

# distal femur; rotationplasty

42 yo; male

1st referral; May 8th 2014

## HPI

- Increasing painful swelling left thigh for 2 months
- Swelling was interpreted as a joint effusion and injected 4 times by the rheumatologist
- With increasing pain patient went to ER
- Ultrasound was showing a 14cm soft tissue tumor

## PMH

- Schizoaffective disorder

# distal femur; rotationplasty

42 yo; male

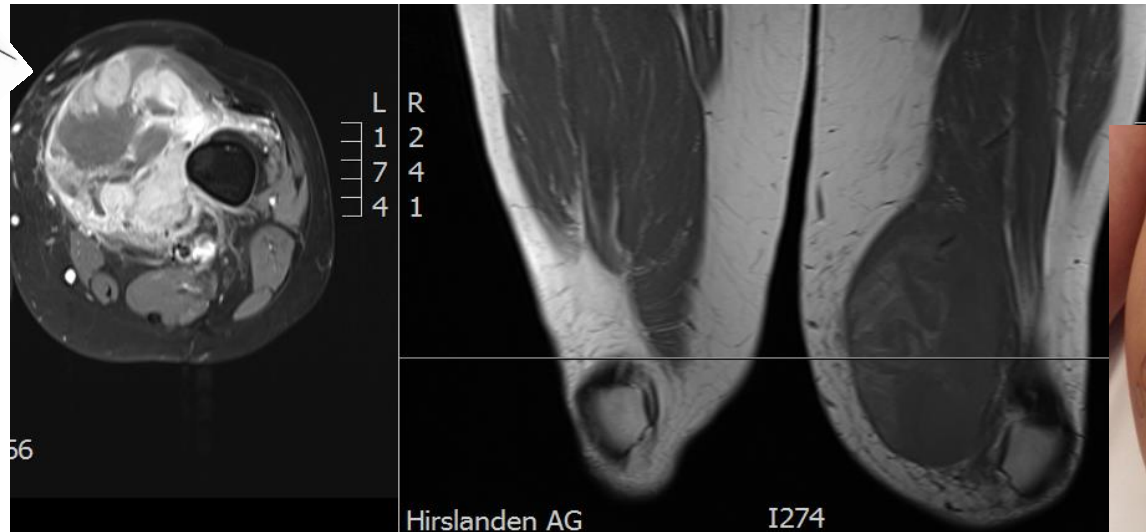
1st referral; May 8th 2014

## Clinical findings

Swelling of 20 x 30 cm on the right antero-medial thigh



# distal femur; rotationplasty



**multiple injections through the tumor, probably even intraarticular**

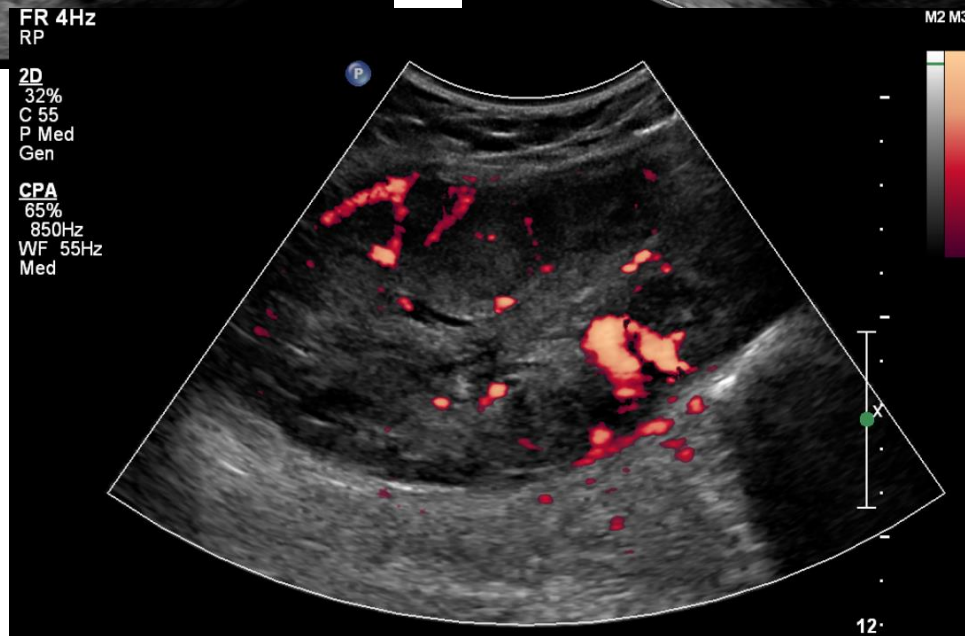
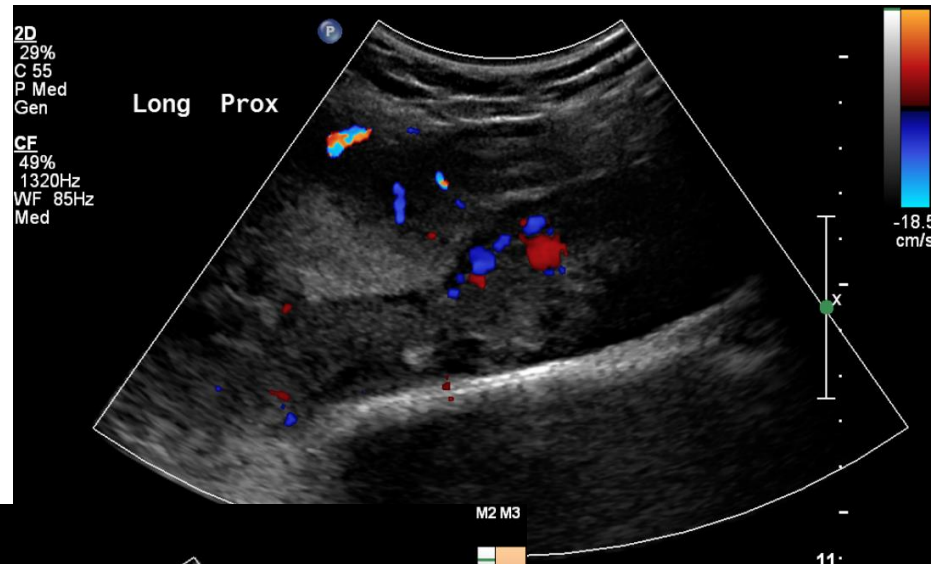


