Disclaimer

Lower Limb Tumour Management

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Lower Limb Tumours

- Sarcomas
- Biopsy
- Staging
- Multidisciplinary Management
- Resection and Reconstruction

Musculoskeletal tumours

- >70 types of sarcoma
- 1000/yr Australia
- 40% increase over 10yrs
- Average age 29 yrs

Genomics of Cancer Management

- Whole genome sequencing $1000
- Microarrays ~ 20 mutations $800
- 700 mutations-therapeutic relevance
- Personalized medicine

PRESENTATION
10y old painful mass 6m

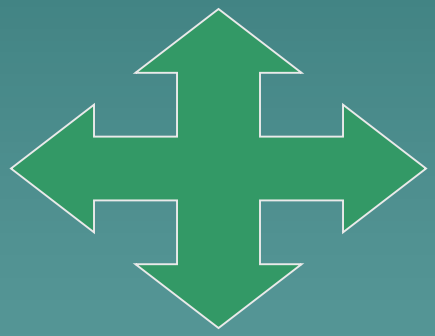
Management of 50 consecutive sarcomas: WA 1991 -93

- 28 biopsied pre referral to MDT
- 3 unnecessary amputations
- 14 diagnostic delay 6m
- 11 diagnostic delay>1yr
- 4 missed opportunities to treat with curative intent

WA State Sarcoma Service

Surgeons

Radiologist



Pathologist

Oncologist

Plastic & Reconstructive Surgeons

- Reconstruct defect
- Cover prosthesis & allograft
- Restore function
- Neurovascular Repair
- Beware DFSP Angiosarcoma & epithelioid sarcoma

Multidisciplinary Management

- Clinical assessment
- Imaging
- Biopsy
- Treatment

Imaging

- US screening, biopsy guidance
- XR screening, initial assessment
- MRI road map (pre biopsy)
  diagnosis / activity
- PET metastases >5mm
  assess systemic therapy
- CT fine slice with PET

Biopsy After Imaging !

- Fine needle aspiration
  homogenous cystic lesions
  sarcoma seeding
- Closed core ***
  LA tract marked with carbon 80% diagnosis
- Incisional
  traditional GA 95% diagnosis
- Excisional
  low grade lipomatous and cartilagenous lesions

