

# Pathological fractures

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# Features

Fracture in bone with pathological lesion decreasing the strength of bone

- Without trauma
- Minimal violence
- Normal traumatic mechanism

# Etiology

- Metabolic diseases
  - osteoporosis
  - osteomalacia, HPT
- Local lesions
  - bone metastasis, multiple myeloma
  - benign tumors
  - malignant tumors
- Congenital anomalies
  - osteogenesis imperfecta,..
- Other entities
  - Paget 's disease of bone, fibrous dysplasia
  - osteomyelitis
  - osteonecrosis

Fr. by opening a  
bottle

i.m. osteosynthesis



♂ 53 let

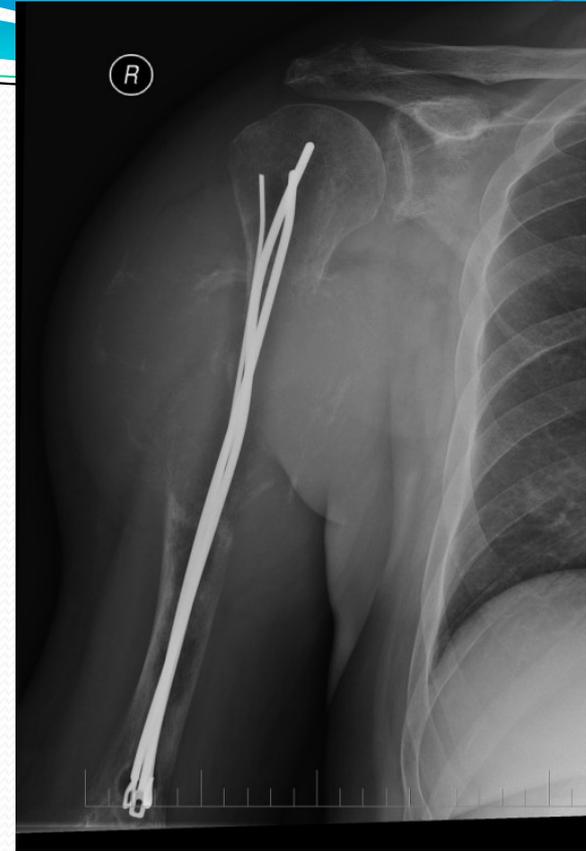


Increasing swelling and mass in  
upper arm

X- ray repeated no finding

back pain after 3 months

- After 4 months referred to our clinic
- Exulceration
- Th 12 large osteolytic lesion
- Risk o paraplegia
- Metastasis of carcinoma from small cells



