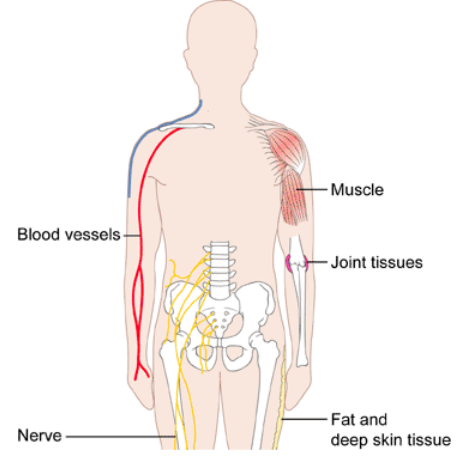




Yumuşak Doku Tümörlerinde Klinik ve Radyolojik Özellikler

Doç. Dr. Seyit Ali Gümüştaş

Klinik

- **Şişlik**

- **Derin**/Yüzeyel

- **Sert**/Yumuşak

- Küçük/**Büyük**

- Hareketli/**Hareketsiz**

- Sabit/**Büyüyen**

- **Ağrı**

- Var/Yok

Klinik

Table 1 The frequency of clinical features by diagnosis

	Sample total	Feature	Malignant	Benign
Size	526	5 cm	222	93
		<5 cm	53	158
Pain	470	Present	91	50
		Absent	132	197
Change in size	470	Increasing	141	44
		Static	82	203
Depth	470	Deep	209	171
		Superficial	14	76

Clinical features of soft tissue sarcomas

Charles JD Johnson, Paul B Pynsent, Robert J Grimer

KARAKTERİSTİK ÖZELLİKLER

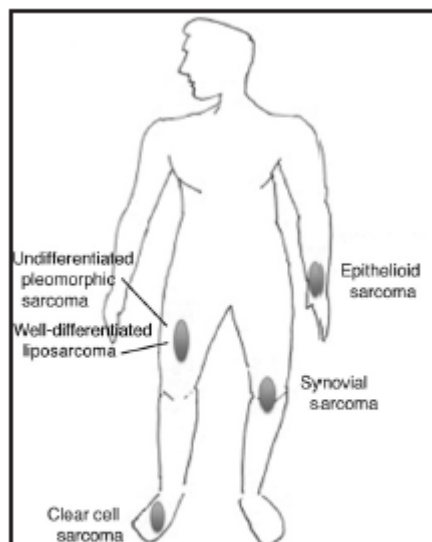


Table 1. Differentiating Characteristics of Soft Tissue Sarcomas

Characteristics	Tumors
Age, year	
<10	Rhabdomyosarcoma
20–40	Clear cell sarcoma, epithelioid sarcoma, and synovial sarcoma
>40	Liposarcoma, leiomyosarcoma, and undifferentiated pleomorphic sarcoma
Around tendons and aponeuroses	Synovial sarcoma, clear cell sarcoma, and epithelioid sarcoma
Lymph node metastases	Synovial sarcoma, epithelioid sarcoma, clear cell sarcoma, and rhabdomyosarcoma
Superficial soft tissues	Myxofibrosarcoma and angiosarcoma
Calcifications	Undifferentiated pleomorphic sarcoma, well-differentiated liposarcoma, extraskeletal osteosarcoma, and synovial sarcoma
Prominent vascular channels	Angiosarcoma, epithelioid hemangioendothelioma, and alveolar soft part sarcoma
Clinical history	
Prior radiation/trauma	Extraskeletal osteosarcoma
Prior radiation/chronic lymphedema	Angiosarcoma

Figure 1. Frequent sites of occurrence of common soft tissue sarcomas in the extremities.

Imaging of Soft Tissue Sarcomas

Roopa Ram, MD, Tarun Pandey, MD, Richard Nicholas, MD, and Kedar Jambhekar, MD

After participating in this activity, the radiologist should be better able to evaluate the usual sites of involvement, possible risk factors, and imaging features, particularly on MRI, of soft tissue sarcomas.

Görüntüleme

- XR
- USG
- BT
- MR
- PET-CT

XR-Kalsifikasyon

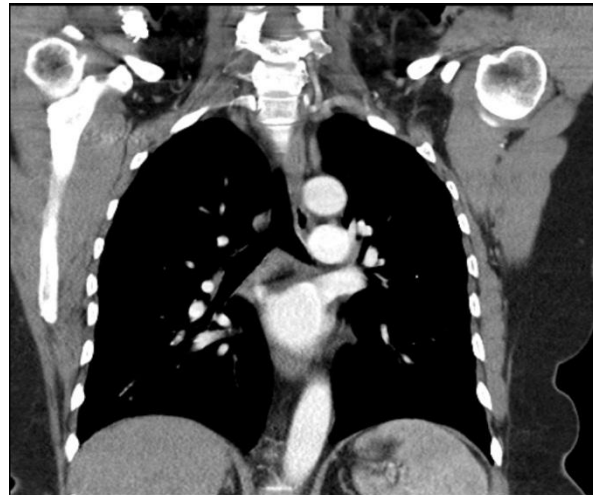
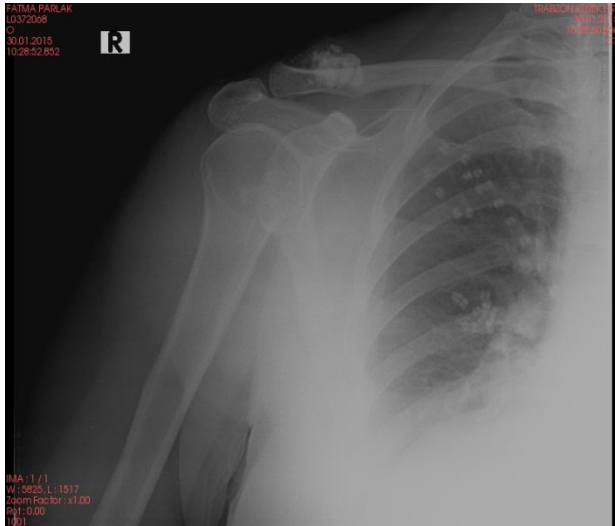
Benign

- Lipom (dejenere)
- Hemanjiom (flebolit)
- M.Ossifikans
- Gout tofus
- Schwannom
- Bursa
- Tümoral kalsinozis
- Snovyal kondromatozis (ekstraartiküler olabilir)

Malign

- Snovyal sarkom
- Ekstraskeletal OS/ES/KS
- Malign periferik sinir kılıfı tümörü