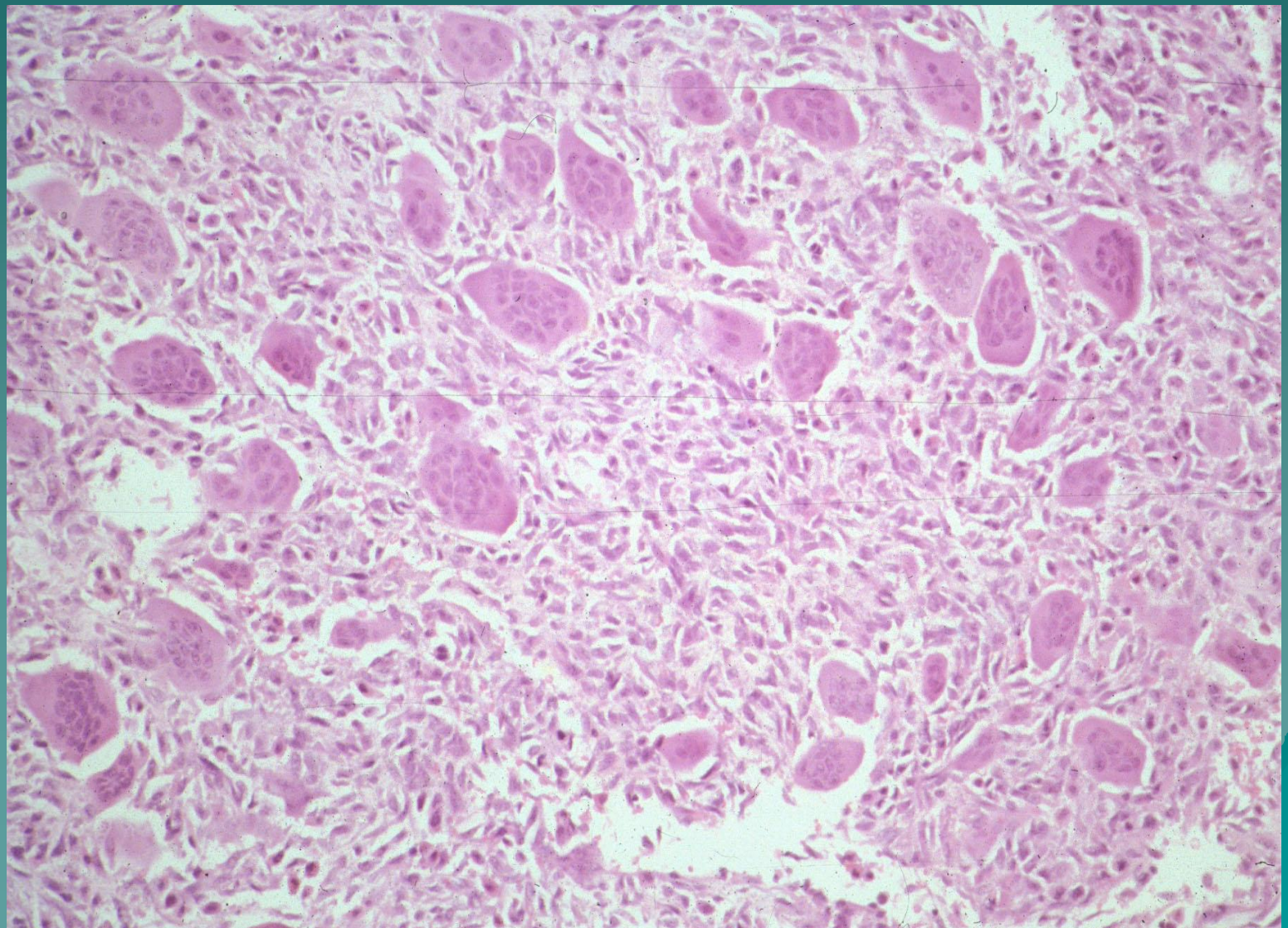
Biopsy Pitfalls

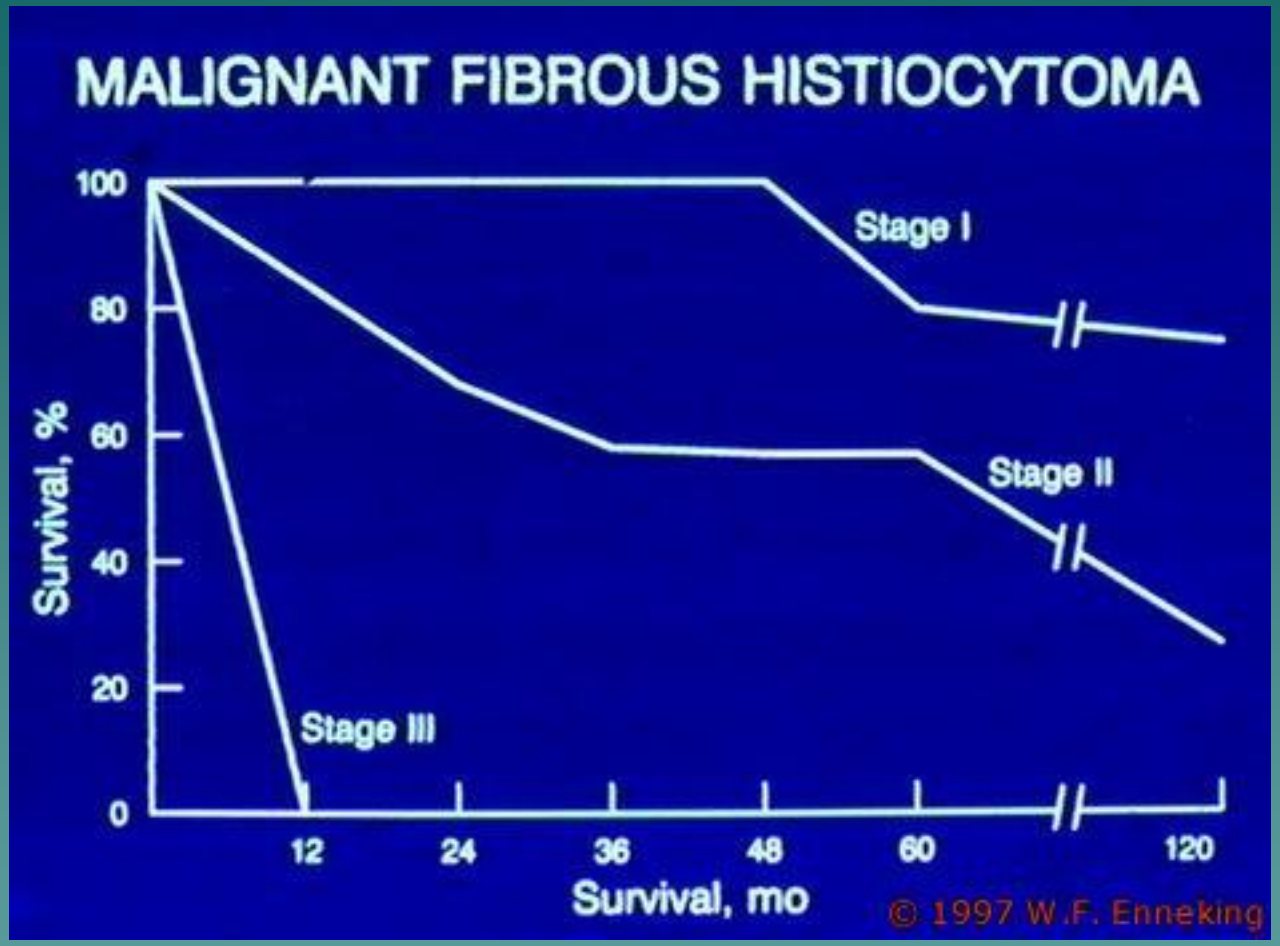
- FNA – local recurrence
- Before imaging – MRI road map obscured
- WHOOPS procedure – local recurrence
- Sarcoma seeded by haematoma
- Seeding by remote drain placement
- Transverse incision – unnecessary amputation

Surgical Staging System

BENIGN		MALIGNANT	
1	inactive	I	low grade
2	active	II	high grade
3	aggressive	III	metastases

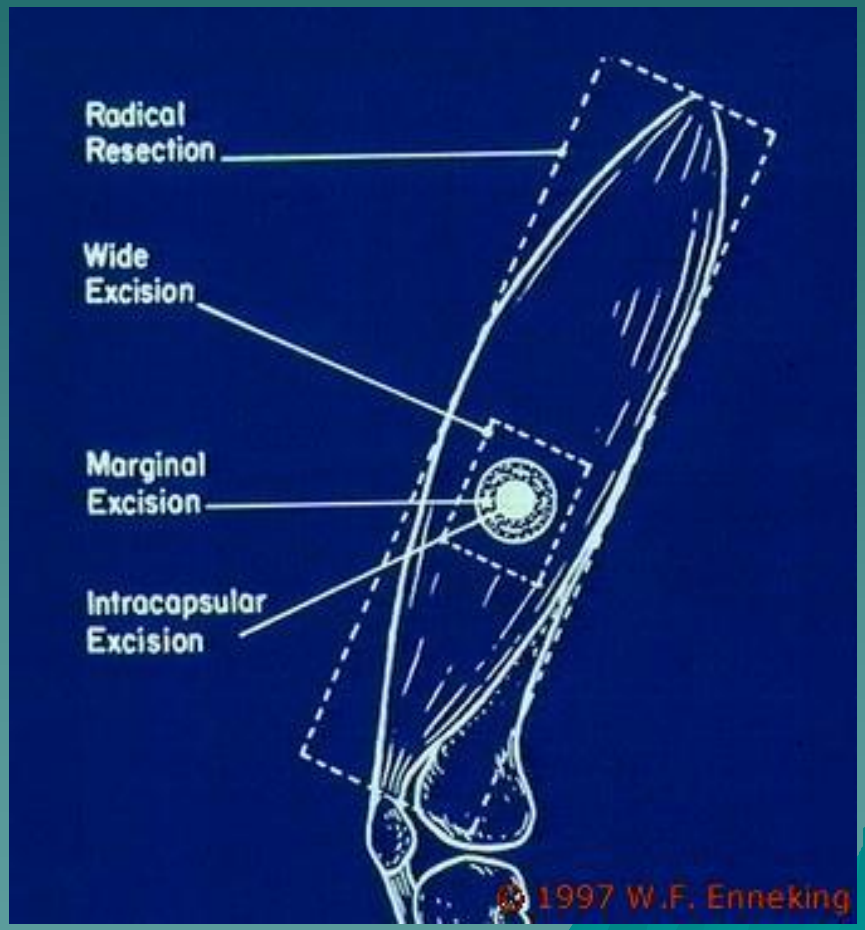
Histology grade 1, 2, & 3 Giant Cell Tumour of Bone




MALIGNANT FIBROUS HISTIOCYTOMA
Survival, %
100
80
60
40
20
0
Stage I
Stage II
Stage III
12
24
36
48
60
120
Survival, mo
© 1997 W.F. Enneking

