RADYOLOJİ KIŞ OKULU 2019

4 -10 Şubat 2019

Mirage Park Otel, Antalya

TRD 1924

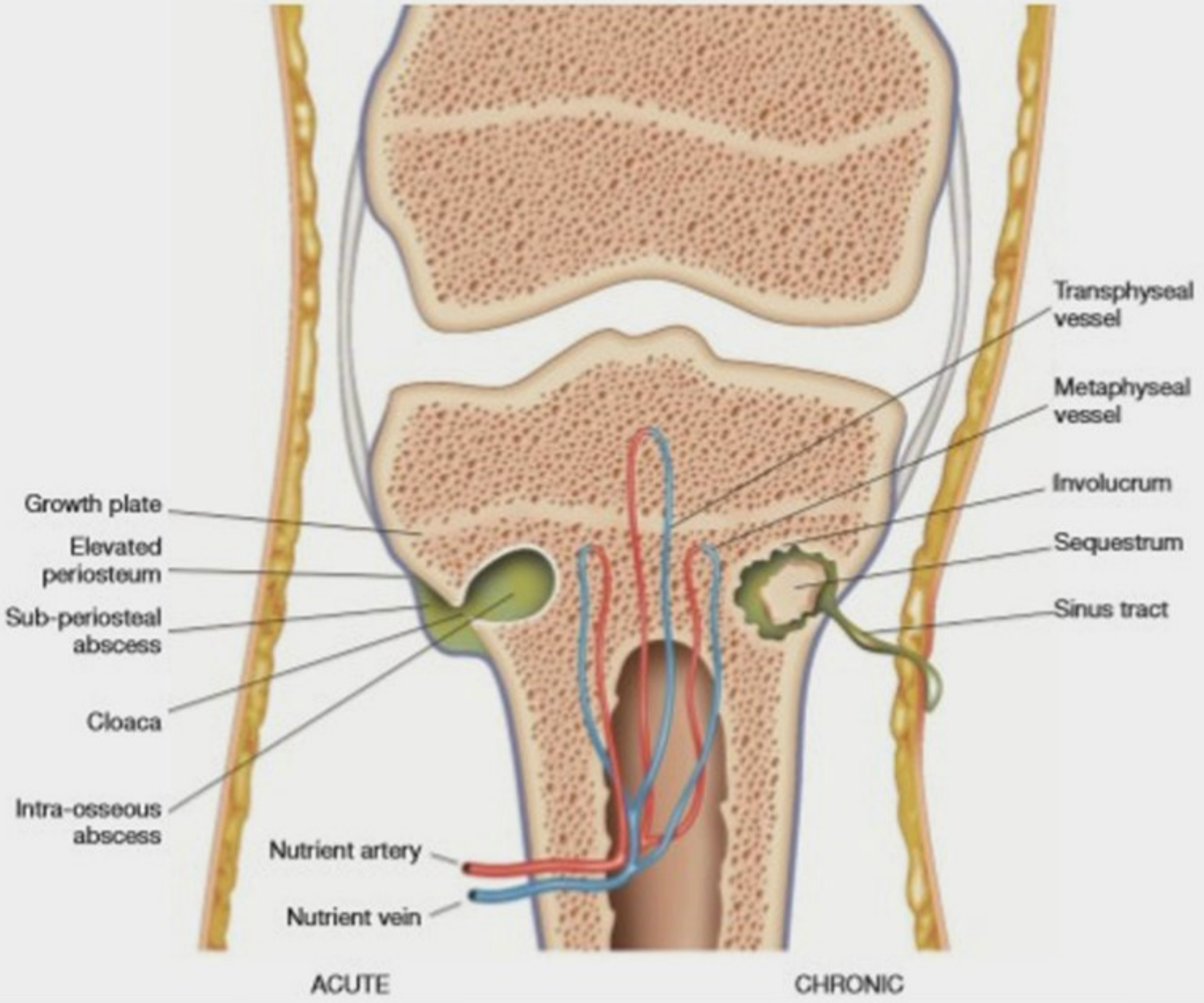
İskelet Sistemi İnfeksiyonları

Dr. Ali BALCI

Dokuz Eylül Üniversitesi Tıp Fakültesi
Radyoloji AD

İnfeksiyonlar

- Osteomyelit
- Artrit (infeksiyöz)
- Miyozit-selülit
- Fasiit
- Bursit



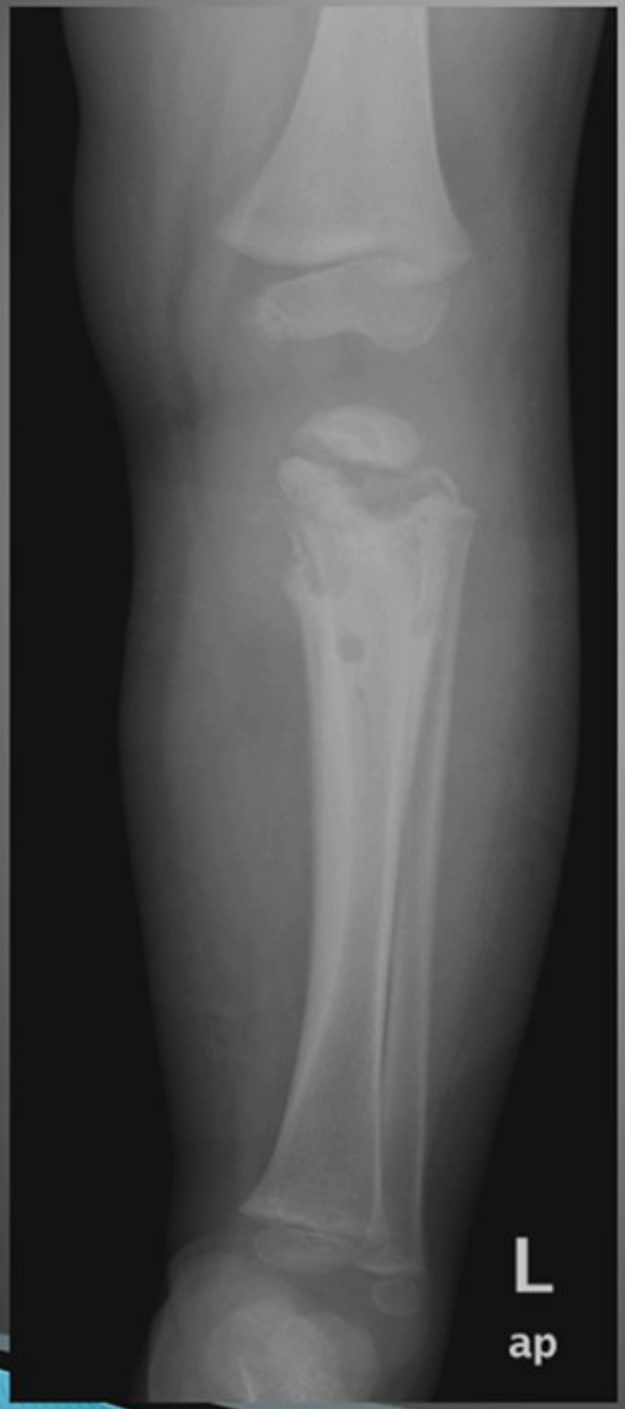
Quant Imaging Med Surg 2016;6(2):184-198

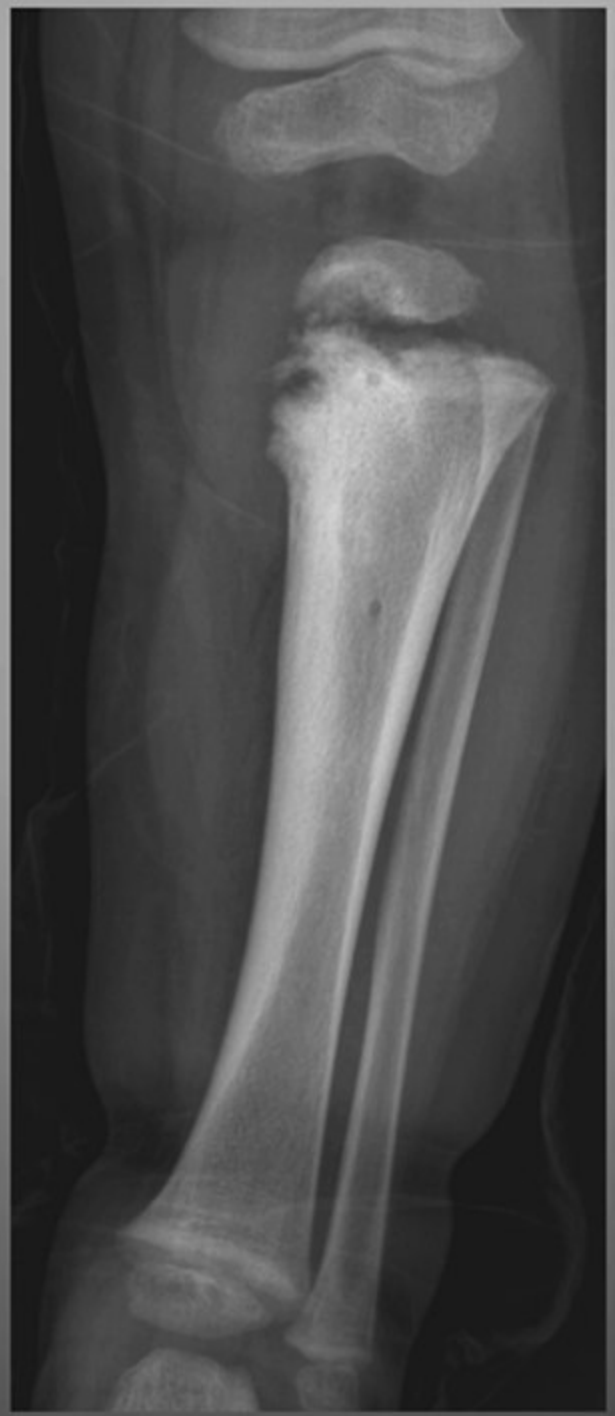
Osteomyelit

- En sık çocuk ve infantta, S. Aureus
- Hematojen osteomyelit genellikle metafizden başlar.
- Penetran yaralanmalar, açık kırıklar, diabetik hastalarda cilt enfeksiyonları osteomyelit nedeni olabilir.
- İlk 7-14 gün direkt grafiler normaldir.

Osteomyelit

- İlk bulgular yumuşak doku şişliği, metafizde litik lezyon ve lezyona komşu periost reaksiyonu
- 2-6.haftada liziste ilerleme, periost reaksiyonunda artma
- Periost reaksiyonu kemiği çevreleyerek involukruma yol açabilir.





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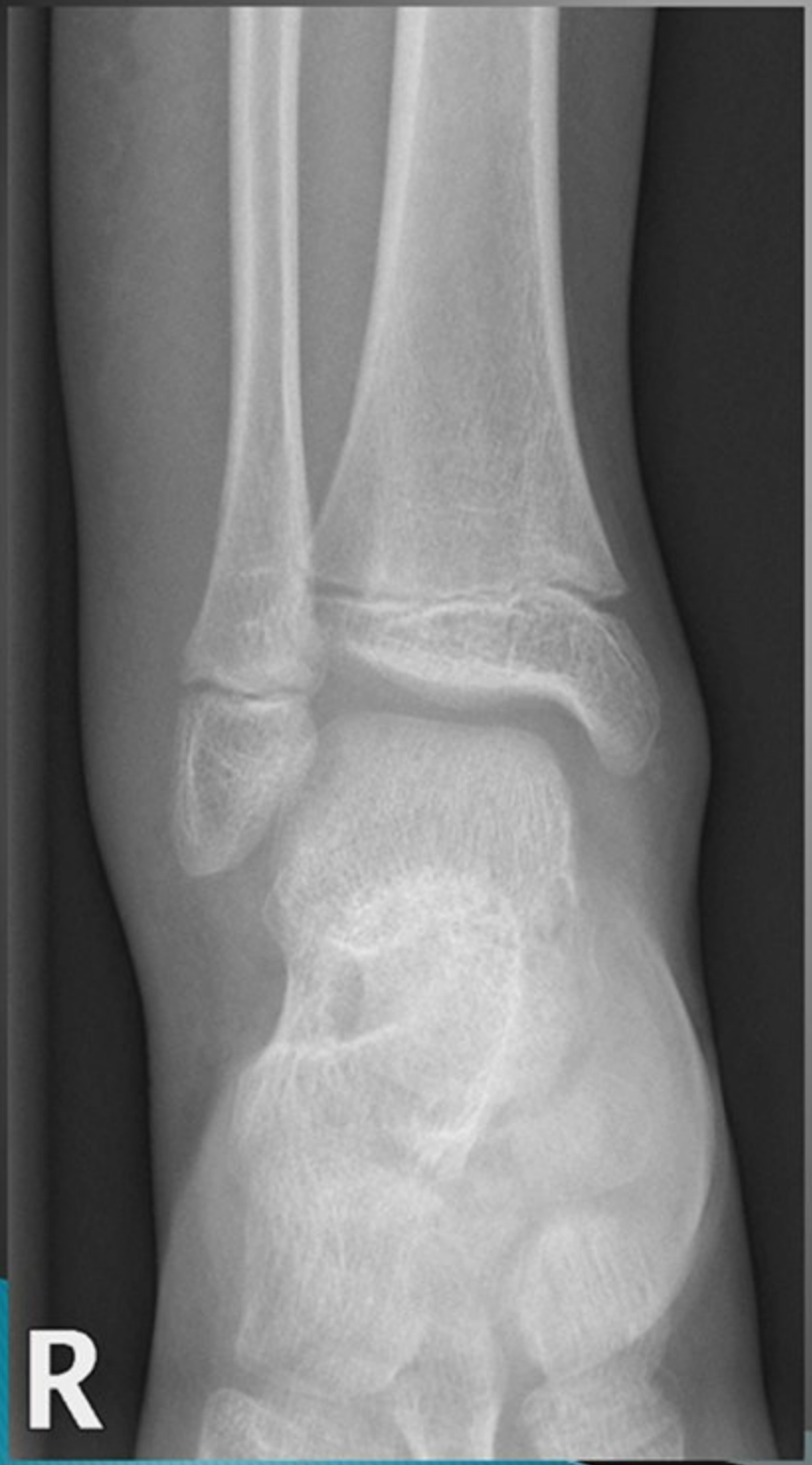
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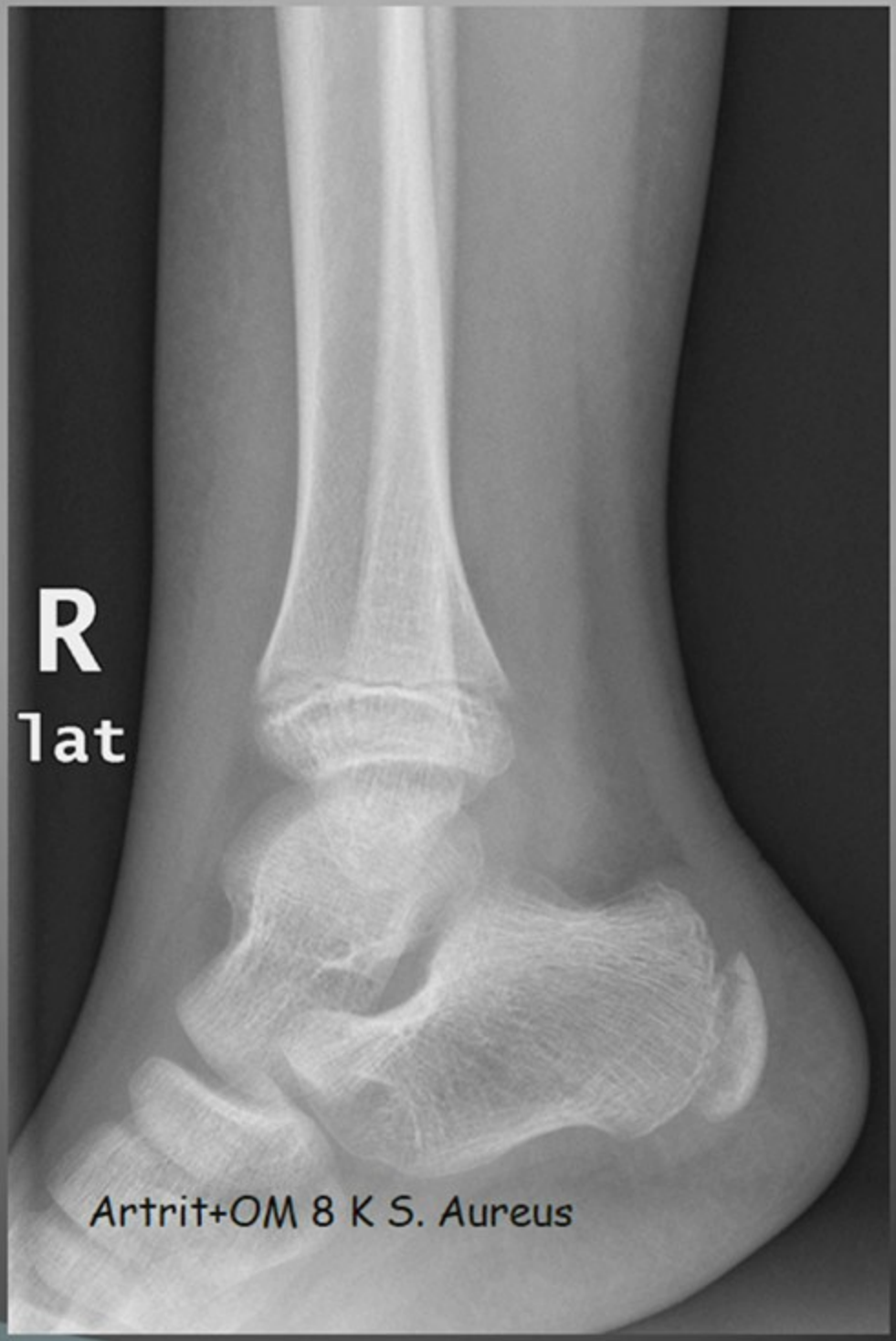
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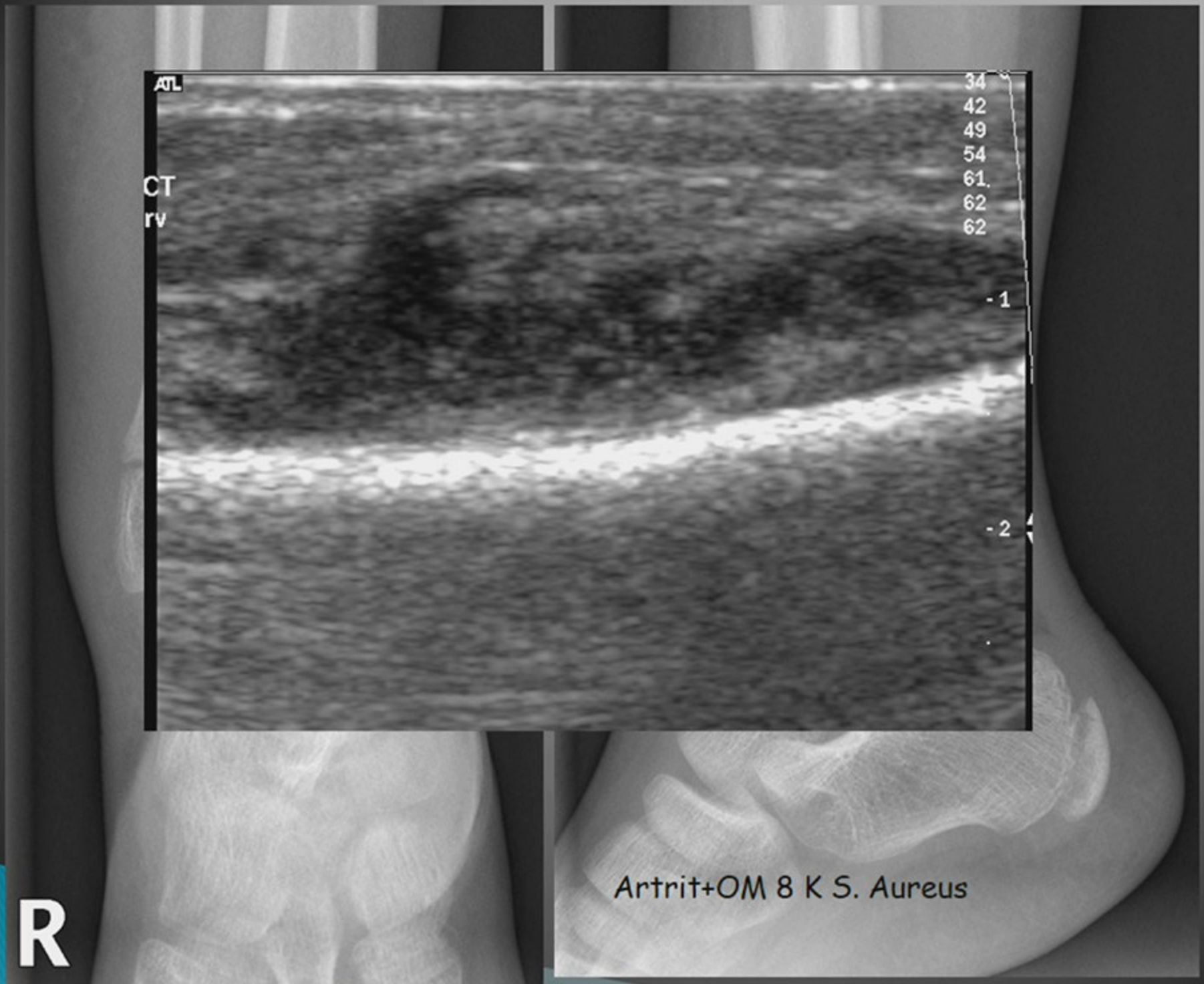
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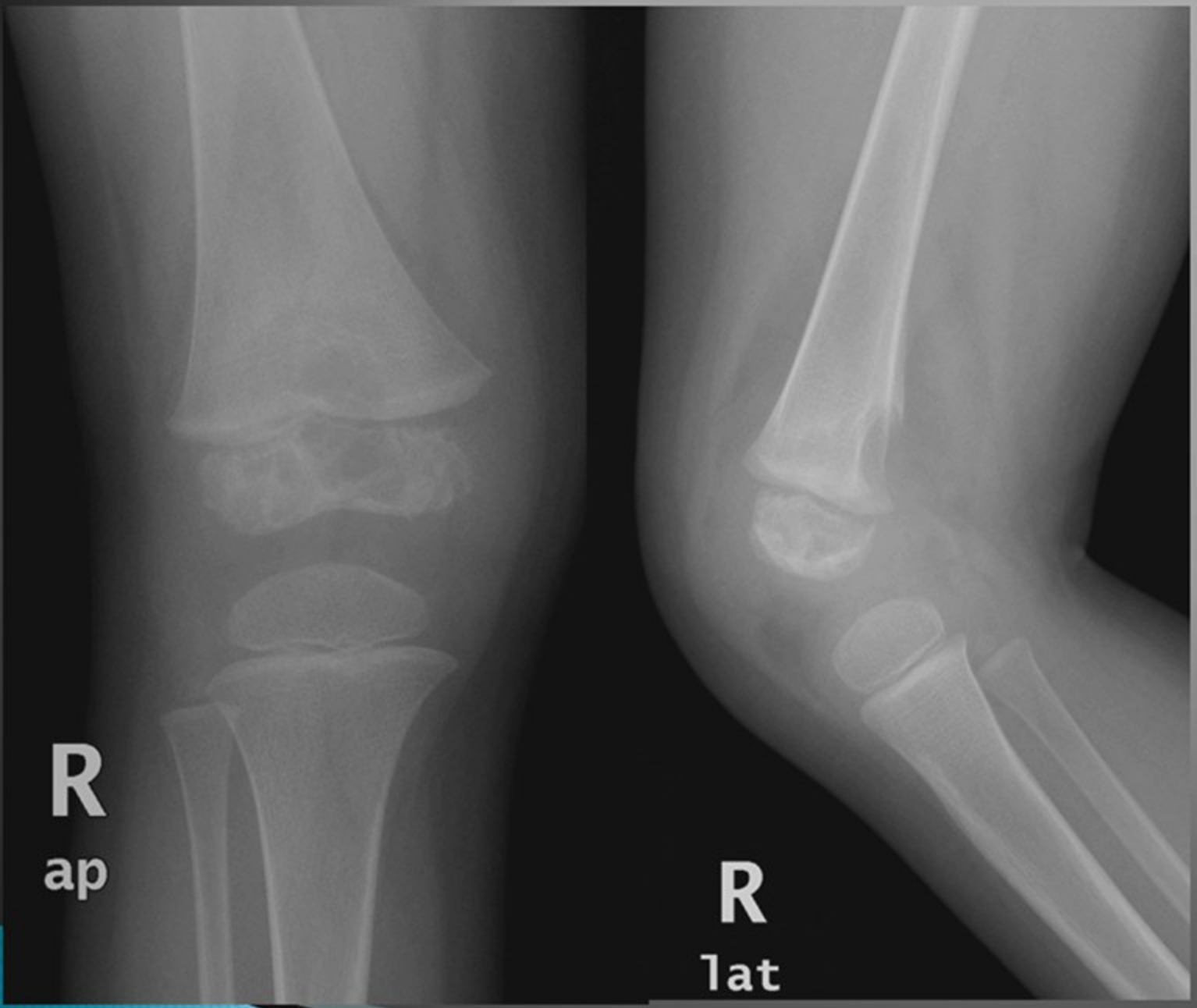
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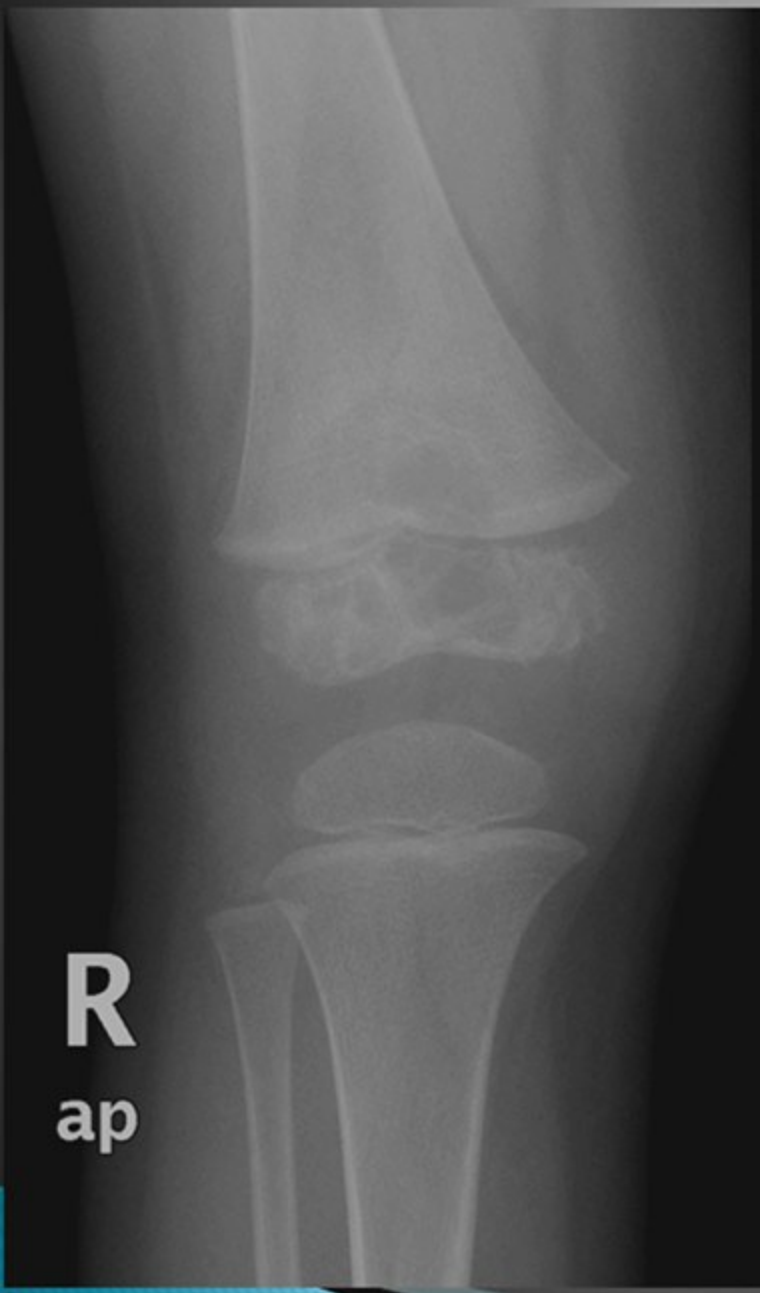
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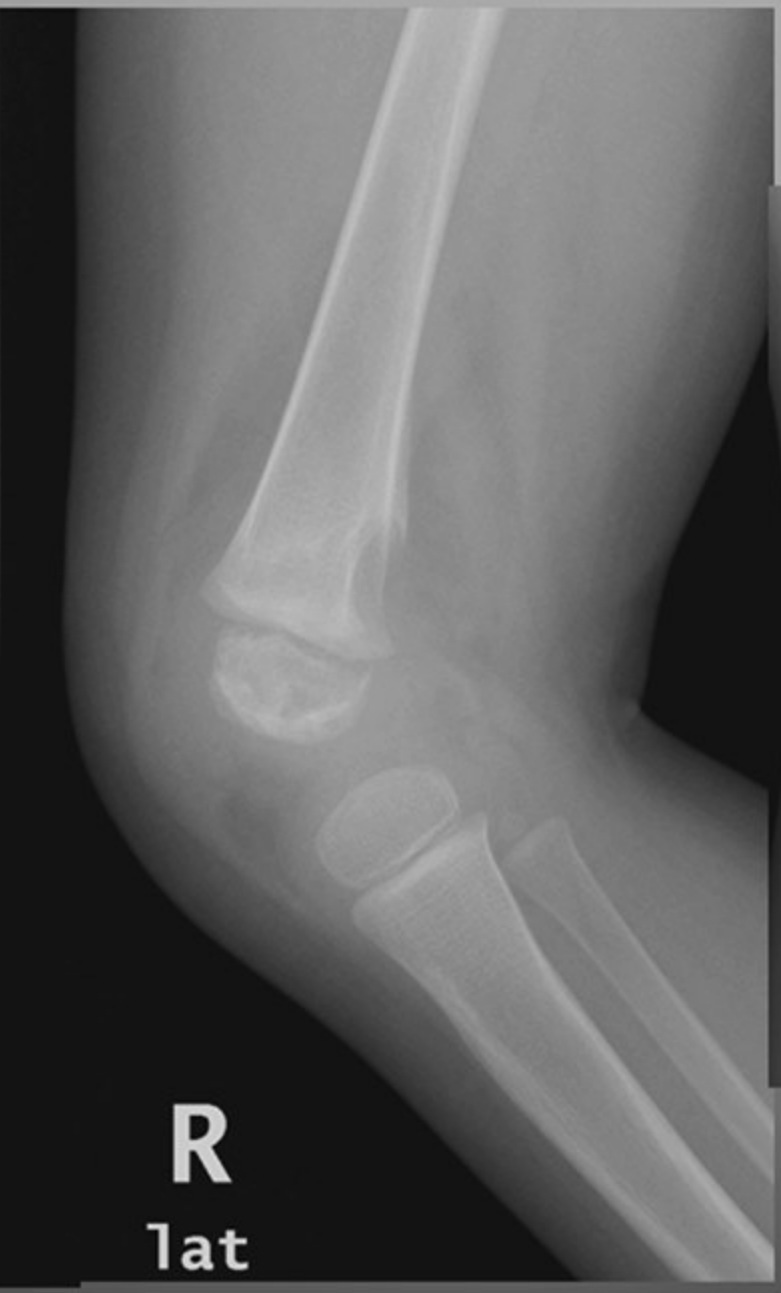
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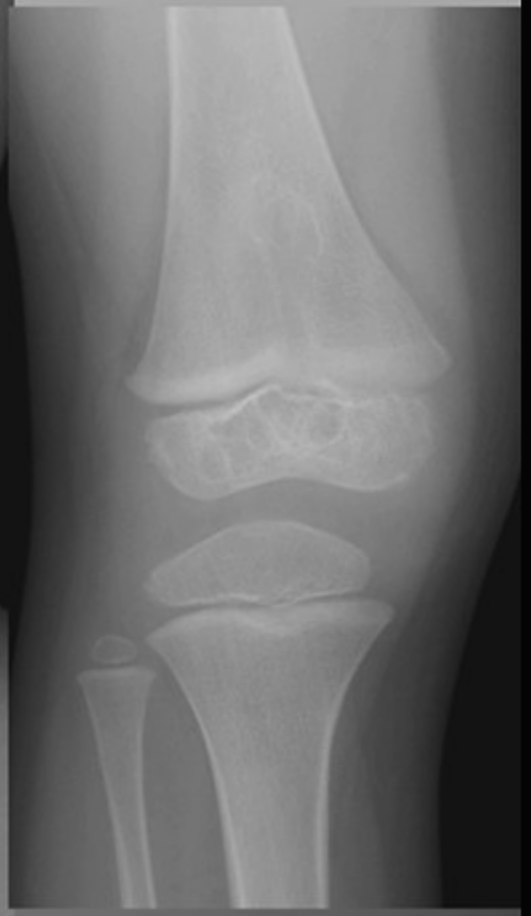