# distal femur; rotationplasty



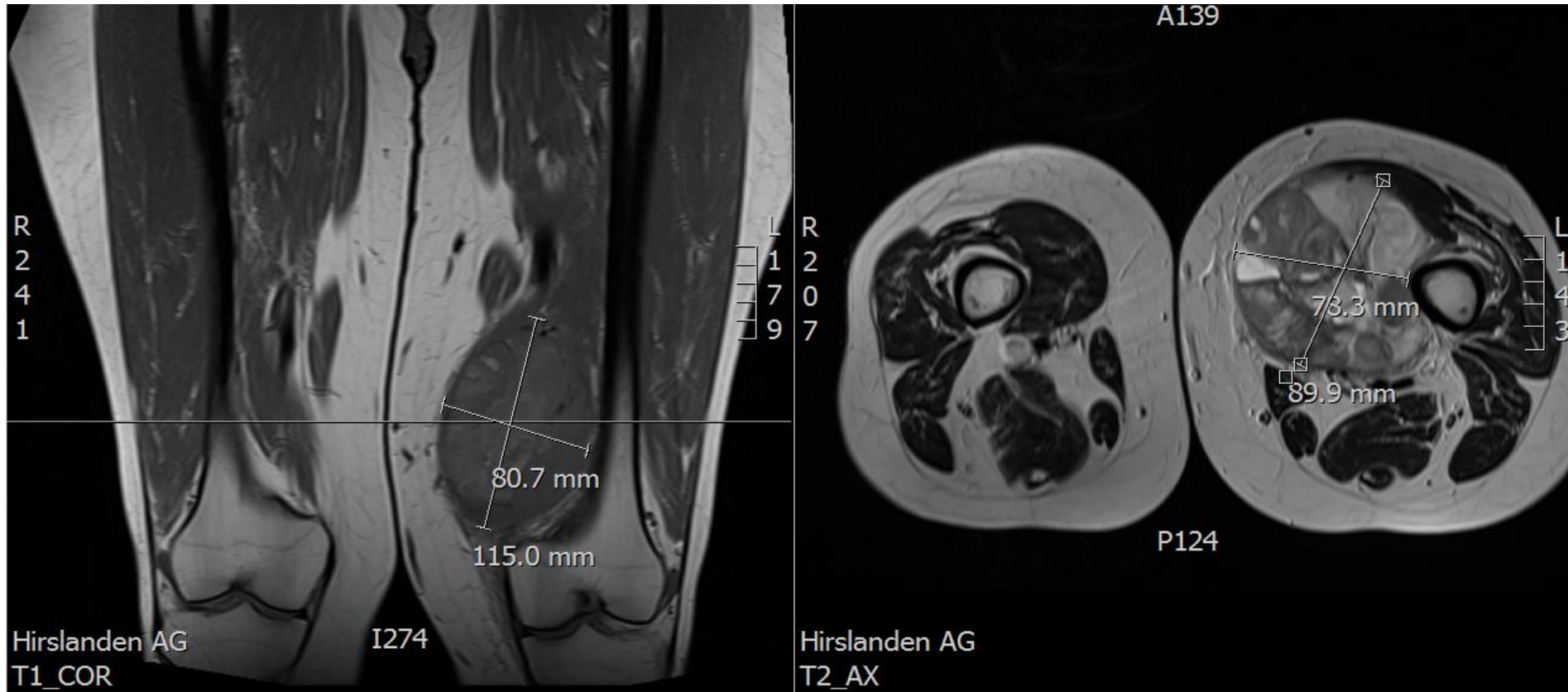
# distal femur: rotationplasty

## ULTRASOUND April 30th 2014



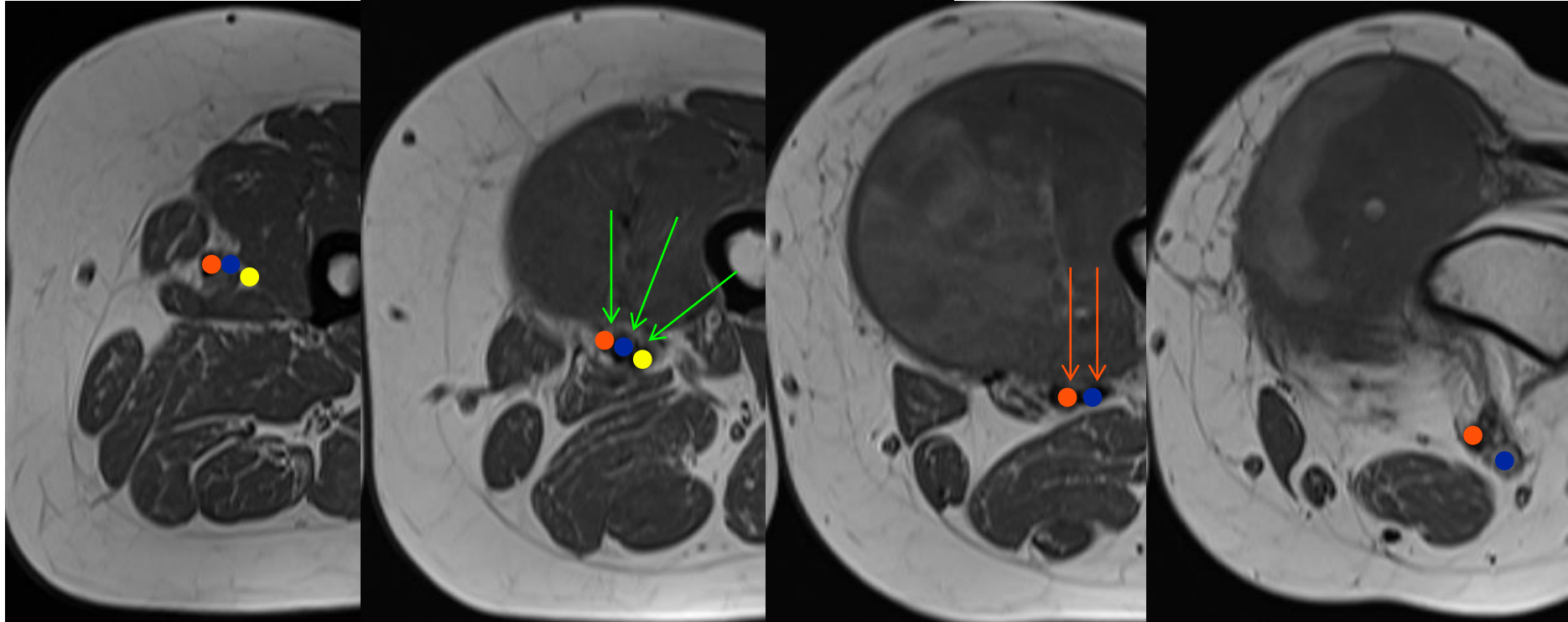
# distal femur; rotationplasty

## MRI May 8th 2014



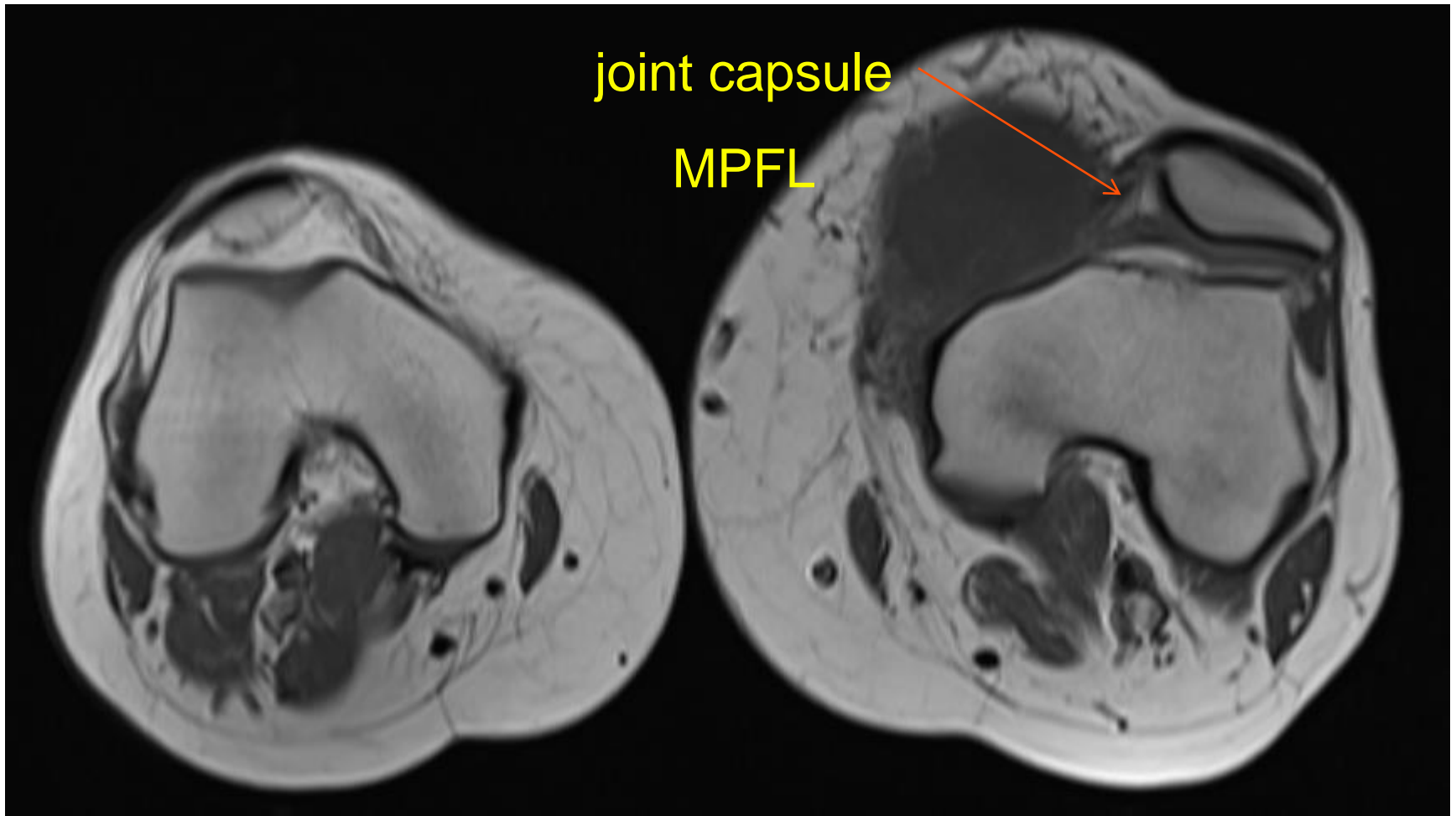
# distal femur; rotationplasty

MRI May 8th 2014



# distal femur; rotationplasty

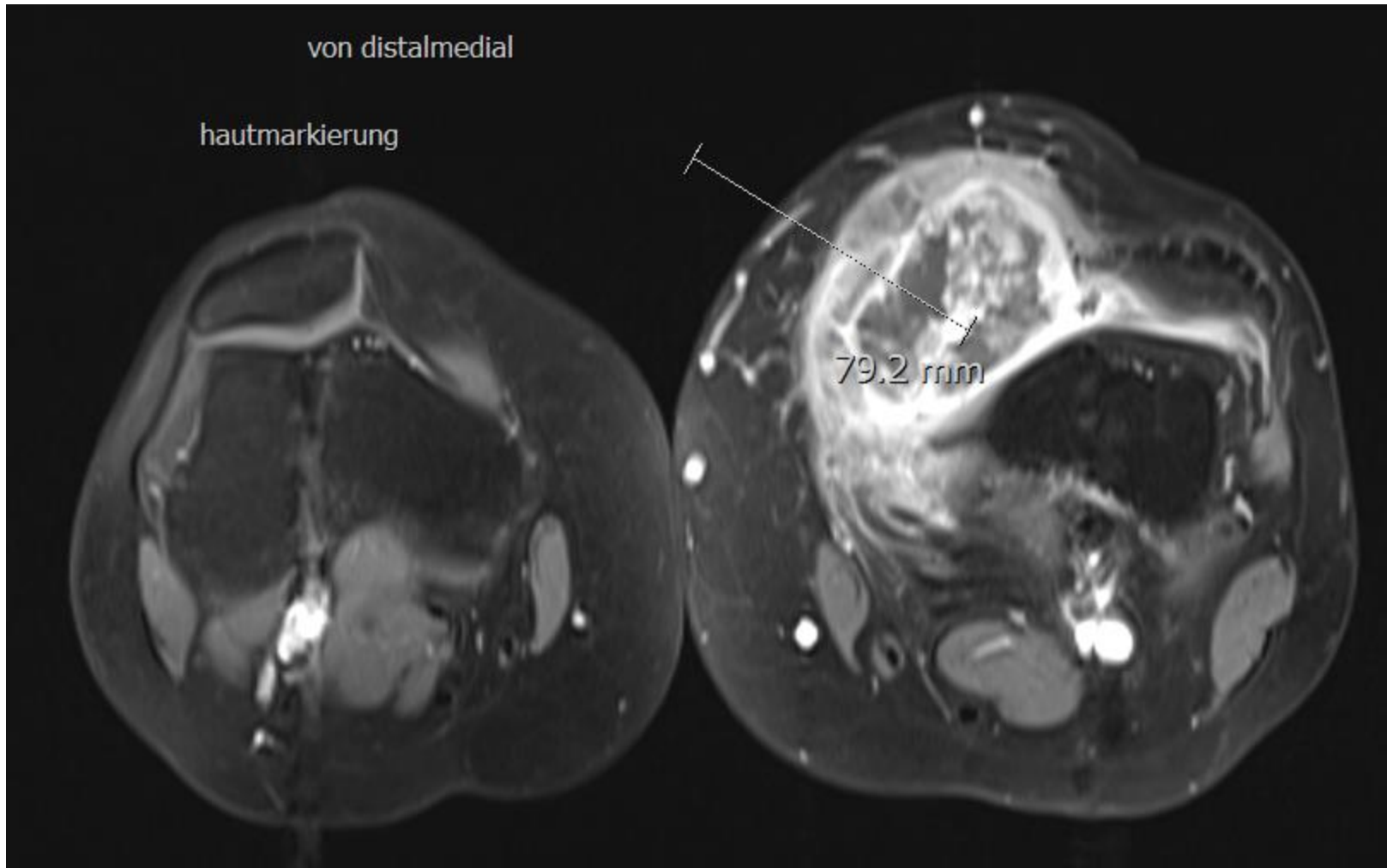
MRI May 8th 2014





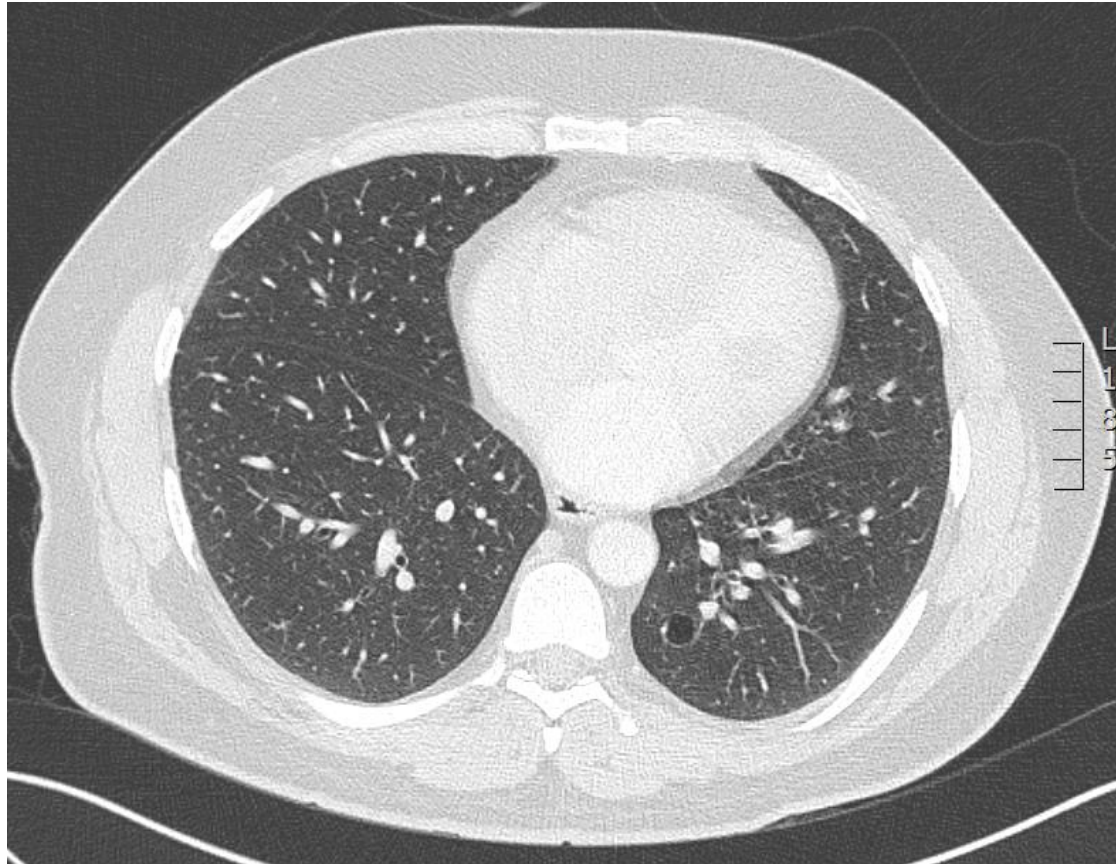
# distal femur; rotationplasty

## MRI BIOPSY PLANNING May 8th 2014



# distal femur; rotationplasty

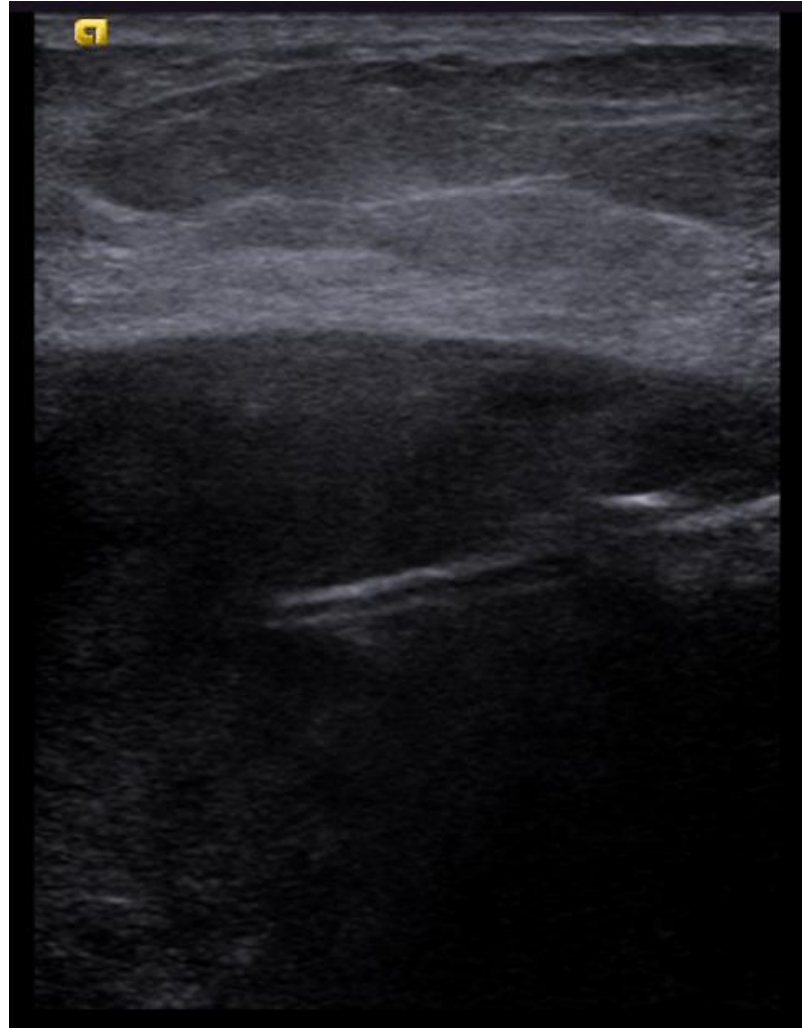
**STAGING CT CHEST May 8th 2014**

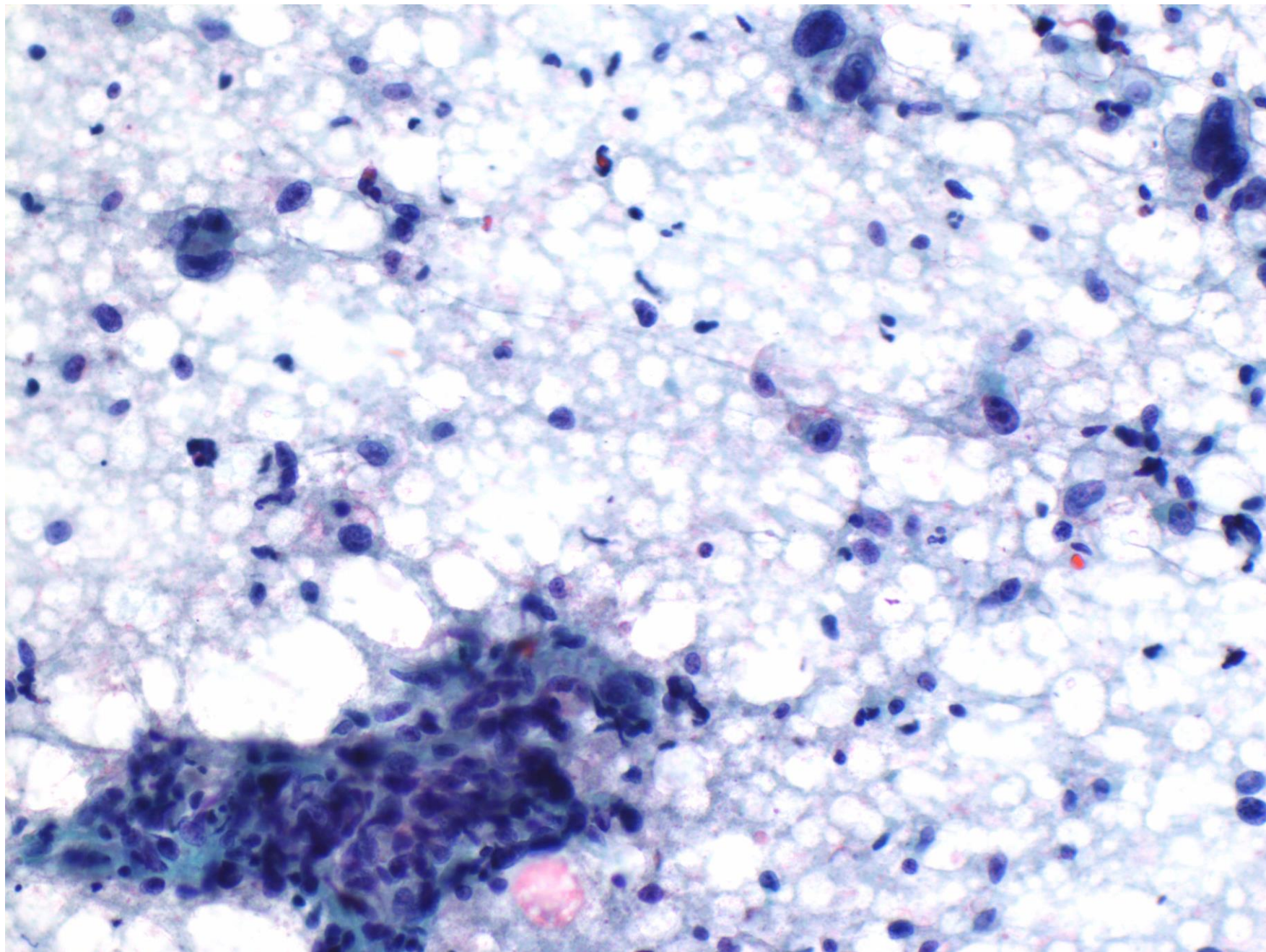


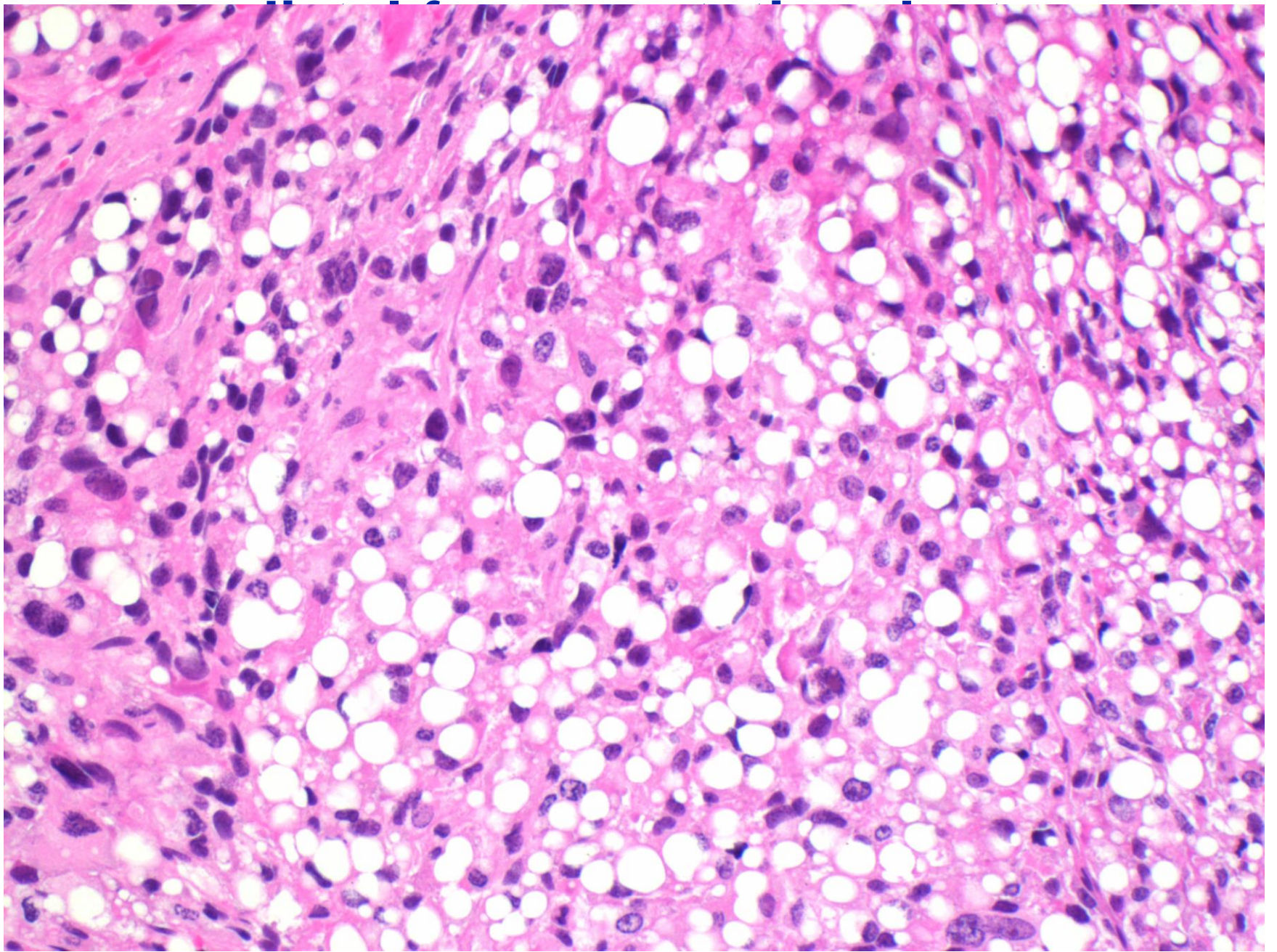
**no metastases /  
suspect lesions**

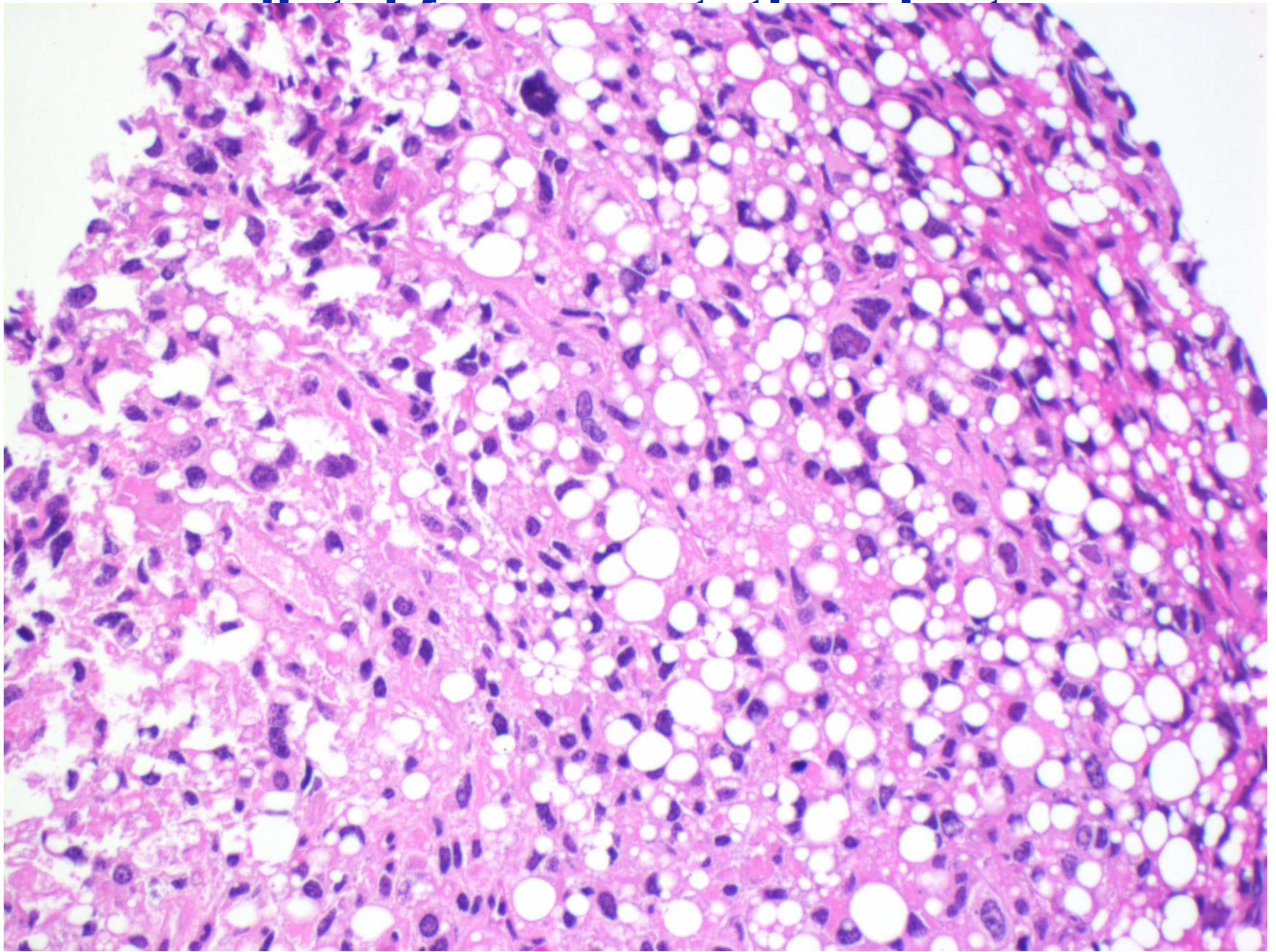