Surgical Margins
Satellites and Skip Lesions

- Intralesional
- Marginal
- Wide
- Radical

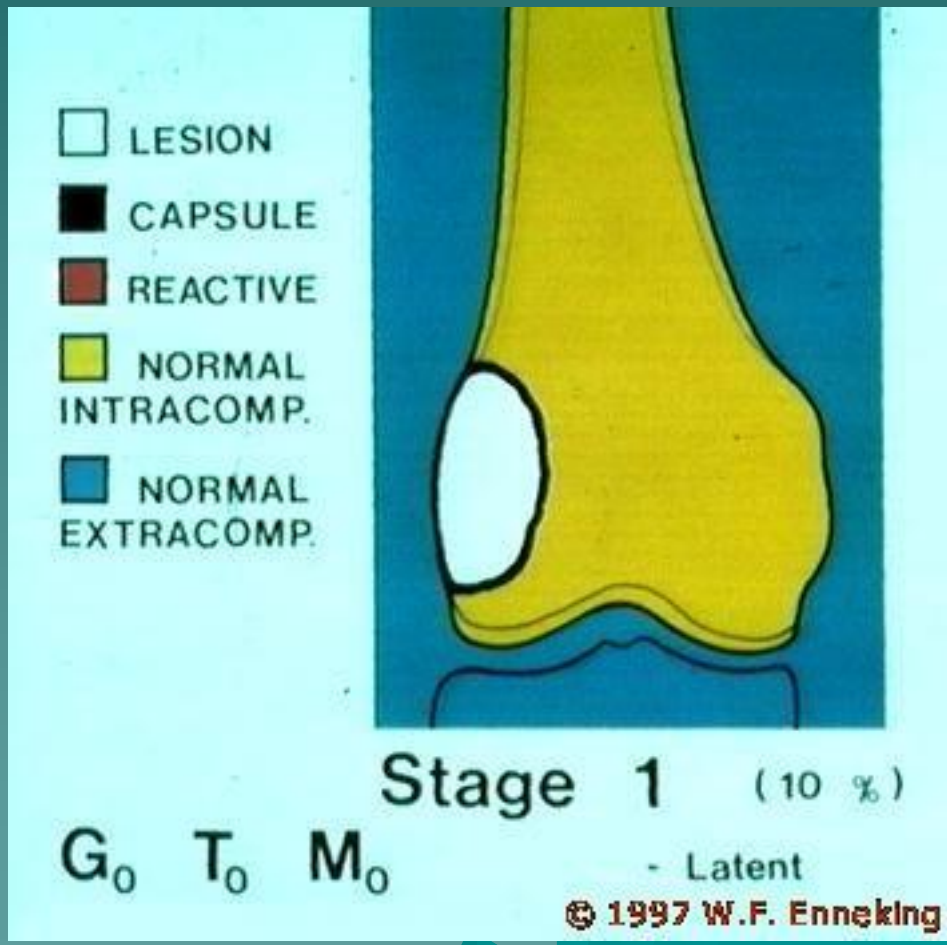


Surgical Margins

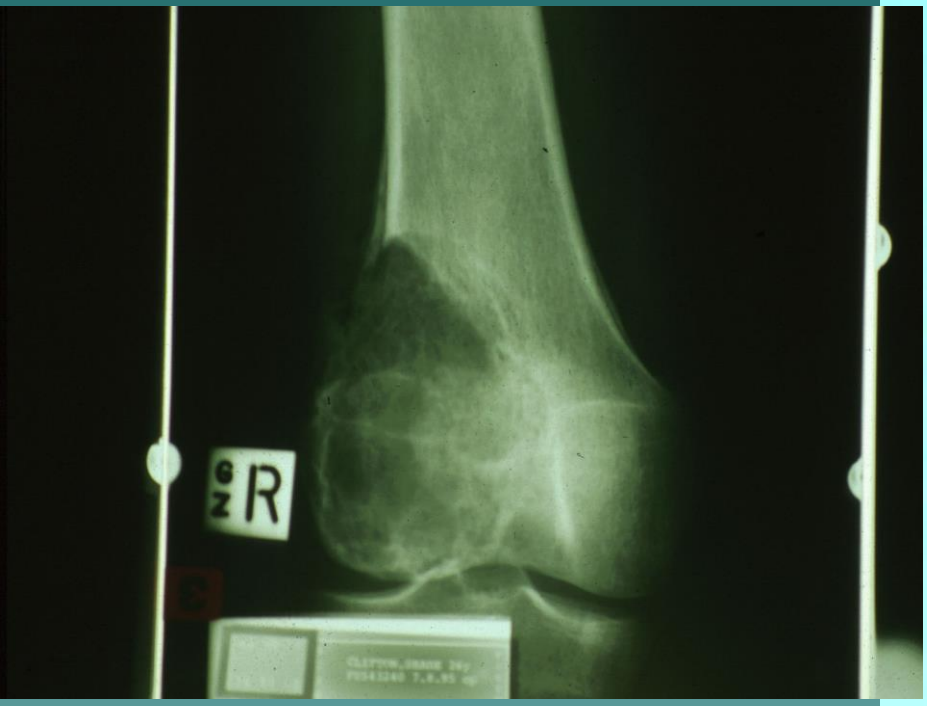
MARGIN	RESIDUAL TUMOUR
Intralesional	macroscopic
Marginal	microscopic & skips
Wide	skips
Radical	none (mets)

