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Review Course
« Musculoskeletal Oncology »

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uniklinik balgrist
EXPERTISE IN MOTION

06/10/11

University of Zurich[UZH]

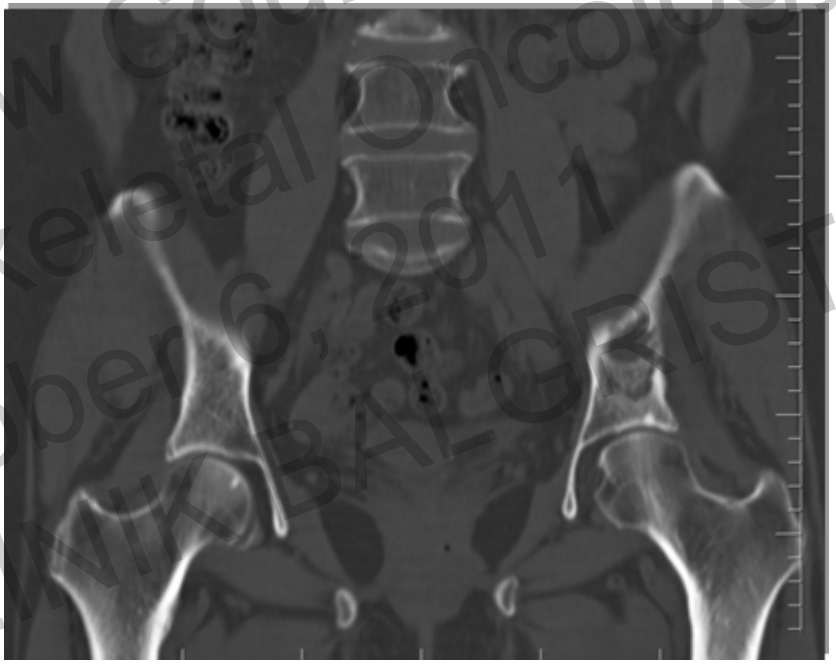
K, 75 yo

Hip pain

=> Standard Xrays & ct-scan

⇛ Kystic lesion & fracture

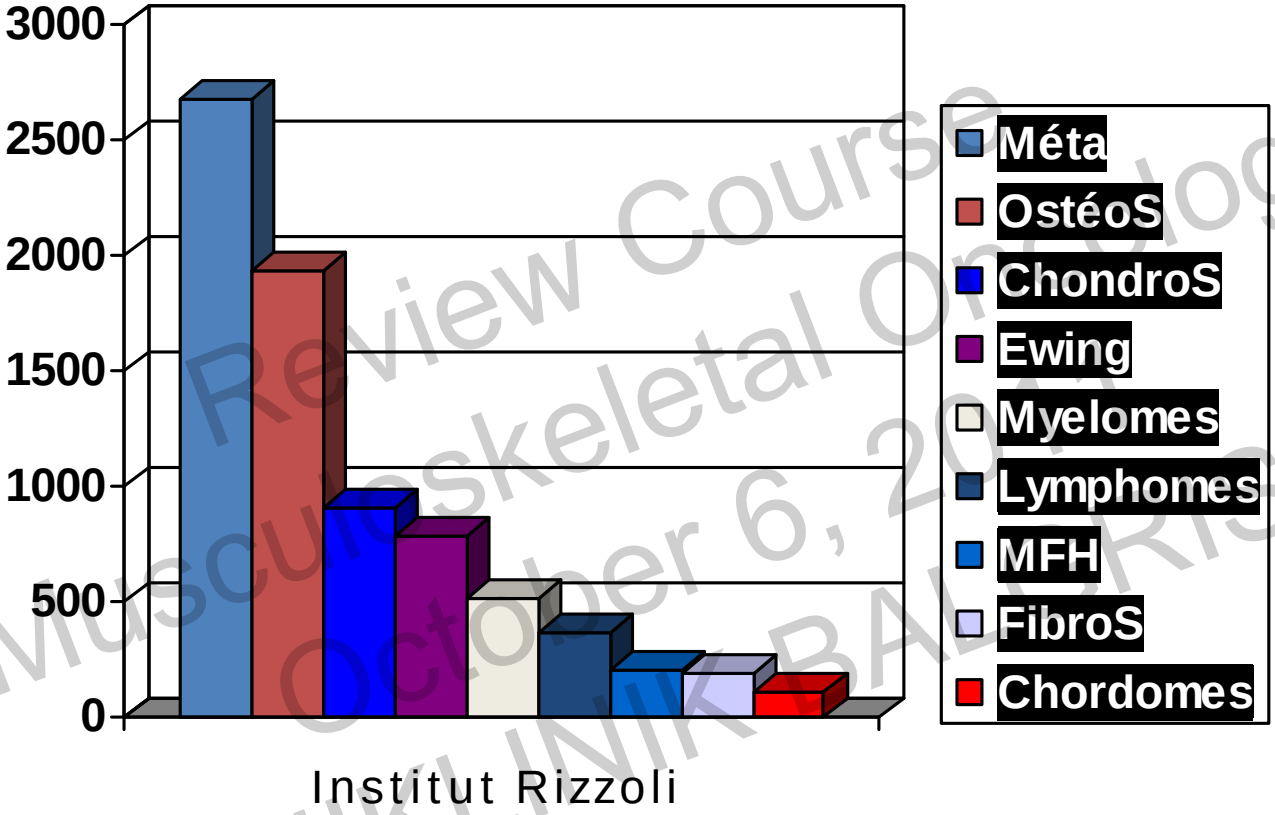
⇛ Diagnosis ?



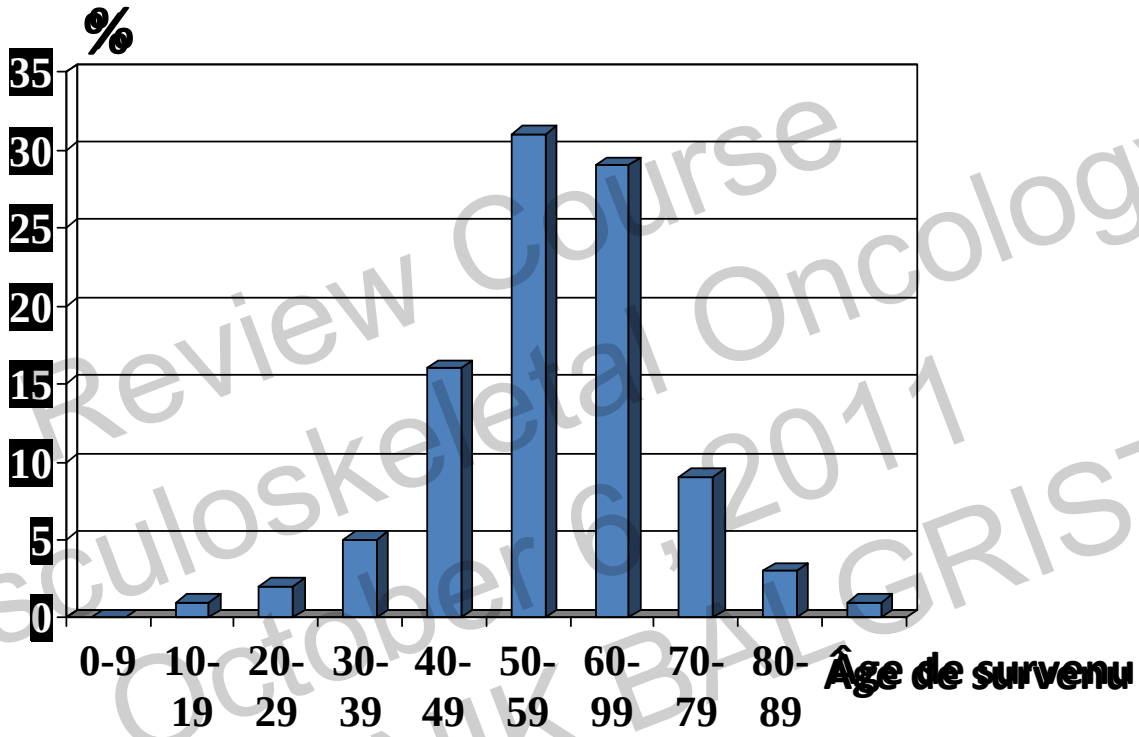
Fractured metastasis, breast cancer ?!

But, why not a chondrosarcoma ?

Why metastases ?
And not a chondrosarcoma ?