# distal femur; rotationplasty

**ULTRASOUND GUIDED BIOPSY May 8th 2014**

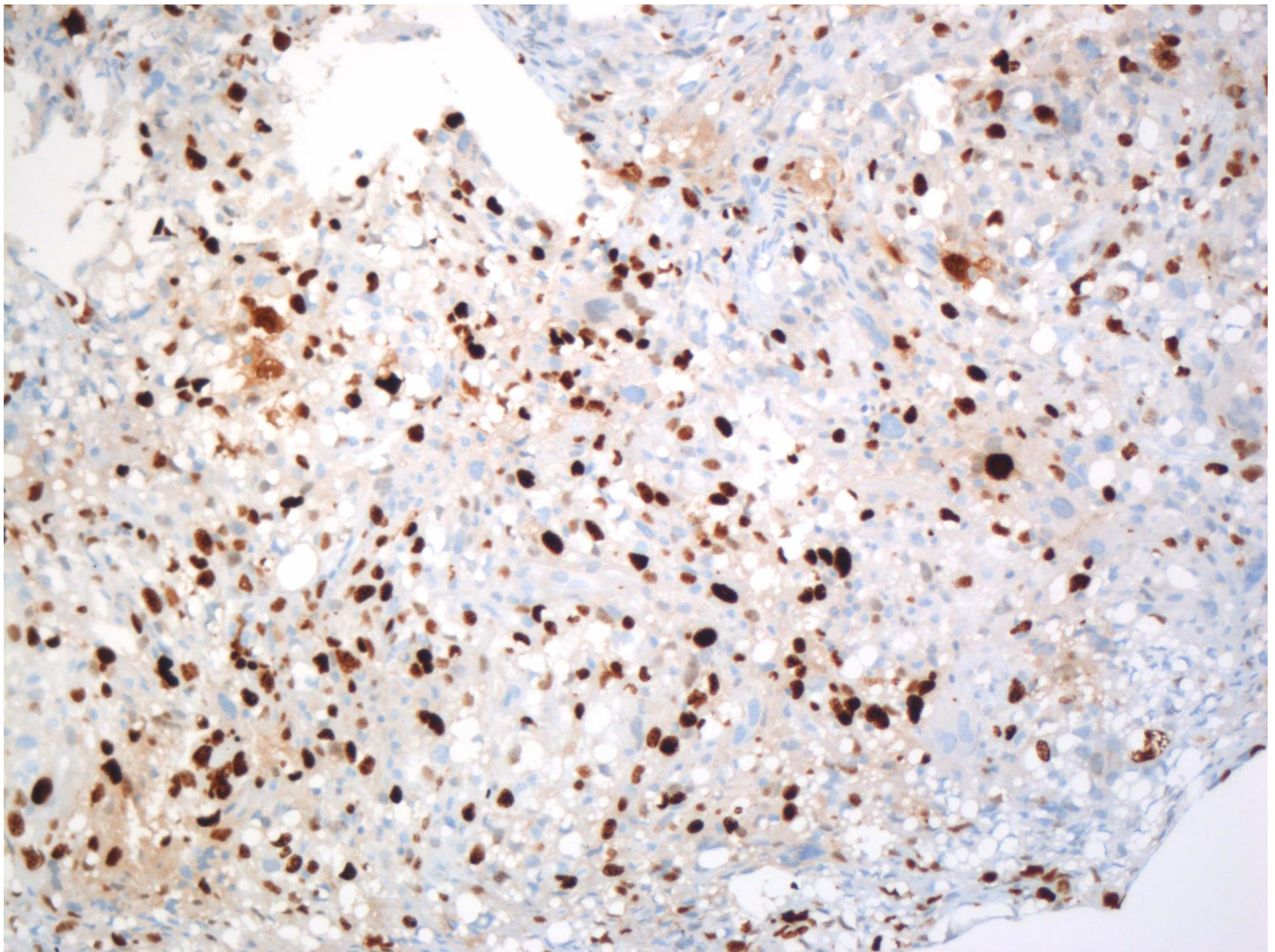


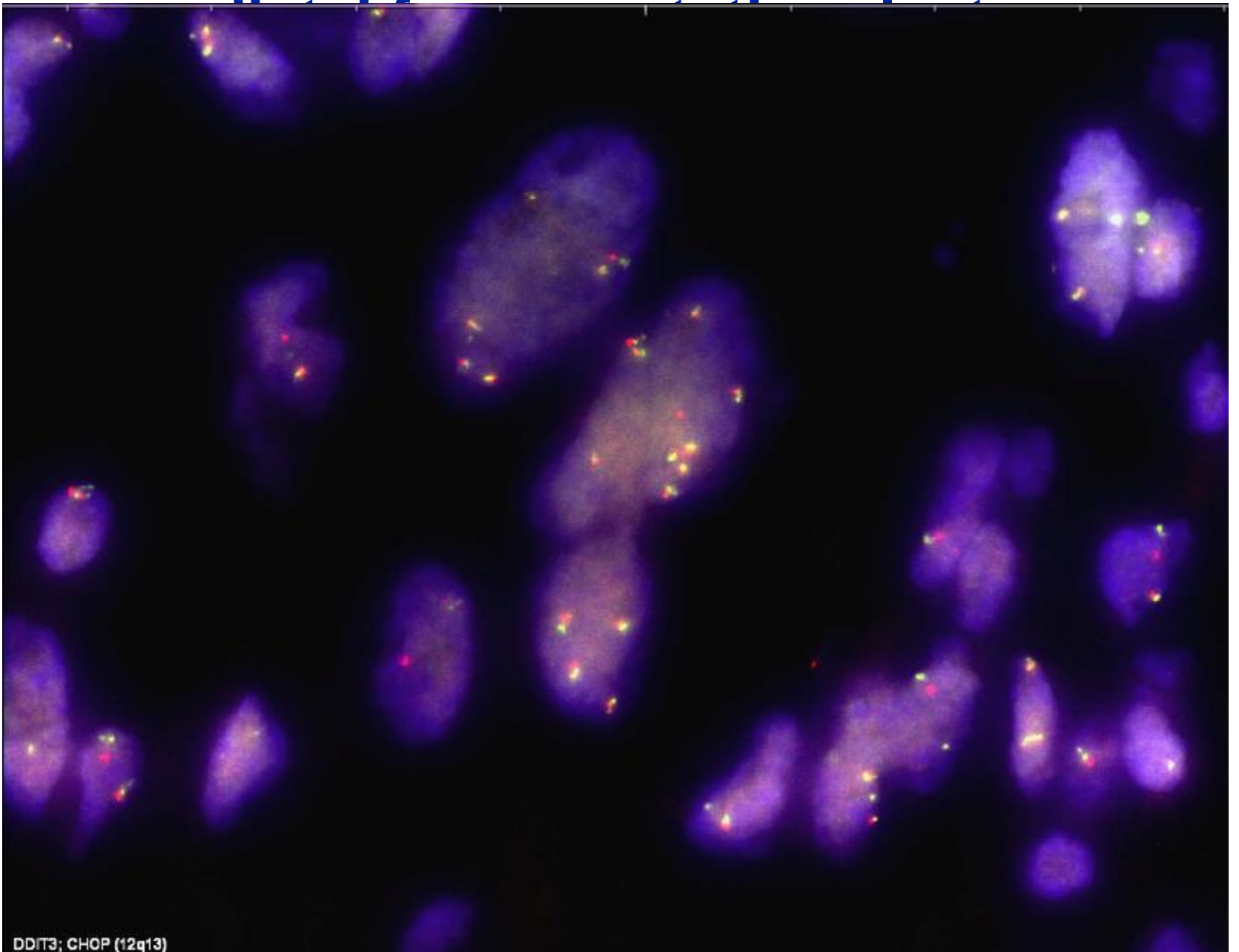






mib1





DDIT3; CHOP (12q13)



# distal femur; rotationplasty

## PATHOLOGICAL REPORT May 8th 2014

### Provisorischer Bericht

#### *Diagnose*

B 2014.25434: Anteile eines lipogen differenzierten Sarkoms (Oberschenkel rechts distal medial; vgl. Kommentar).

#### *Spezialuntersuchungen*

Immunhistochemie Negativität für: S100, mdm2. Proliferationsindex MIB: 30-40%

#### *Kommentar*

Histologisch liegt das Bild eines lipogen differenzierten high grade Sarkoms vor. Die Differentialdiagnose umfasst bei spärlichem Biopsiematerial alle drei Subtypen der Liposarkome (dedifferenziert / myxoid / pleomorphzellig), so dass

