ΑΡΧΕΣ ΒΙΟΨΙΑΣ & ΣΤΑΔΙΟΠΟΙΗΣΗΣ ΟΓΚΩΝ ΜΥΟΣΚΕΛΕΤΙΚΟΥ

Ι.Παπαναστασίου
Επιμελητής Α
ΓΟΝΚ «Αγιοι Ανάργυροι»
Fellow at Memorial Sloan Kettering Center (Ορθοπαιδική Ογκολογία) & Moffitt Cancer Center (Σπονδυλική Στήλη)

BIOPSY

- It is crucial to address the therapeutic approach\
- It always influences treatment and prognosis
- It has potential catasthrophic complications

Mankin HJ, et al.: JBJS Am, 1982

	Total	Local C.	Specialized C.
• Major mistakes	18.2%	30.1%	9.1%
• No-diagnosis	10.3%	19.6%	3.2%
• Complications	17.3%	30.8%	7%
• Modif. treat.	18.2%	31.5%	8.1%
• Modif. prognosis	8.5%	13.3%	4.8%

Mankin HJ, et al.

The hazards of biopsy, revisited: members of the musculoskeletal tumor society. JBJS Am, 1996

- Wrong diagnosis 17,8%
- No-rappresentative sample 8,4%
- Complications 9 %
  (skin, bone, soft tissues)
- Change of treat. and prognosis 10 %

Difference between biopsies done in Bone Tumor Centers and in no-specialized Hospitals

Same results than in the previous study in 1982 !!

Needle Biopsy

Incisional Biopsy

- Almost any part of the body can be biopsied safely with CT guidance. The accuracy rate ranges from 70-90 % depending on whether a metastatic focus or a primary tumor is biopsied

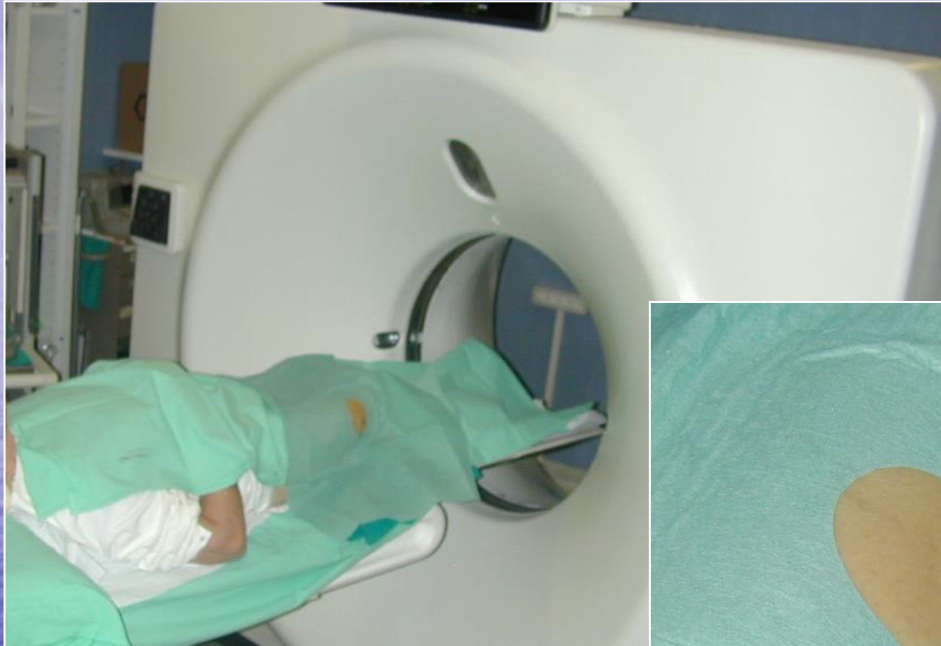
  Jelinek et al. Diagnosis of primary bone tumors with image-guided percutaneous biopsy: Experience with 110 tumors. Radiology 2002; 223:731.
  Leffler etal. CT-guided percutaneous biopsy of sclerotic bone lesions: Diagnostic yield and accuracy. AJR 1999; 172:1389.
  Dupuy et al. Accuracy of CT-guided needle biopsy of musculoskeletal neoplasms. AJR 1998; 171:759.]

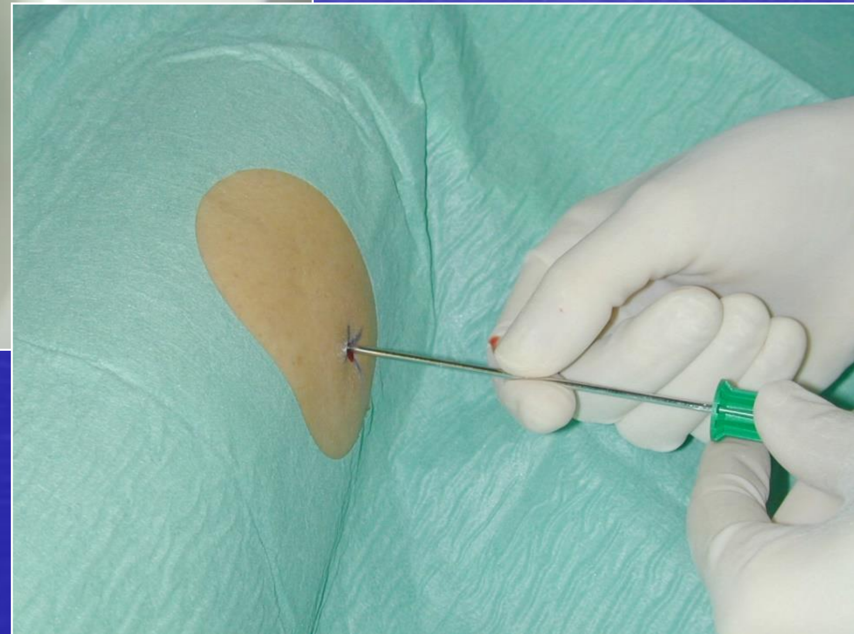
- In Hau report (359pts), the accuracy rates of FNB and FNA were 74 and 63% respectively

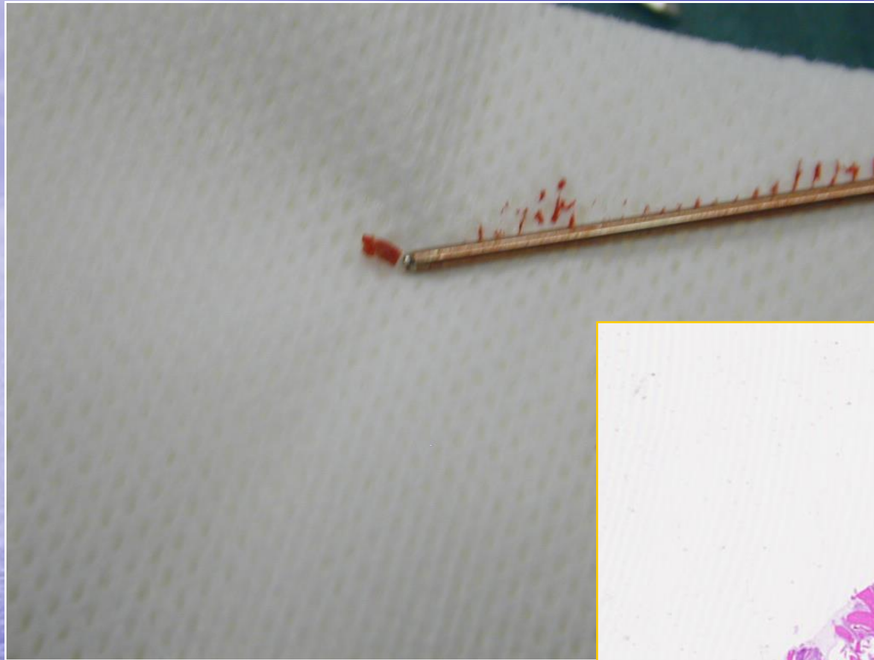
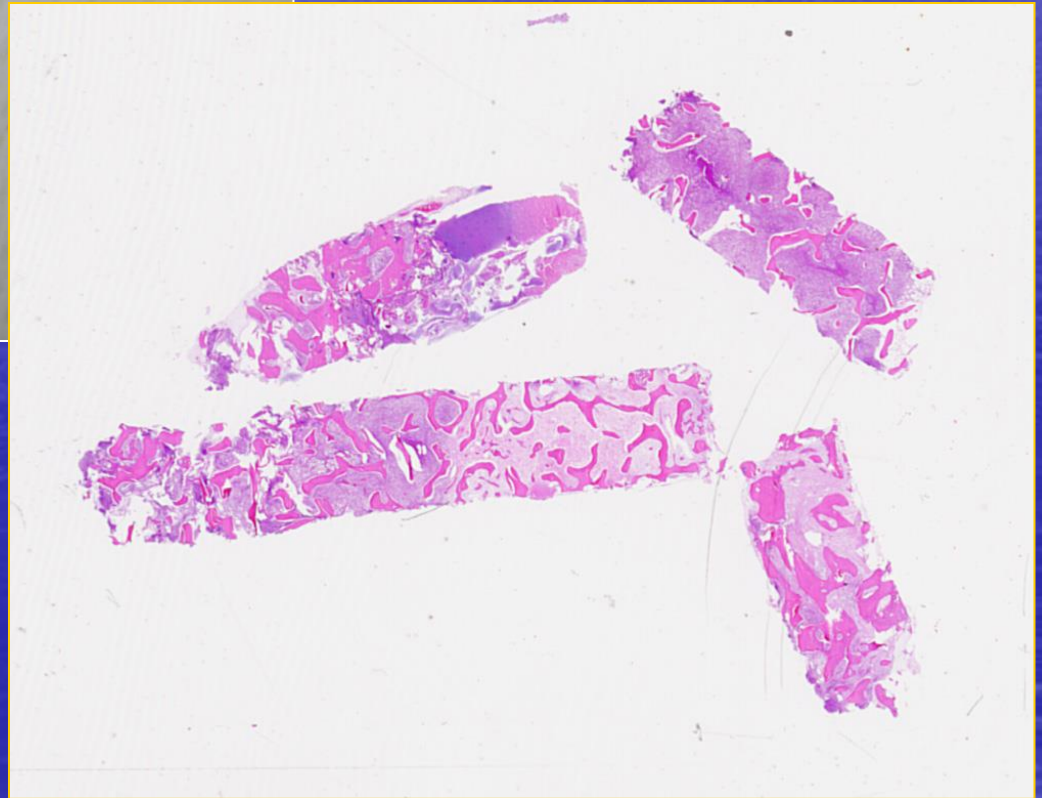
  Ward etal. Fine needle aspiration biopsy of primary bone tumors. CORR 2000; :80.

  Hau et al. Accuracy of CT-guided biopsies in 359 patients with musculoskeletal lesions. Skeletal Radiol 2002; 31:349.

CT Guided Needle Biopsy

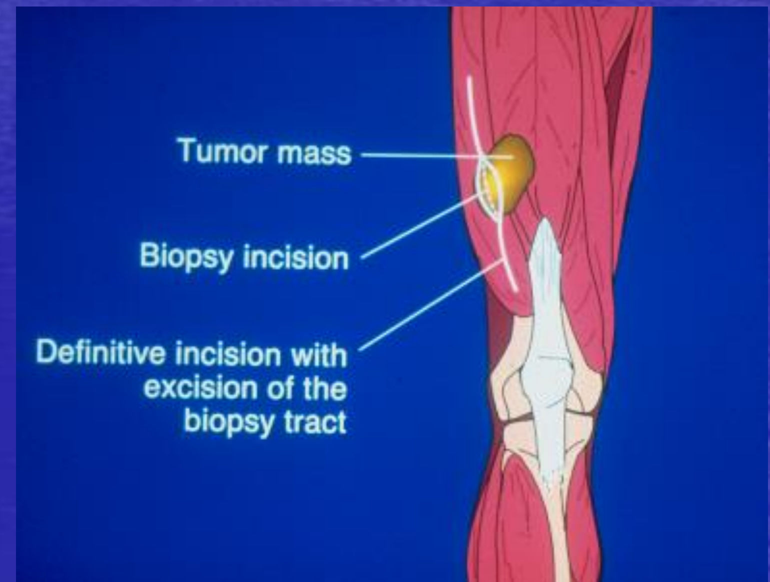


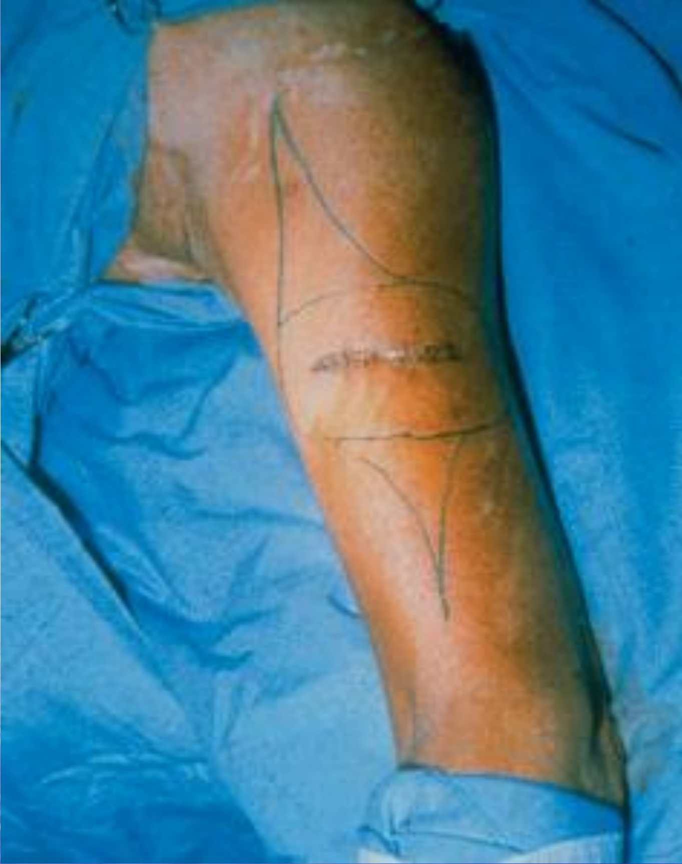


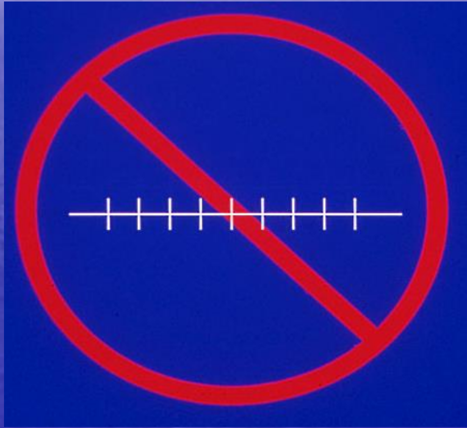
OPEN BIOPSY
Technical Aspects

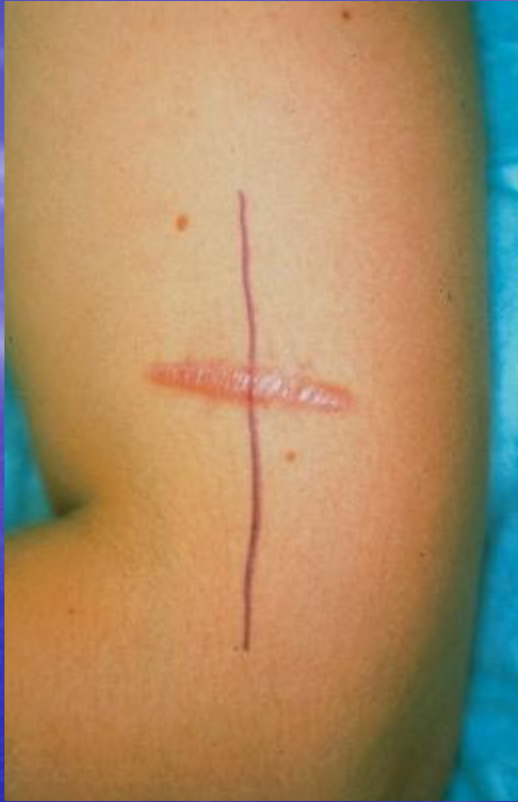
The location and orientation of the incision must anticipate the incision that will be required for definitive management.

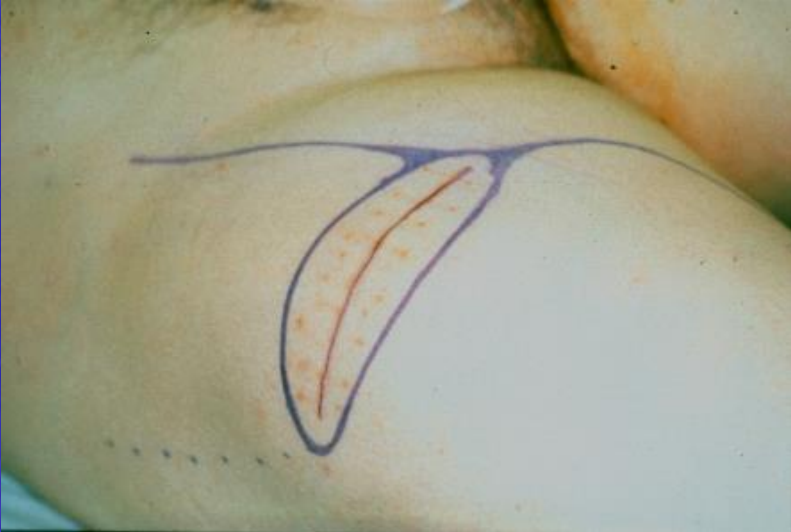




Just say no !