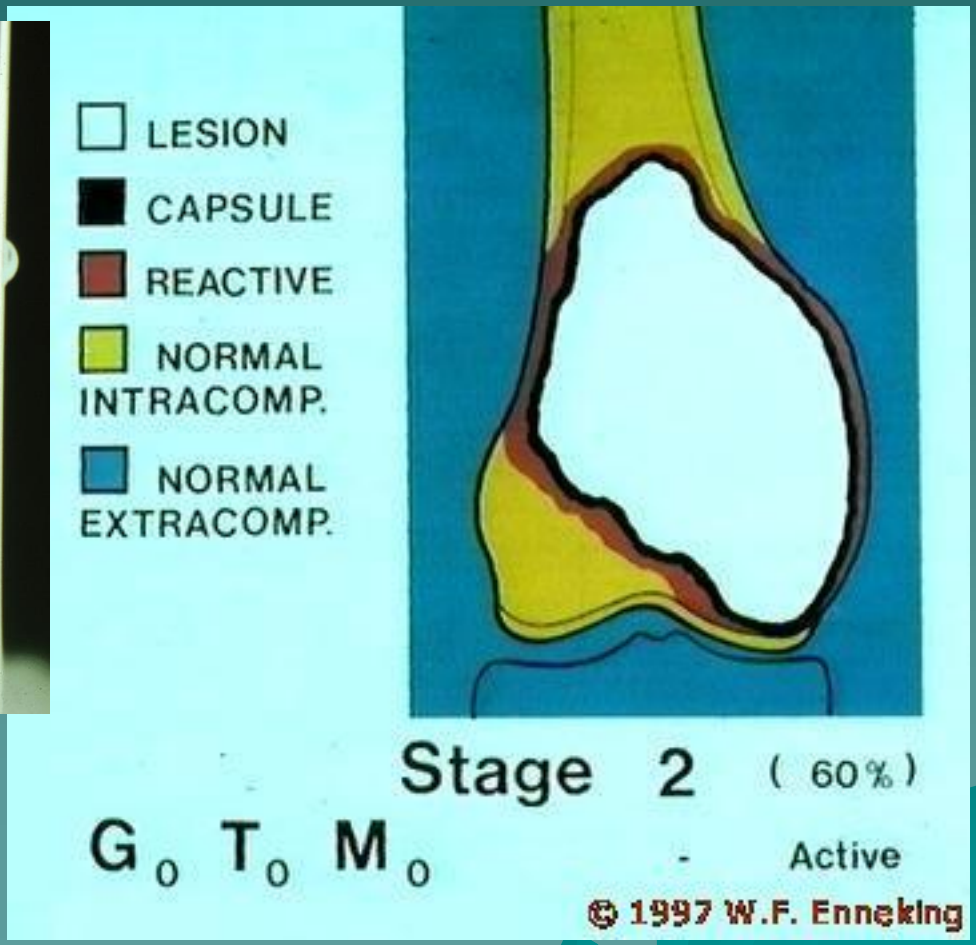
Stage 1 benign

- Inactive
- Minimal reactive zone
- Intralesional resection/observe



Stage 2 benign





Stage 2 benign

- Active
- Defined reactive zone
- Expansion of bone
- Adjuvant
- Marginal >wide

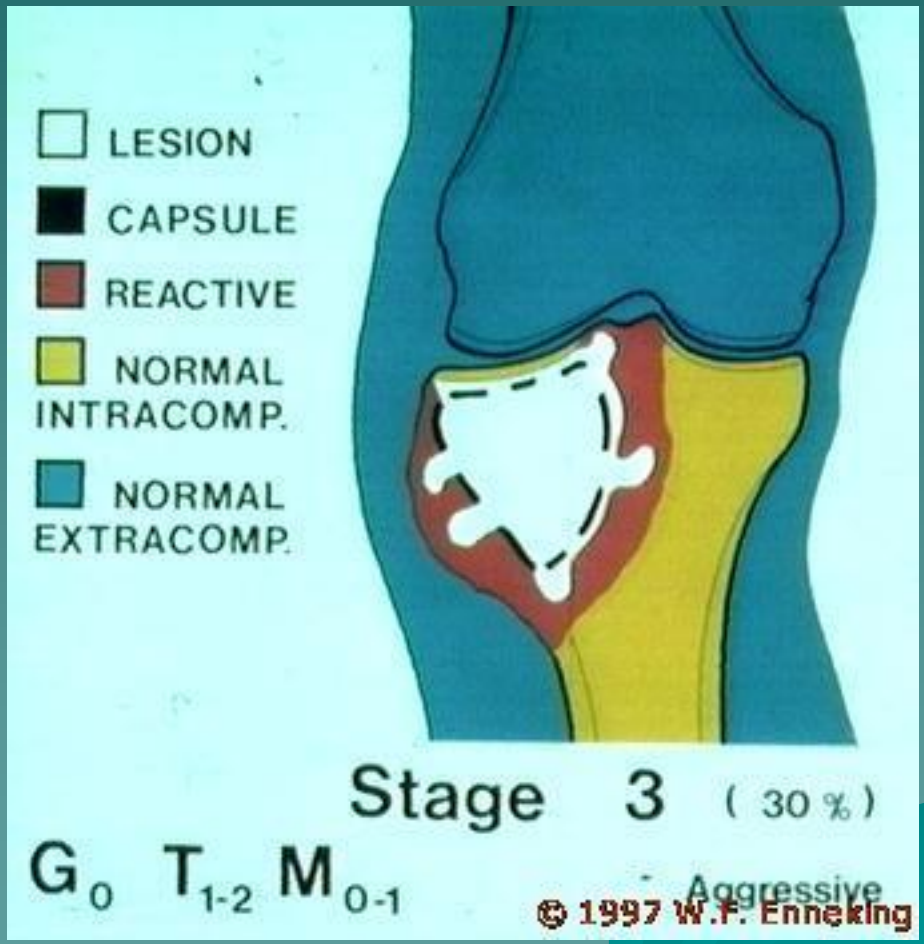
Surgical Staging System

BENIGN

- 1 inactive
- 2 active
- 3 AGGRESSIVE

Stage 3 benign

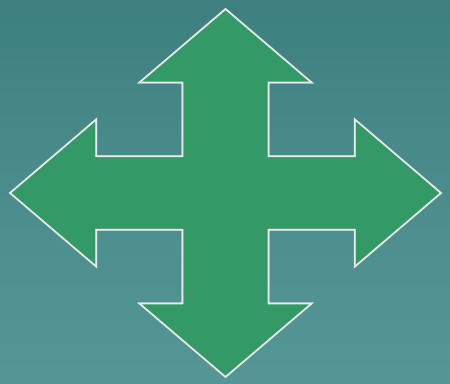
- Aggressive
- Cortical destruction
- Wide reactive zone
- Adjuvant down stage
- Wide resection