AMORF KALSİFİKASYON



HEMANGIOMA

HETEROTOPIK OSSİFİKASYON

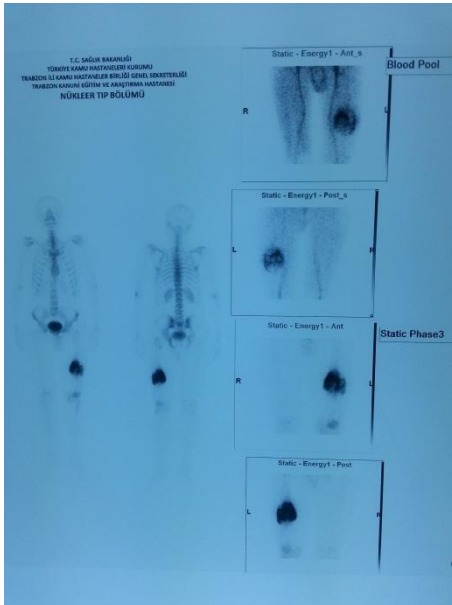
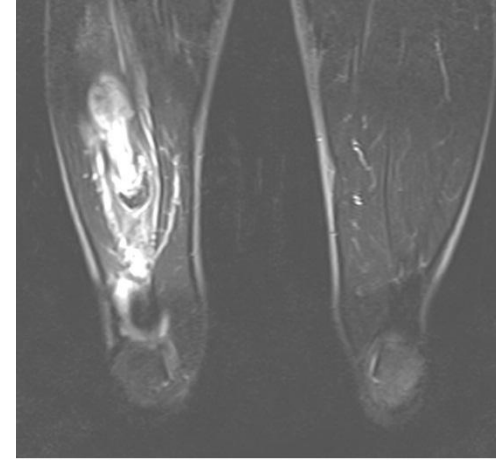
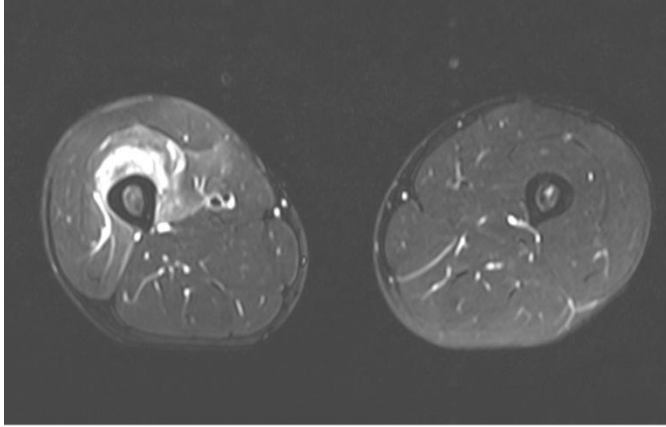


Fig. 1. Use of radiography in assessment of soft-tissue masses of the extremities. A,B: Hemangioma on frontal radiography (A) and coronal post-contrast MRI (B) of the right forearm. Radiograph shows multiple well-defined calcifications (arrowheads) in the interosseous space. Well-defined remodeling of the cortex of the distal radius (arrows) suggests an indolent process. MRI, which was obtained prior to radiography, showed a heterogeneously enhancing soft tissue mass at this location (*) with associated erosion and intramedullary extension (arrows) in the radius and ulna, that was concerning for a malignant neoplasm. Note that calcifications are not well seen on MRI. C–E: Heterotopic ossification (“myositis ossificans”) in a different patient. C: Frontal radiograph of the left hip shows a well-defined, peripherally mineralized structure (*) medial to the lesser trochanter. D: CT shows a mass (*) in the adductor magnus muscle and confirms the peripheral pattern of mineralization. E) Contrast-enhanced axial MRI shows an enhancing mass (*) in the adductor magnus muscle with ill-defined enhancement extending to the adjacent muscles of the adductor compartment.

Contemporary Imaging of Soft Tissue Sarcomas

BEHRANG AMINI, MD, PhD,¹ AARON C. JESSOP, MD, MBA,¹ DHAKSHINA M. GANESHAN, MD,¹
WILLIAM W. TSENG, MD,^{2,3} AND JOHN E. MADEWELL, MD¹

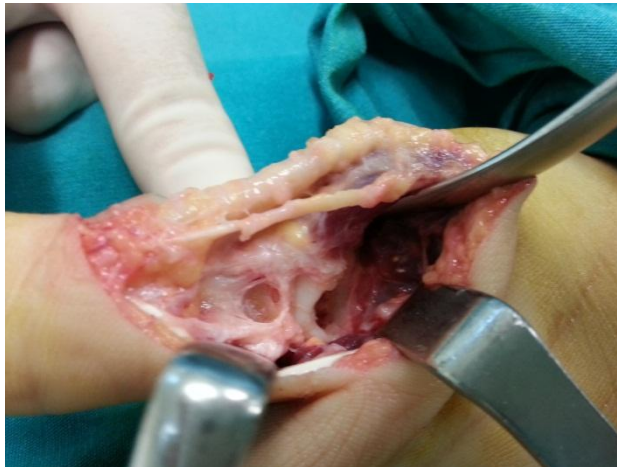
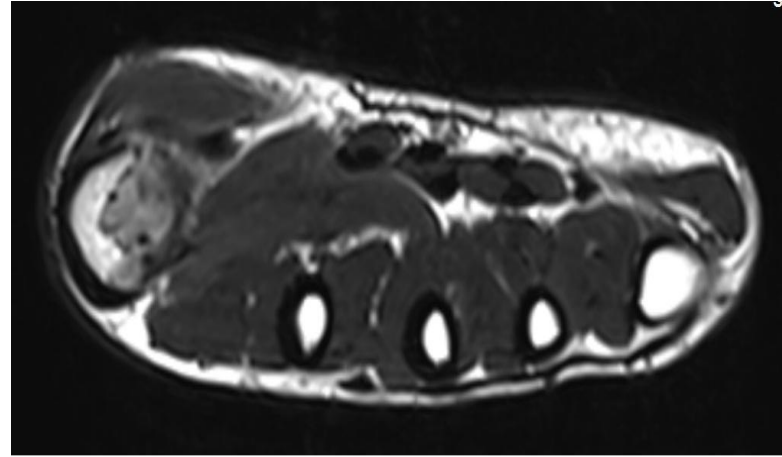
HETEROTOPIK OSSİFİKASYON



XR-Kemik invazyonu

- Gout
- Desmoid tümör
- PVNS/DHTT
- Vasküler tümörler (Glomus dahil)
- Leiomyosarkom
- Clear cell sarkom
- Snovyal sarkom
- Ewing sarkom

DHTT



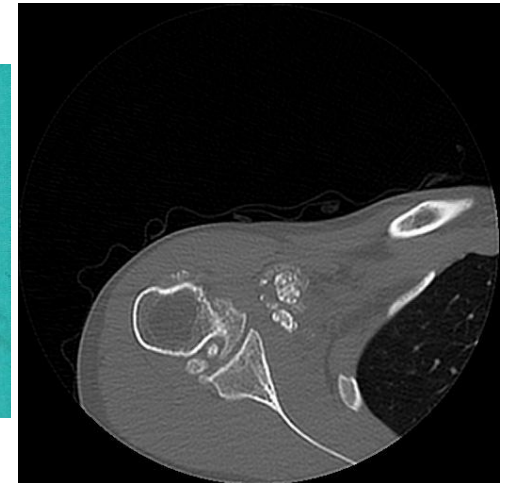
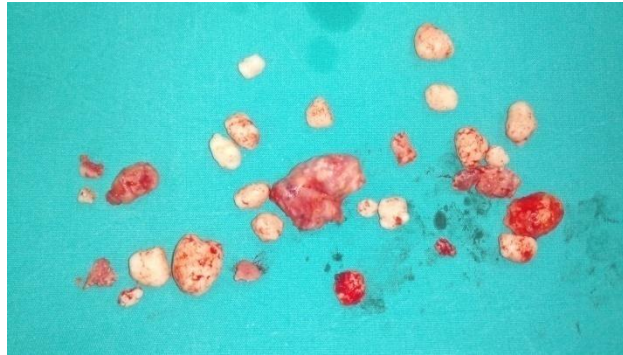
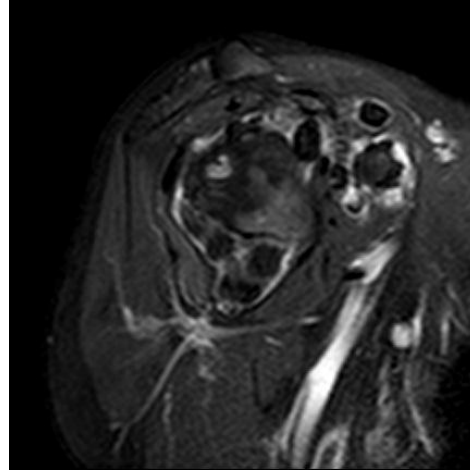
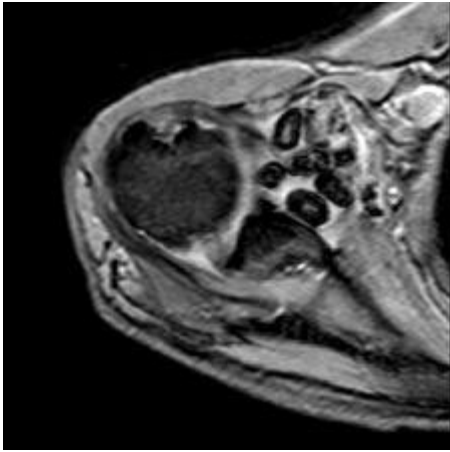
USG