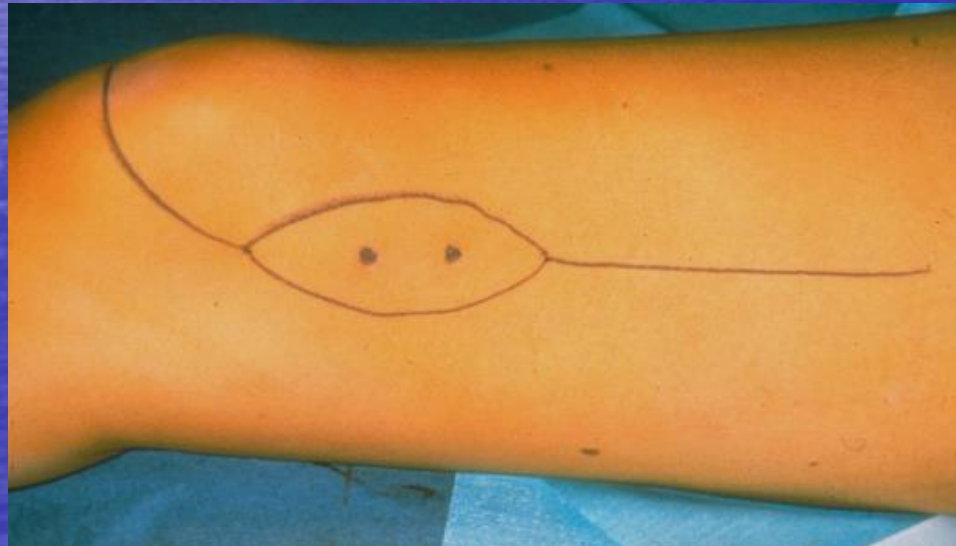






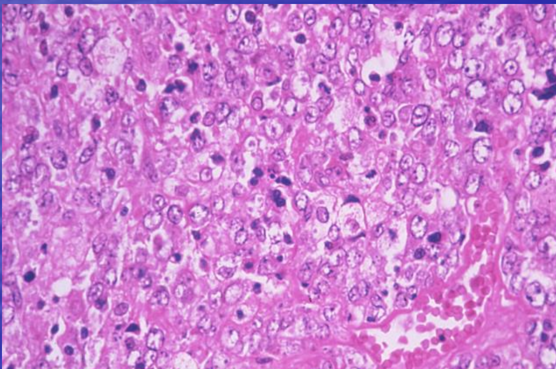
OPEN BIOPSY
Technical Aspects

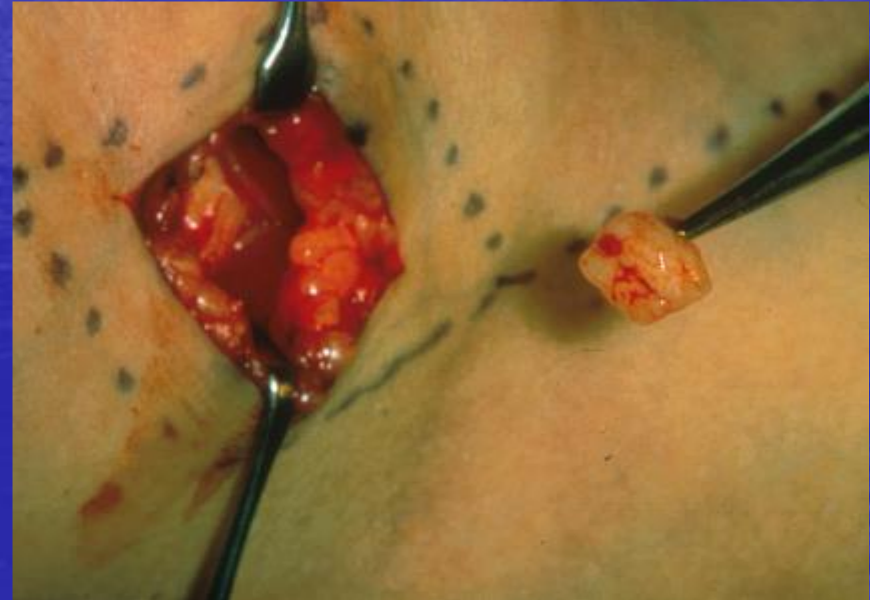
Design a safe window into the tumor which can be easily removed later.



OPEN BIOPSY
Technical Aspects

- Incisional biopsy
  - FROZEN SECTION !!
    - Is it viable ?
    - Is it enough ?
    - Is it representative ?





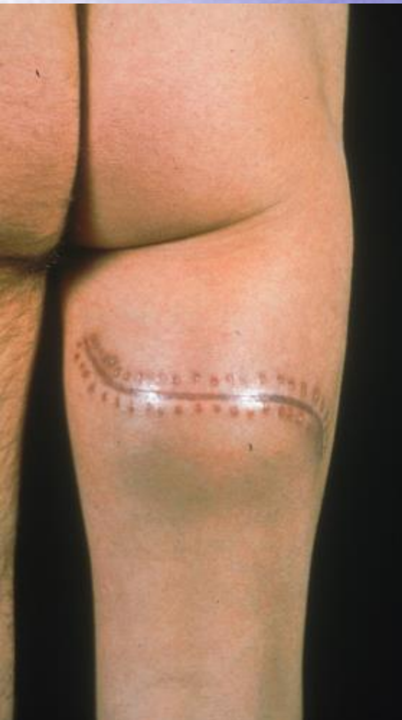
OPEN BIOPSY

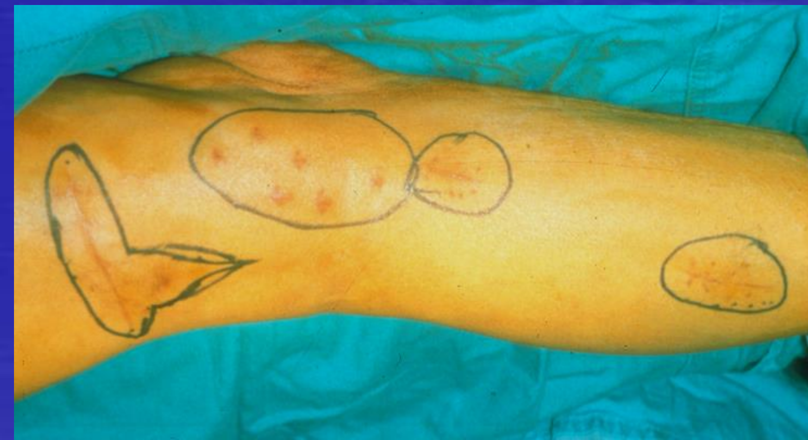
Accomplish your goal, then stop!!

Don’t shell it out.

Don’t debulk the tumor.

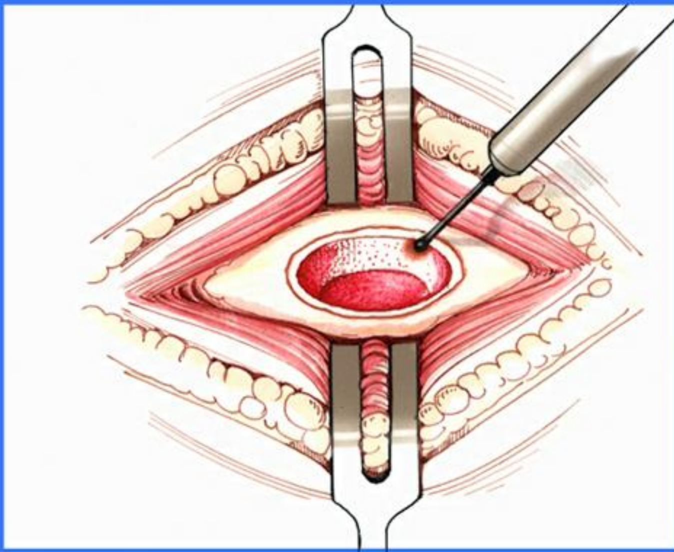
Don’t do anything else.

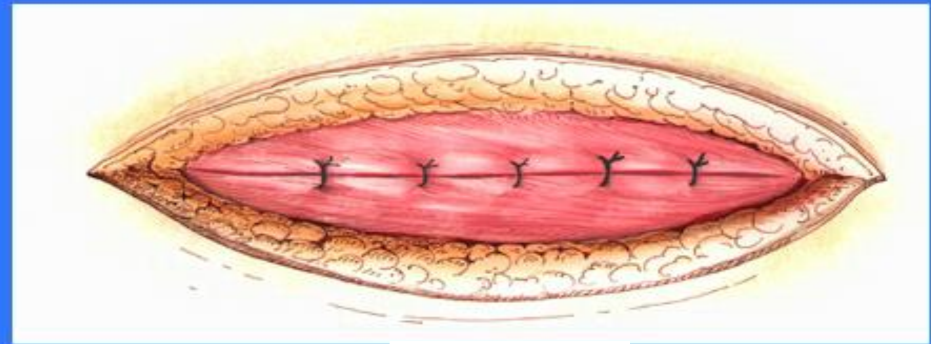




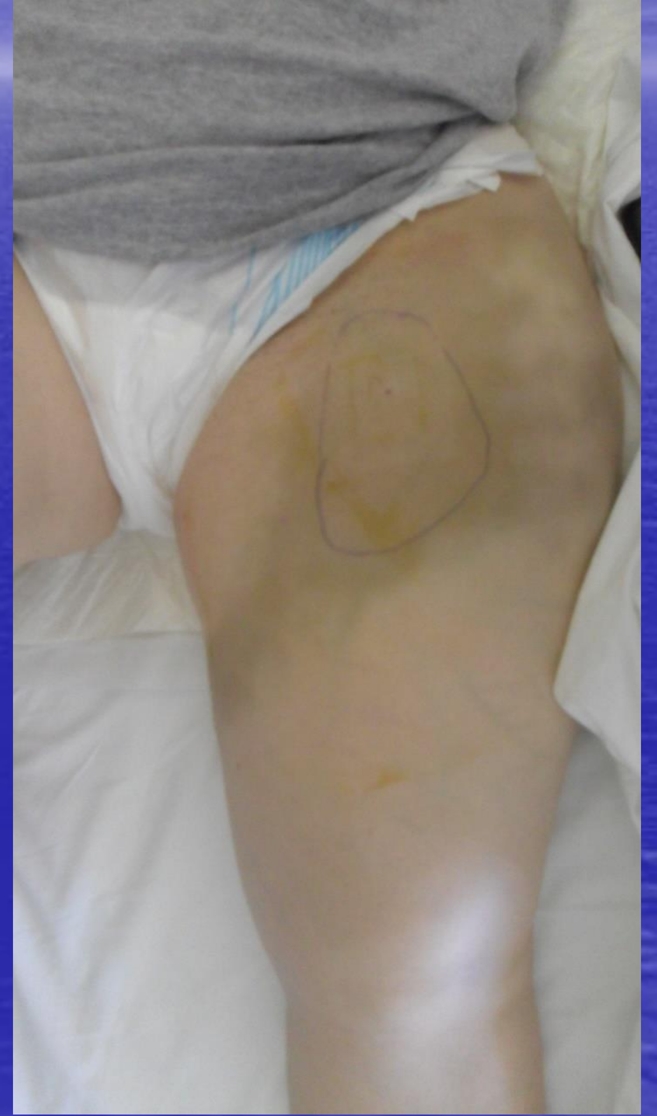
To look for:

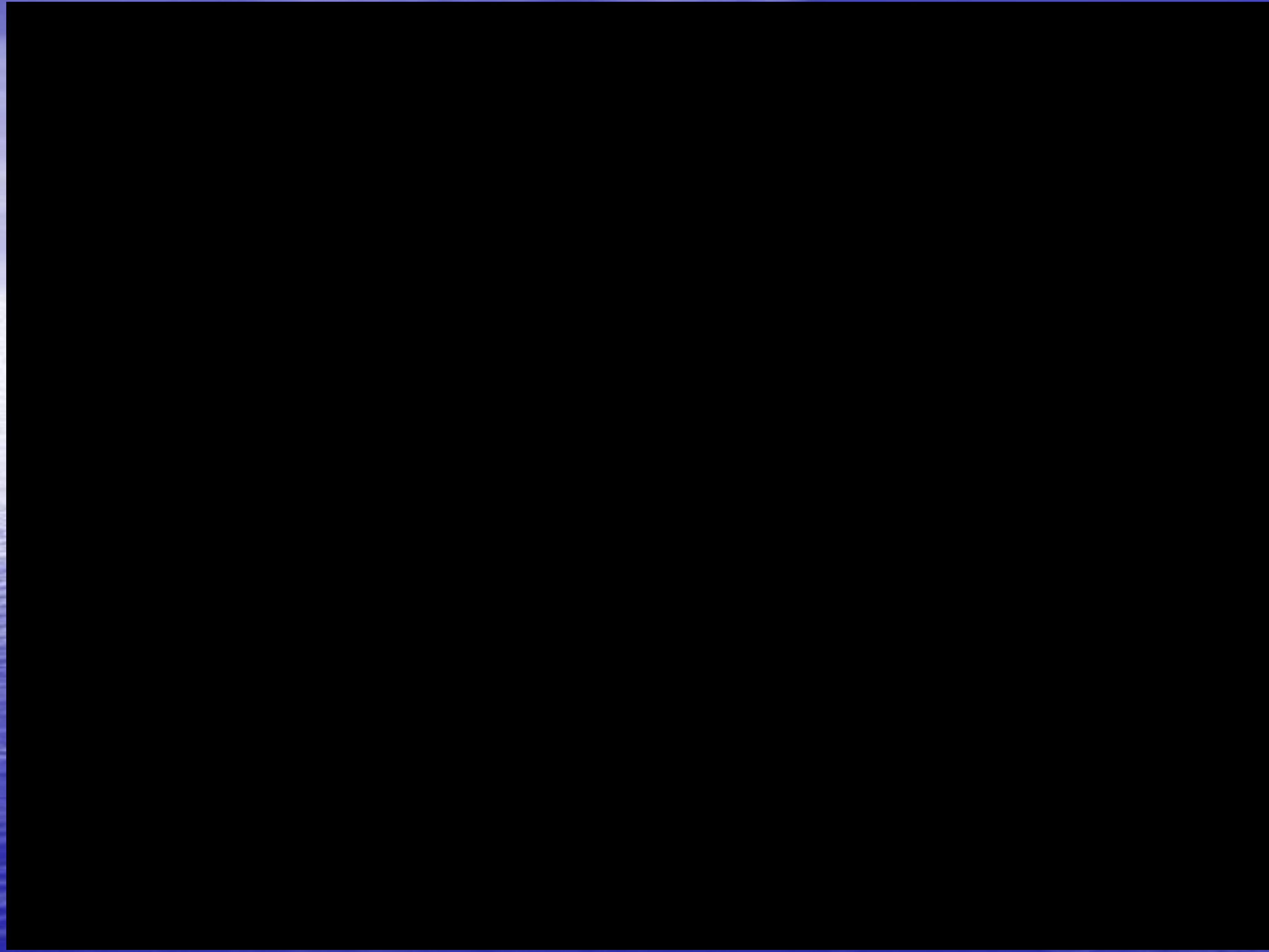
Perfect Emostasys & Appropriate Suture

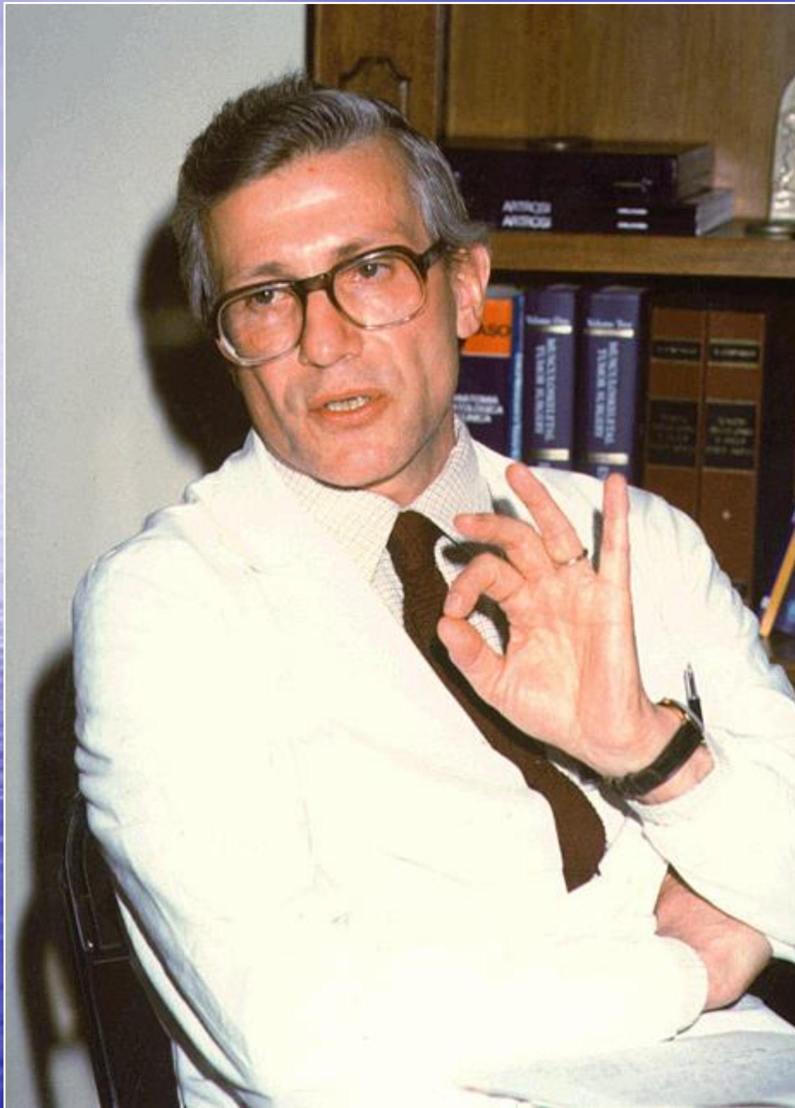




Right







………always remember that biopsy is a crucial surgical step in the treatment of musculo-skeletal neoplasms; it must be performed by a skilled surgeon, with a large experience in sarcoma care while the definitive surgery can be done by the young orthopedist

Συστηματα Σταδιοποιησης

Table 1

American Joint Committee on Cancer (AJCC)
TNM Staging System for Bone *(Primary malignant lymphoma and multiple myeloma are not included)*

(7th ed., 2010)

Primary Tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Tumor 8 cm or less in greatest dimension
T2	Tumor more than 8 cm in greatest dimension
T3	Discontinuous tumors in the primary bone site

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Regional lymph node metastasis

Note: Because of the rarity of lymph node involvement in bone sarcomas, the designation **NX** may not be appropriate and cases should be considered **N0** unless clinical node involvement is clearly evident.