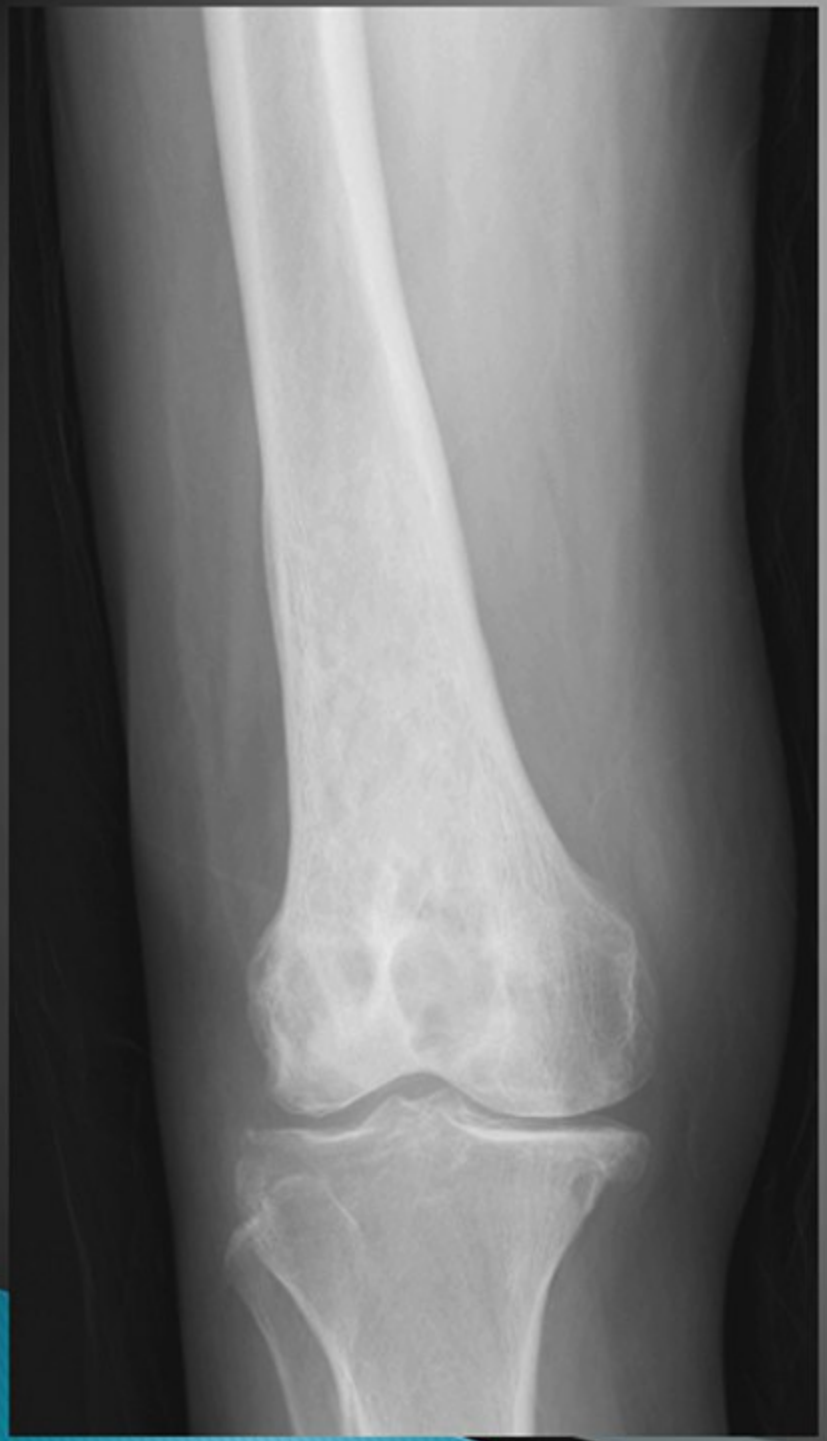

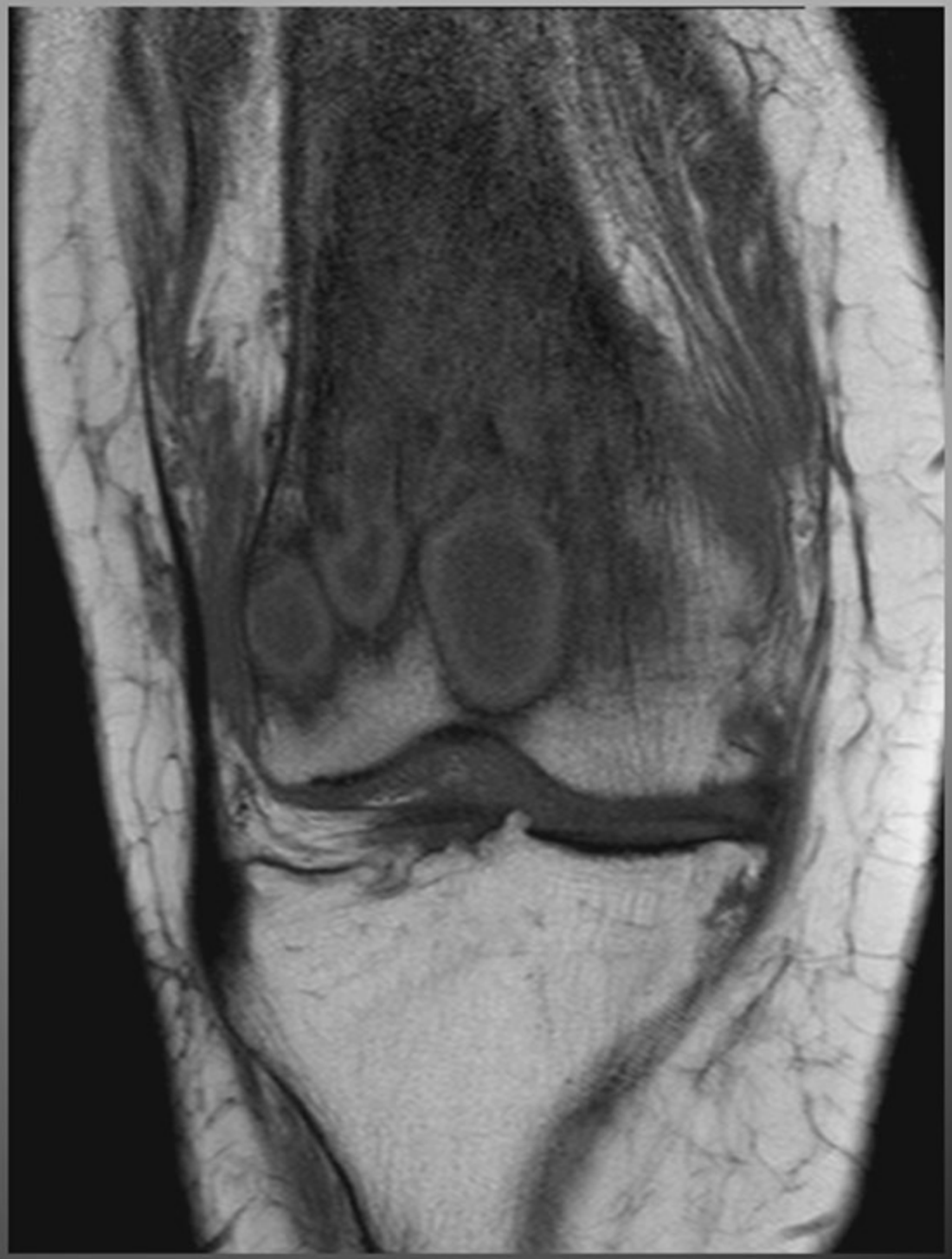

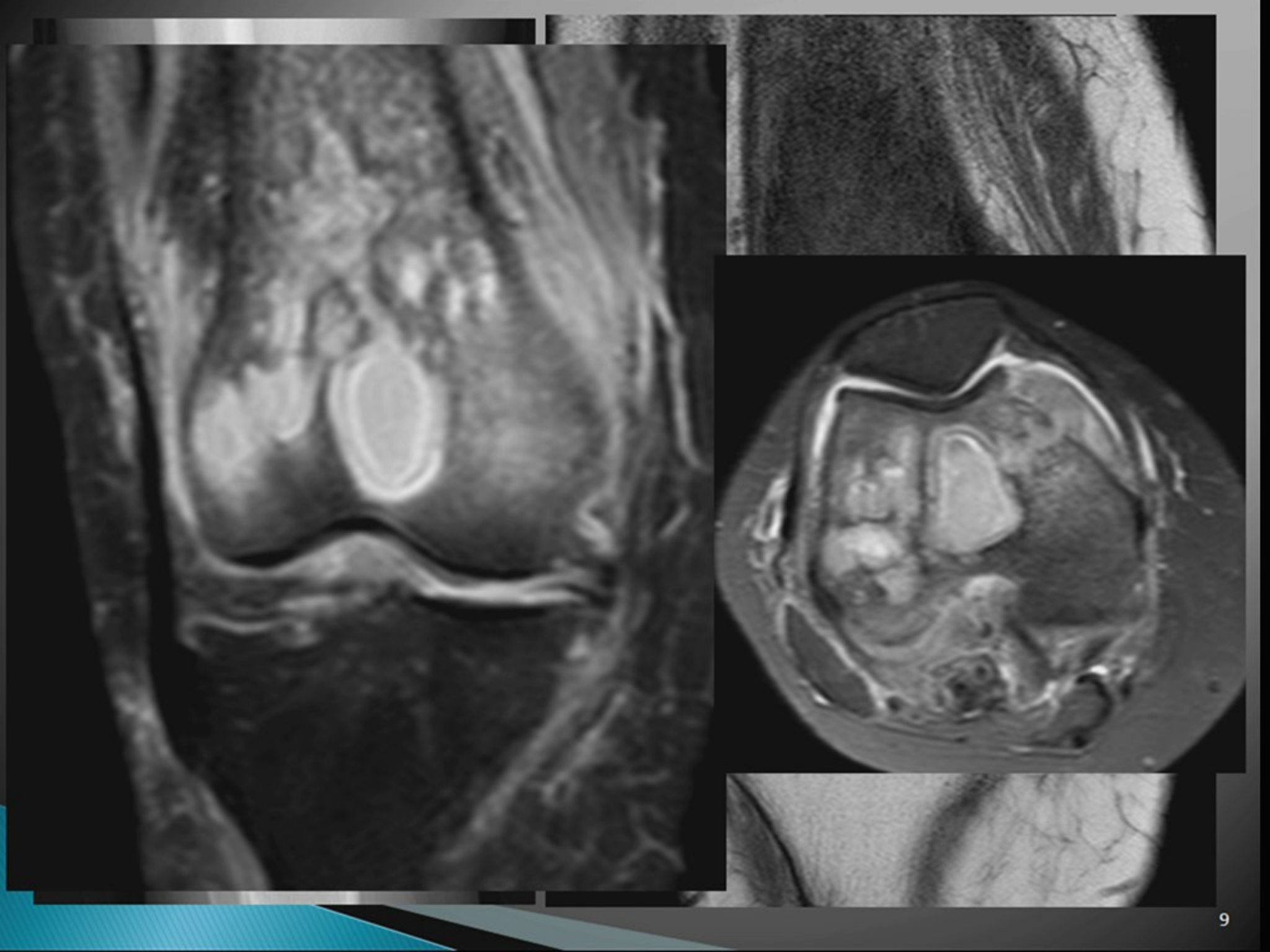

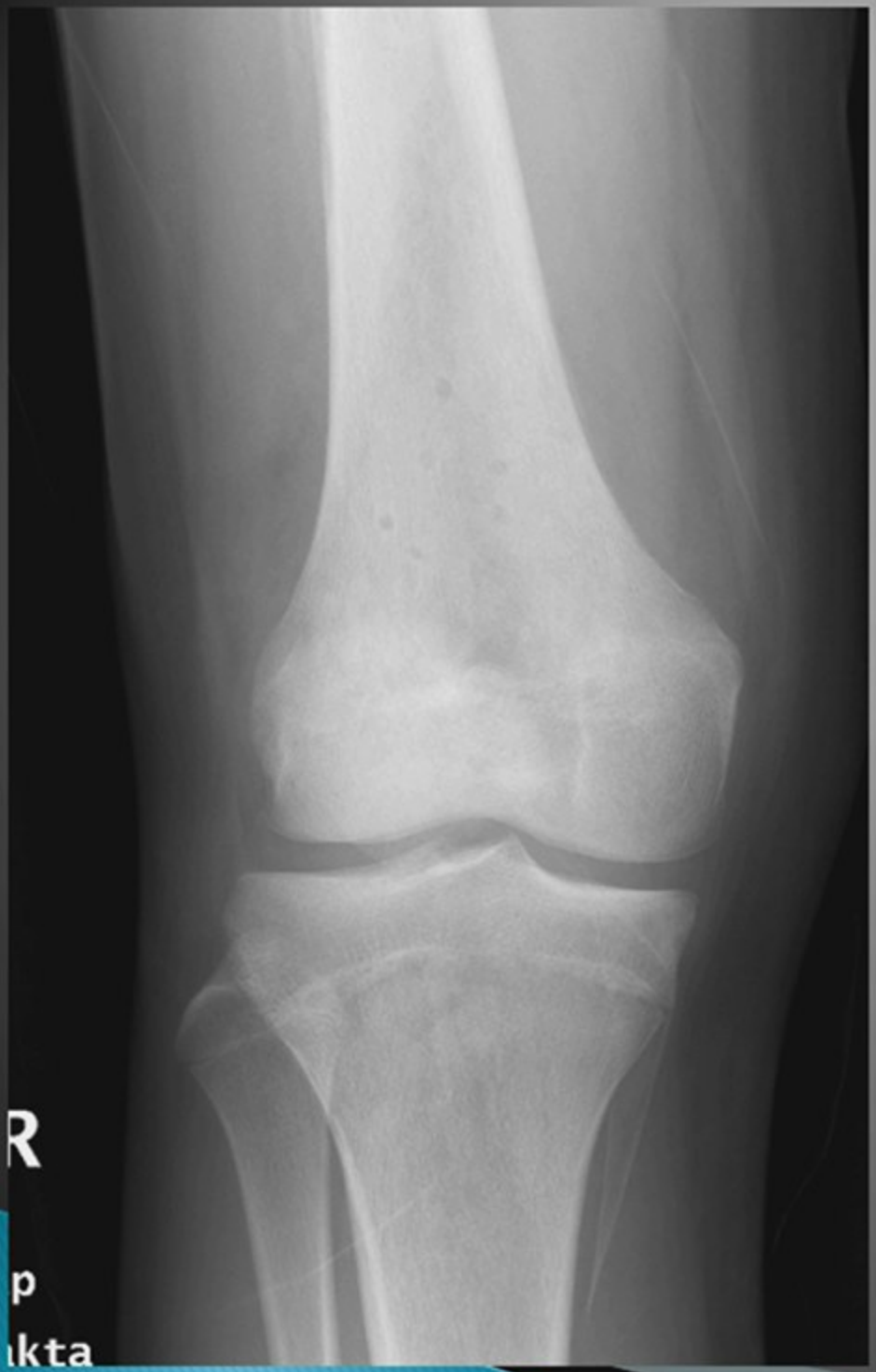

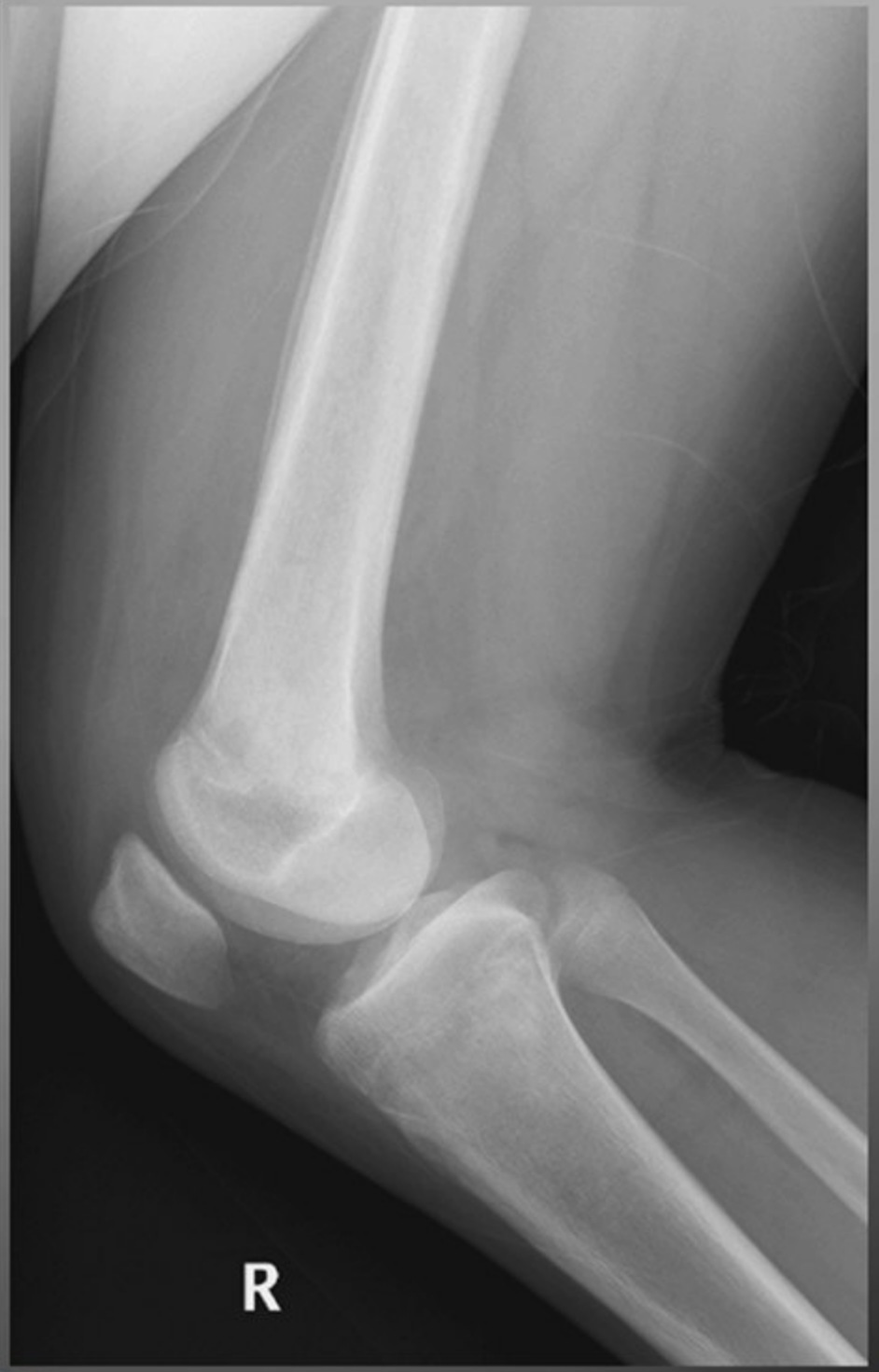

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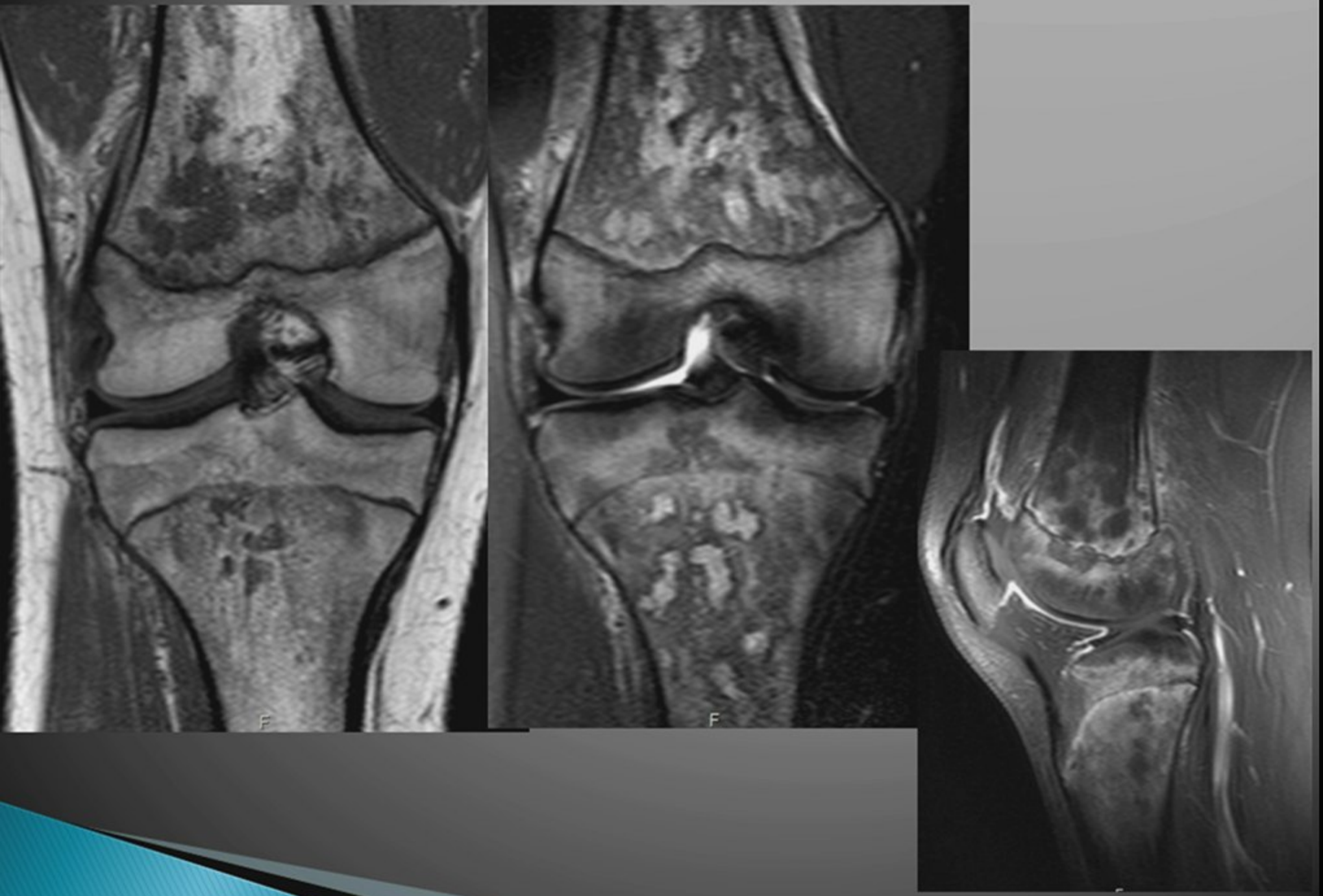

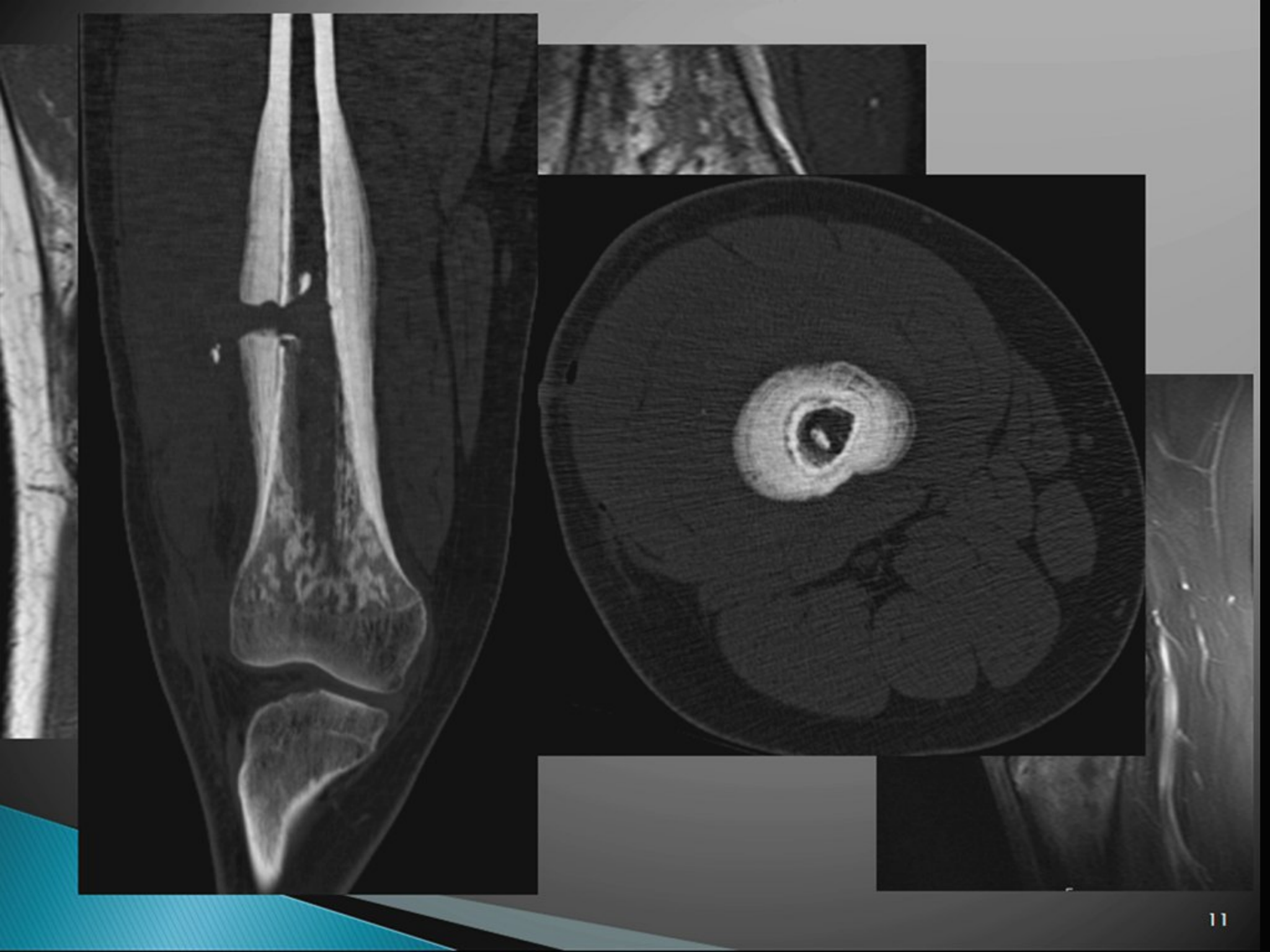

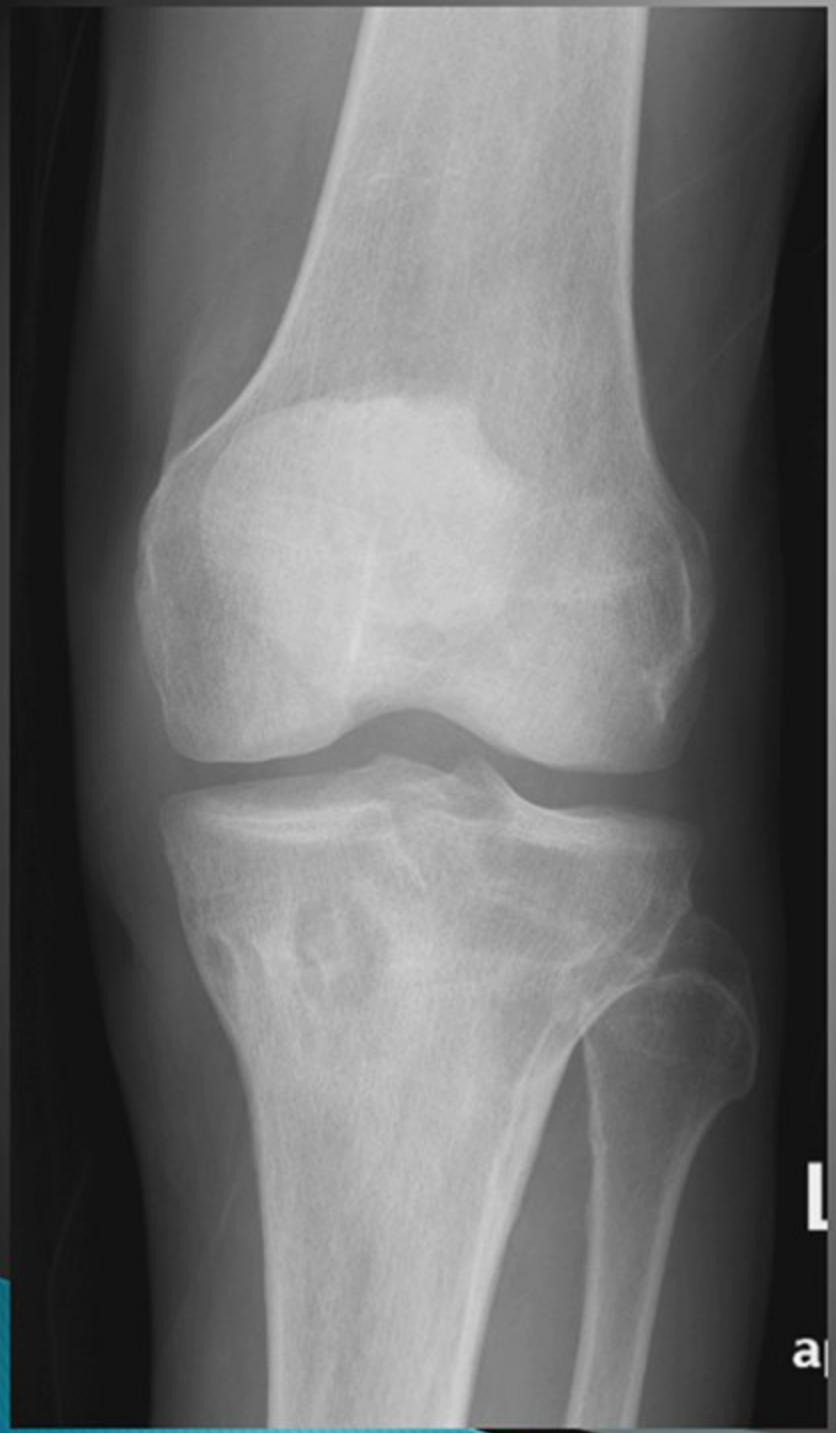

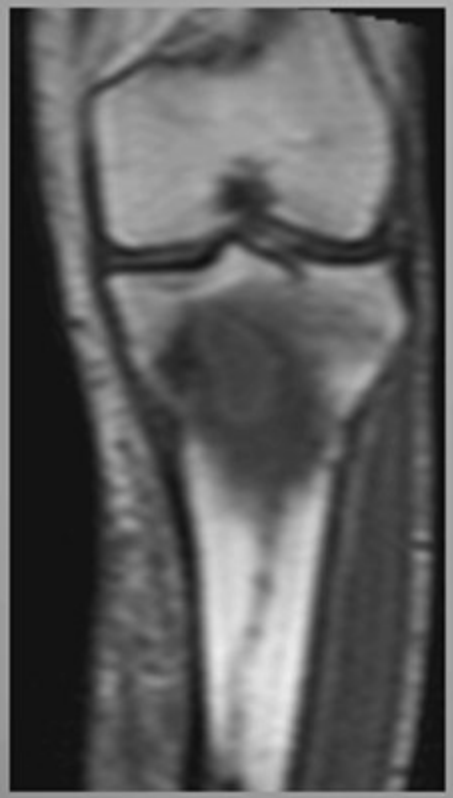

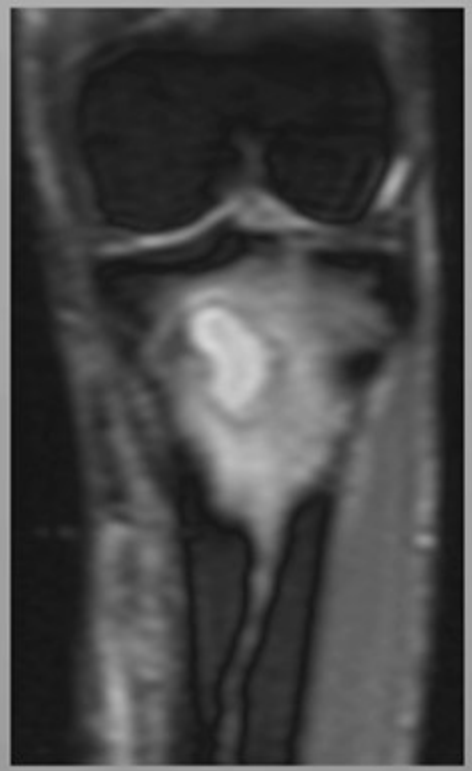

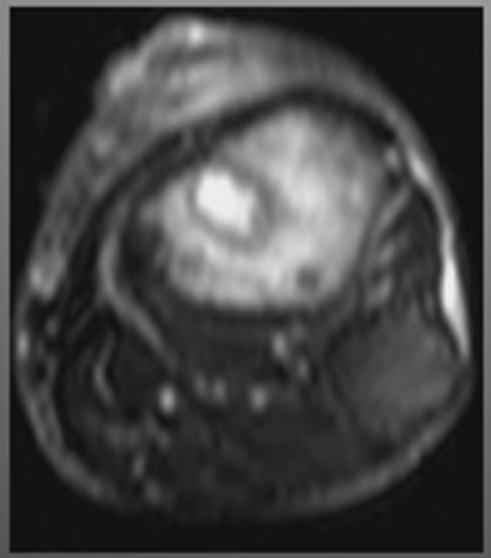

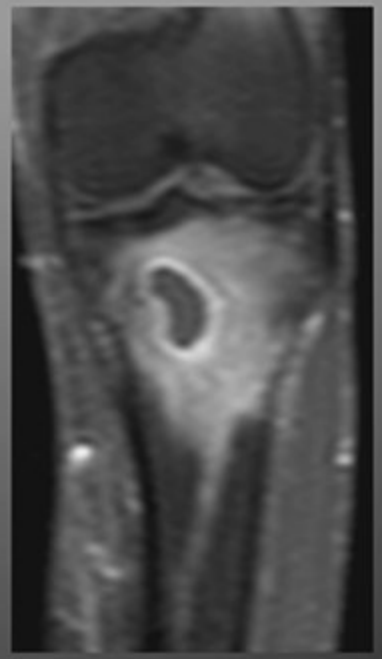

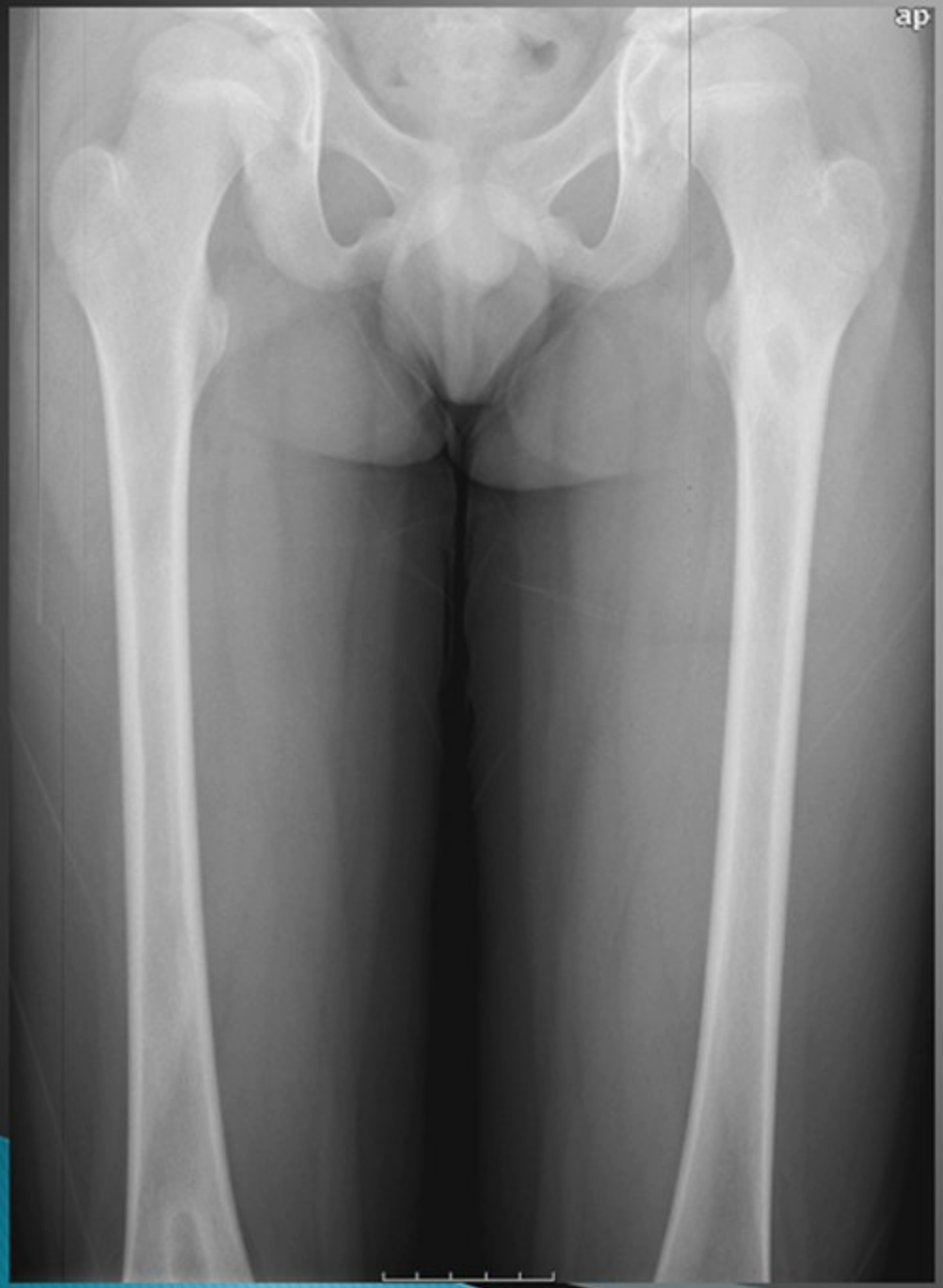
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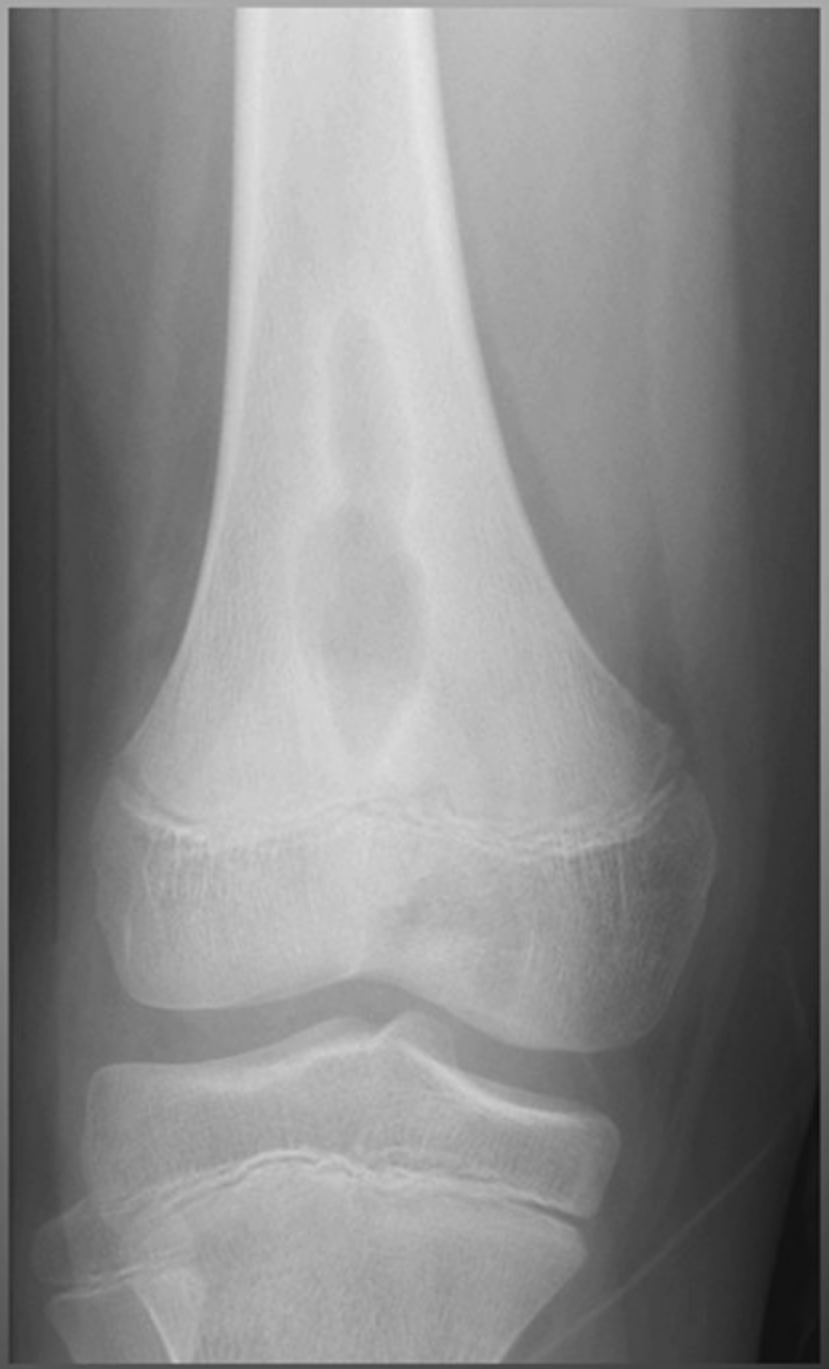