- Lipom
- Ganglion
- Hematom

BT

- MRI çekilemediği durumlarda (kalp kapak ameliyatı, stent vs)
- Tarama: Toraks/Batın/Pelvis
- Snovyal kondromatozis

SNOVYAL KONDROMATOZİS



MRI

- Altın standart
- Rutin kontrastlı
- Tarama: Tüm vucüt (Miksoïd liposarkom)

MRI

- Lokalizasyon
- Boyut
- İçerik
- Sınırlar
- Nörovasküler invazyon
- Nüks/rezidü tümör varlığı
- Adjuvan tedaviye yanıt. (Nekroz ve hemorajiye bağlı boyut artabilir)

MAJOR NV YAPILARIN TUTULMASI

Figure 18. Tumor encasement of a critical structure. (a) Axial T2-weighted fat-saturated MR image shows a rhabdomyosarcoma in the right thigh. The tumor encases the sciatic nerve (arrow) and abuts distal superficial femoral vessels. (b) Photograph of the pathologic specimen shows the tumor surrounding the sciatic nerve (arrow).

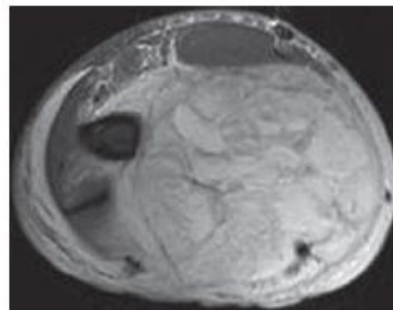
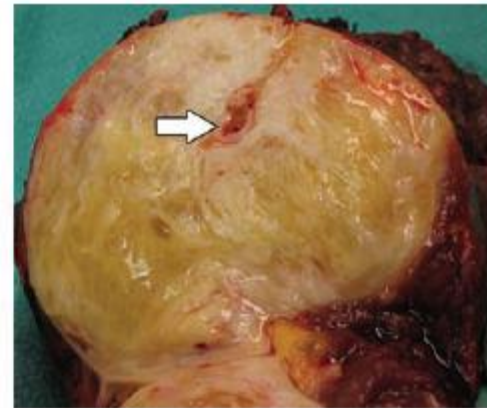


Figure 19. Sarcoma with vascular and neural involvement. Axial T2-weighted fat-saturated MR image shows a high-signal-intensity undifferentiated soft-tissue sarcoma involving the anterior and posterior compartments of the upper arm. The lesion abuts the humeral cortex and involves the brachial vessels and the median and ulnar nerves. Limb salvage could not be performed, and the patient was treated with shoulder disarticulation.





MRI

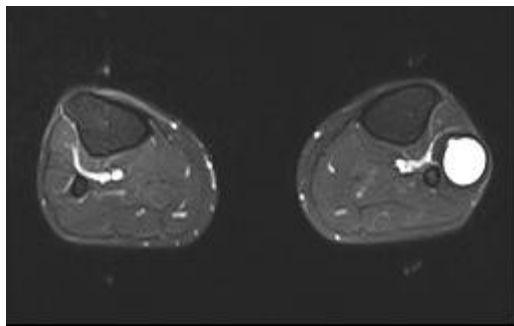
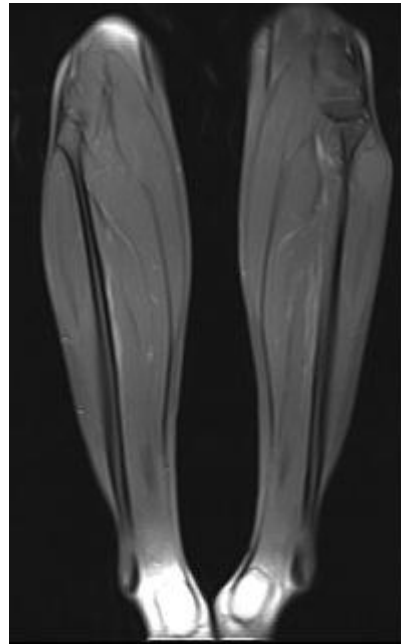
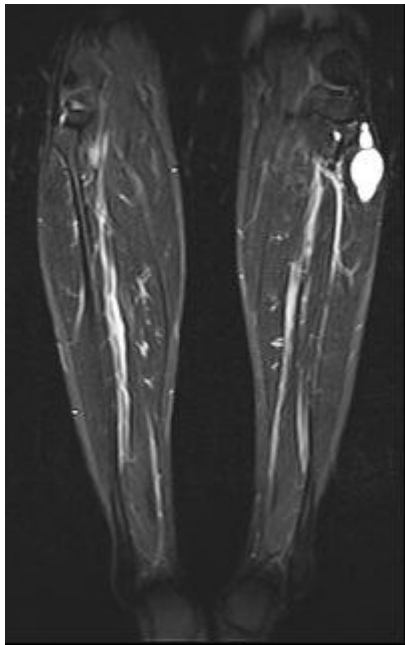
- Malign tümörler
 - **T1:** Hipointens
 - **T2:** Hiperintens