Distant Metastasis (M)

M0	No distant metastasis
M1	Distant metastasis
M1a	Lung
M1b	Other distant sites

Histopathologic Grade (G)

GX	Grade cannot be assessed
G1	Well differentiated — Low Grade
G2	Moderately differentiated — Low Grade
G3	Poorly differentiated
G4	Undifferentiated

Note: Ewing's sarcoma is classified as G4.

Stage Grouping

Stage IA	T1	N0	M0	G1, 2 Low grade, GX
Stage IB	T2	N0	M0	G1, 2 Low grade, GX
	T3	N0	M0	G1, 2 Low grade, GX
Stage IIA	T1	N0	M0	G3, 4 High grade
Stage IIB	T2	N0	M0	G3, 4 High grade
Stage III	T3	N0	M0	G3,
Stage IVA	Any T	N0	M1a	Any G
Stage IVB	Any T	N1	Any M	Any G
	Any T	Any N	M1b	Any G

Used with the permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the AJCC Cancer Staging Manual, Seventh Edition (2010) published by Springer Science and Business Media LLC (SBM). (For complete information and data supporting the staging tables, visit www.springer.com.) Any citation or quotation of this material must be credited to the AJCC as its primary source. The inclusion of this information herein does not authorize any reuse or further distribution without the expressed, written permission of Springer SBM, on behalf of the AJCC.

Table 2

Surgical Staging System (SSS)

Stage	Grade	Site
IA	Low (G1)	Intracompartmental (T1)
IB	Low (G1)	Extracompartmental (T2)
IIA	High (G2)	Intracompartmental (T1)
IIB	High (G2)	Extracompartmental (T2)
III	Any (G) + Regional or distant metastasis	Any (T)

From Enneking WF, Spanier SS, Goodman MA: A system for the surgical staging of musculoskeletal sarcoma. Clin Orthop 1980:153:106-120.

Σταδιοποιηση Enneking (Χειρουργικη)

Table 2

Surgical Staging System (SSS)

Stage	Grade	Site
IA	Low (G1)	Intracompartmental (T1)
IB	Low (G1)	Extracompartmental (T2)
IIA	High (G2)	Intracompartmental (T1)
IIB	High (G2)	Extracompartmental (T2)
III	Any (G) + Regional or distant metastasis	Any (T)

From Enneking WF, Spanier SS, Goodman MA: A system for the surgical staging of musculoskeletal sarcoma. Clin Orthop 1980:153:106-120.

Table 1

American Joint Committee On Cancer (AJCC) Staging System For Soft Tissue Sarcoma (7th ed, 2010)

Primary Tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Tumor 5 cm or less in greatest dimension*
T1a	Superficial tumor
T1b	Deep tumor*
T2	Tumor more than 5 cm in greatest dimension*
T2a	Superficial tumor
T2b	Deep tumor

*Superficial tumor is located exclusively above the superficial fascia without invasion of the fascia; deep tumor is located either exclusively beneath the superficial fascia, superficial to the fascia with invasion of or through the fascia, or both superficial yet beneath the fascia.

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1†	Regional lymph node metastasis

†Presence of positive nodes (N1) in M0 tumors is considered Stage III.

Distant Metastases (M)

M0	No distant metastasis
M1	Distant metastasis

Histologic Grade

GX	Grade cannot be assessed
G1	Grade 1
G2	Grade 2
G3	Grade 3

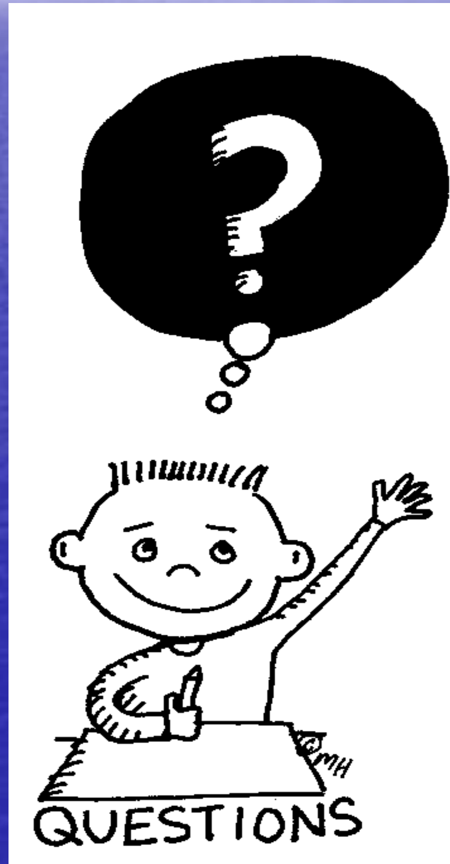
Anatomic Stage/Prognostic Groups

Stage IA	T1a	N0	M0	G1, GX
	T1b	N0	M0	G1, GX
Stage IB	T2a	N0	M0	G1, GX
	T2b	N0	M0	G1, GX
Stage IIA	T1a	N0	M0	G2, G3
	T1b	N0	M0	G2, G3
Stage IIB	T2a	N0	M0	G2
	T2b	N0	M0	G2
Stage III	T2a,T2b	N0	M0	G3
	Any T	N1	M0	Any G
Stage IV	Any T	Any N	M1	Any G

Continued...

Used with the permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the AJCC Cancer Staging Manual, Seventh Edition (2010) published by Springer Science and Business Media LLC (SBM). (For complete information and data supporting the staging tables, visit www.springer.com.) Any citation or quotation of this material must be credited to the AJCC as its primary source. The inclusion of this information herein does not authorize any reuse or further distribution without the expressed, written permission of Springer SBM, on behalf of the AJCC.

..now I am really confused.. Which one is better?

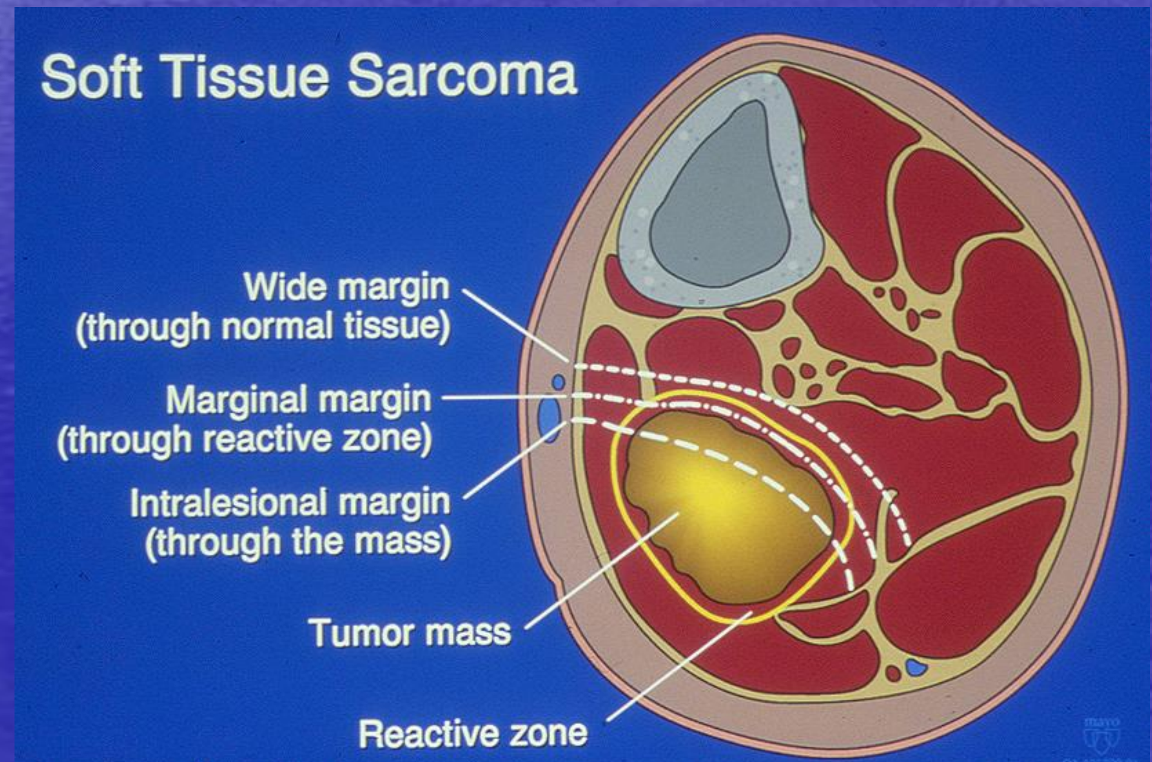


- Different scope
- AJCC: Prognosis (High grade vs Low grade: 50 vs 90% survival in 5y)
  - Size does matter!
- MSTS: Treatment (Compartment conception)

SURGICAL PRINCIPLES
Local Resection

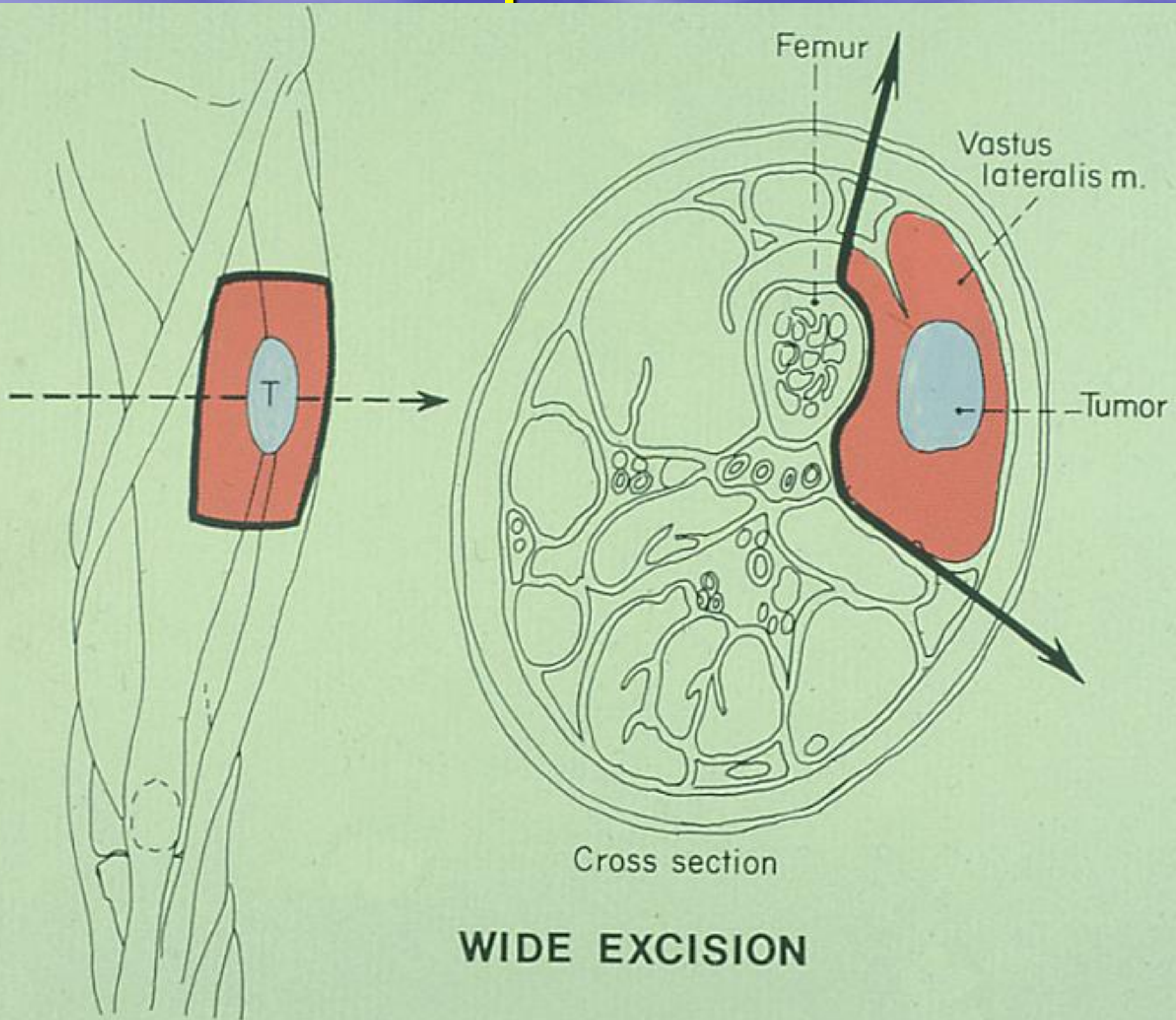
Standardization of Surgical Margins*

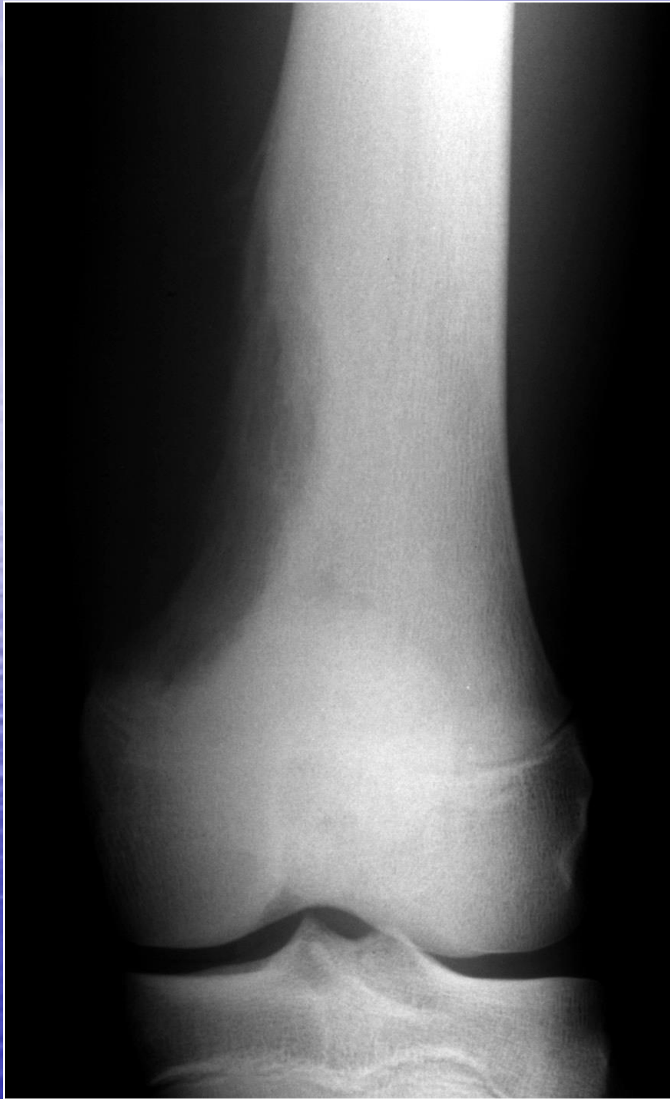
- intra-lesional
- marginal
- wide
- radical



