

# **Ewing's Sarcoma of Proximal Femur and Hip**

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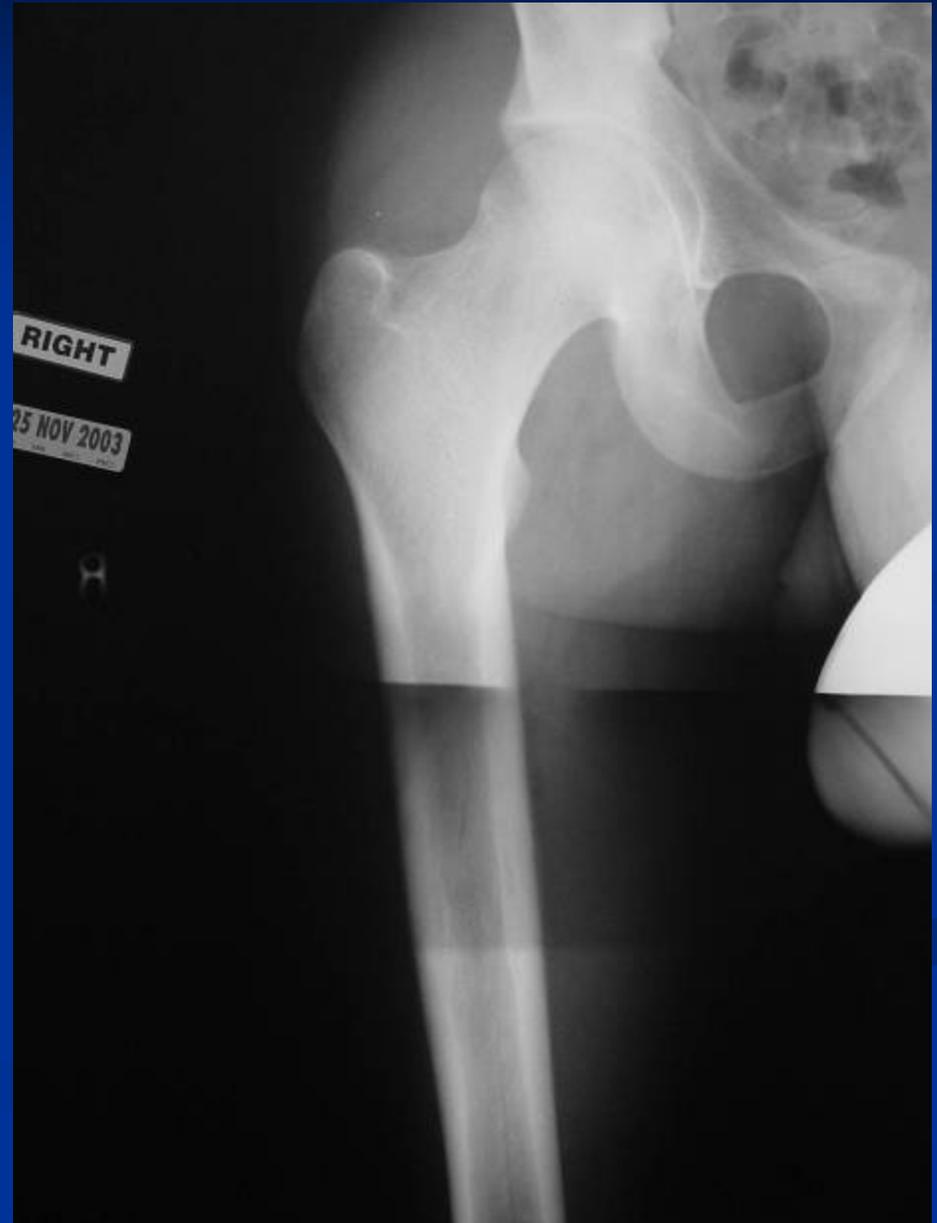
**Mount Sinai Medical Center**

# Clinical History

- 16 year old boy with pain in the right hip and thigh for several months.
- The boy was otherwise healthy.
- He had no history of fevers, night sweats, weight loss.
- There was no previous history of infections.
- Laboratory studies including CBC, ESR and CRP were normal.

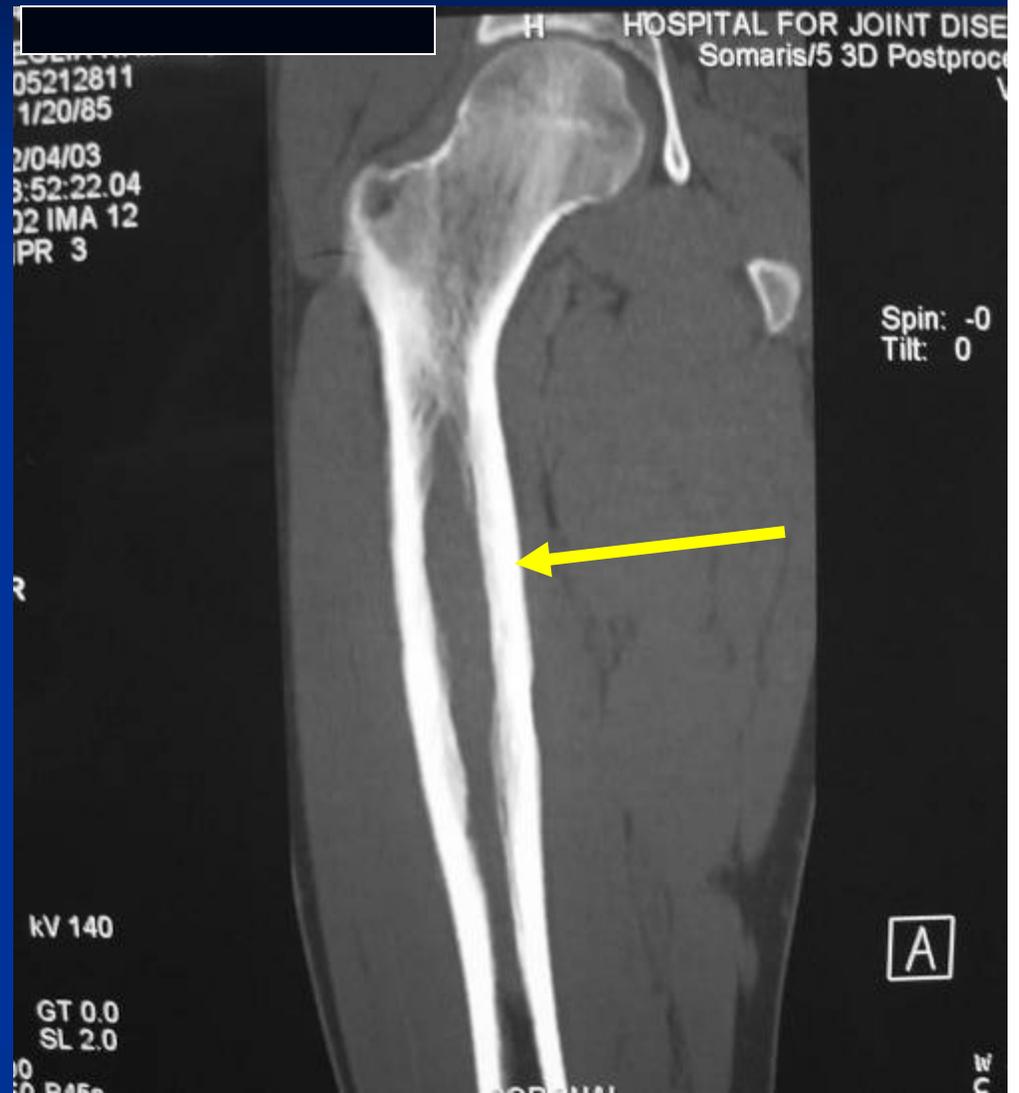
# X-rays

- X-rays demonstrated a permeative lesion of the right proximal femur with slight sclerosis
- The lesion was barely perceptible on the Xray



# CT Scan

- The CT scan demonstrated a permeative lesion through the proximal 1/2 of the femur
- The cortex was mildly thickened and expanded (arrow)
- There was no soft tissue component



6 IMA 41  
SPI 3  
SP 316.0

F-SP-CR  
12/04/03  
13:53:03.0  
6 IMA 42  
SPI 3  
SP 321.0

R

R

**Lesion**



5cm

5cm

kV 140  
eff.mAs 98  
mA 123  
TI 1.0  
GT 0.0  
SL 5.0/1.0/5.0  
W 400 149 80/0  
C 40 B30s L11C0ND

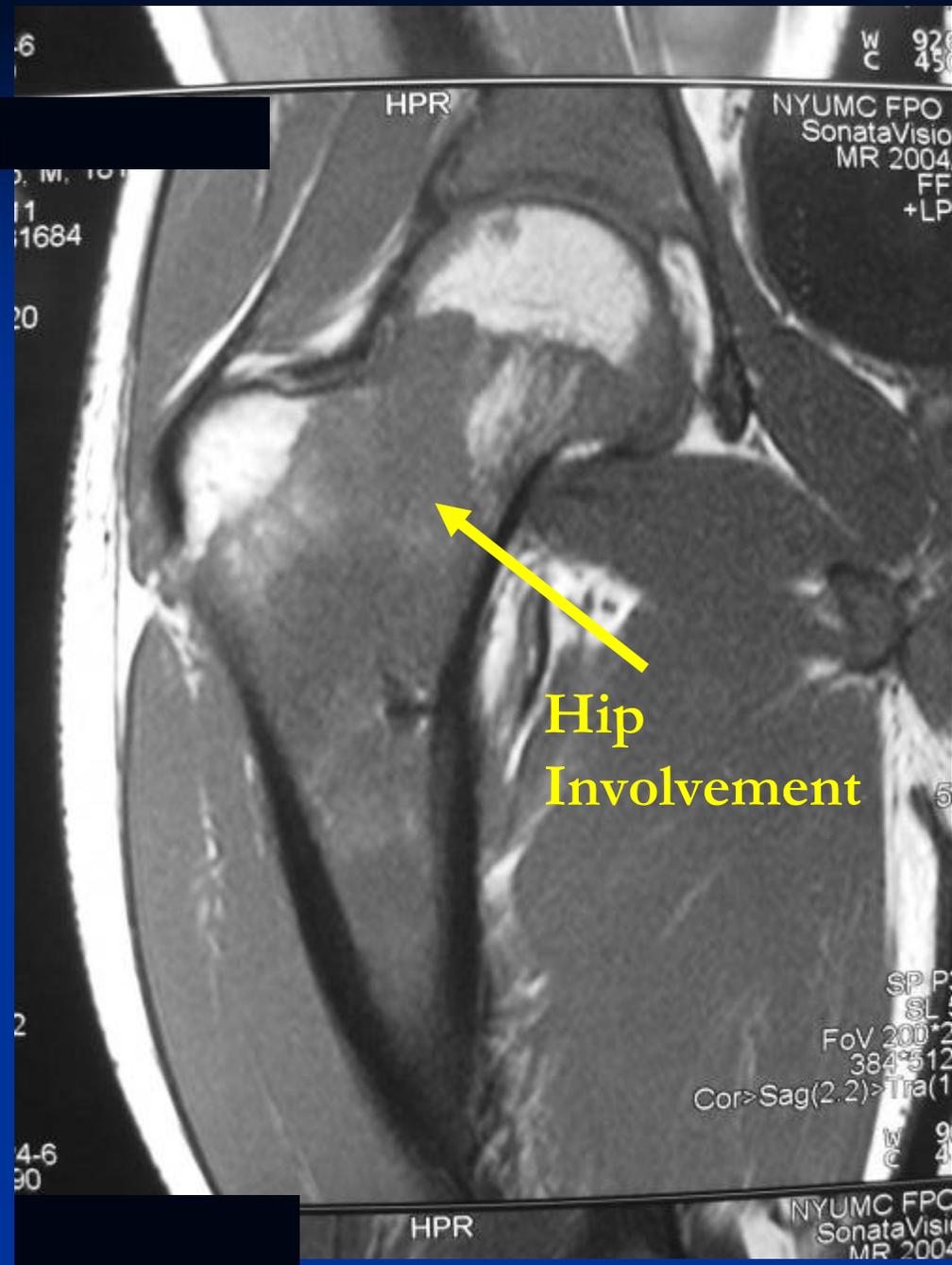
kV 140  
eff.mAs 98  
mA 123  
TI 1.0  
GT 0.0  
SL 5.0/1.0/5.0  
W 400 149 80/0  
C 40 B30s L11C0ND