Adjuvant

Physical

Local

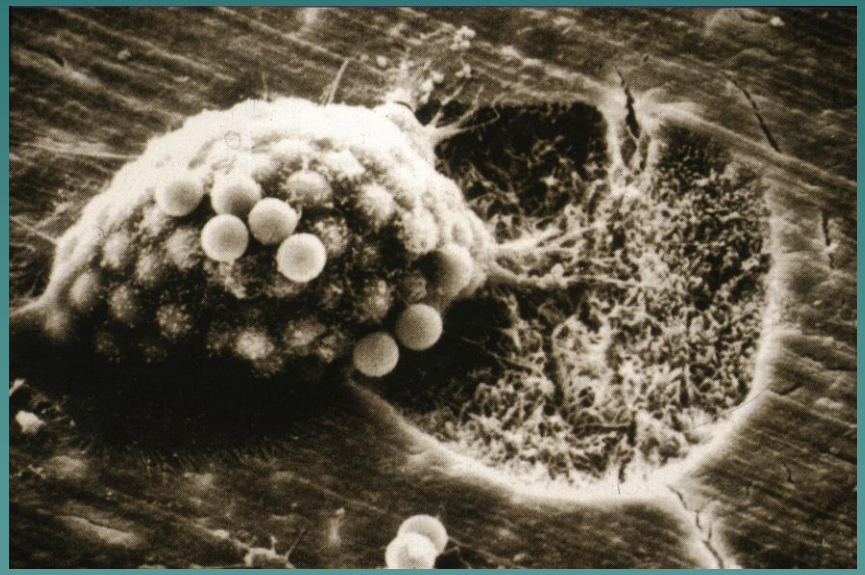


Systemic

Chemical

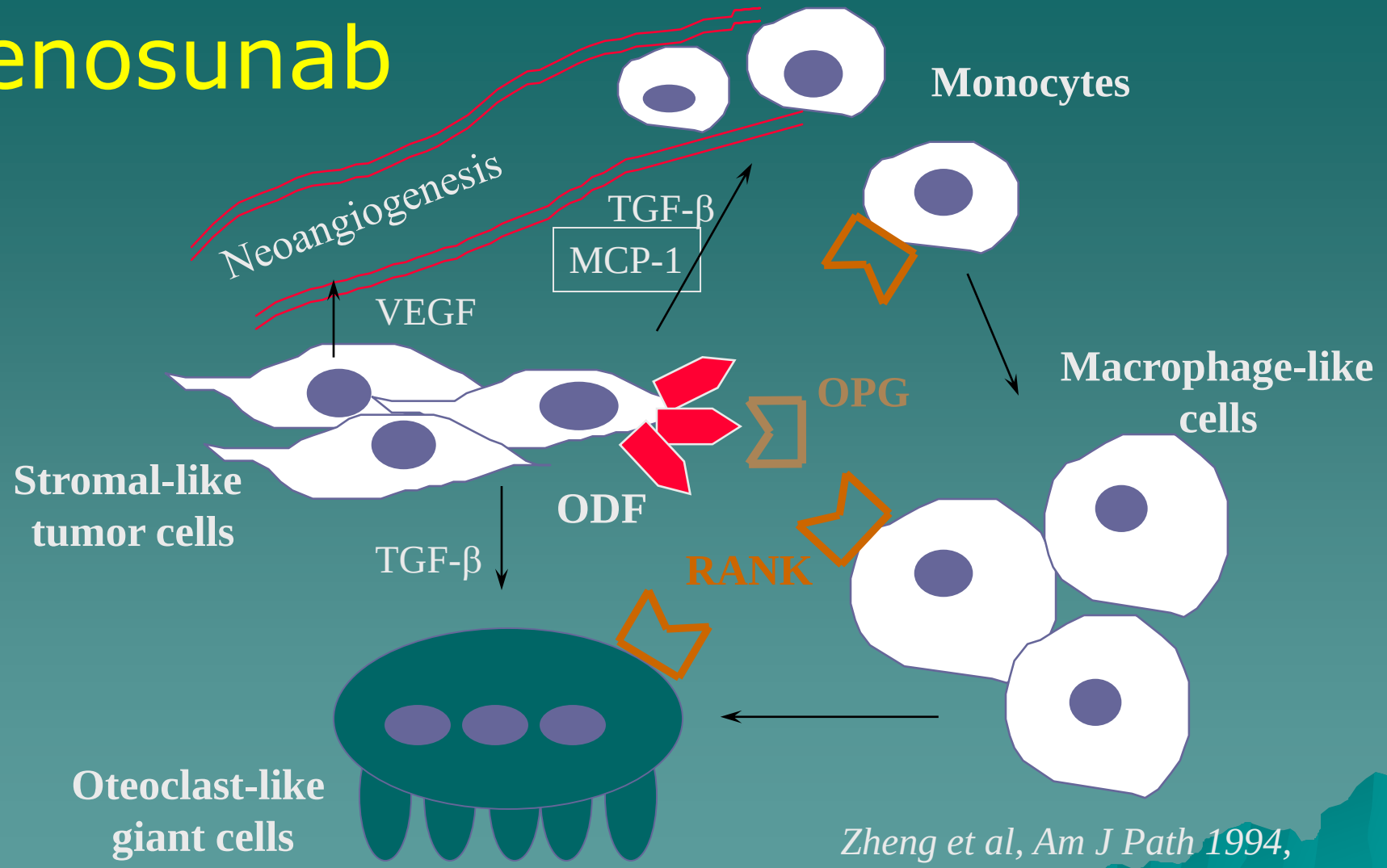
Adjuvant: Giant Cell Tumour

- Acrylic cement
- Phenol
- Cryosurgery
- Bisphosphonates
- Denosunab



A model of tumor cell-induced osteoclastogenesis in GCT

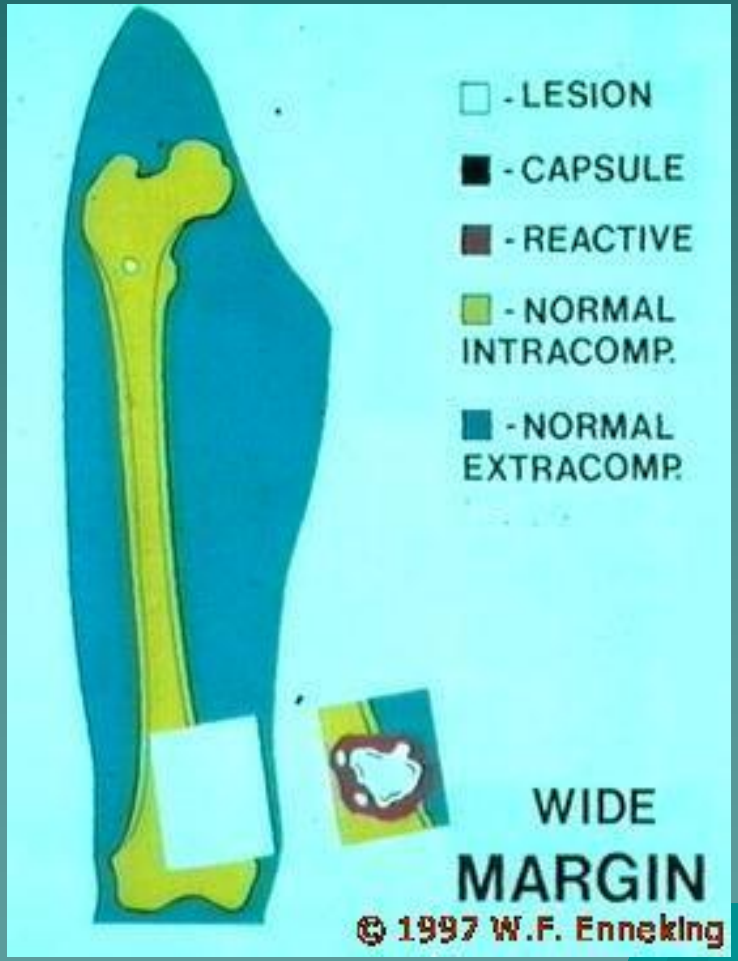
Denosunab



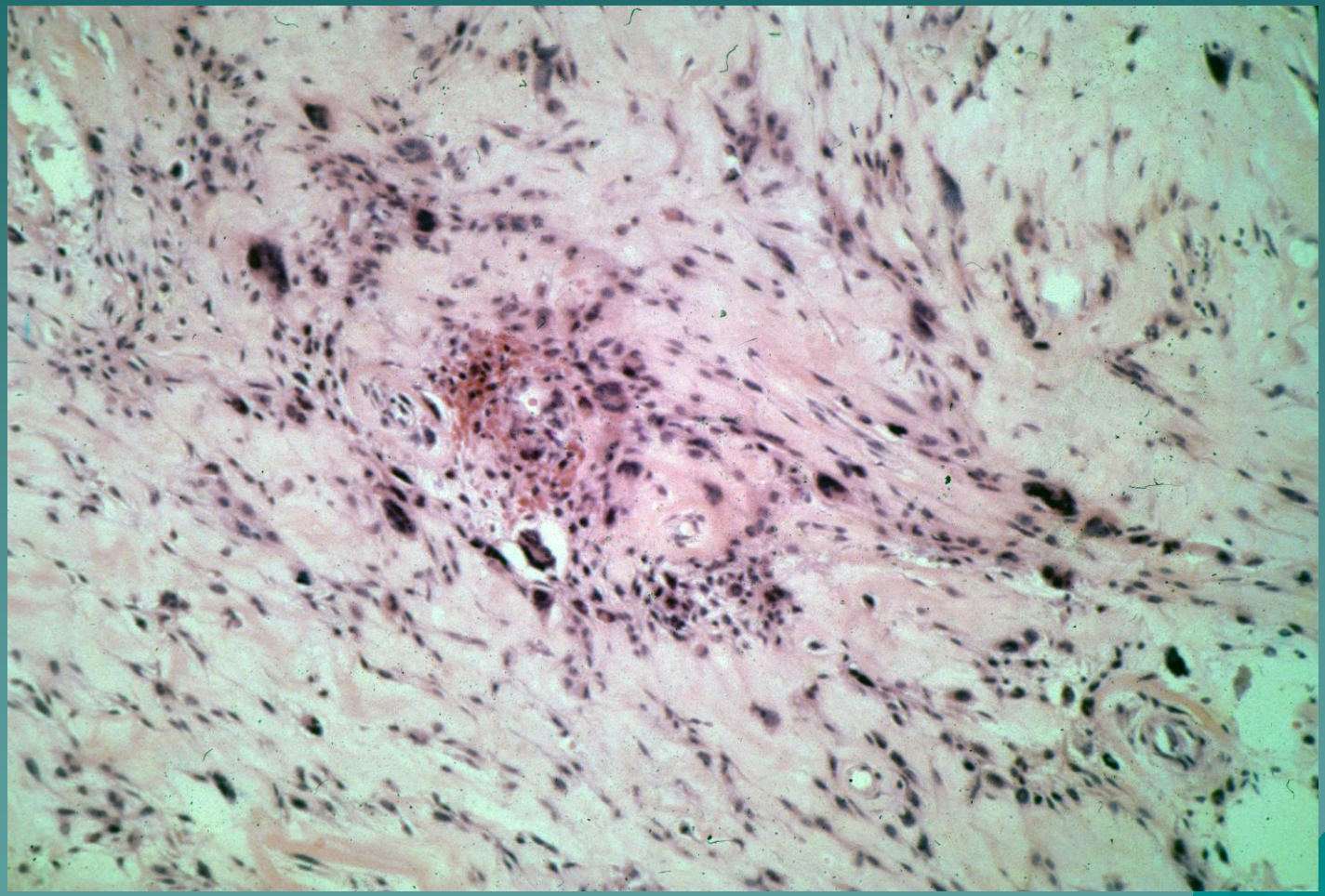
Zheng et al, Am J Path 1994, 1995, Huang et al, Am J Path 1999, Zheng et al, Human Pathol 2000