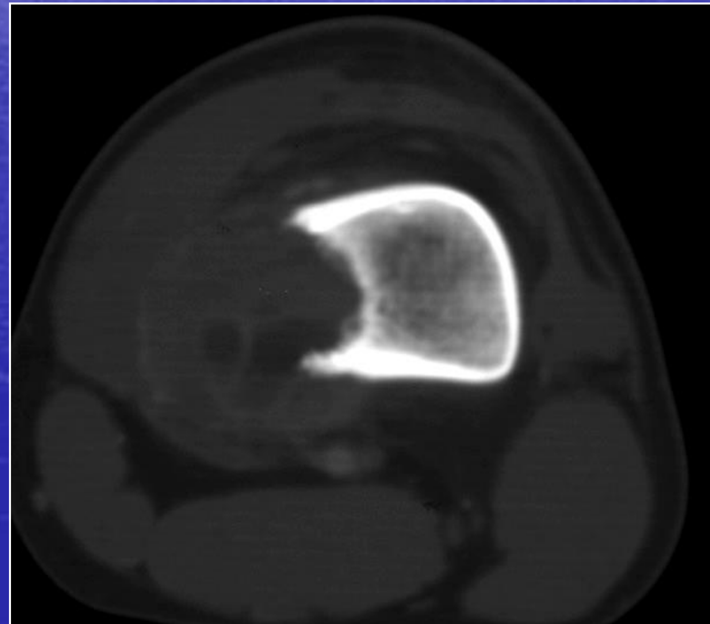
* modified by adjuvant RT

Compartment



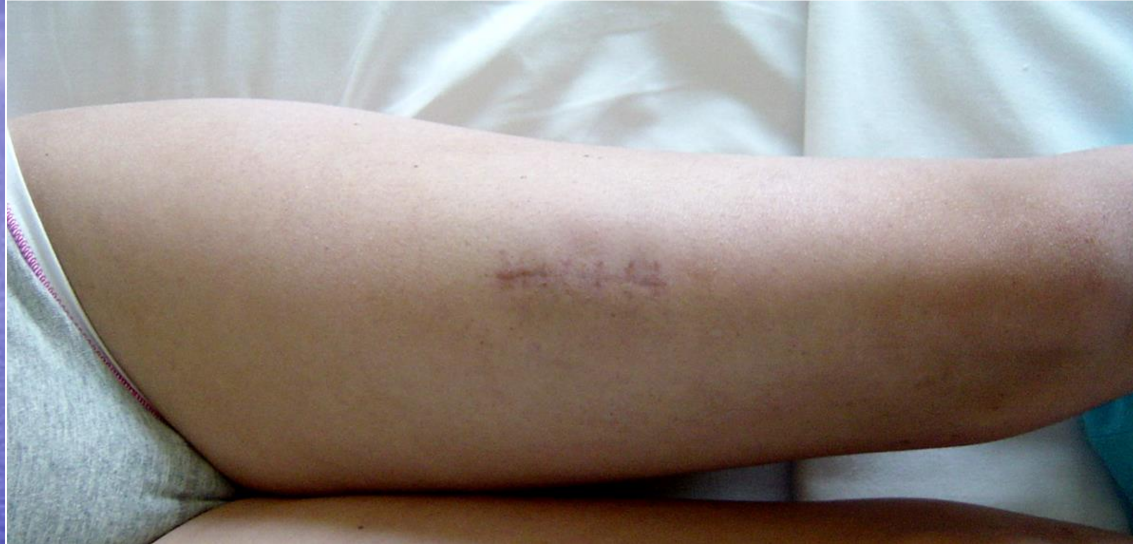


- Sarcomas often respect the limits of the anatomical compartments



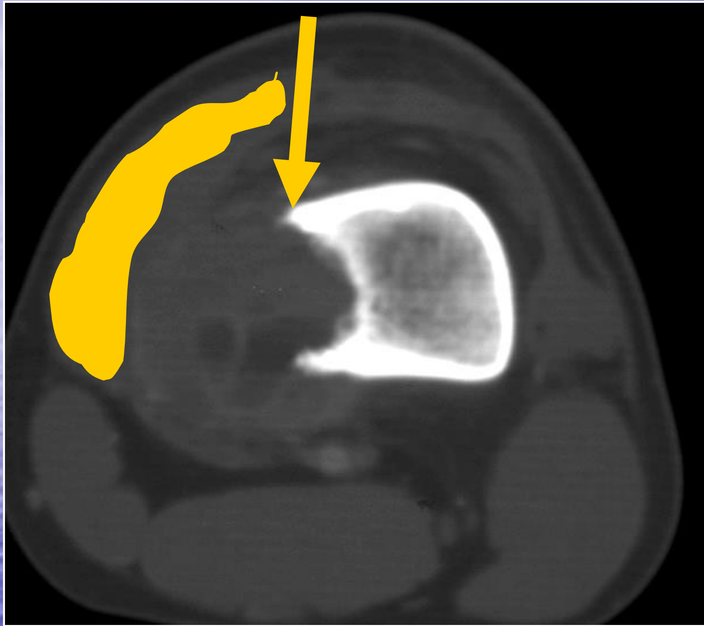
Options

1. Εγκαρσια τομη (πορεια δερματικων πτυχων)
2. Επιμηκης τομη
3. Δια του εσω πλατεος
4. Δια του ορθου (πιο συντομη)
5. Δια του εξω πλατεος

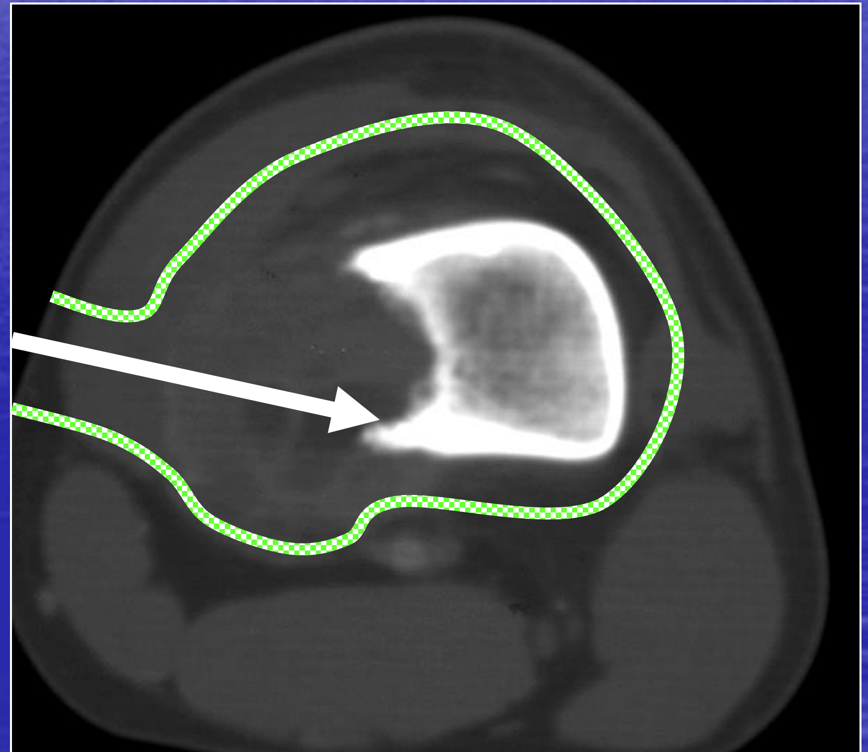


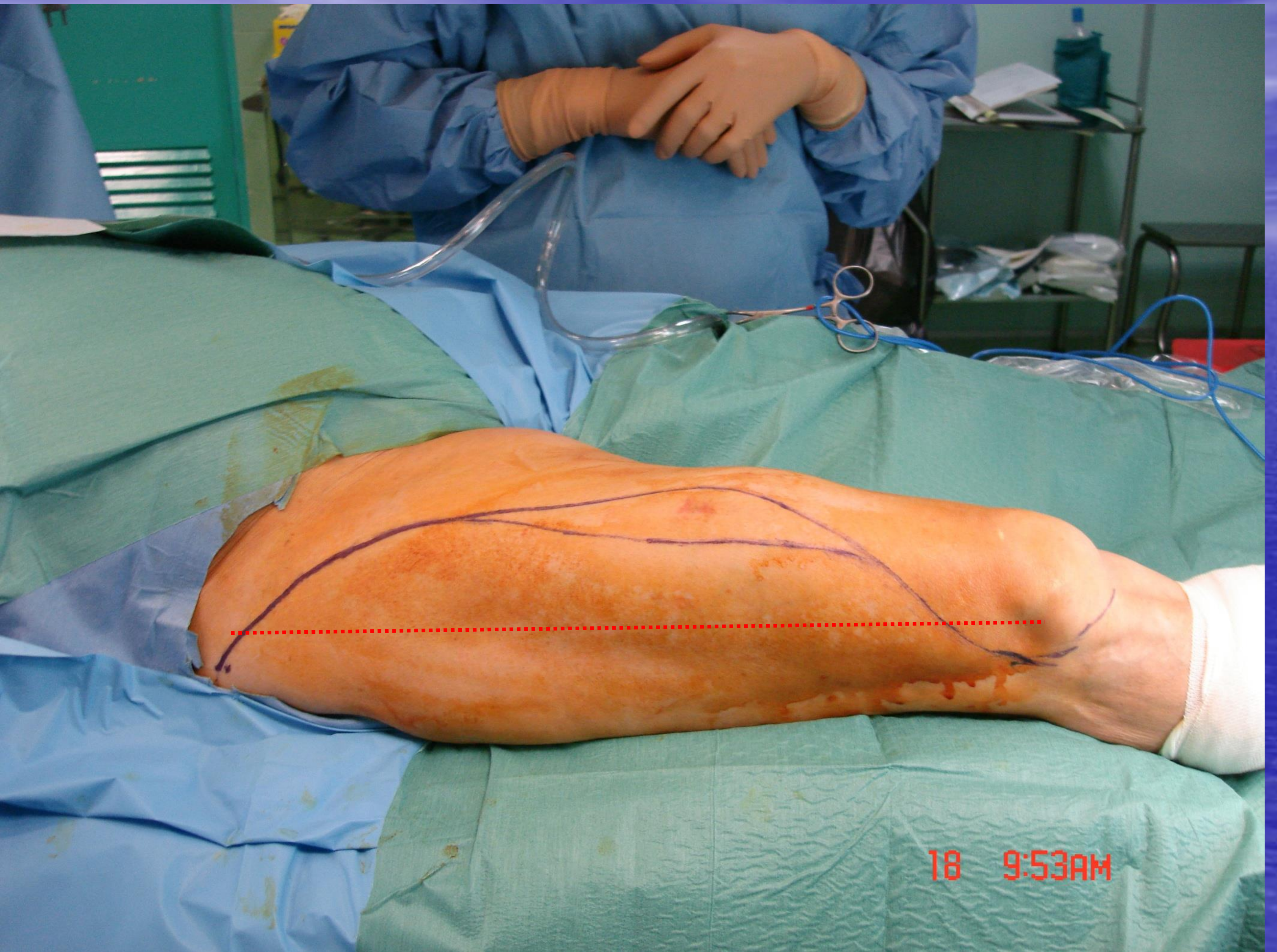
MISTAKE!!!!

NO!!

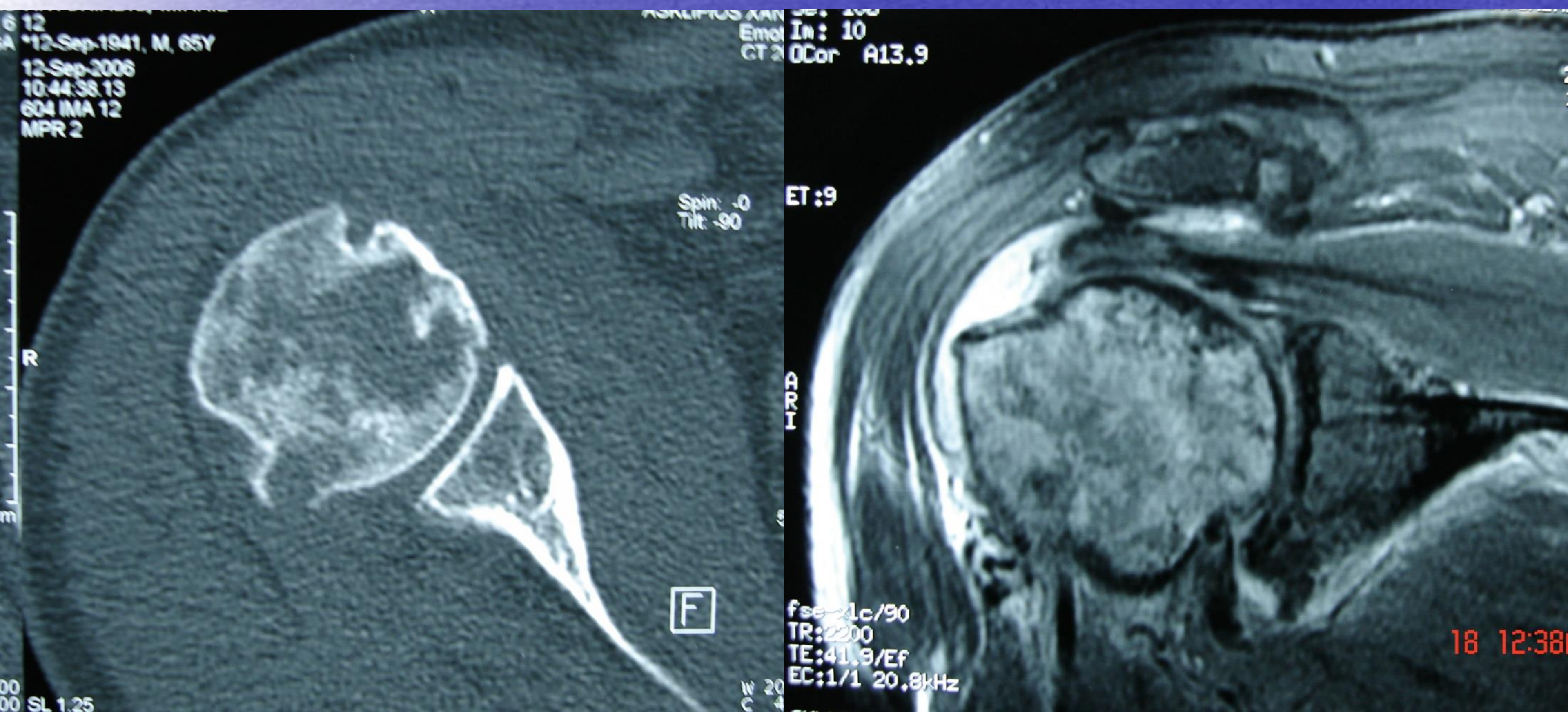


YES!!