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# MRI T1 Weighted Image

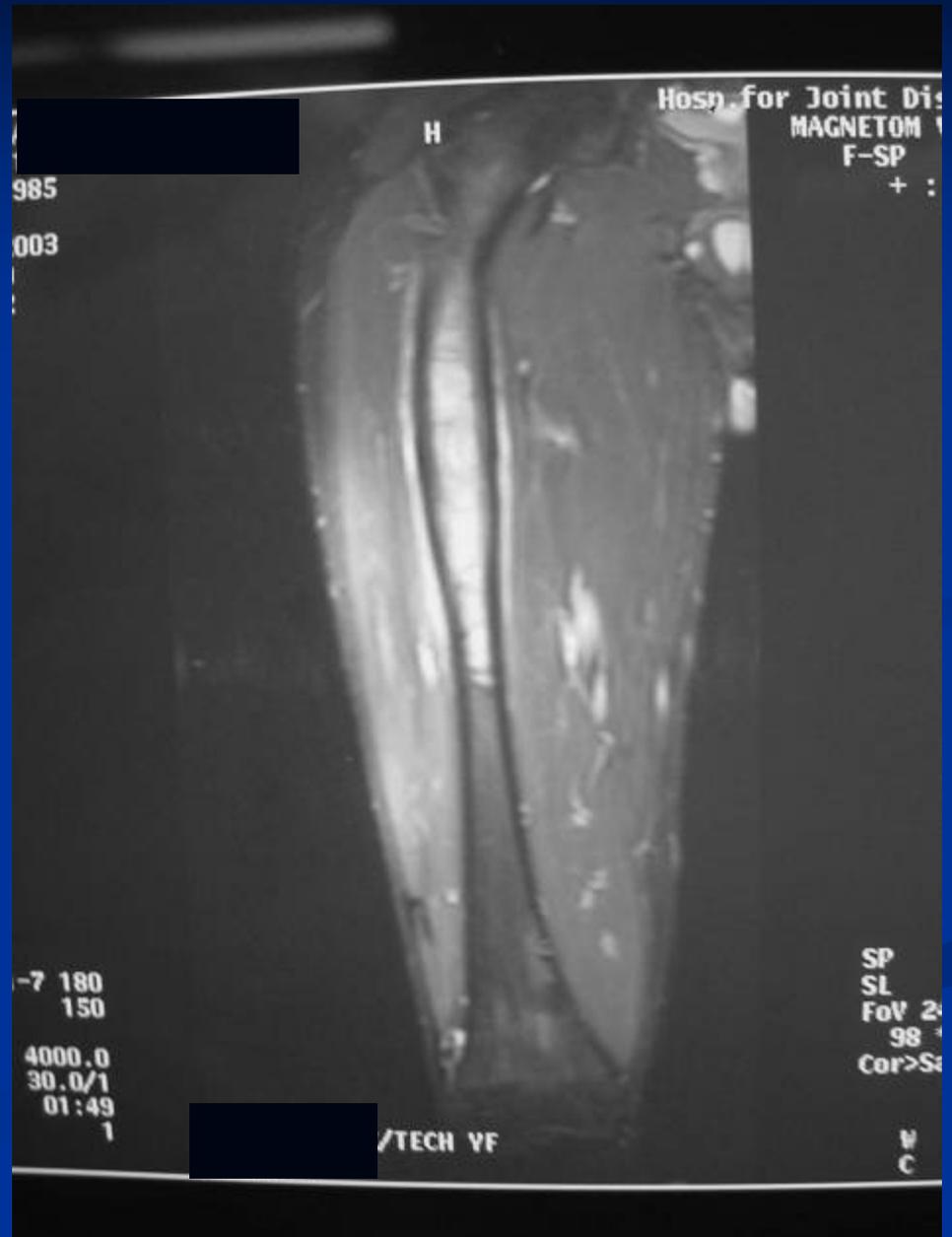
- The T1 weighted MRI demonstrated a permeative lesion involving the upper 1/2 of the femur (arrows).
- The bone was mildly expanded and the cortex slightly thickened
- There was no Codman's triangle, hair on end or sunburst periosteal reaction





# T2 Weighted MRI

- The T2 weighted image demonstrates significant edema (bright signal)
- There was no soft tissue component associated with the tumor



# T1 Axial MRI Images



IMAGE 127  
SER 1-13

A

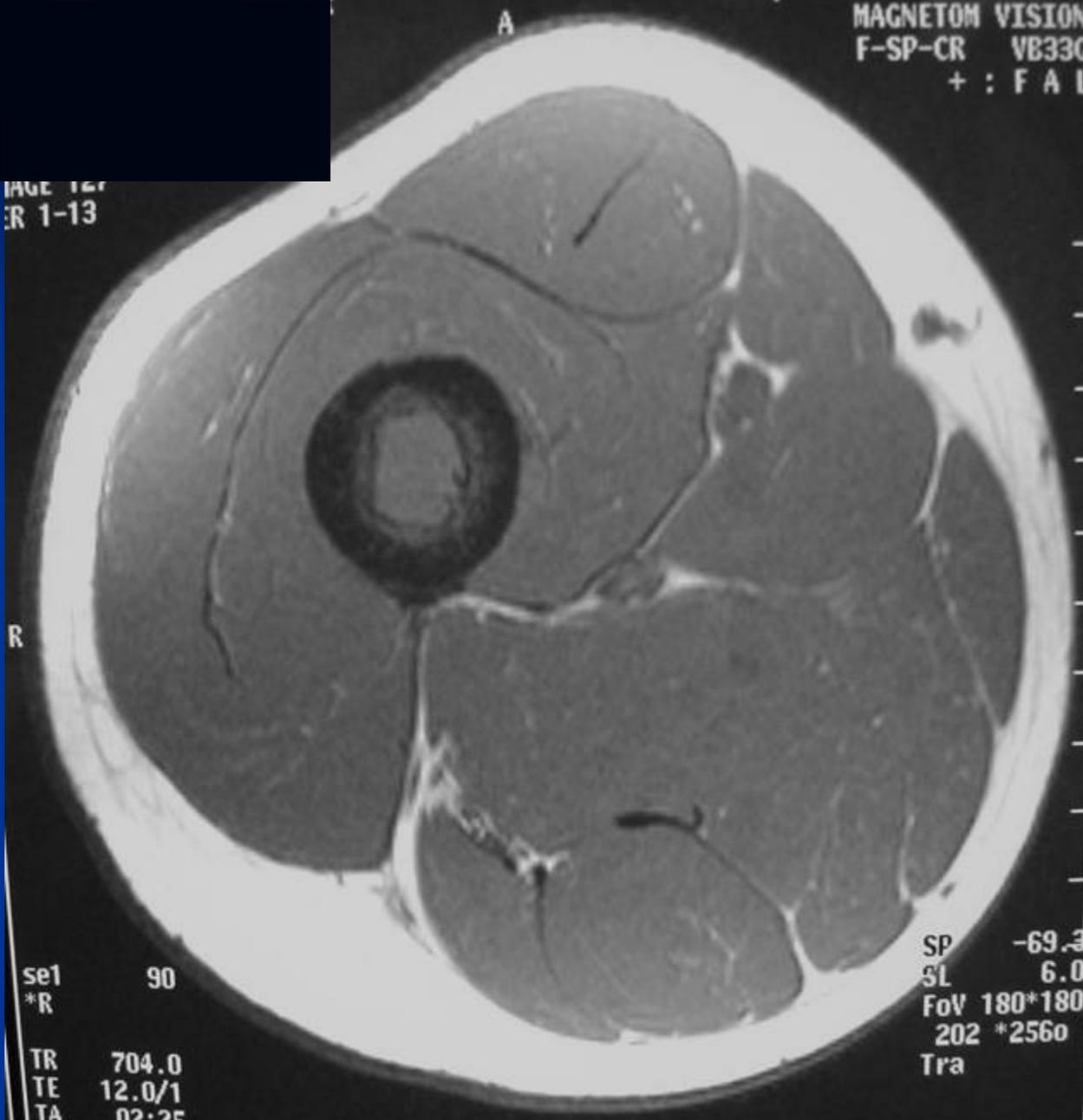
MAGNETOM VISION  
F-SP-CR VB33G  
+ : F A L

R

se1 90  
\*R  
TR 704.0  
TE 12.0/1  
TA 02:25  
AC

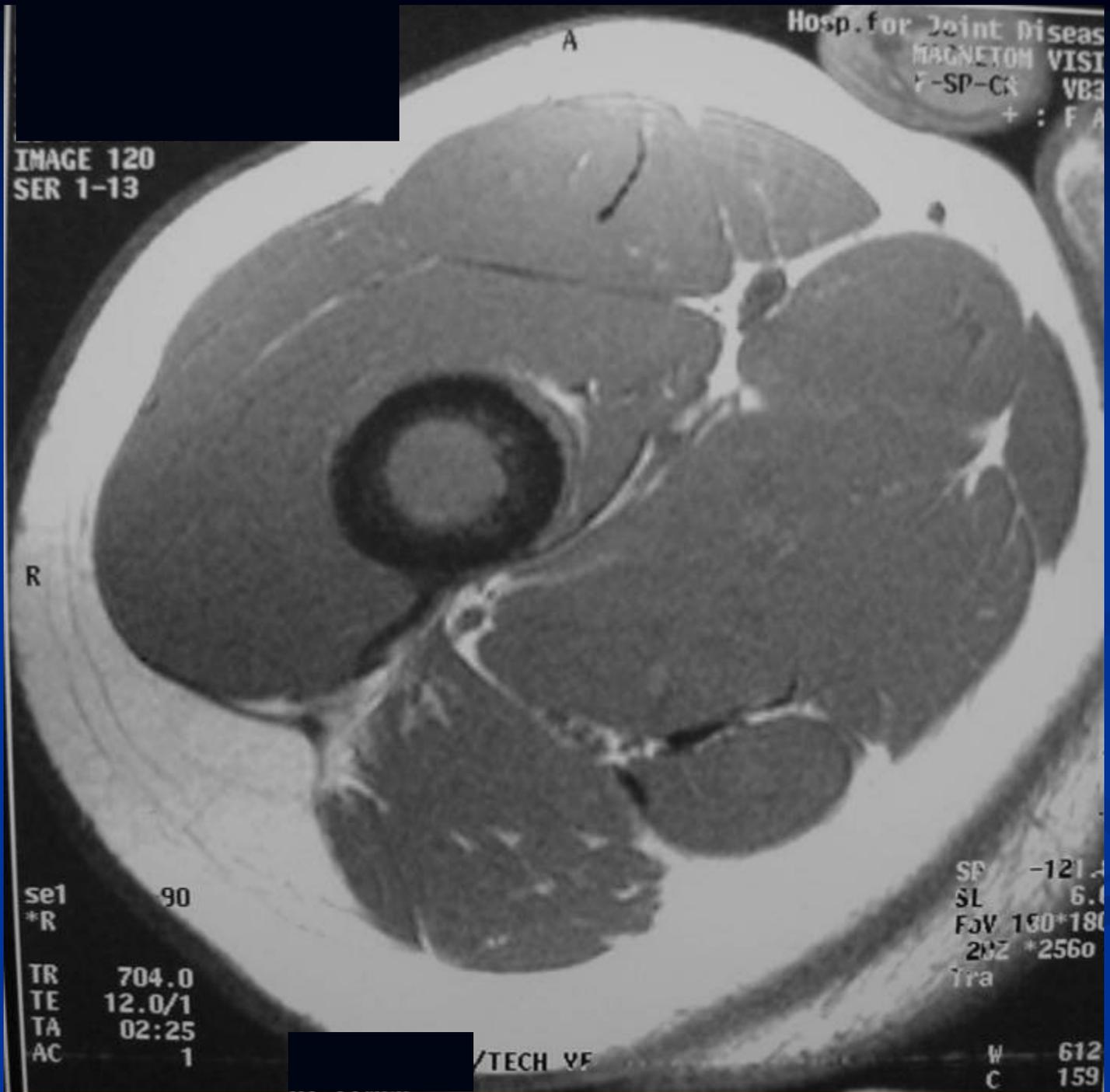
SP -69.3  
SL 6.0  
FoV 180\*180  
202 \*2560  
Tra