MRI

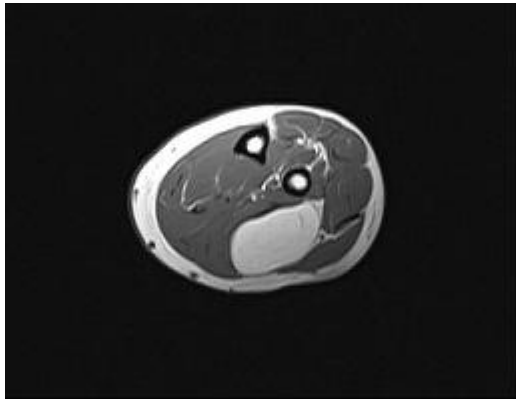
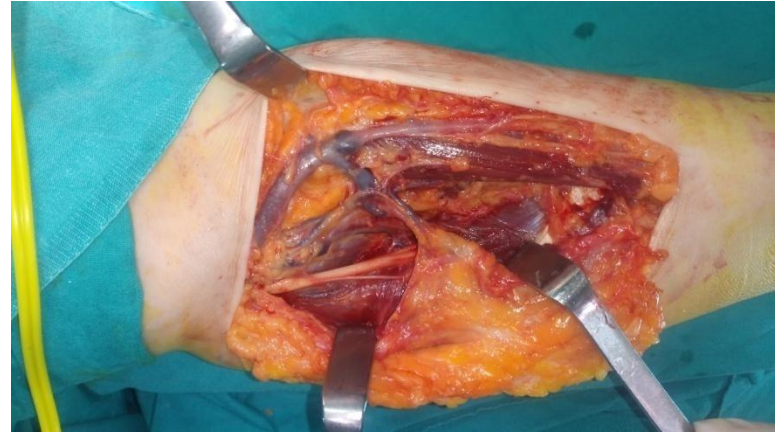
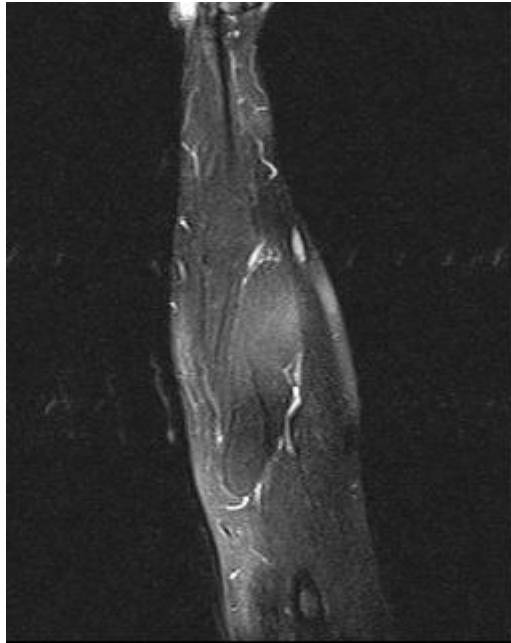
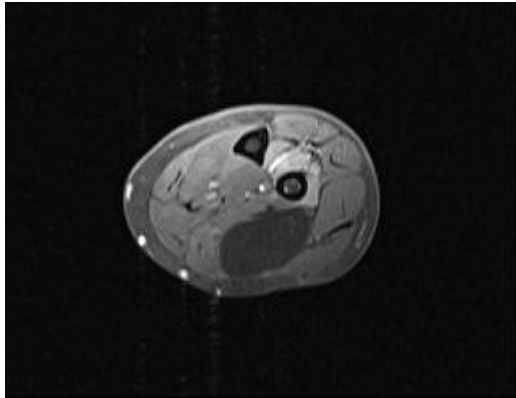
- **T1 Hiperintens**

- Lipom
- Hemanjiom
- Hematom
- Ganglion
- H.Ossifikasyon (matür)

GANGLION KİSTİ



LIPOM

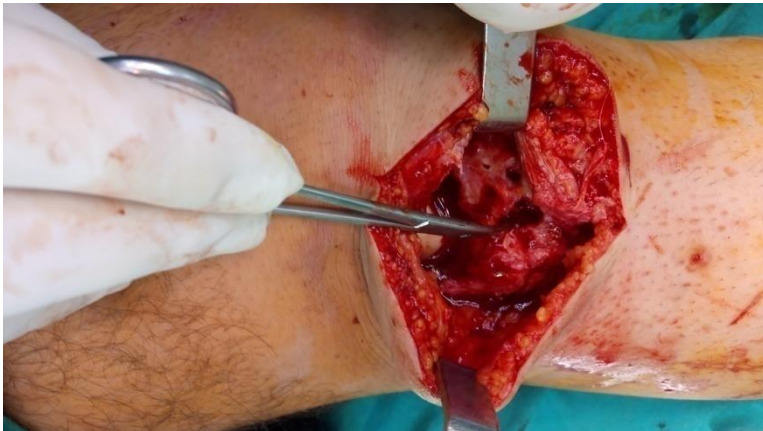
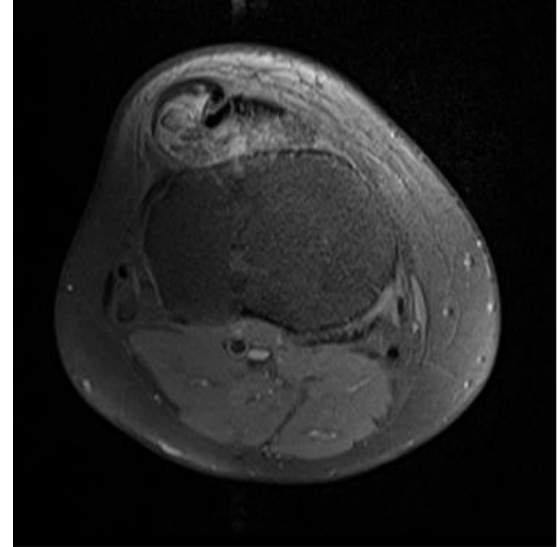
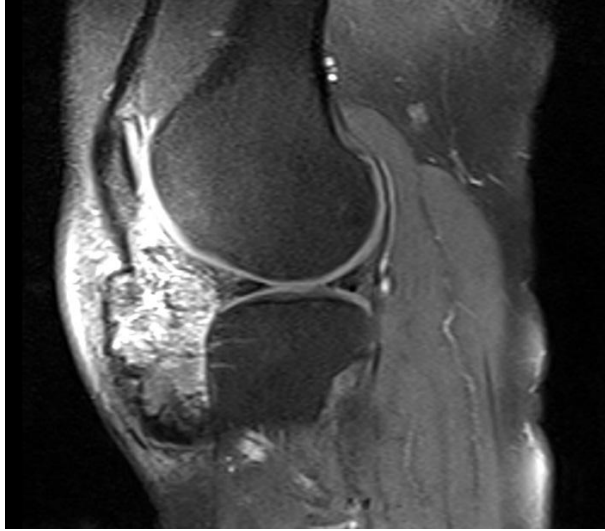