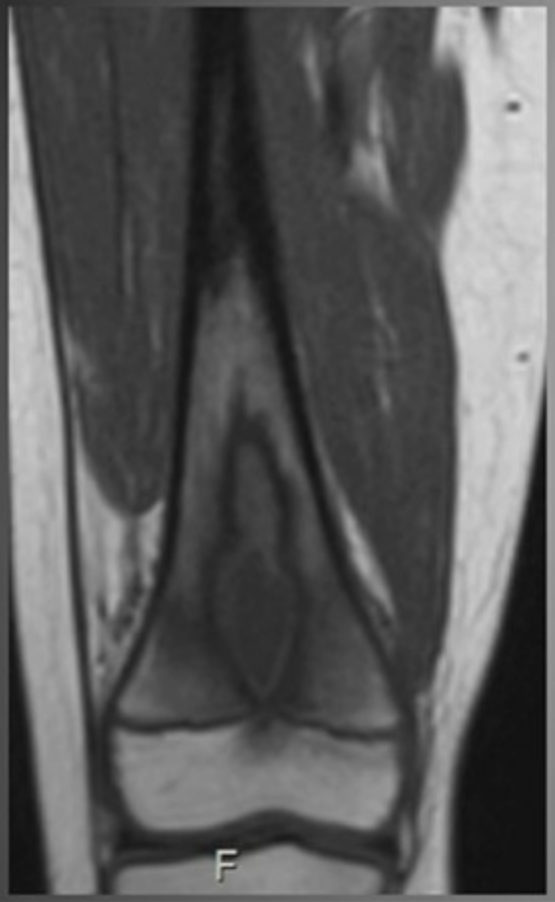
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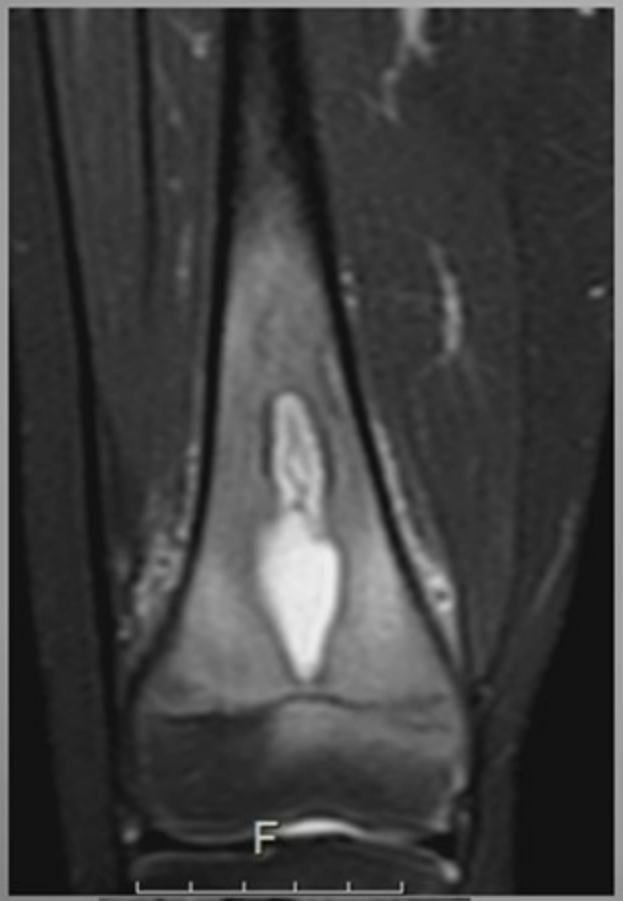
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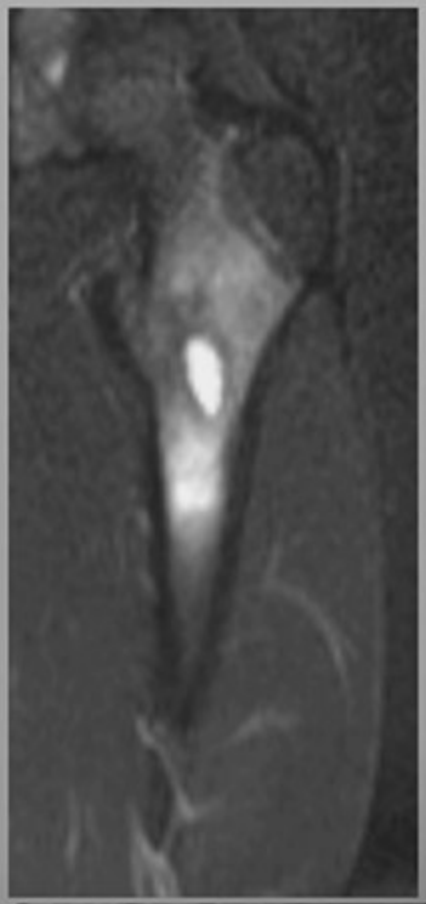

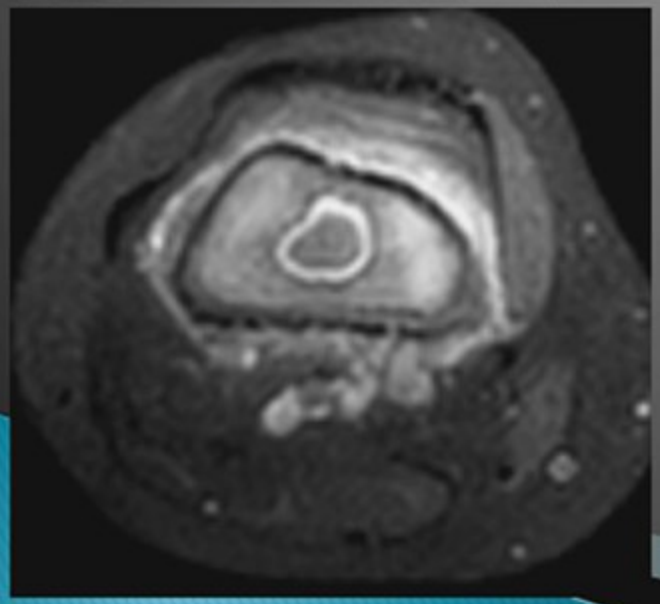

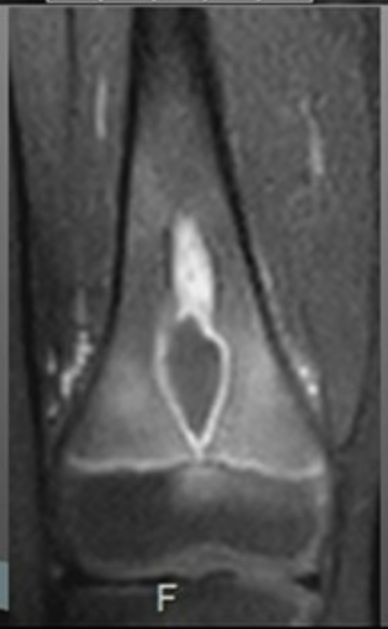
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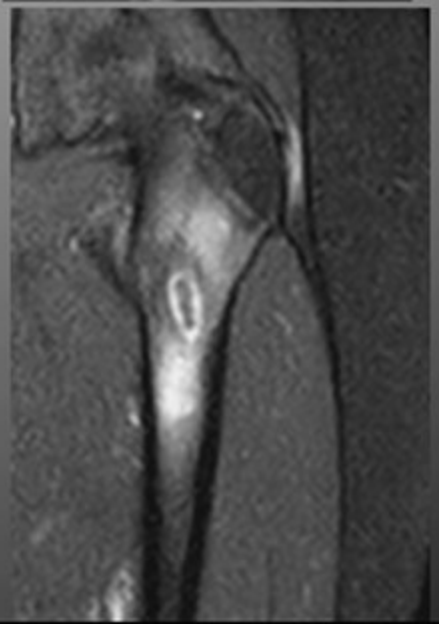
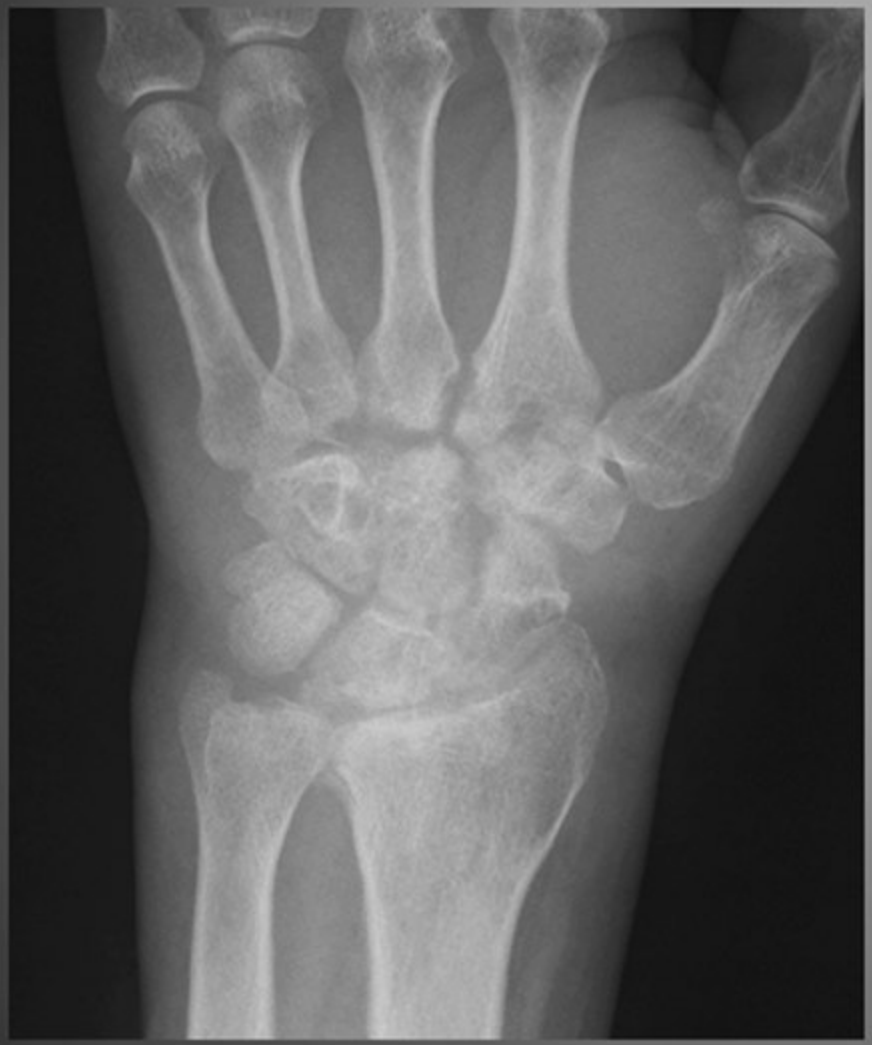
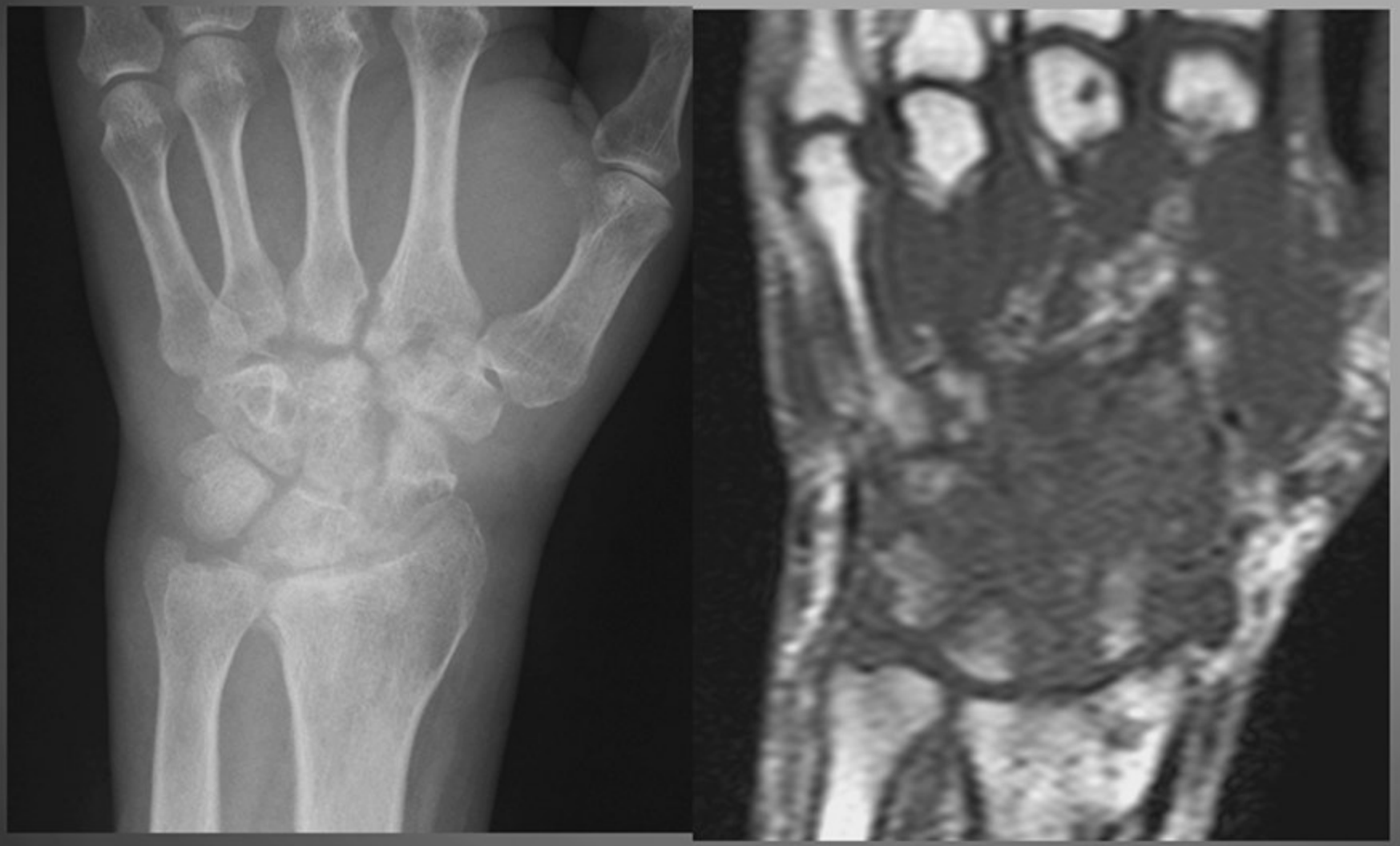




Artrit+OM TB



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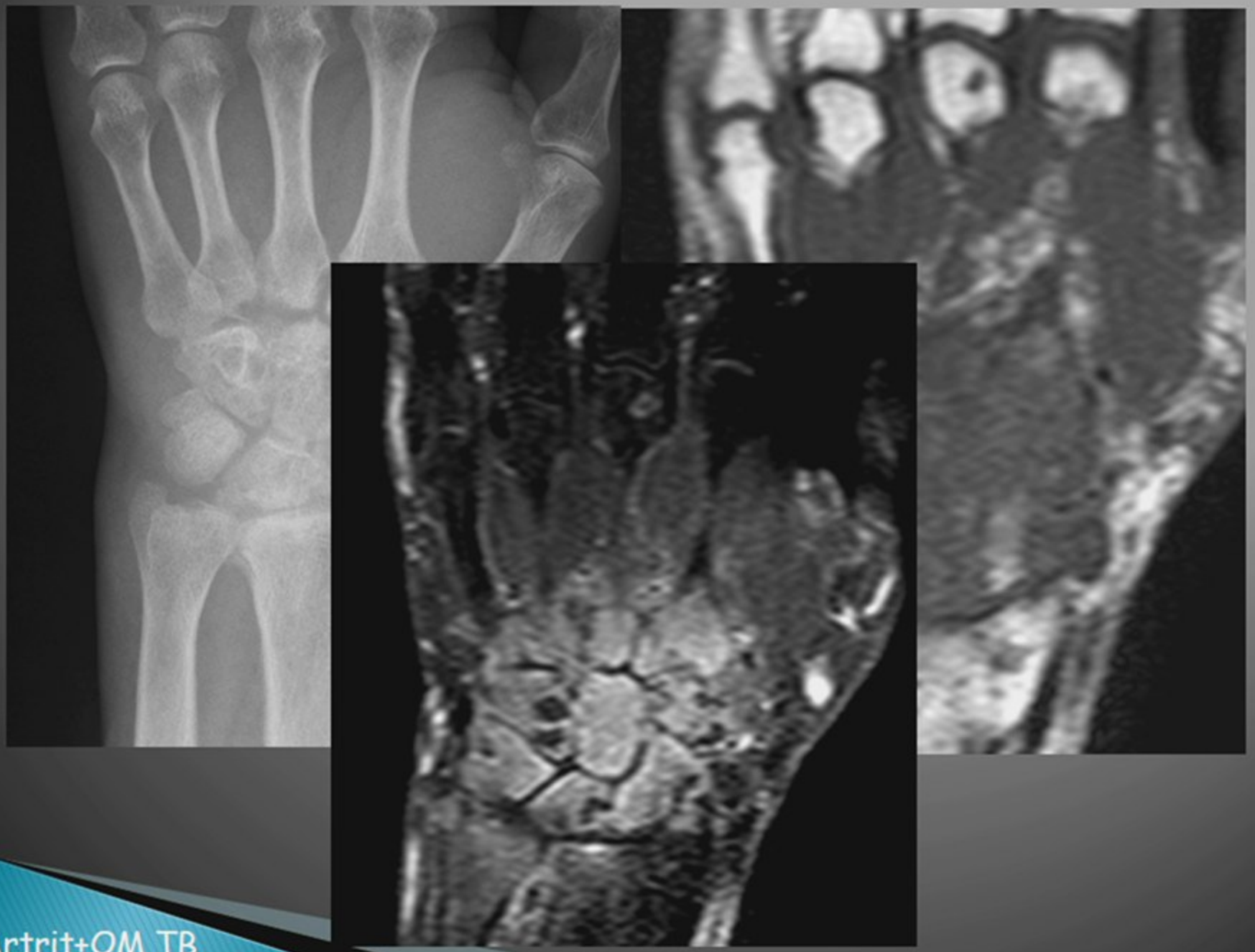

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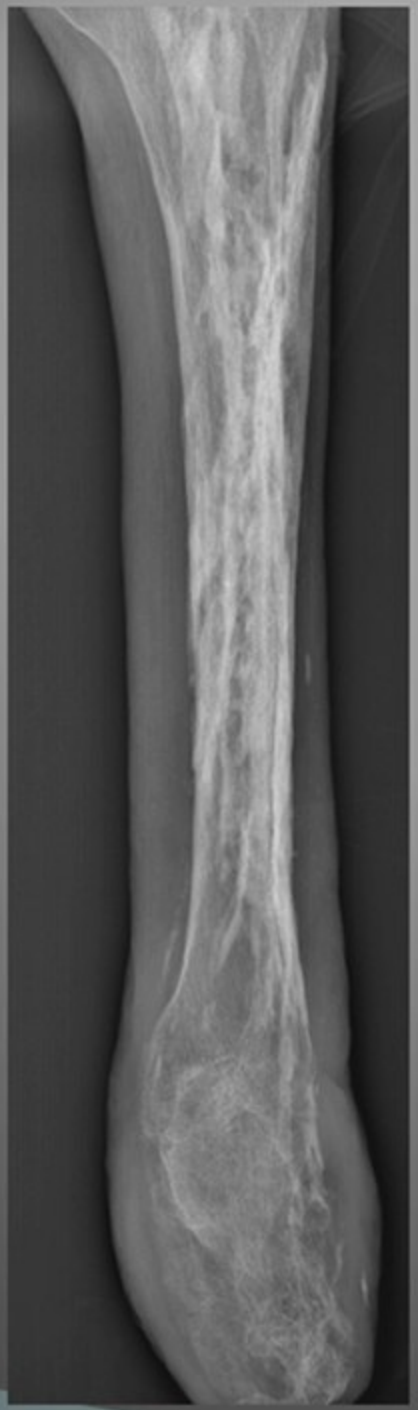
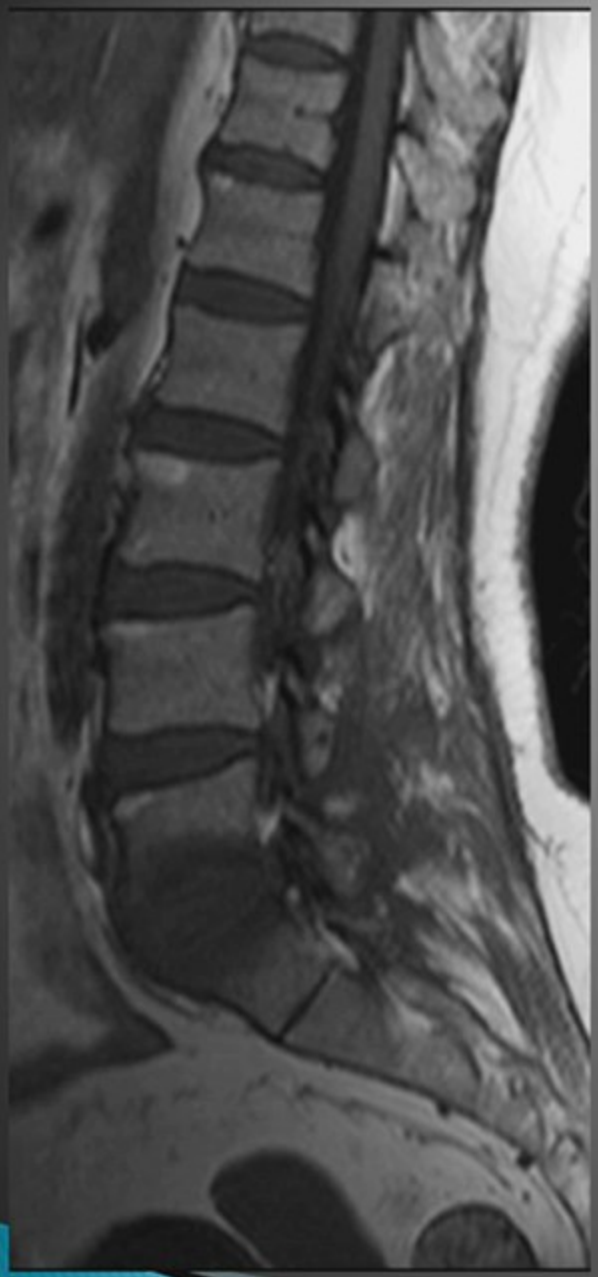


Spondilodiskitler

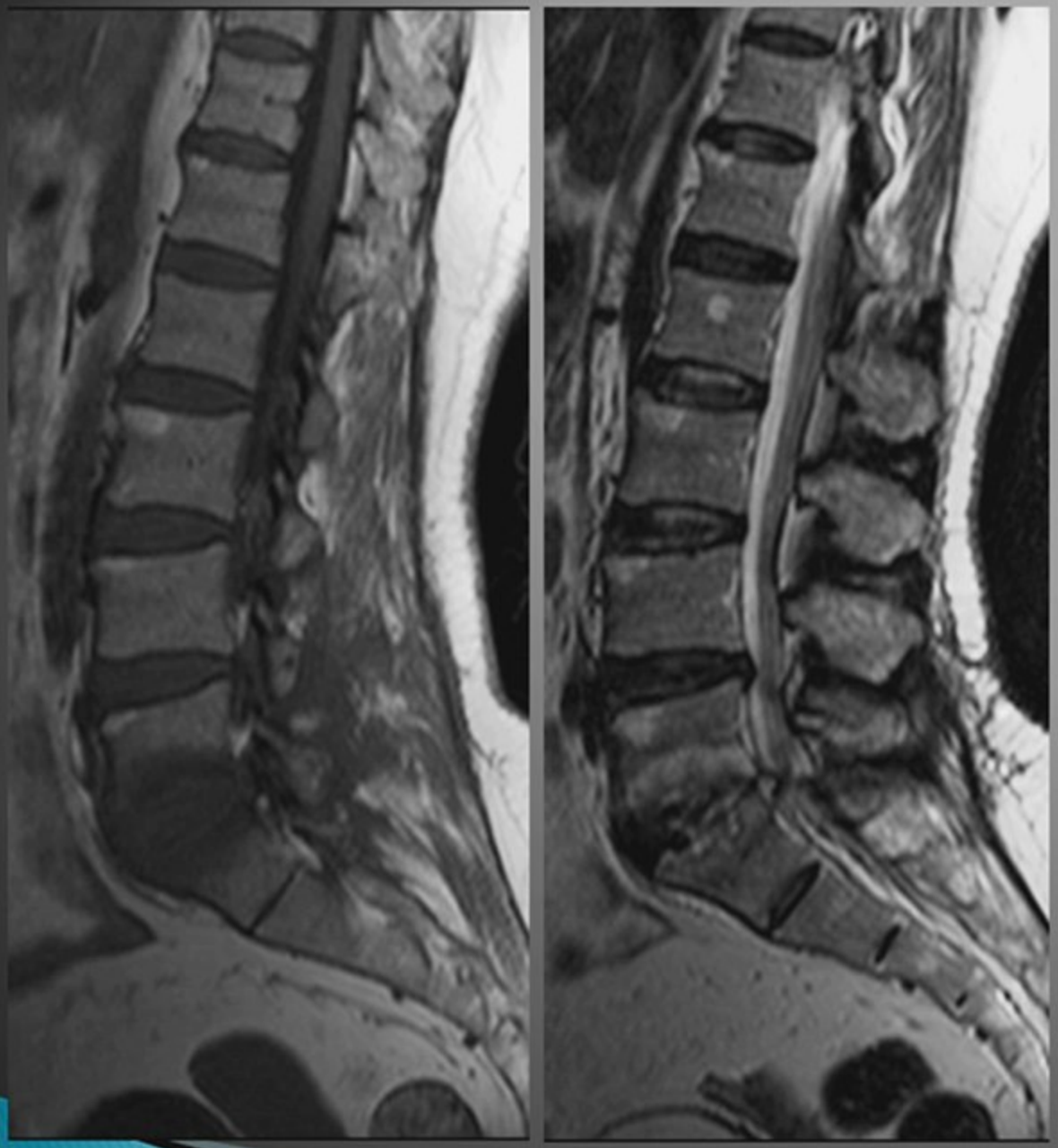
- T1 A ve CE T1A
  - Kemik iliği ödemi, intravert. vakum
  - End-plato çizgisinin tanımlanamaması
  - Kortikal devamlılıkta bozulma
  - Tutulmuş kemik, disk ve diğer alanlarda kontrast boyanma (flegmon; diffüz boyanma)
  - Apselerde periferik boyanma

Spondilodiskitler

- T2A
  - Diskte (hot disc) ve kemik iliğinde sinyal artışı
  - Disk santralindeki hipointens nükleer yarık görünümünün kaybolması
- Atipik Bulgular
  - T1 A disk sinyalinde değişmeme veya artma
  - İnfekte diskte boyanmama
  - T2 A disk sinyalinde azalma



Gram (+) kok, 02/2011



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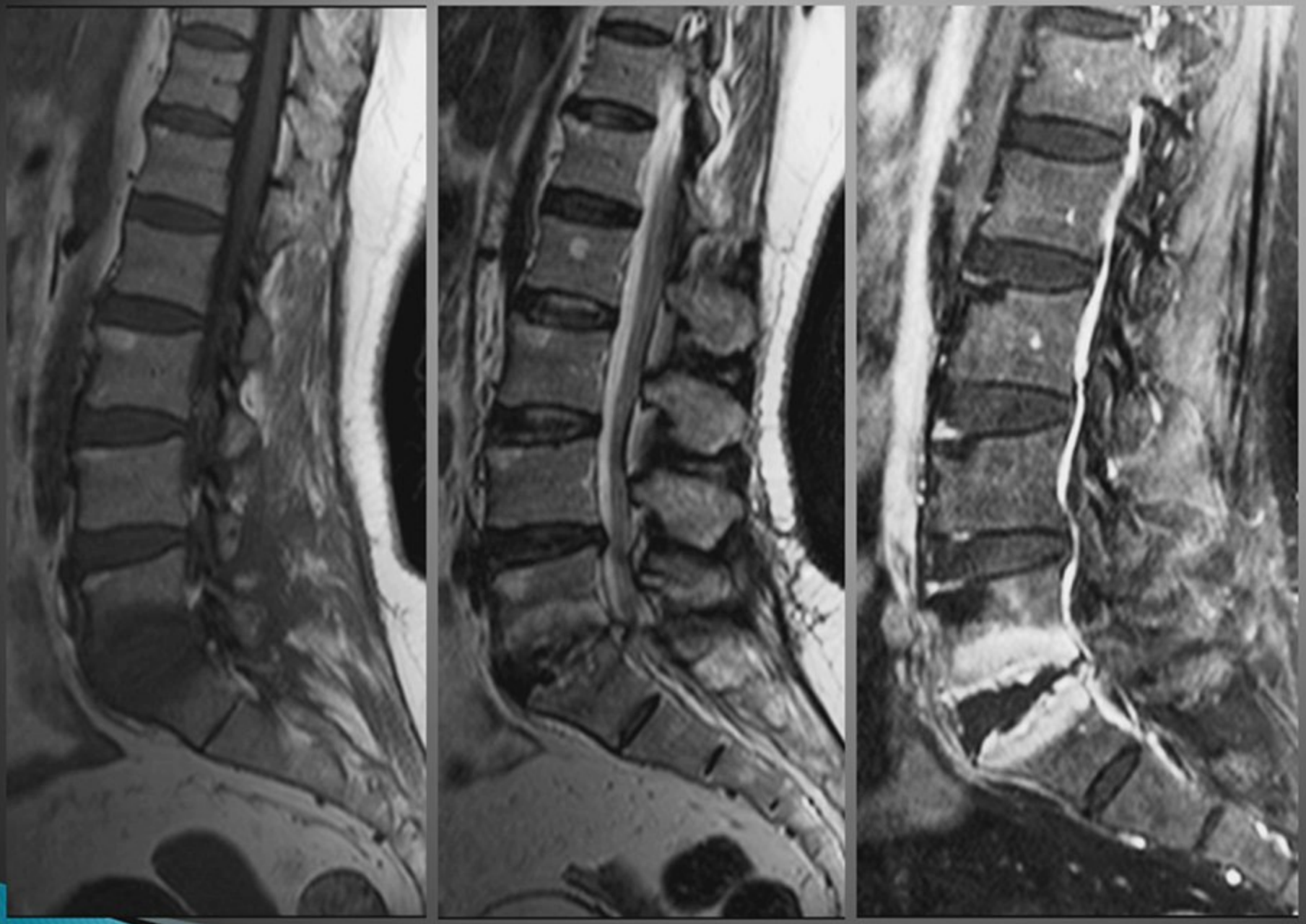