# distal femur; rotationplasty

**SARCOMABOARD May 15th 2014**

## Therapeutic decisions:

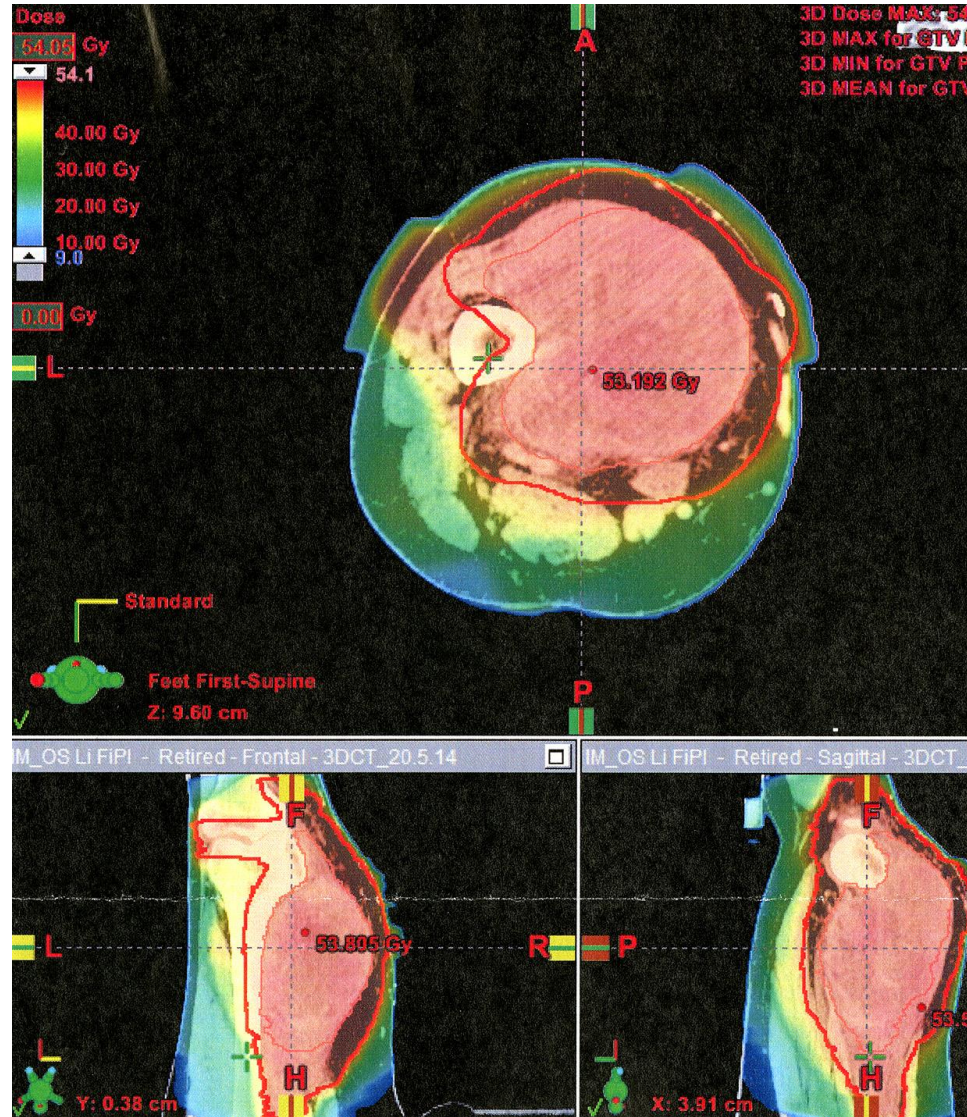
**Chemotherapy: no**

**Radiotherapy: yes, including the knee joint.  
Preoperative**

**Surgery: yes, resection of tumor, no joint  
replacement.**

# distal femur; rotationplasty

## Radiotherapy: May 20th, 2014



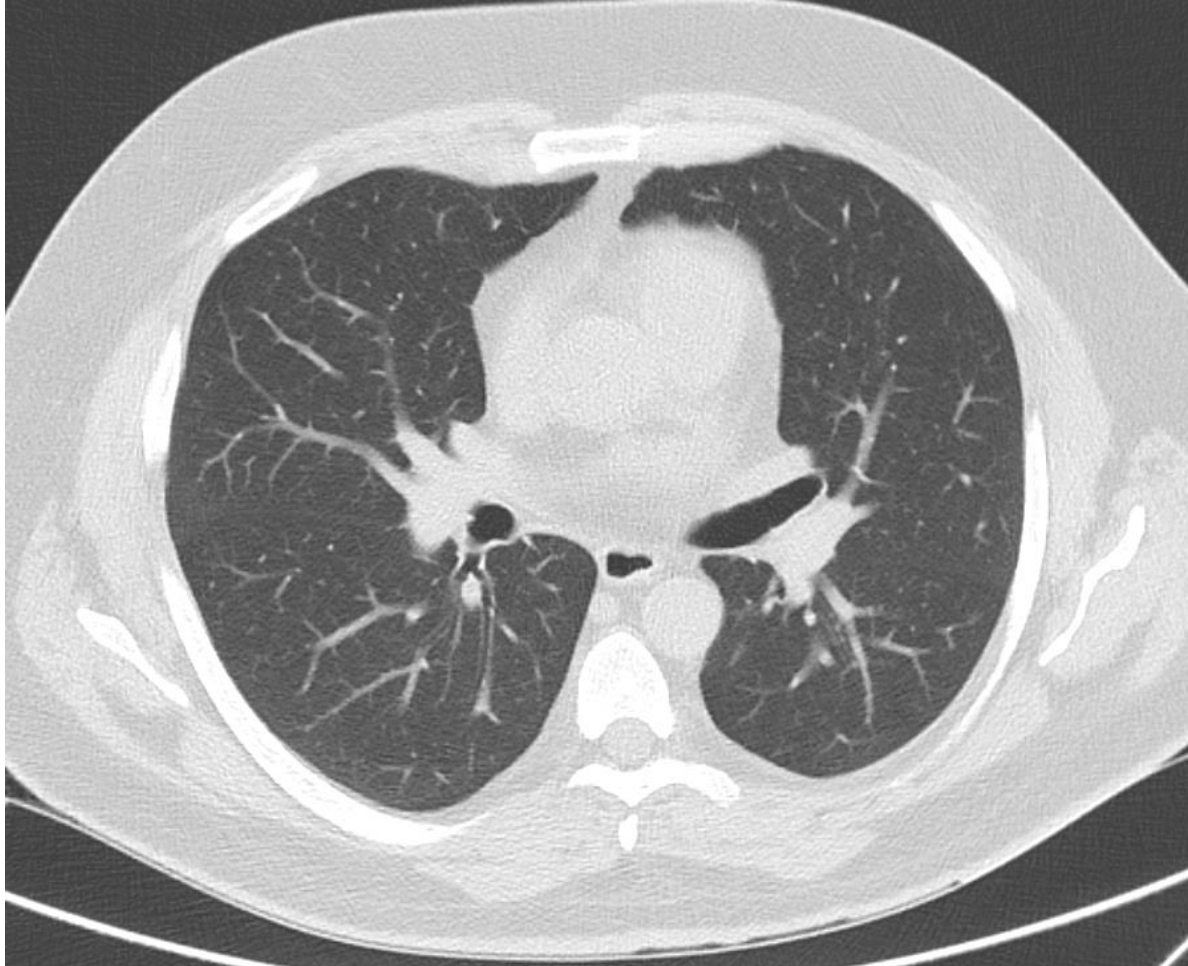
# distal femur; rotationplasty

Follow-up after RT: July 14th, 2014



# distal femur; rotationplasty

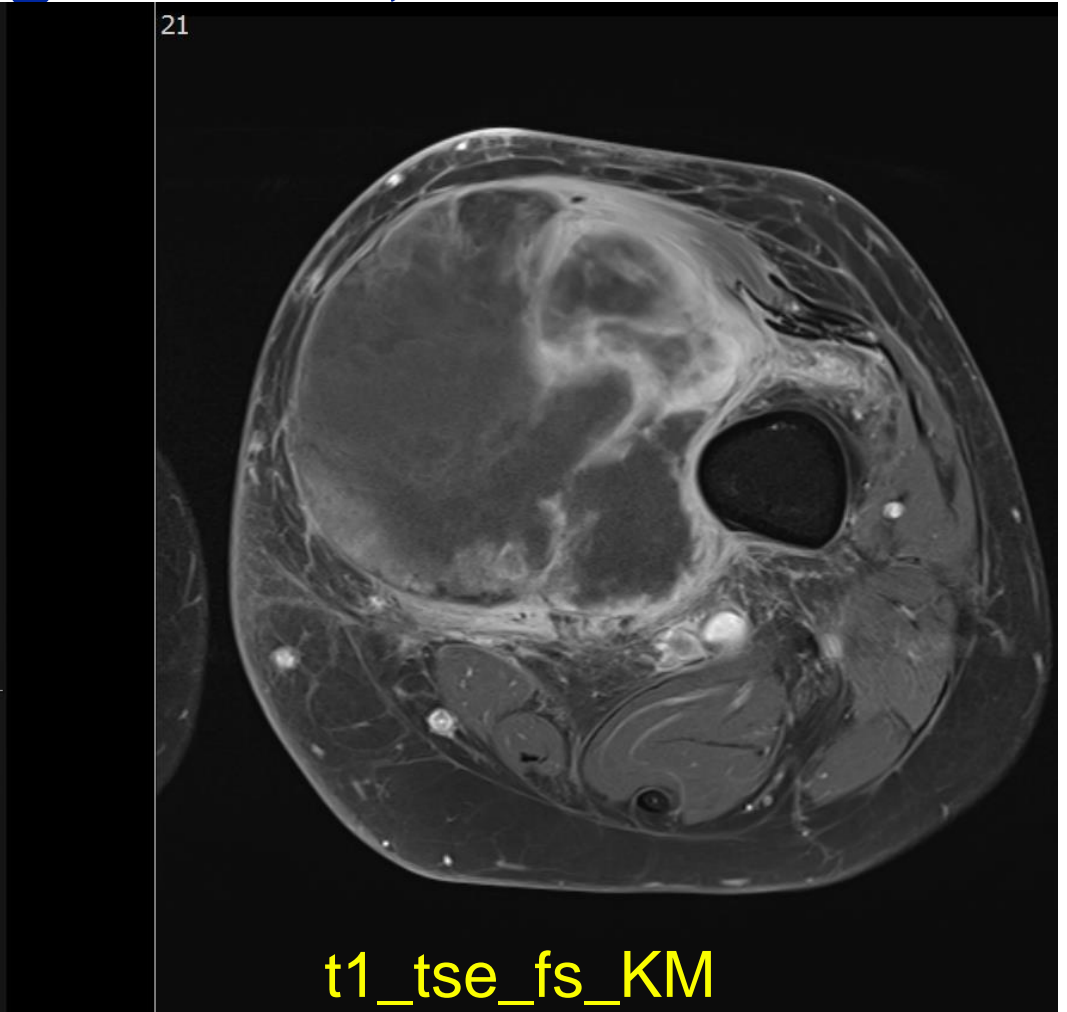
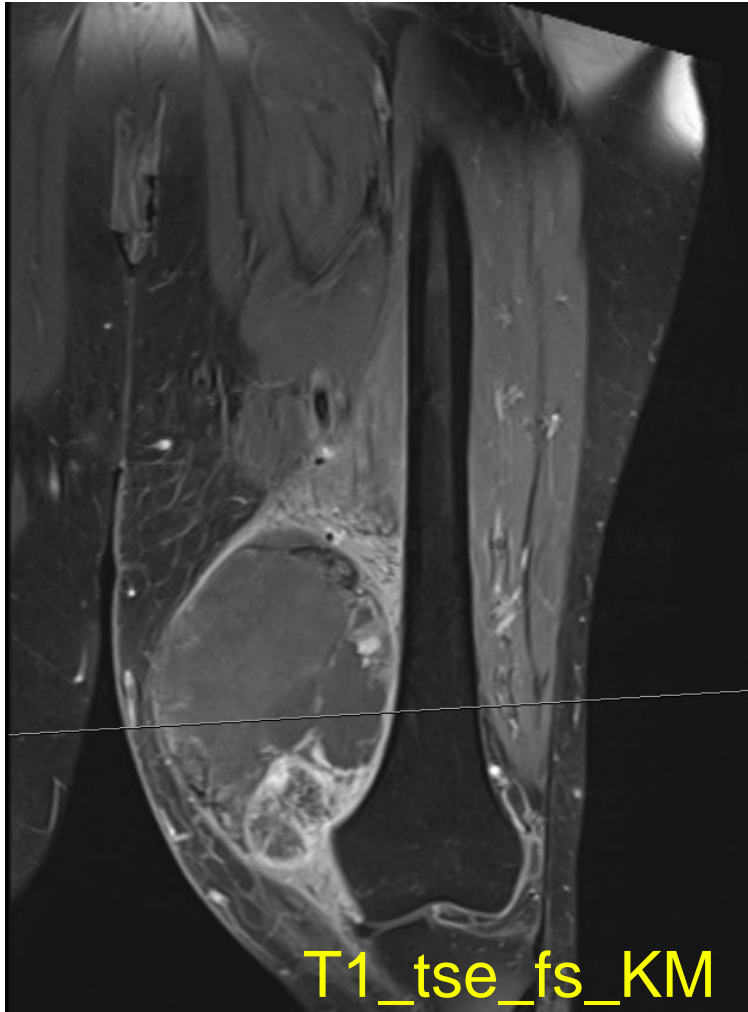
CT August 13th, 2014



**no metastases  
suspect lesions**

# distal femur; rotationplasty

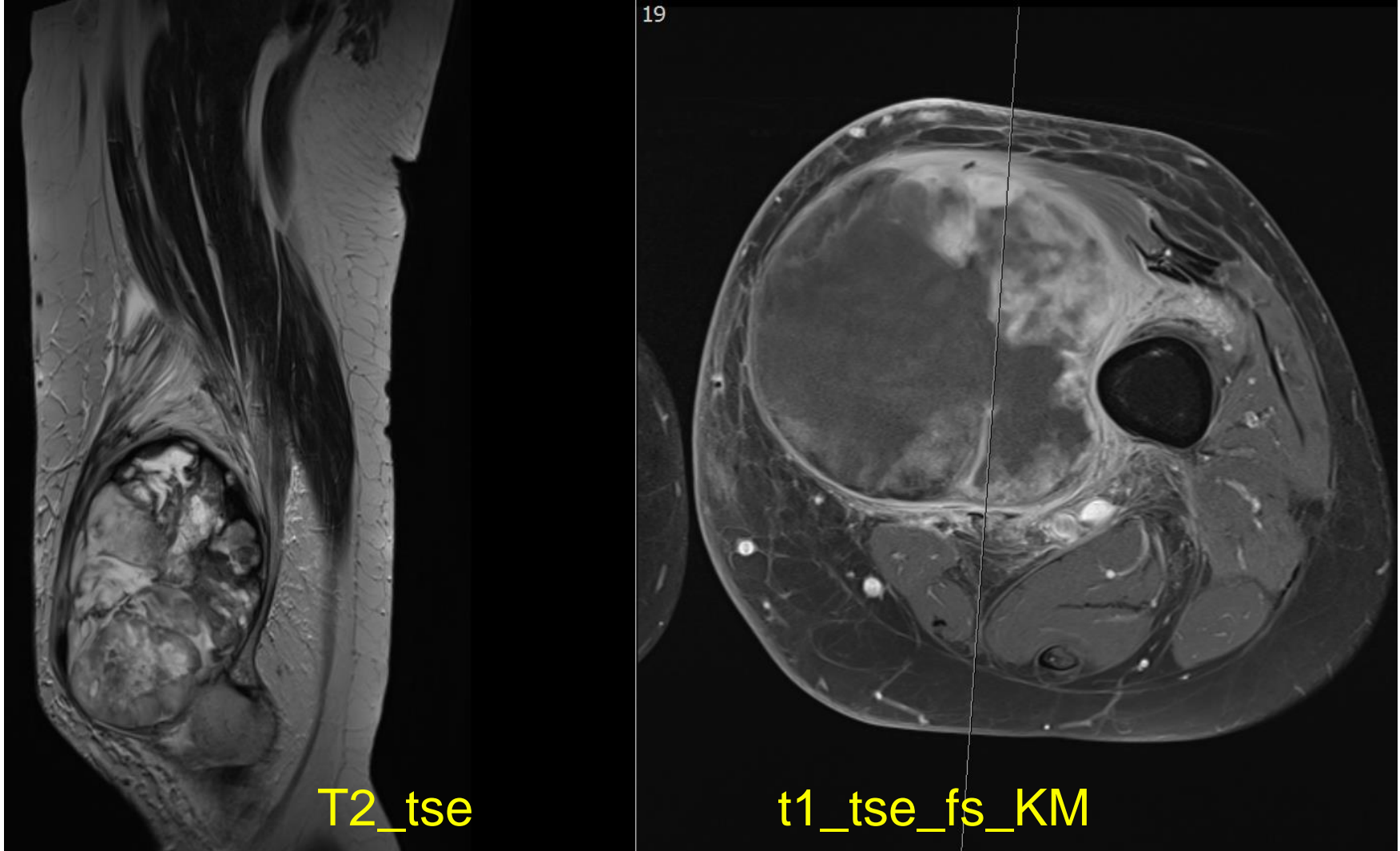
MRI August 25th, 2014



**Tumor size: 15,5x10,5x10,5cm**

# distal femur; rotationplasty

MRI August 25th, 2014



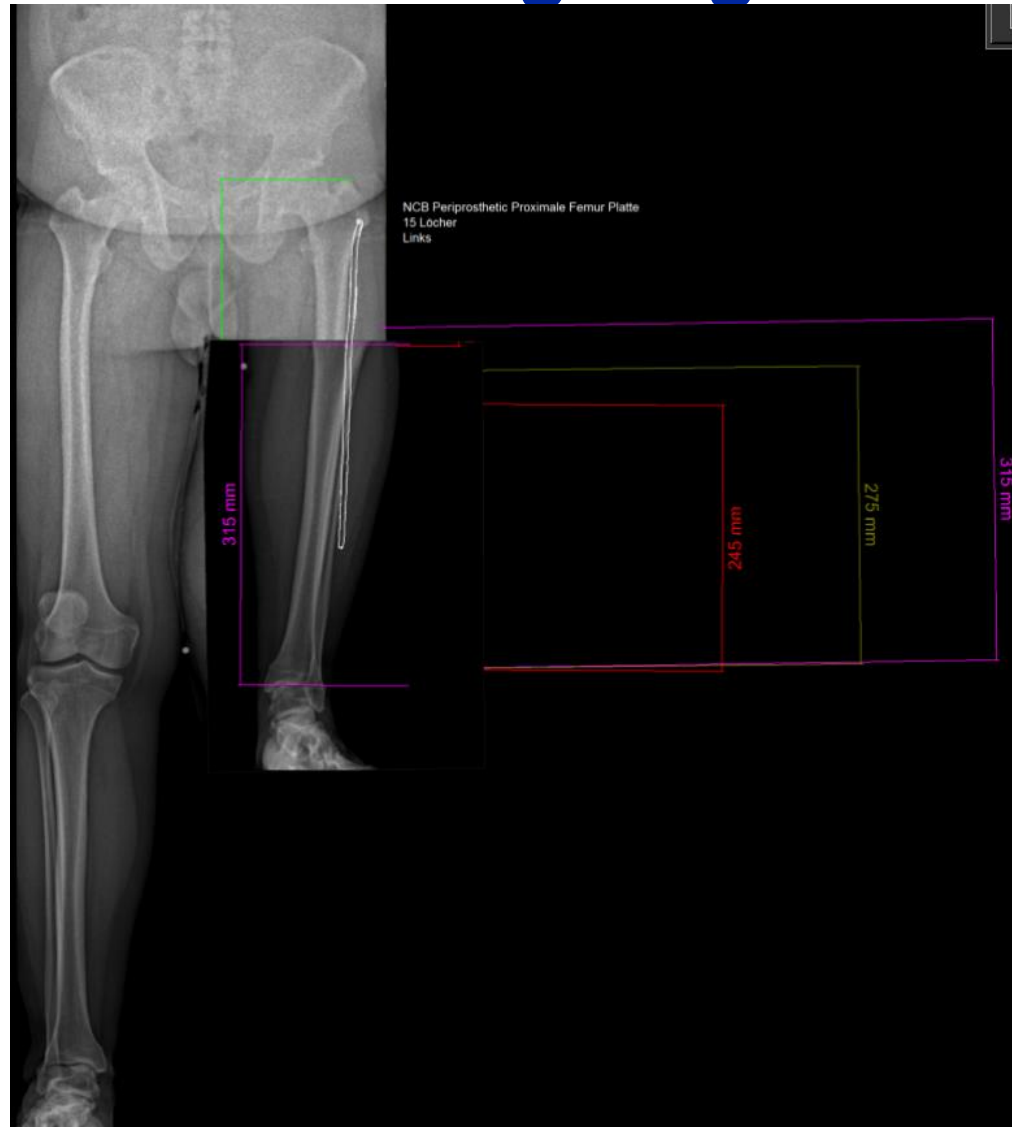
**Tumor size: 15,5x10,5x10,5cm** SarcomaSurgery





# distal femur; rotationplasty

## Preoperative Planning August 25th, 2014



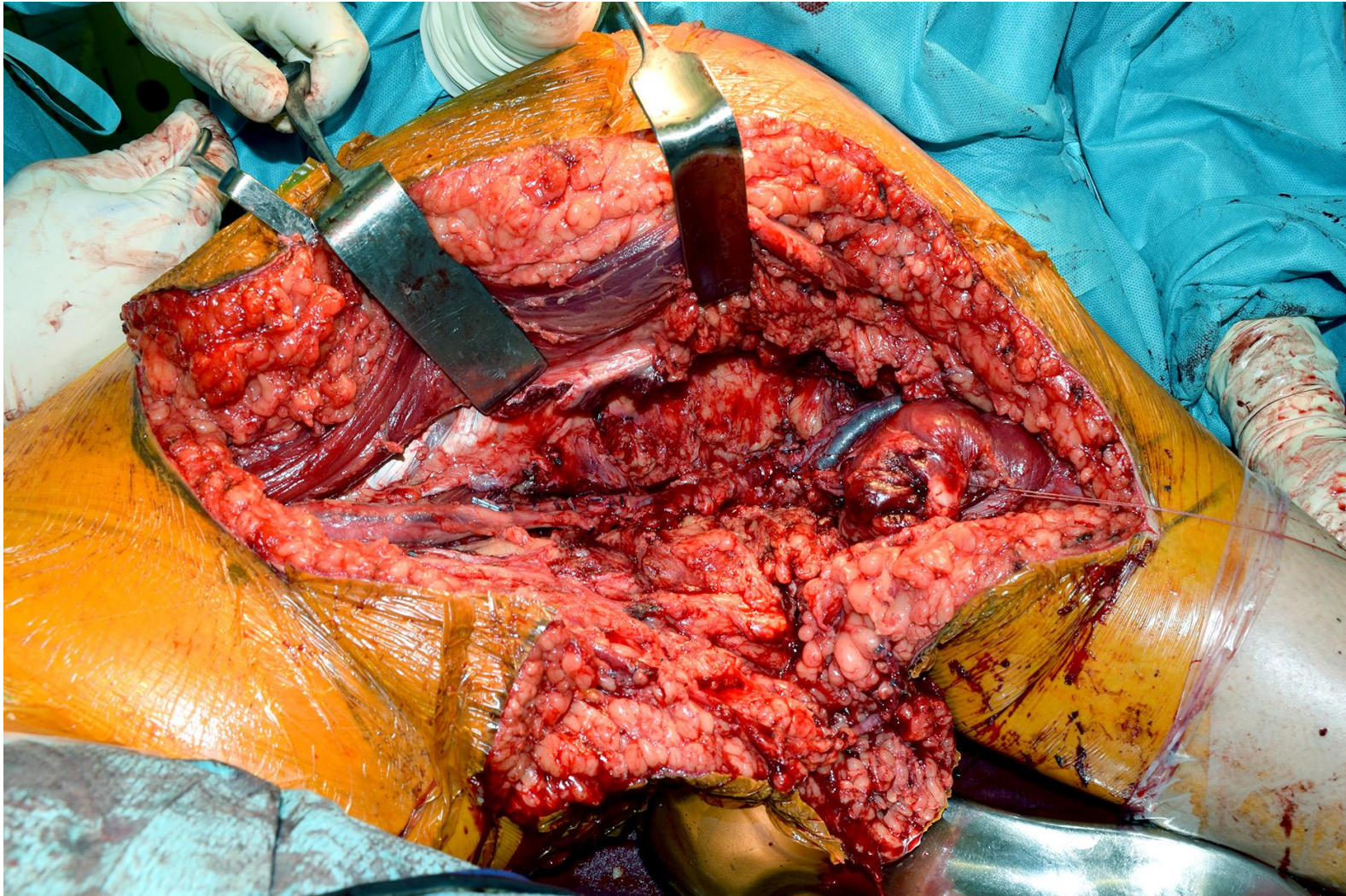
# distal femur; rotationplasty

**Surgery: August 26th, 2014**



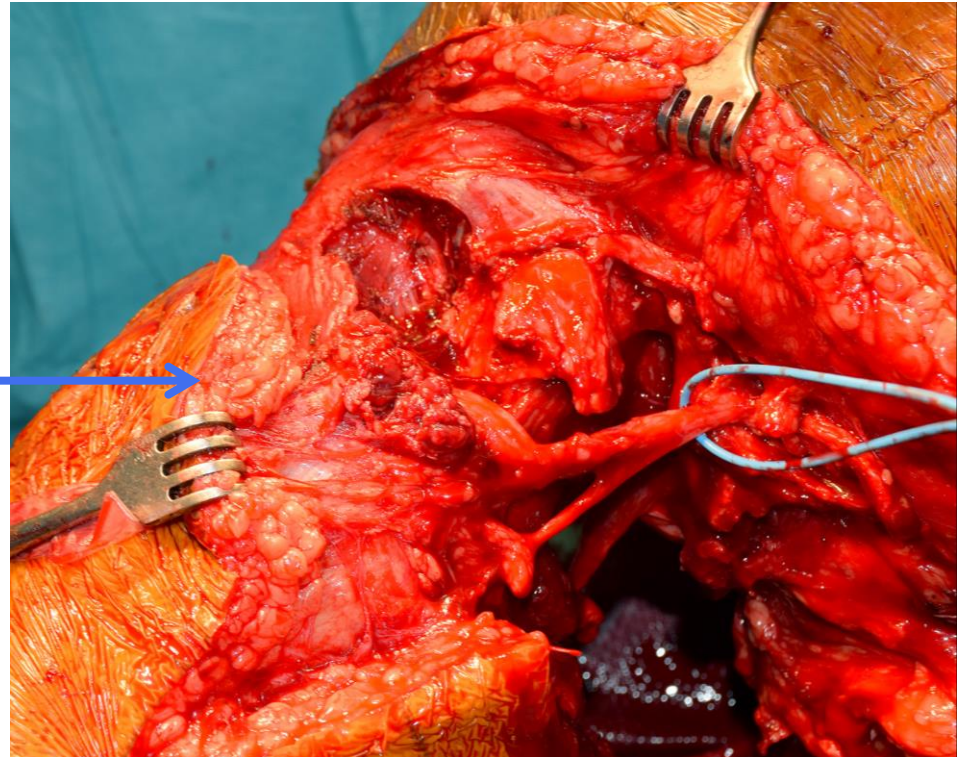
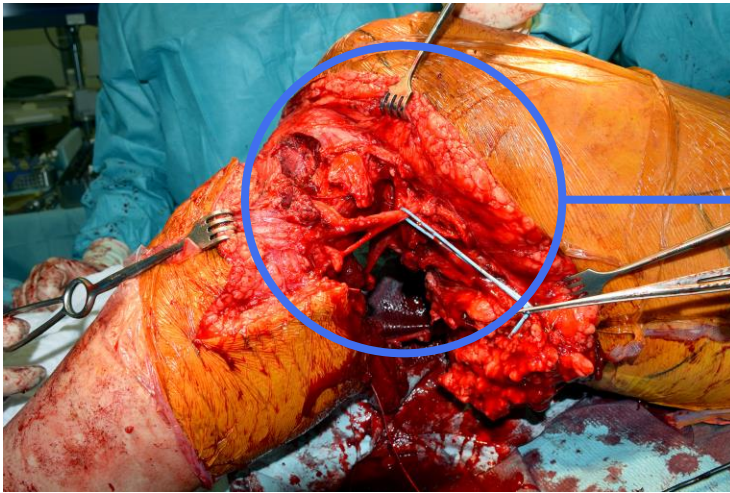
# distal femur; rotationplasty