004



Hosp. for Joint Diseases  
MAGNETOM VISION  
F-SP-CX VB3  
+ : F A

IMAGE 120  
SER 1-13



se1 90  
\*R  
TR 704.0  
TE 12.0/1  
TA 02:25  
AC 1

/TECH VF

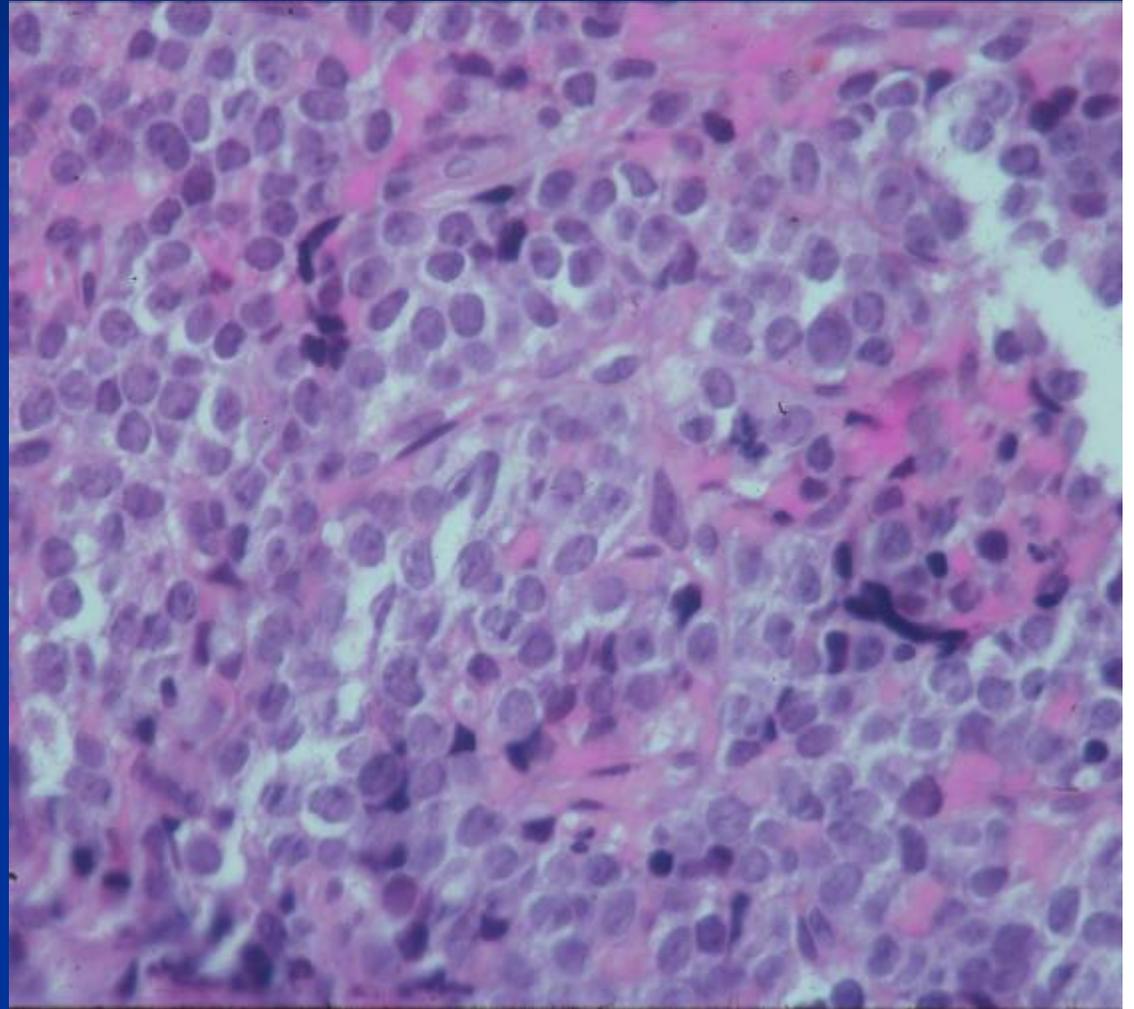
SP -121.4  
SL 6.0  
FoV 180\*180  
20Z \*2560  
Tra  
W 612  
C 159

# Differential Diagnosis

- The differential diagnosis based on the radiographic studies included:
  - Infection/Osteomyelitis
  - Eosinophilic Granuloma
  - Ewing Sarcoma
  - Lymphoma

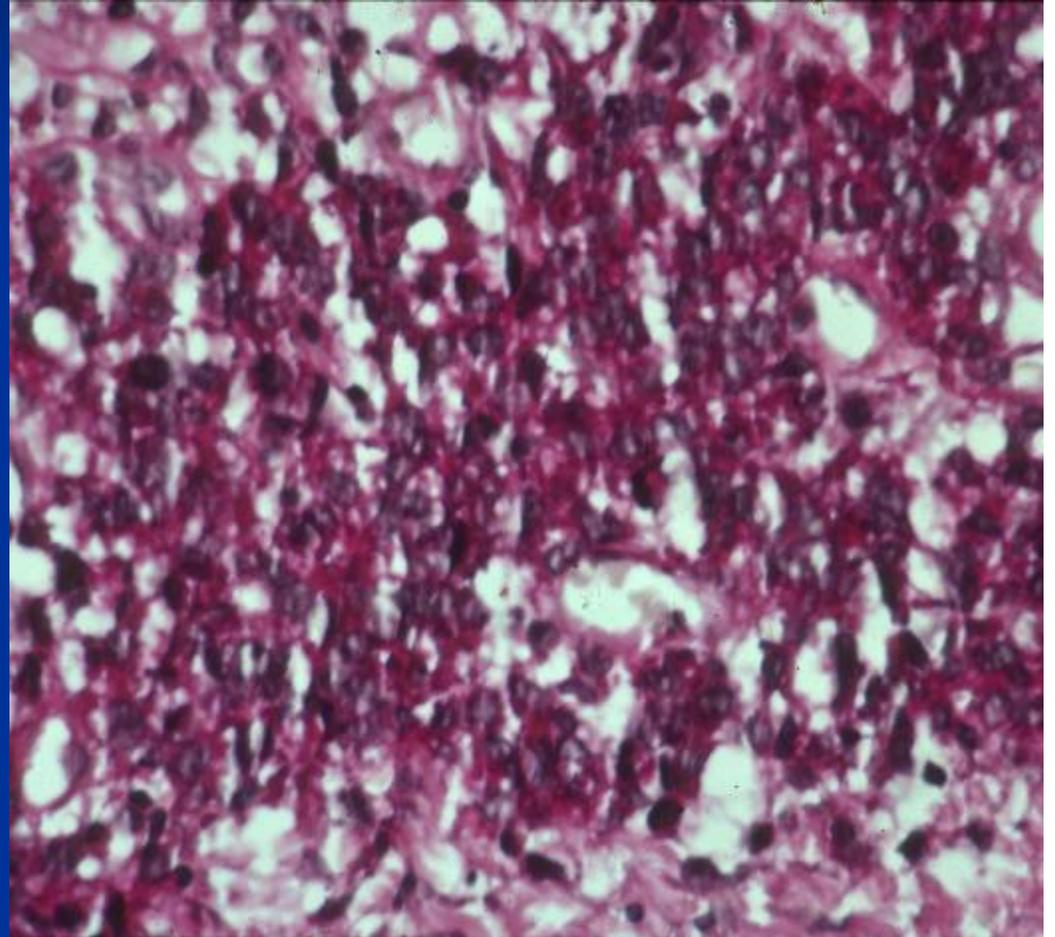
# Biopsy

- A biopsy was performed That showed a small round blue cell tumor.
- There was a monotonous, uniform collection of cells
- Hypercellularity
- There were no PMNs nor Eosinophils