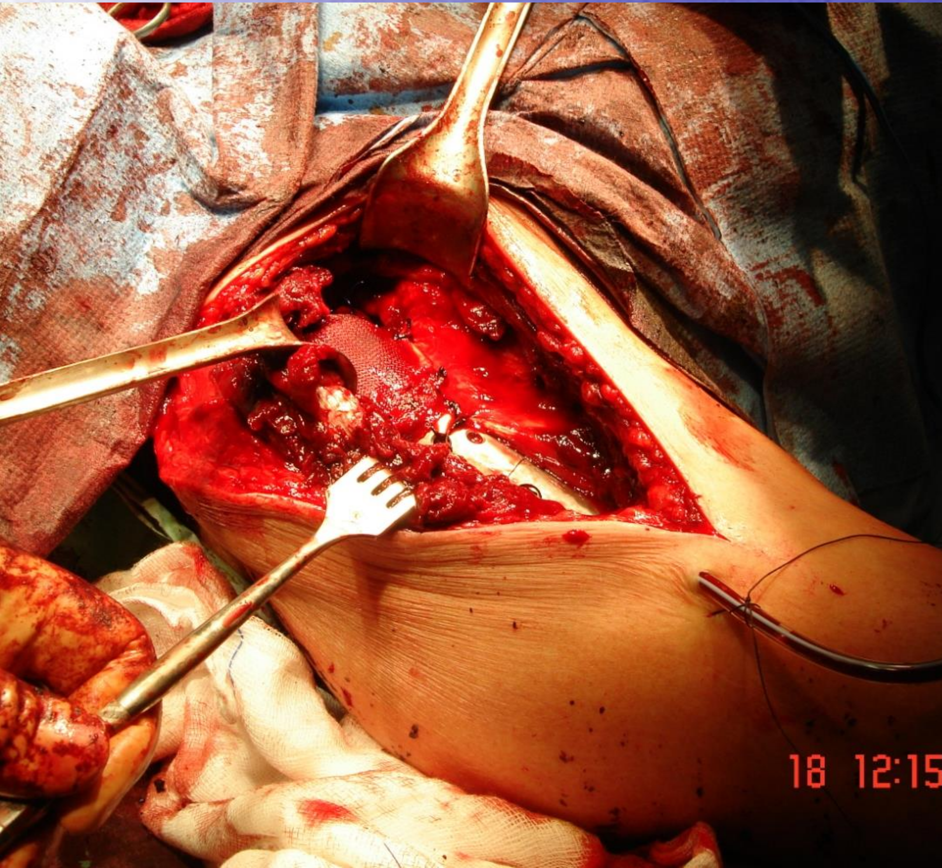

18 9:53AM

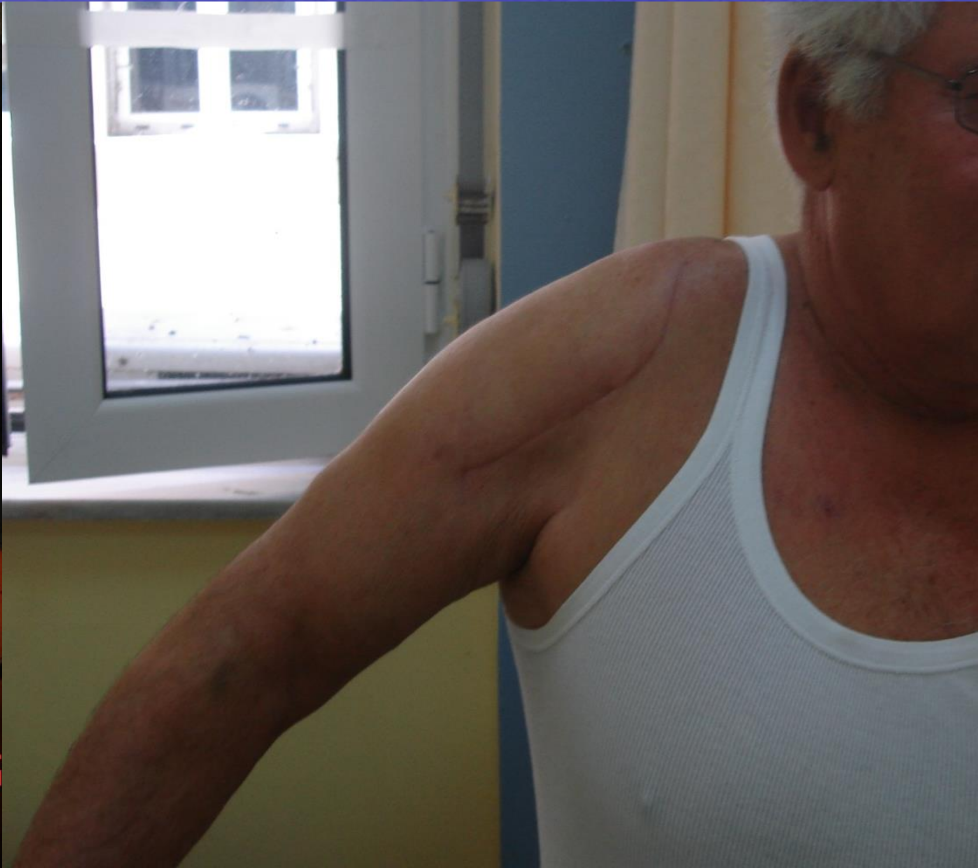
Upper humerus destructive tumor



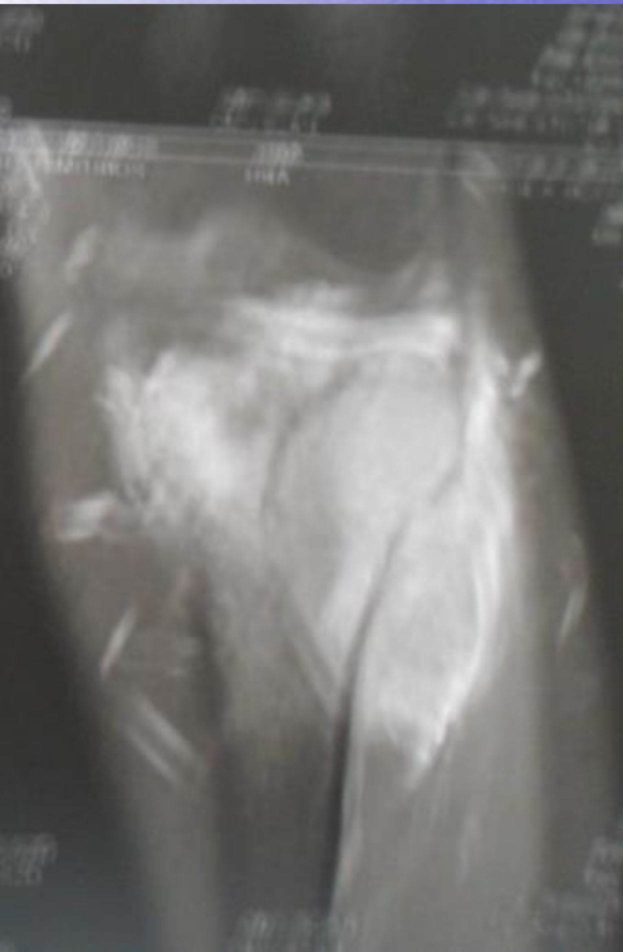
Options

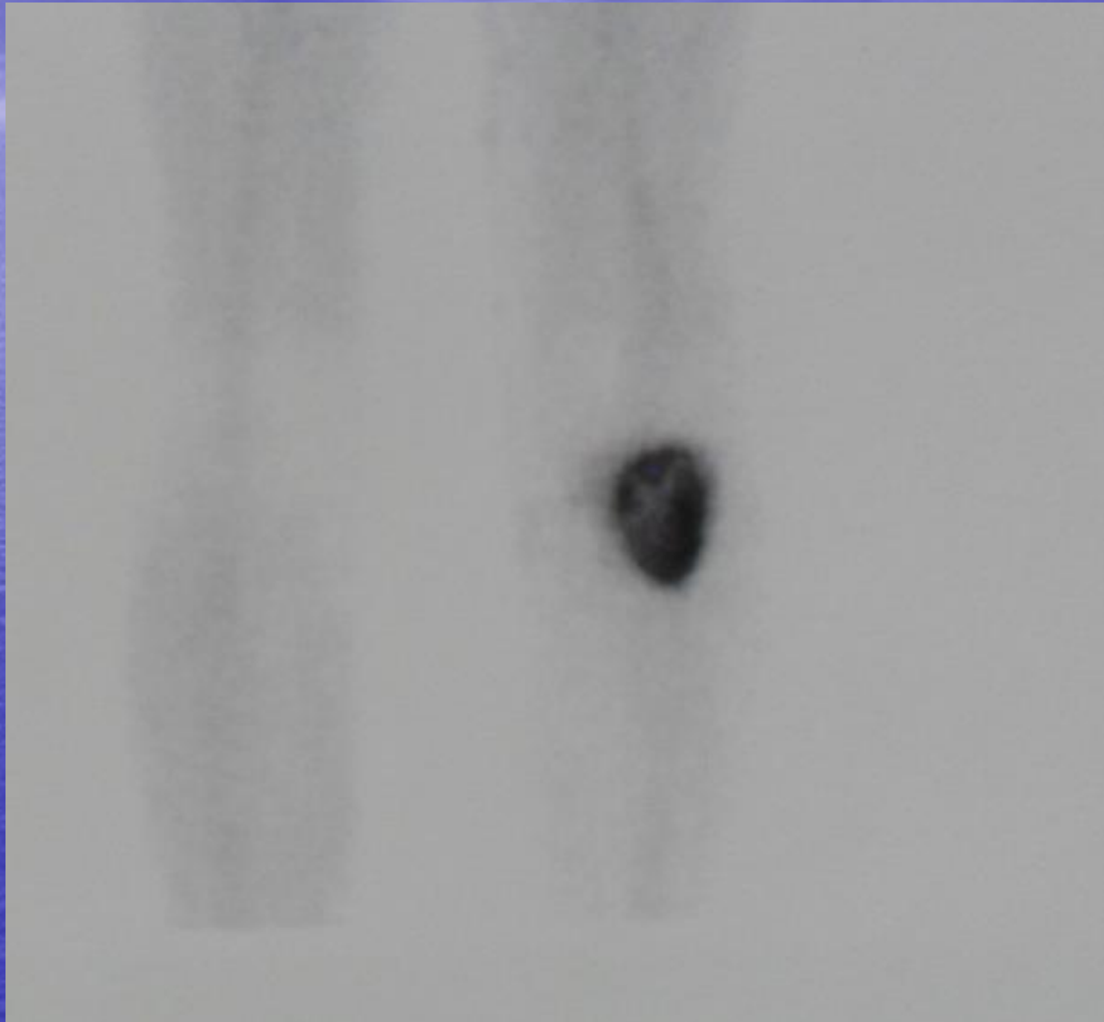
1. Εγκαρσια τομη
2. Επιμηκης τομη
3. Δια της προσθιας μοιρας του δελτοειδη
4. Δια της οπισθιας μοιρας του δελτοειδη
5. Δια του θωρακοδελτοειδους διαστηματος (μικροτερη βλαβη του δελτοειδη)


18 12:15

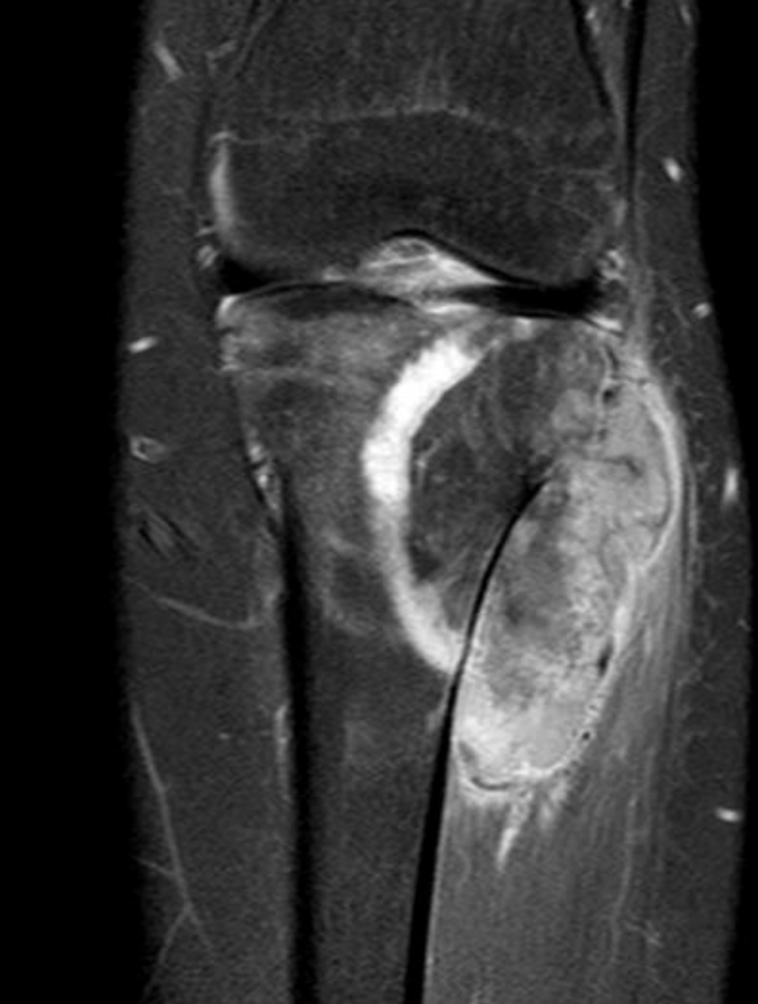


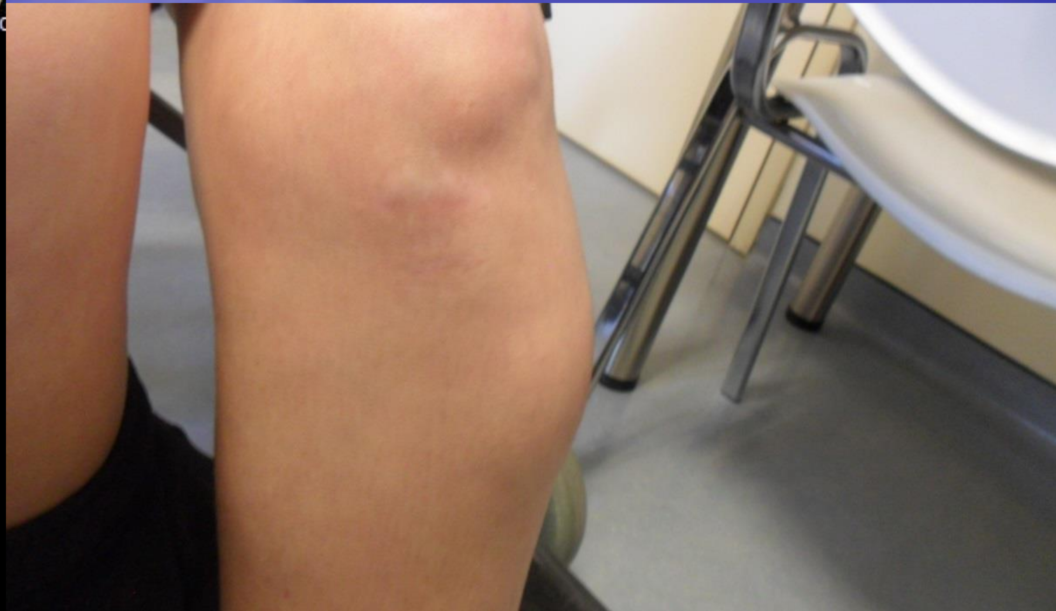
18 ετων με ογκο κνημης και περιορισμενες πνευμονικες μεταστασεις