Sarcomas
Surgical Margins

- Intralesional
- Marginal
- WIDE
- Radical



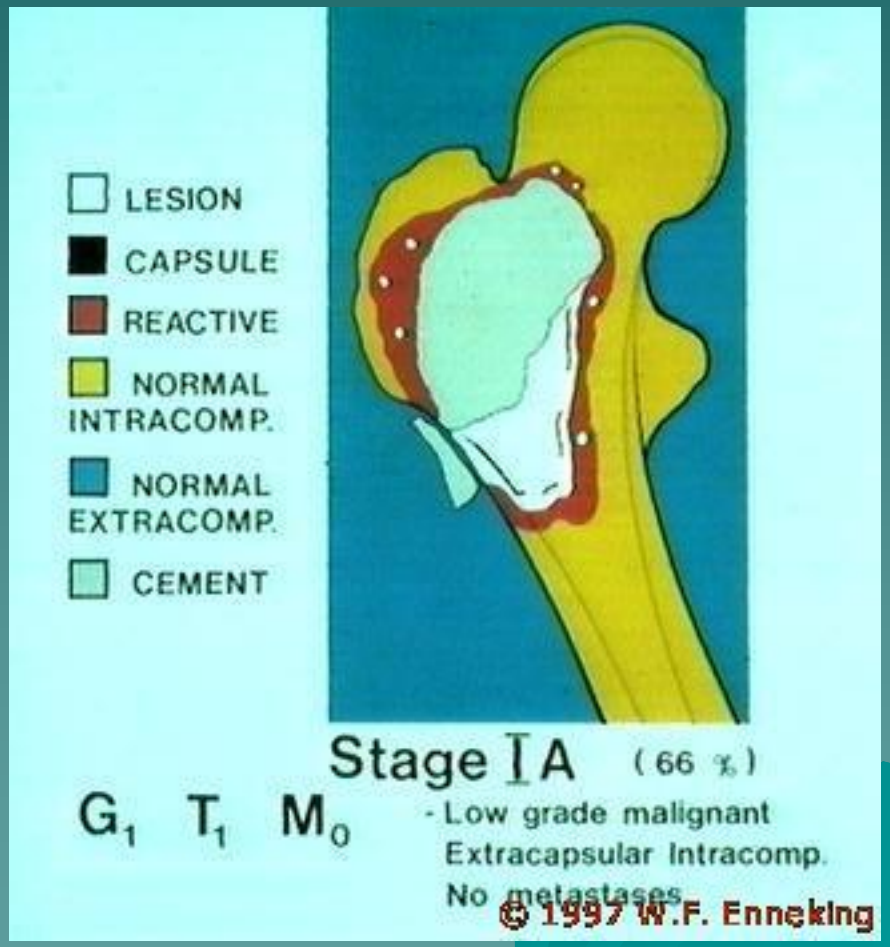
Malignant Tumours
Broder's Grades



Surgical Staging System

MALIGNANT

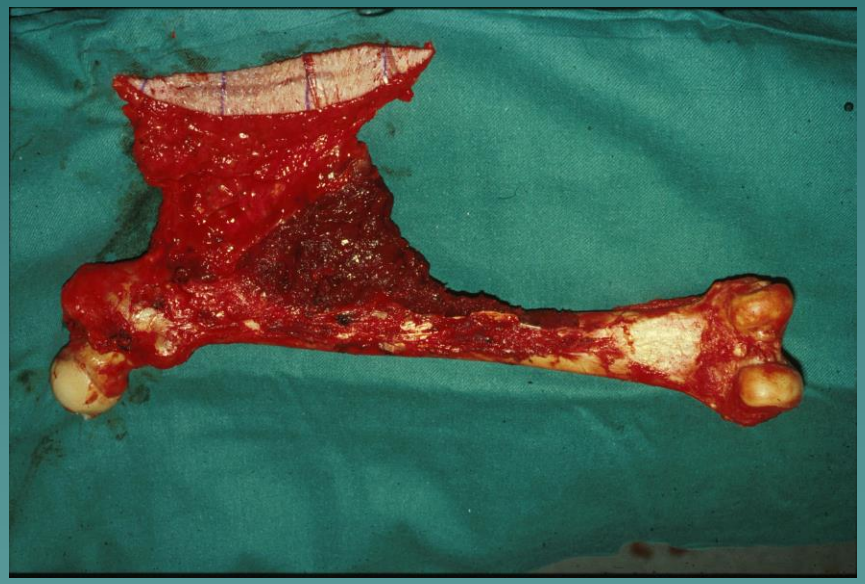
- I LOW GRADE
- II high grade
- III metastases