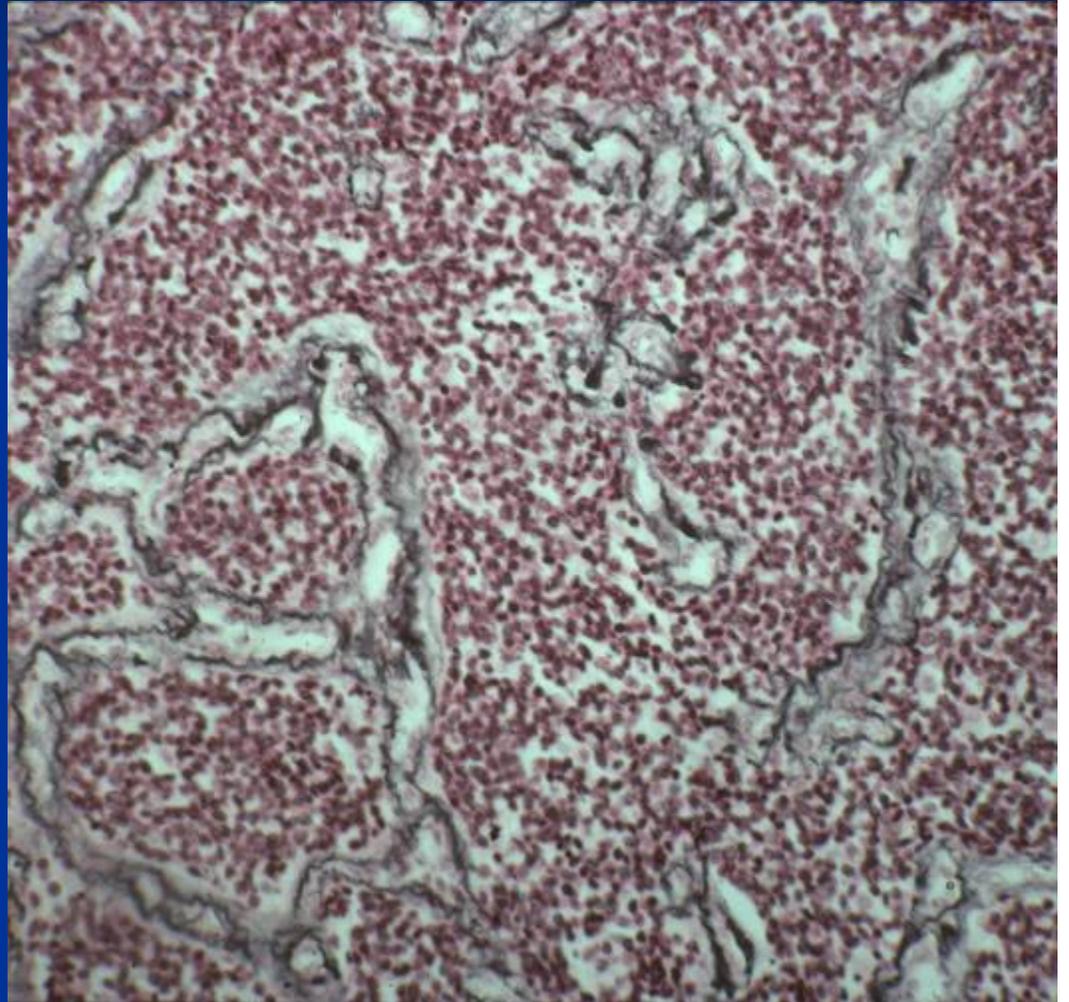
# Biopsy

- The lesion was heavily PAS Positive



# Biopsy

- The lesion stained poorly for reticulin



# Biopsy

- The lesion also demonstrated a T11;22 translocation

# Diagnosis

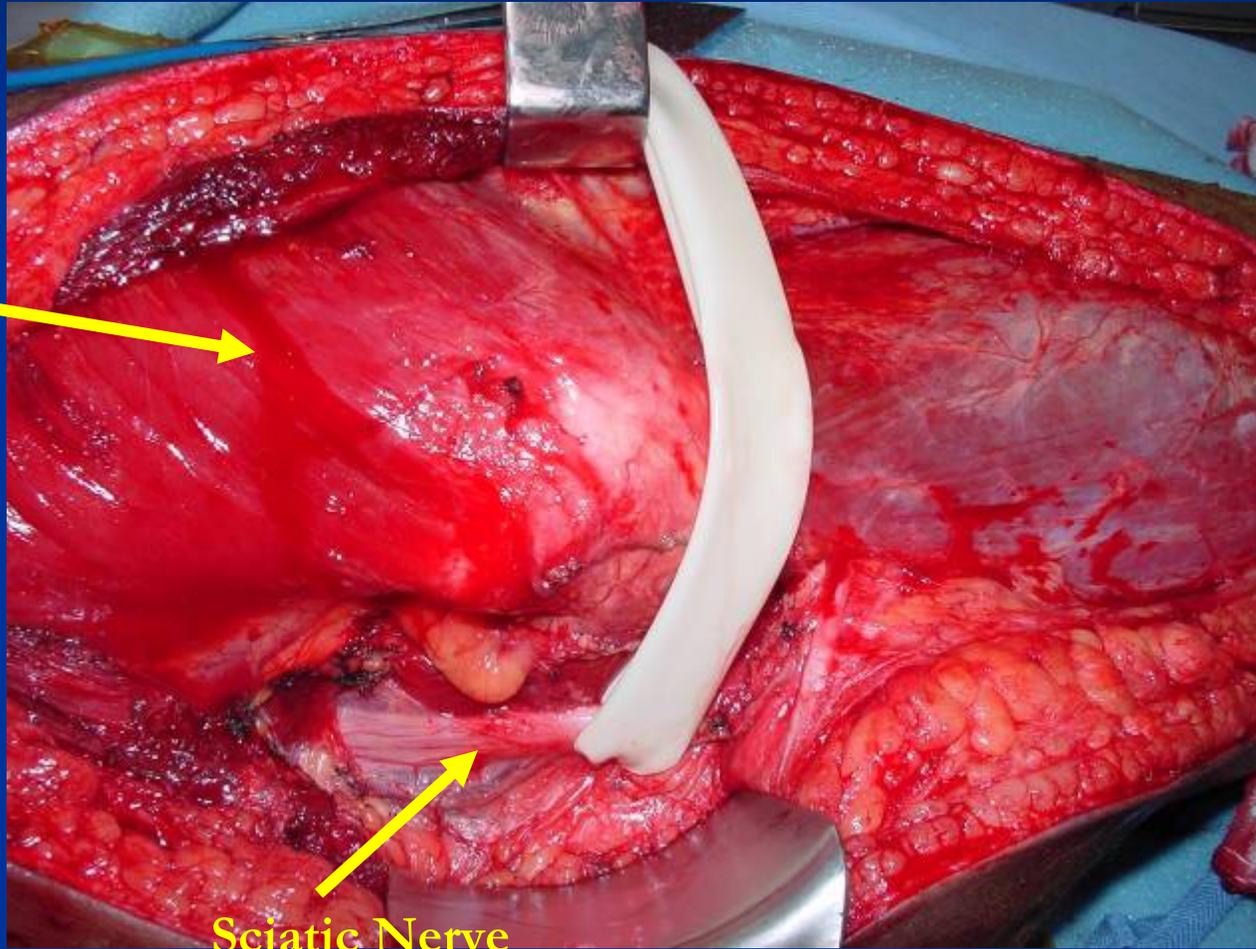
- The diagnosis was Ewing Sarcoma
- The patient underwent preoperative chemotherapy
- Surgically, the patient was treated with a radical resection of the proximal  $\frac{1}{2}$  of the femur and reconstructed with a special, modular segmental proximal femur tumor prosthesis. This also replaced the ball portion of the hip joint.
- The patient received more chemotherapy after surgery

# Incision



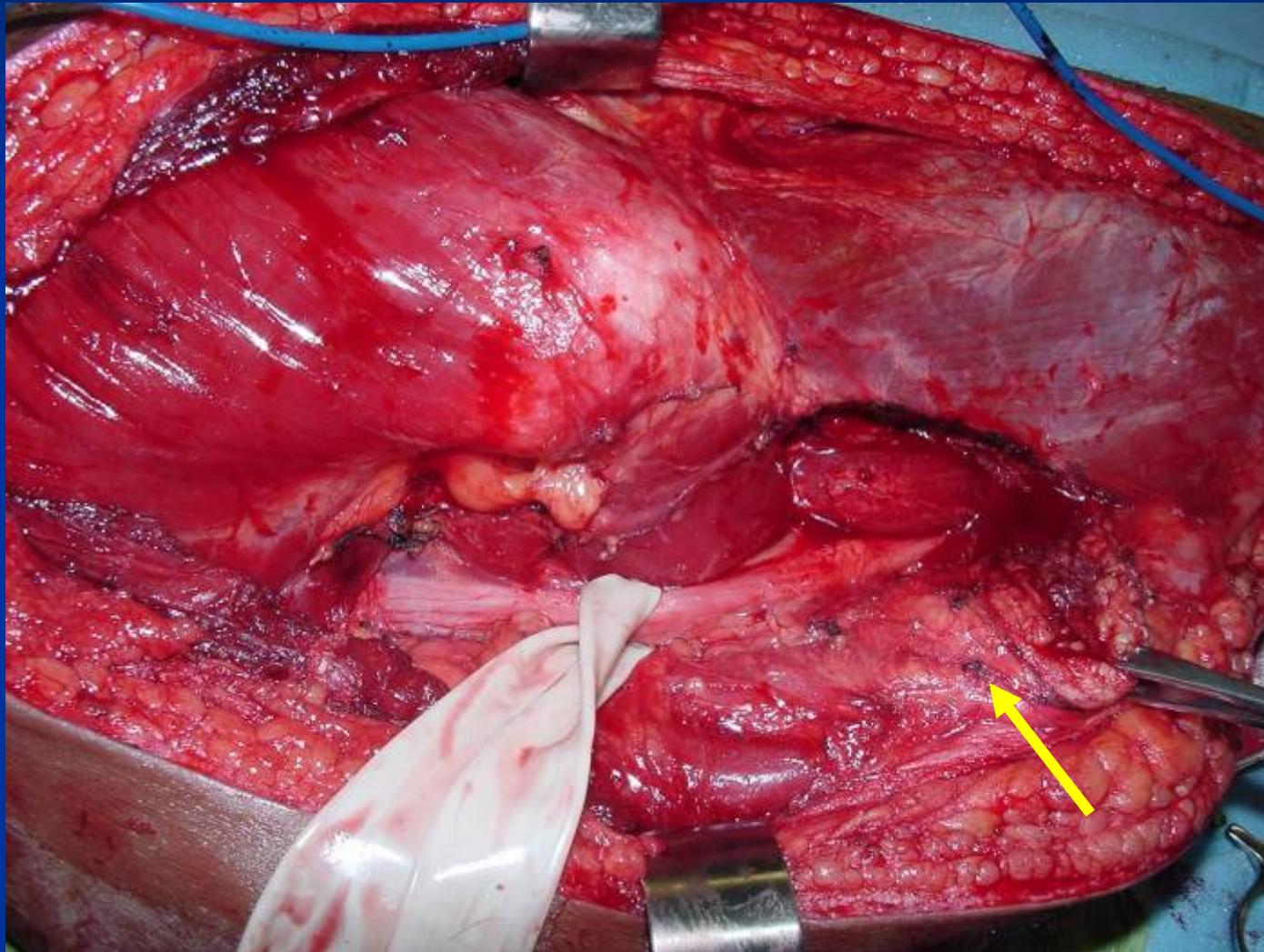
# Sciatic Nerve Dissection and Mobilization