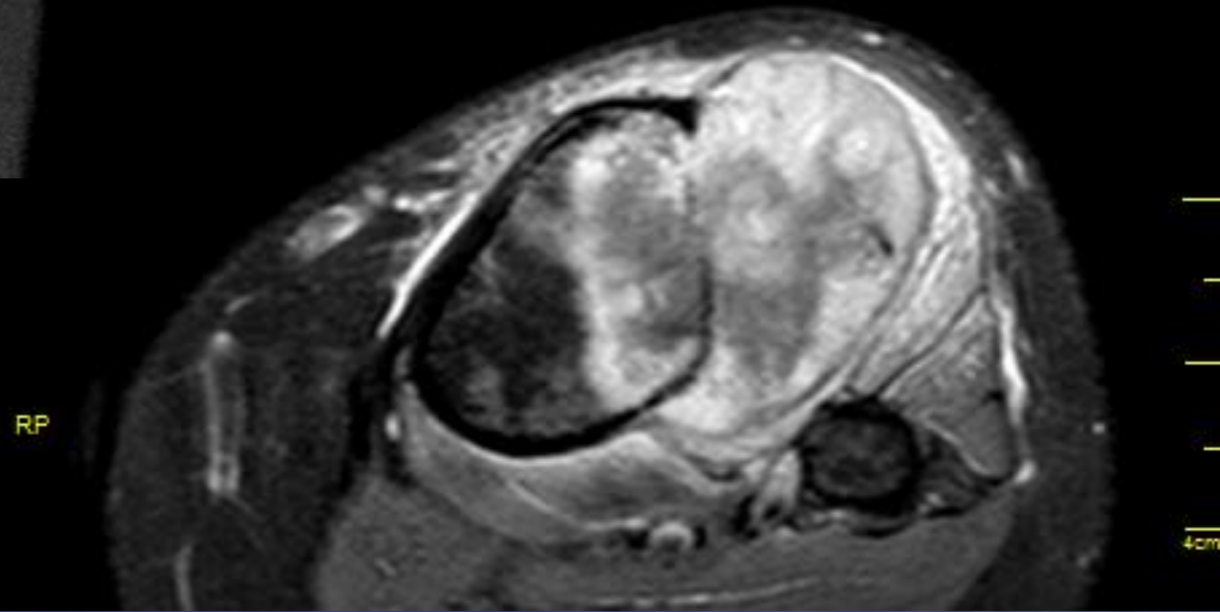


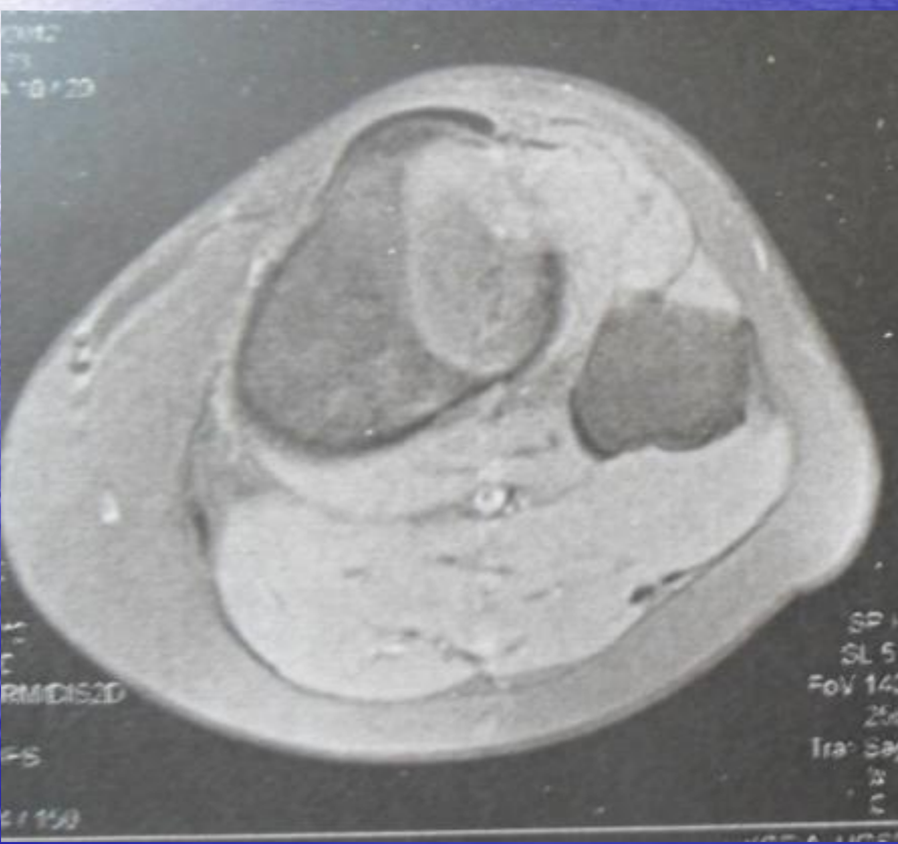


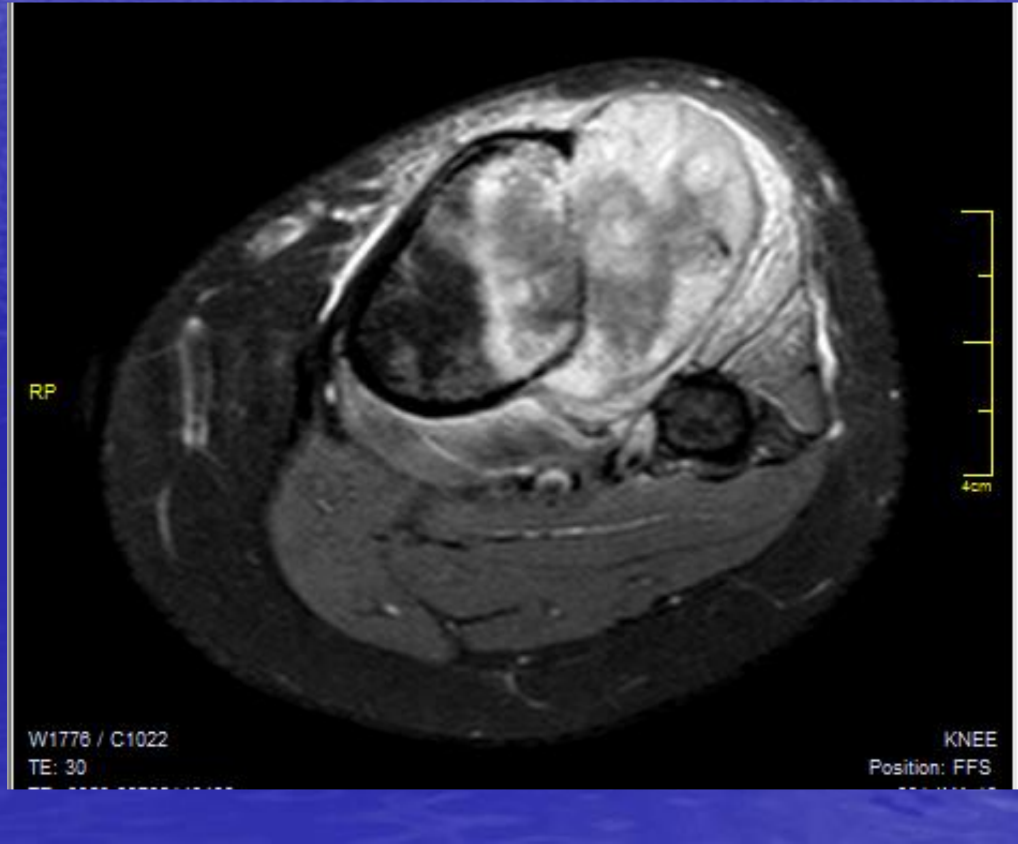
Βιοψια δια βελονης



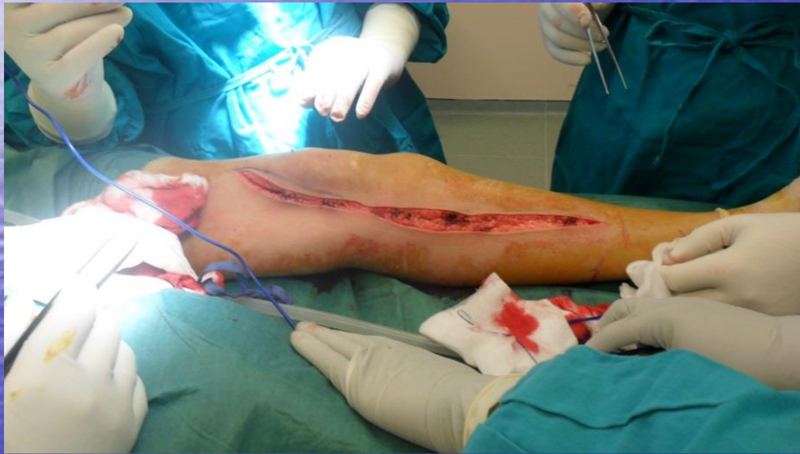
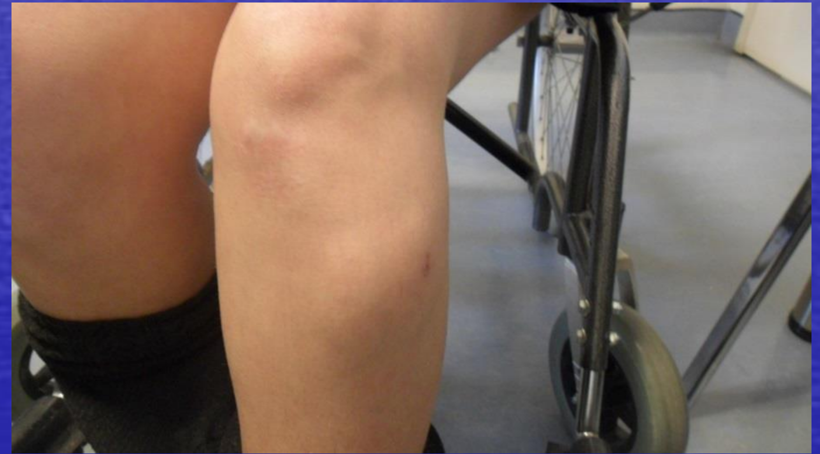


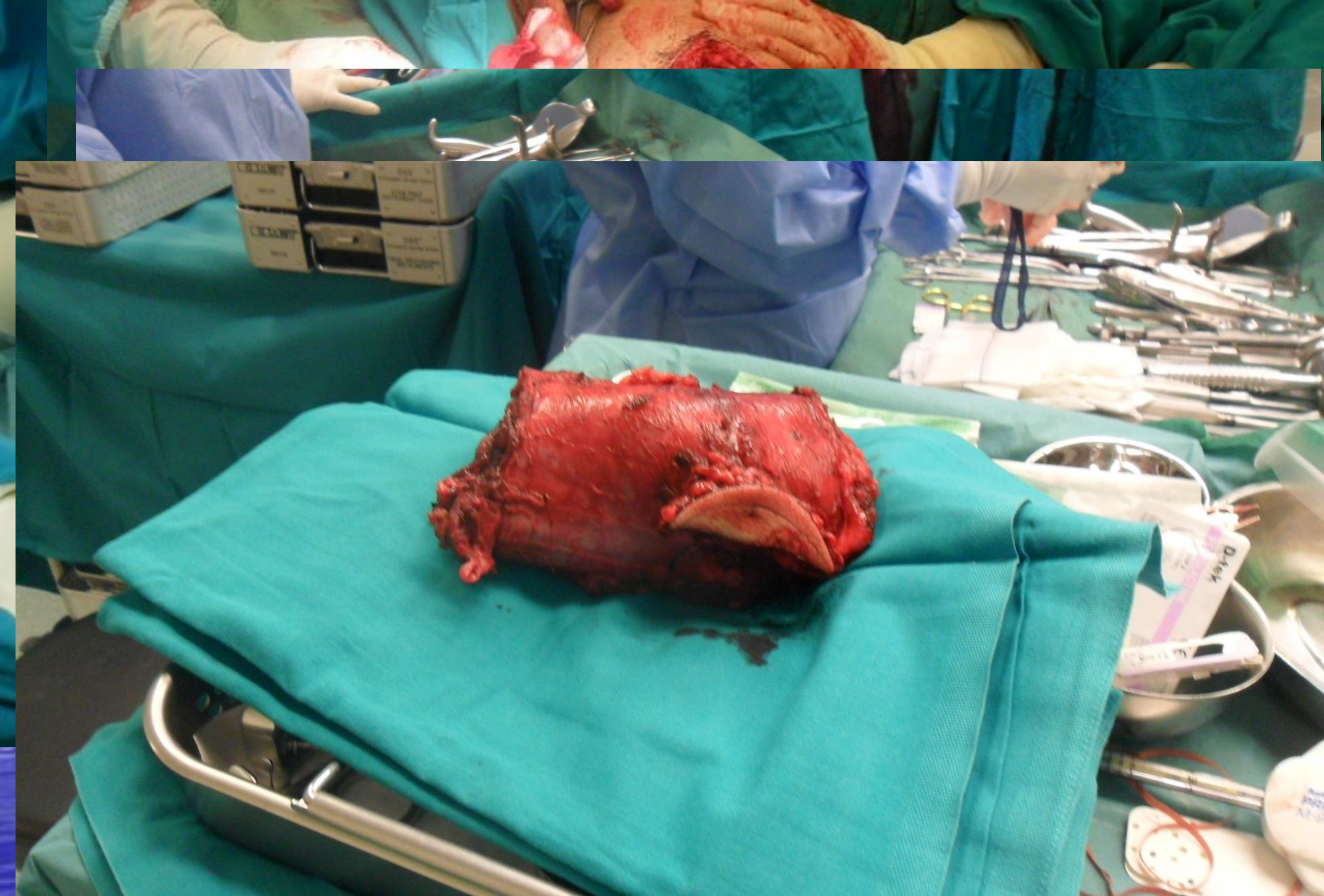

RP
4cm




RP
4cm
W1776 / C1022
TE: 30
KNEE
Position: FFS

- Ακρωτηριασμος?
- Διασωση μελους?

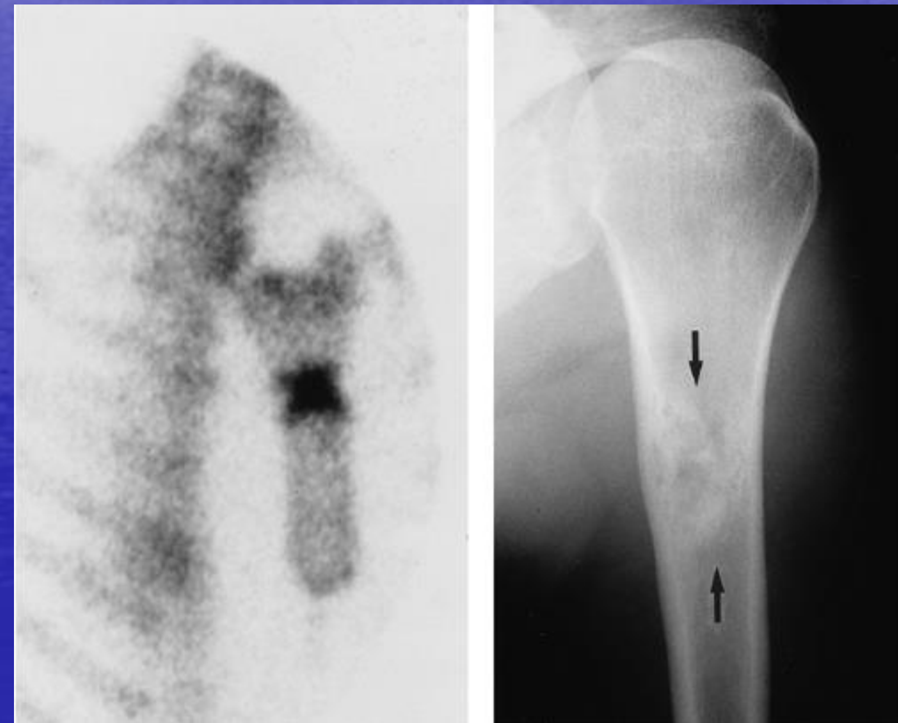





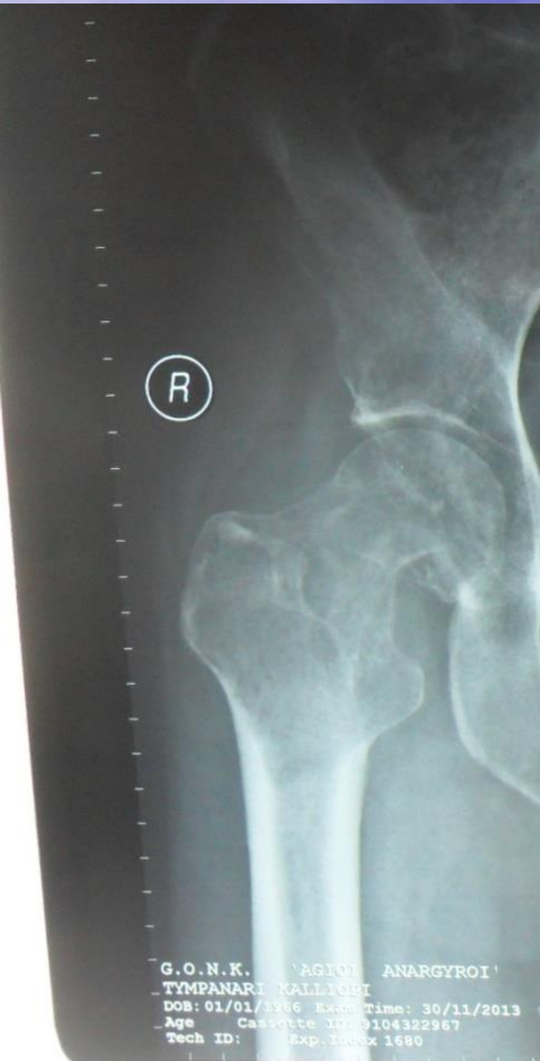
Σταδιοποιηση

ΣΠΙΝΘΗΡΟΓΡΑΦΗΜΑ ΟΣΤΩΝ (Τεχνητιο)

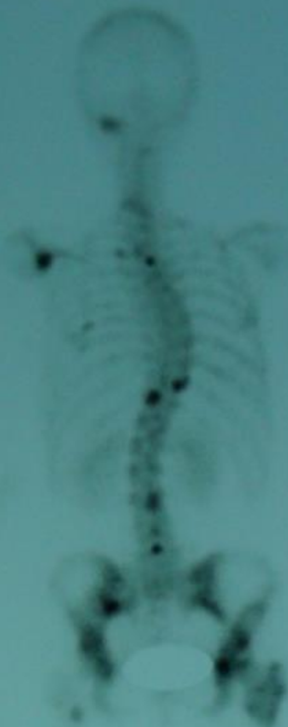
- Δεικτης της οστεοβλαστικης δραστηριοτητας



Μονοστικη εντοπιση?

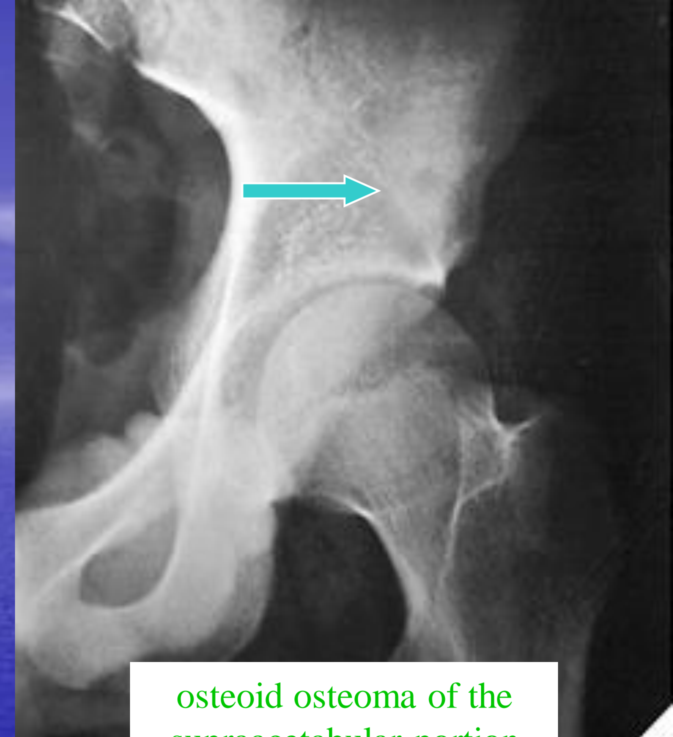


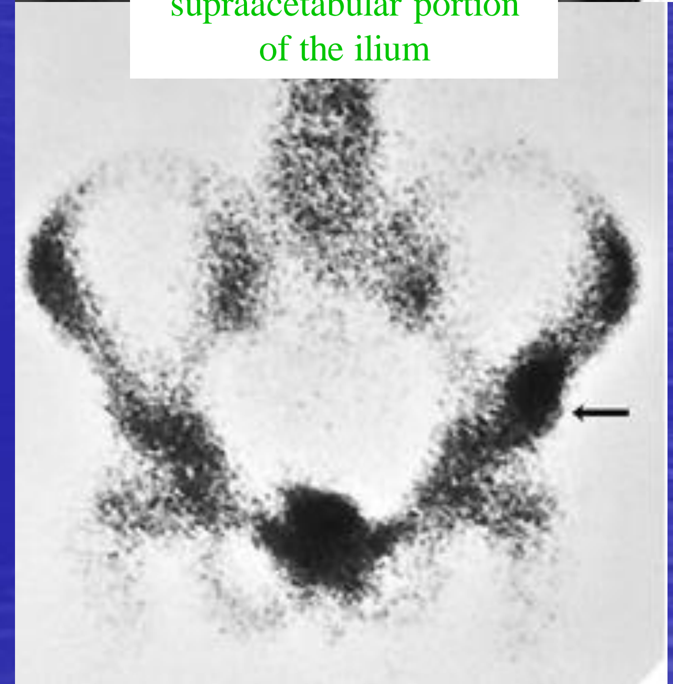
ody Flash [Masked] 11/11/2013



ΣΠΙΝΘΗΡΟΓΡΑΦΗΜΑ

- ΠΟΣΟ ΕΝΕΡΓΗ (HOT) ΕΙΝΑΙ Η BLABH





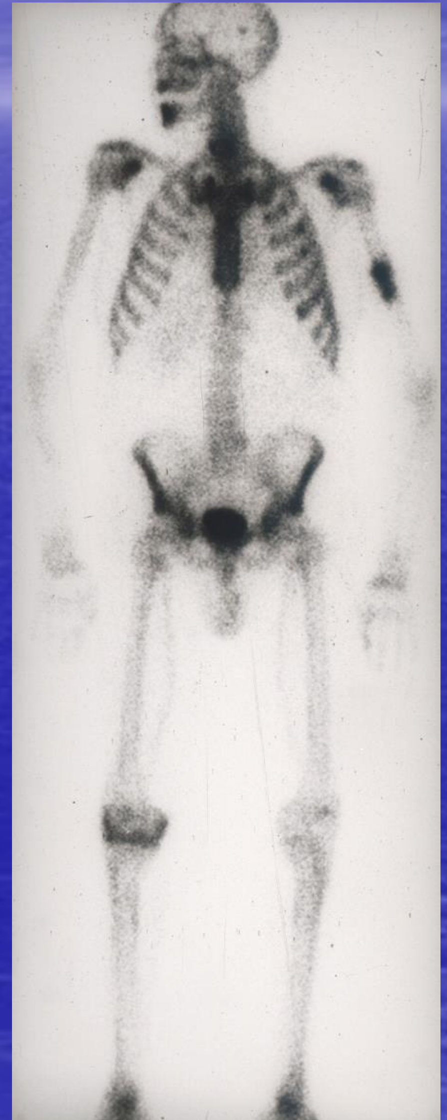
osteoid osteoma of the supraacetabular portion of the ilium