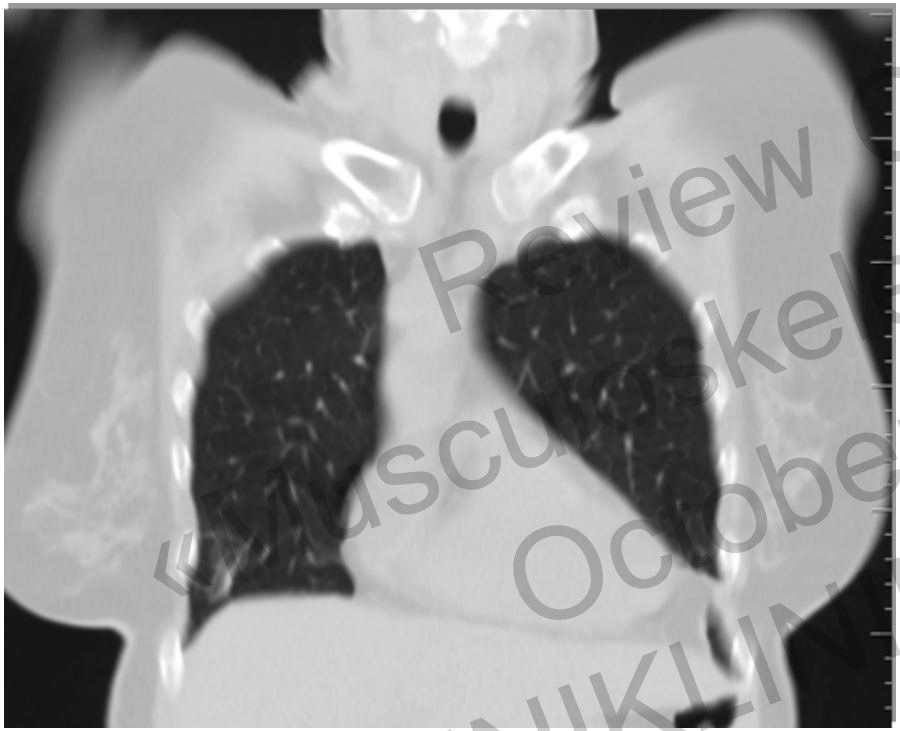
Metastases is a most frequent bone malignent tumor

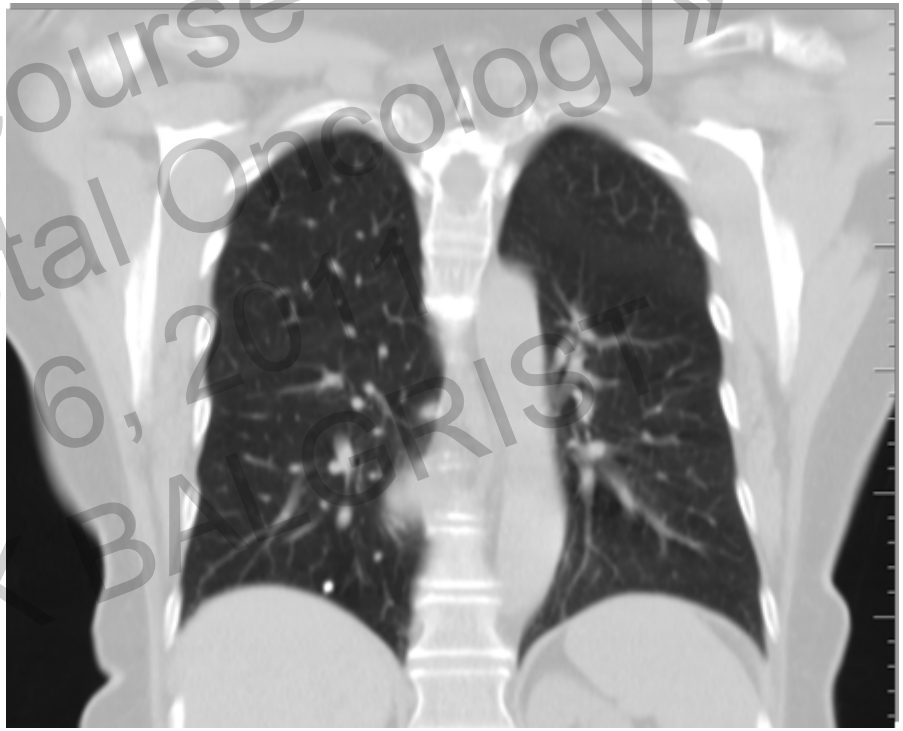


Midle age of diagnosis: 52 ans

⇔ Adult and old person tumor

Why breast metastases ?

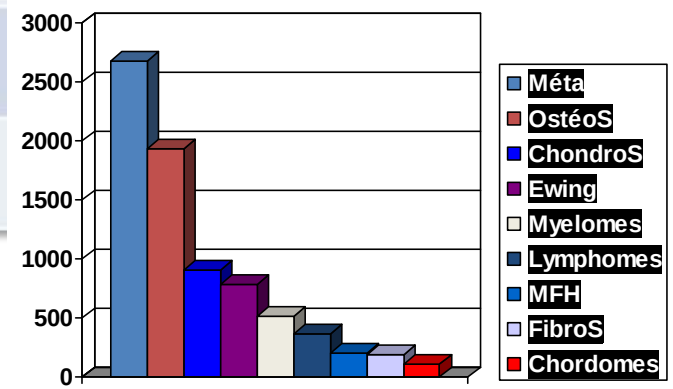




Epidemiology

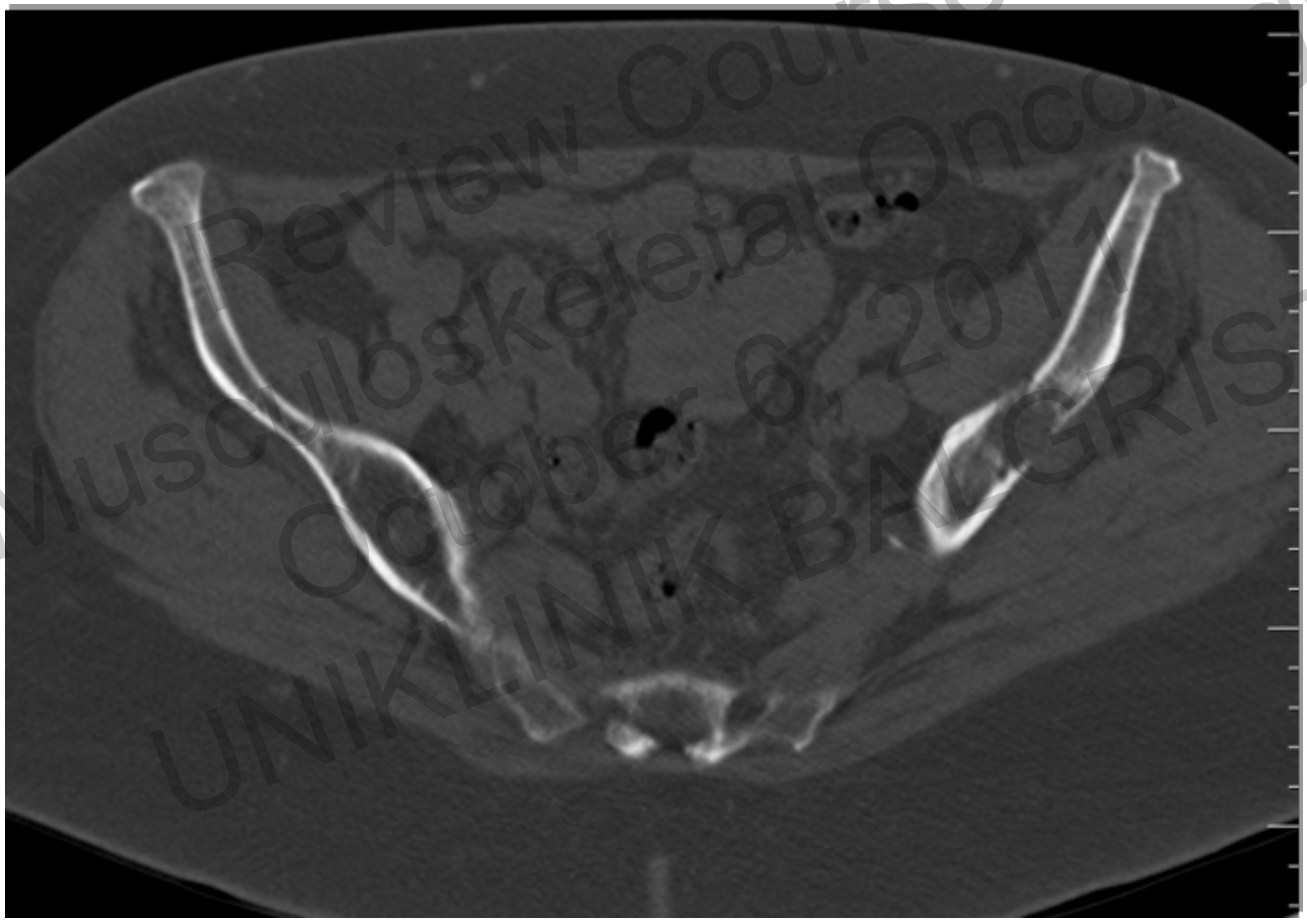
Coleman, Cancer 1997

Primary tumor	Metastases incidence (%)
Myeloma	95-100
Breast	65-75
Prostate	65-75
Thyroid	60
Lung	30-40
Kidney	20-25



Institut Rizzoli

Why fractured metastases?