**Surgery: August 26th, 2014**



# distal femur; rotationplasty

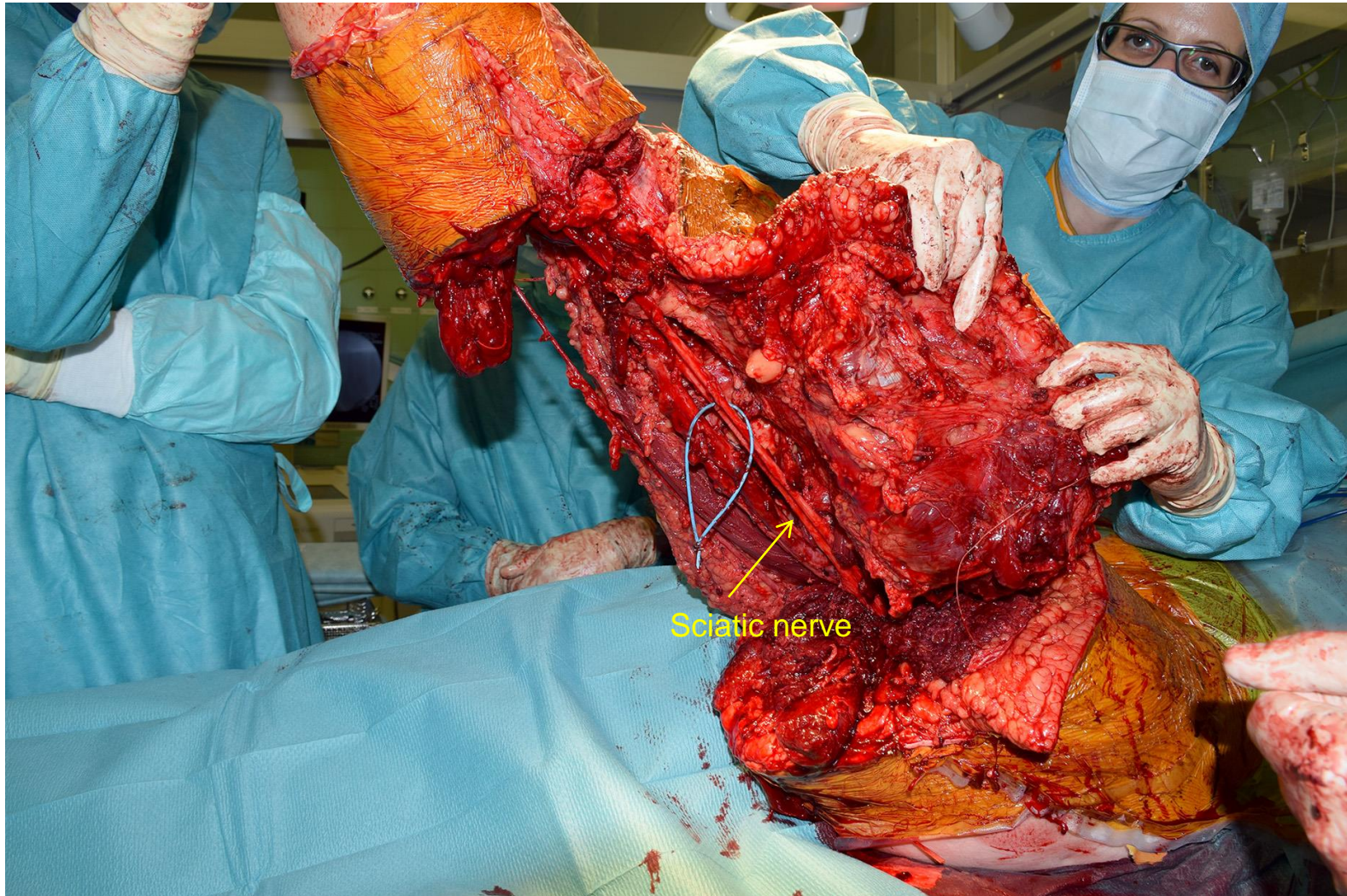
**Surgery: August 26th, 2014**



**Common peroneal nerve**

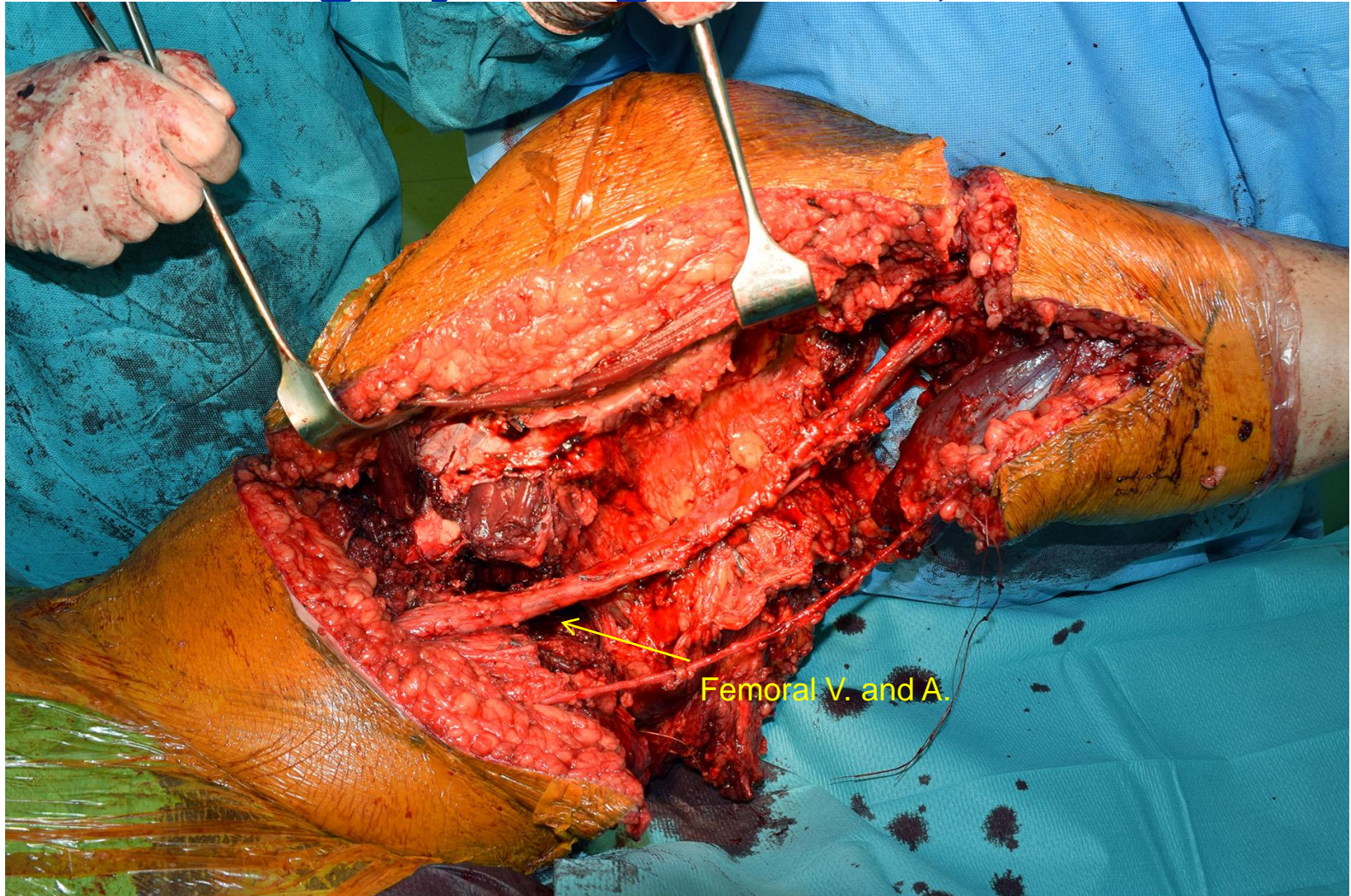
# distal femur; rotationplasty

**Surgery: August 26th, 2014**



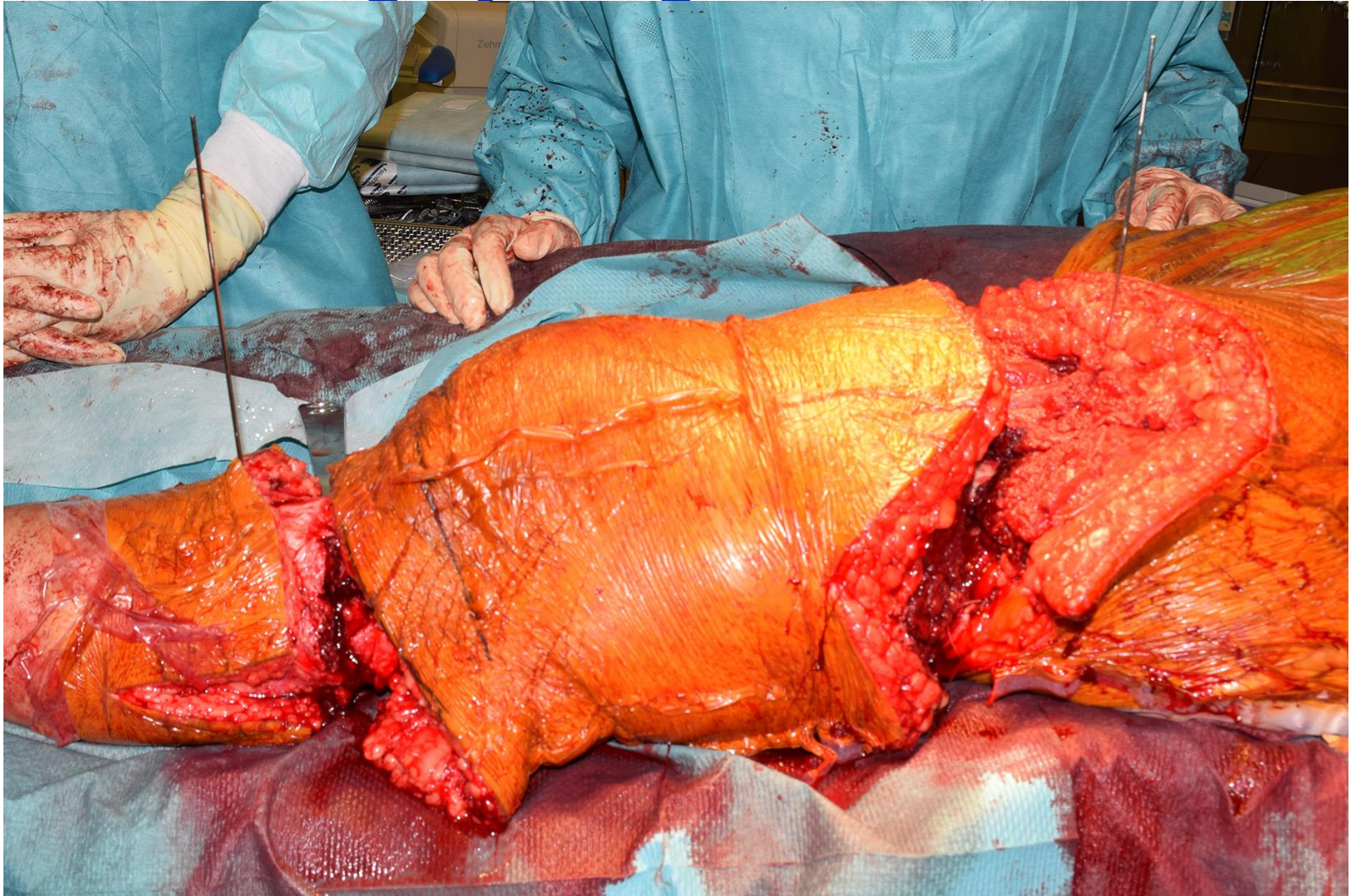
# distal femur; rotationplasty

**Surgery: August 26th, 2014**



# distal femur; rotationplasty

**Surgery: August 26th, 2014**



# distal femur; rotationplasty

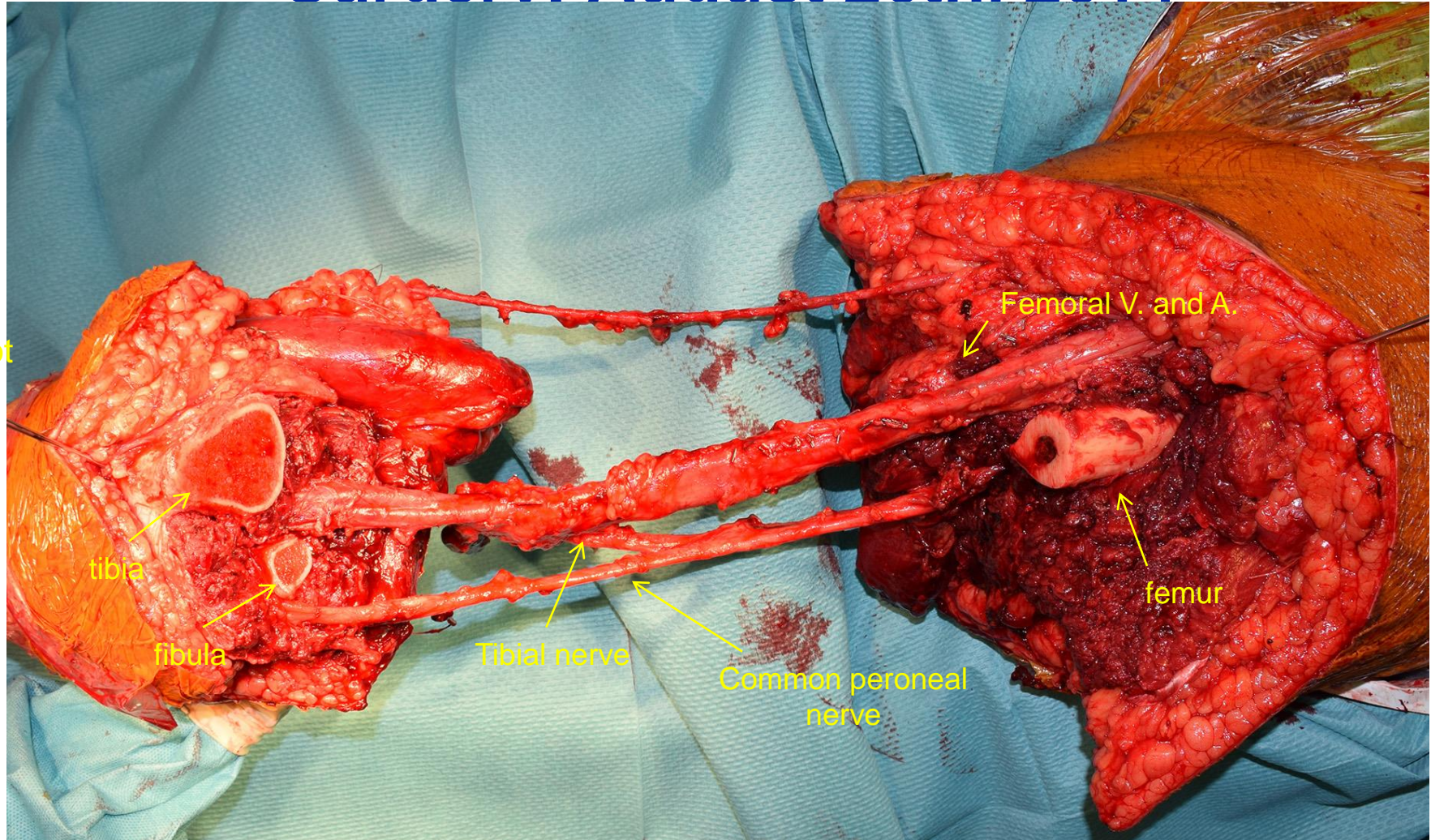