ΣΠΙΝΘΗΡΟΓΡΑΦΗΜΑ

- Most sensitive examination for imaging the entire skeleton

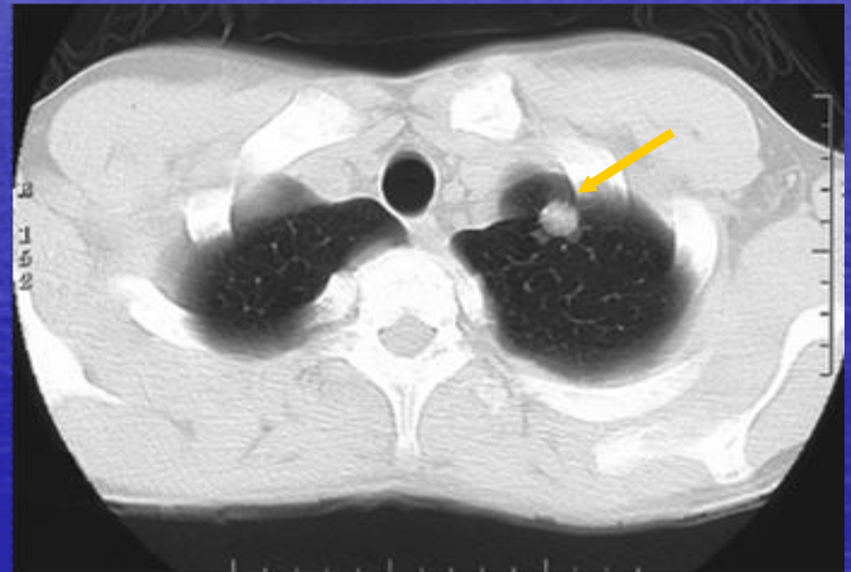
- high sensitivity- low specificity

- Usually cannot distinguish benign from malignant tumors

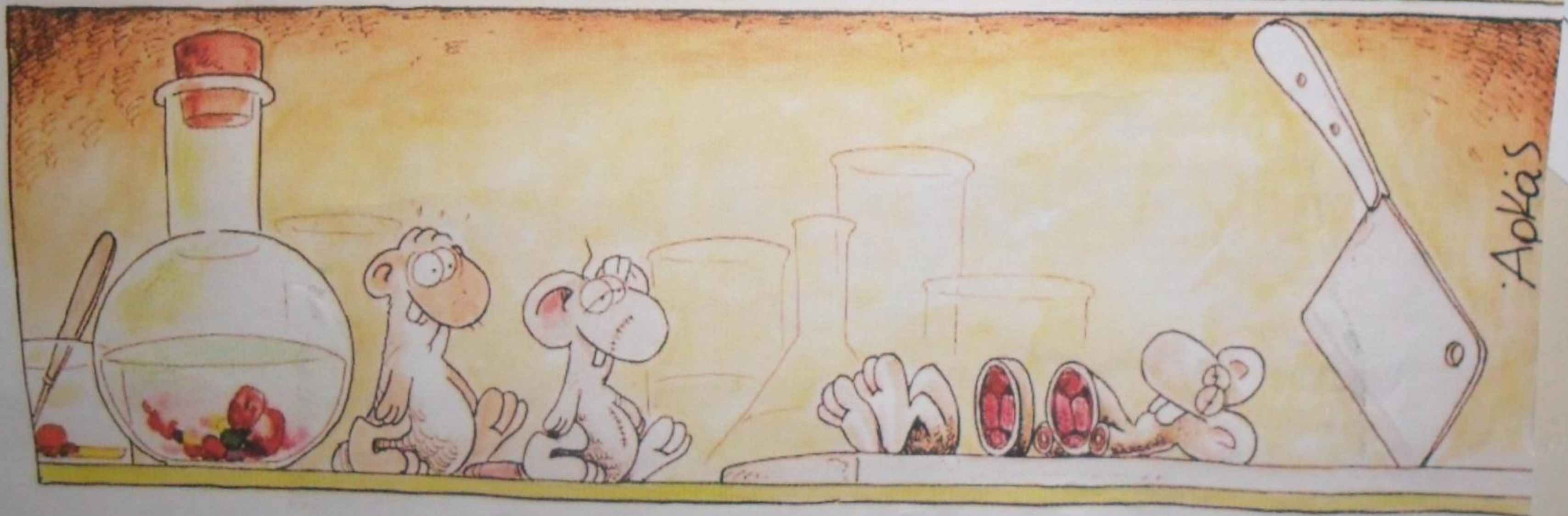


CT staging

- Chest
- Abdomen
- Brain

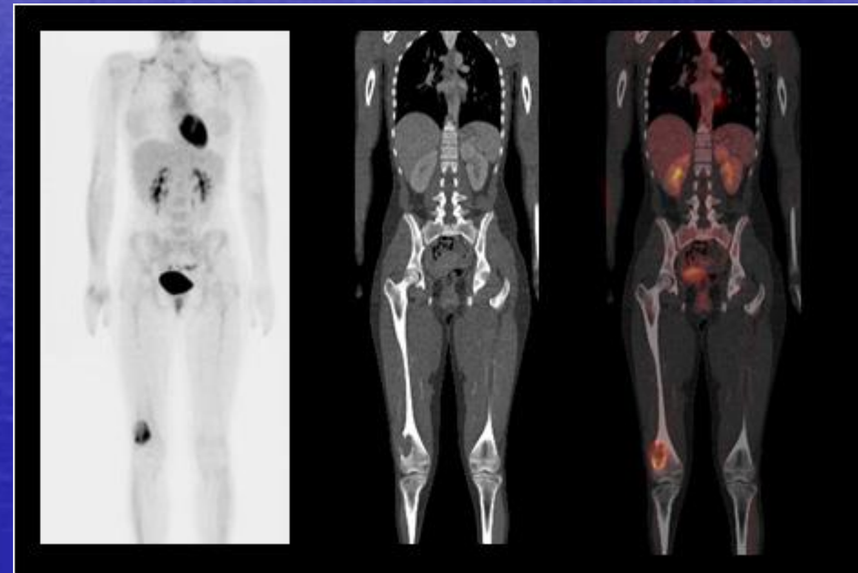


CT scan lungs



PET SCAN

- Ολοσωμη CT με ραδιοφαρμακο (συνηθως σημασμενη Glu)
- Σκαναρει ολο το σκελετο και το σωμα – και τους λεμφαδενες
- Συνδυασμος ολοσωμης CT & σπινθηρογραφηματος



Αρα ειναι η εξεταση εκλογης?

ΝΑΙ (ΥΠΟ ΠΕΡΙΟΡΙΣΜΟΥΣ)

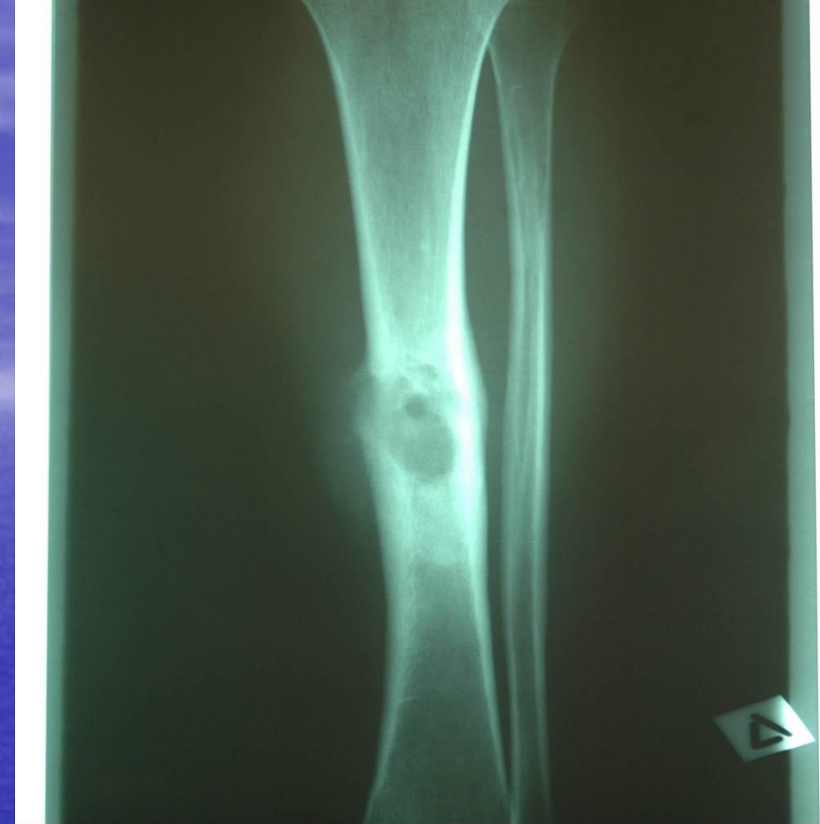
- Μεγιστη δοση ακτινοβολιας
- Κοστος 400 ευρω (εναντι 70 + 70+ 70)
- Γινεται σε επιλεγμενες δομες.

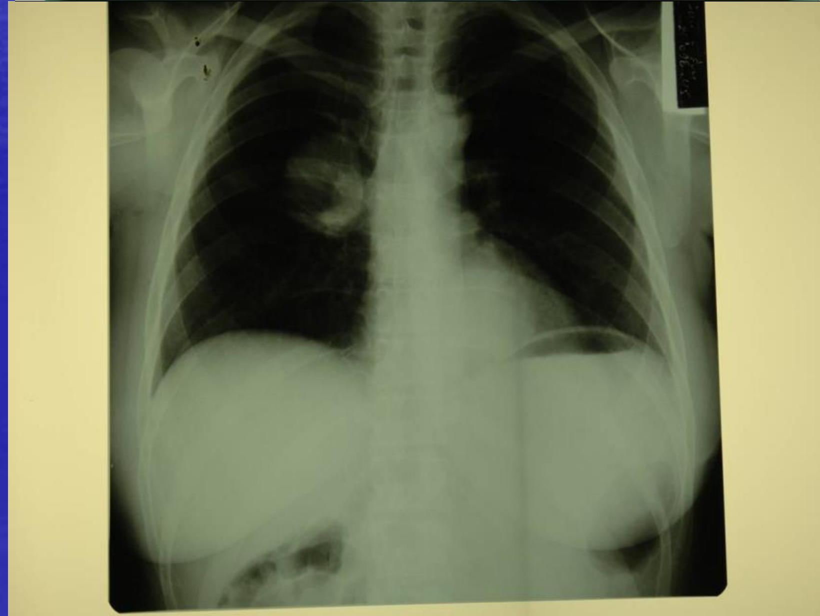
Δοσιμετρία (ενήλικα)

Εξετάσεις	Ενεργή δόση (mSv)	Αντιστοιχία σε αριθμό ακτινογραφιών θώρακα
Ακτινοδιαγνωστική		
ΟΜΣΣ	2.4	120
Κοιλία	1.5	75
Μελέτη με βάριο εντέρου	9.0	450
Ενδοφλέβια ουρογραφία	4.6	230
Αξονική τομογραφία		
ΘΜΣΣ	6.0	300
ΟΜΣΣ	3.5	175
Θώρακα	8.0	400
Κοιλία	8.0	400
Πυρηνική Ιατρική		
Σπιν/μα οστών με Tc-99m	3.6	180
Σπιν/μα νεφρών DTPA	1.6	80
Σπιν/μα μυοκαρδίου MIBI	5.0	250

Τι γινεται αν καποιος δεν θελει/ μπορει CT

- Α/α θωρακος
- U/S ανω- κατω κοιλιας





ΑΙΜΑΤΟΛΟΓΙΚΕΣ ΕΞΕΤΑΣΕΙΣ

ΠΡΩΤΟΠΑΘΕΙΣ ΟΓΚΟΙ

- Συνηθως φυσιολογικες

- Αλκαλικη φωσφαταση
- LDH

ΑΙΜΑΤΟΛΟΓΙΚΕΣ ΕΞΕΤΑΣΕΙΣ

ΜΕΤΑΣΤΑΤΙΚΟΙ ΟΓΚΟΙ

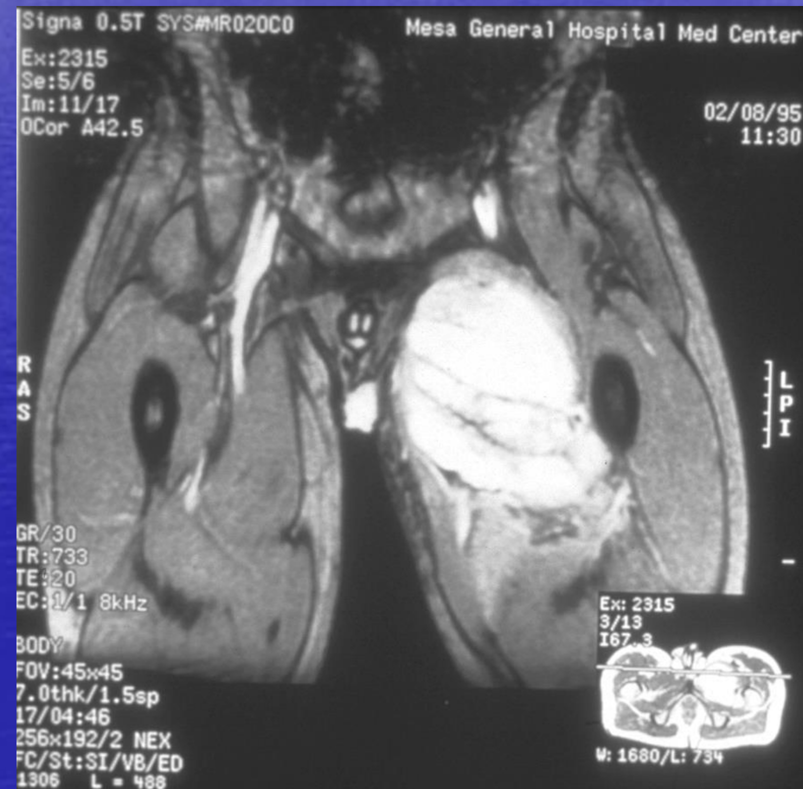
- ΚΑΡΚΙΝΙΚΟΙ ΔΕΙΚΤΕΣ (CEA, Ca19-9, Ca15-5, Ca125, PSA, Afp)
- Εξετασεις για μυελωμα (ηλεκτροφορηση πρωτεινων)
- ΓΑ, Βιοχημικος ελεγχος

To be avoided..

- Νομιζα οτι ηταν αιματωμα..
- Μην ανησυχεις μια θλαση ειναι θα περασει..
- Που να τρεχεις τωρα στην τριπολη γι αυτο το λιπωματακι..
- Ελα να κανουμε στα γρηγορα μια βιοψία (γρηγορα ναι, προχειρα οχι!)

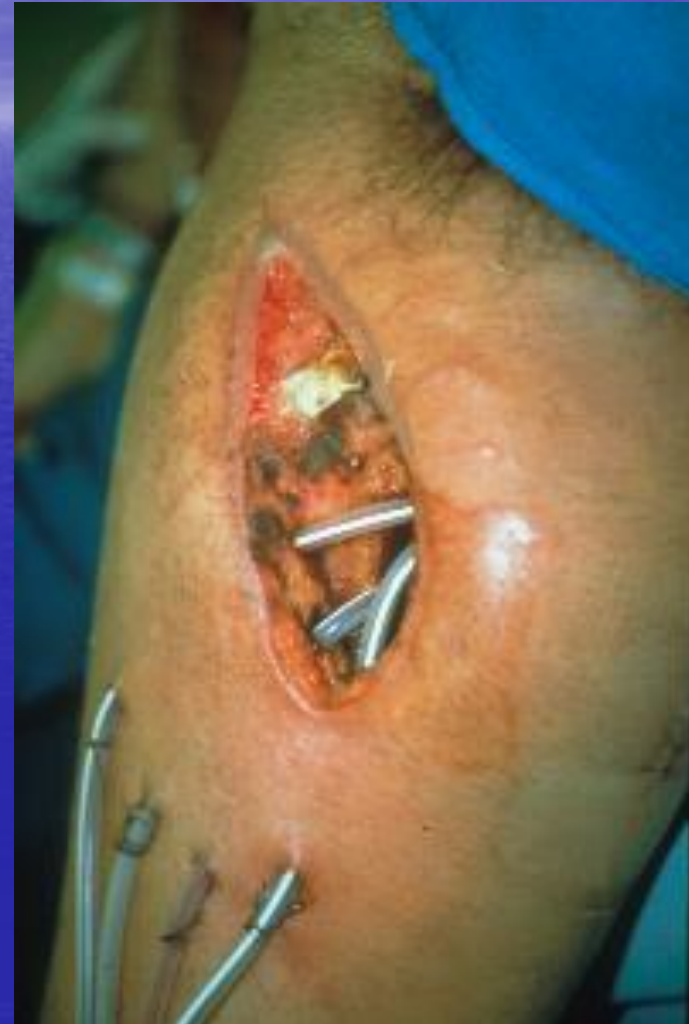
Ασθενης 35 ετων

- 11/94: μαζα μηρου (..θλαση..)
- 02/95: παραπομπη, MRI (..αιματωμα..)
- 03/95: παροχετευση (..αποστημα..)