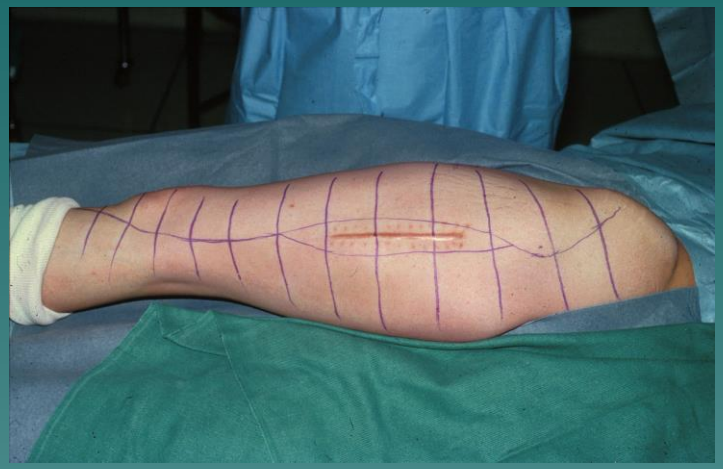
Low grade chondrosarcoma 1A

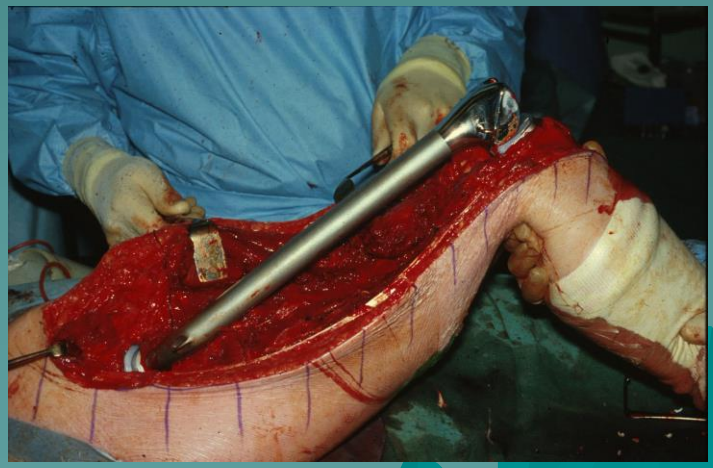
Surgical Margins

- Intralesional
- Marginal
- WIDE
- RADICAL

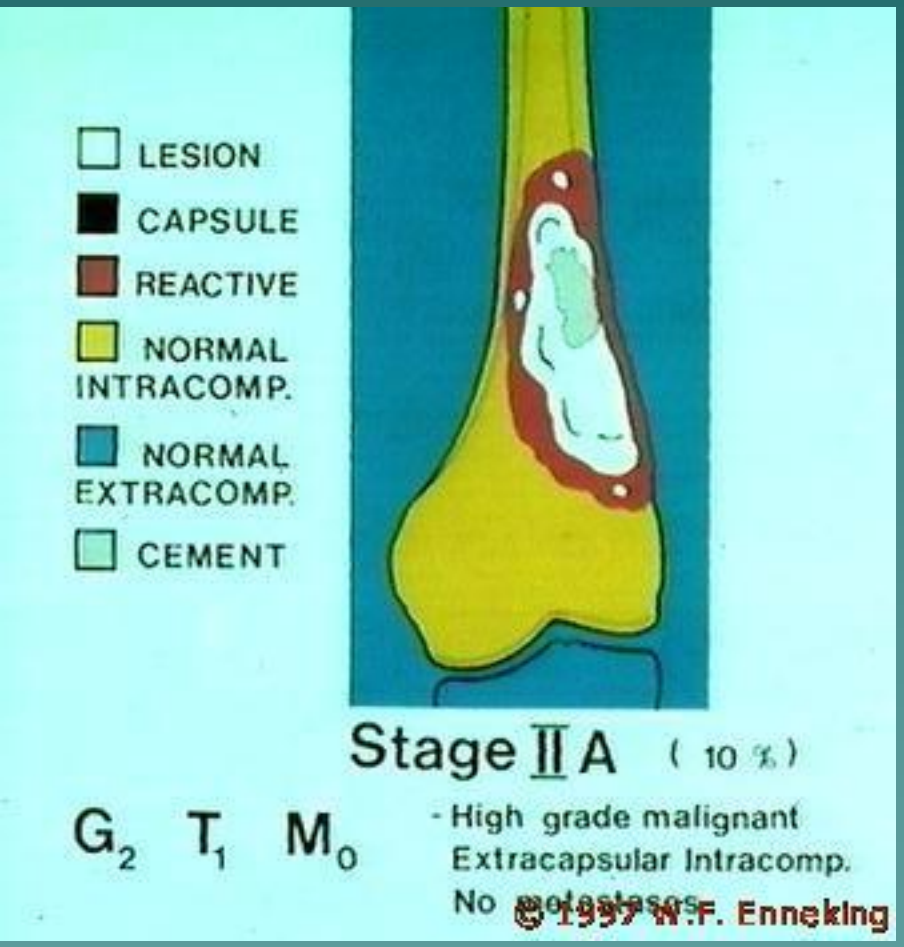


Low grade chondrosarcoma





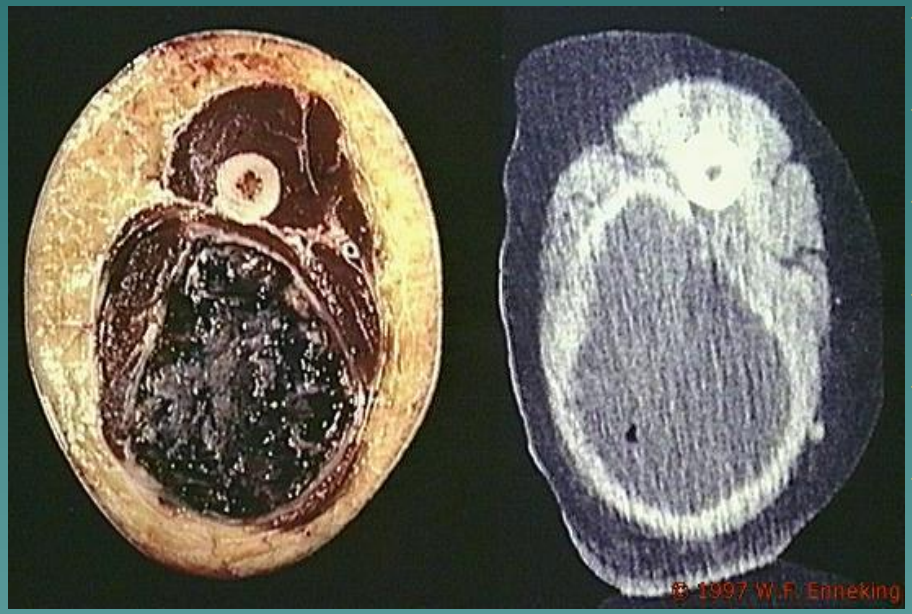
Surgical Staging System



MALIGNANT

- I low grade
- II HIGH GRADE
- III metastases

Stage IIA & IIB



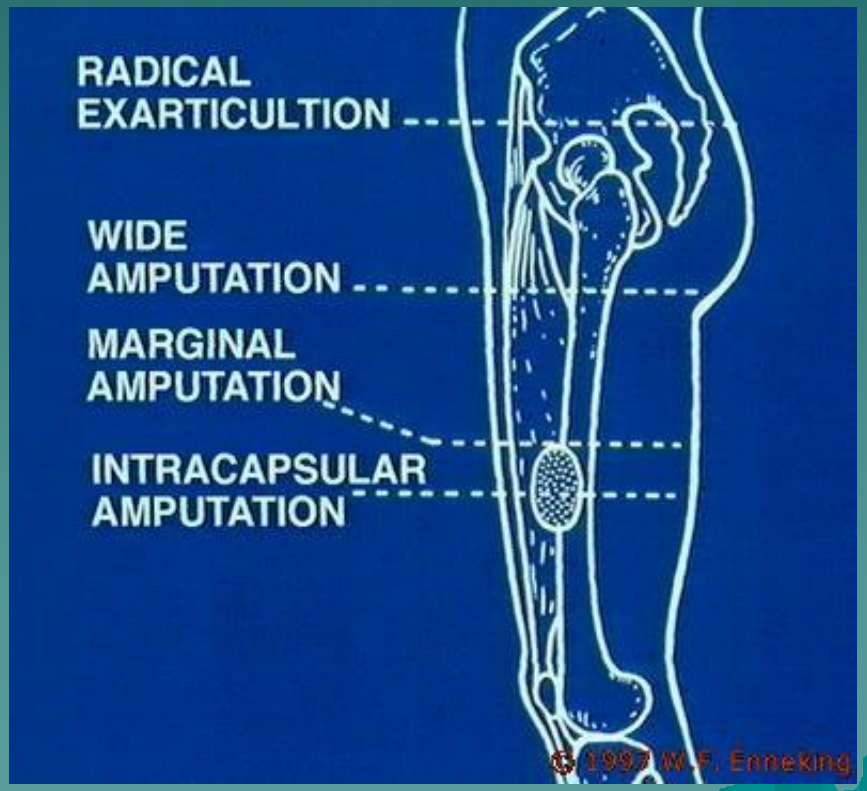
- Wide v Radical
- Response to Chemo / DXT
- Skips
- Relative disability
- Amputation v limb salvage
- Neurovascular involvement

Amputation v Limb Salvage

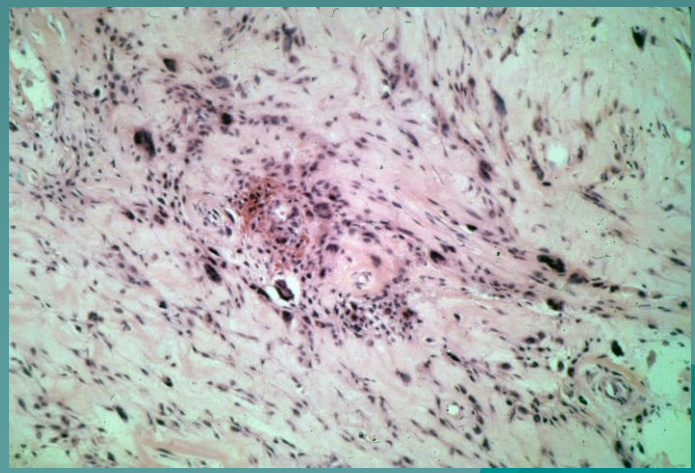
Patient preference
Function
Psychological trauma
2Nd Opinion