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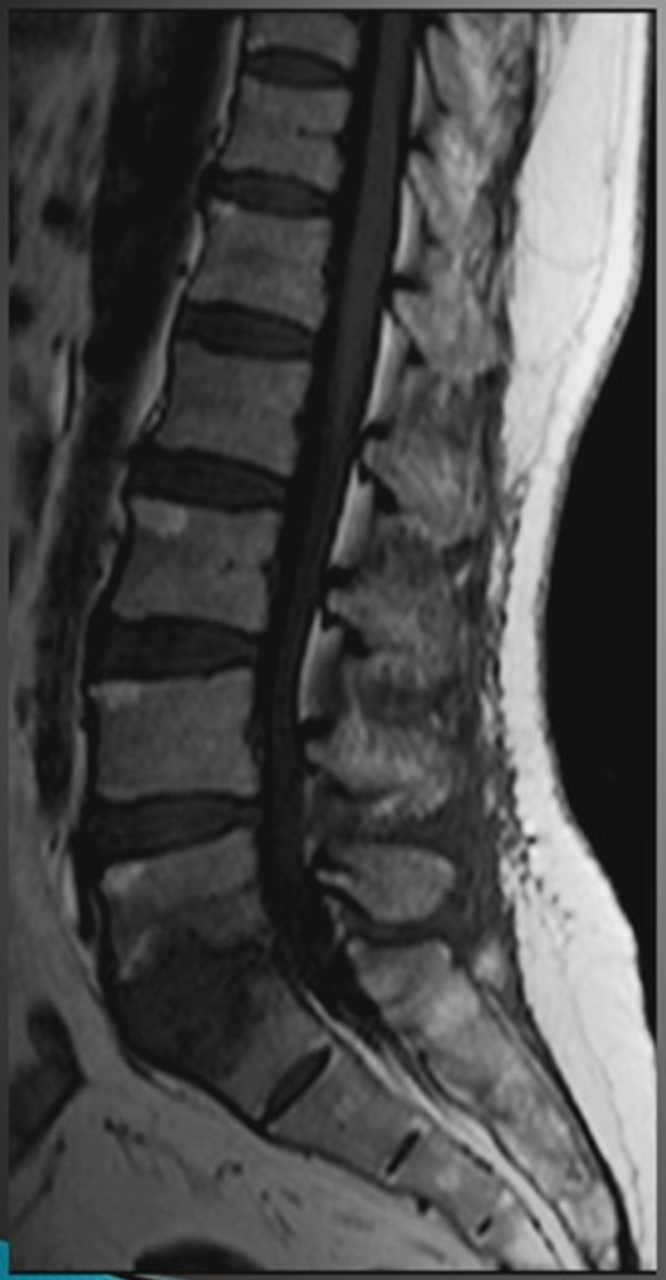

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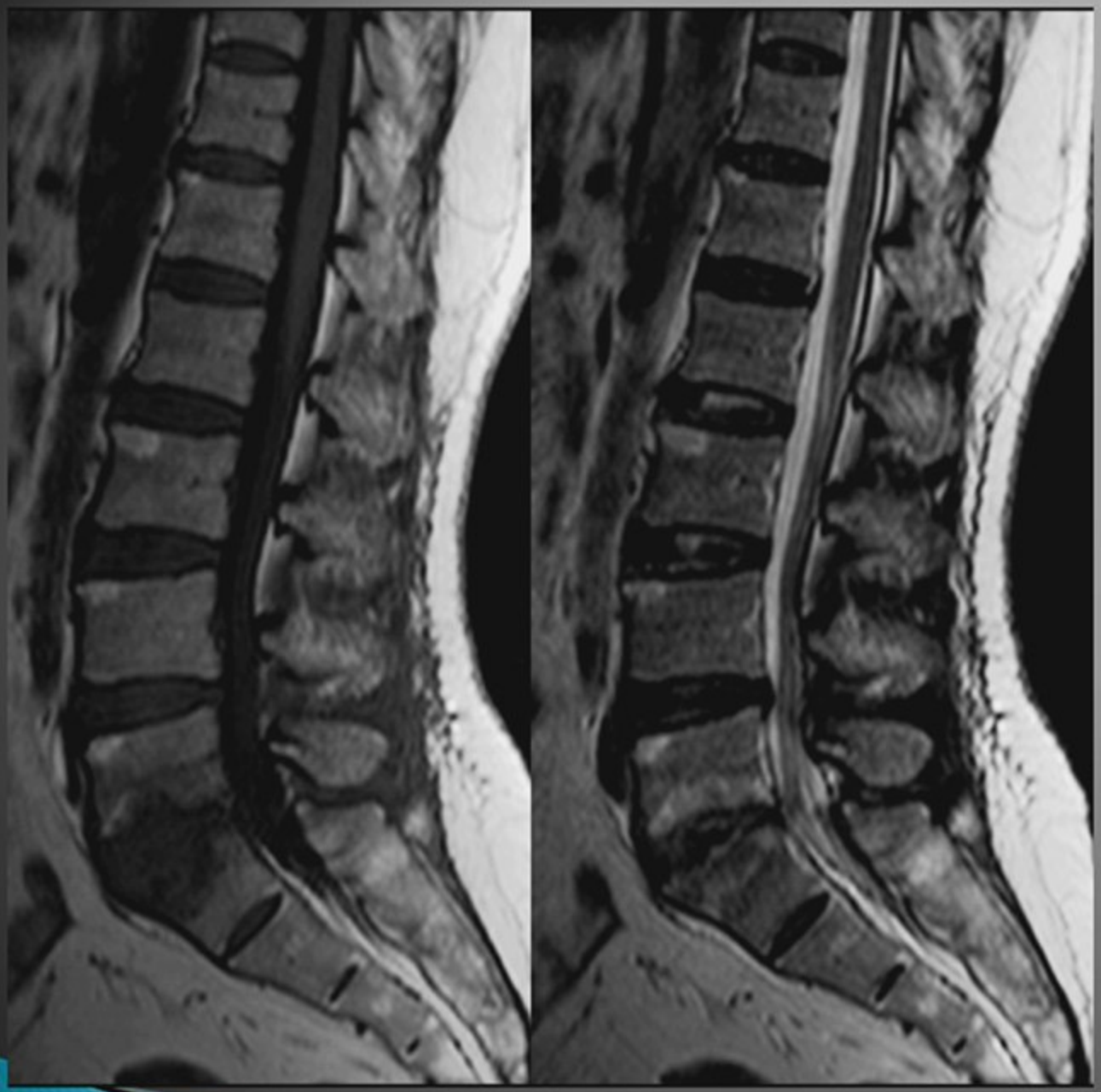

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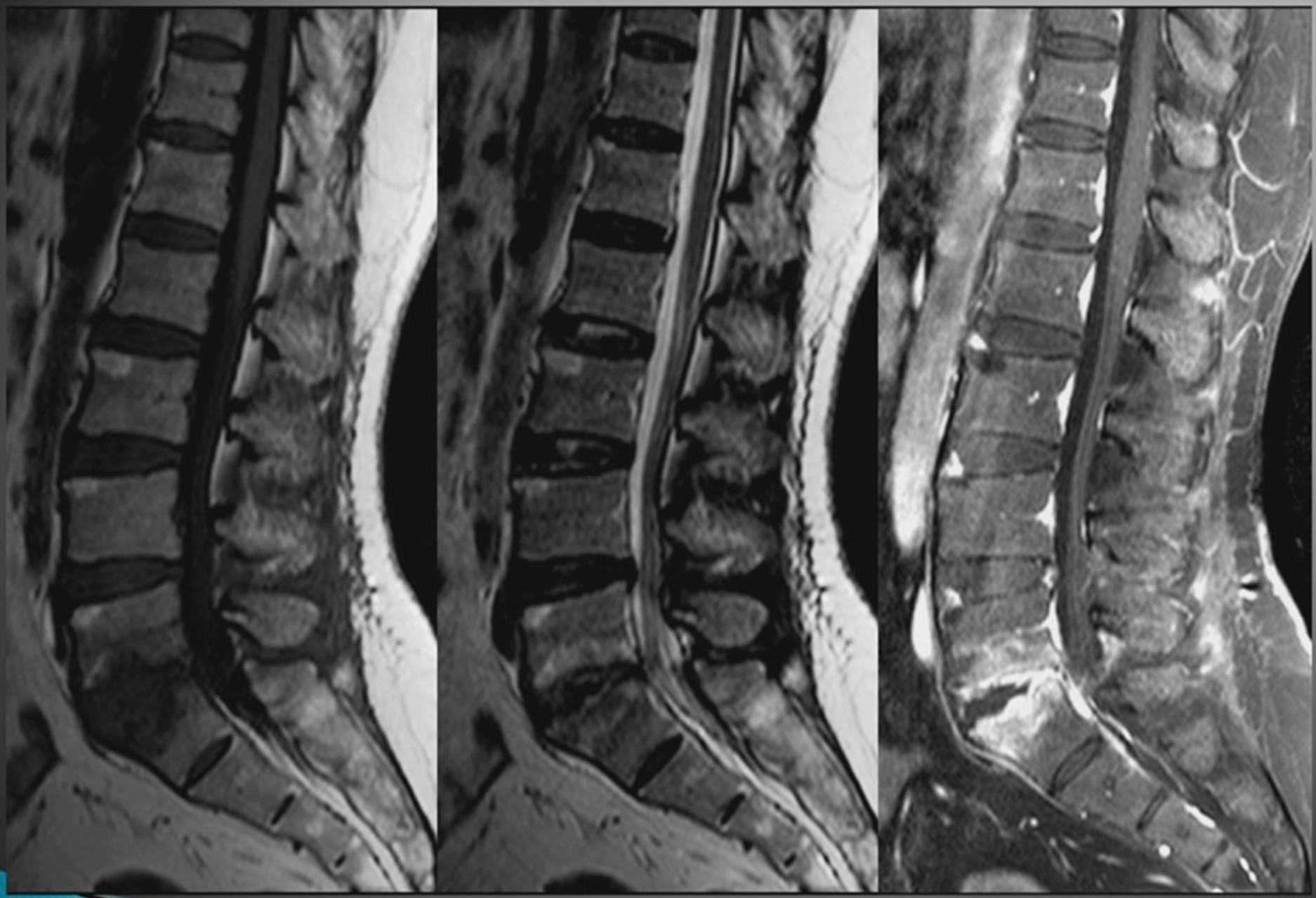


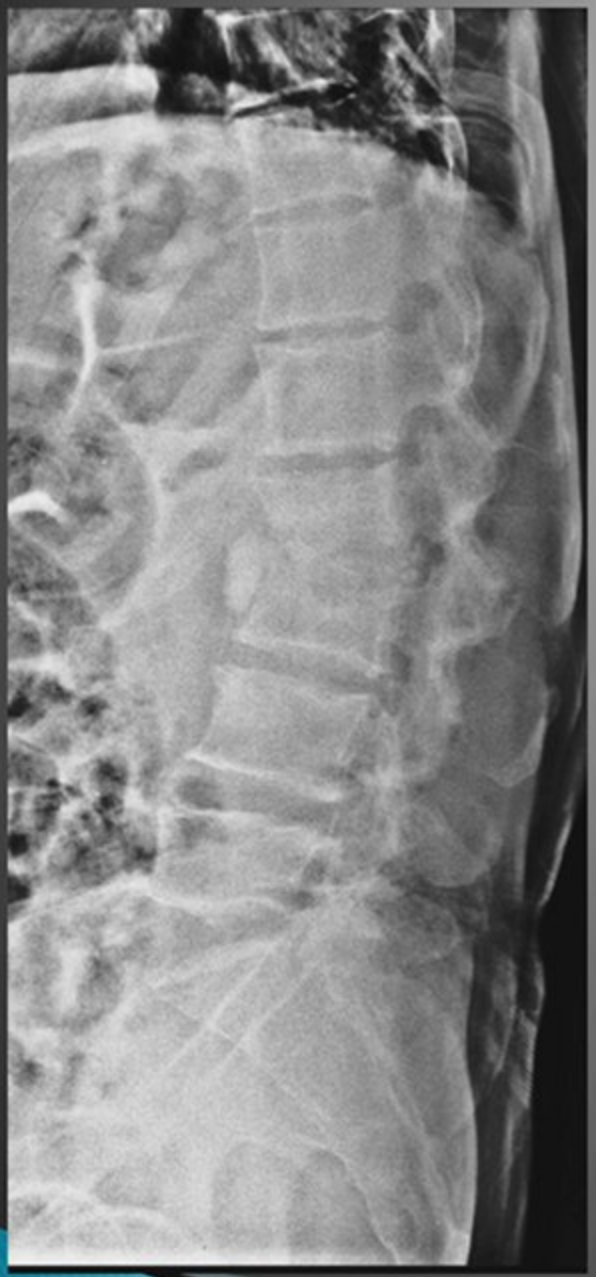
Gram (+) kok, 04/2011

TB Spondilodiskit

- Hematojen yayılım, kronik gidiş (disk tutulumu geç)
- Piyojenik spondilodiskitten radyolojik ayrım zor
- En sık alt torakal/üst lomber
- Genellikle vertebra üst end-platosuna komşu subkondral kemikten başlar
- Posterior eleman tutulumu daha sık

TB Spondilodiskit

- Ardışık iki vertebra end-platosunun tutulumu
- Kortikal kayıp ve fragmantasyon
- İkiden fazla vertebra korpusunun tutulumu
- Anterior vertebral osteoliz ve kamalaşma (gibbus)
- Epidural tutulum
- Paraspinal kitle, apse ve fistülizasyon, kalsifik.



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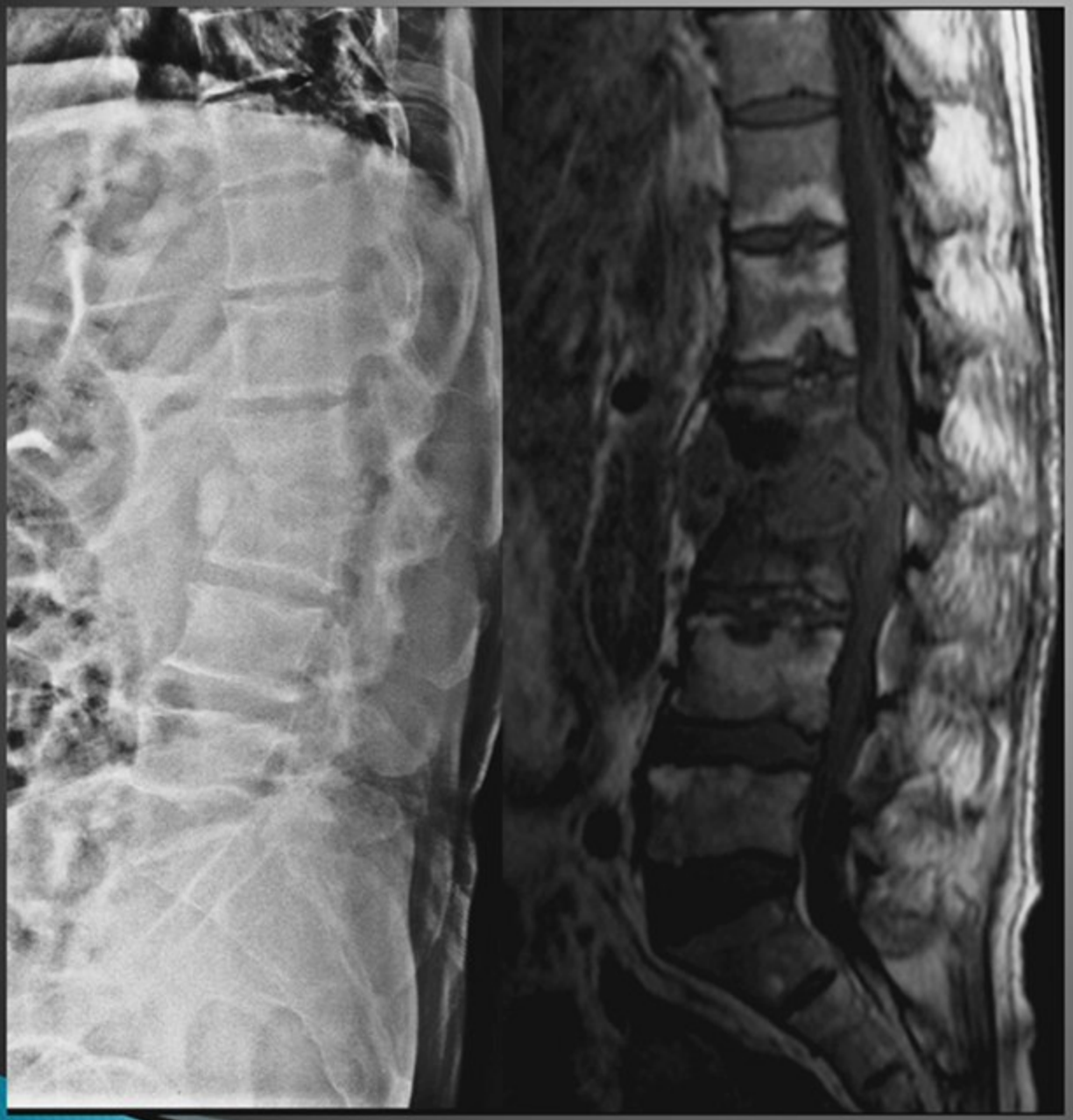

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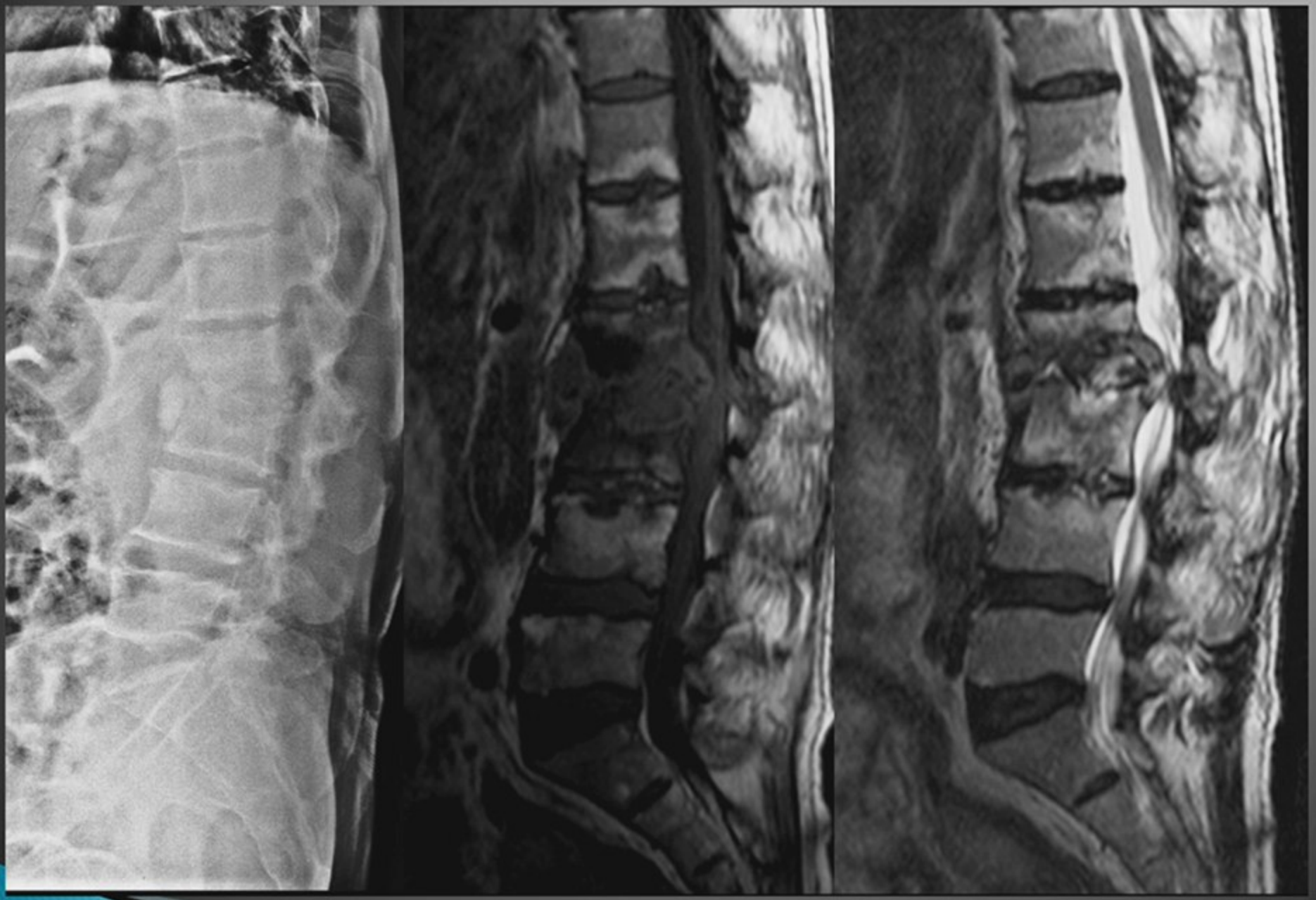

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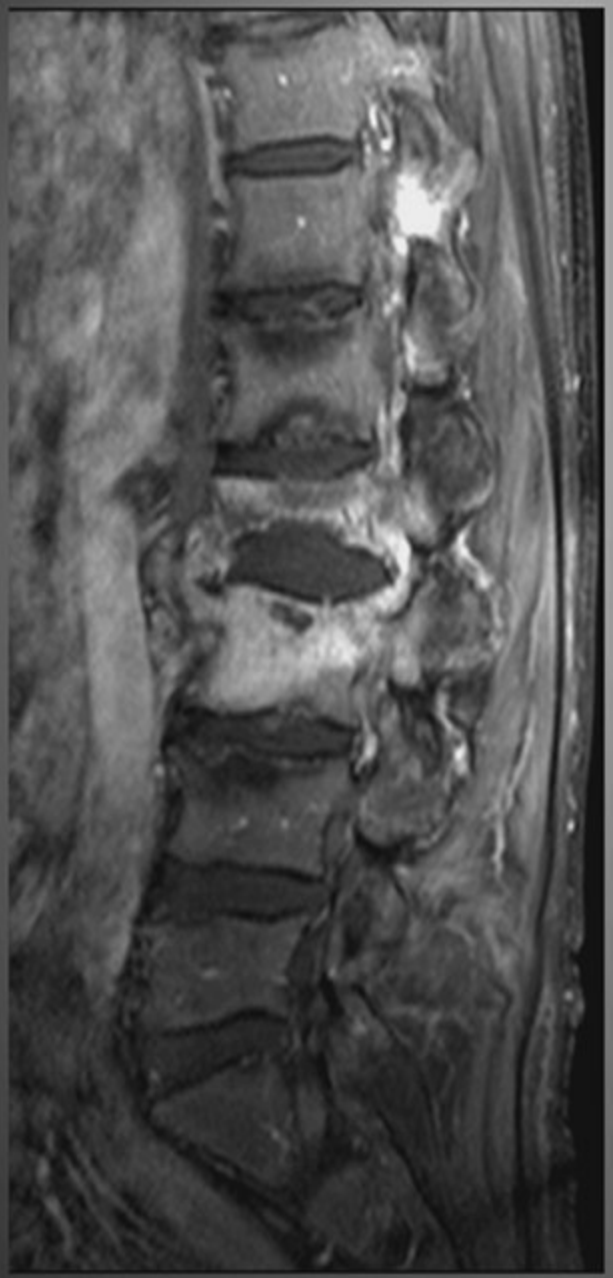

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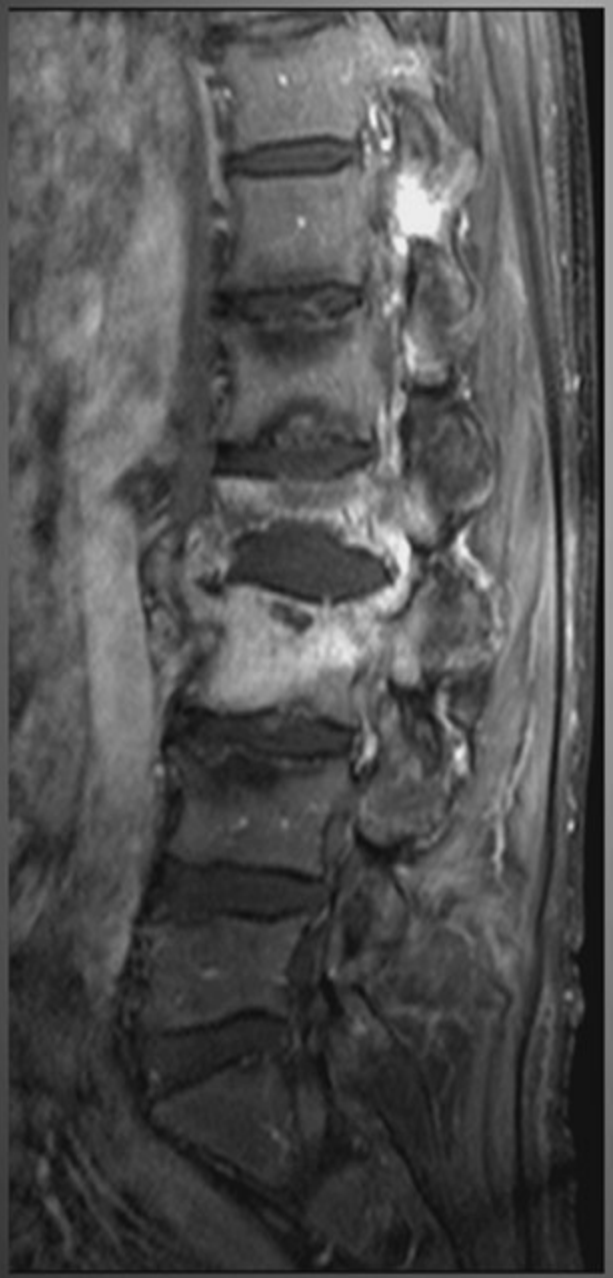

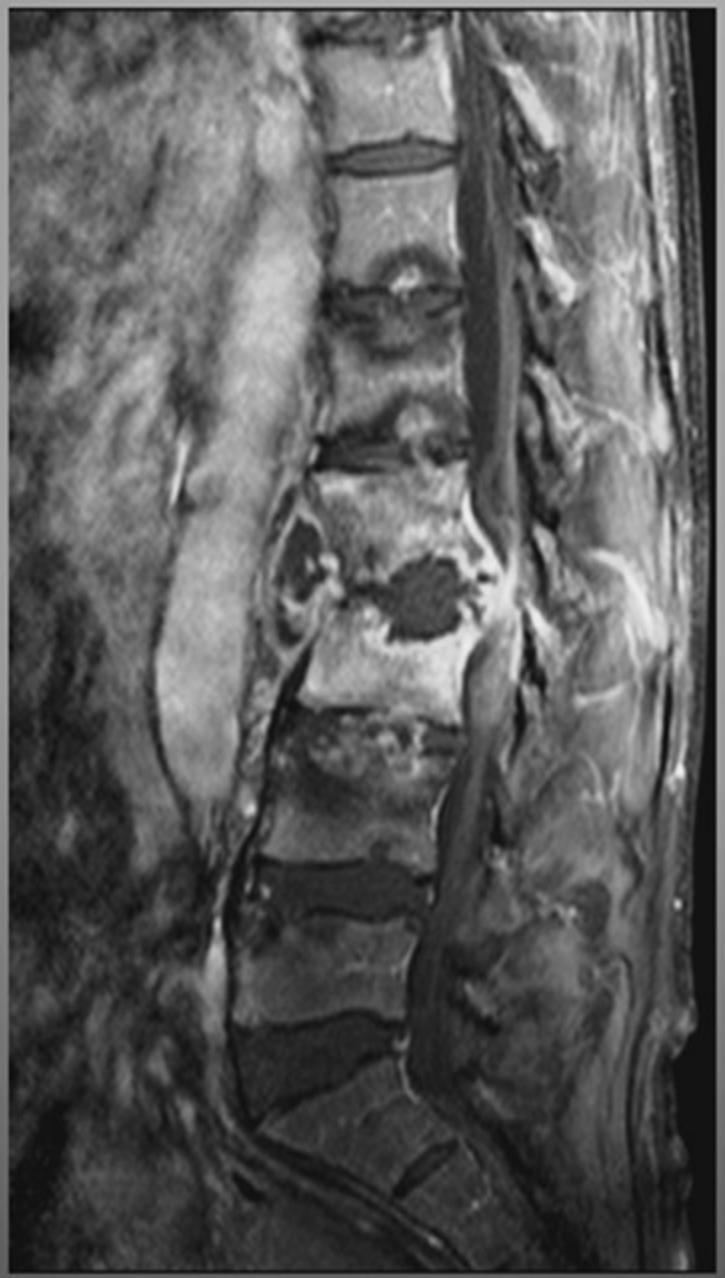

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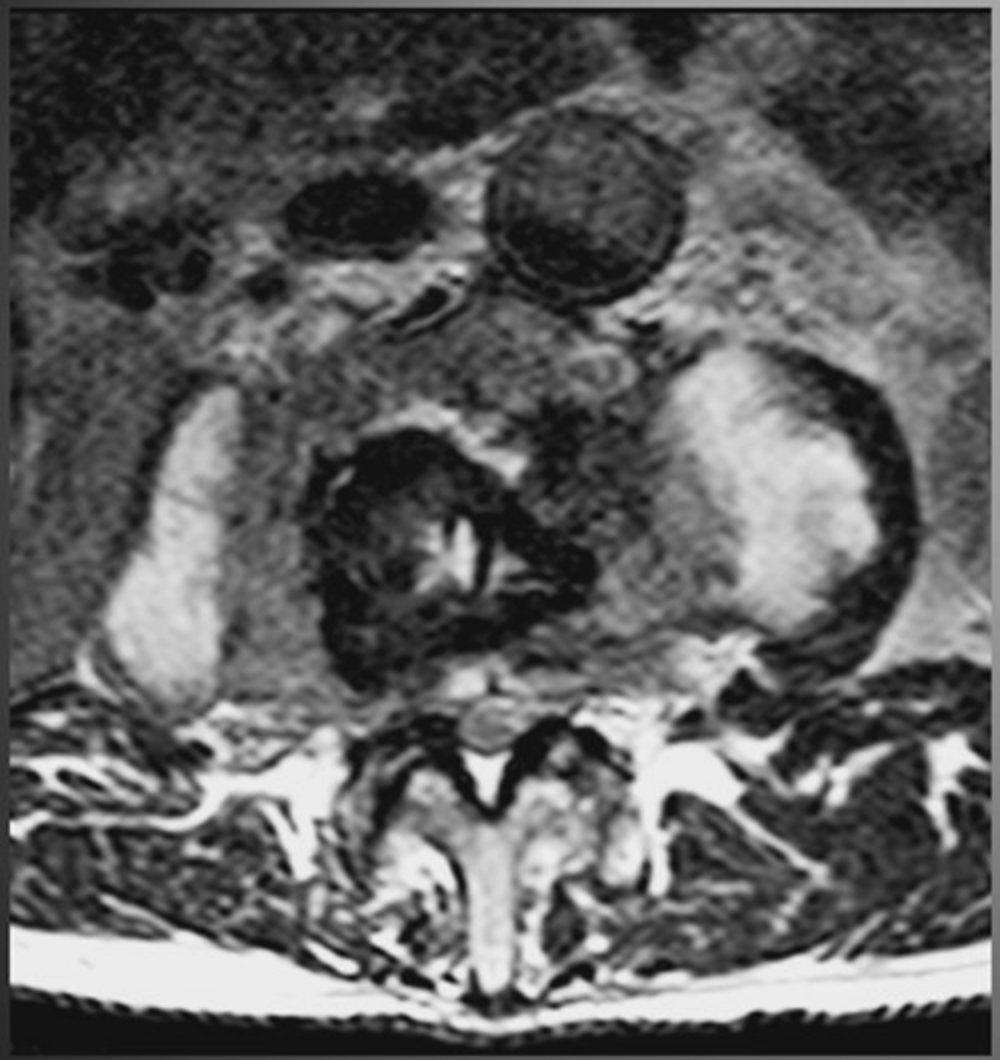

