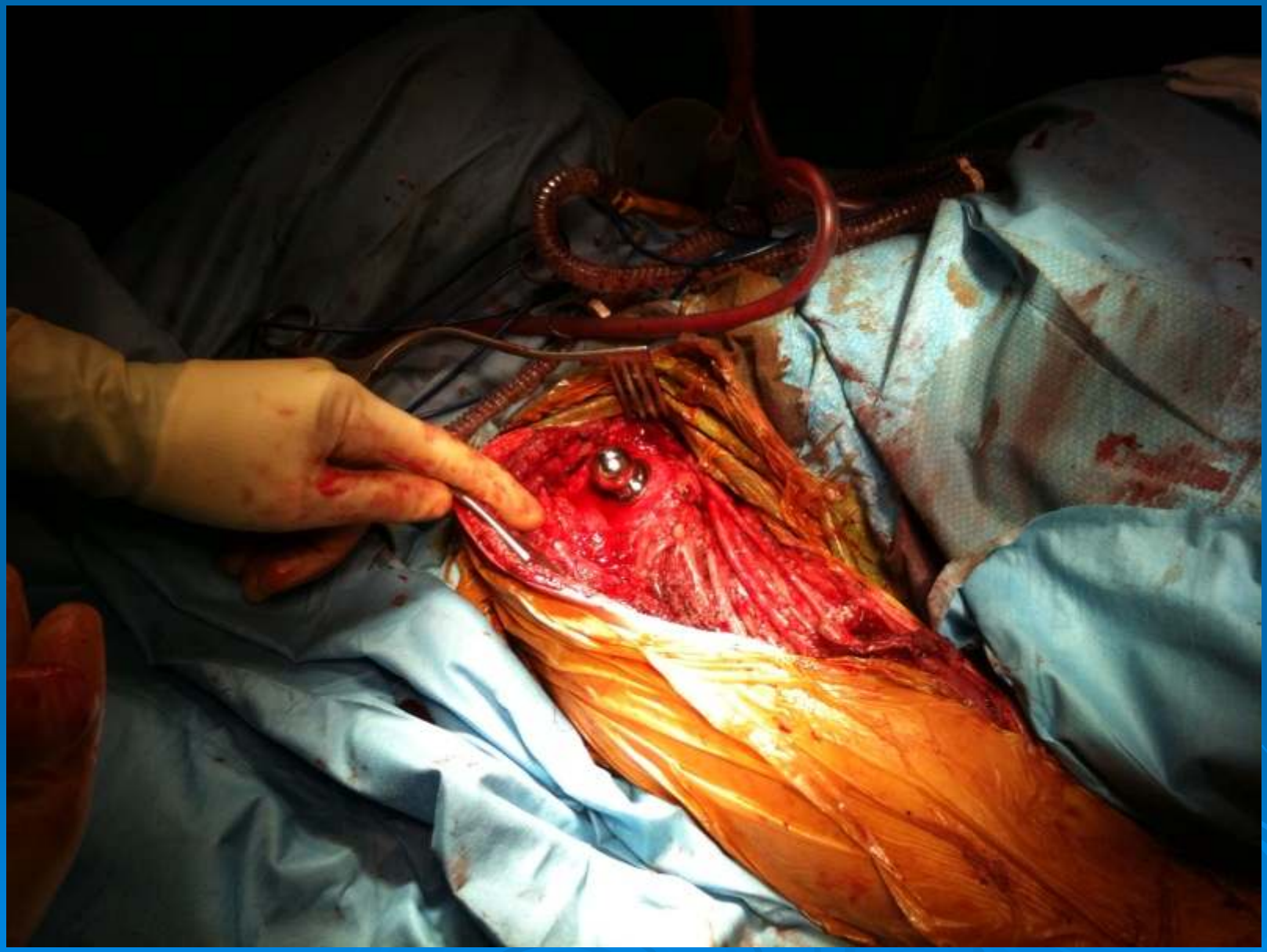
84 yo male

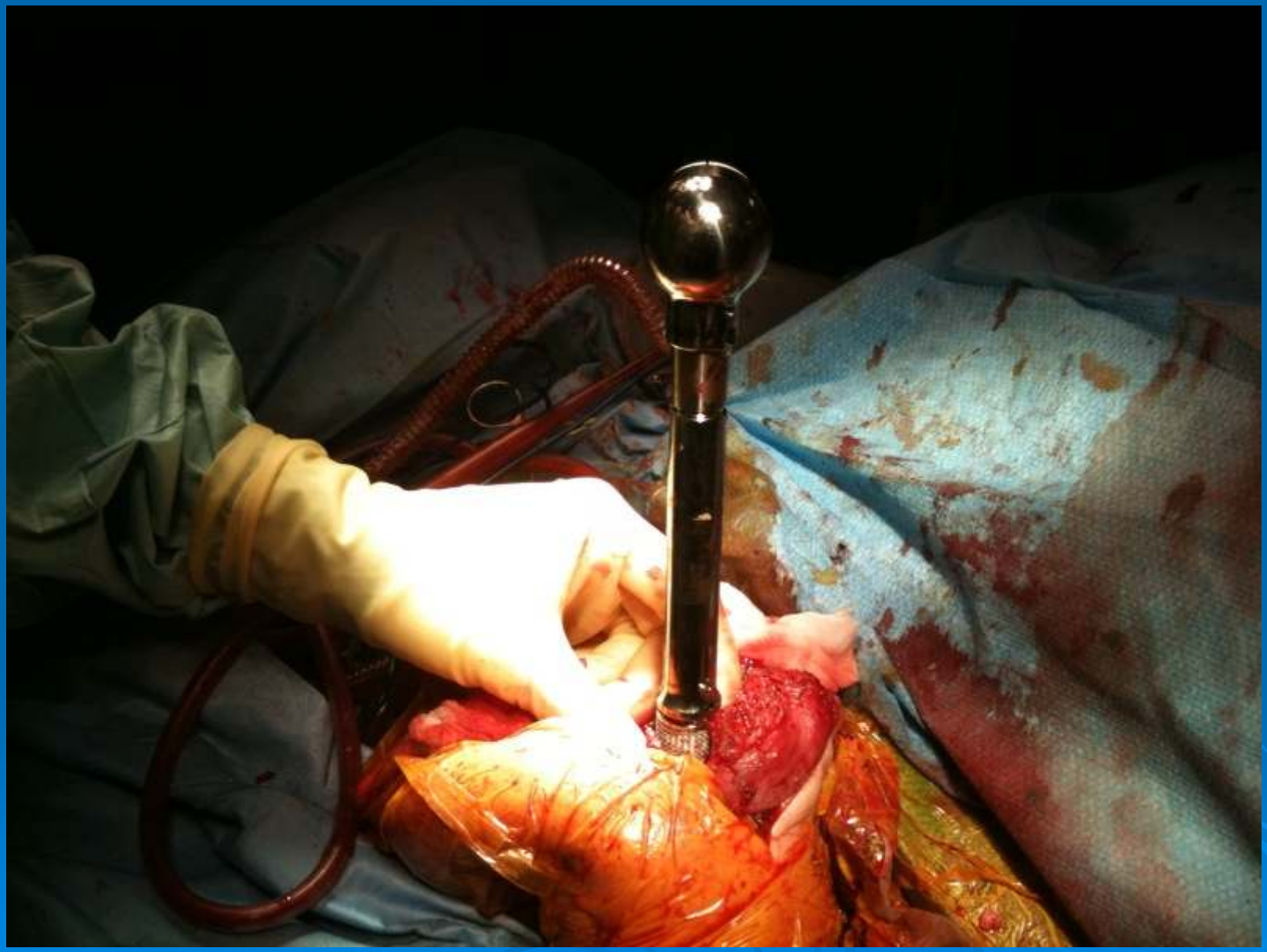
Pathological fracture

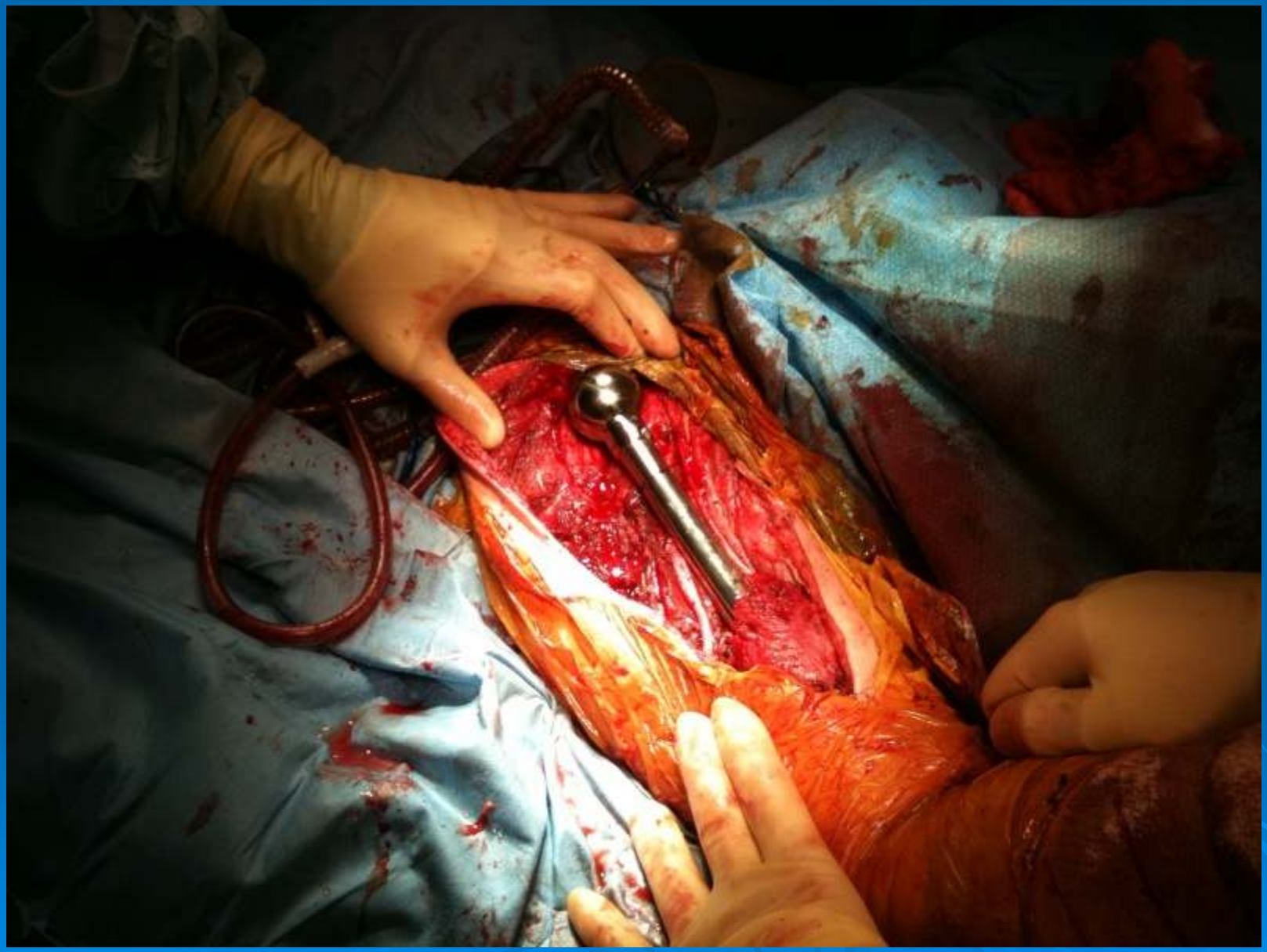
1. Most likely diagnosis?

2. What next?

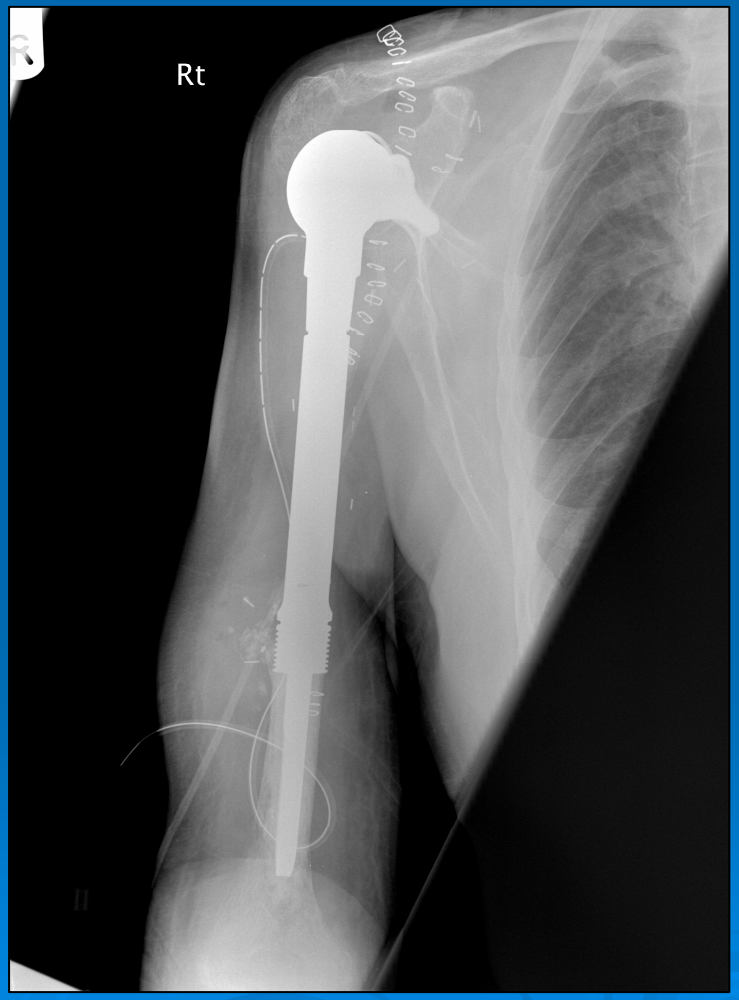








Reconstruction



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Acknowledgements

- MCQs adapted from:
  - Review questions in Orthopaedics, Wright JM et al Lippincott Williams and Wilkins

- Please look at www.Sarcoma.org for further information. There is a link to a free online text book (on the left hand side of the main page) from which the majority of the in information for this talk was taken and a lot of the pictures (which I unfortunately cannot put in to the uploaded version) also came form this resource