Circumstances of diagnosis

Pain (biologic and mechanic factors) ⇔ fracture
Swelling
Neurologic compression
Fortuitously
Weight loss
…

Pathologic fracture: 20 % of cases.
61% of pathologic fractures are in the femur
80% are in the trochanteric area

Pathologic fractures: 20 % of cases.

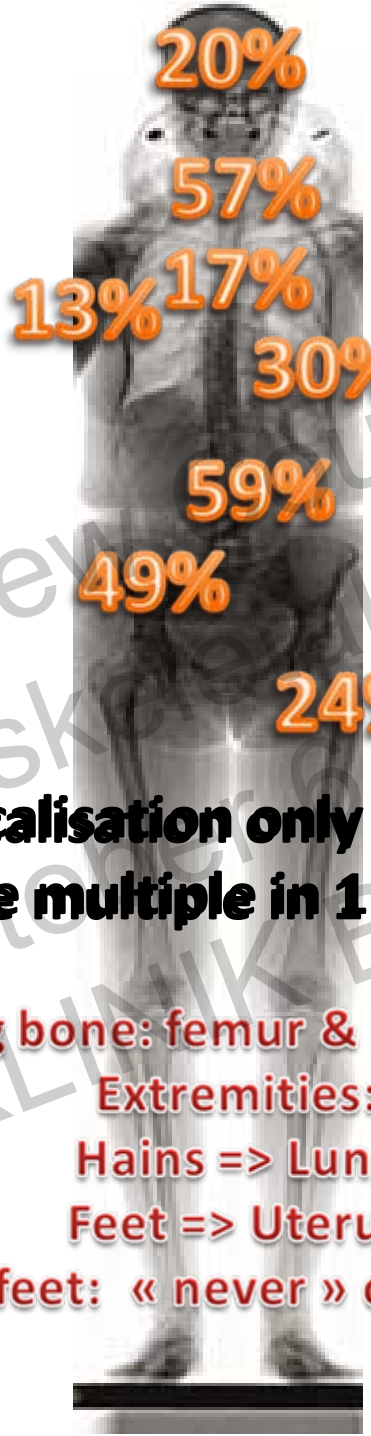
Fracture risk and Mirels score (Mirels H, CORR, 1989)

Parameters	Score		
	1	2	3
Site	Upper limb	Lower limb	Peritrochanter
Pain	Mild	Moderate	Severe
Lesion	Blastic	Mixed	Lytic
Size	< 1/3	1/3.2/3	> 2/3

Score less or equal to 7: low risk
Score of 8: 15% risk for fracture
Score of 9: 33%

Score of 9 or greater ⇔ prophylactic surgery

Localisations



Unique localisation only in 10 to 20%
And will be multiple in 1 to 3 y.

Long bone: femur & humerus
Extremities:
Hains => Lung
Feet => Uterus
Hands & feet: « never » osteosarcoma

Epidemiology

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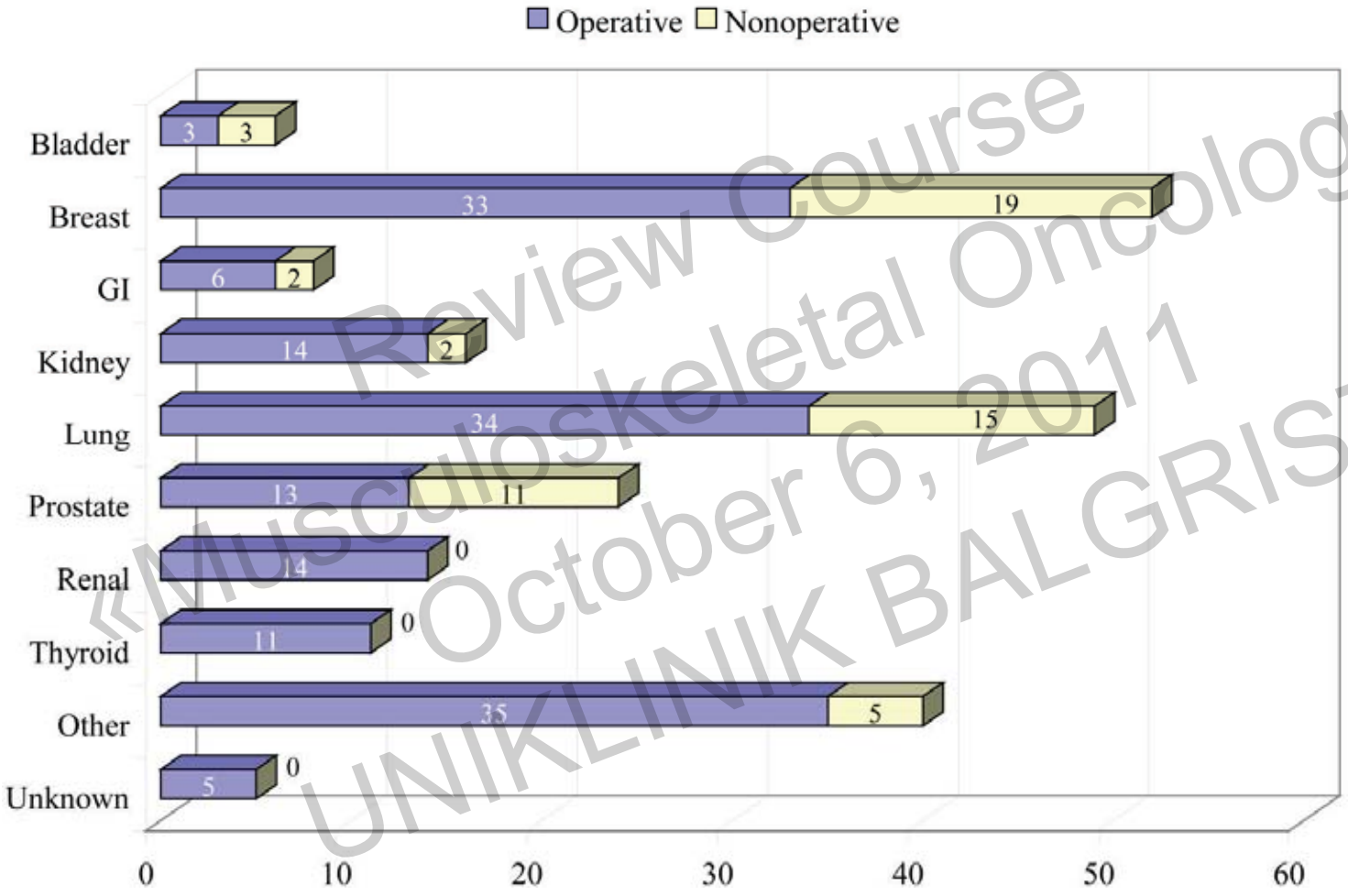
Bone metastases ⇔ position 3
Long bone metastases: 75% in the femur
80% of prostate cancer
50% of breast cancer
With bone metastases, bone event:
. Every 4 y
. In 60% of patients

Metastase ⇔ indicate a change in the evolution of the disease
But bone meta had a better prognostic than viscerale one