MRI

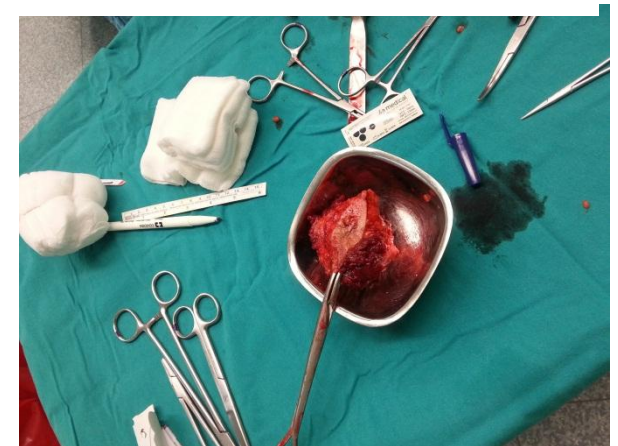
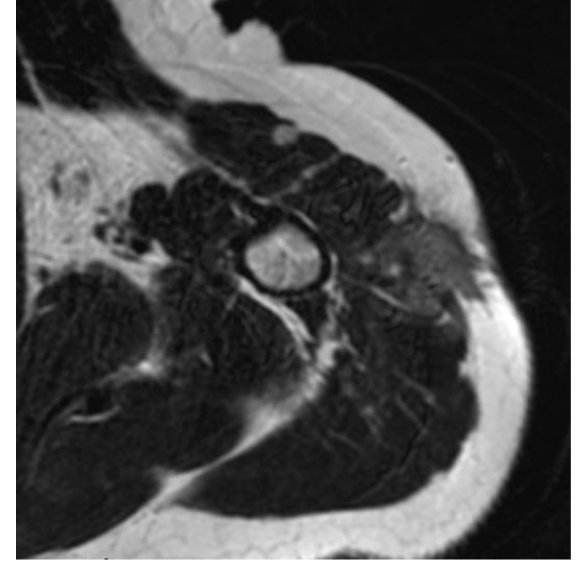
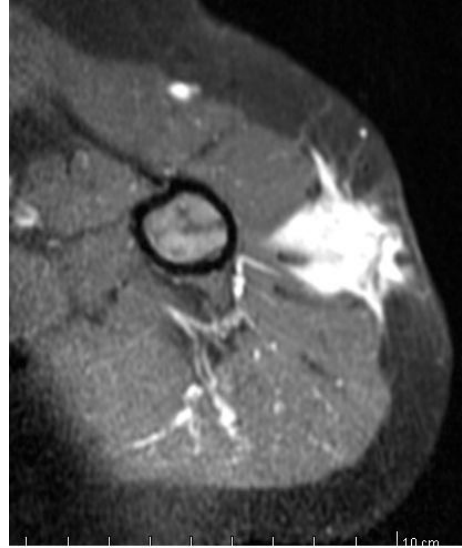
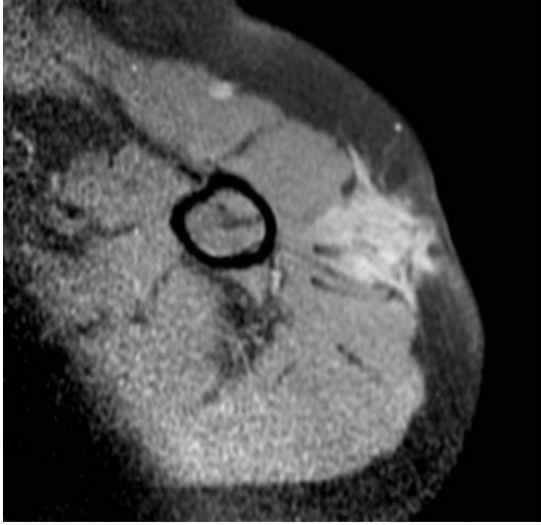
- **T2 Hipointens**

- Fibrom
- Desmoid tümör
- Fibrosarkom
- Tendon kılıfı tümör
- Gout tofus
- PVNS

PVNS



DEZMOİD TÜMÖR



MRI

T2 Kist benzeri görünüm

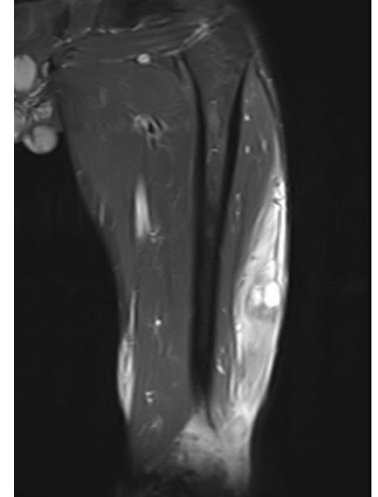
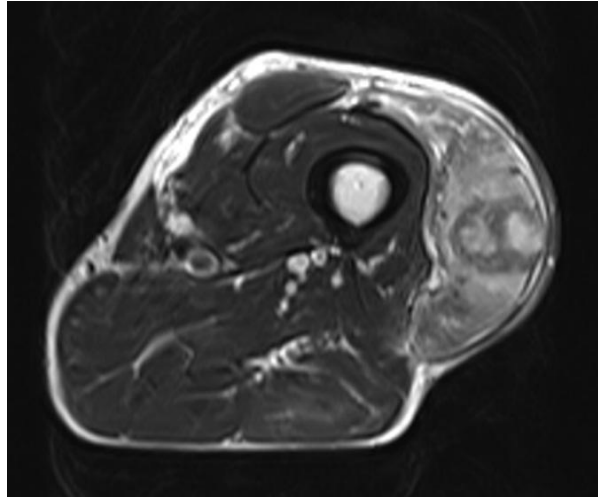
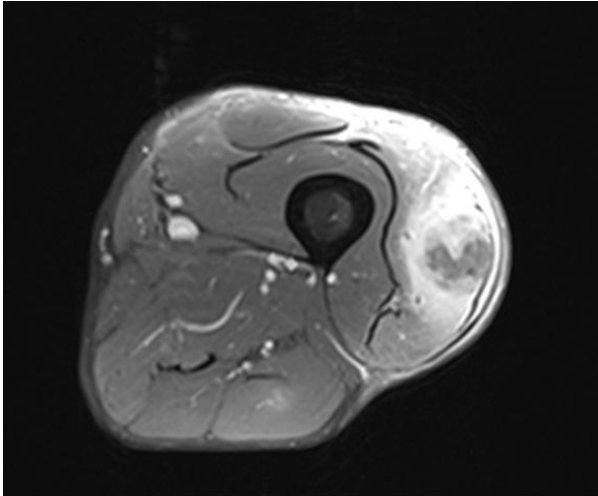
Çevresel kontrast tutulum

- Ganglion
- Seroma
- Abse
- Epidermoid inklizyon kisti
- Bursa

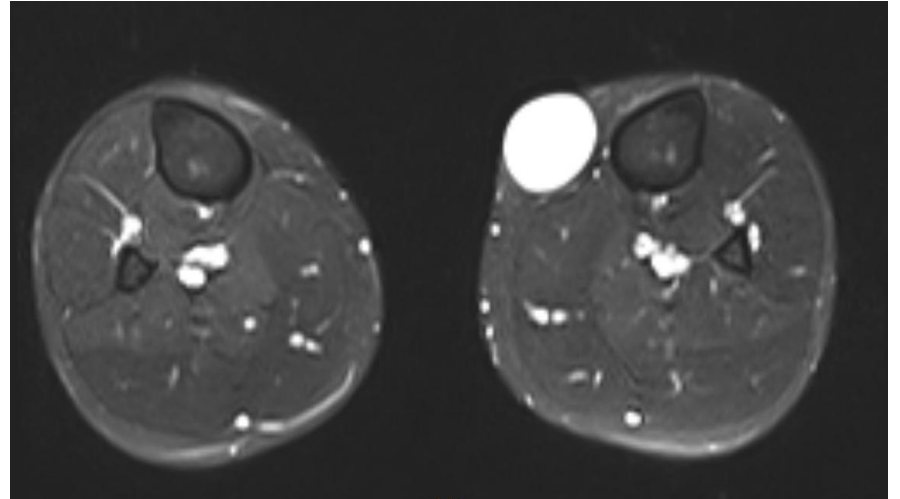
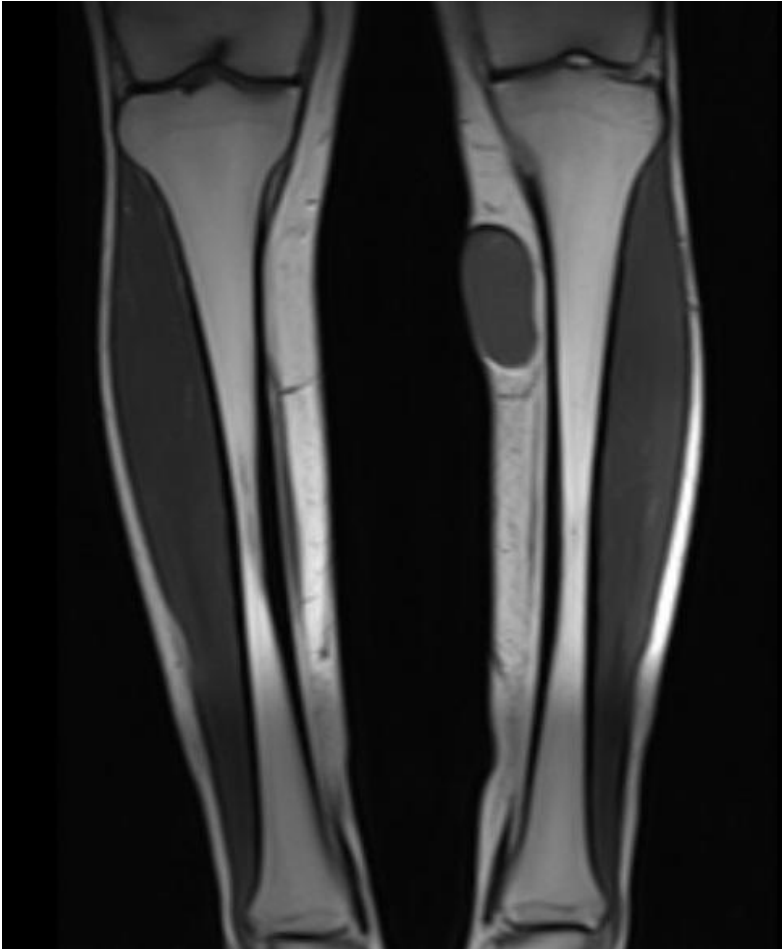
Tamamen tutulum

