Ewing’s Sarcoma of Proximal Femur and Hip

James C. Wittig, MD
Associate Professor of Orthopedic Surgery
Chief, Orthopedic Oncology
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 demonstrated a permeative lesion of the right proximal femur with slight sclerosis.

The lesion was barely perceptible on the X-ray.
The CT scan demonstrated a permeative lesion through the proximal ½ of the femur.

- The cortex was mildly thickened and expanded (arrow).
- There was no soft tissue component.
Lesion
The T1 weighted MRI demonstrated a permeative lesion involving the upper ½ 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.
Hip Involvement
T2 Weighted MRI

- The T2 weighted image demonstrates significant edema (bright signal)
- There was no soft tissue component associated with the tumor
The differential diagnosis based on the radiographic studies included:

- Infection/Osteomyelitis
- Eosinophilic Granuloma
- Ewing Sarcoma
- Lymphoma
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.
The lesion was heavily PAS Positive
Biopsy

- The lesion stained poorly for reticulin
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 ½ 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

Hip Joint
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