Surgical Margins: Amputation

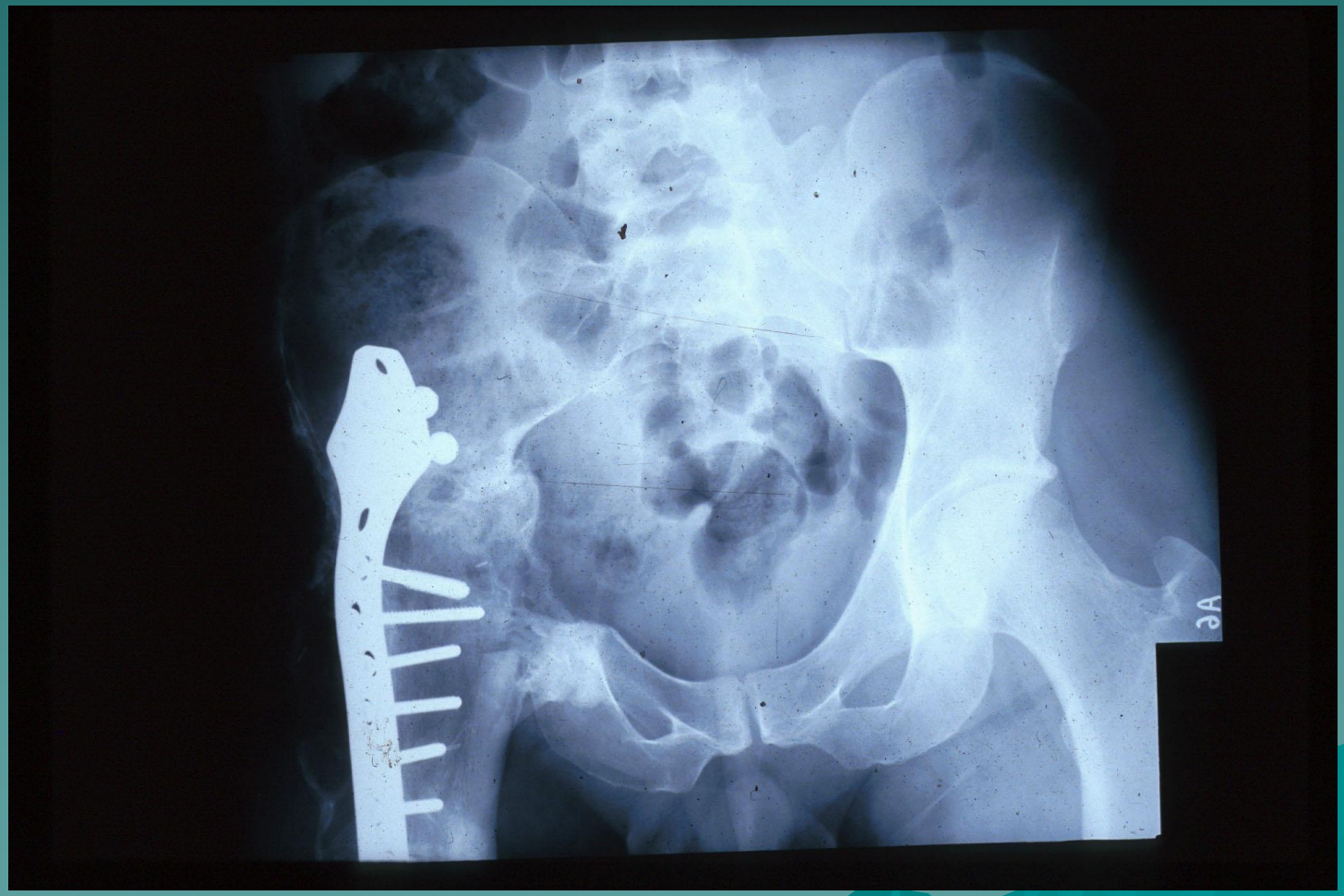
- Intralesional
- Marginal
- Wide
- Radical



Critical Muscle group: Hip - abductors

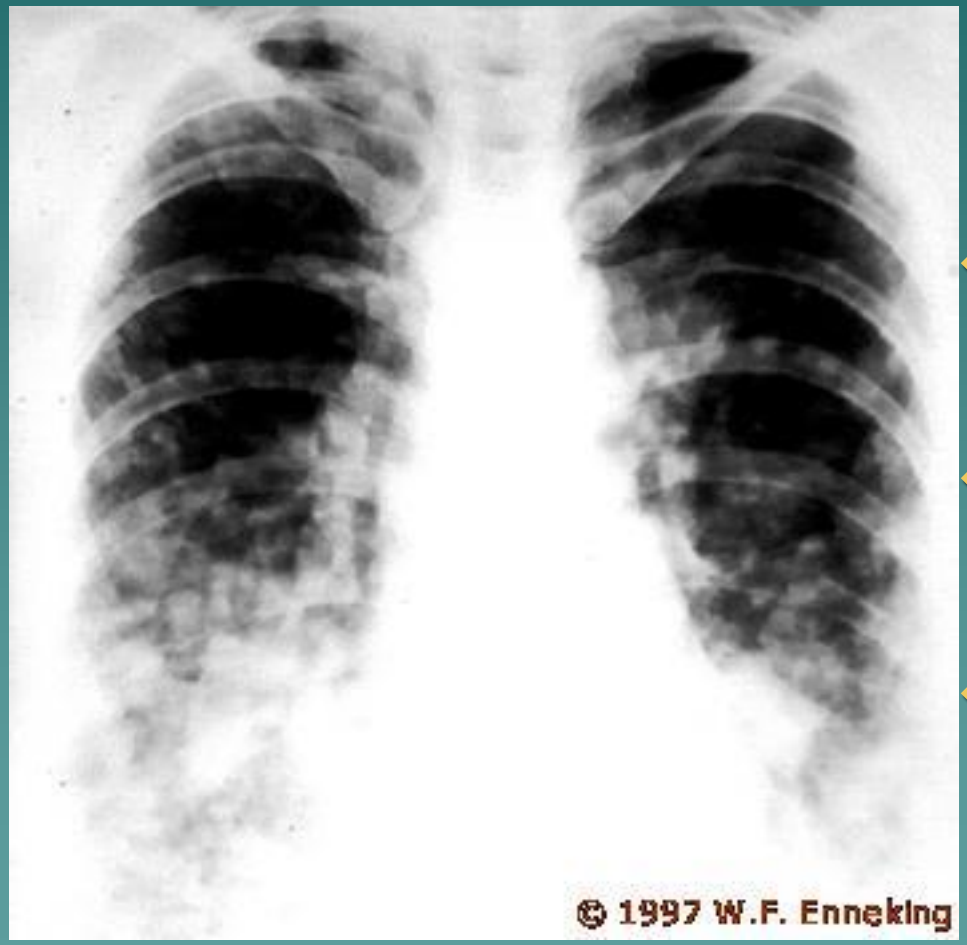


Stage IIB osteosarcoma allograft arthrodesis



Patient preference - mobility

Surgical Staging System



MALIGNANT

- I low grade
- II high grade
- III METASTASES

Surgical management
Palliative amputation

Summary

- Early detection & referral to MDT
- Avoid the WHOOPS procedure
- Surgical staging system
- Adjuvant therapy
- Genomic age of treatment
- Respect patient's informed views