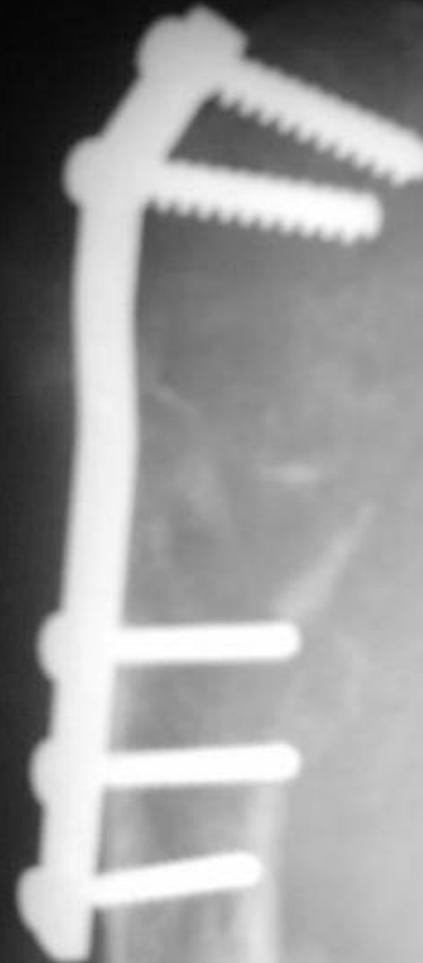
## Metastasis of carcinoma

♂ 26 let

Fr. by driving a car

- AO plate osteosynthesis
- Afterwards increasing mass
- X ray after 3 months

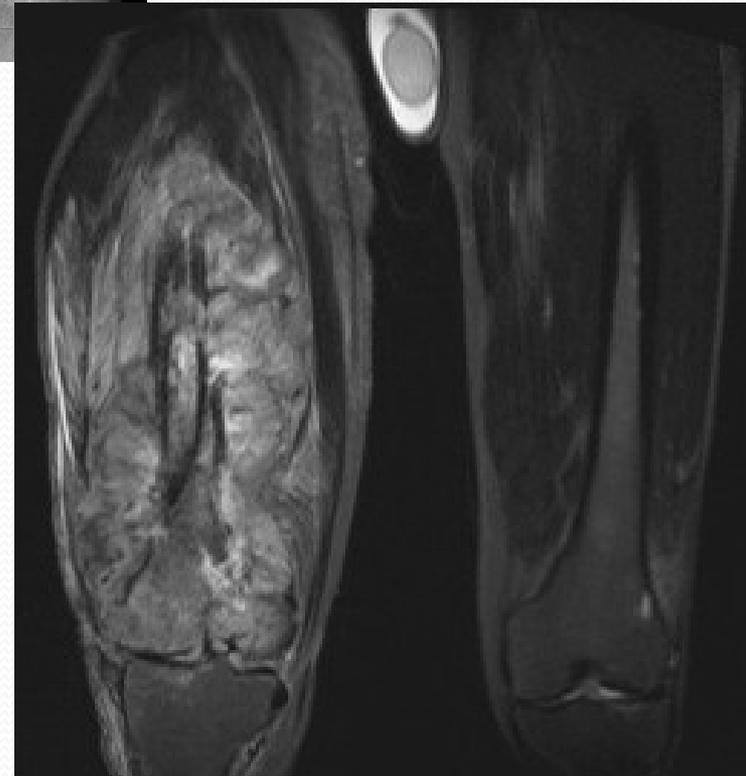
**OSTEOSARCOMA  
HIGH-GRADE**



Fall on stairs

- Supracondylar fr.
- Osteosynthesis with a nail
- Increasing pain and swelling
- After 6 months removal of metal a biopsy
- Fracture not healed
- Referred to our clinic

**LEIOMYOSARCOMA G3**



# Bone metastases of carcinoma

- Breast, prostate, kidney, lung, thyreoid gland
- Assessment of prognosis
  - Visceral or bone lesions, solitary or multiple lesions
  - Type of primary tumor, staging
  - Time of first occurrence
  - Sensitivity to other treatment
  - Comorbidities and general condition
  - Pathological fracture makes always the prognosis worse
  - Multidisciplinary access