**Surgery: August 26th, 2014**



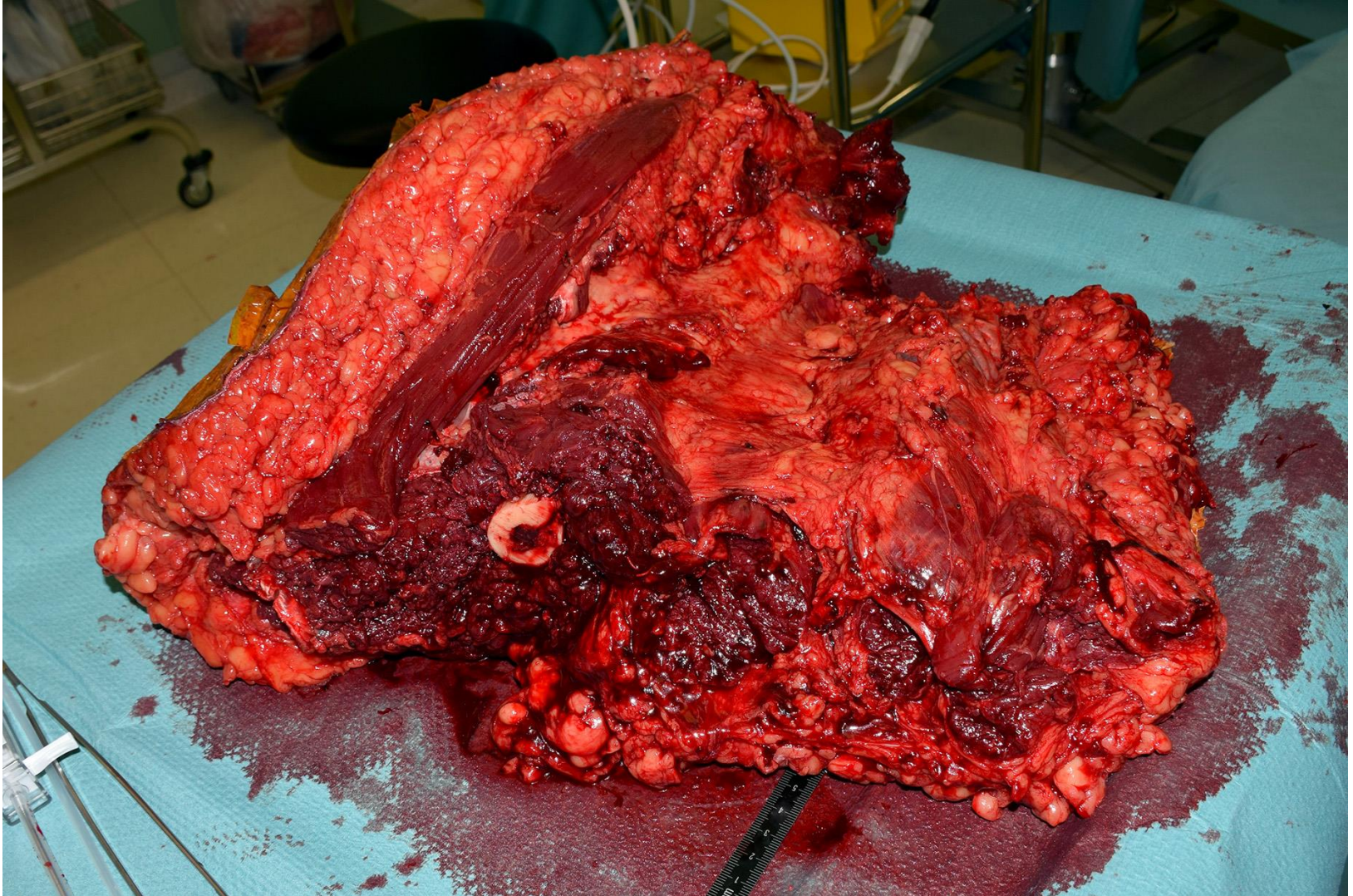


# distal femur; rotationplasty

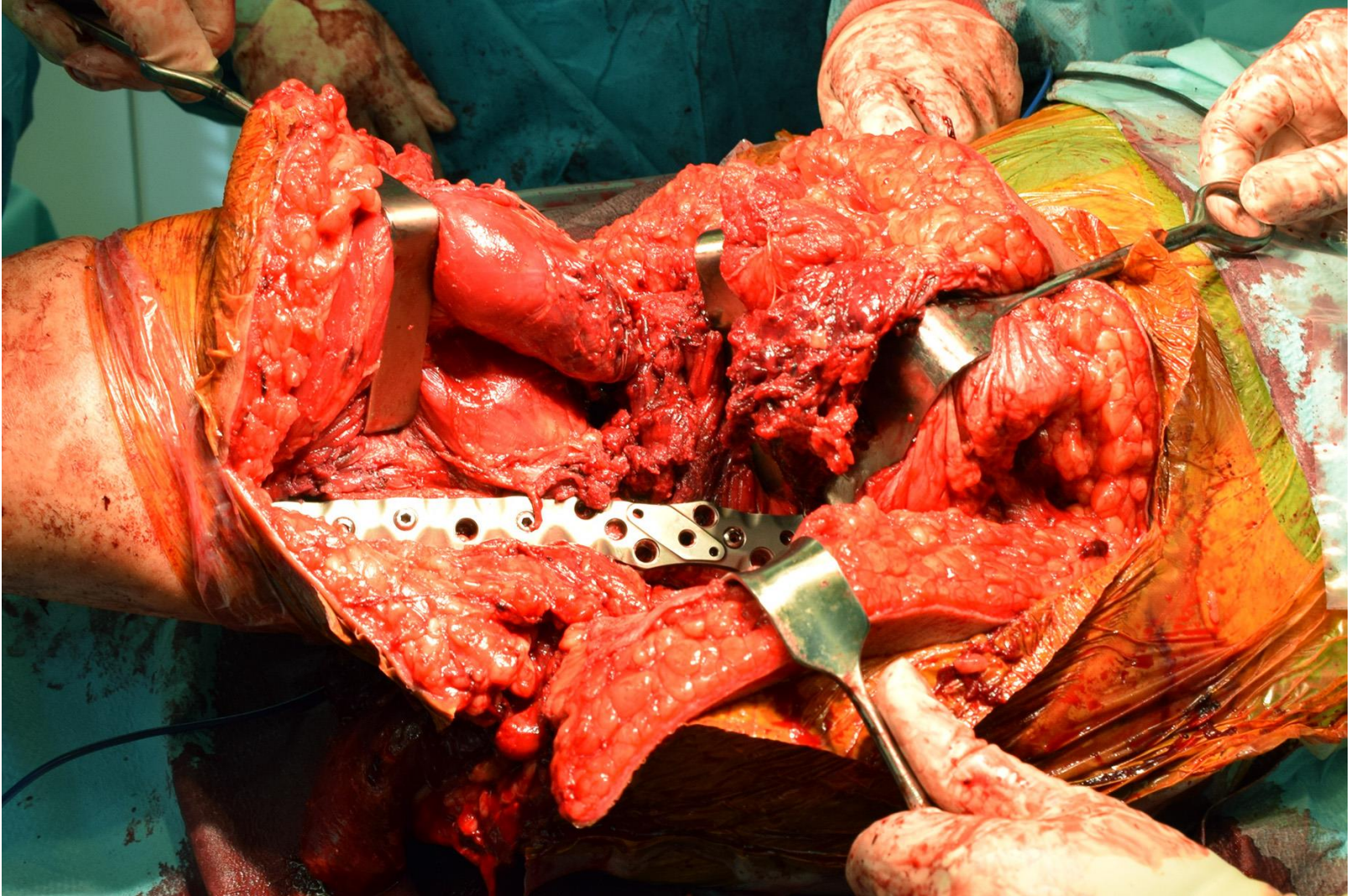
Surgery: August 26th, 2014



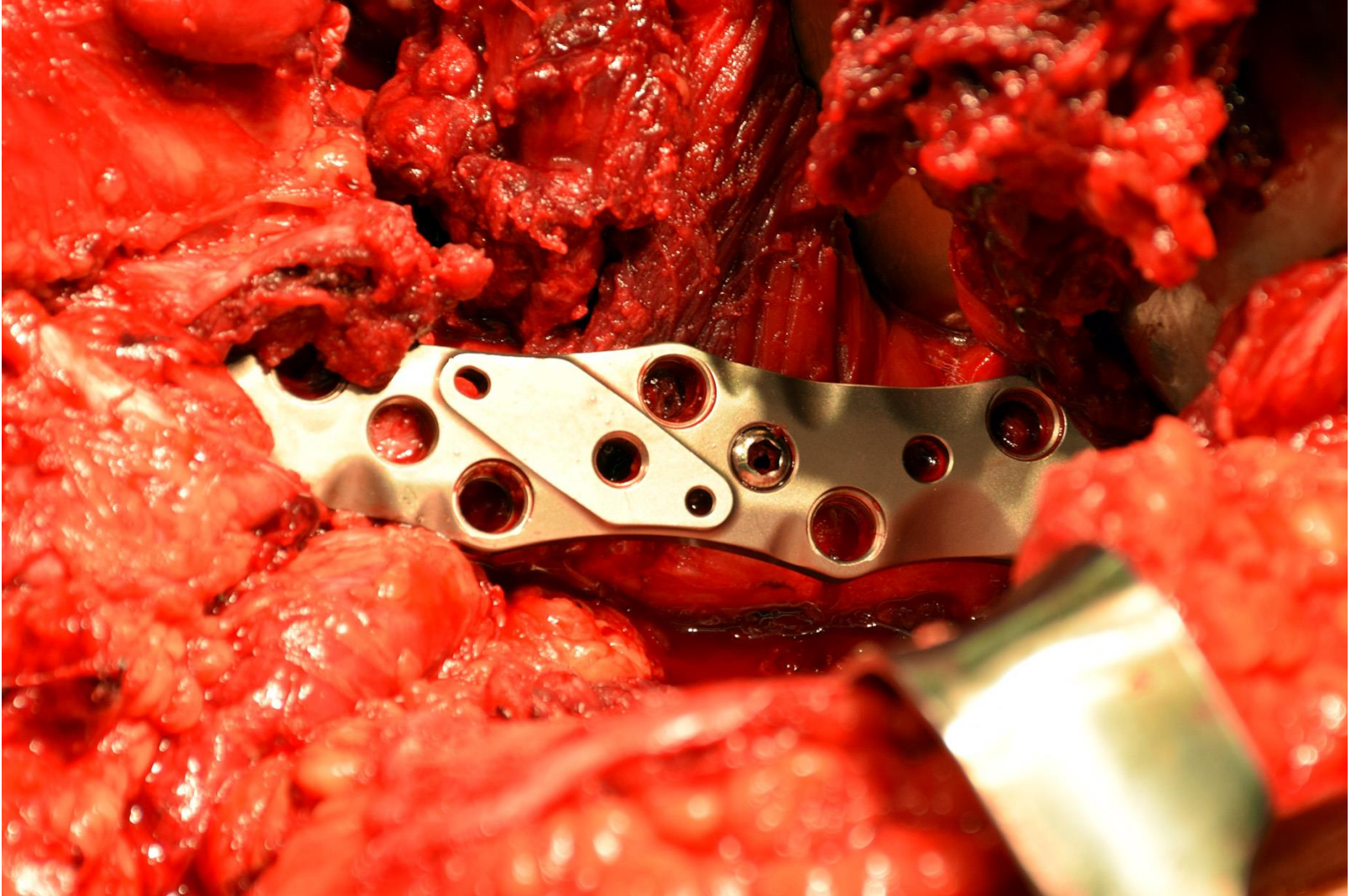
# distal femur; rotationplasty Surgery: August 26th, 2014



# distal femur; rotationplasty Surgery: August 26th, 2014



# distal femur; rotationplasty Surgery: August 26th, 2014



# distal femur; rotationplasty Surgery: August 26th, 2014



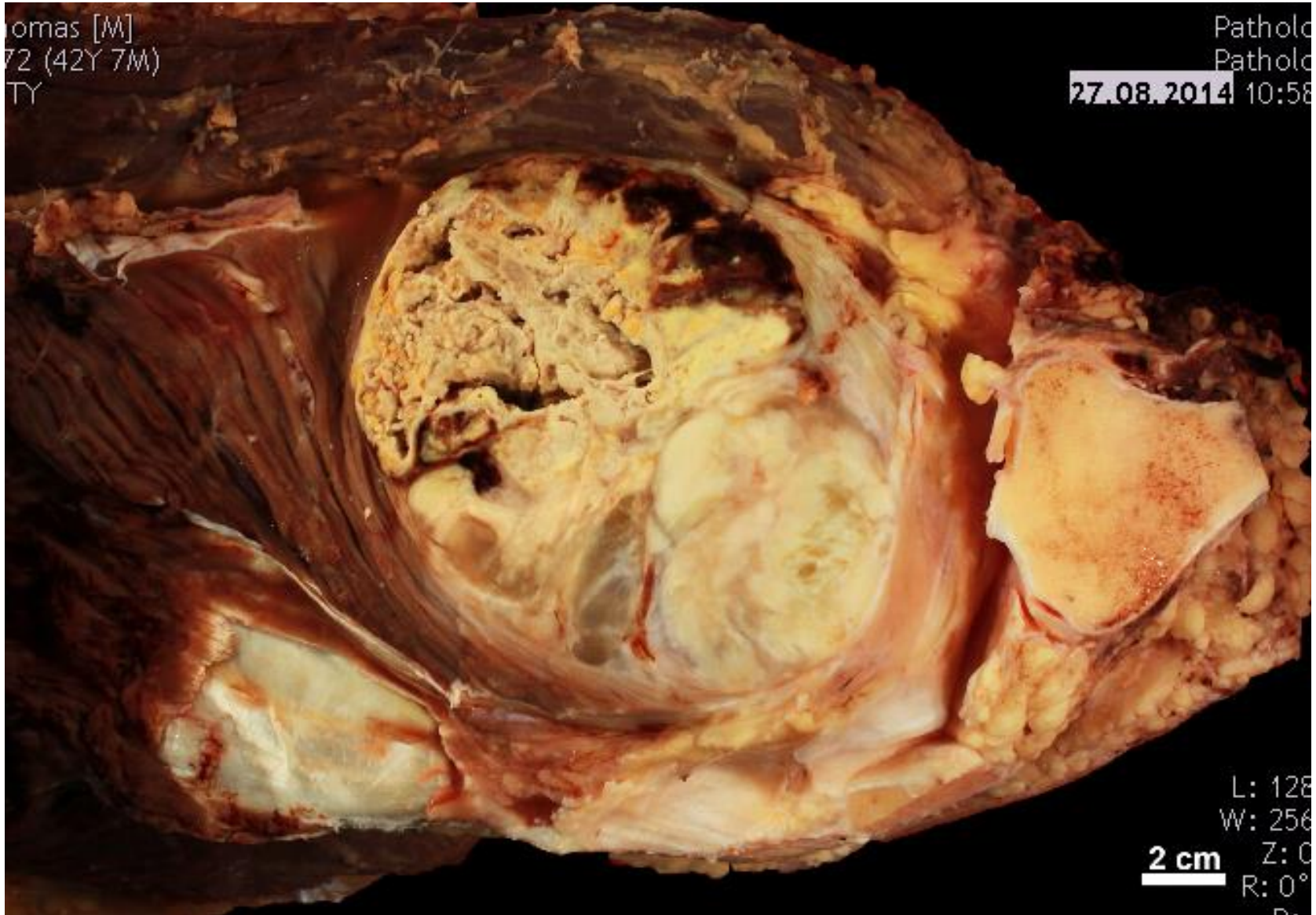
# distal femur; rotationplasty Surgery: August 26th, 2014