- Miksoma
- Miksoid sarkom
- Snovyal sarkom

PYOMİYOZİT



Epidermal Kist



SINOVIAL SARKOM

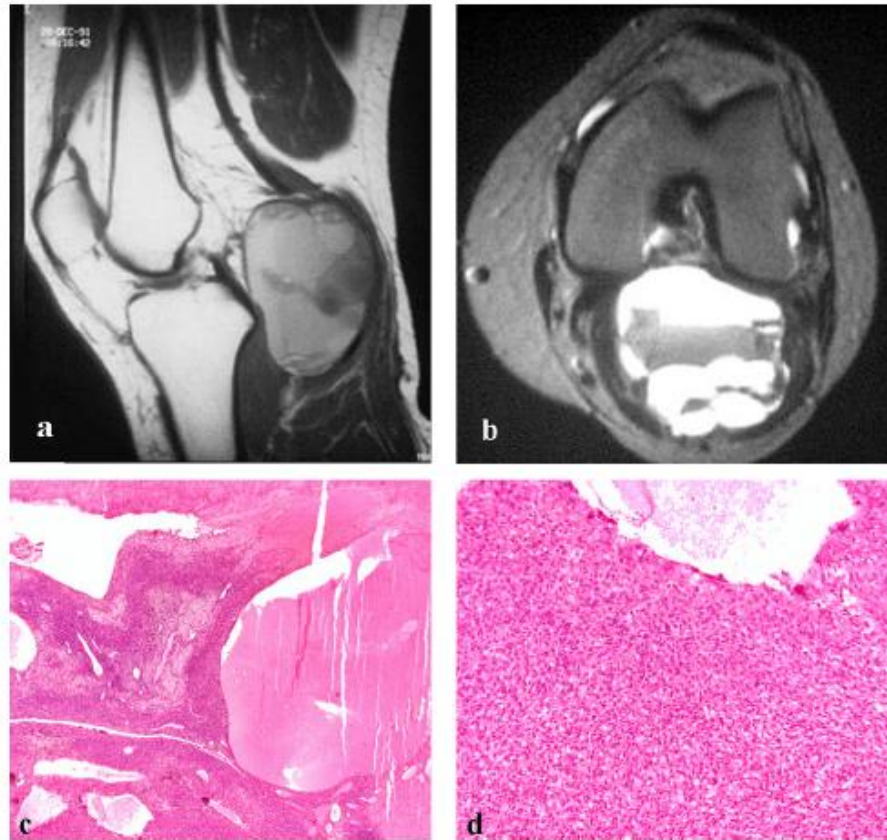
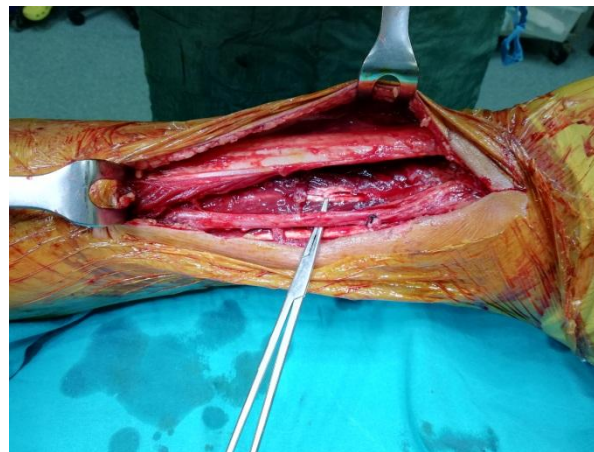
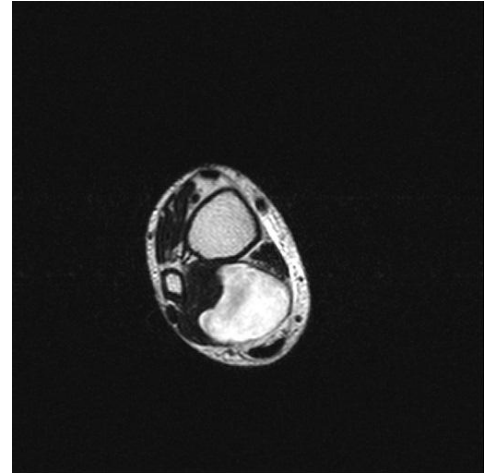
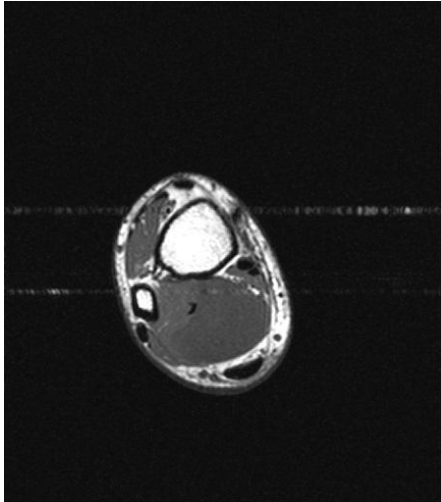


Fig. 8. Synovial sarcoma of the poplitea fossa. (a) Sagittal T1-weighted spin-echo MR: extra articular tumour with an heterogeneous signal so-called the triple sign. (b) Transverse T2-weighted spin-echo MR: lesion exhibits fluid-fluid levels characteristic of synovial sarcoma with hemorrhage. (c) Presence of cystic areas in a monophasic spindle cell synovial sarcoma. (d) Tumour composed of small, uniform spindle cells.