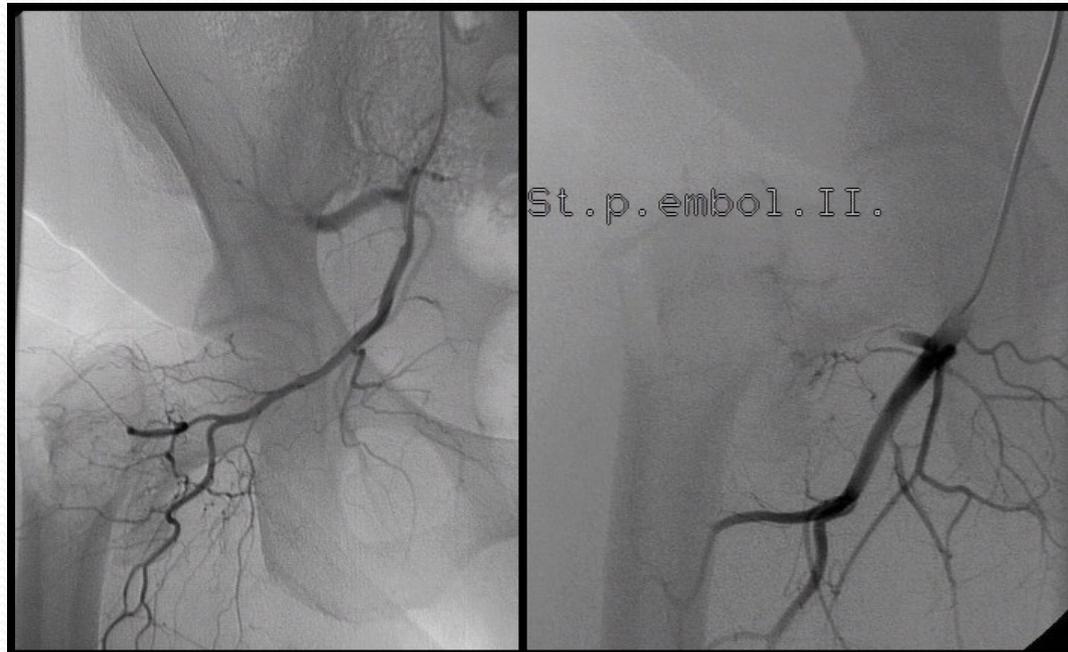
# Mirel's score

points	1	2	3
Localisation	Upper extr.	Low extr.	Pertrochant. region
Pain	low	medium	big
Type	Osteoplastic	mixed	Osteolytic
Size	<1/3 width of bone	1/3 – 2/3 width of bone	>2/3 width of bone
≤ 7 points	Risk 4%		Preventive ORIF no
8 points	Risk 15%		Indication for ORIF on border
≥ 9 points	Risk 33% and more		Indication for preventive ORIF

# TU-THA

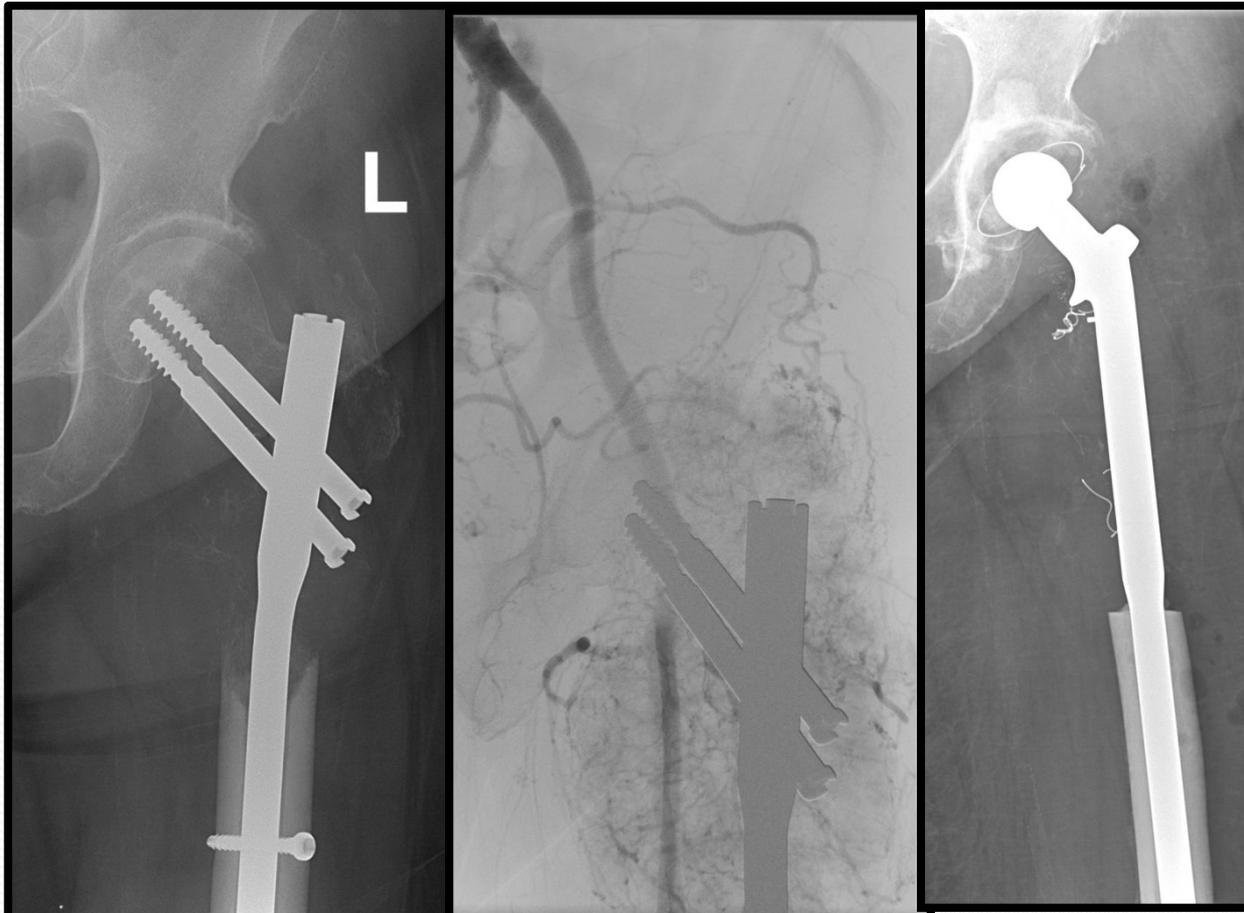
## optimal solution

- Metastasis of clear cells renal carcinoma (angiography with embolisation)