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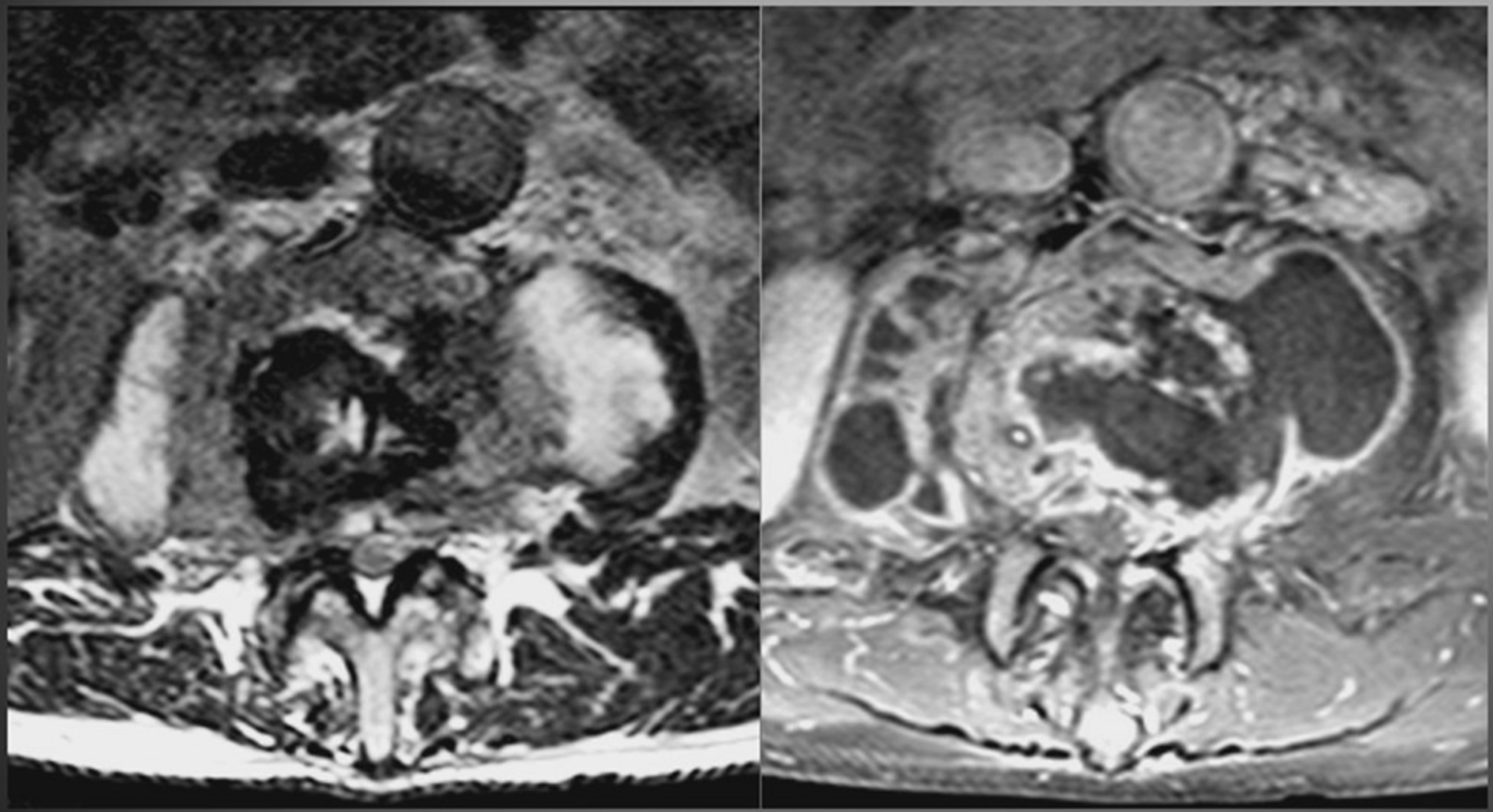
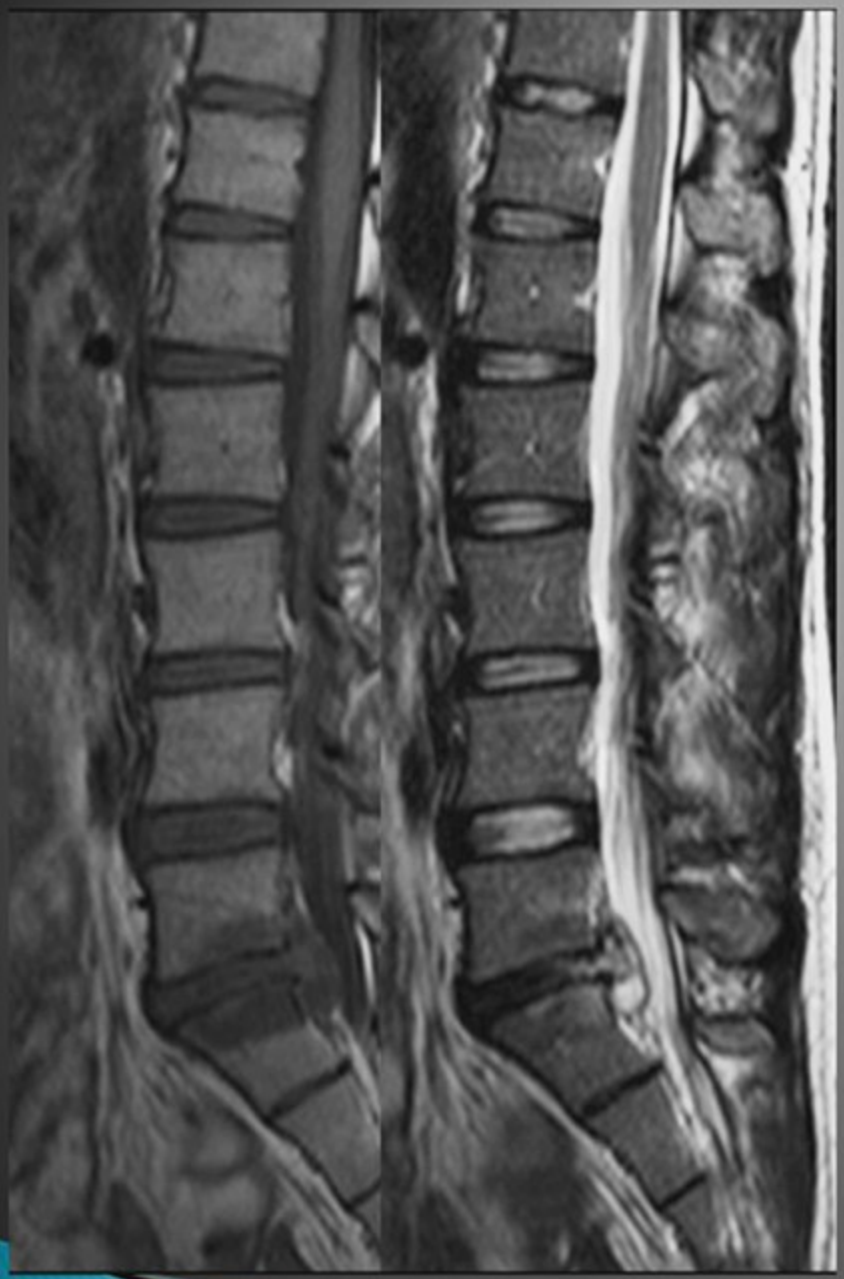


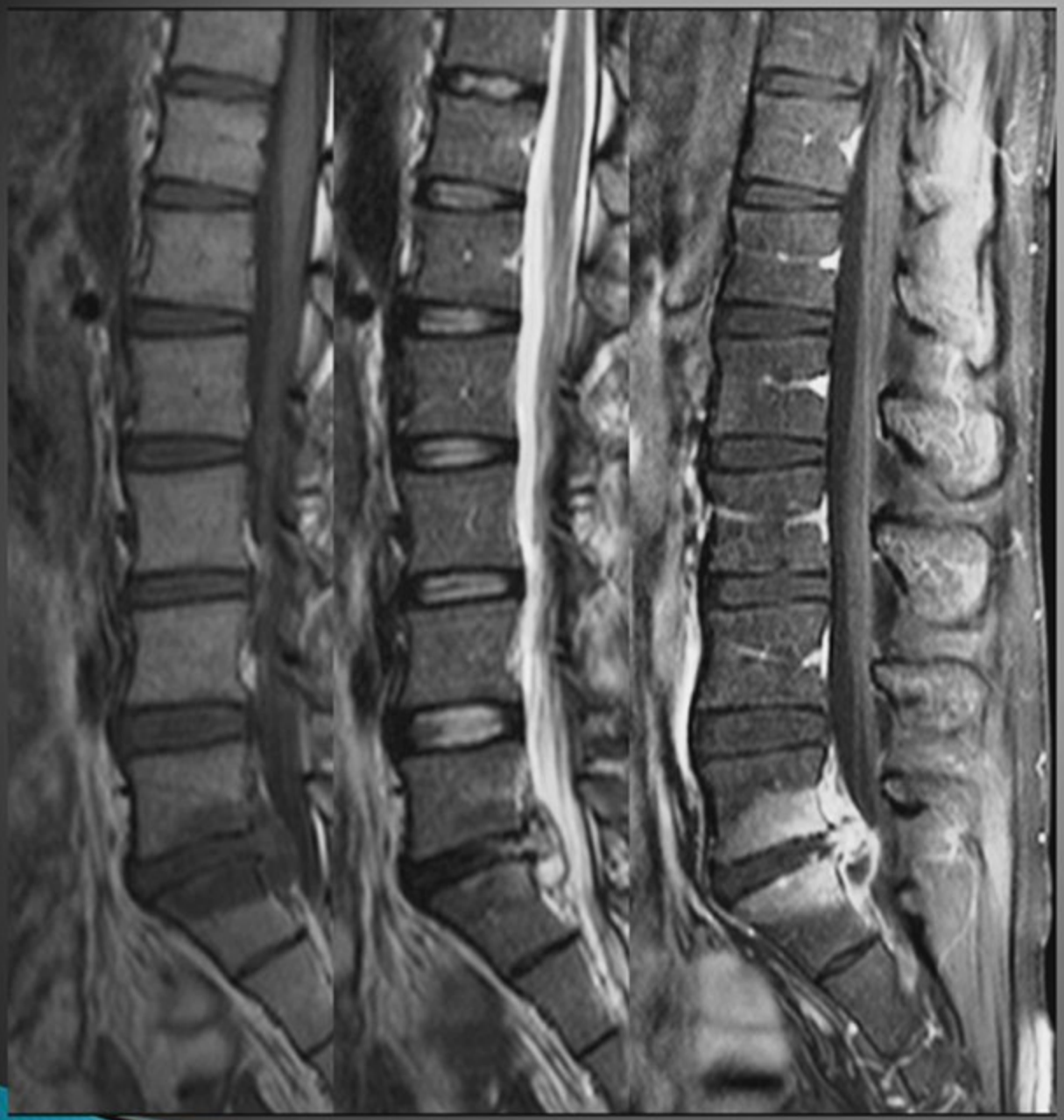
TB

Brusella Spondilodiskit

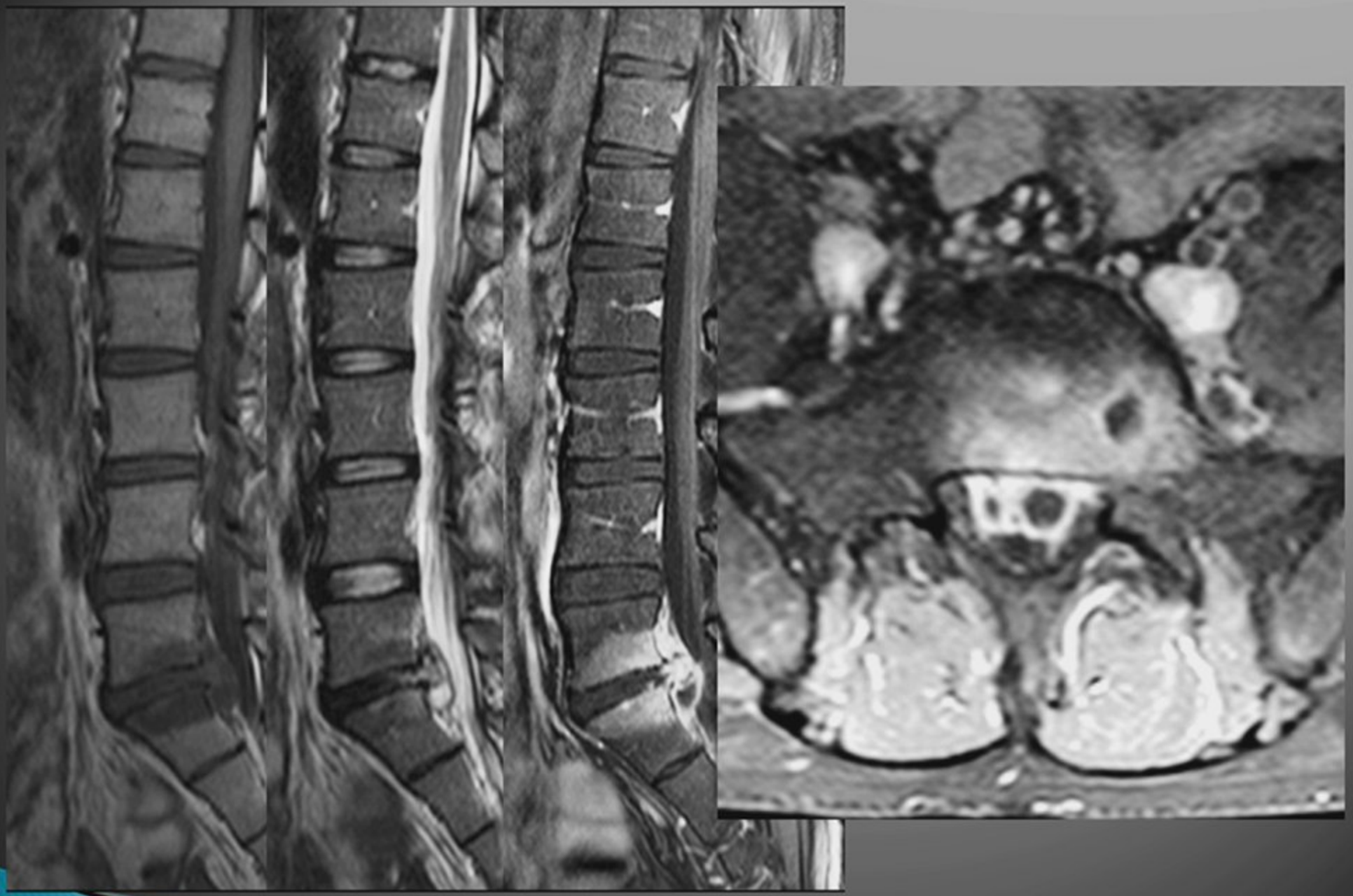
- Genellikle vertebra üst end-platosunda başlar
- En sık alt lomber
- Genişlemiş, ödemli disk (herniasyonu taklit edebilir)
- Erken evrede üst end platoda anteriorda kemik destrüksiyonunu takiben yeni kemik oluşumu (papağan gagası)



Brusella



Brusella

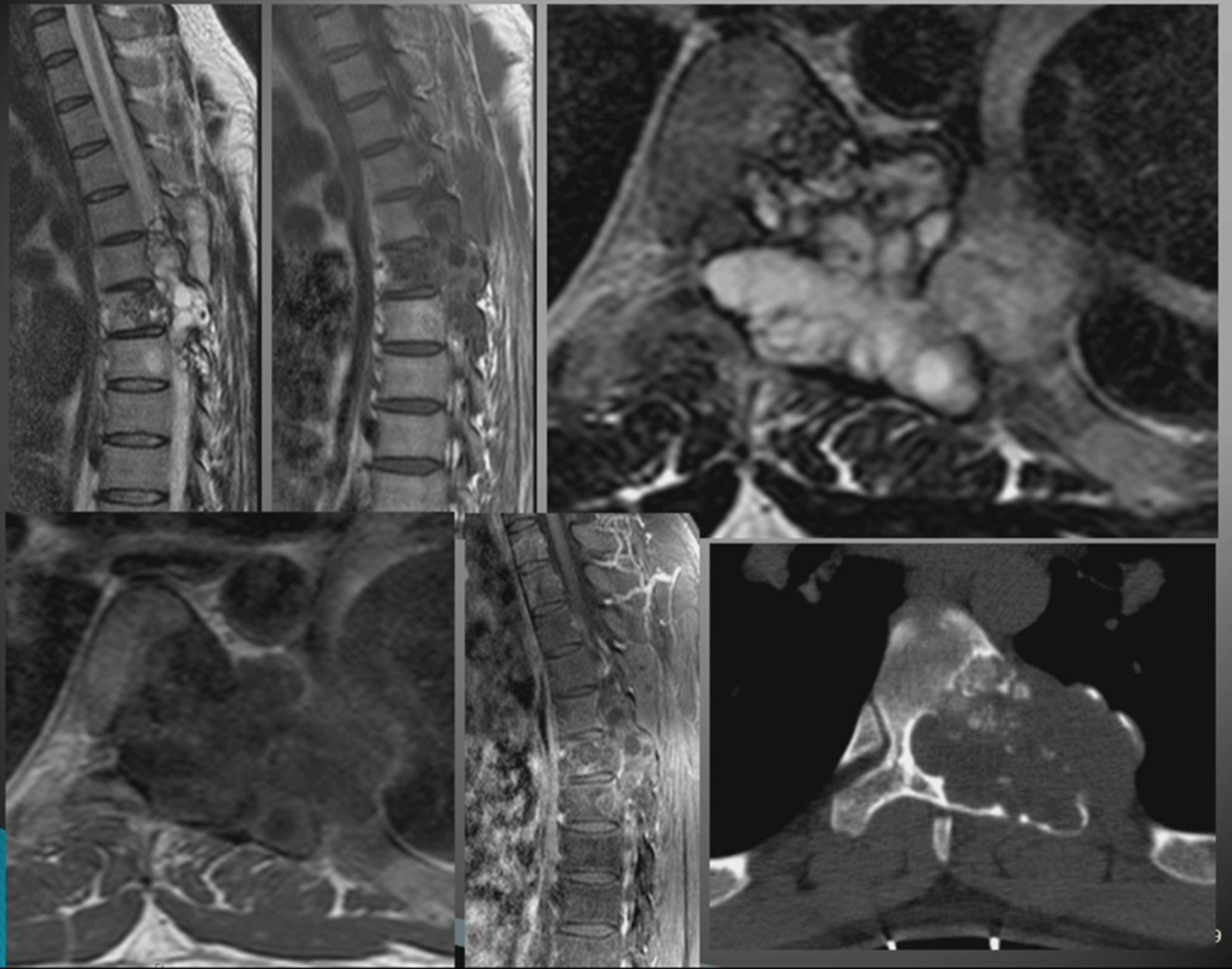


Brusella

	Lokaliz	Disk Tut	Çoklu Seviye	Apse	Post. Eleman Tut.	Kemik defom. Kollaps	Kalsif.	Yeni Kem.
TB	Torakal	Geç (ciddi)	+++	+++ (ince)	+++	+++	+++	-
Brusel.	Alt Lomber	Geç (orta)	+	+ (kalın)	-	+	-	++
Piyoje.	Lomber	Erken (orta)	+	++ (kalın)	-	++	-	+

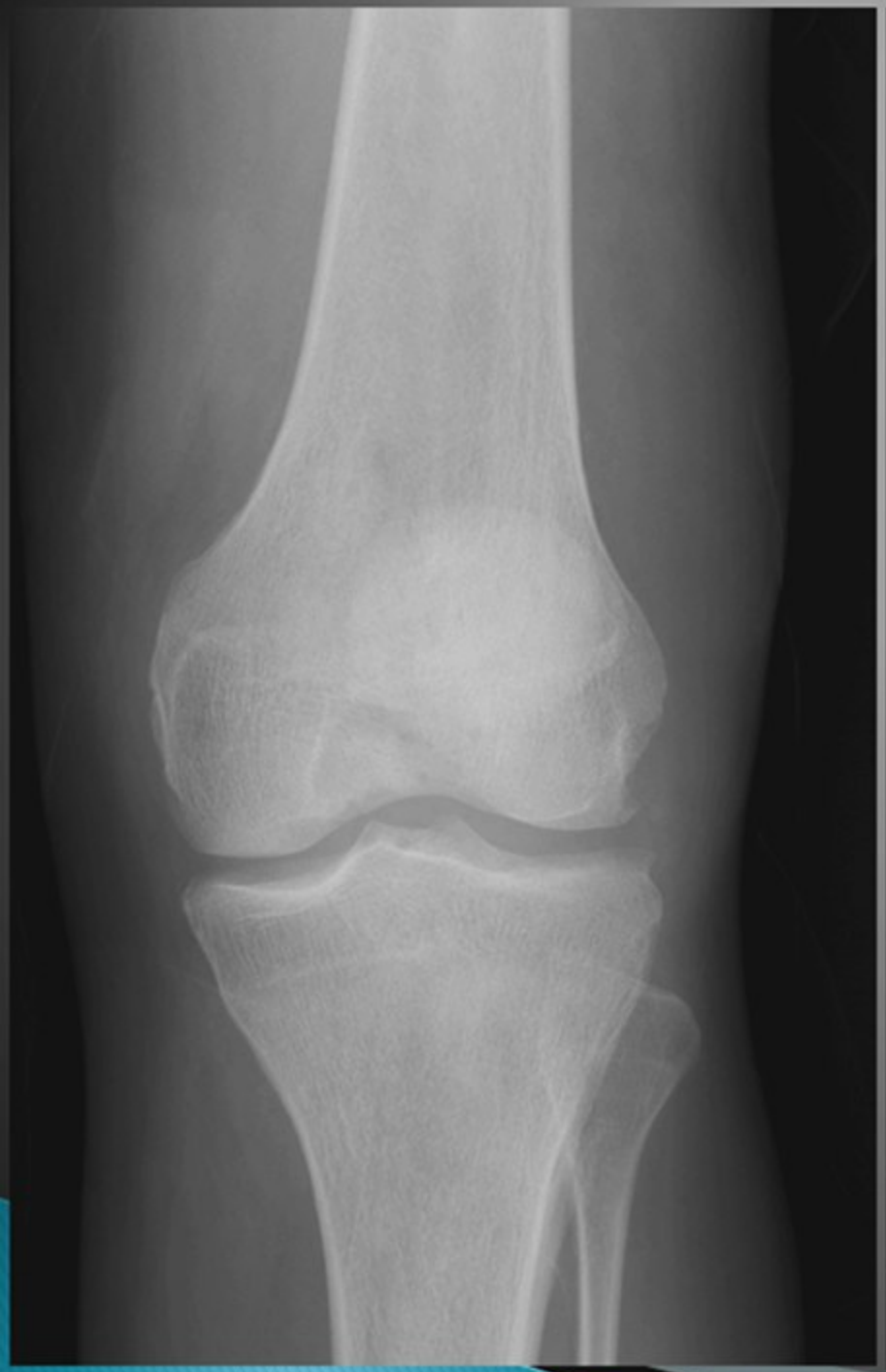
Artrit (infeksiyöz)

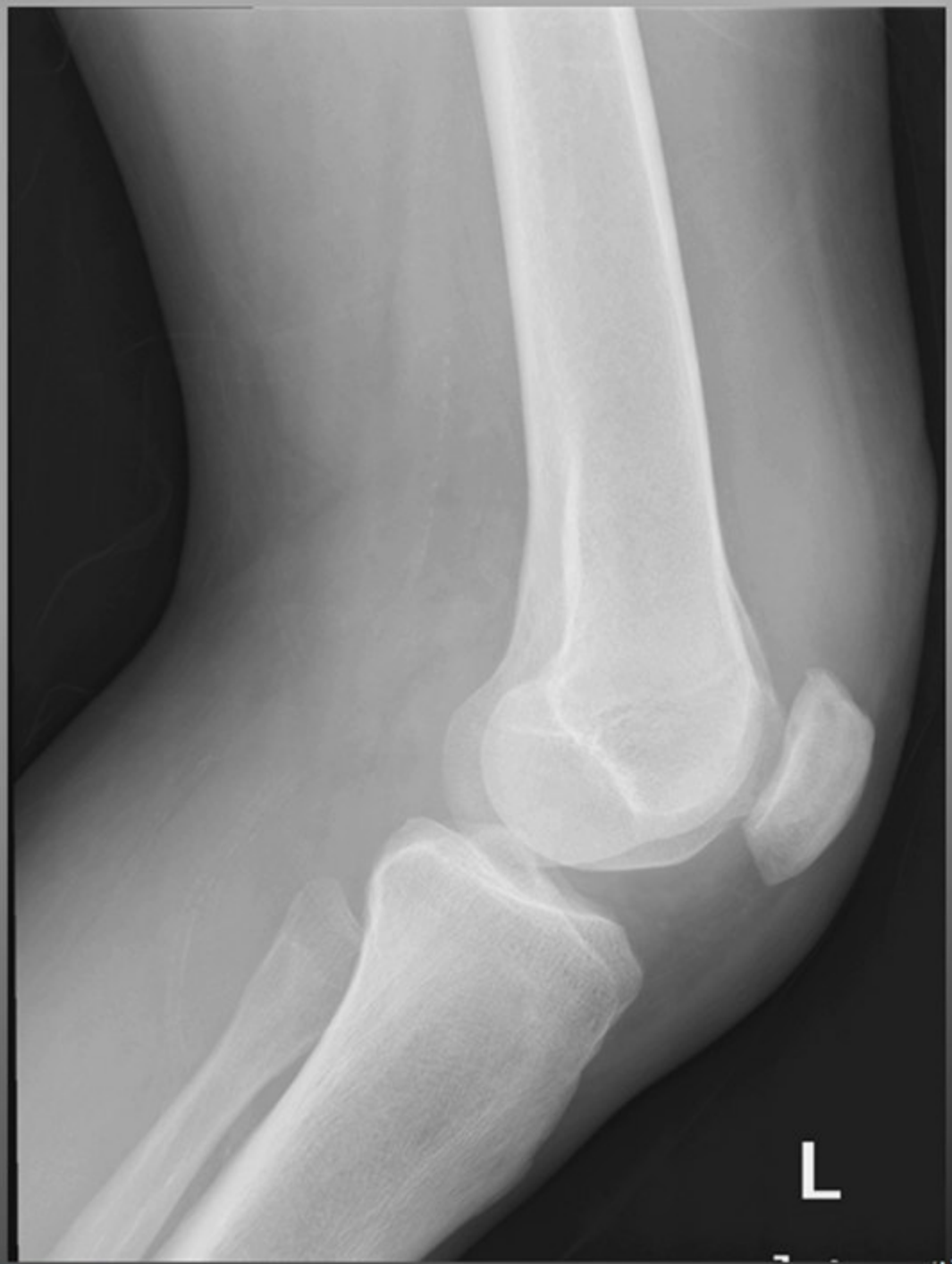
- Hematojen yolla, osteomyelite sekonder veya cerrahi sonrası gelişebilir.
- En sık tutulan eklem kalçadır.
- Erken dönemde yumuşak doku şişliği görülür.
- Eklem kartilajı 1-2 hafta içinde tamamen destrükte olabilir ve eklem daralır.
- Daha sonra subkondral kemikte destrüksiyon ve kronik evrede kemik ankilozu gelişebilir.



Artrit (infeksiyöz)

- Hematojen yolla, osteomyelite sekonder veya cerrahi sonrası gelişebilir.
- En sık tutulan eklem kalçadır.
- Erken dönemde yumuşak doku şişliği görülür.
- Eklem kartilajı 1-2 hafta içinde tamamen destrükte olabilir ve eklem daralır.
- Daha sonra subkondral kemikte destrüksiyon ve kronik evrede kemik ankilozu gelişebilir.

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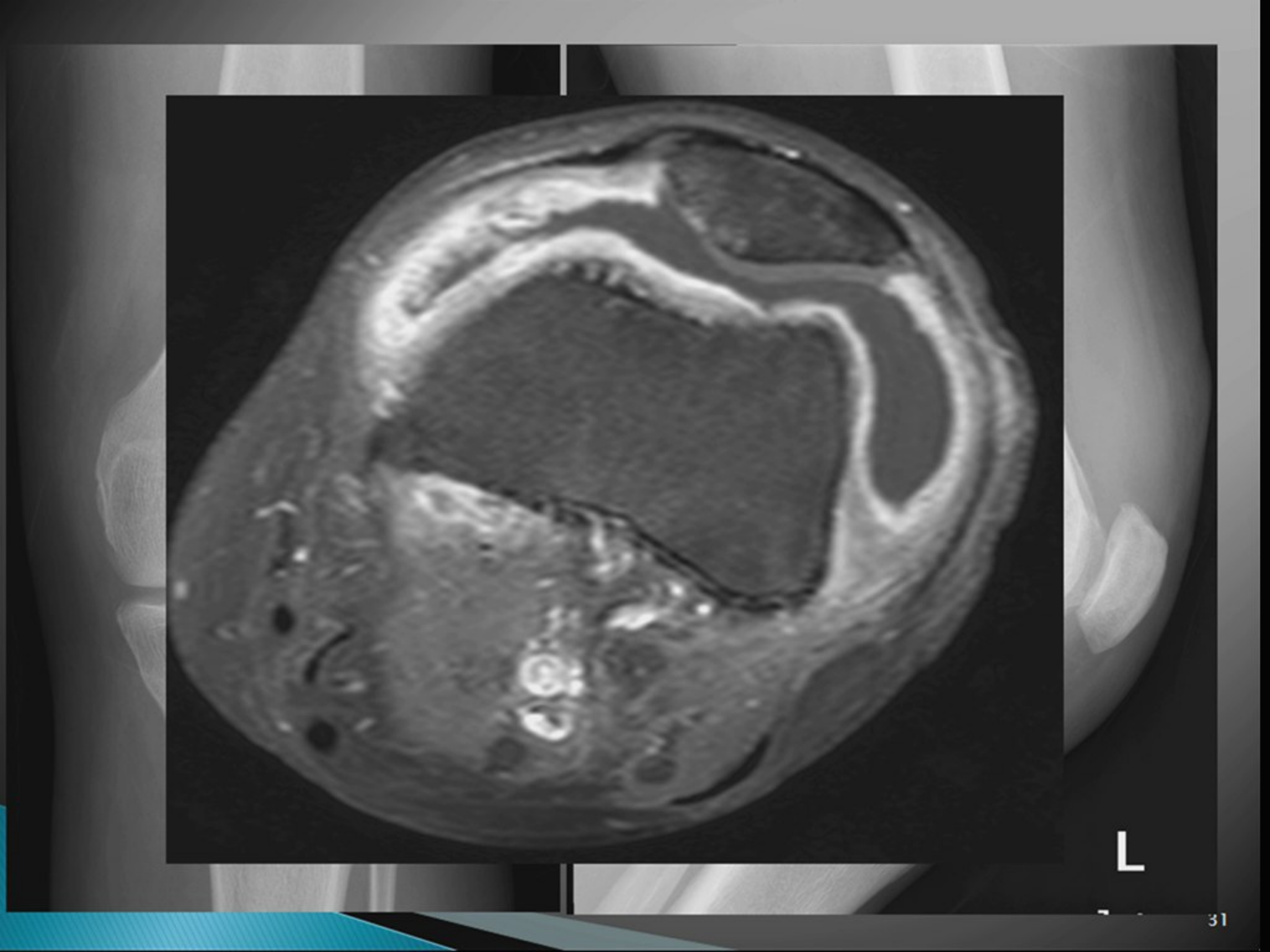
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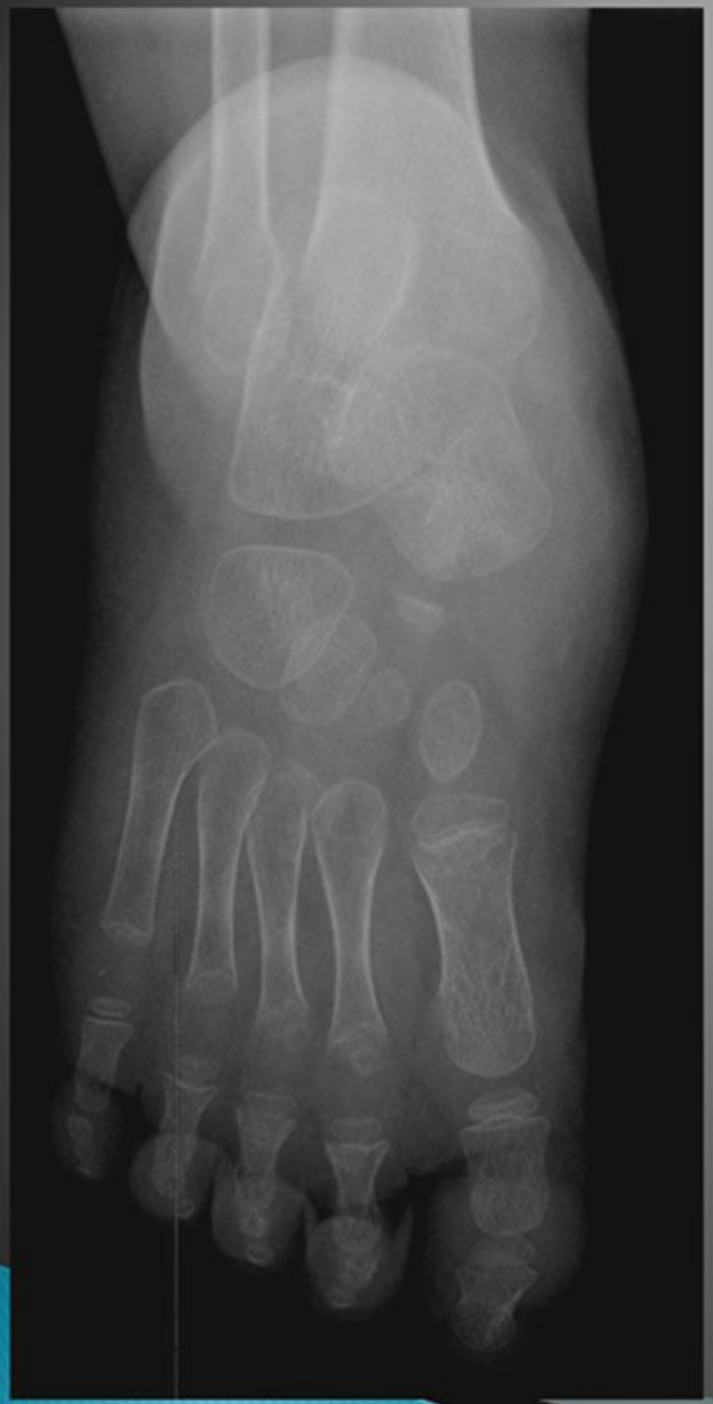
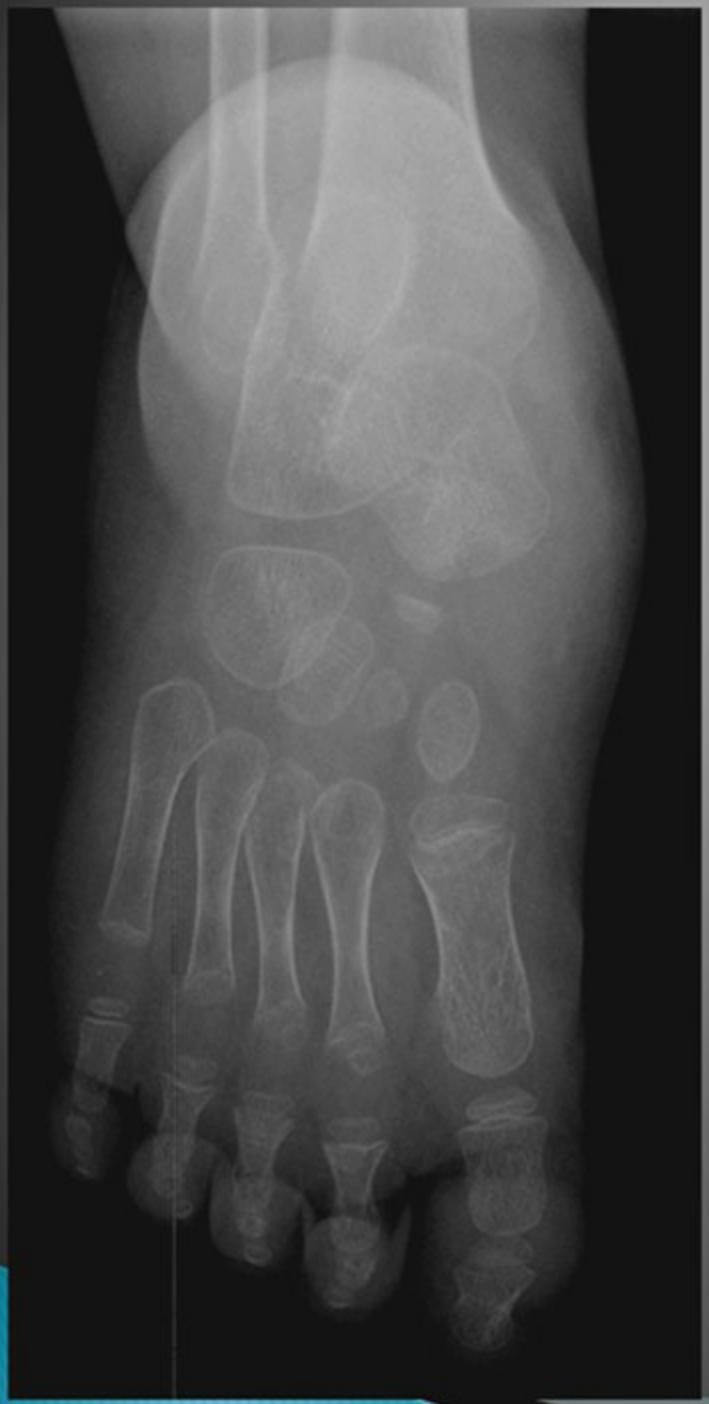
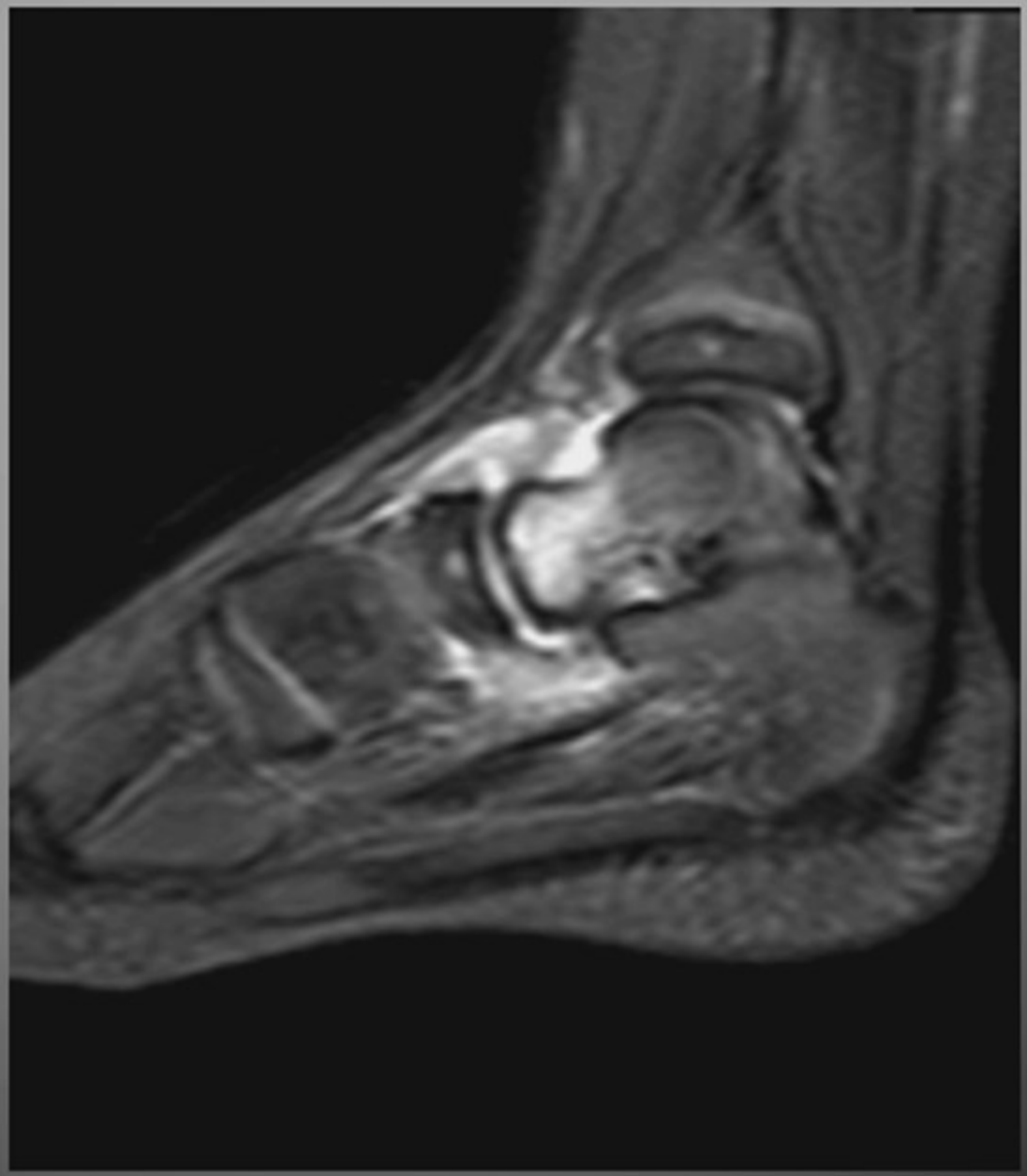
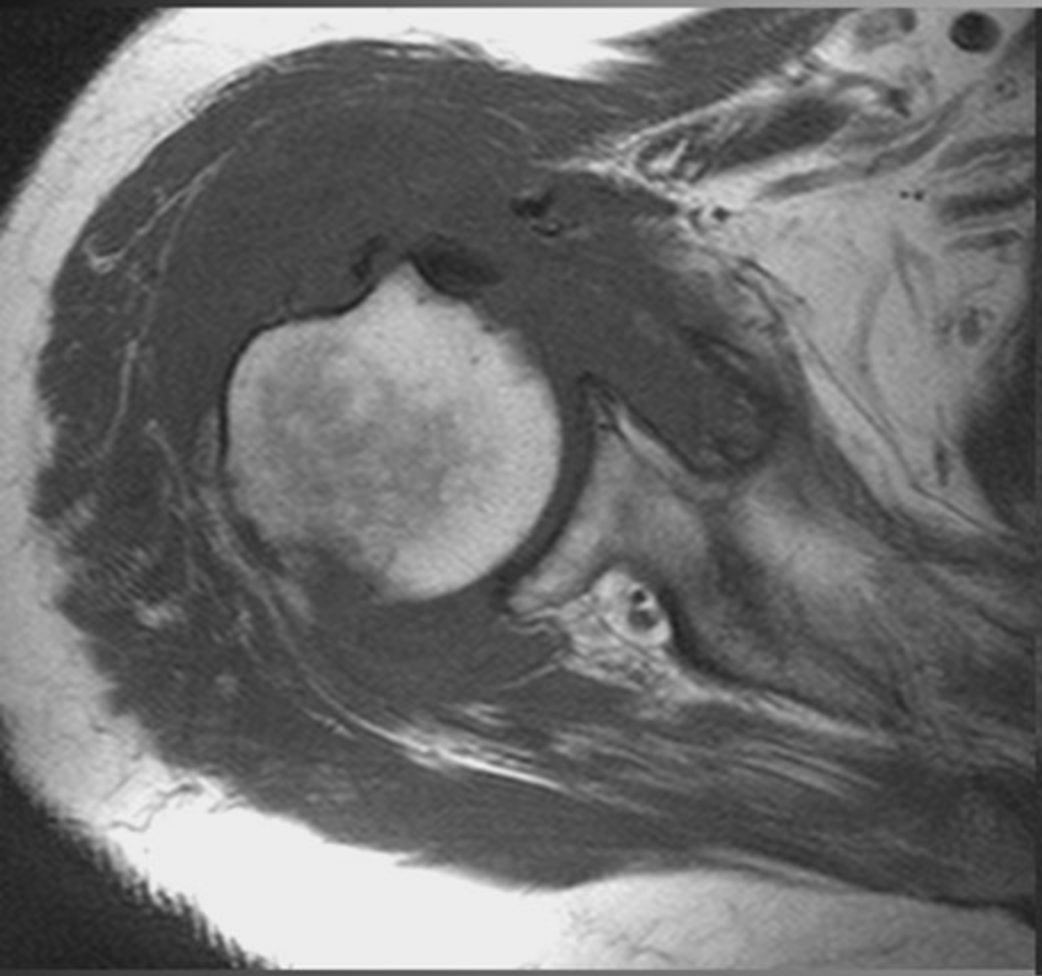