Hip  
Abductor  
Muscles

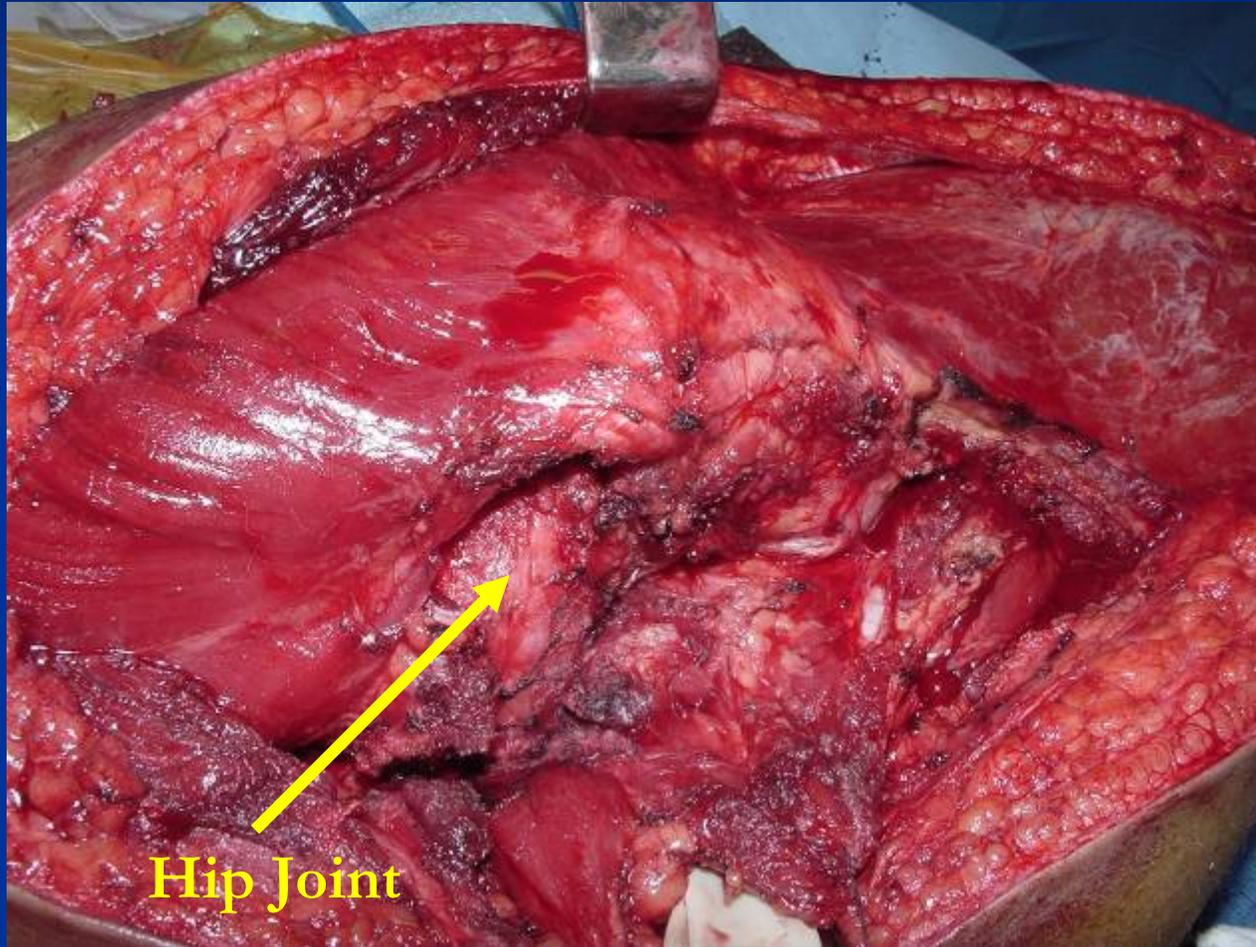


Sciatic Nerve

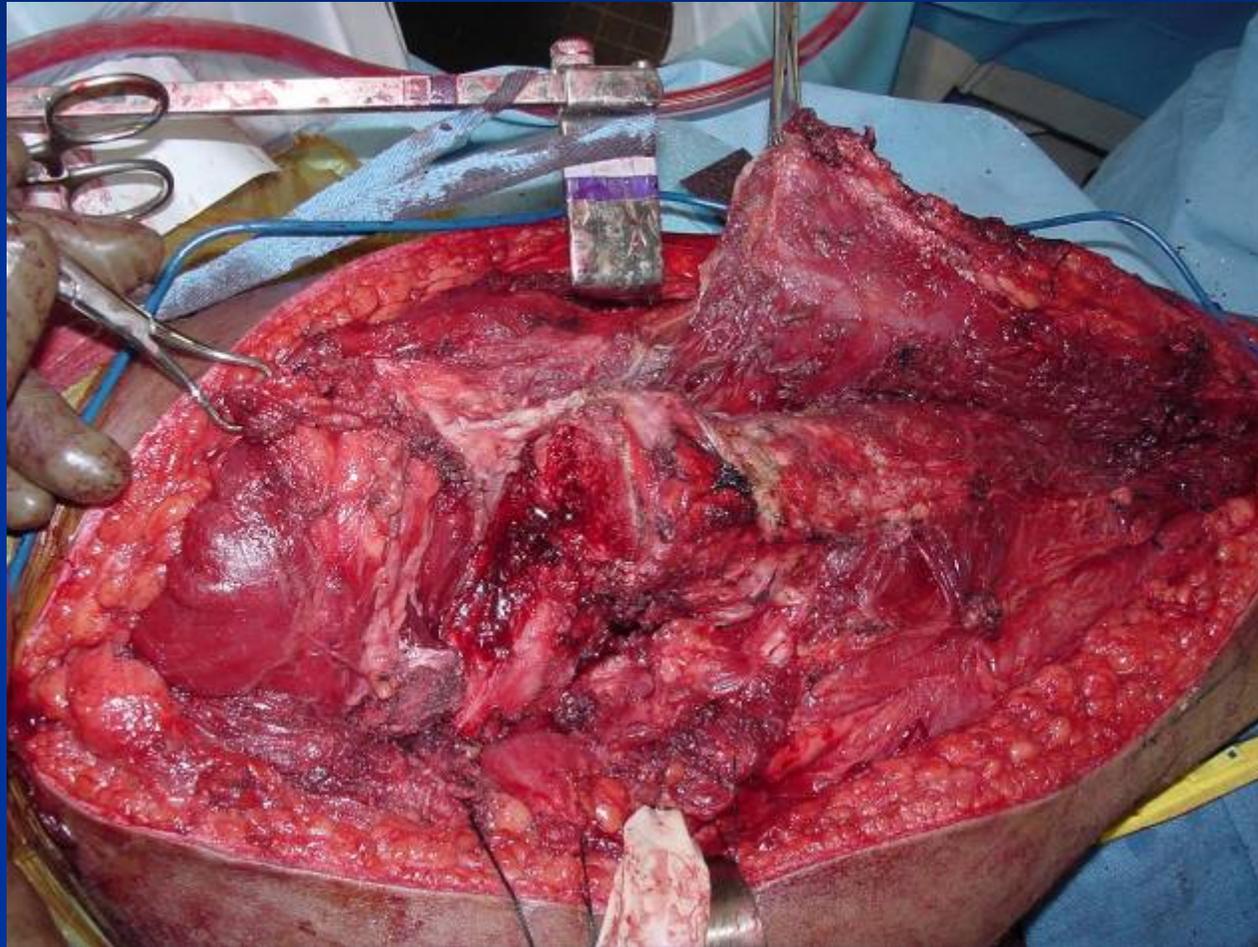
# Gluteus Maximus Released from Insertion on Femur