# distal femur; rotationplasty X-Ray: August 26th, 2014

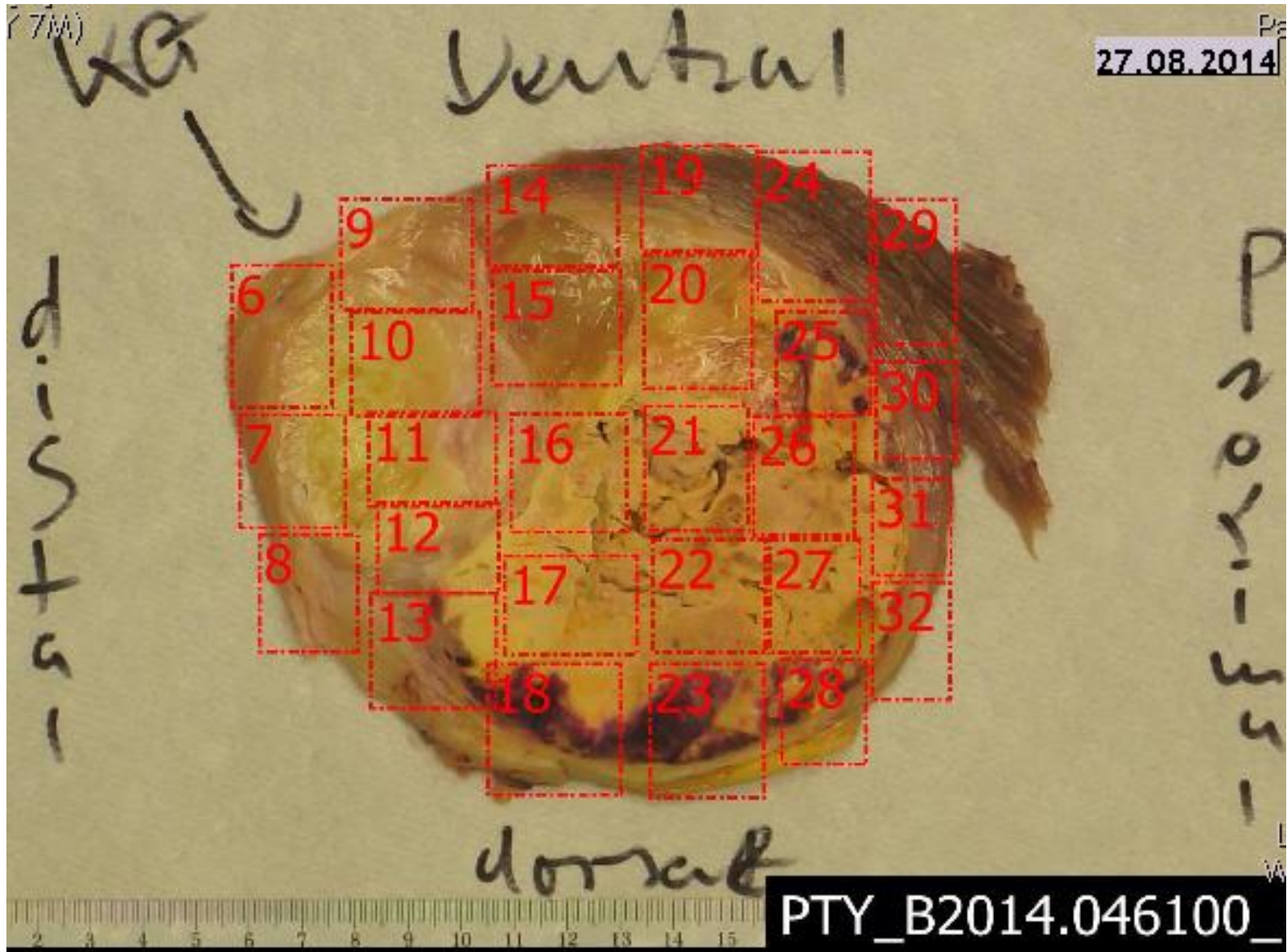


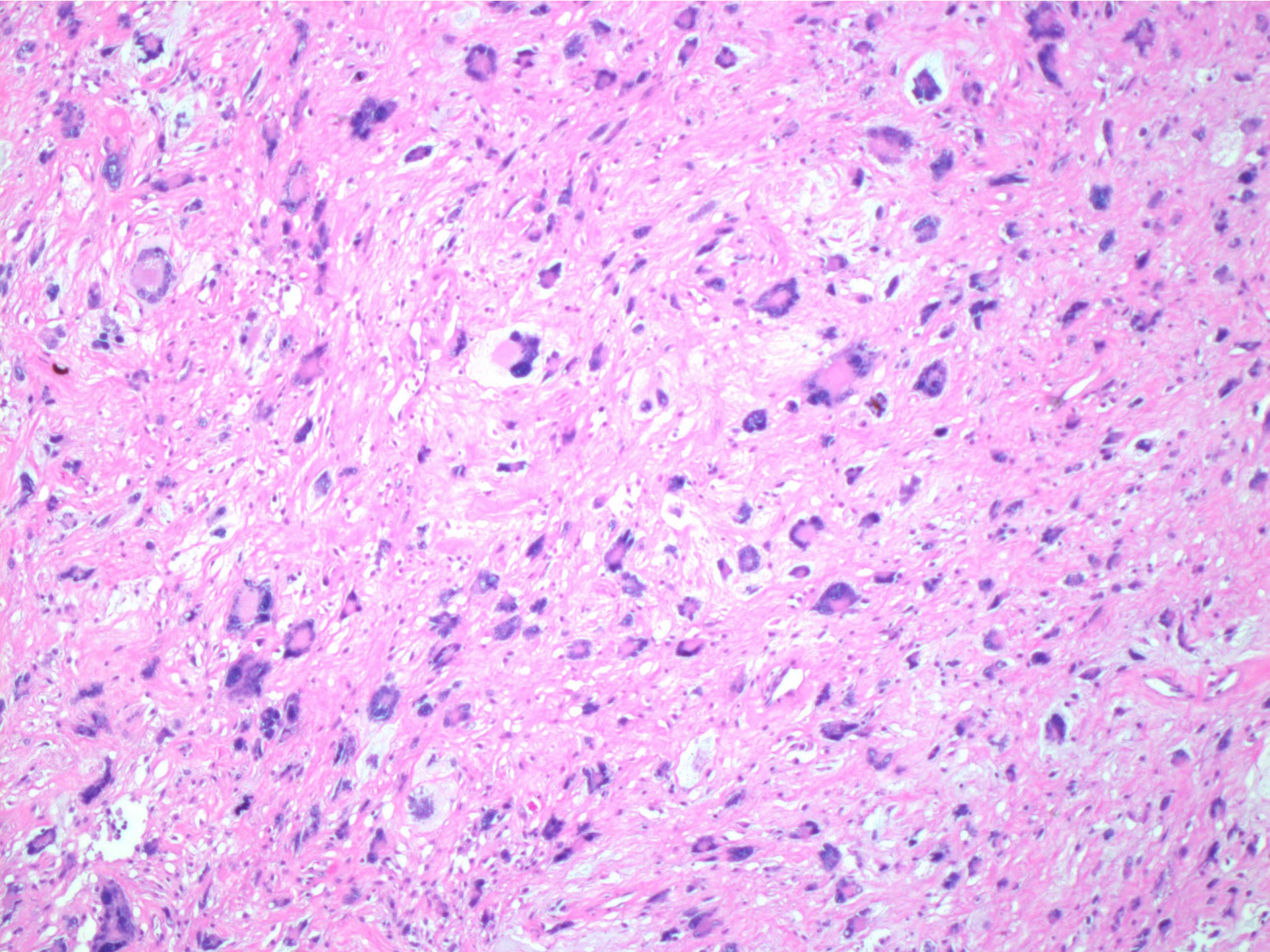
# distal femur; rotationplasty





# distal femur; rotationplasty





# distal femur; rotationplasty

## Result Surgery: August 26th, 2014

### *Diagnose*

Knieamputat (links) mit einem maximal 12.0 cm grossen pleomorphen Liposarkom (G3) der medialen Weichteile auf Höhe des distalen Femurs. 90% Tumor-Nekrose bei Status nach neoadjuvanter Radiotherapie. Kein Nachweis von Knocheninfiltration. Kein Nachweis von Infiltration in der Kniegelenkscapsel. Kein Nachweis von Gefässinfiltraten. Nachweis von drei tumorfreien poplitealen Lymphknoten (0/3).

Resektion erfolgte im Gesunden. Mindestabstand zum nächstgelegenen Resektatrand (Gefässbett): 0.4 cm.

Abstände zu den übrigen Resektaträndern: Nach proximal mindestens 10.1 cm; nach distal mindestens 9.7 cm; zur Kniegelenkscapsel mindestens 0.5 cm; zum Gefässbett/Adduktorenkanal mindestens 0.4 cm; zum Knochen mindestens 0.6 cm.

# distal femur; rotationplasty Follow-up: August 28th, 2014



# distal femur; rotationplasty

## Sarcoma Board: September 04th, 2014

### Therapeutic decisions:

#### Chemotherapy:

A re-evaluation of a possible chemotherapeutic treatment in 6-8 weeks postoperatively should be discuss again, because it was a “G3-tumor”.

#### Radiotherapy:

already done

Hyprosar: Yes.

#### Surgery:

already done.

# distal femur; rotationplasty

## Rx: NOV 27, 2014

**Oct 15, 2014**

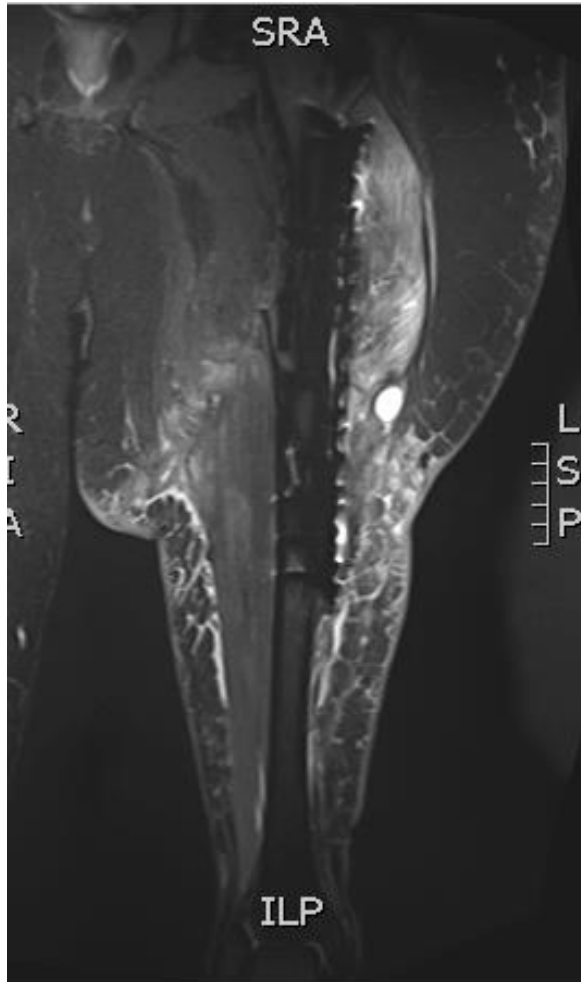


**Nov 27, 2014**

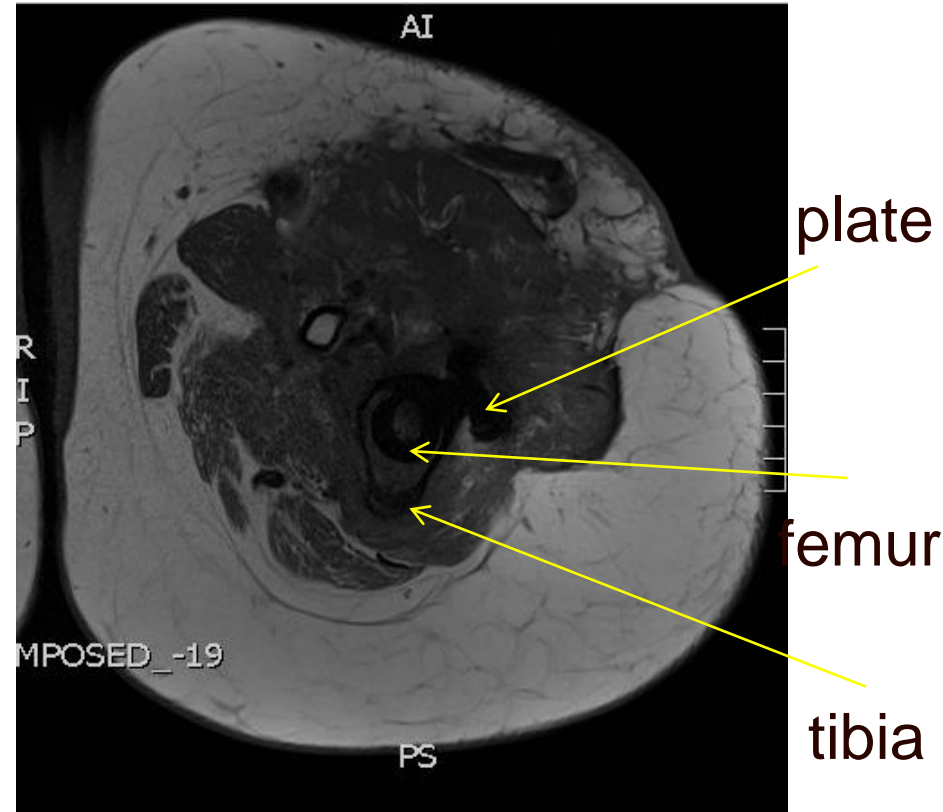


# distal femur; rotationplasty

## MRI: NOV 27, 2014

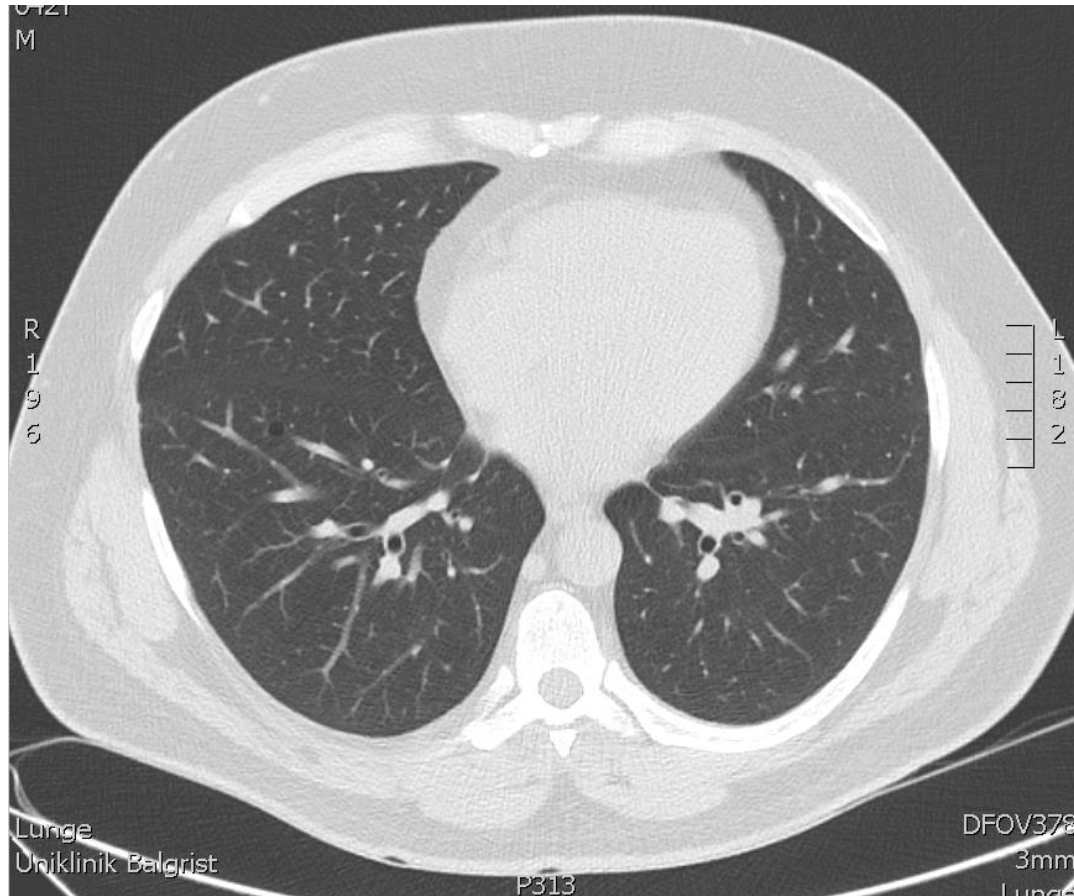


T1 tirm



T1 tse

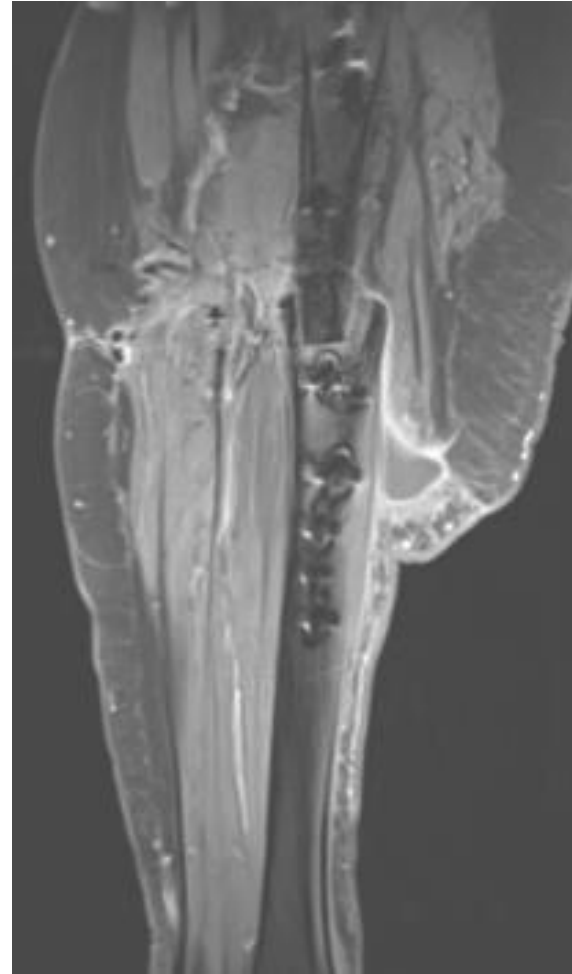
# distal femur; rotationplasty CT: NOV 27, 2014



**no metastases suspect lesions**



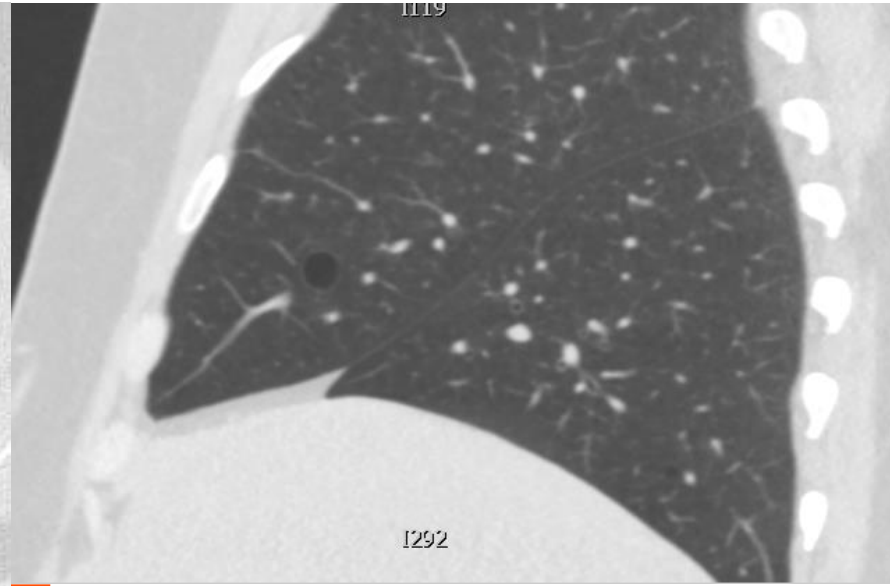
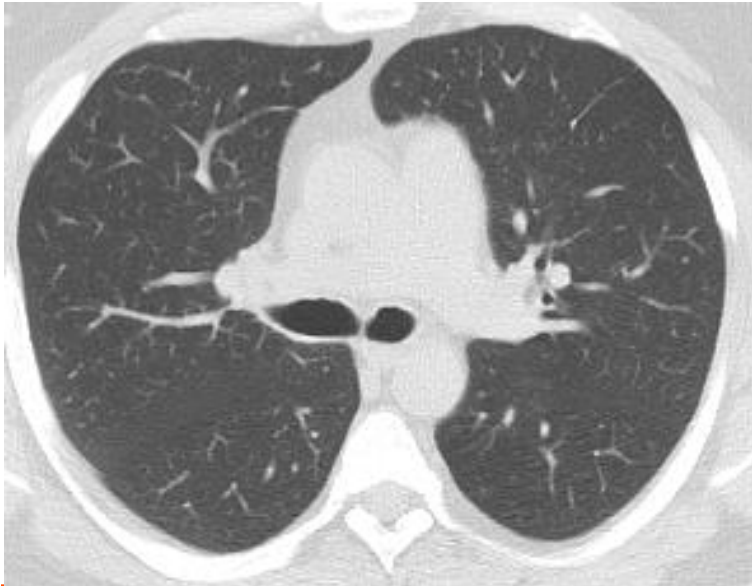
# distal femur; rotationplasty X-ray/MRI: February 25th 2015