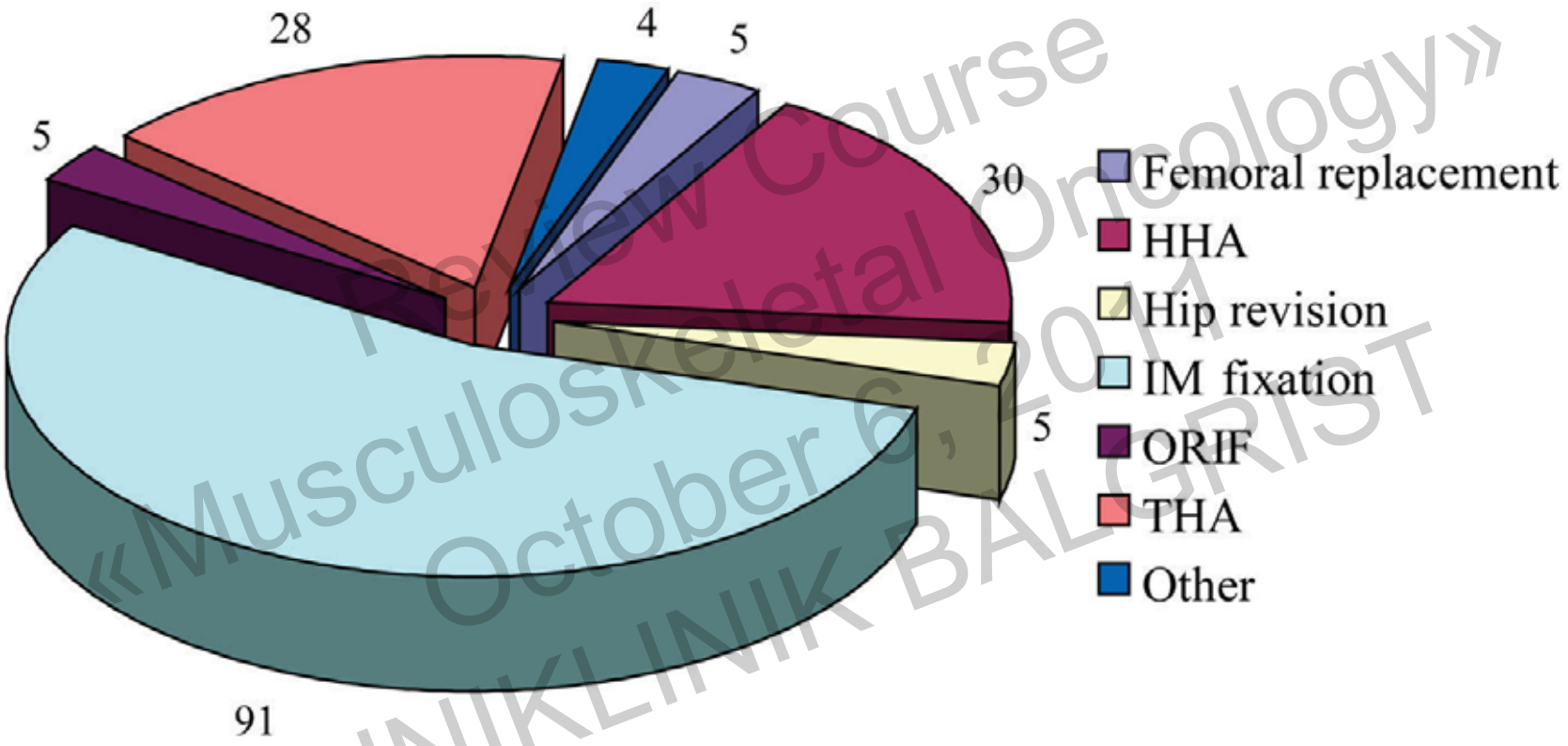
Quality of life
Economic impact

Repartition of surgical or no surgical treatment according to primary lesion



Bristly, JBJS Am, 2006
Utah et Thomas Jefferson Universités

Treatment type



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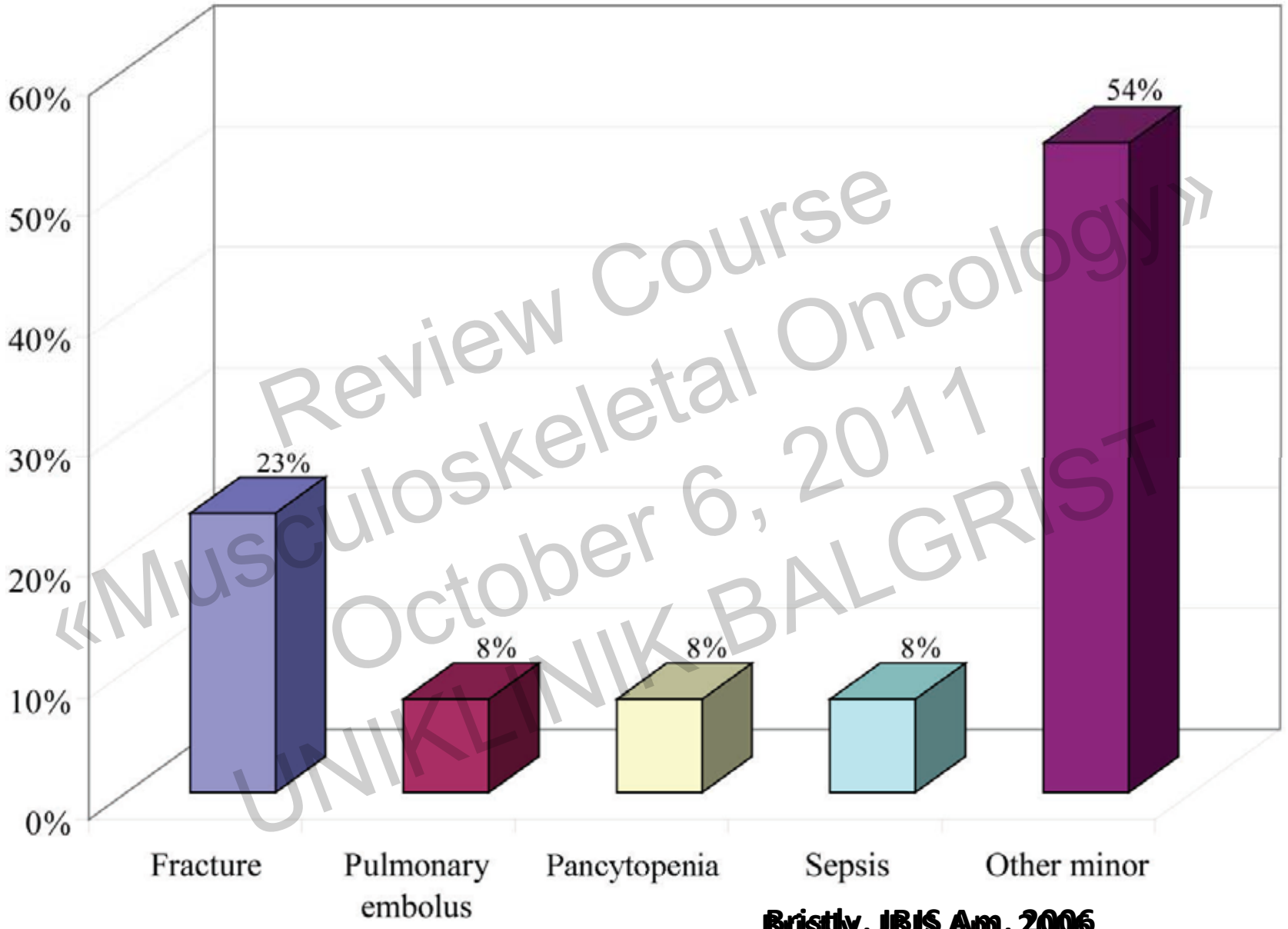
Complications of surgical treatment



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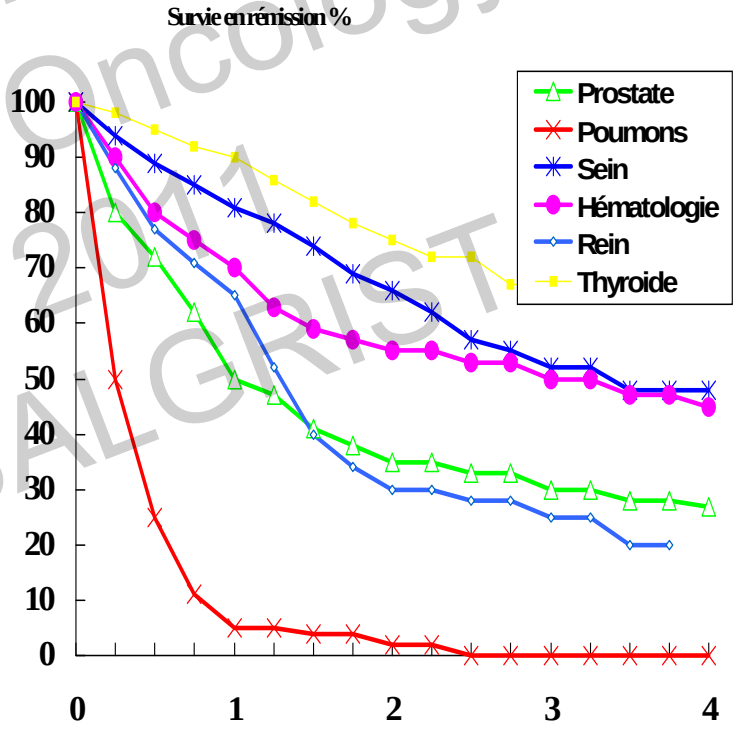
Prognostic

Primary tumor	Survival mediane (months)	Percent of survival at 5 years
Myeloma	20	10
Breast	24	20
Prostate	40	25
Thyroid	48	40
Lung	< 6	< 5
Renal	6	10
Melanoma	< 6	< 5



Imaging: standard xRays

Goal: diagnostic or fortuit

Fellow up

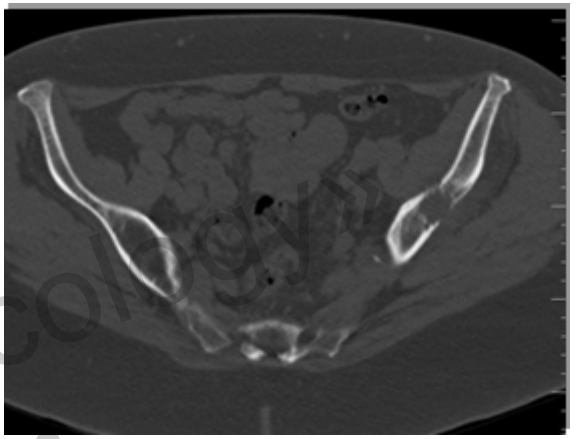
But a lytic lesion is visible only if disappearance of 1/3 of bone mass

=> MRI, PET

Osteolytic (myeloma)
Blastic lesion (prostate)
Mixed (breast)

Other aspects:
As Paget disease (mixed: lytic, blastic and blower)
Periosteum (lytic and blower)
As sarcoma (significant impairment of soft tissue)

Imaging: Ct-scan



Local exam:

Refine the diagnosis of radiologicaly dubious lesion

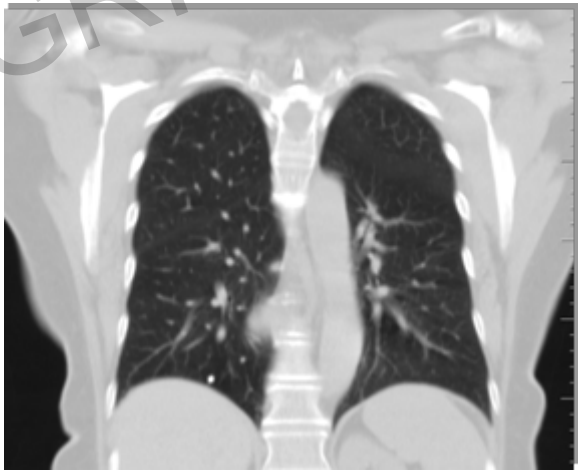
(no visible on xray, fractured or no, biopsy)

Other localisations:

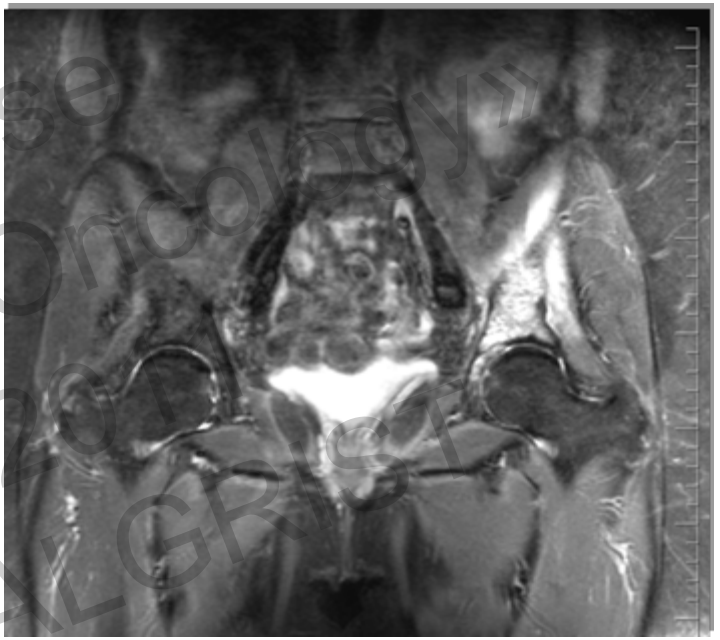
Primary tumor, other metastases

(Thoraco-abdominal ct scan)

Follow-up



Imaging: MRI



Refine the diagnosis
(Type, size and etendu of the lesion)
Surgery planification
Local follow-up

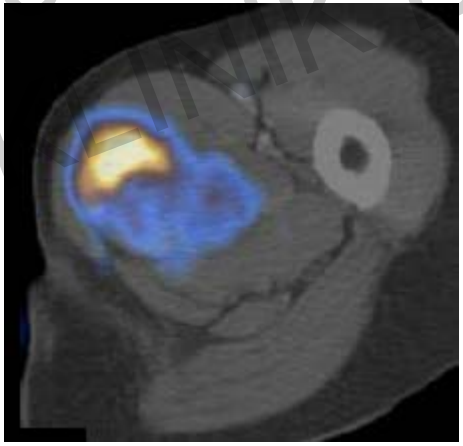
Imaging: scintigraphy and PET scan

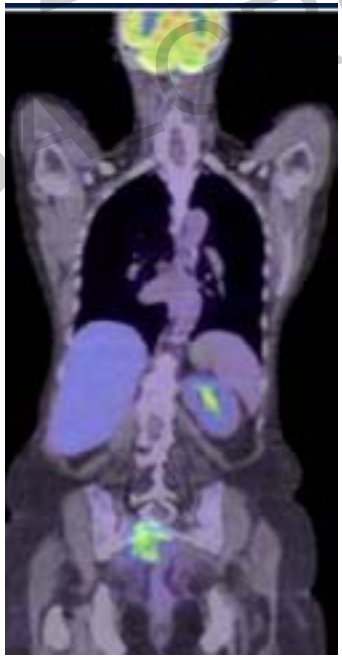
Primary tumor, other metastases

(Specifies small lesions
Guides the others investigations
Follow the activity of the lesion)

+/- fellow-up

(Local and elsewhere)





Diagnostic and therapeutic strategy

Known primary tumor?

The histological type dominates the prognosis and conditioning treatment

Unknown primary tumor?

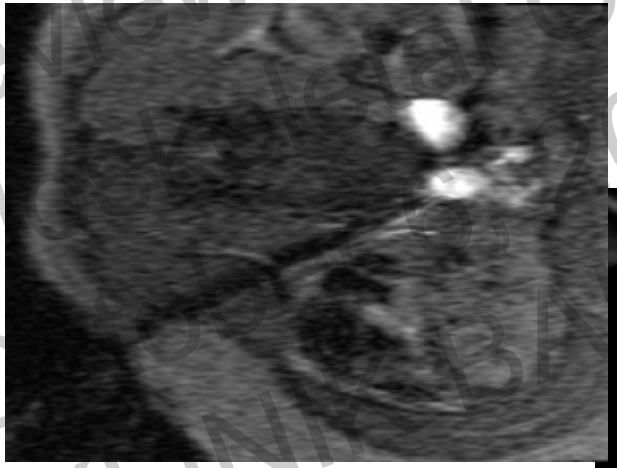
It is essential to eliminate a primary bone tumor whose treatment would be different

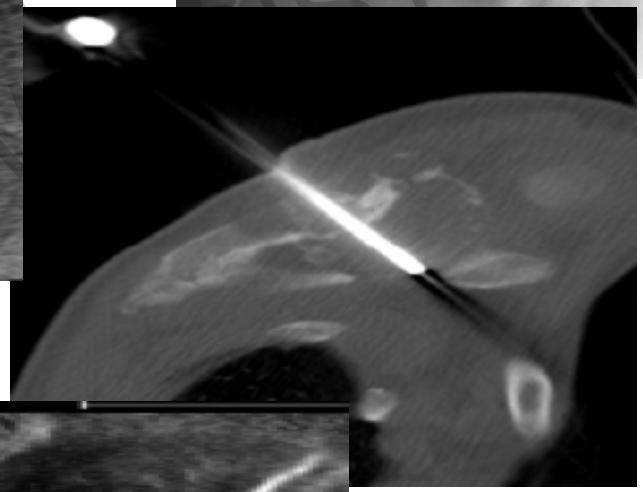
3 to 4% of all carcinomas have unidentified primary origin

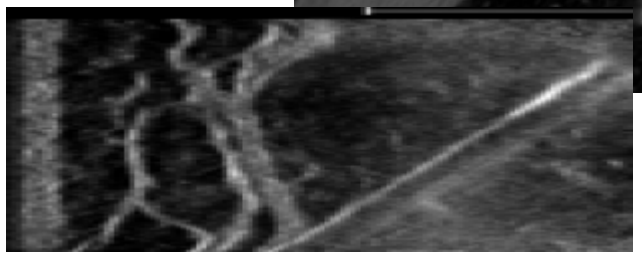
And 10 to 15% are bone metastases

Unkown primary tumor?

Biopsy







Known primary tumor

Unknown primary tumor + biopsy

Curative treatment

Or

Palliative treatment ?

Favourables prognostic factors:

-Primary tumor: thyroid, kidney
-Above 4 years interval between tumor and metastases
- Single metastases
- Radicale (wide) excision
- little vascularized matastasis (kidney)
- Chemotherapy, radiotherapy and hormonal therapy sensitive

Factors not favourable prognosis:

-Primary tumor unknown or not controlled oncologically
- Lung, pancreas, melanoma, liver
- Axial location
- short time to duplication
- Multiple metastases / multiorgane
- Poor general condition of the patient
- Chimio, radio, hormonal resistant

Factors not influencing the prognosis:

- **Pathological fracture**
- **Age and sex for kidney tumors**
- **Size of metastasis**
- **Histological grade of the primary tumor**

Known tumor

Unknown tumor and biopsy

Curative treatment

Palliative treatment

Patient operable or not

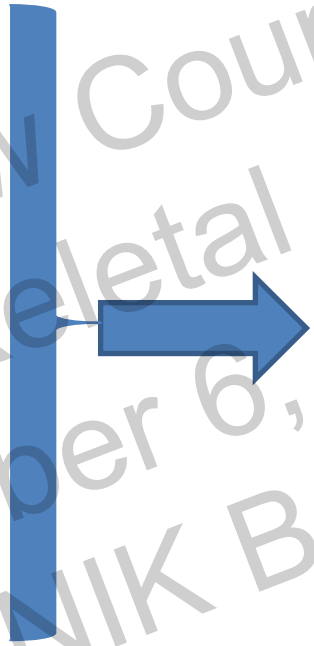
Fracture risk or not

Histological type

Prognosis

Operability

Fracture risk



Choice of treatment

Therapeutic opportunities:

Drug treatment:

Chemotherapy
Hormonal therapy
Bisphosphonate

Radiation therapy

Surgery

These treatment are also well curative than palliative, used alone or in combination

GOOD SUPPORT

⇔

MULTIDISCIPLINARY SUPPORT

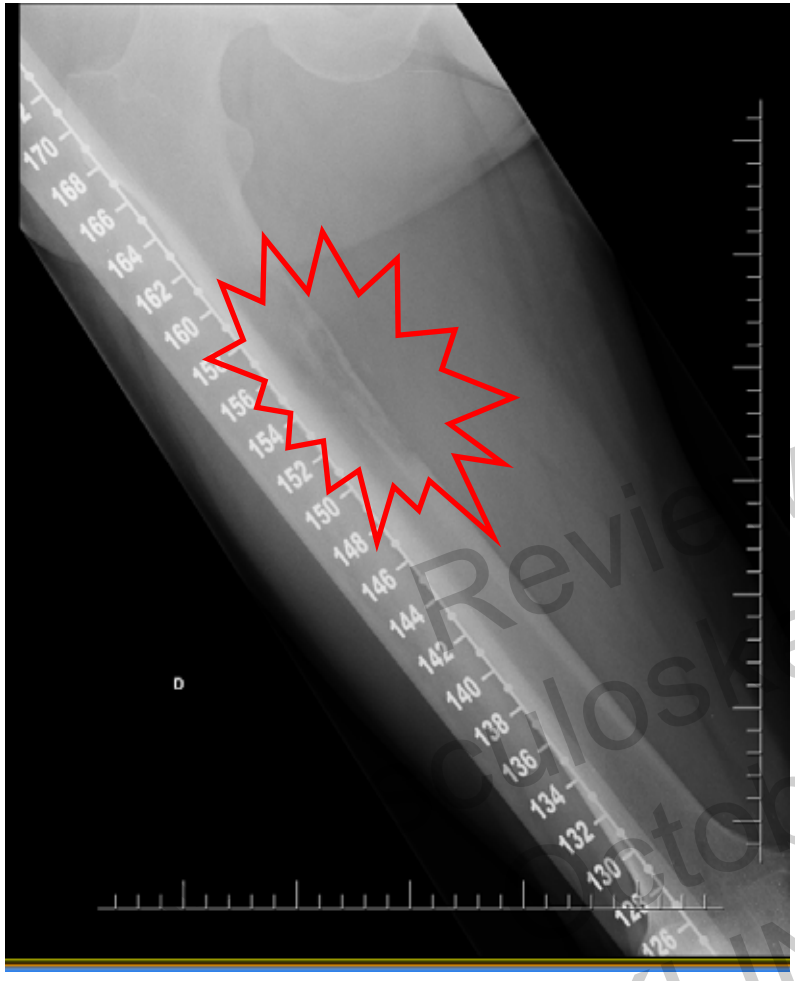
⇒ **It will talk only of the surgical management**

Curative surgery

Tumor excision and reconstruction
(Allograft, Autograft, Osteosynthsis, massive prosthesis)

« Amputation »

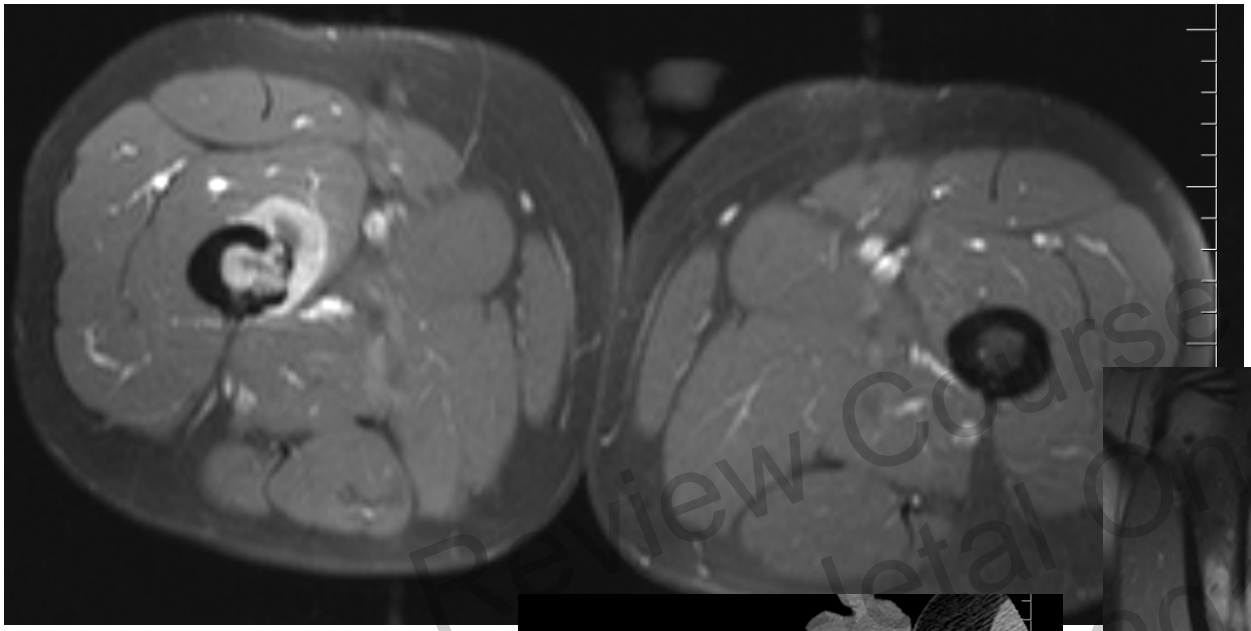
Do not forget neo or additives treatment
And the analgesic devices (drugs, radiation, radiofrequency, ciment,…