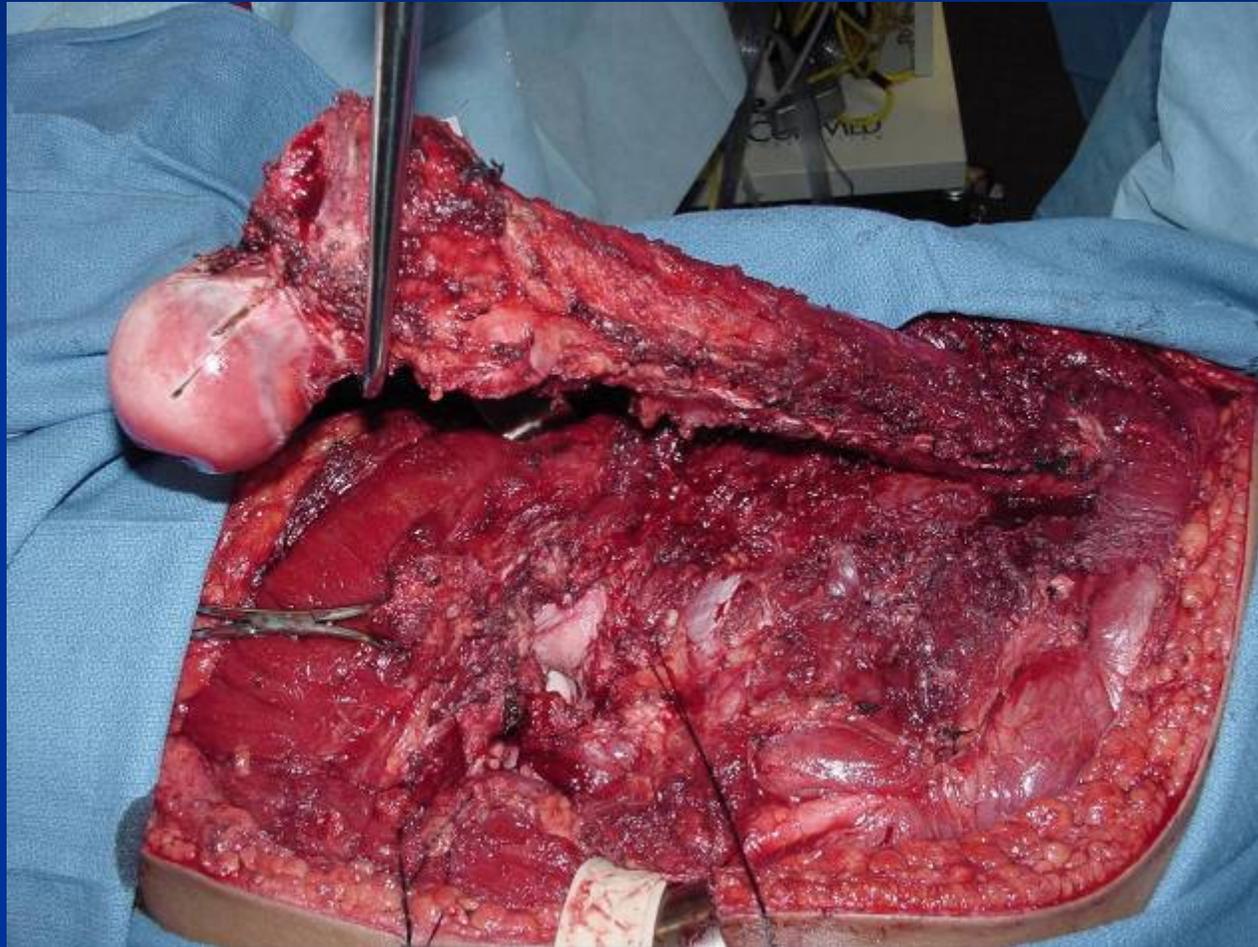
# Hip External Rotators Released



# Greater Trochanter released along with Vastus Lateralis



# Hip Capsule and Adductors Released; Femur Osteotomized



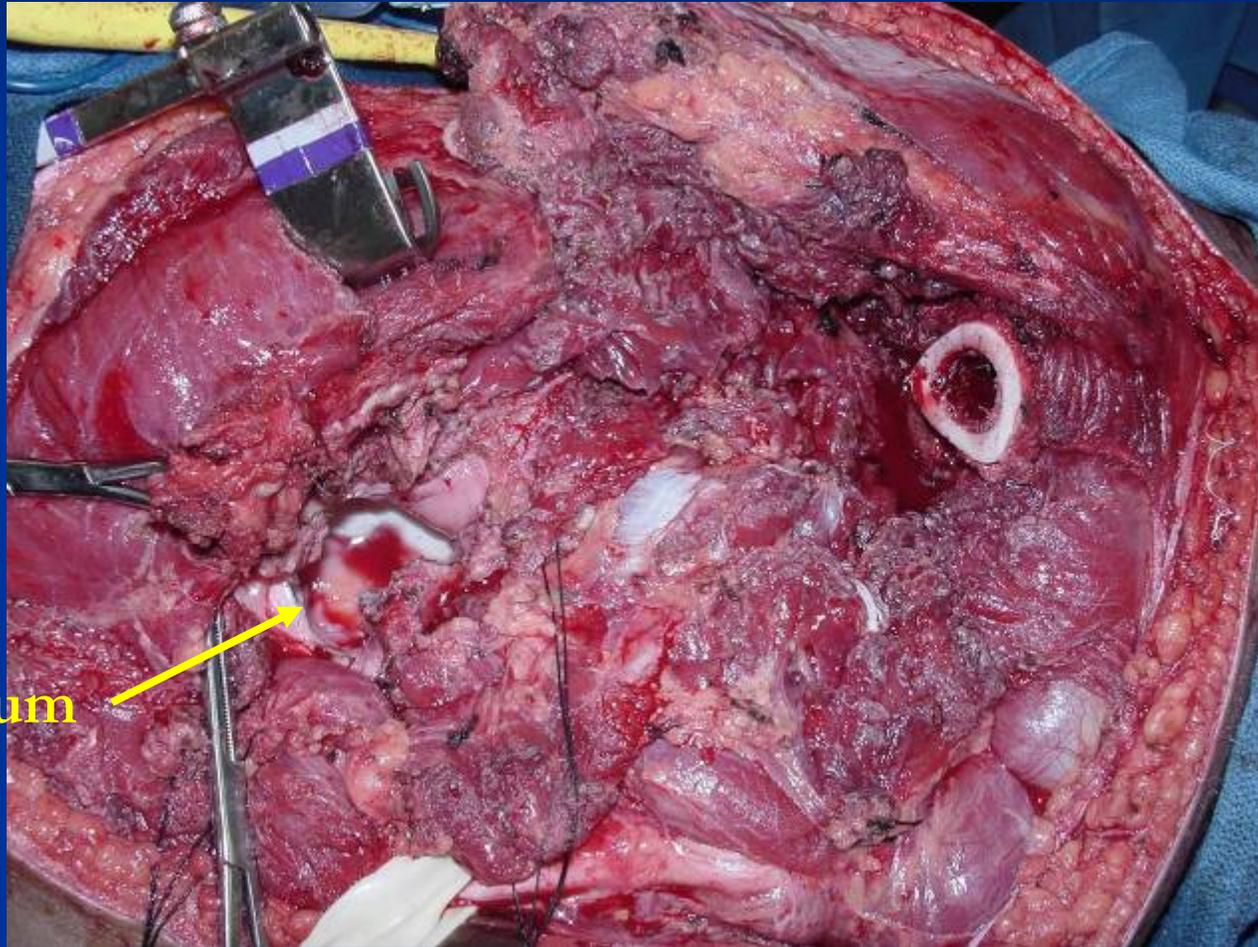
# Specimen: Anterior Aspect



# Specimen: Posterior Aspect

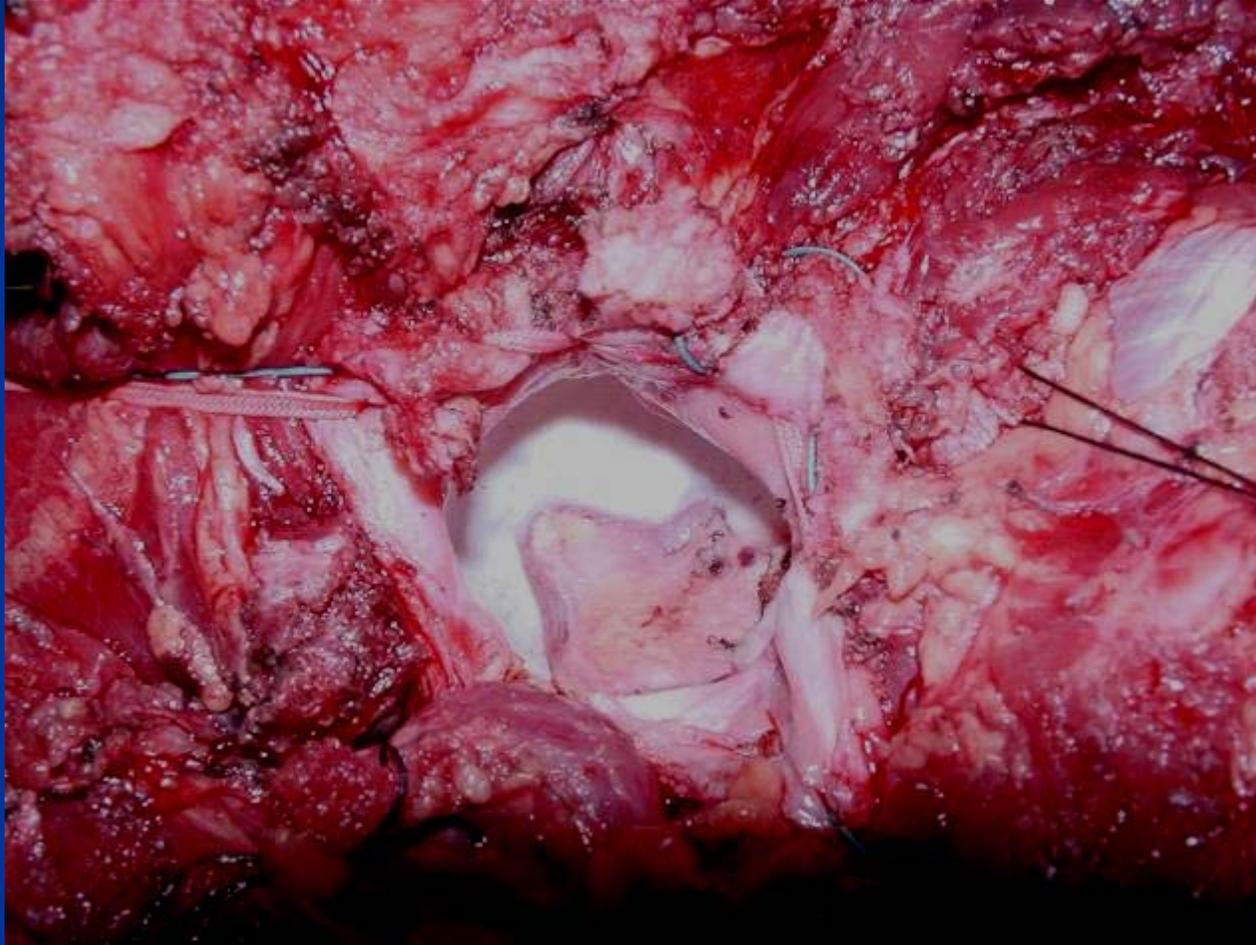


# Defect

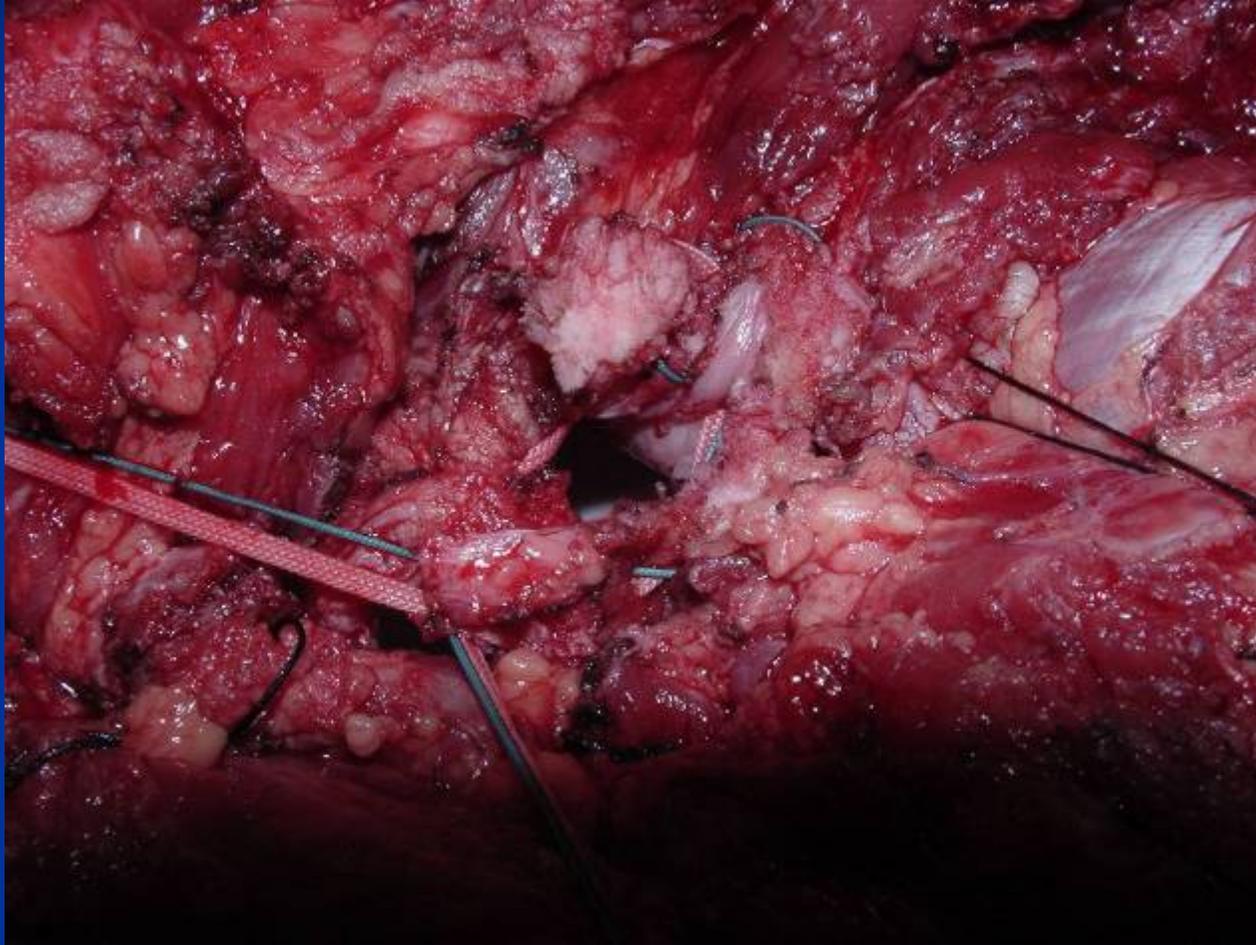


Acetabulum

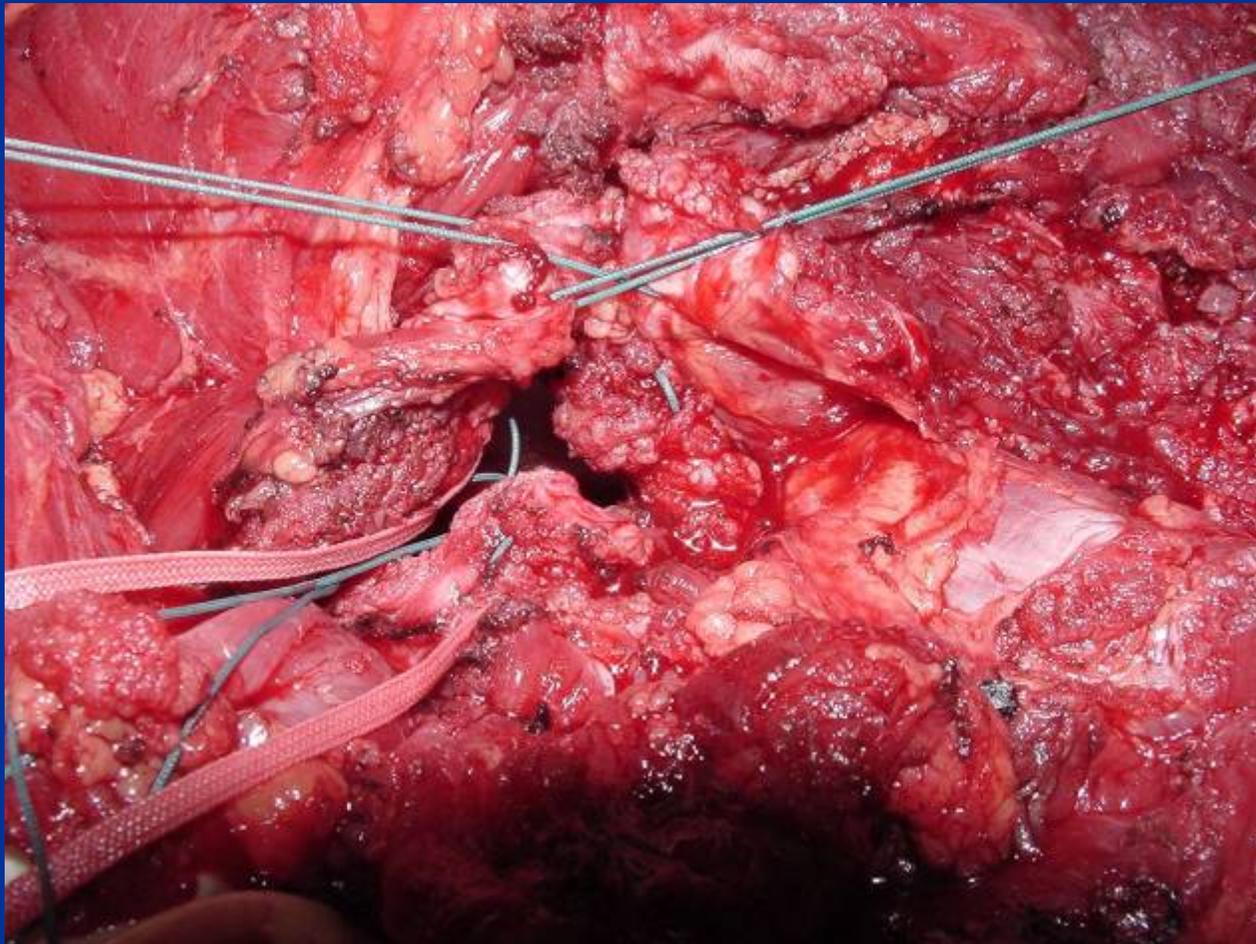
# Purse String Suture Through Hip Capsule