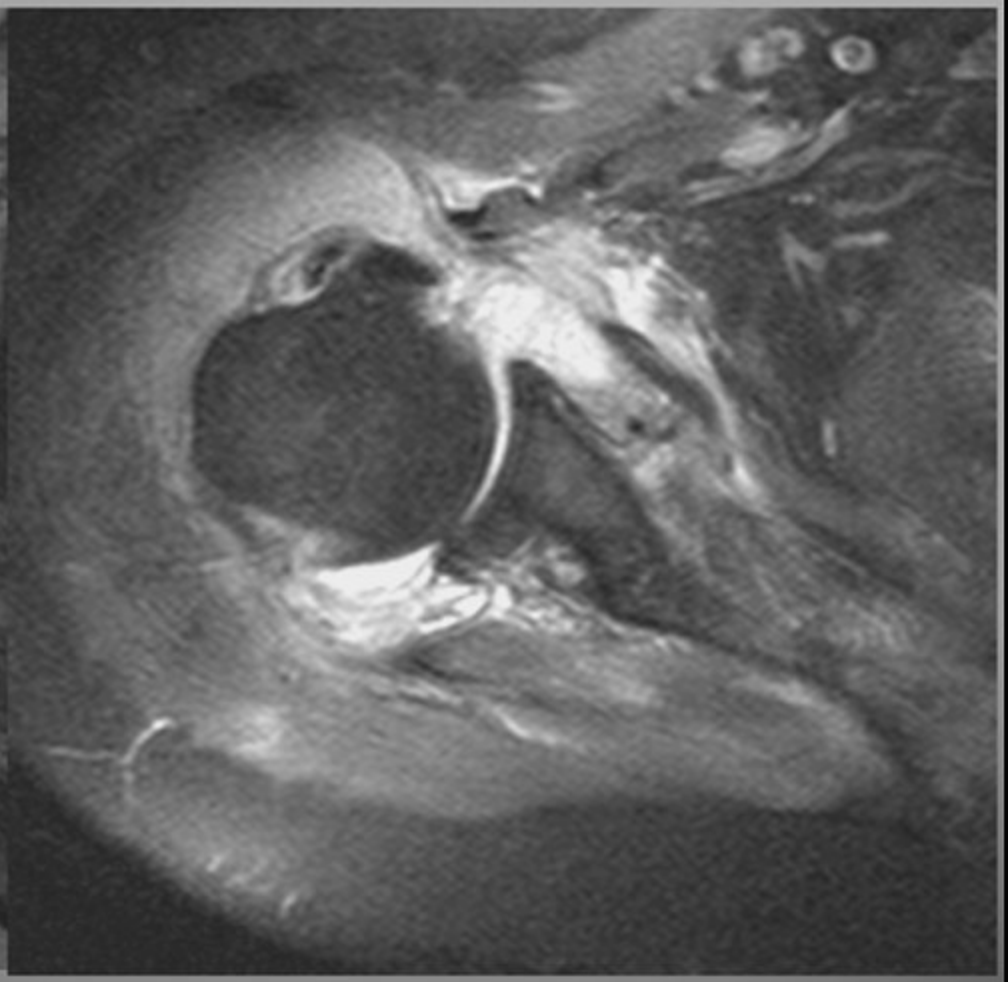
3 K Brusella artriti

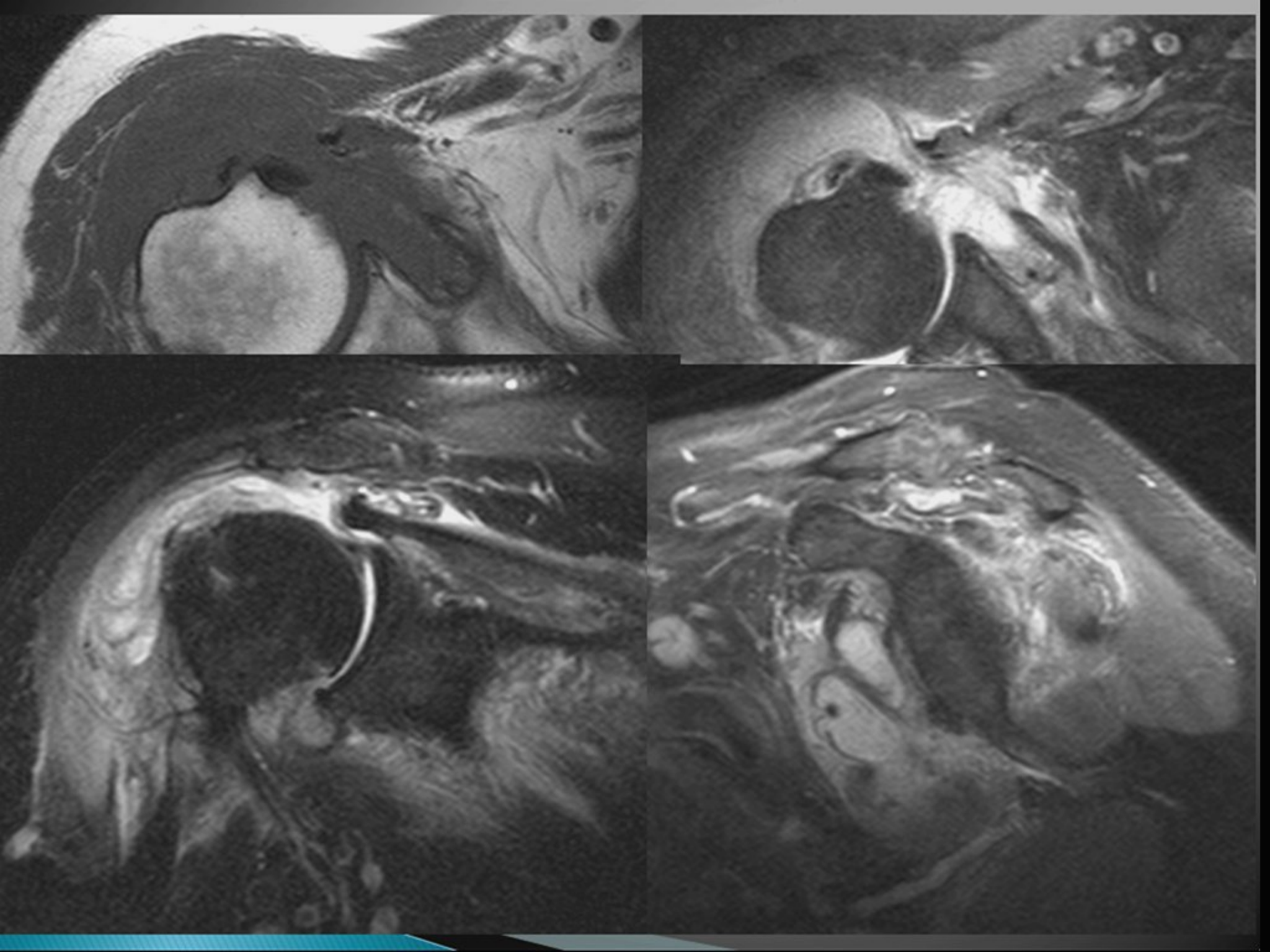


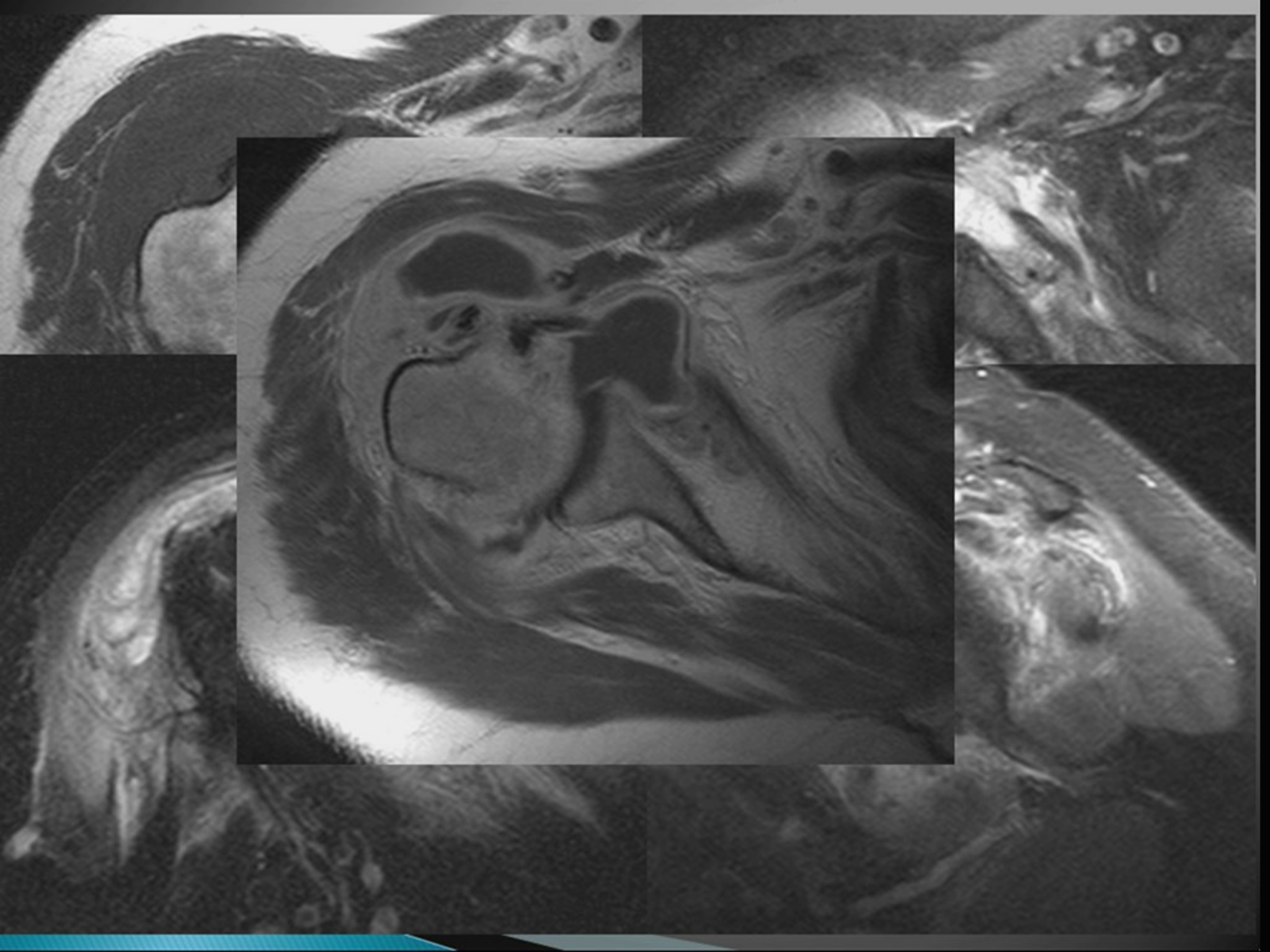


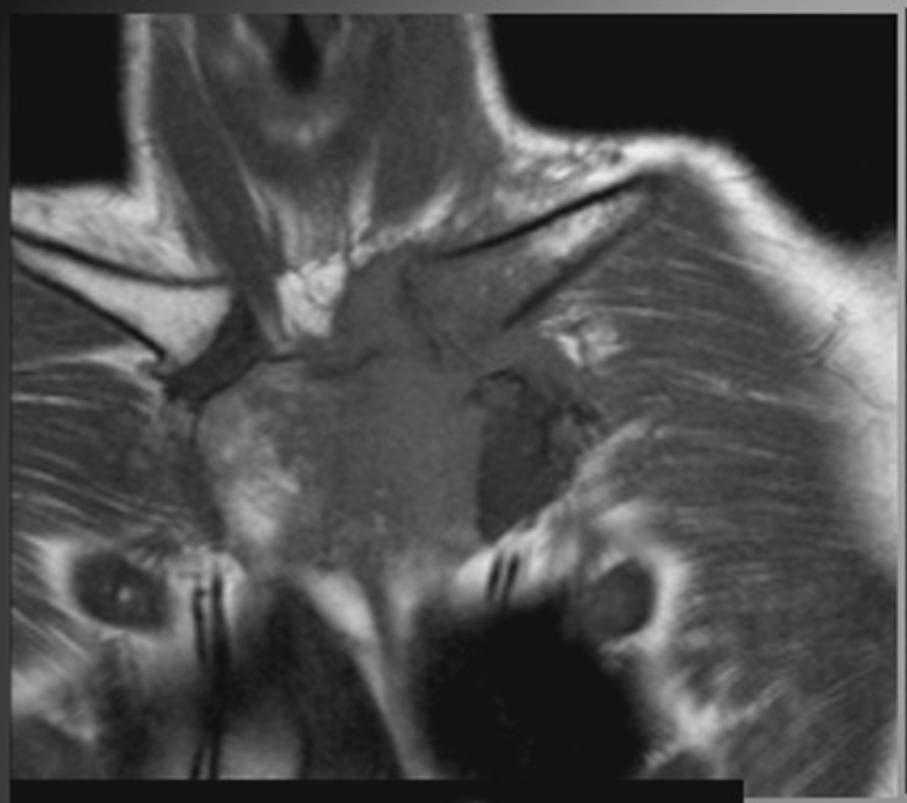
3 K Brusella artriti

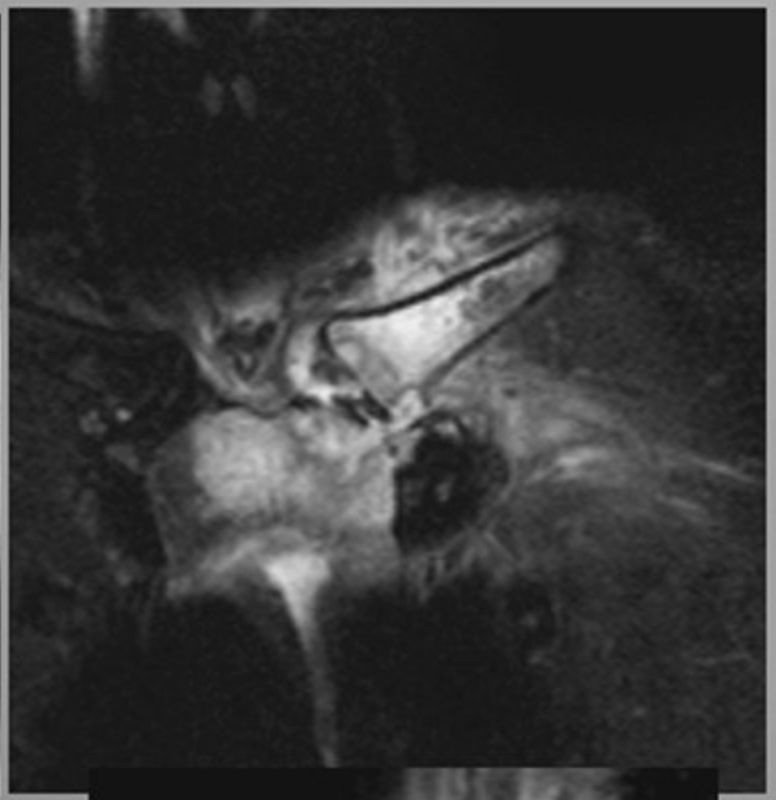


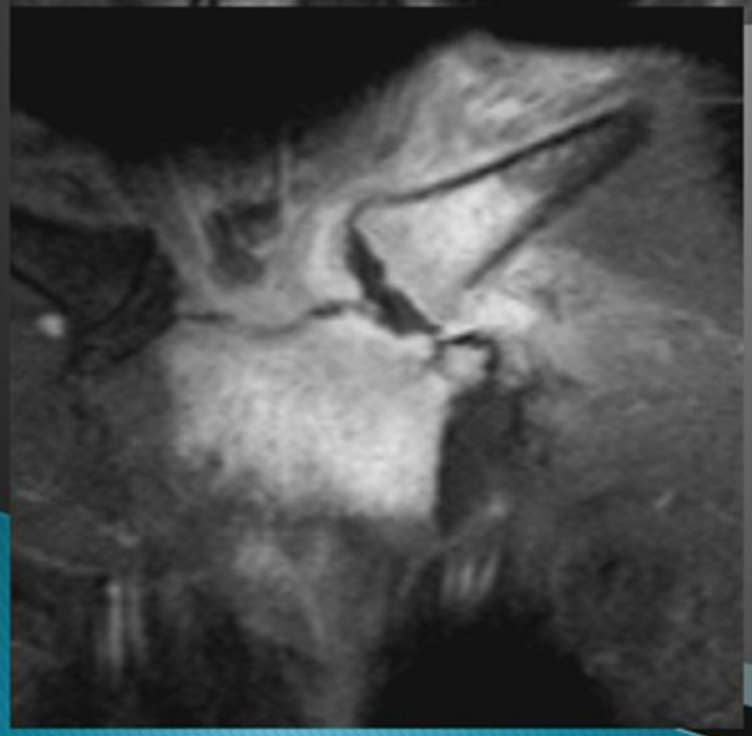


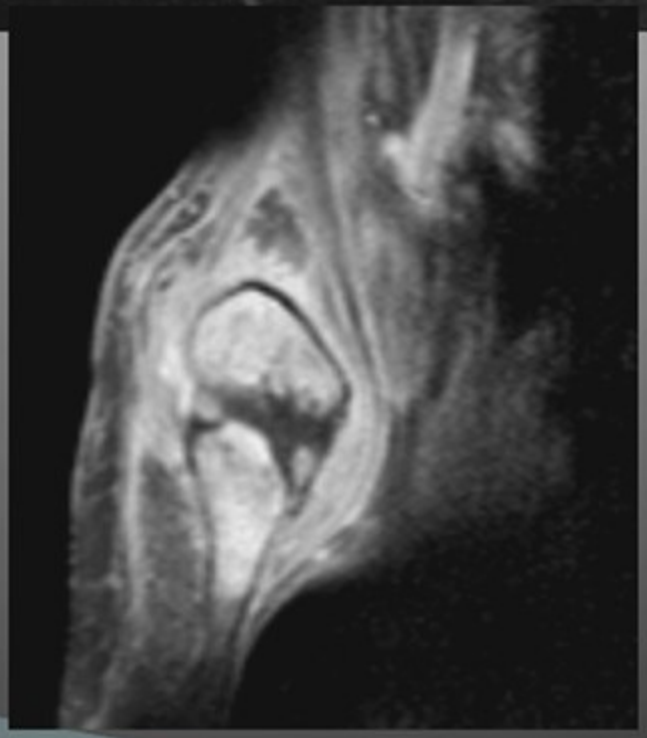






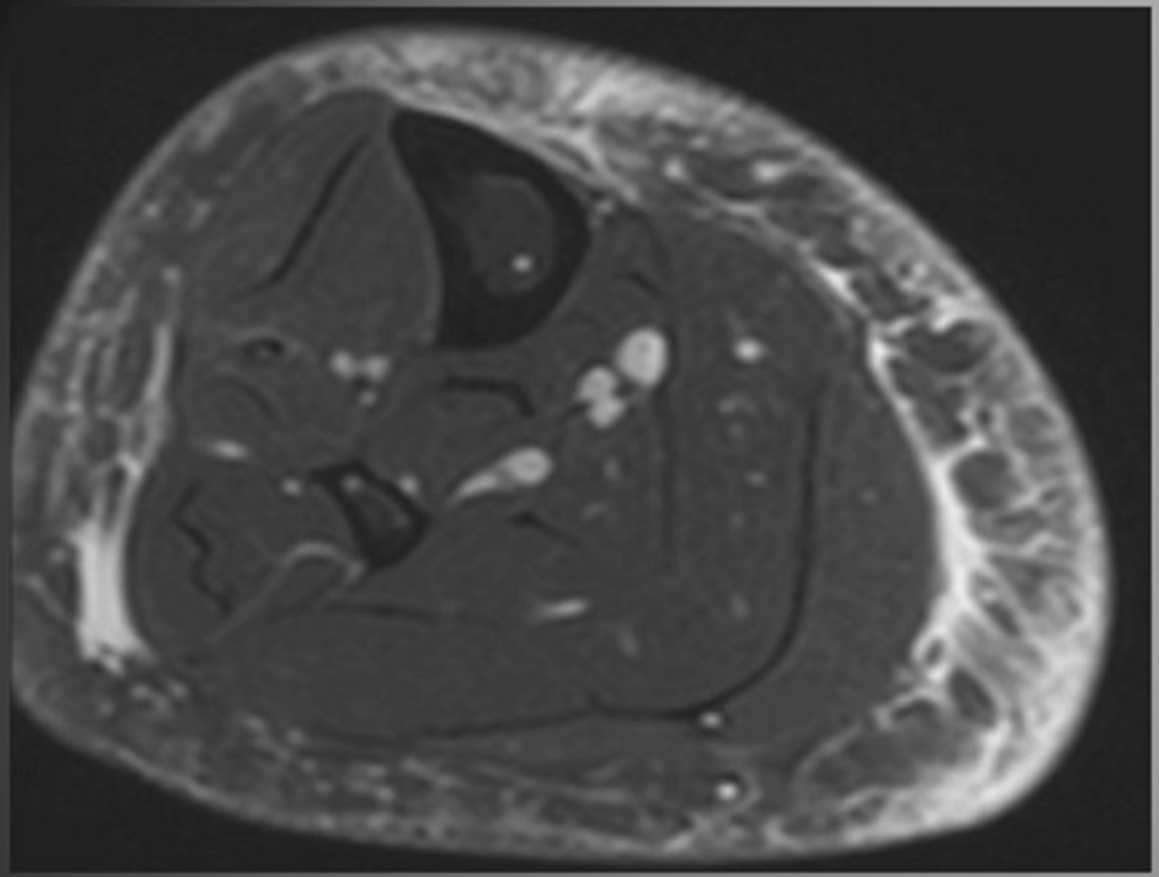


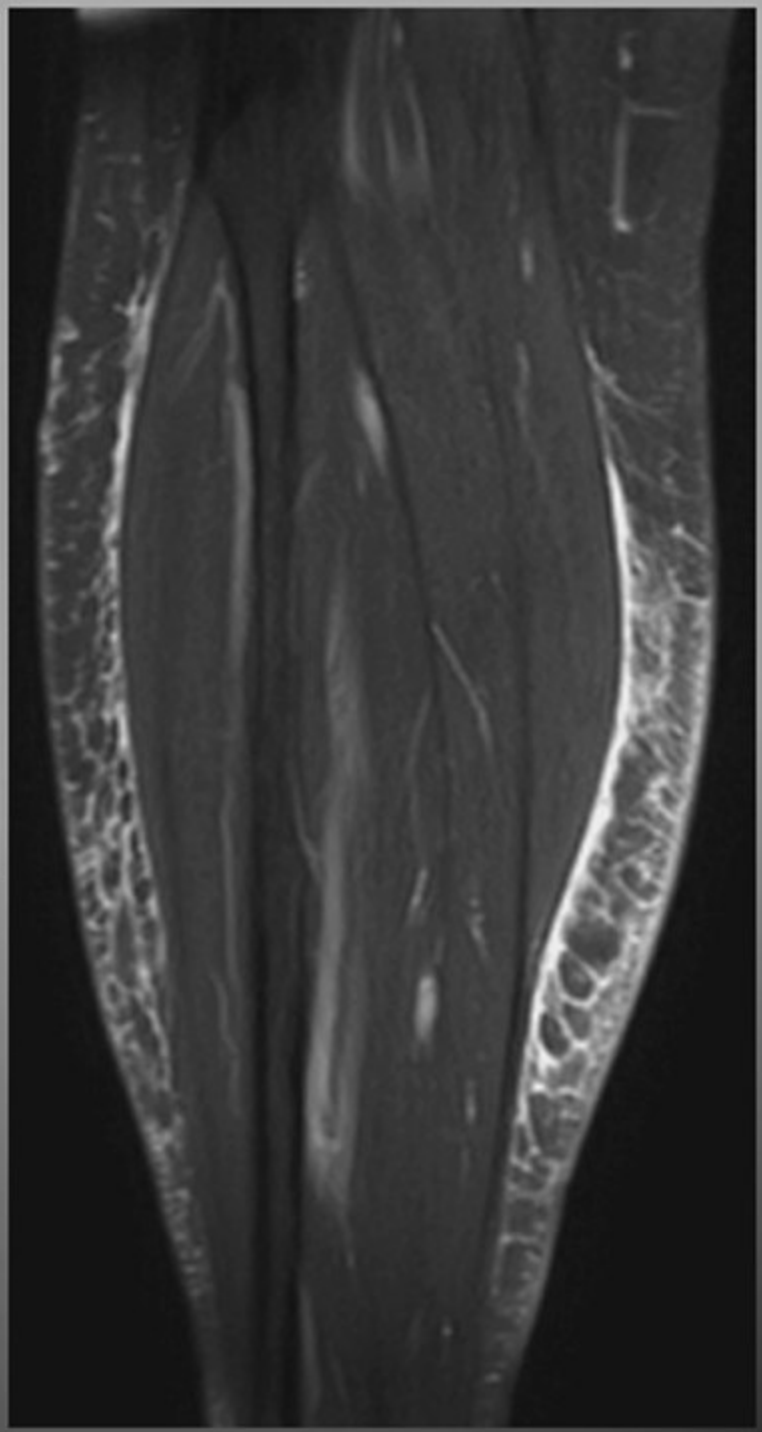


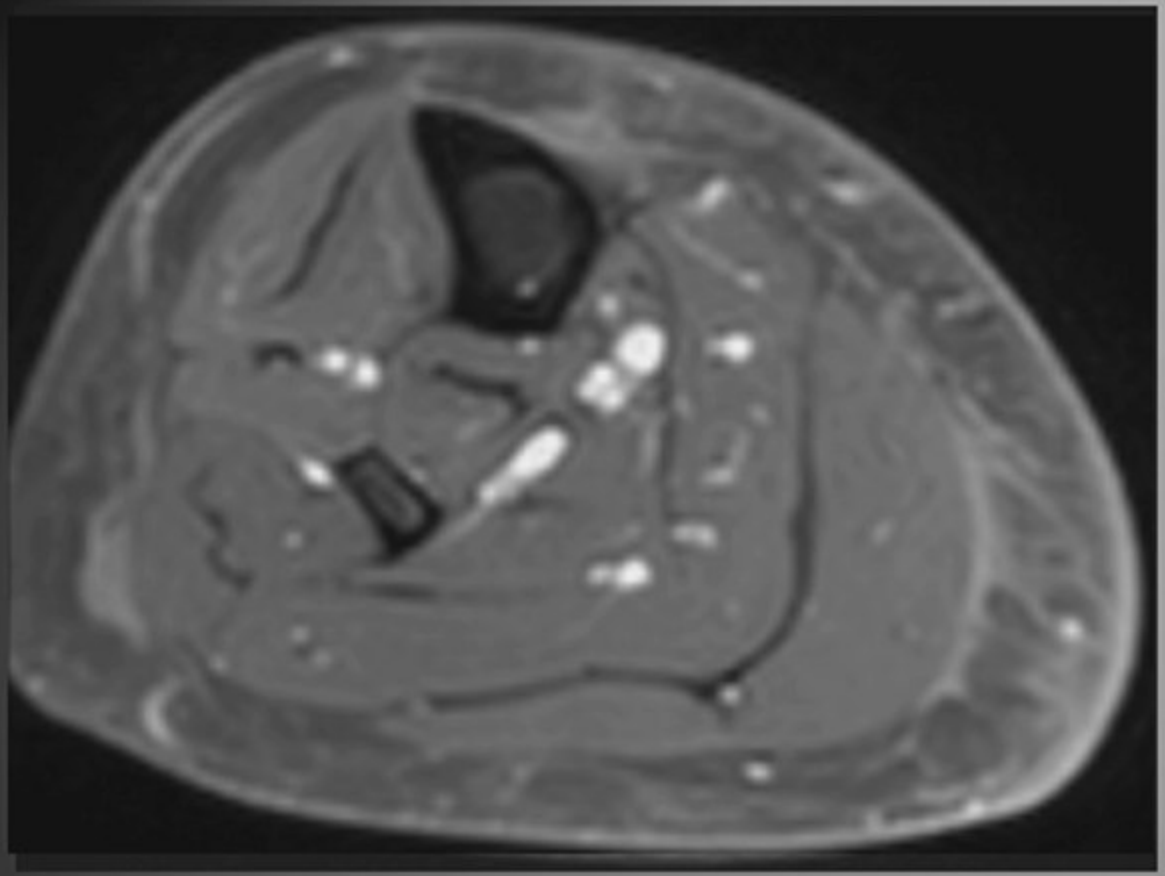


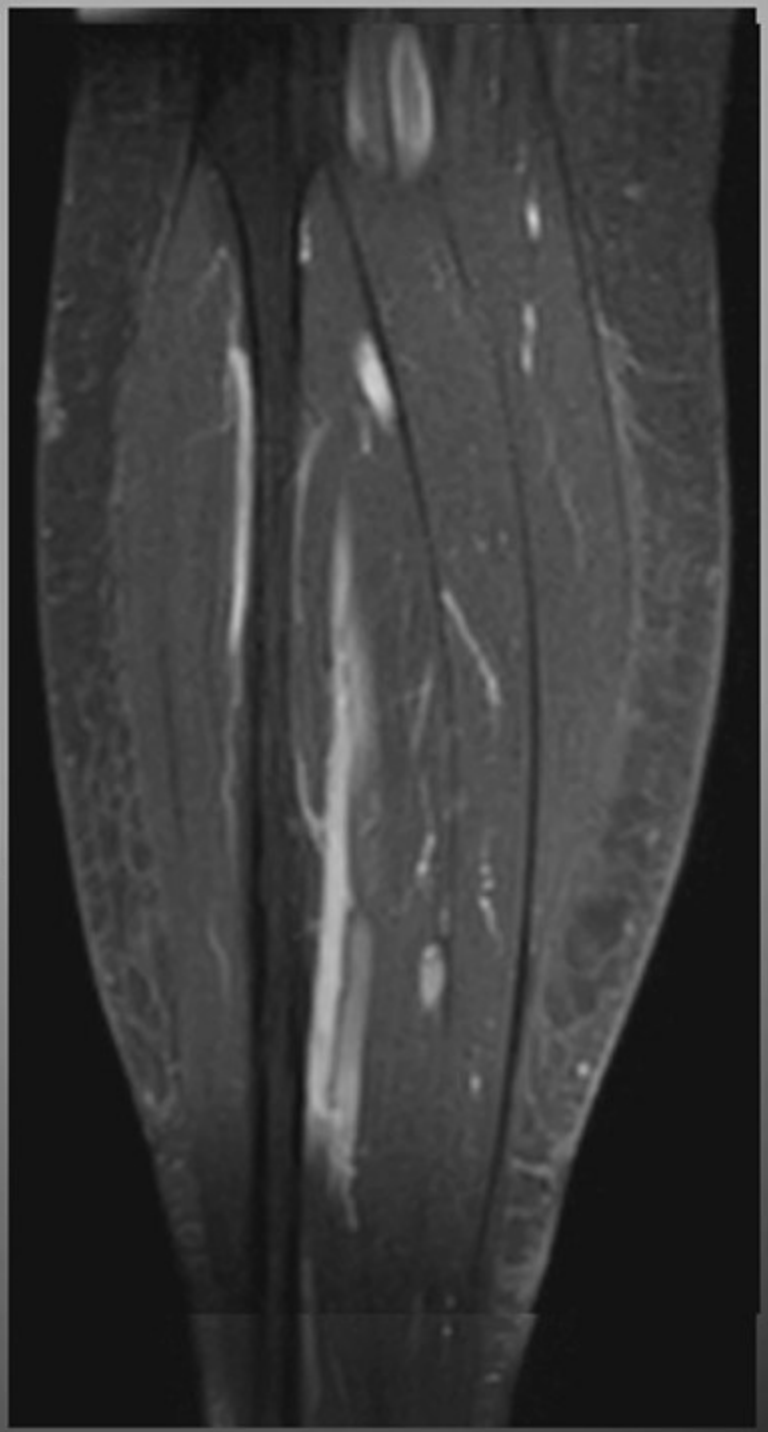
Selülit

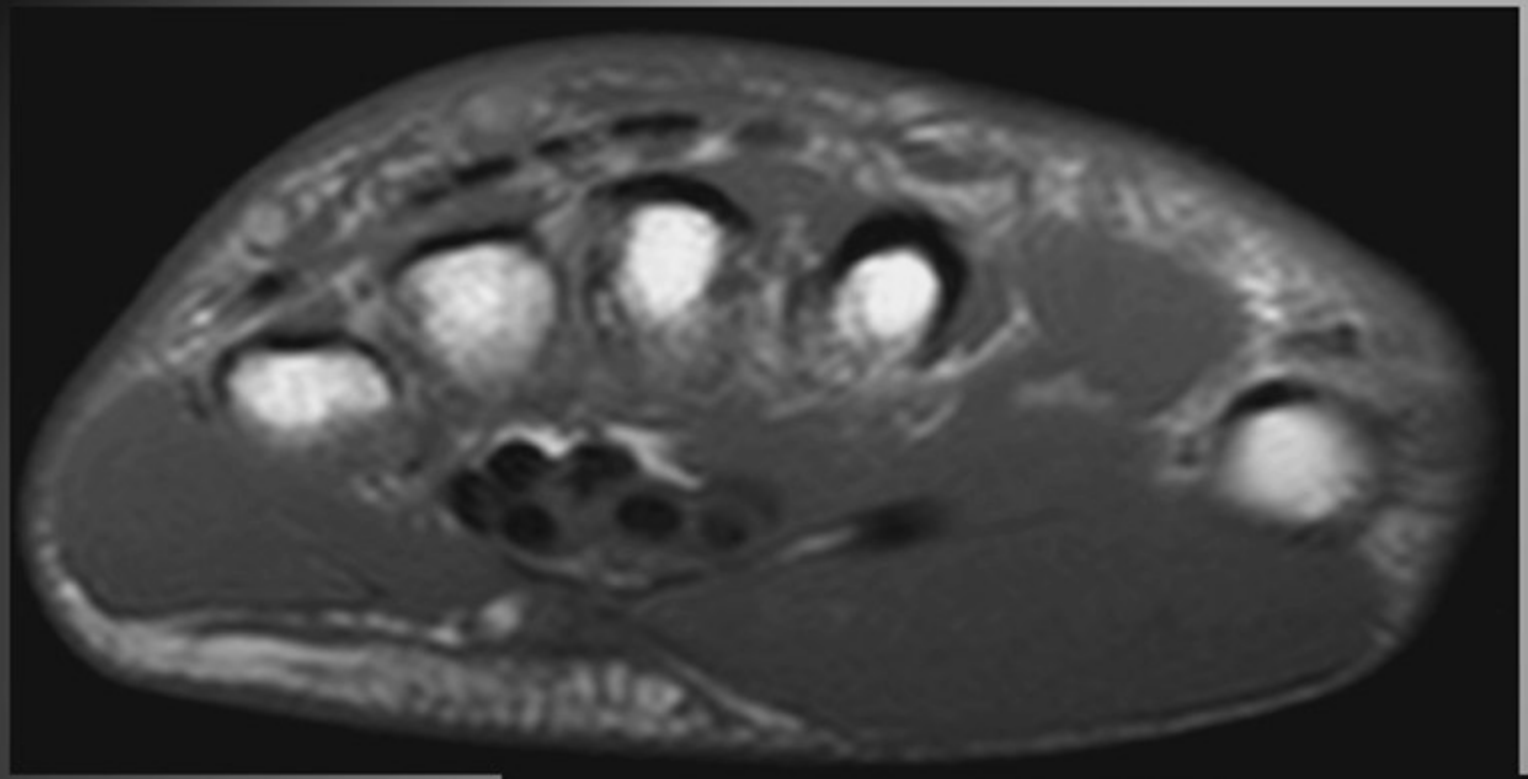
- Dermis ve subkutan dokunun infeksiyonu (S. Aureus, Beta hem. Strep)
- Radyografide nonspesifik YD ödemi izlenir
- US de ağsı patern-kaldırım taşı görünümü
- Kesitsel görüntüleme
  - Abse ve/veya koleksiyonu dışlamak için gereklidir
  - MR da periferik tarzda kontrast tutan koleksiyon ve YD ödemi