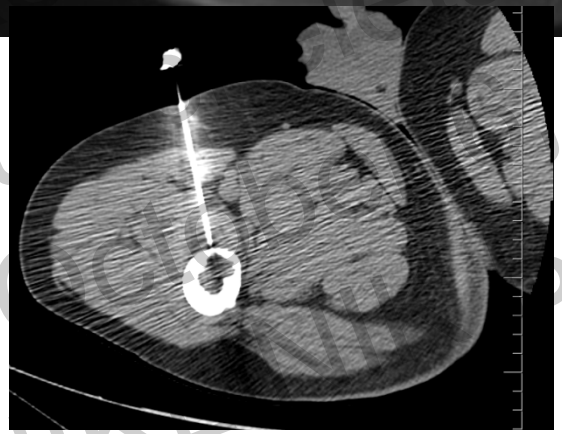


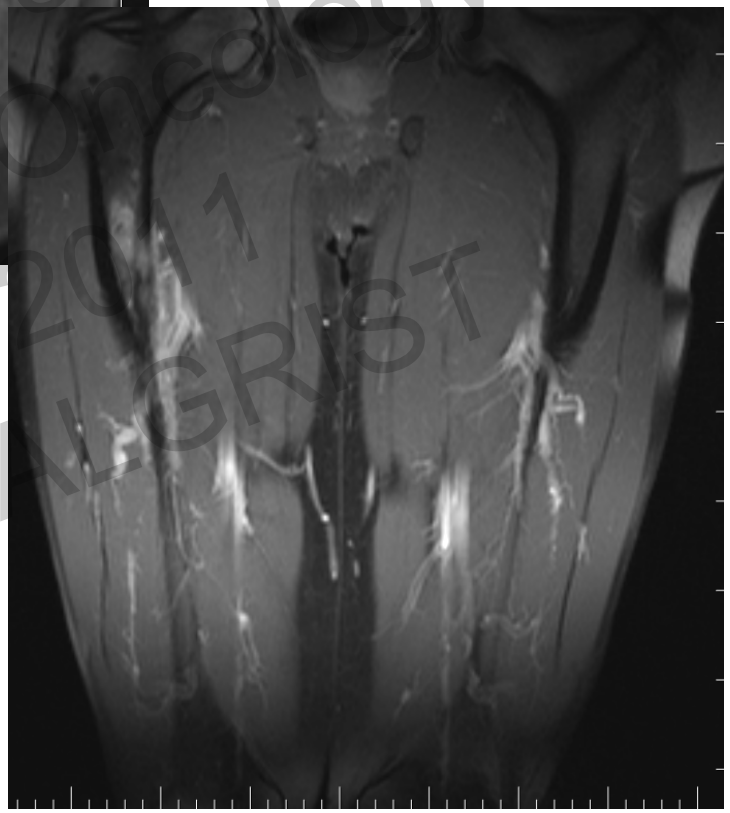
JCD, 50 y

Story: melanoma

Lytic, painful lesion and fracture risk





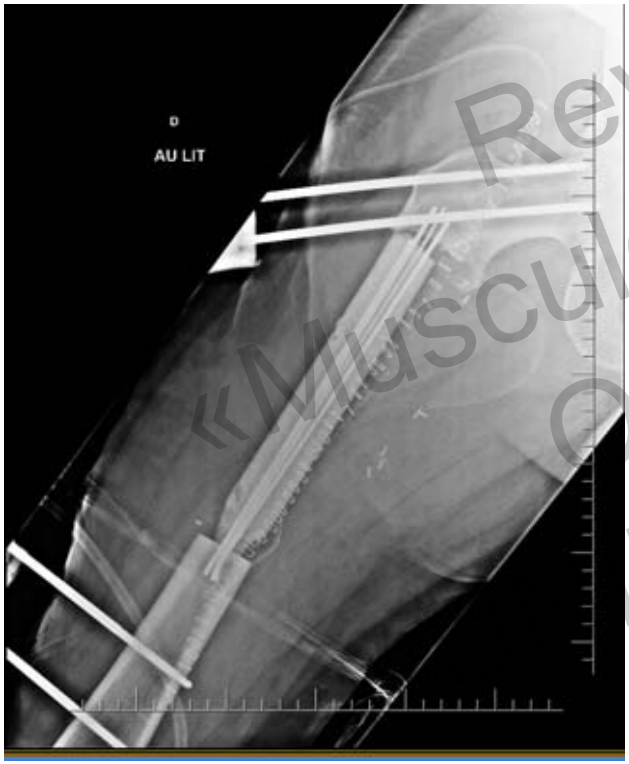


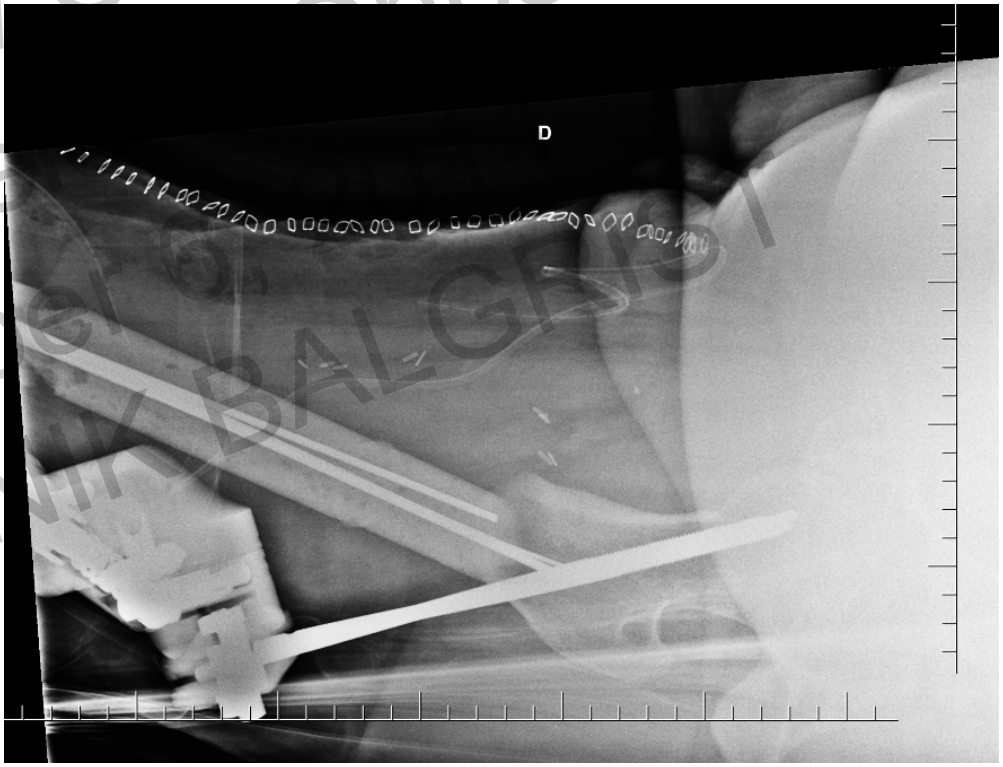
Unique, extended lesion

Biopsy under ct scan: meta of the melanoma

Decision: oncologic excision in 2 times:

1. **Excision and provisional reconstruction**
2. Histological result OK => Final reconstruction





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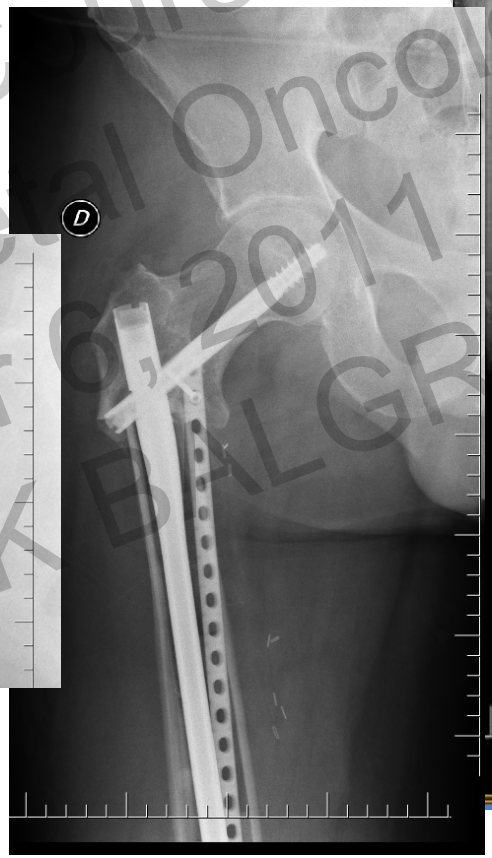
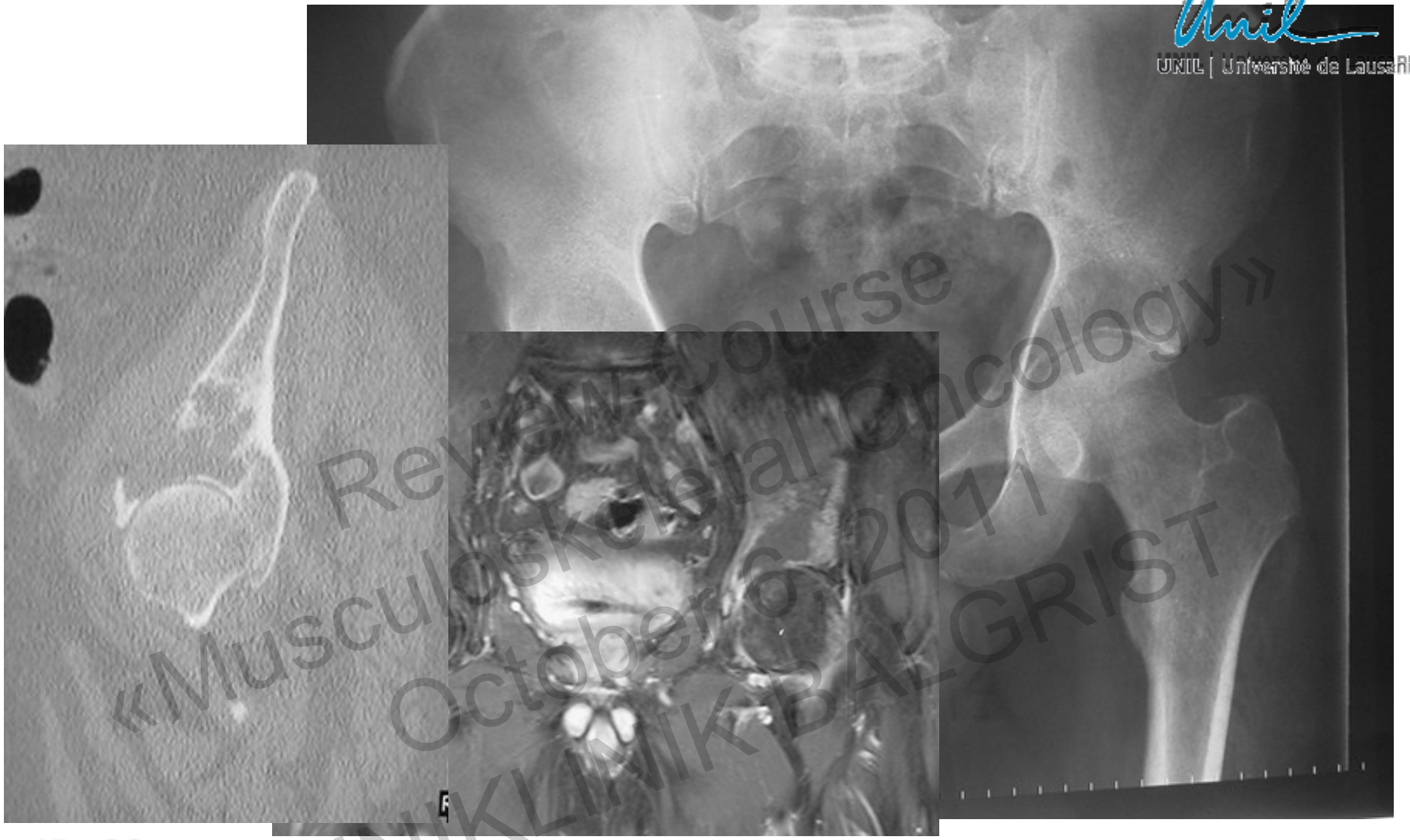