MİKSOİD LİPOSARKOM



KLİNİK-GÖRÜNTÜLEME

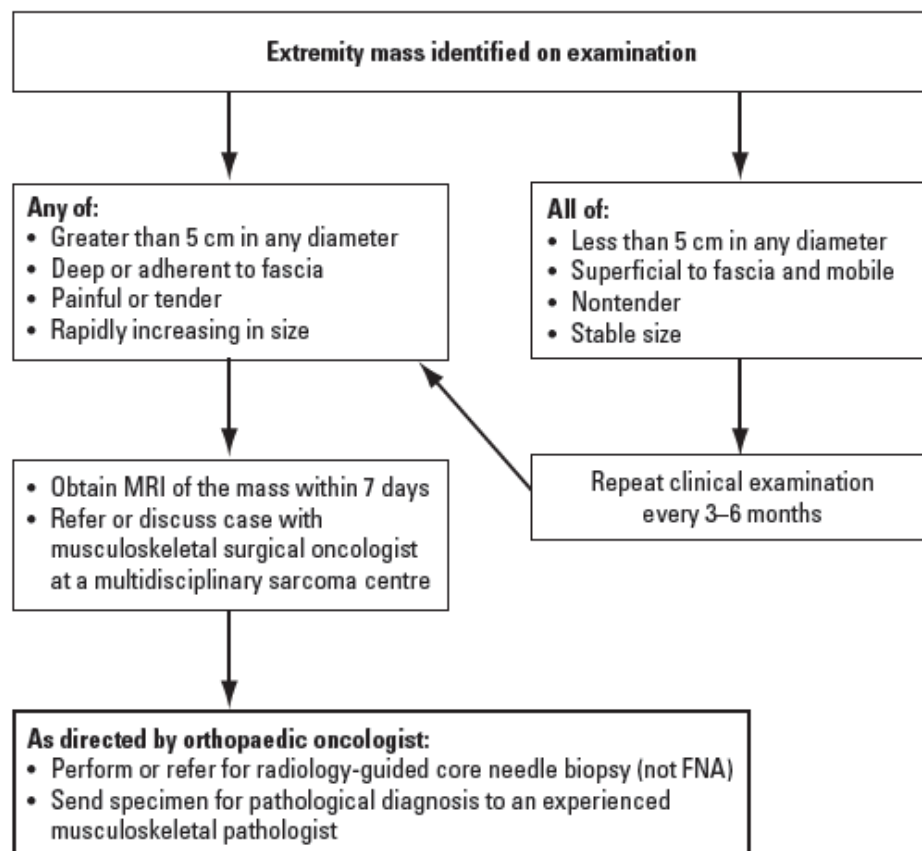


Figure 3. Recommended diagnostic algorithm for soft tissue sarcoma of the extremities.

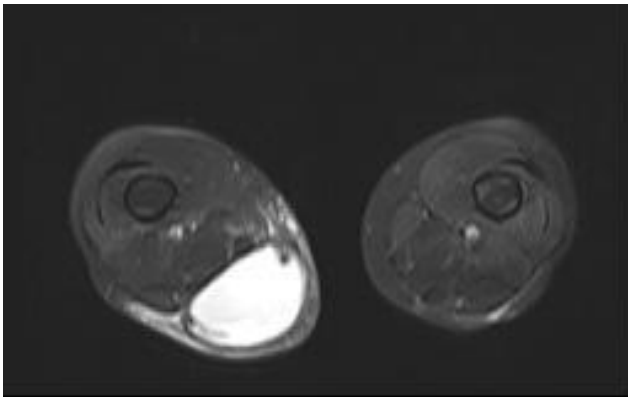
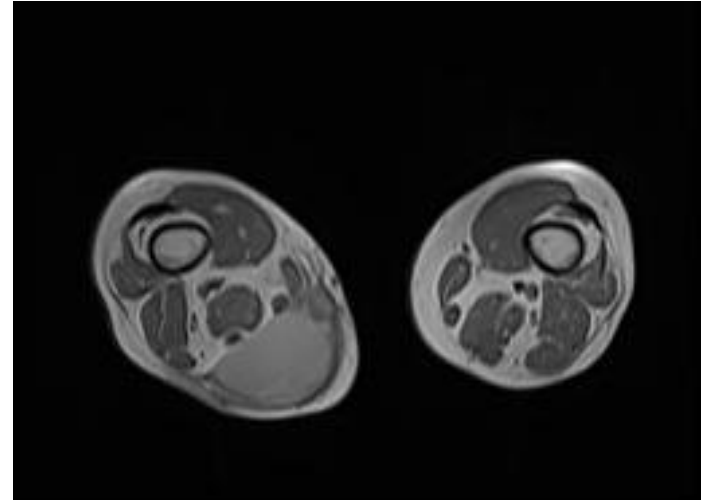
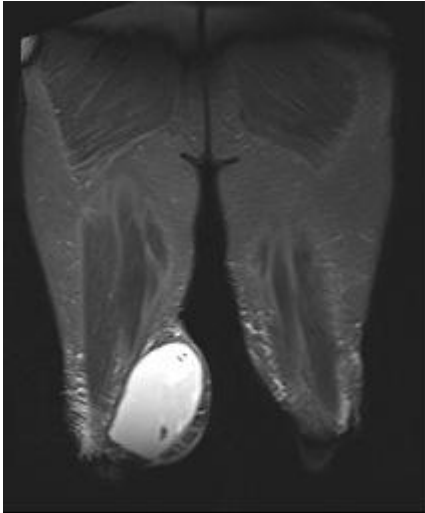
MR

Hematoma ile tümör ayırımında kullanılır

TABLE 1: Features That Can Help Differentiate Hematoma From Blood Within Tumor When Blood Is Present Within Lesion

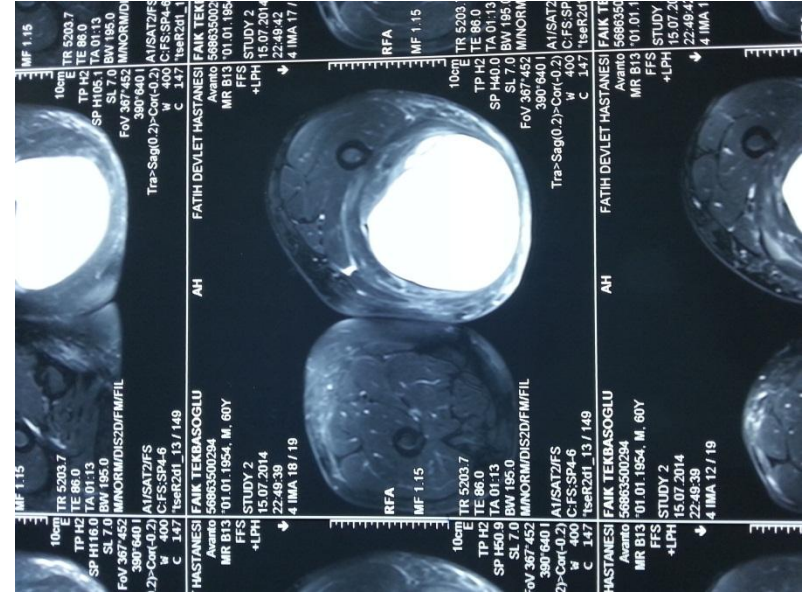
Typical Features	
Hematoma	Tumor
History of trauma or anticoagulants	Spontaneous bleeding
Surrounding edema	Limited surrounding edema
Curvilinear high-signal-intensity foci	No specific morphology of high-signal-intensity regions
Thick nonnodular wall	Nodular wall
Rim enhancement	Heterogeneous enhancement
Hemosiderin in wall if chronic	No or limited hemosiderin in wall