- Condition after osteosynthesis for pathological fr. with metastasis of renal tumor, progresion of osteolytic lesion  
No adjuvant chermotherapy

Angiography +  
embolisation,  
resection  
TU THA



Total thyroidectomy 7 years ago,  
radiotherapy and chemotherapy

- X-ray osteosynthesis 2 years ago,  
no further treatment

## **METASTASIS of thyroid carcinoma**

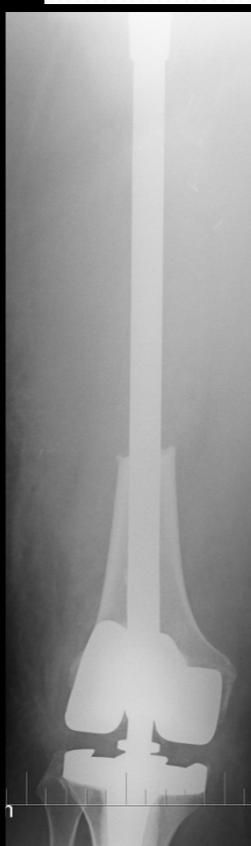
- No further treatment for humeral  
lesion
- No radiotherapy

**Disarticulation in shoulder**



# Total femur

Metastasis of breast carcinoma,  
good prognosis

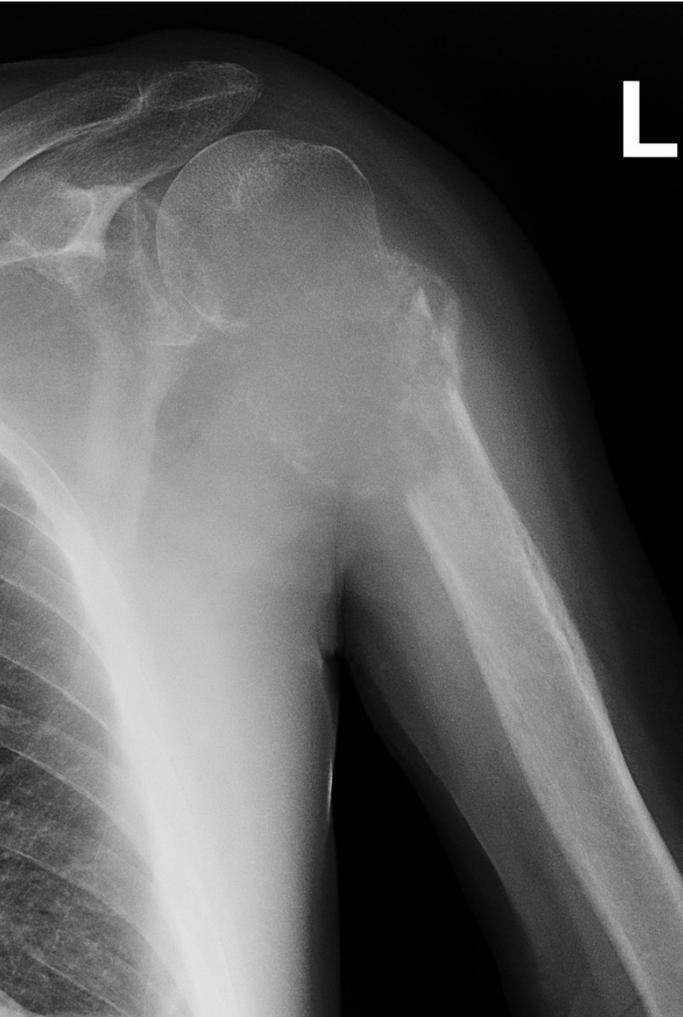


# Dislocation of TU THA



# Head prosthesis

# Reverse total shoulder replacement



# TU-TKA

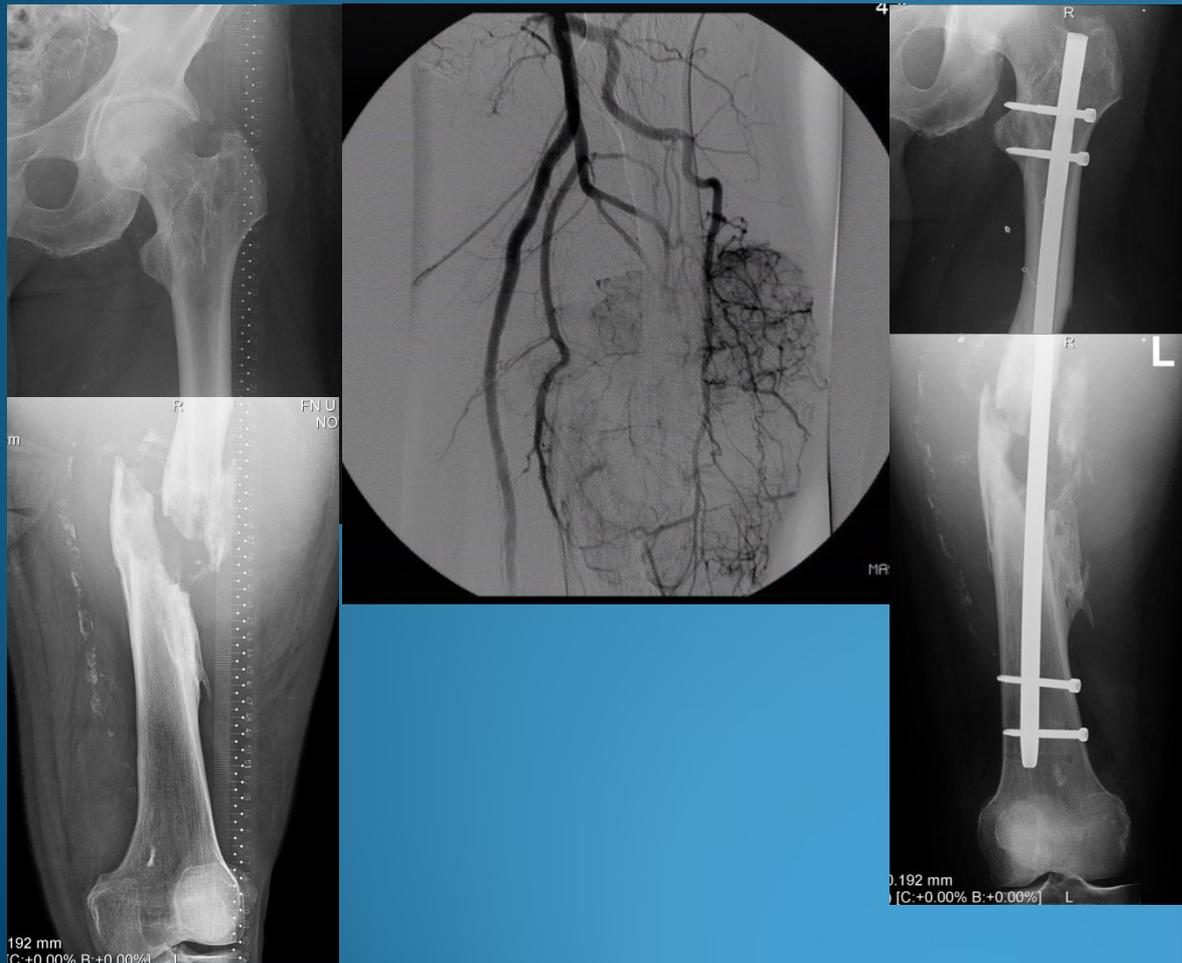


# Metastasis in diaphyseal region

- Femur and humerus
- Types
  - i.m. nail
  - Resection + cement a osteosynthesis
  - Resection + intercalary spacer
  - Resection + bone graft and osteosynthesis