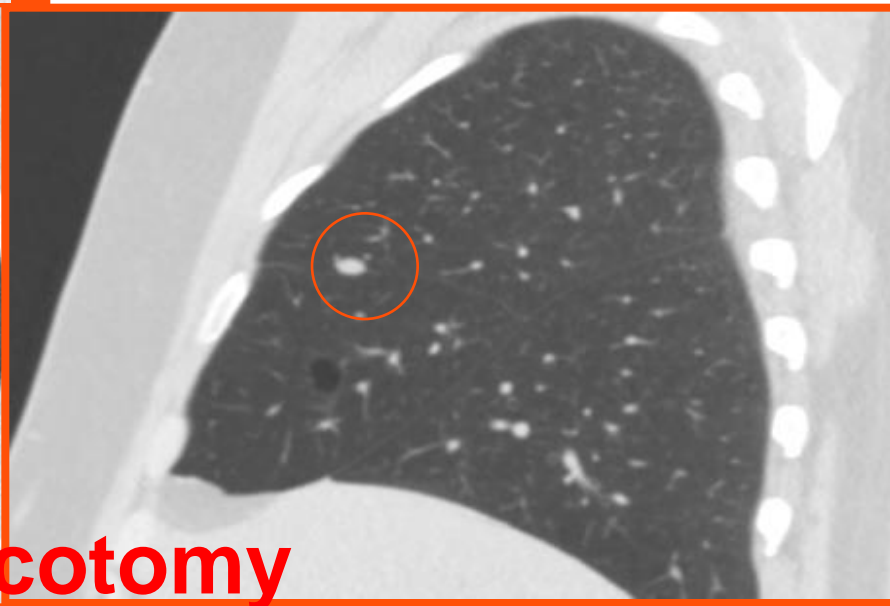
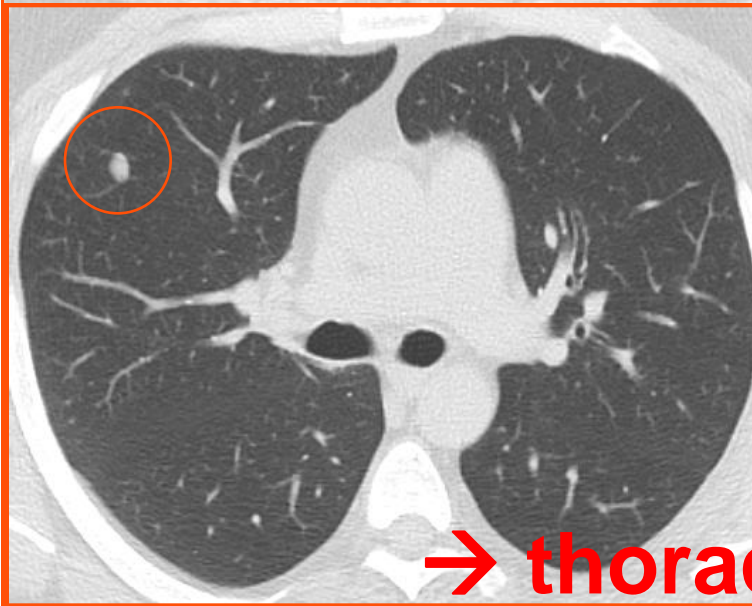
**no local recurrence**

# distal femur; rotationplasty CT-Chest: February 25th 2015

Nov. /14



Feb. /15



→ thoracotomy

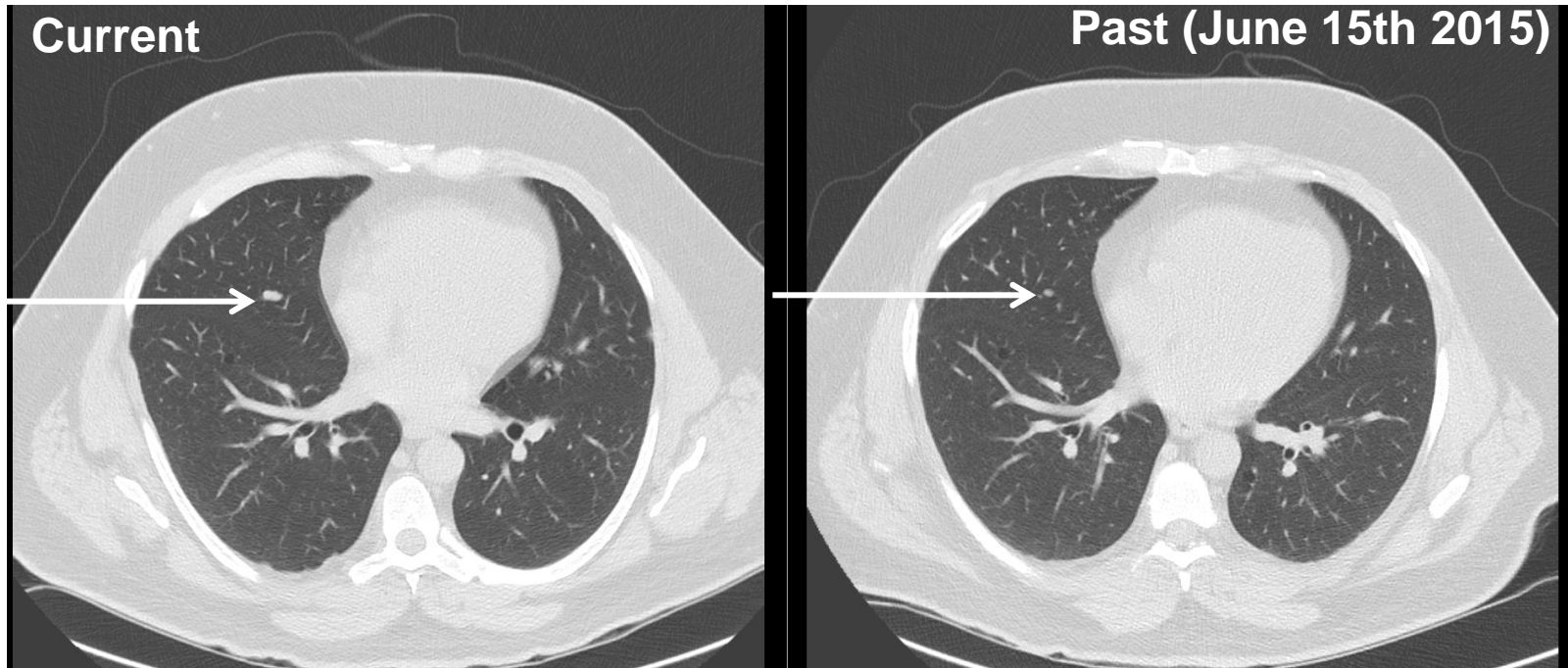
# distal femur; rotationplasty MRI September 14th 2015

**No local recurrence**



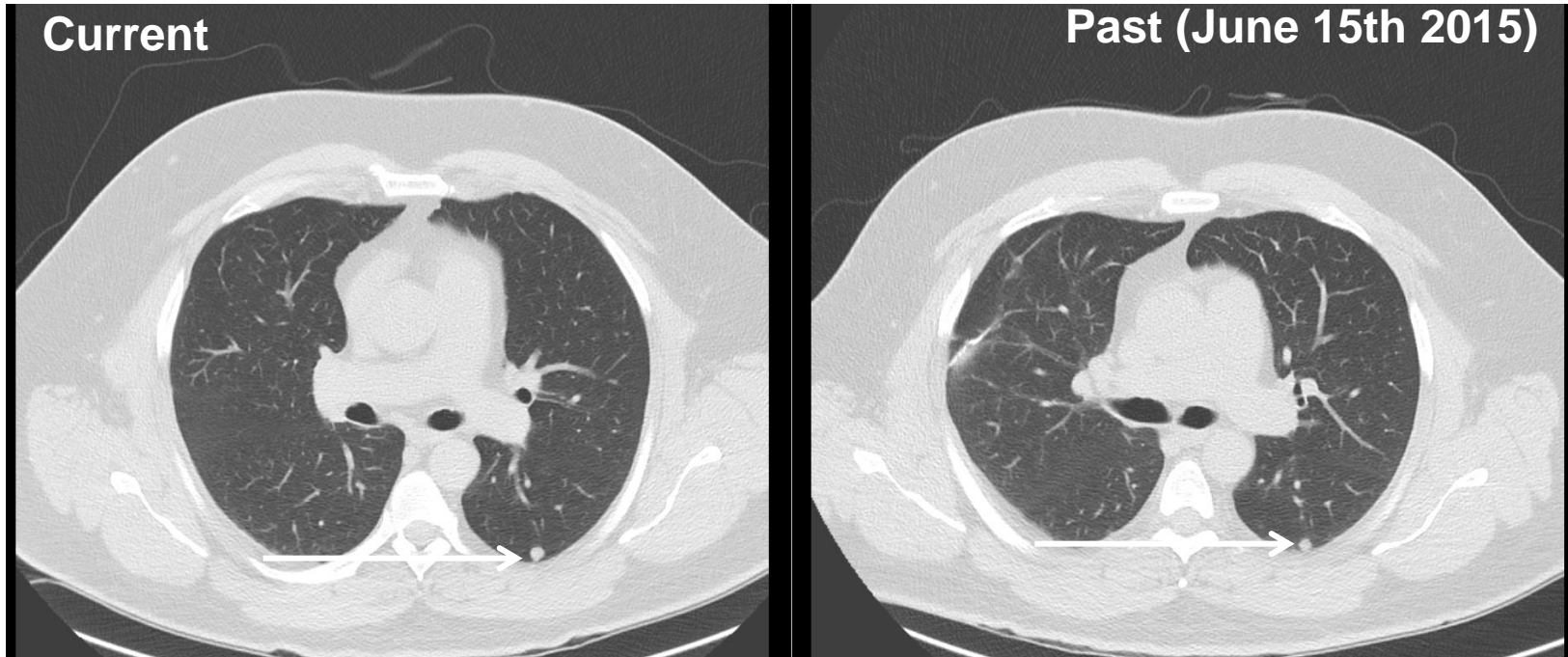
# distal femur; rotationplasty CT thorax September 14th 2015

Progressive pulmonary nodules (0.4 → 0.9 cm)



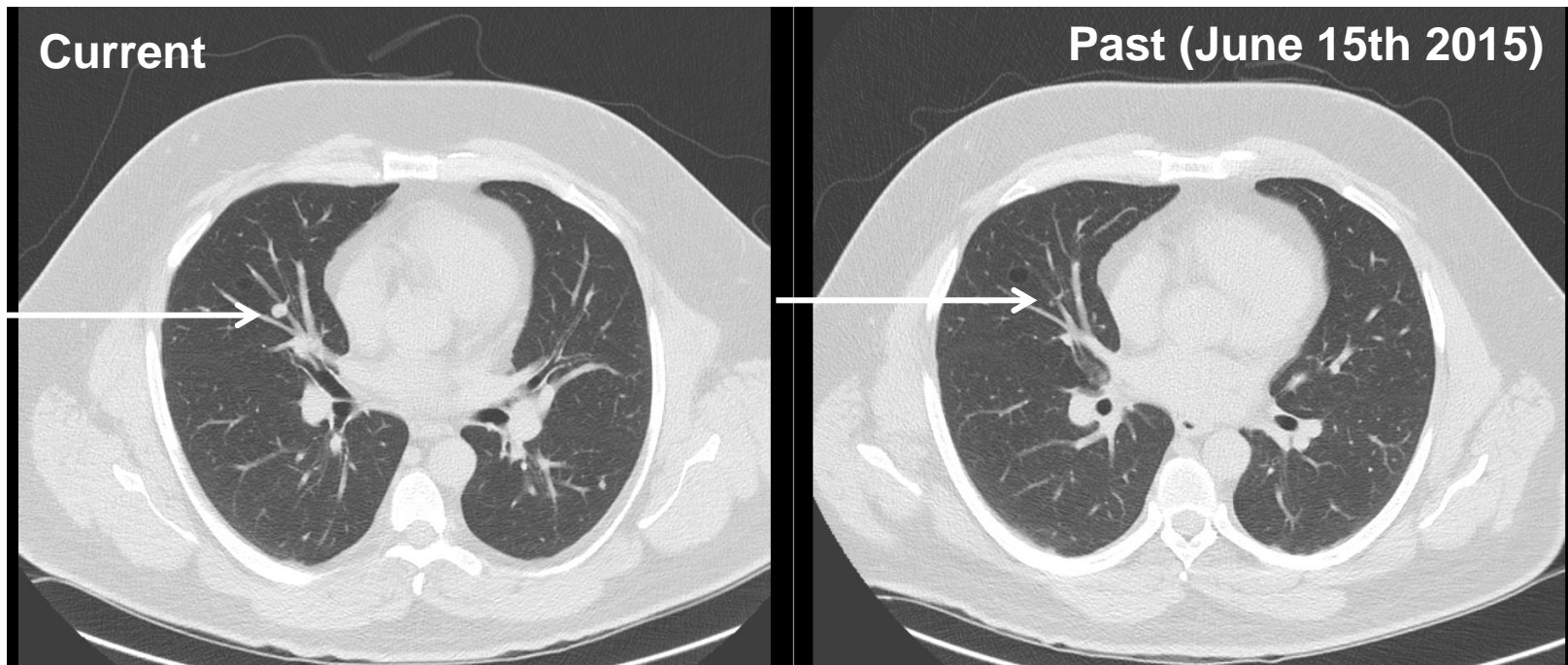
# distal femur; rotationplasty CT thorax September 14th 2015

Progressive pulmonary nodules (0.7 → 0.9 cm)



# distal femur; rotationplasty CT thorax September 14th 2015

Progressive pulmonary nodules (0.3 → 0.9 cm)



→ overt pulmonary metastasis

→ patient dies in August 2016

# distal femur; rotationplasty

## Cp links to TV broadcasting

■ Puls-Beitrag vom 01.09.2014

Ein Fussgelenk ersetzt das Knie



In der Tumorchirurgie gibt es immer wieder äusserst seltene und doch faszinierende Operationen. Zu genau dieser Art von Operationen zählt beispielsweise die sogenannte "Umkehrplastik". Sehen Sie unter folgendem Link einen Beitrag der Sendung "Puls" SRF, welche am 01.09.2014 ausgestrahlt und an der Uniklinik Balgrist unter der Leitung von Prof. B. Fuchs durchgeführt wurde.

[Link zum Film](#)

■ Puls-Beitrag vom 01.12.2014

Die Zeit nach der Amputation



Fortsetzung des Puls- Beitrags vom 01.09.2014: Vor zwei Monaten verlor Thomi Huber krebisbedingt sein Knie («Puls» berichtete). Sein Fuss wurde umgedreht an dessen Stelle gesetzt – das soll ihm ein besseres Gehen ermöglichen. Fürs erste muss er jetzt aber lernen, auf nur einem Bein zurecht zu kommen.

[Link zum Film](#)

■ Puls-Beitrag vom 26.01.2015

Mit Fuss am Knie neu laufen lernen



Fortsetzung des Puls- Beitrags vom 01.12.2014: Vor fünf Monaten verlor Thomas Huber krebisbedingt sein Knie («Puls» berichtete). Sein Fuss wurde umgedreht an dessen Stelle gesetzt

REVIEW

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# Rotationplasty About the Knee: Surgical Technique and Anatomical Considerations

B. FUCHS AND F.H. SIM\*

*Division of Orthopedic Oncology, Department of Orthopedics, Mayo Clinic, Rochester, Minnesota*

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Rotationplasty is an intercalary resection of a bone segment with subsequent reconstruction of the lower limb by rotating it through an arc of 180°. After rotation, the rotated ankle functions as a knee joint, thereby powering a custom-made below-knee prosthesis. Rotationplasty is a satisfactory treatment option in selected patients. A prerequisite for this type of surgery is an intact sciatic nerve. Rotationplasty is indicated for skeletally immature patients with a tumoral lesion about the knee (<8–10 years of age), for older patients with large lesions that are not candidates for limb salvage as an alternative to above-knee amputation, and as a salvage procedure for chronically infected prosthetic implants. Preoperative planning includes the prediction of the exact remaining bone growth, because the ipsilateral distal tibial epiphysis will not completely substitute for the growth deficit resulting from the resected distal femoral and proximal tibial epiphyses. Therefore, minimal over length of the ankle of the operated leg is retained. Technical details of the surgery are described with particular emphasis on anatomical considerations. It provides a durable and biologic reconstruction and allows patients to become good functional below-knee prosthesis users and allows participation in recreational activities and sports. Clin. Anat. 17:345–353, 2004.

© 2004 Wiley-Liss, Inc.

**Key words:** knee rotationplasty; intercalary amputation; reconstruction; surgical technique; limb salvage



# distal femur; rotationplasty

CLINICAL ORTHOPAEDICS AND RELATED RESEARCH  
Number 415, pp. 52–58  
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## Functional Outcome of Patients With Rotationplasty About the Knee

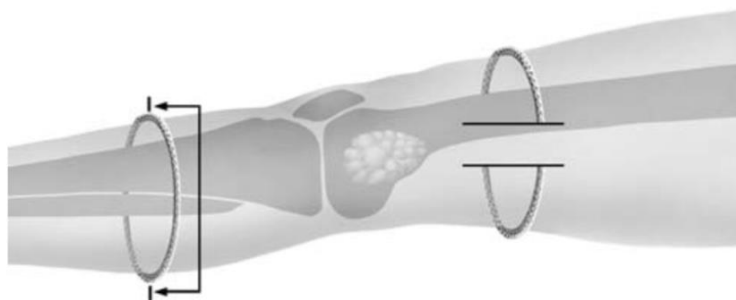
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*Bruno Fuchs, MD\**; *Brian R. Kotajarvi, PT\*\**; *Kenton R. Kaufman, PhD\*\**;  
*and Franklin H. Sim, MD\**

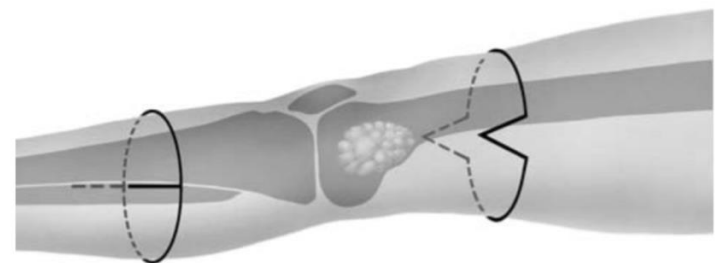
SURGICAL TECHNIQUE

## A New Incision Technique to Reduce Tibiofemoral Mismatch in Rotationplasty

Christian Ossendorf MD, MS, Gerhard U. Exner MD,  
Bruno Fuchs MD, PhD



**Fig. 1** The incision is planned by measuring the circumference of the distal incision by a sterile cord. This then is used to map to the proximal incision by cutting the cord into two equally sized parts, which are placed in a symmetric fashion at the place where the proximal incision will be made (The proximal incision is shown close to the knee only for illustration purposes).



**Fig. 2** The distance between the two semicircular incisions is bridged by two symmetric triangular-shaped incisions. Distally, two incisions with the length representing the height of the proximal incision are made.



**Fig. 3** The legs of the triangles can be matched exactly, without difficulty, to the needed size.