HEMATOM



HEMATOM

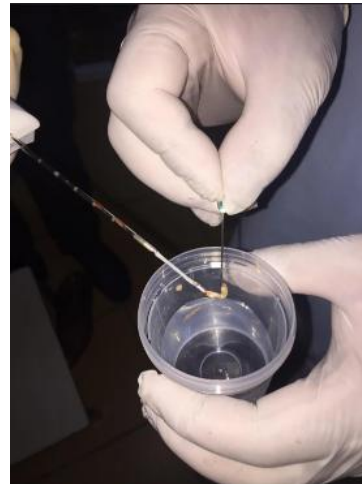
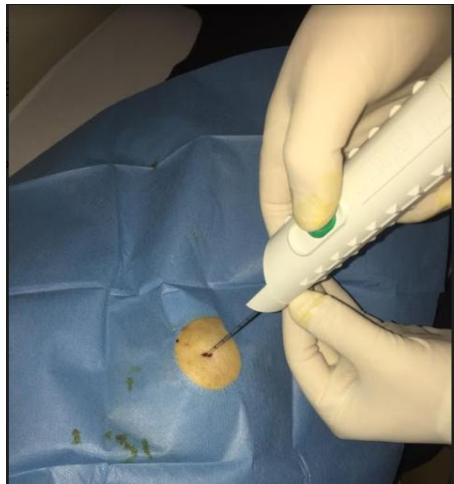
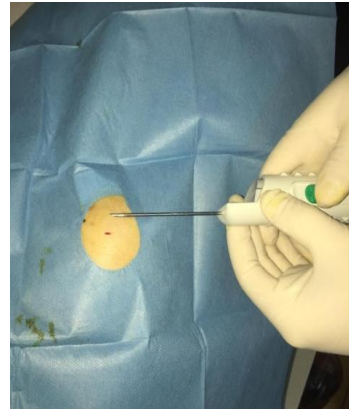
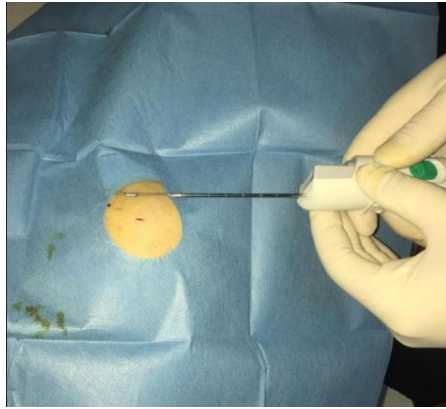
İNDFERANSİYE PLEOMORFİK SARKOM



Biyopsi

- Tru-cutt biyopsi yapılır
- Görüntüleme (USG, BT) eşliğinde yapılabilir
- Tercihen tedaviyi yapacak cerrah kontrolünde yapılmalı
- Nadiren açık biyopsi yapılır
- Kemik ve yumuşak doku patoloğu gerekir

Tru-Cutt



PET-CT

- Benign/Malign ayırımı: $SUV > 2.5$
- Tarama: Metastaz
- Tedaviye yanıt
- Takip

PET-CT

LAP

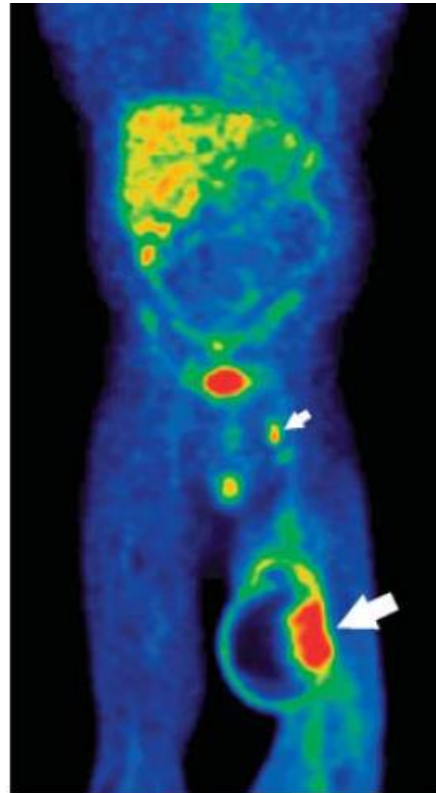


Fig 4. — Coronal reformatted PET image obtained from 3-dimensional data shows high-grade malignant fibrous histiocytoma in the thigh (large arrow). Absence of central activity in the mass reflects necrosis and hemorrhage. Note small hypermetabolic regional lymph node in the groin (small arrow).

Diagnostic Imaging Update: Soft Tissue Sarcomas

Edson L. Knapp, MD, Mark J. Kransdorf, MD, and G. Douglas Letson, MD

AJCC Sınıflama

- Stage
 - IA: Low grade. <5 cm
 - IB: Low grade. >5cm
 - IIA: Intermediate grade: <5 cm
 - IIB: Intermediate grade: >5 cm
 - III: High grade. >5cm yada lenf nodu yayılımı
 - IV: Uzak met

Tedavi

- İyi huylu tümörlerinin bir kısmı sadece gözlenirken diğerlerinin cerrahi ile basit olarak çıkarılması yeterlidir.
- Birkaç spesifik tümör (desmoid, PVNS vs) hariç nadiren tekrarlarlar.
- Kötü huylu tümörler de kitlenin geniş cerrahi ile çıkarılmasının yanı sıra radyoterapi ve uygun vakalarda kemoterapi verilir.
- Nüks ve metastaz açısından yakın takip gerekir

Kemoterapi (KT)

- Metastaz varlığında
- High grade
- >5cm
- Derin yerleşimli

KT

- **Rutin:** Rabdomyosarkom
- **Kemosensitiv:** Snovyal sarkom, Miksoid liposarkom
- **Orta sensitiv:** Miksofibrosarkom, Epiteloid sarkom, Leiomyosarkom, MPST, Anjiosarkom
- **Düşük sensitiv:** Dediferansiye liposarkom, Clear cell sarkom
- **Dirençli:** Alveolar soft part sarkoma

Radyoterapi (RT)

- Kötü huylu yumuşak dokü tümörlerinin tedavisinde cerrahi ile kombine edilir
- Ameliyat öncesi ve sonrası uygulamanın avantaj ve dezavantajları olup birbirine üstünlükleri yoktur

RT Komplikasyonları

Table 1. A summary of the acute and late toxicities described in selected studies of extremity soft tissue sarcoma treated with adjunctive radiotherapy

Study		Acute effects Major wound (%)	Skin grade ≥ 2 toxicity (%)	Primary closure rate (%)	Chronic/late effects (grade ≥ 2)				Total (%)
					Fibrosis (%)	Edema (%)	Joint (%)	Fracture (%)	
Pre-op									
NCIC SR2—pre-op [16, 22]		35	36	66	32	15	18		37
NCIC SR2—pre-op [16]		43							
PMH—pre-op [24**]	LE	30		93	9.3	11.1	5.6	0	
RTOG 0630—pre-op [19**]		37			5.3	5.3	3.5		10
RTOG 0630—pre-op [19**]		42			6.0	6.0	4.0		12
Post-op									
NCIC SR2—post-op [16, 22]		17	68	77	48	23	23		
NCIC SR2—post-op [16]		21							
MSKCC—post-op [25*]	Conv	18	49			15	17	9.1	37
MSKCC—post-op [25*]		19	32			7.9	14	4.8	31

As complications are more common in lower extremity sarcomas, sub-group analyses were performed on the National Cancer Institute of Canada (NCIC) SR2 study and the RTOG 0630 study. The Princess Margaret Hospital (PMH) prospective study was dedicated to the pre-operative radiotherapy (pre-op) of lower extremity sarcomas. For comparison purpose, toxicity data from a large retrospective study from the Memorial Sloan Kettering Cancer Center (MSKCC) of patients treated largely (88 %) with post-operative (post-op) radiotherapy was included.

LE lower extremity subset, Conv conventional radiotherapy

Soft Tissue Sarcoma and Radiation Therapy Advances, Impact on Toxicity

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Philip Wong, M.D., M.Sc.¹

Dian Wang, M.D., Ph.D.^{2,*}