# Demonstrating How Capsule will Close



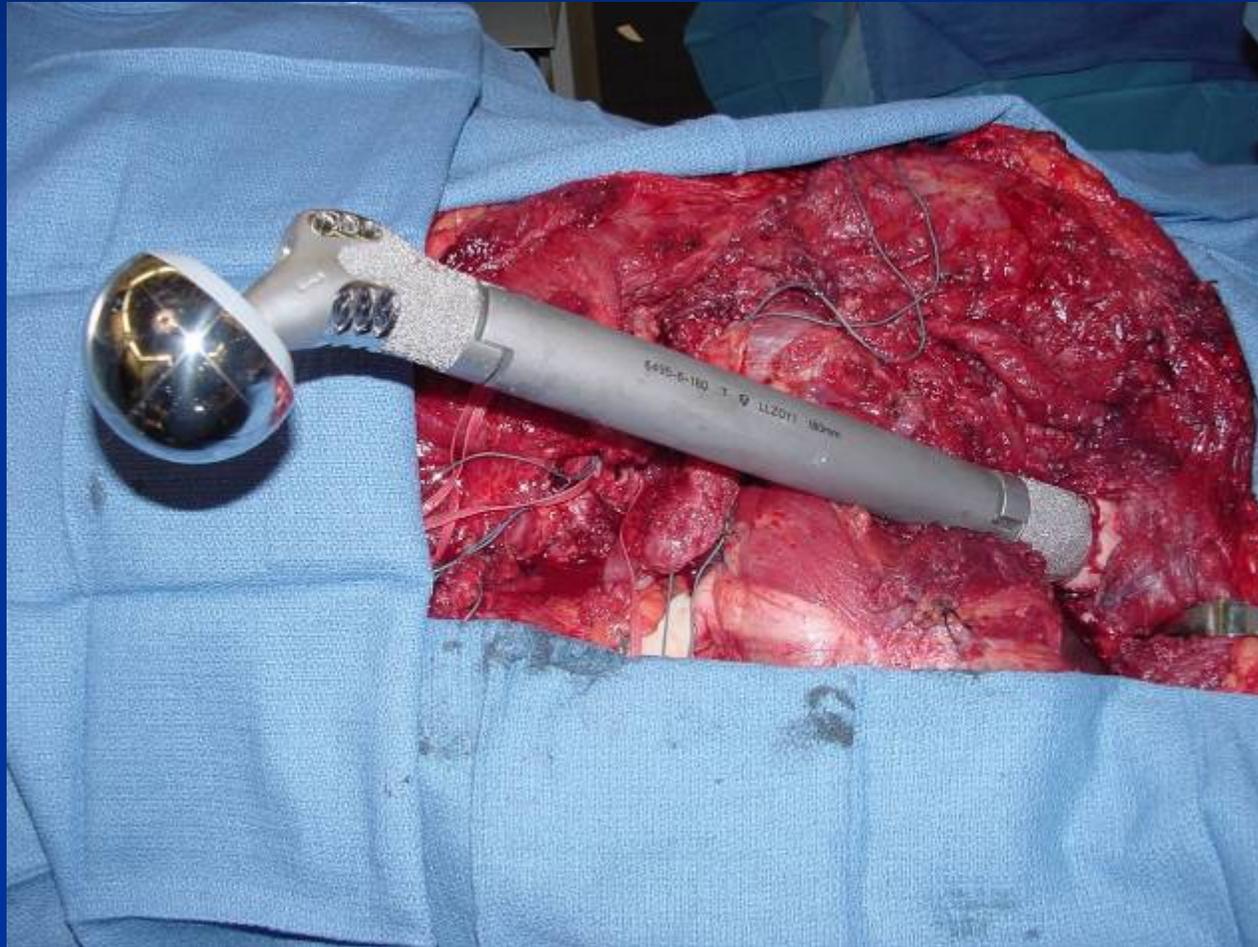
# Transfer of Psoas to External Rotators to Reinforce Hip Capsule: Prevent Dislocation



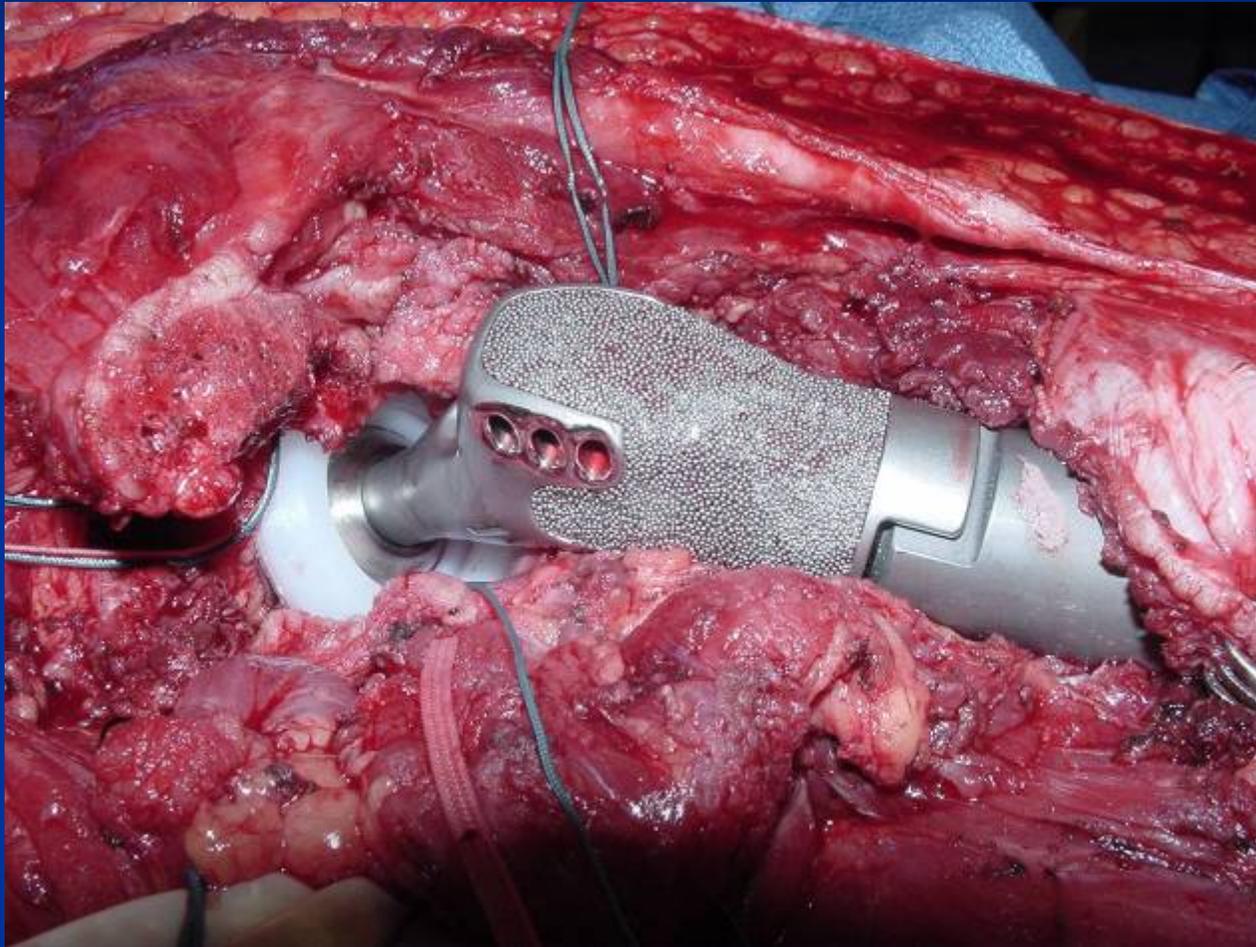
# Proximal Femur Tumor Prosthesis Bipolar Femoral Head Component