CE, 49 y

Story: testicular tumor

Lytic and painful lesion, fracture risk

Decision: Oncologic excision and massive prosthesis

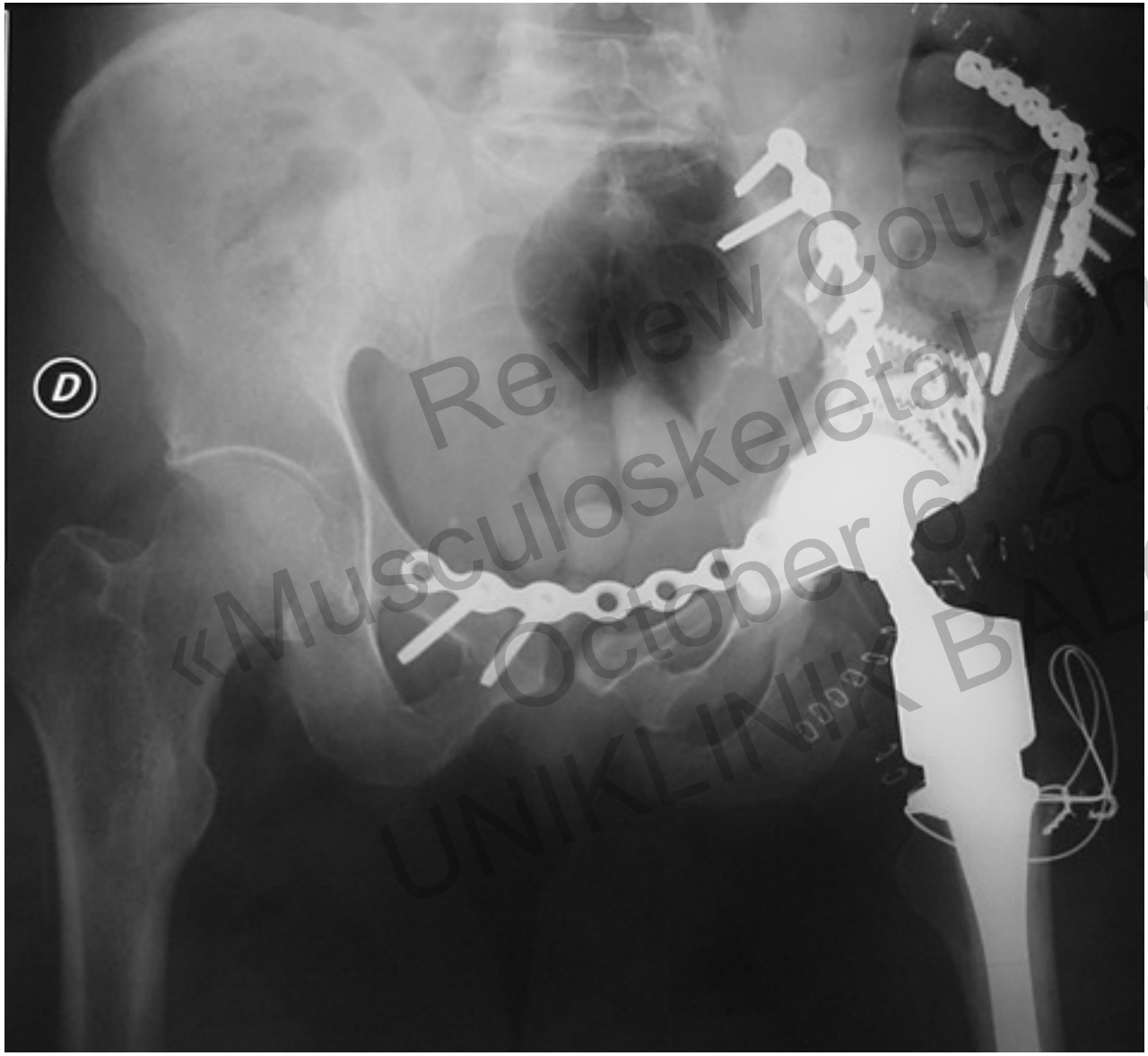


JP, 62 y

Story: renal tumor

Lytic and painful lesion, fracture and articalar contamination

Decision: oncologic excision, reconstruction of the pelvis and massive prosthesis



Palliative surgery:

Preventive or therapeutic osteosynthesis of pathological fracture:

Pertrochanteric lesion (Nail, plate +/- curettage and ciment)

Arthroplasty: head or neck lesion

Rarely, only cementing for non-bearing area

Xray of the entire femur,
Long nail and long arthroplasty are prefered
Discharge hole (depression)

Parameters	Score		
	1	2	3
Site	Upper limb	Lower limb	Peritrochanter
Pain	Mild	Moderate	Severe
Lesion	Blastic	Mixed	Lytic
Size	< 1/3	1/3.2/3	> 2/3

Score: 12

WP, 52 y

Story: lung cancer

Multiple lytic and painful metastases, major fracture risk

Decision: preventive nailing and additive radiation therapy

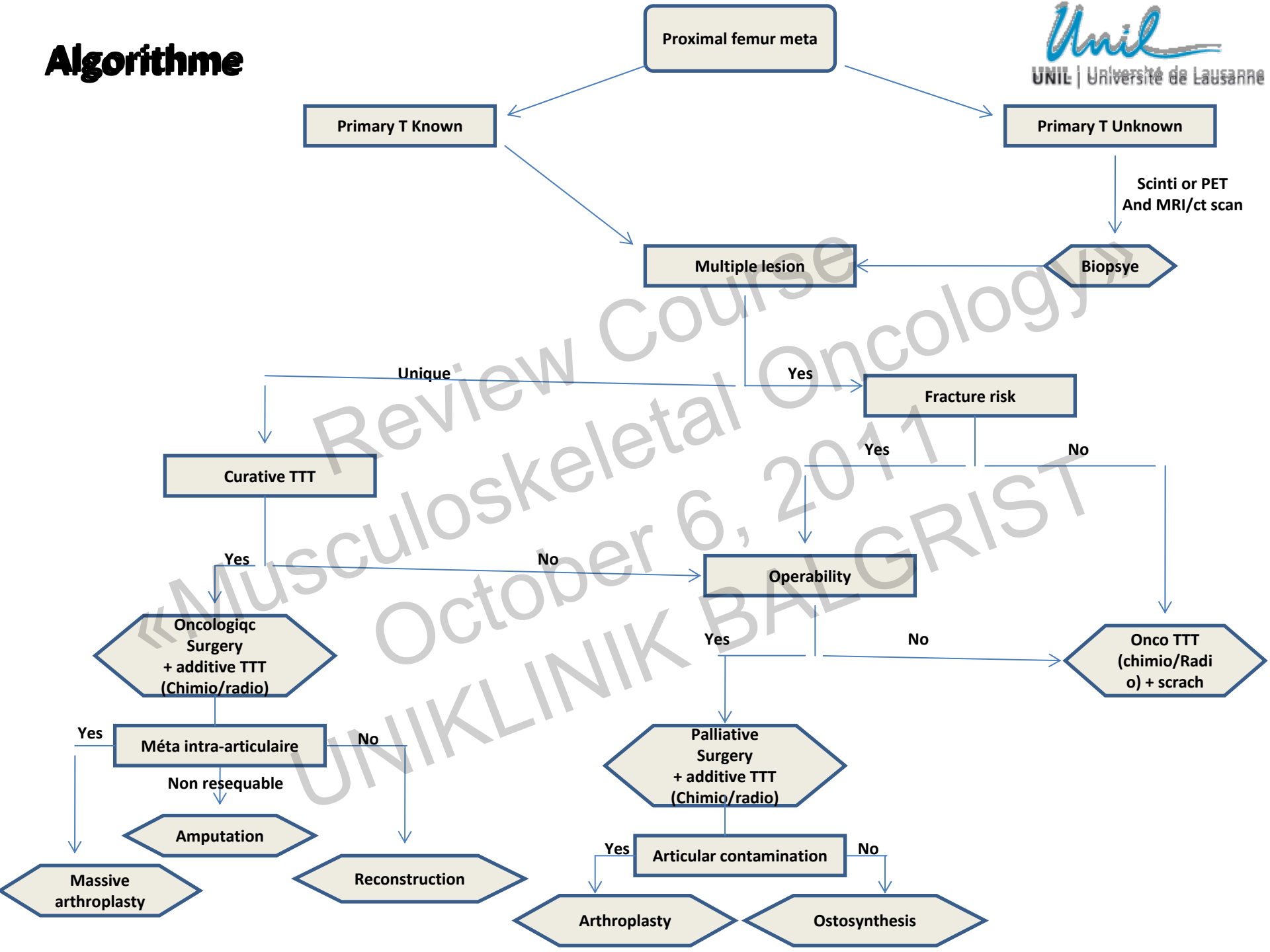
WP, 64 y

Story: Breast cancer

Multiple lytic and painful meta, fracture risk

Decision: arthroplasty and radiotherapy on right side, Only radiotherapy on the left side

Algorithme




Thank you
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