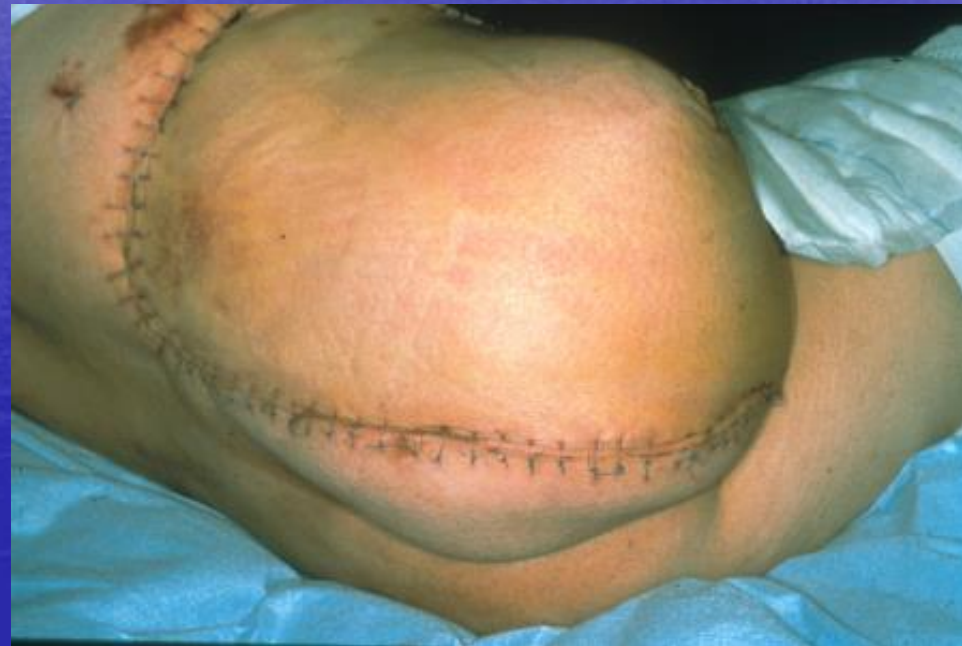


- 3-4/95: 4 διανοιξεις

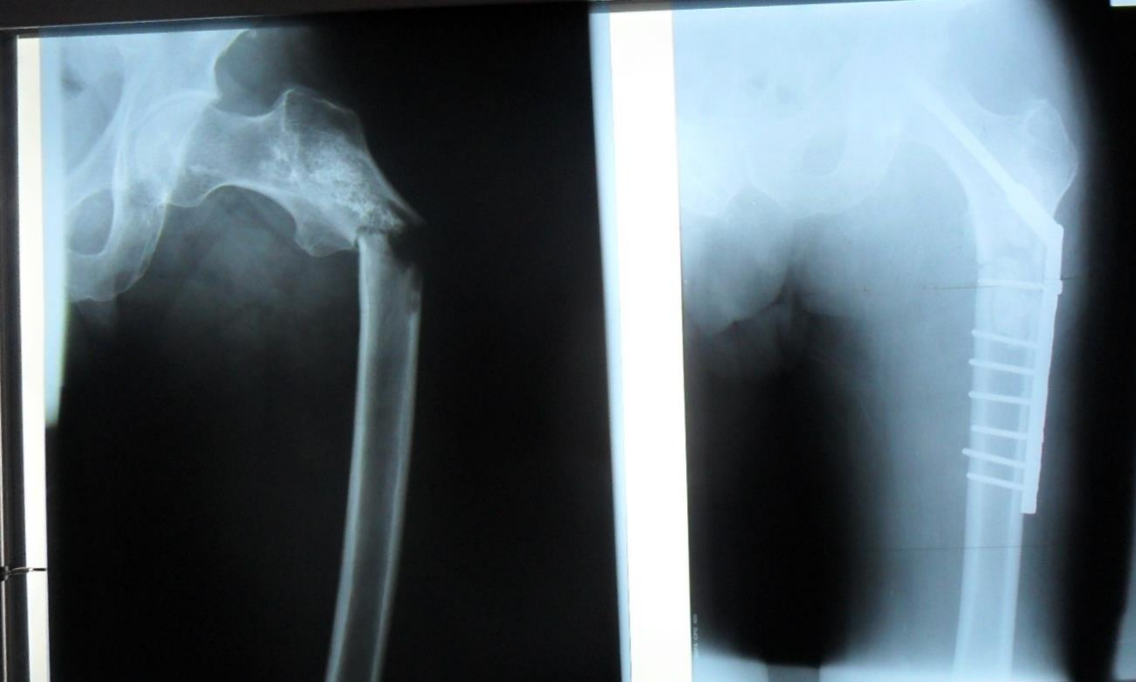
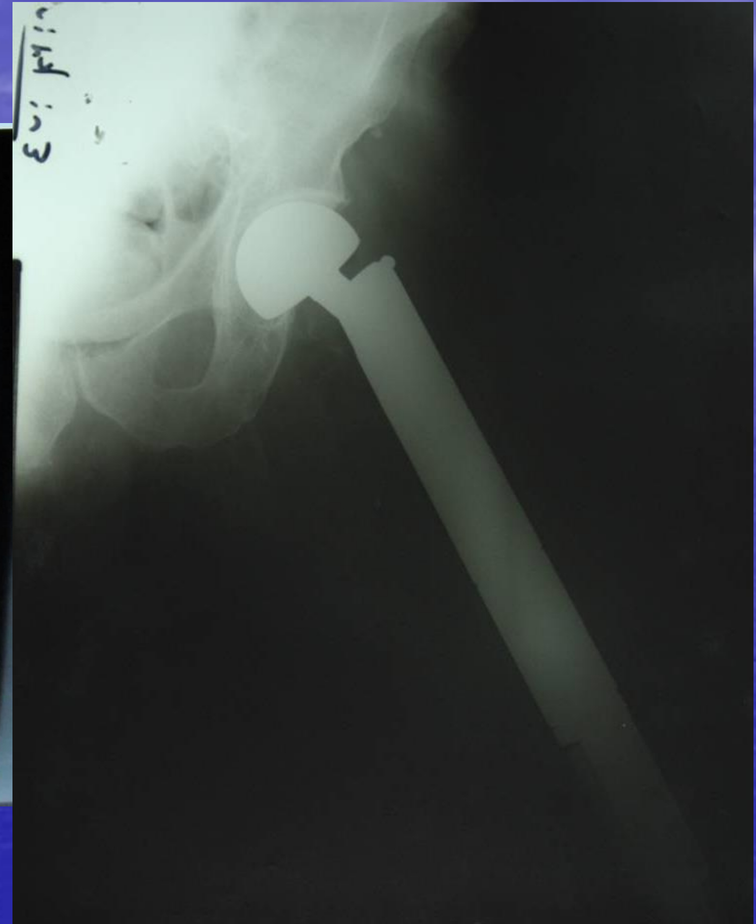
- 04/95: βιοψια (..ΣΑΡΚΩΜΑ..)

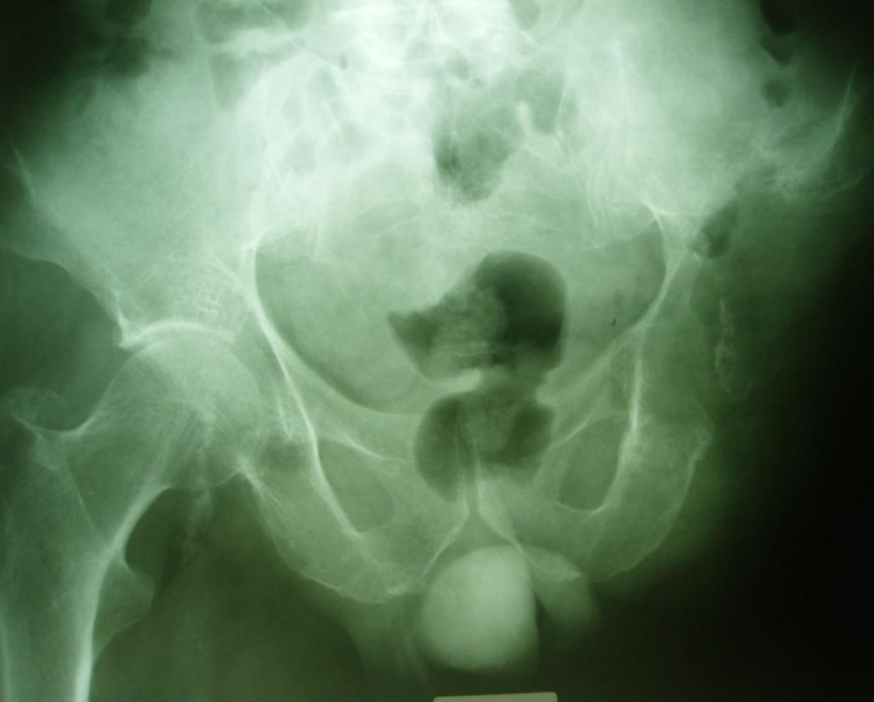


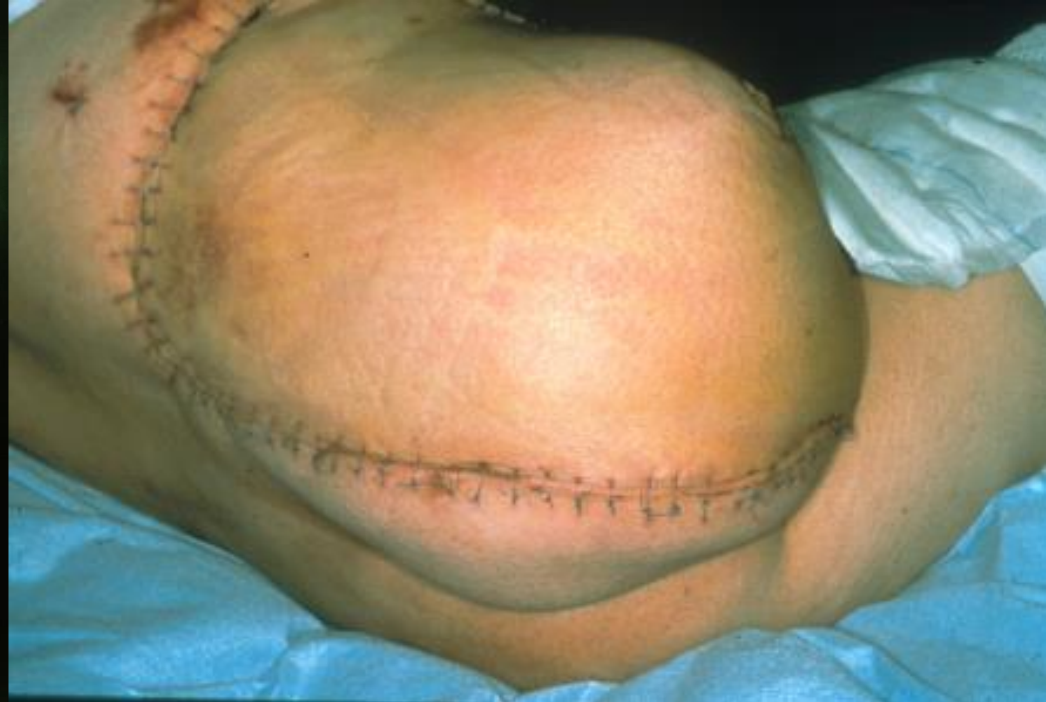
- 4/95:
  - πυελεκτομη

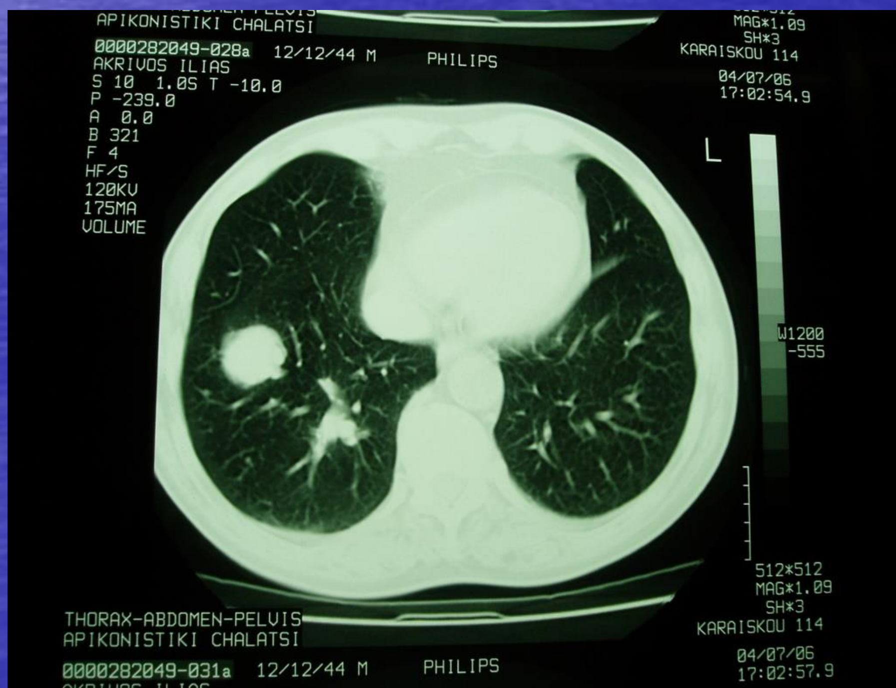


- 12/96
  - Απεβιωσε






APIKONISTIKI CHALATSI
0000282049-028a 12/12/44 M
AKRIVOS ILIAS
PHILIPS
MAG*1.09
SH*3
KARAISKOU 114
04/07/06
17:02:54.9
S 10 1.0S T -10.0
P -239.0
A 0.0
B 321
F 4
HF/S
120KV
175MA
VOLUME
L
W1200
-555
512*512
MAG*1.09
SH*3
KARAISKOU 114
THORAX-ABDOMEN-PELVIS
APIKONISTIKI CHALATSI
0000282049-031a 12/12/44 M
PHILIPS
04/07/06
17:02:57.9

ΣΥΜΠΕΡΑΣΜΑΤΑ

Πλειονοτητα των μυοσκελετικων ογκων

- Τοπικο έλεγχο

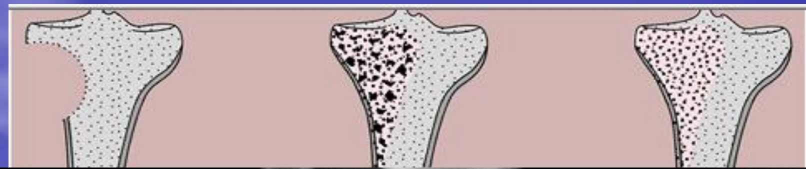
1. α/α (οστικοι ογκοι)
2. u/s (μαλακα μορια)
3. MRI με σκιαγραφικο

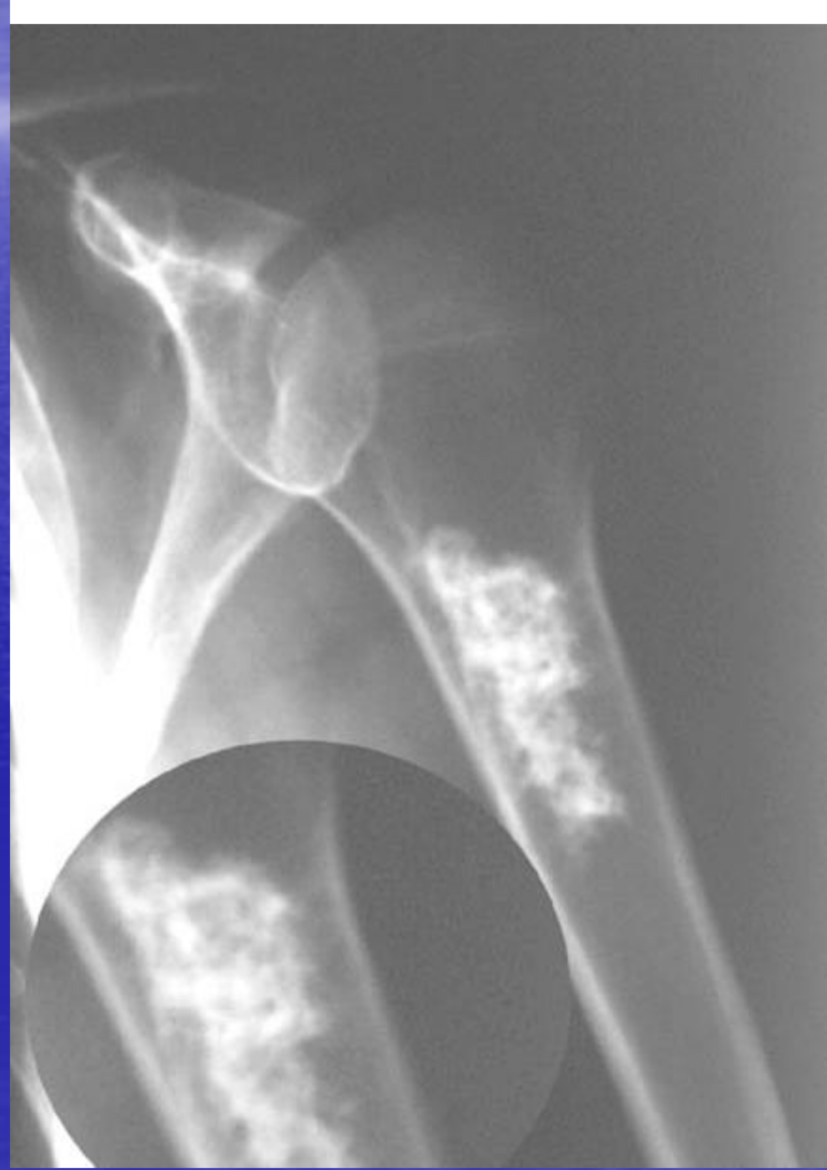
- Συστηματικος ελεγχος

1. α/α θωρακος
2. u/s ανω κατω κοιλιας

Απλη Ακτινογραφια

1. Τυπος Οστικης Καταστροφης
2. Ορια Βλαβης
3. Περιοστικη Αντιδραση
4. Περιεχομενο





Σταδιοποιηση

- Σε πιο υποπτους ογκους (μεγαλη μαζα η οστεολυση η περιεργη α/α εικονα)
- Σε πιθανη μεταστατικη νοσο (>40 ετων, απωλεια βαρους, ειδικα συμπτωματα)

- CT θωρακος (ανω/ κατω κοιλιας)
- Σπινθηρογραφημα οστων
- Εργαστηριακος έλεγχος (ΓΑ, βιοχημικα- **Αλκαλικη Φωσφ**/ **LDH**, καρκινικοι δεικτες, ηλεκτροφορηση πρωτεινων)

ΒΙΟΨΙΑ

- Μετα τη σταδιοποιηση τυπικα Βιοψια
- Μικρή επιμήκης τομή, στην πορεία της πιθανής μελλοντικής επέμβασης
- Ατραυματική
- Αν μπει παροχέτευση (..) πλησιον και στην προεκταση της τομης