Radiotherapy in a case of nonradical surgery

# i.m. nail



- Tumor in situ
- paliative surgery
- wrong prognosis
- Adjuvant radiotherapy

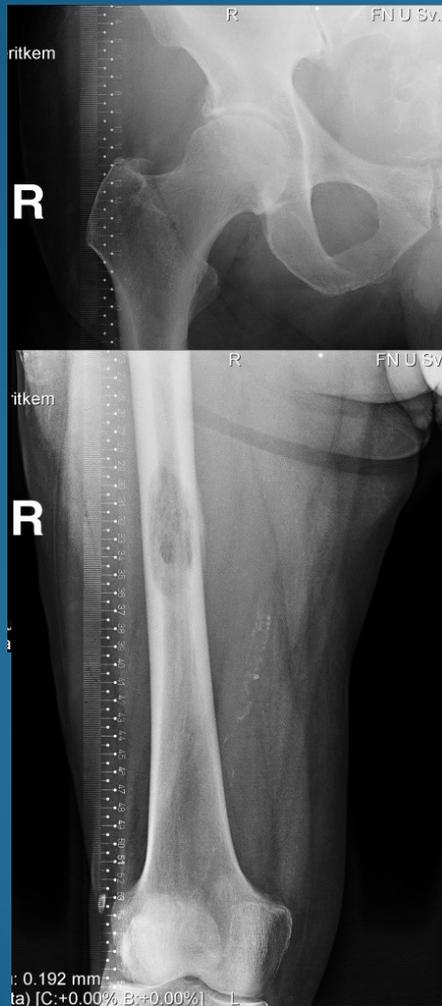
# Curretage + osteosynthesis + cement



# Resection + i.m. nail and cement



# Diaphyseal spacer



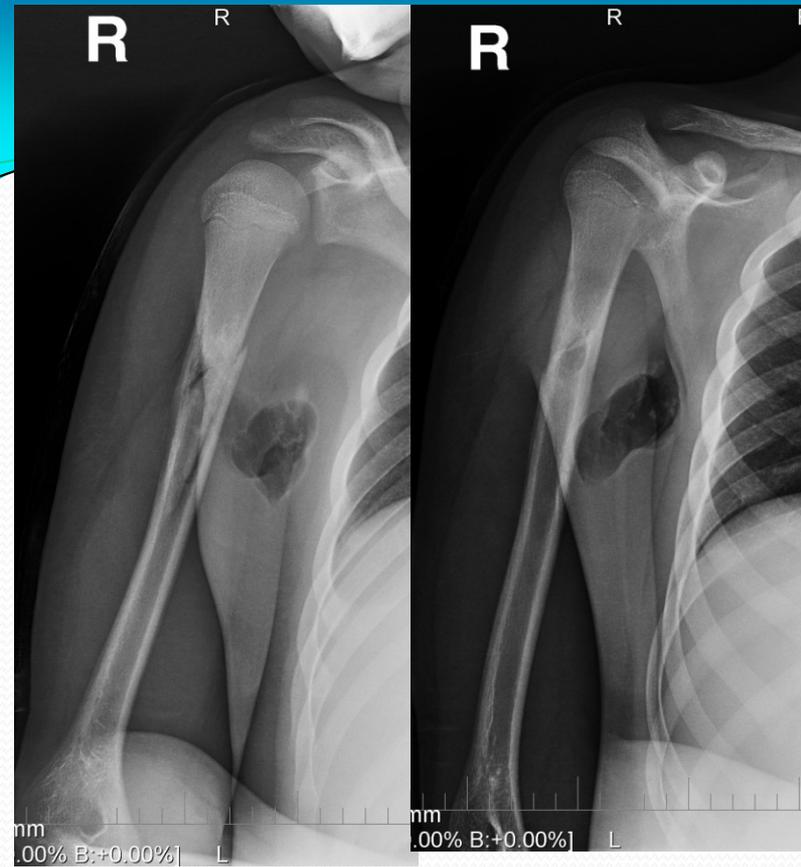
# Primary malignant bone tumors

- Osteosarcoma, Ewing sa, chondrosarcoma
- Pathological fracture
  - Worse prognosis
  - High risk of dissemination
  - Less chance for local control
  - Amputation ?

# Orthosis chemotherapy



Resection  
bone graft  
plate



13 let boy  
By throwing of a ball  
**High grade  
osteosarcoma**

# 73 let, Dediferentiated chondrosa G3



Pathol. fracture  
Amputation