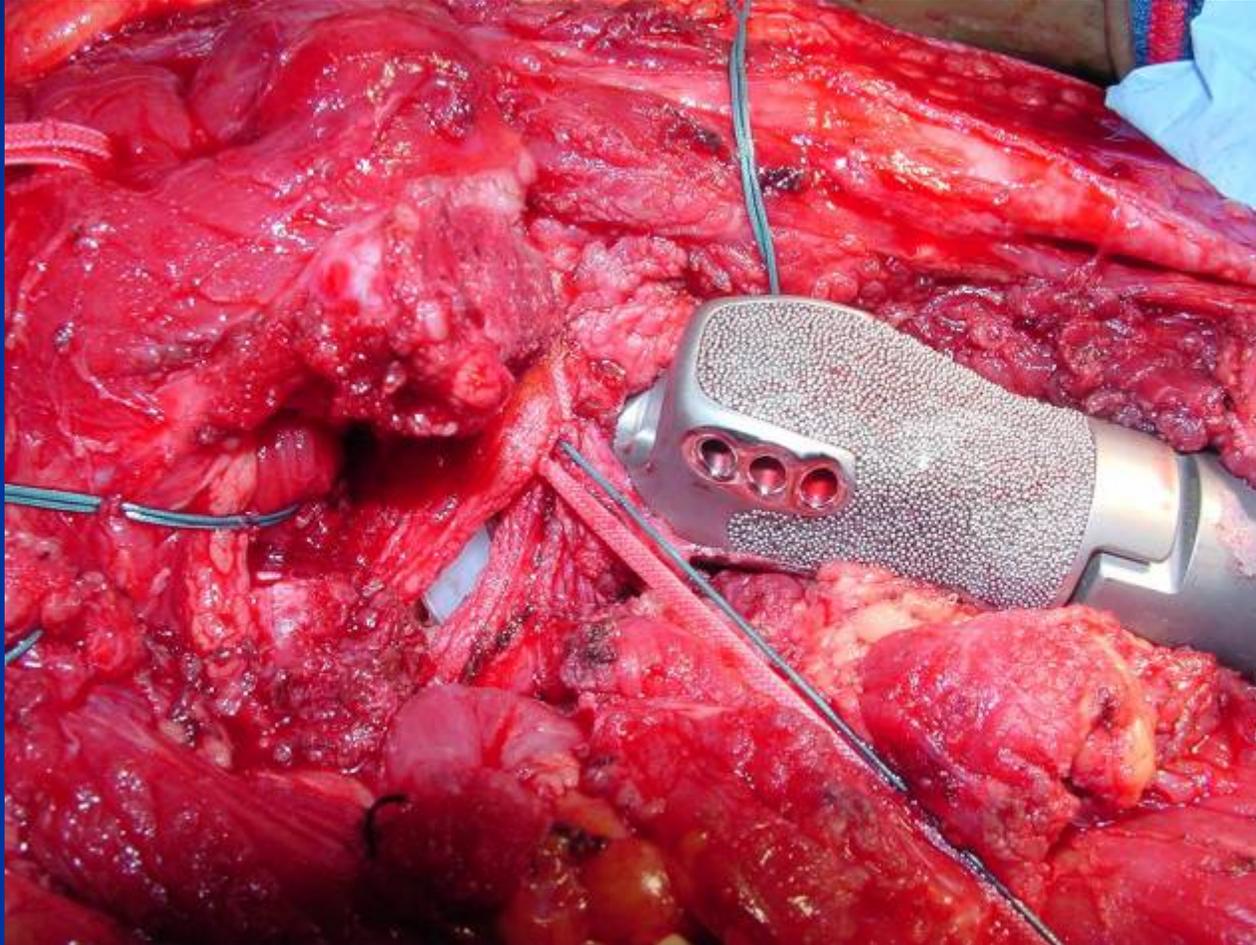
# Prosthesis Implanted



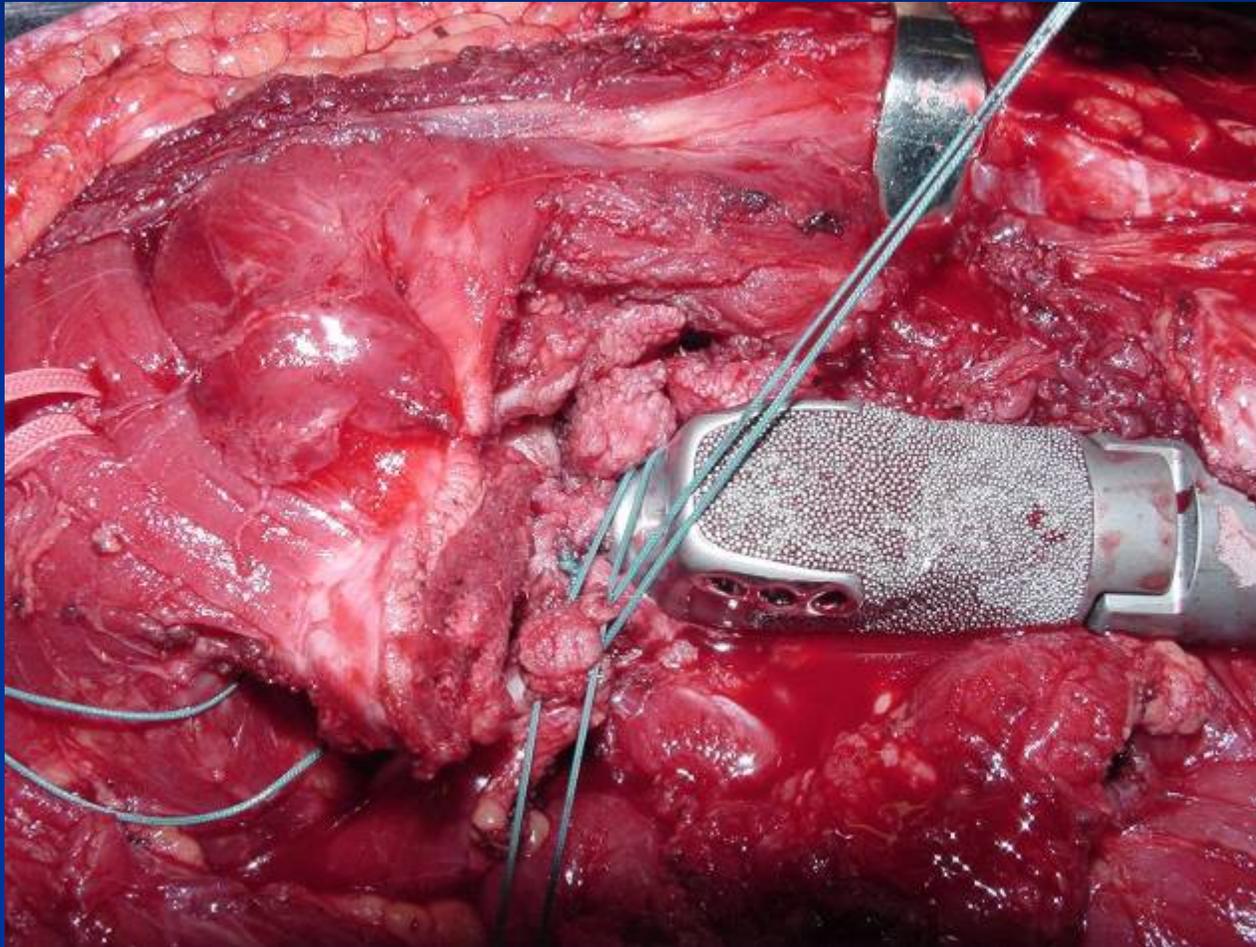
# Prosthesis Reduced into Acetabulum



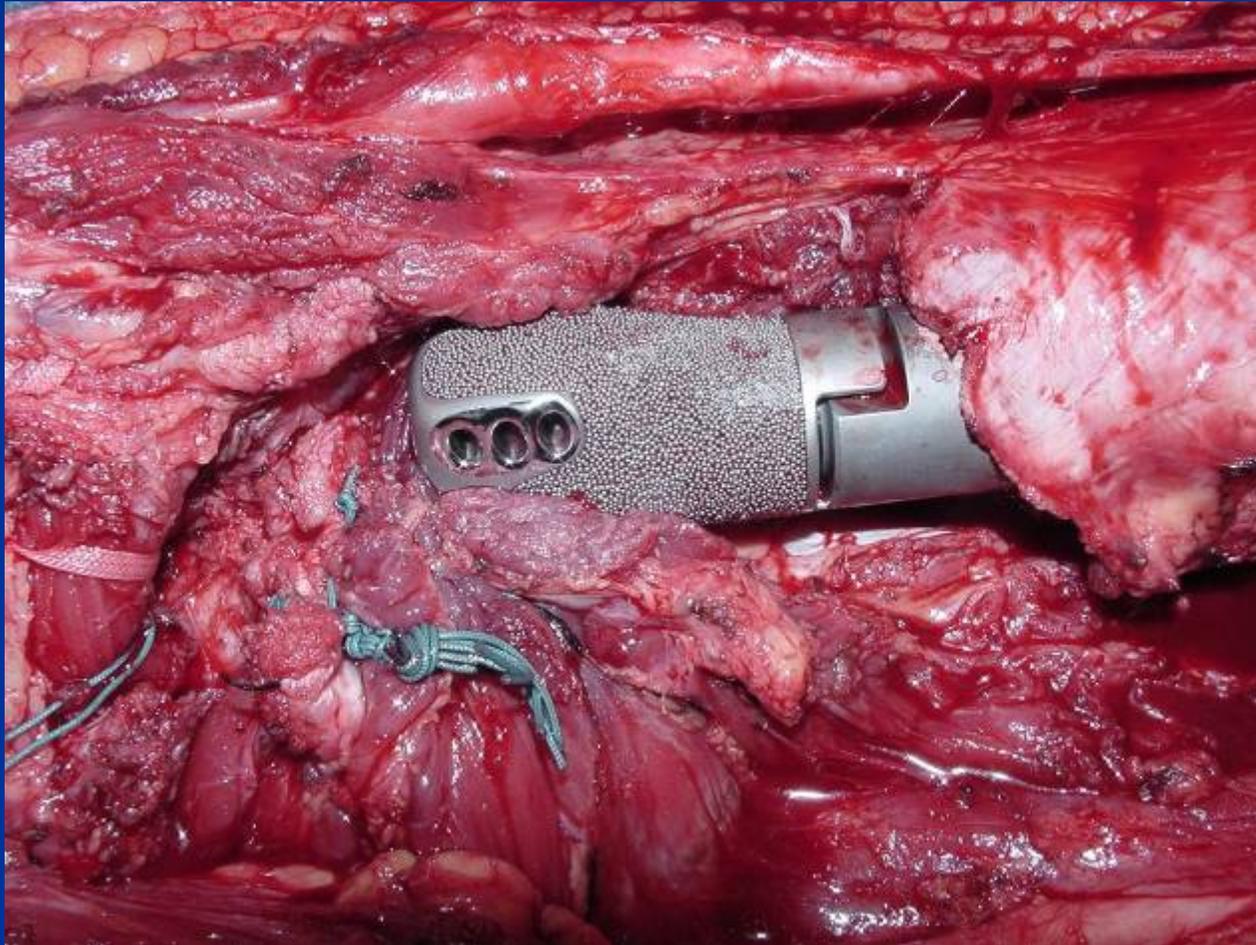
# Hip Capsule Closed



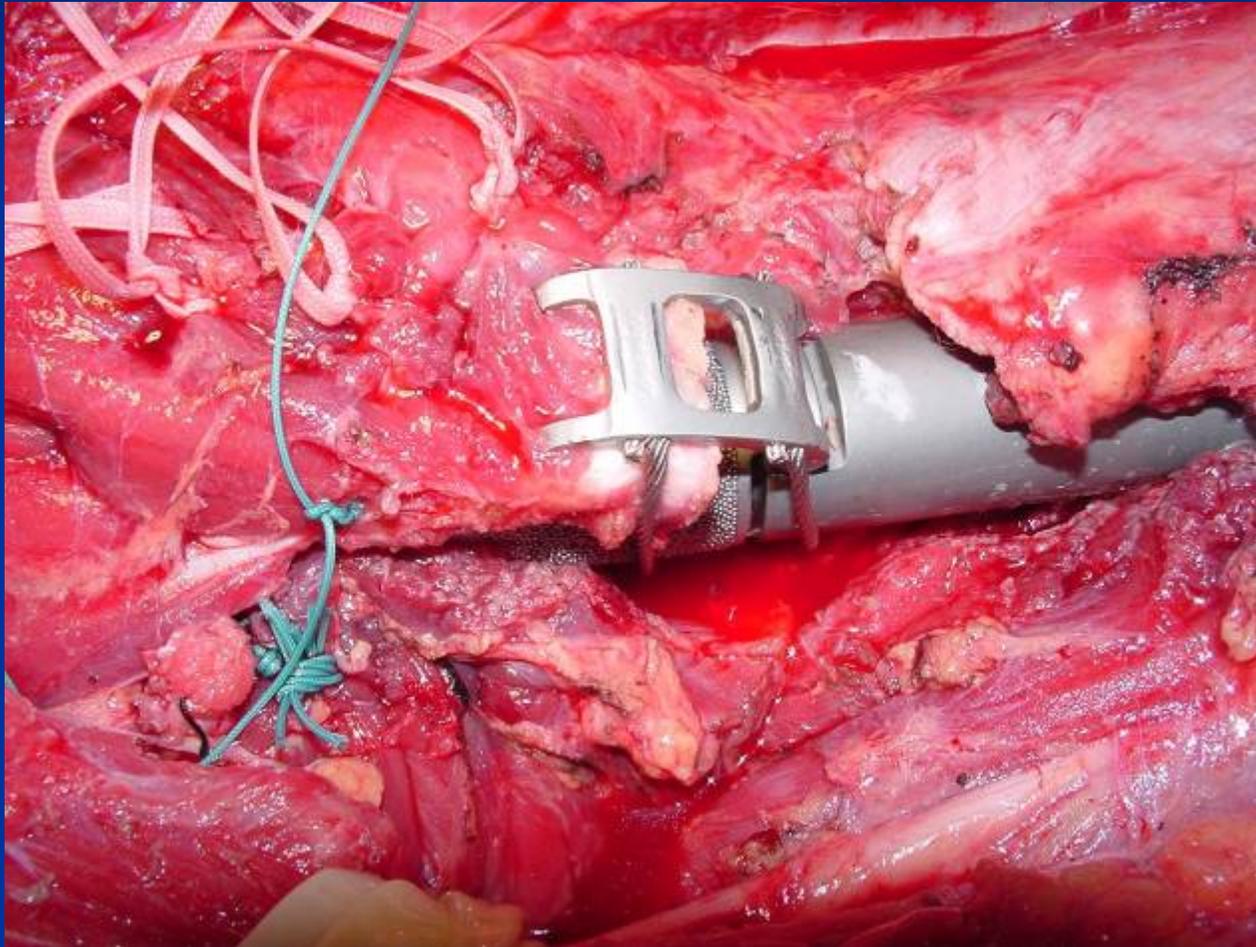
# Transfer of Psoas to External Rotators to Stabilize Prosthesis



# Quadratus Femoris Rotated to Reinforce Capsule and Prevent Dislocation



# Hip Abductors / Greater Trochanter Advanced and Repaired



# Gluteus Maximus Rotation Flap to Close Defect and Augment Hip Abductors



# Upper Portion of Prosthesis



# Lower Portion of Prosthesis Cemented into Medullary Canal