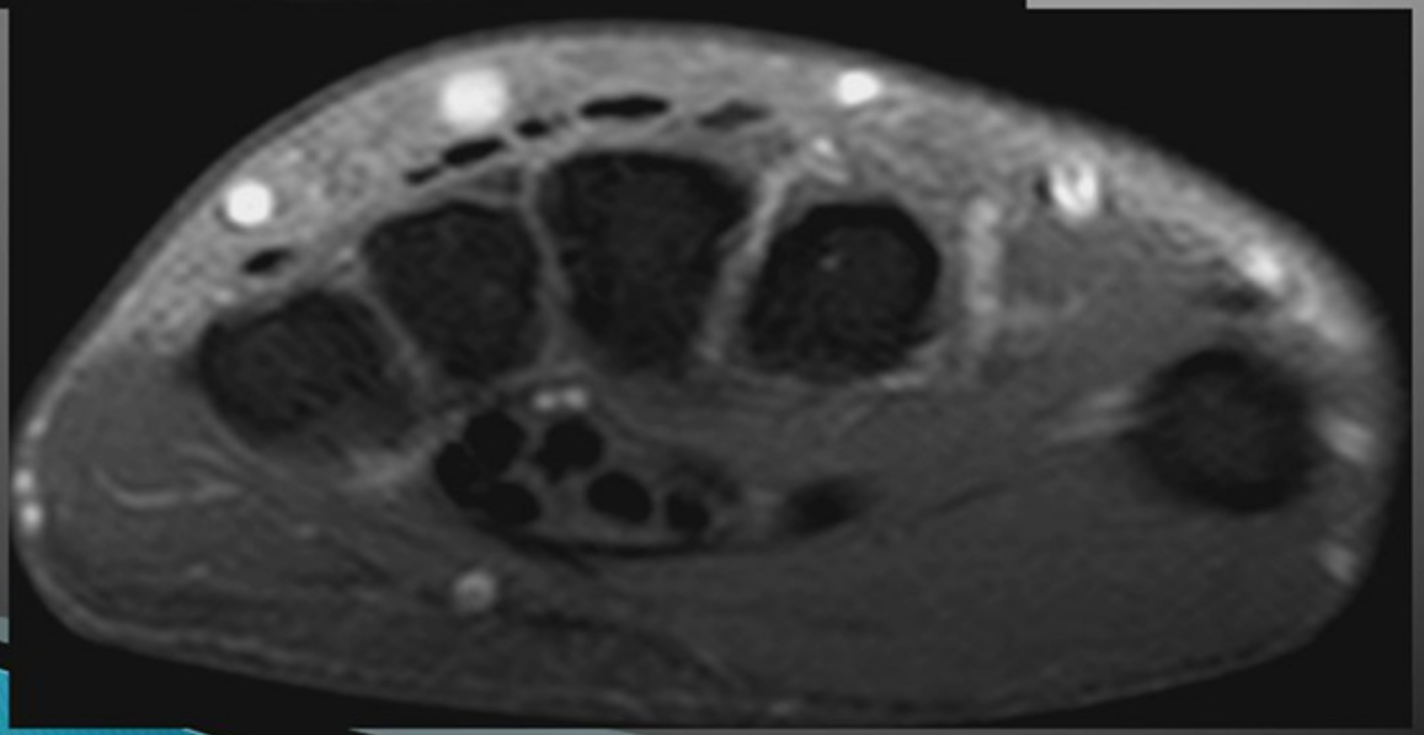




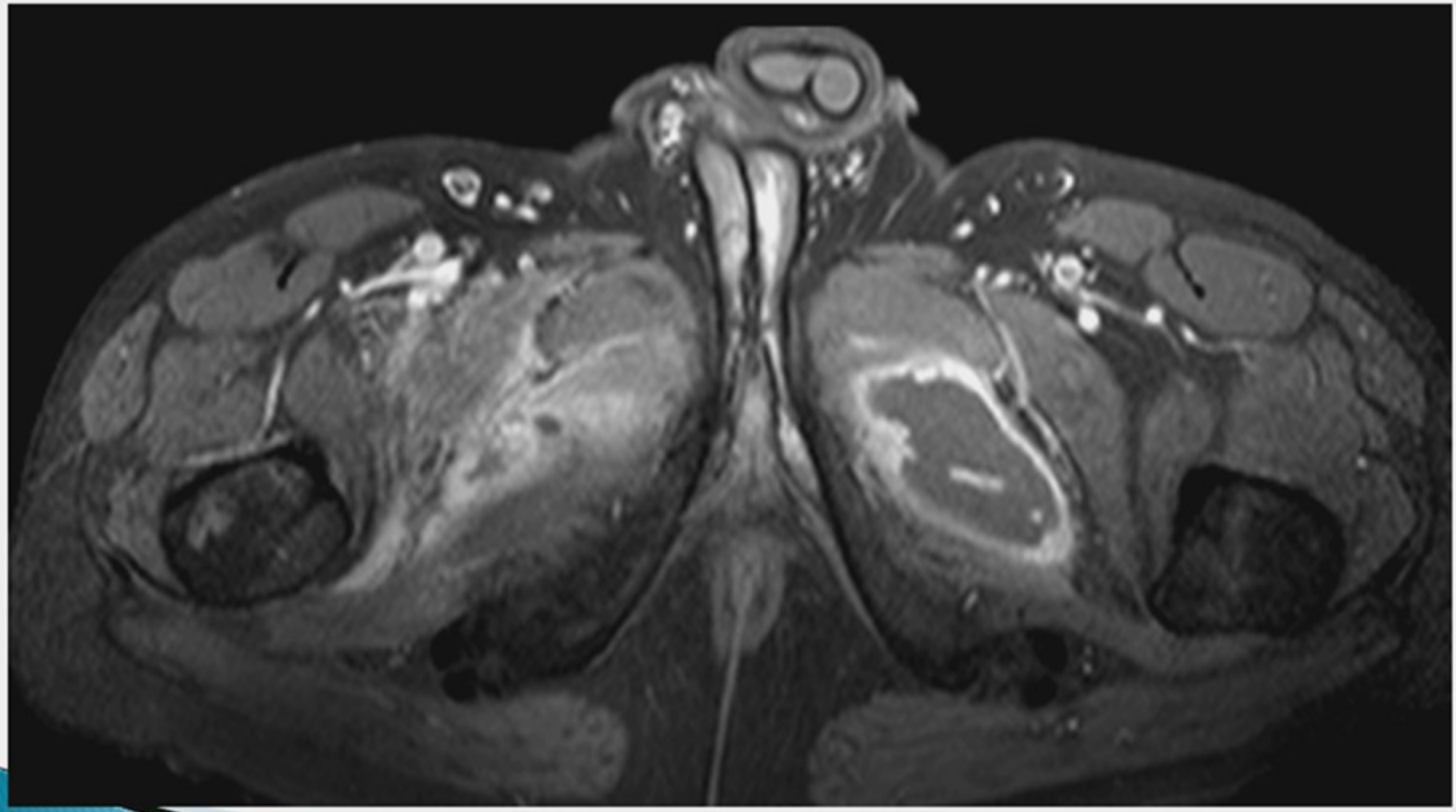


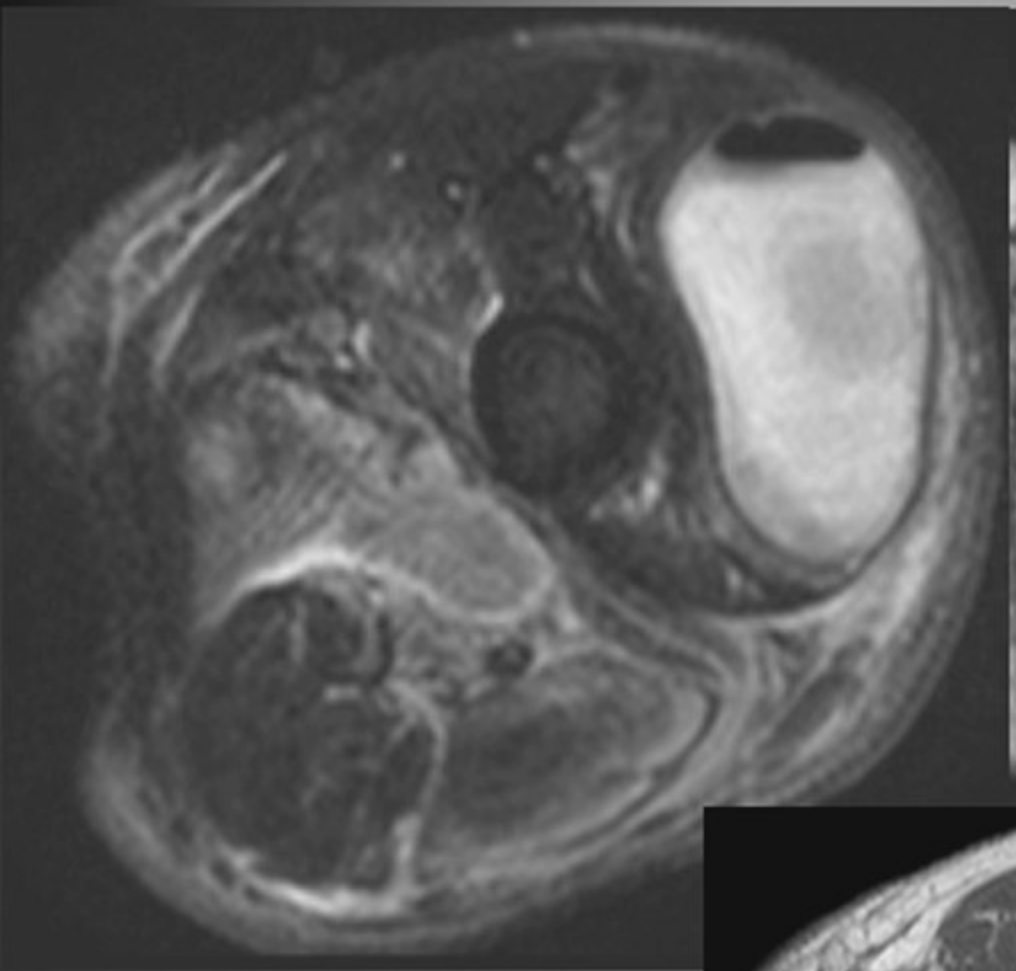


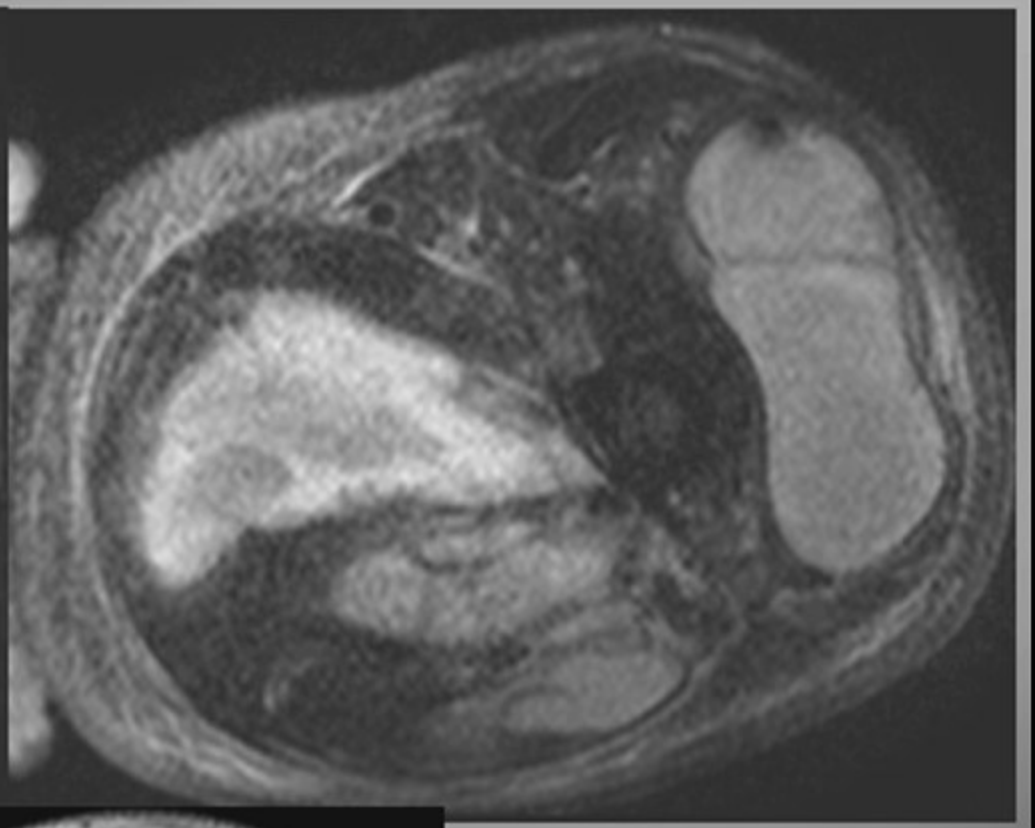


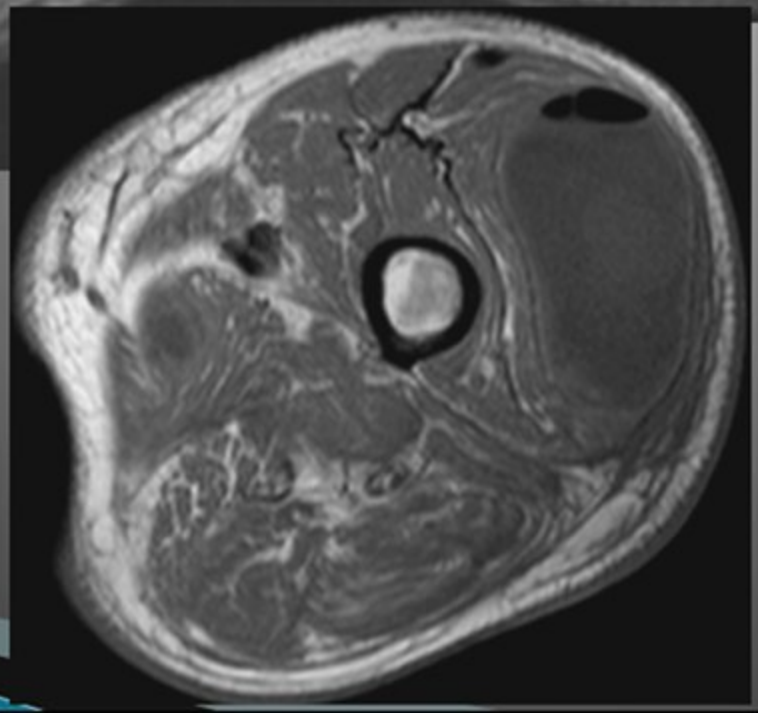


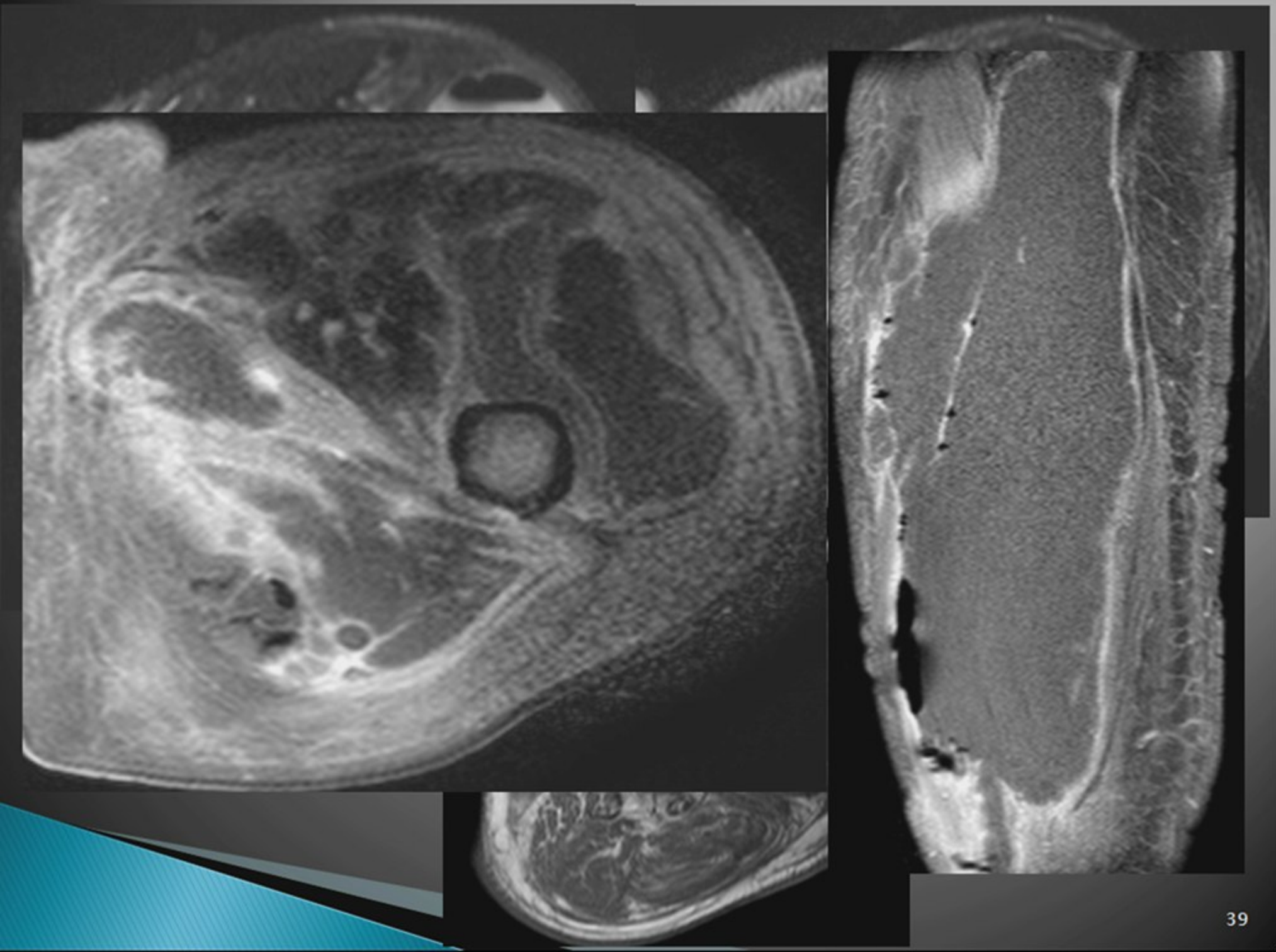
Miyozit

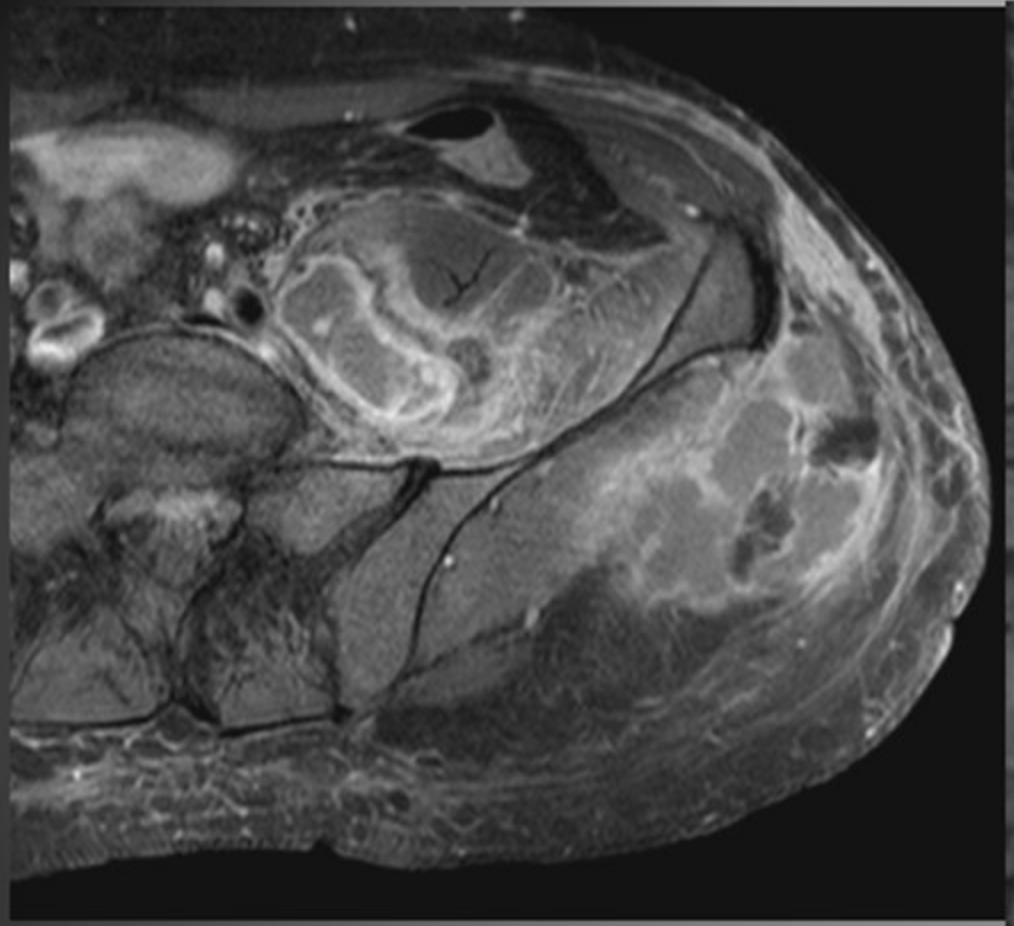


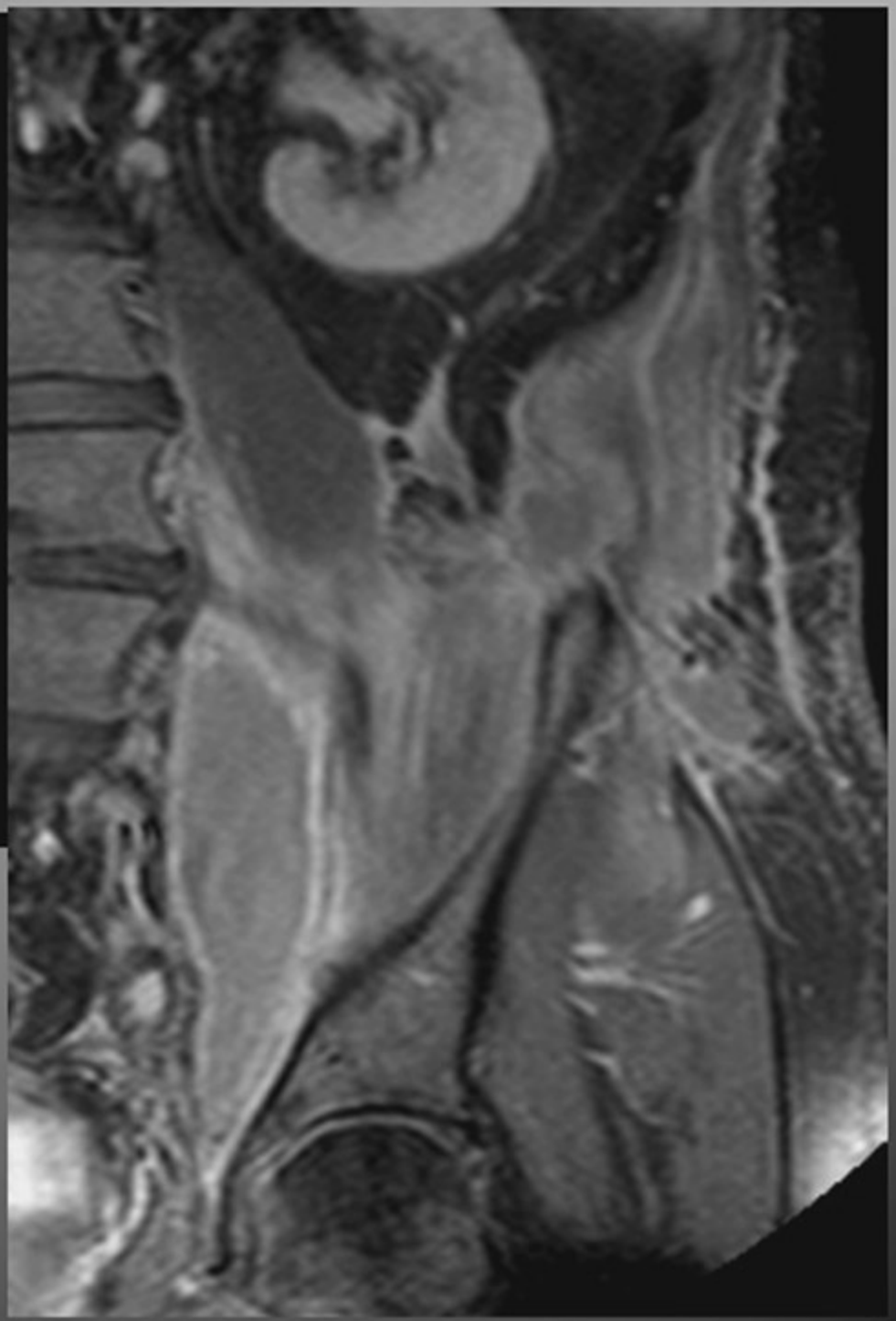


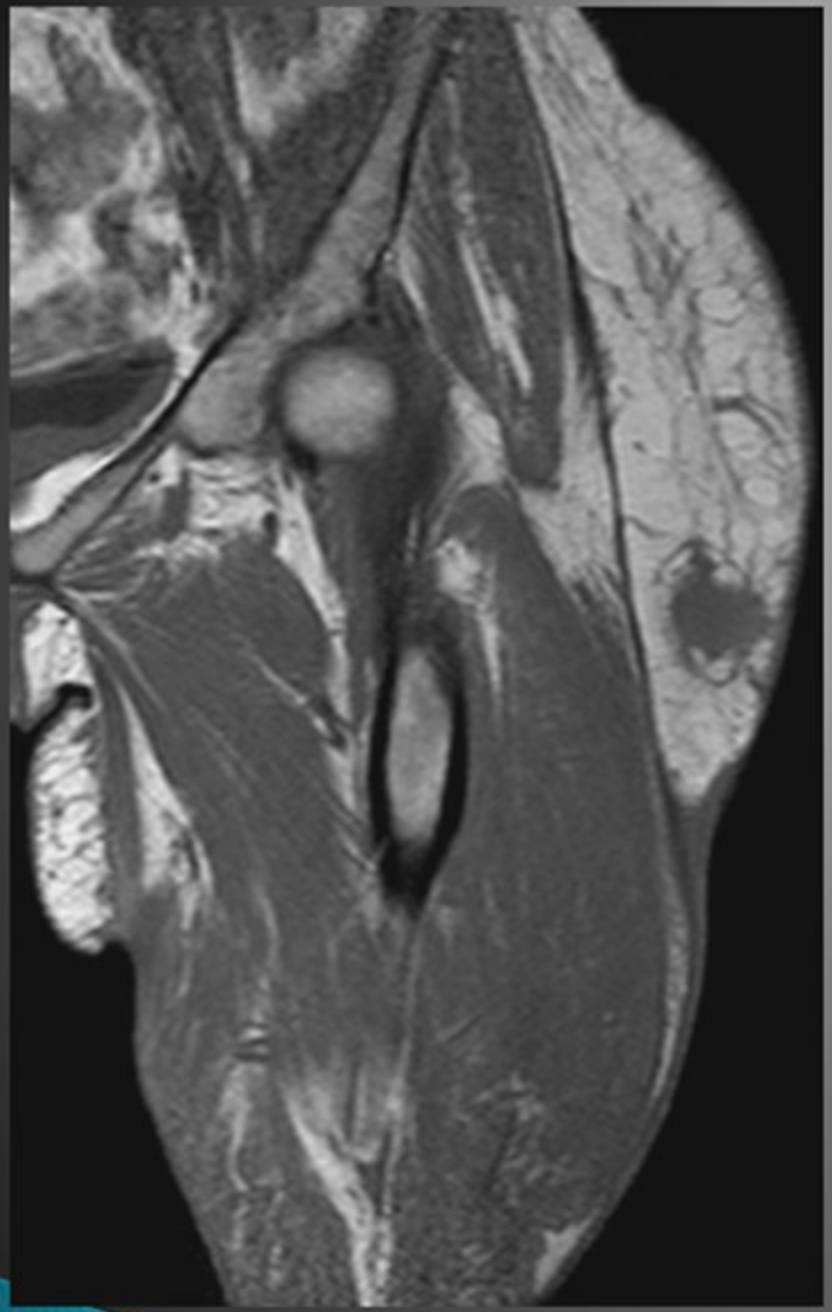


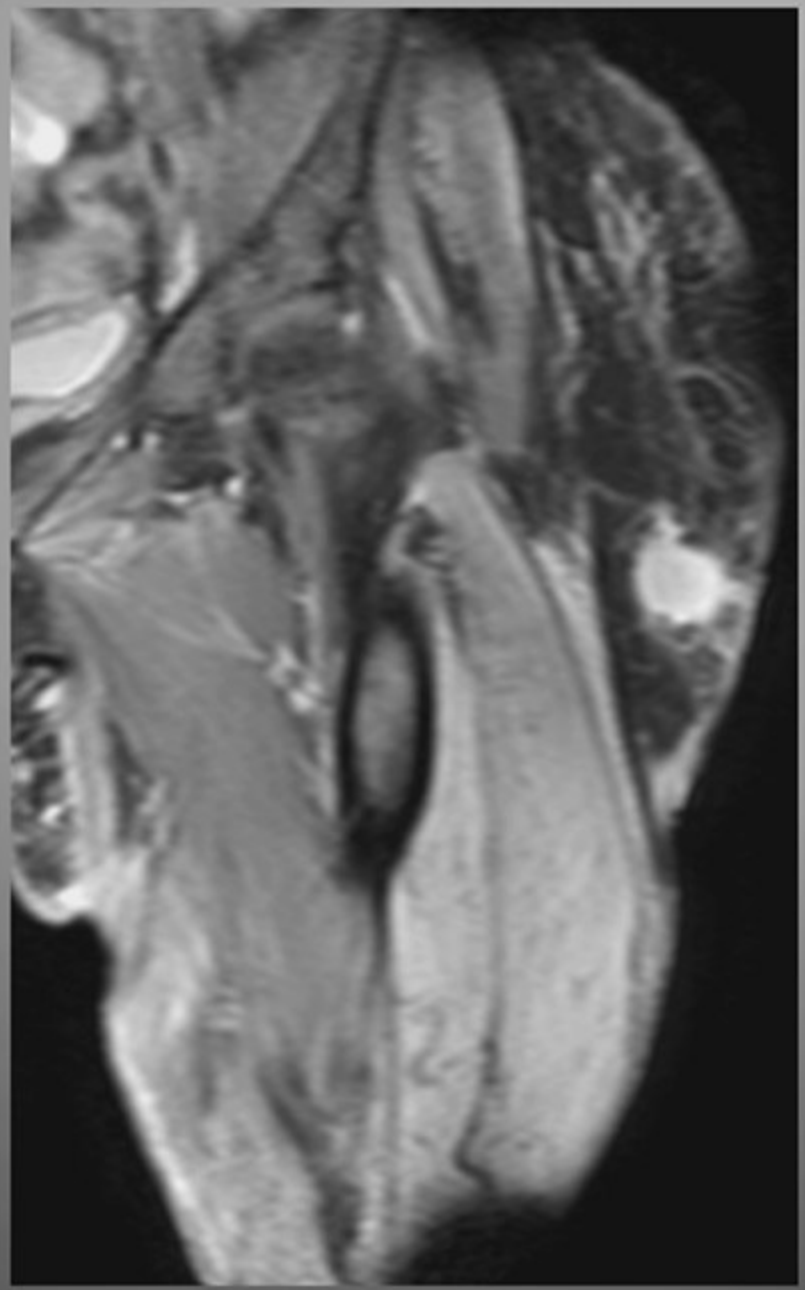


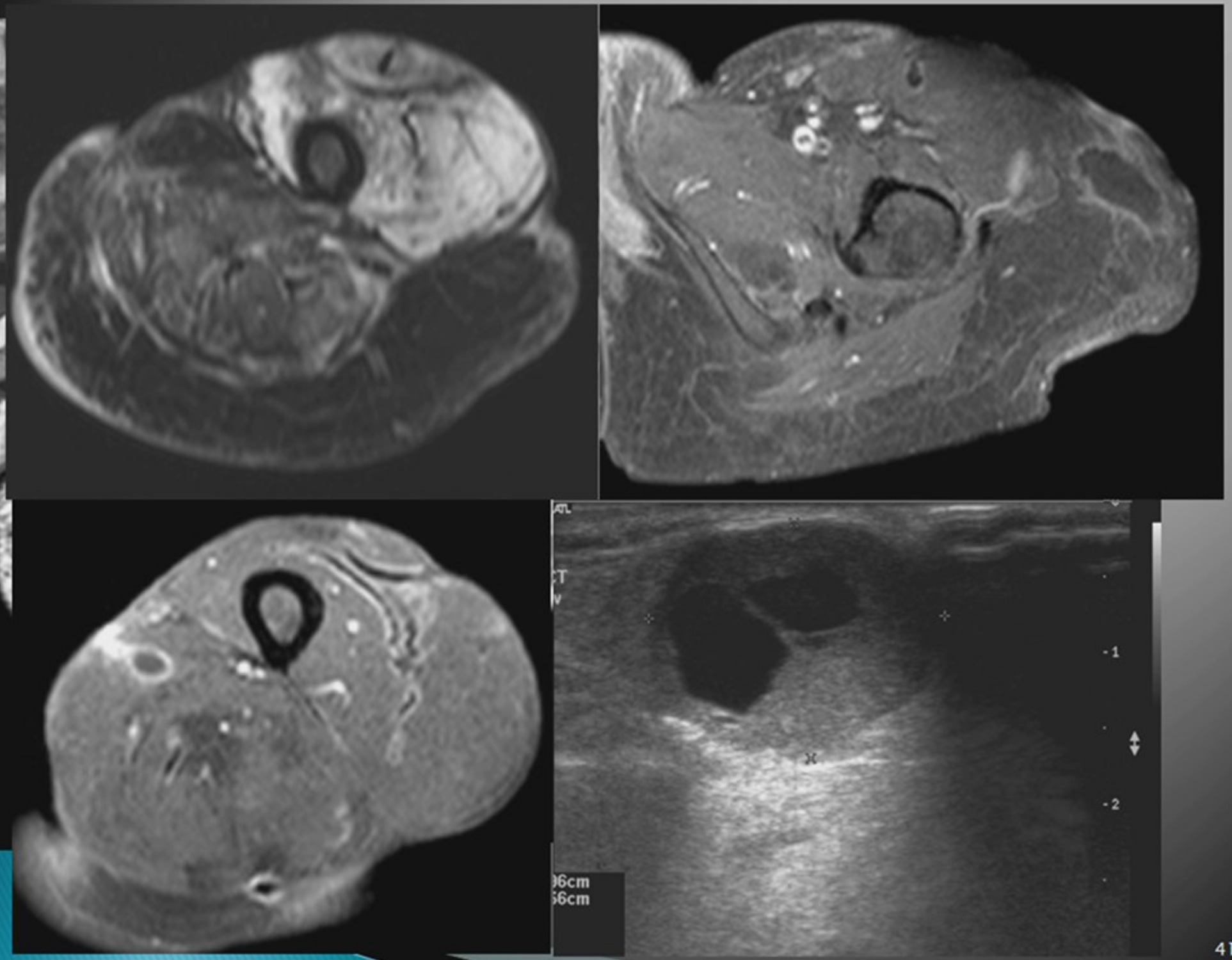








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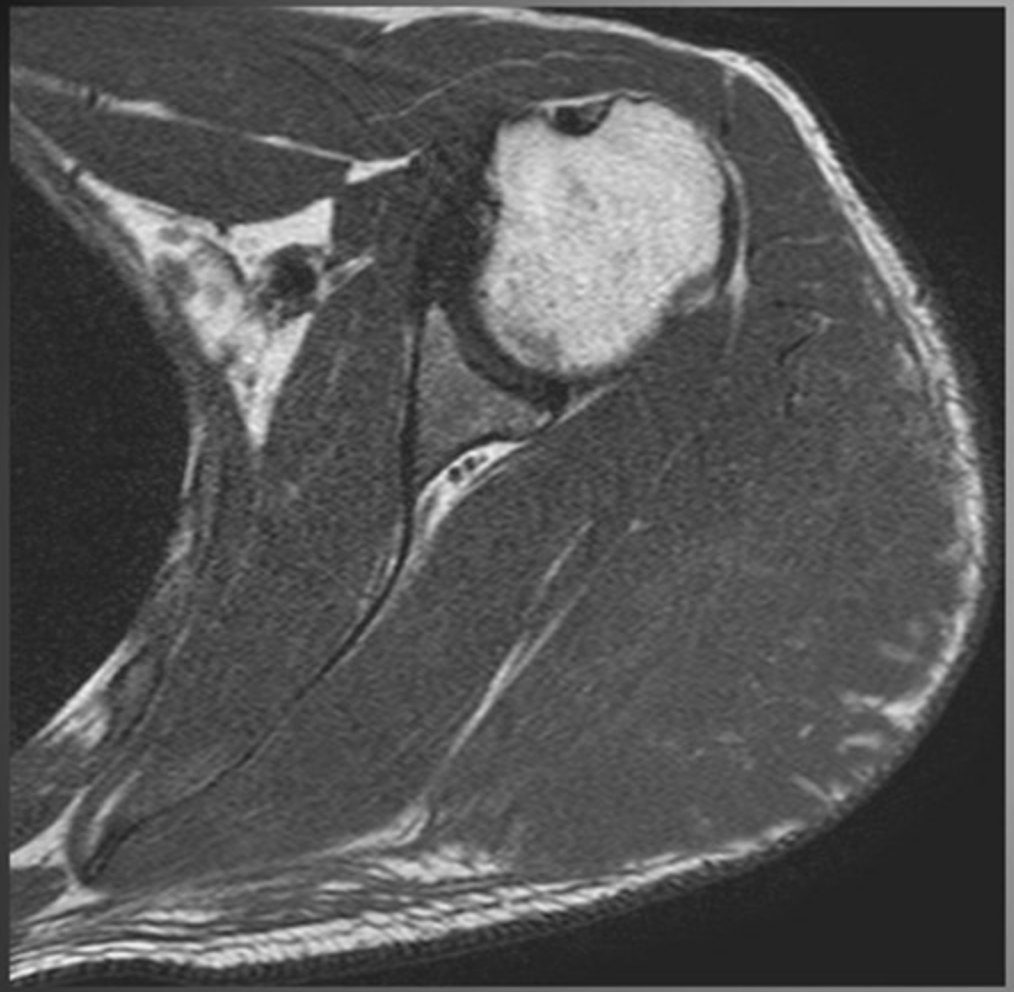

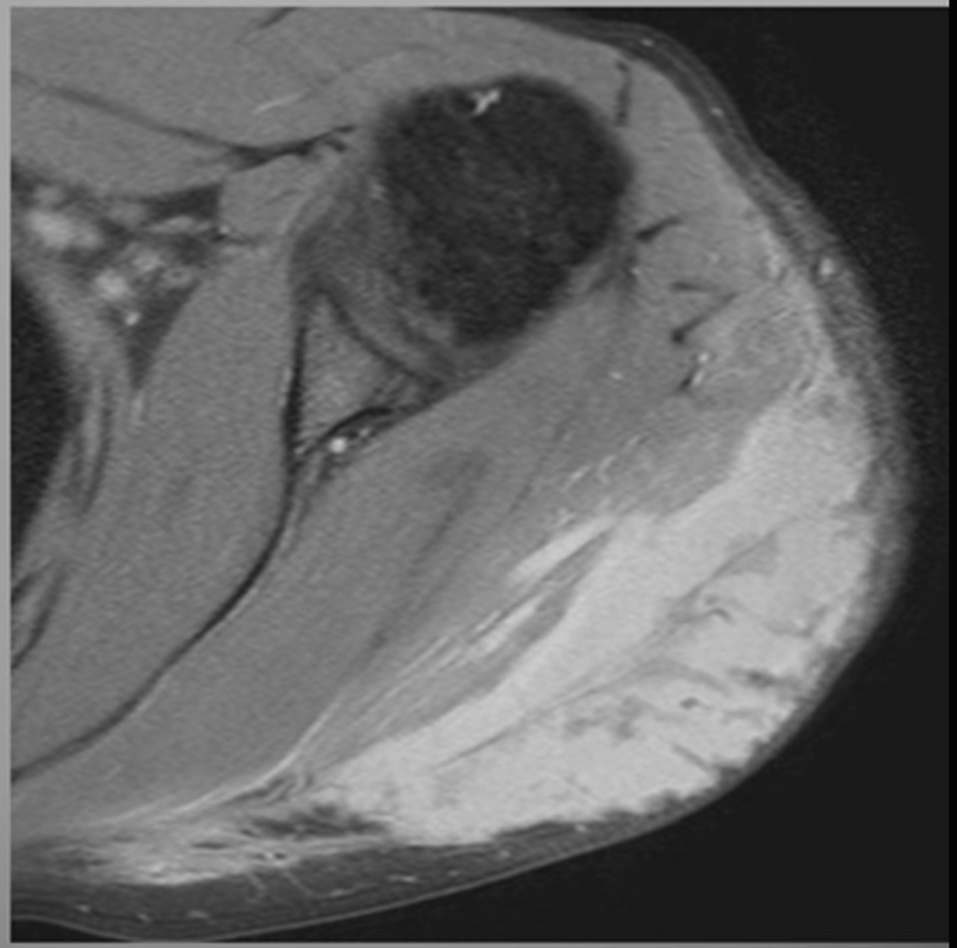

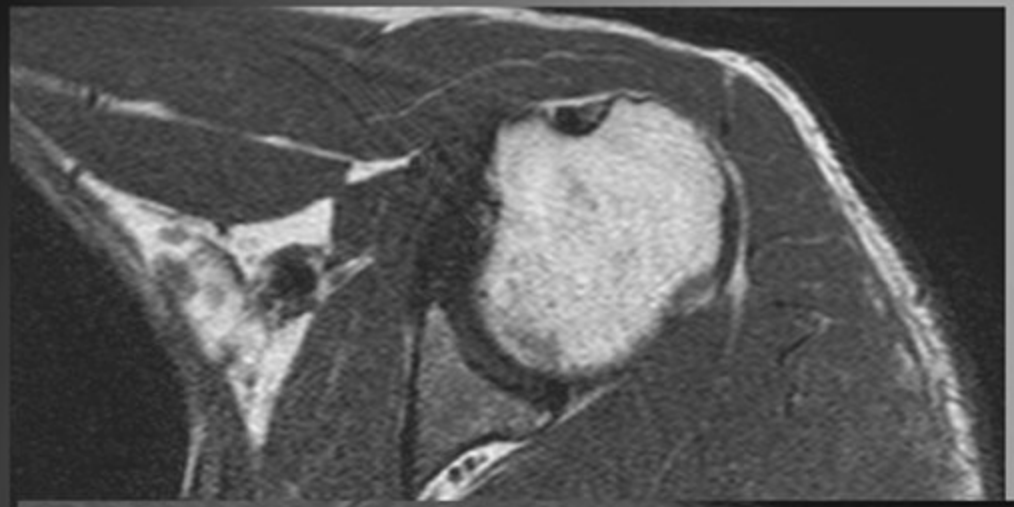

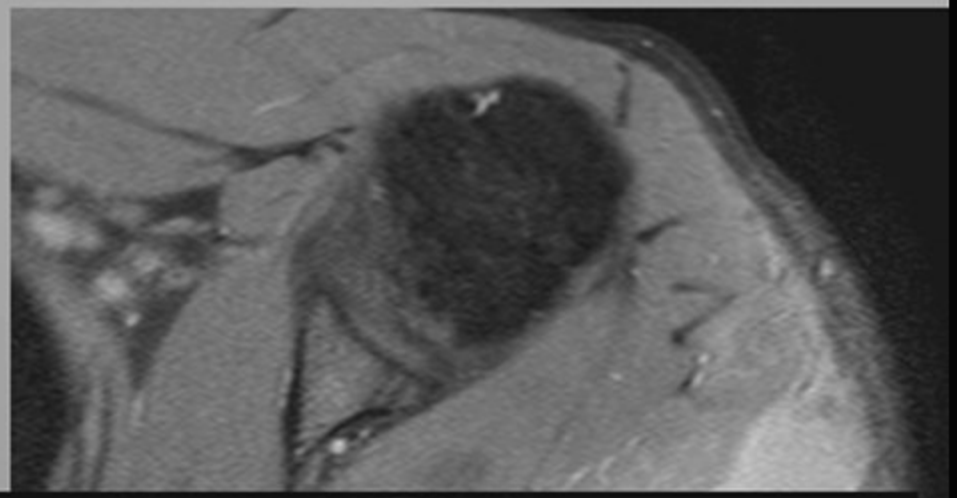

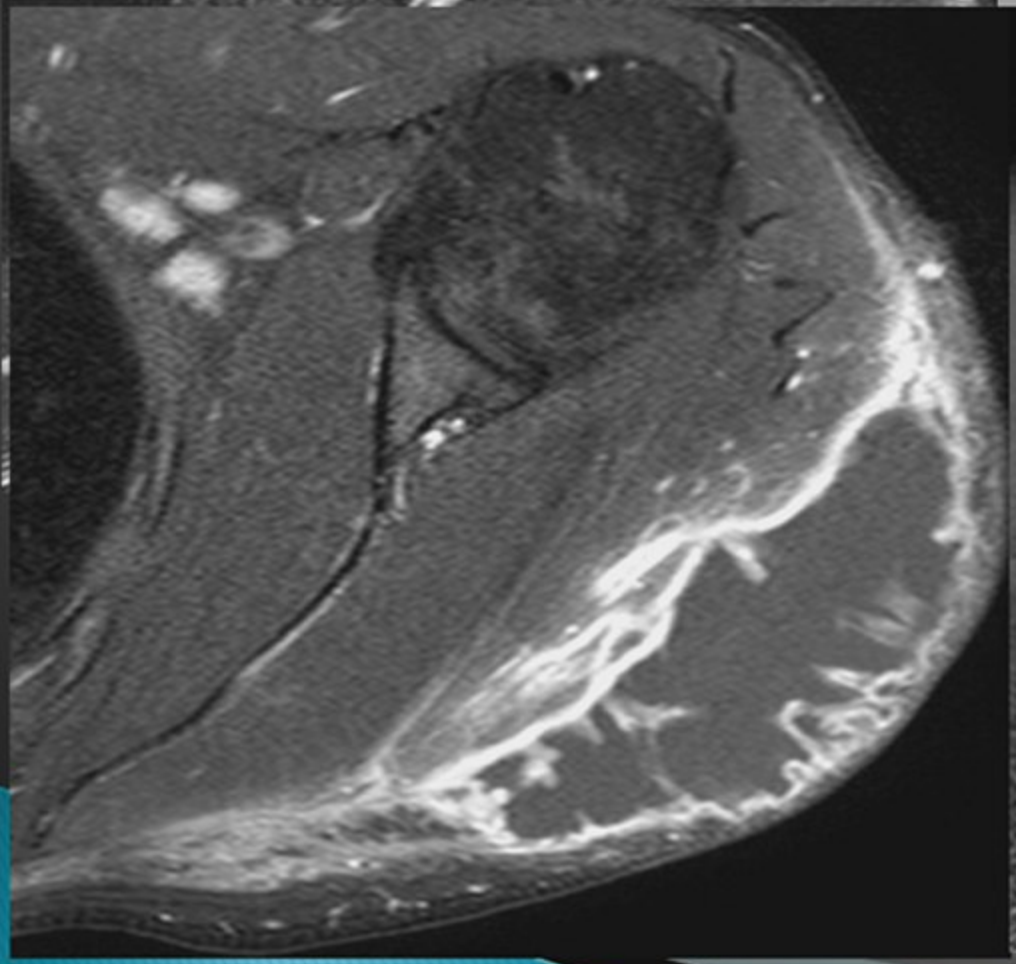

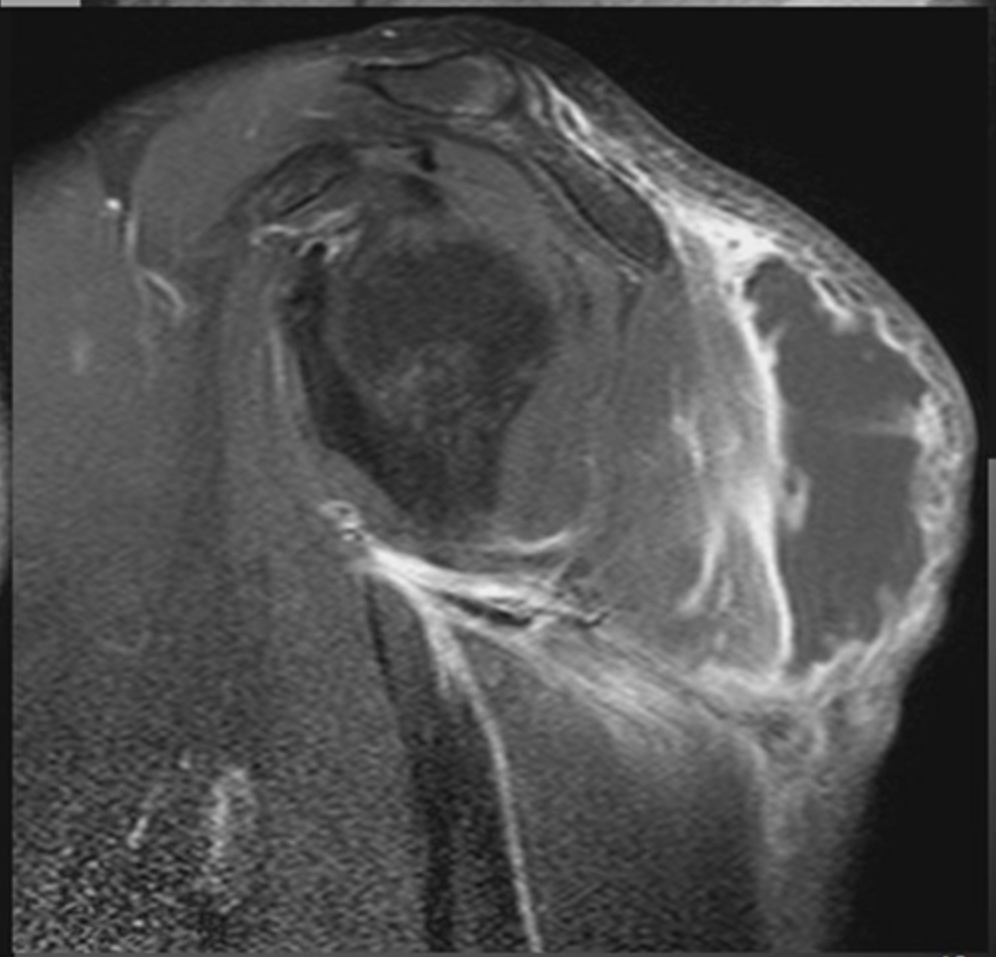

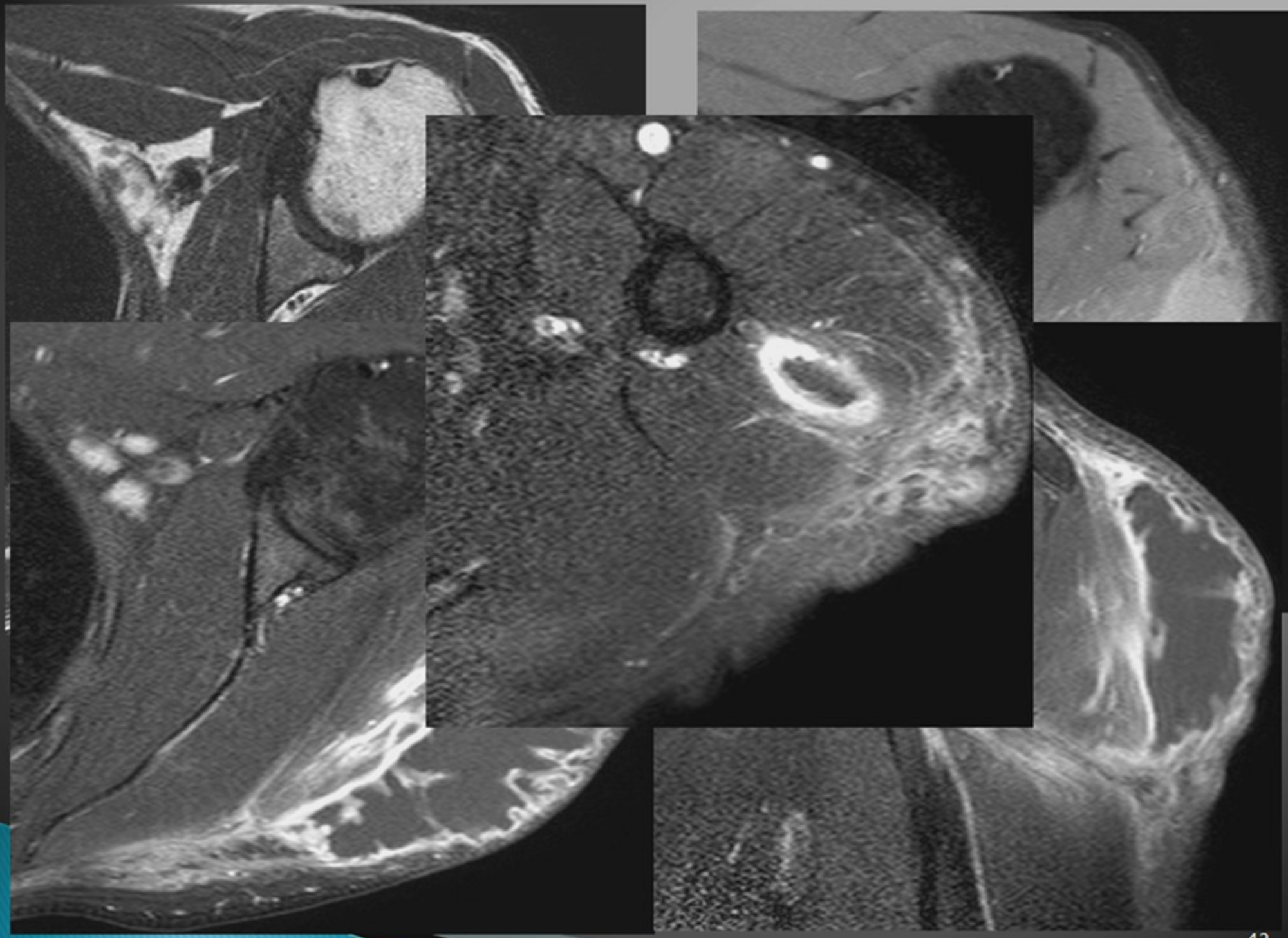

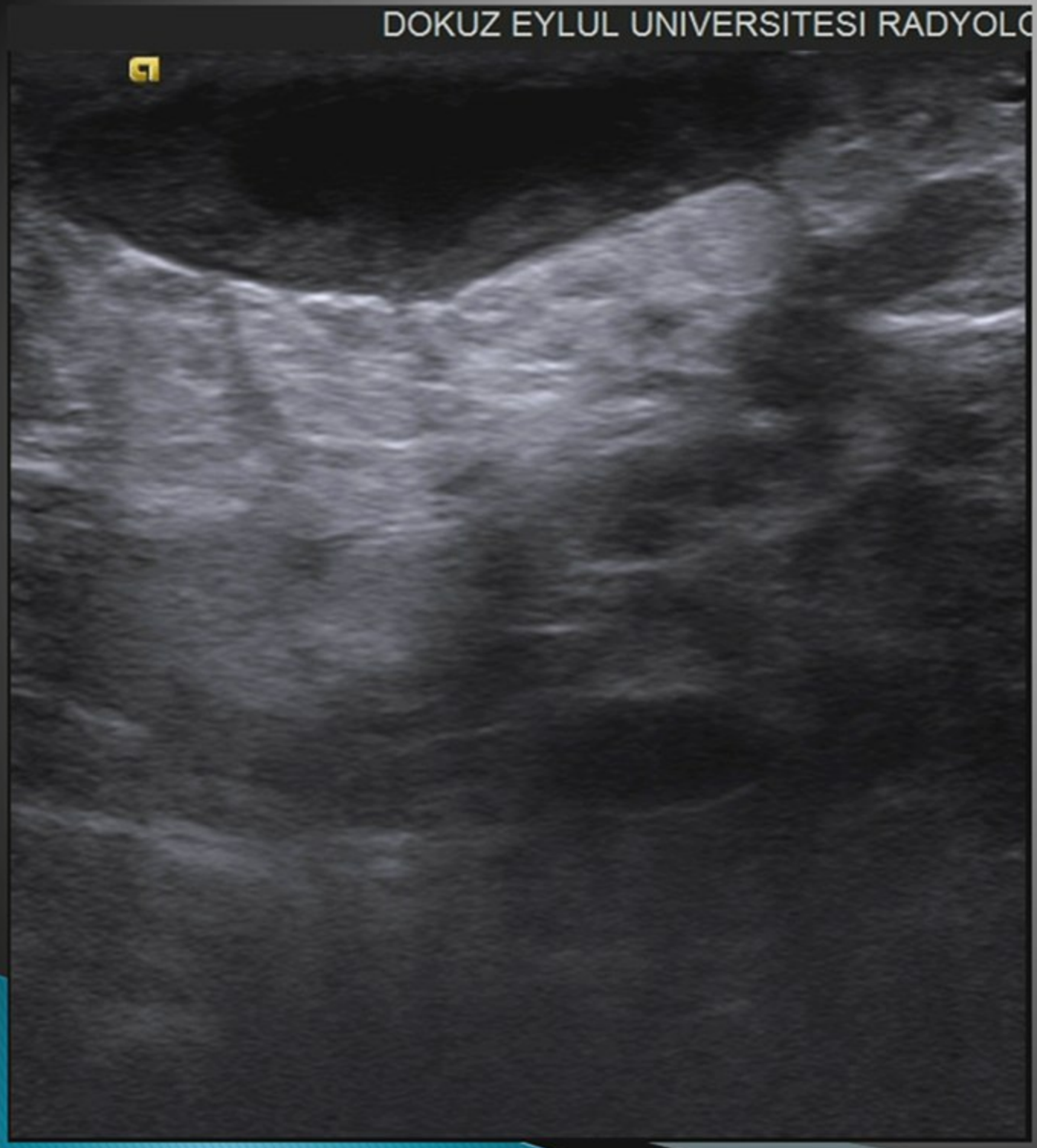
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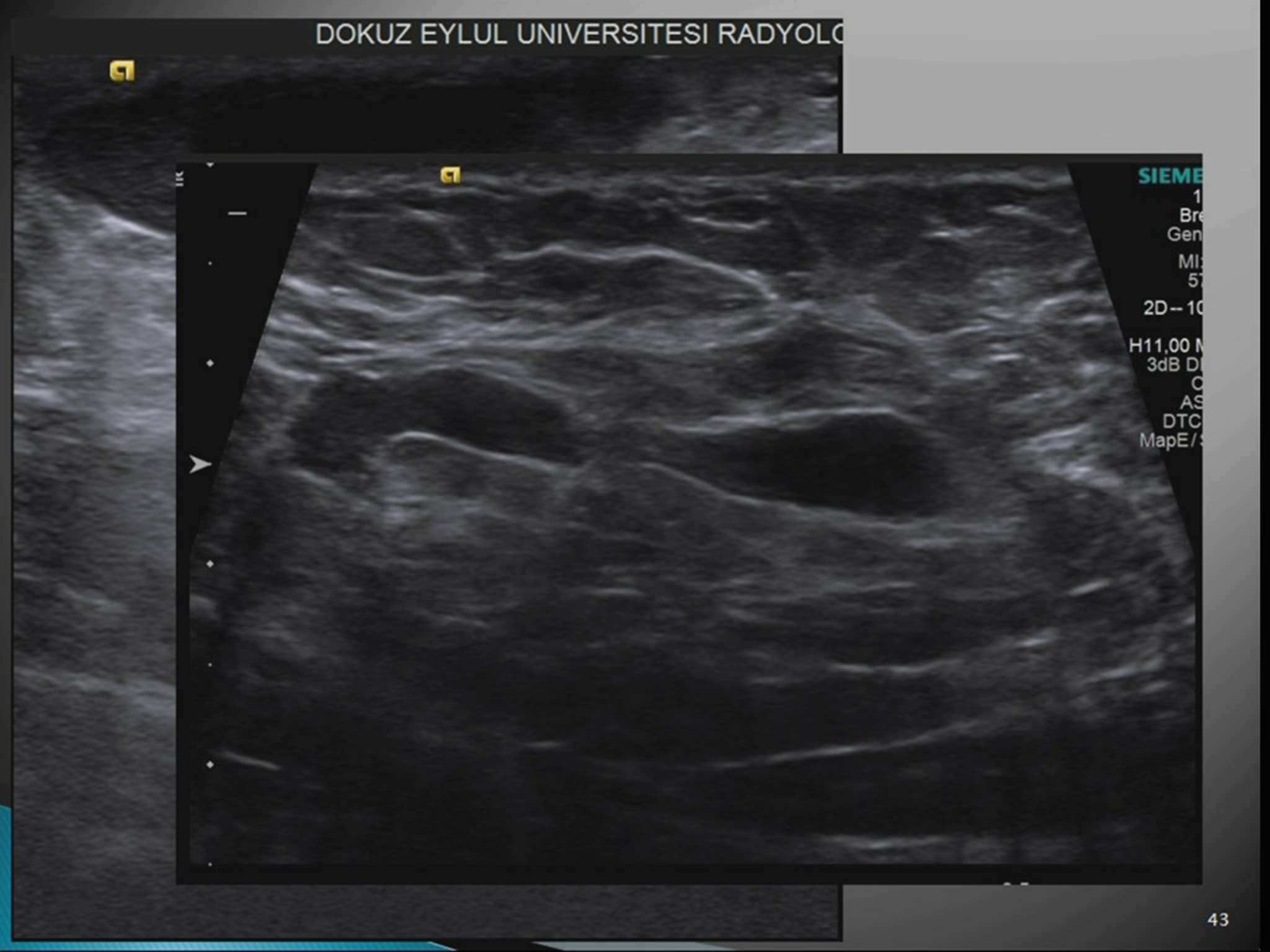
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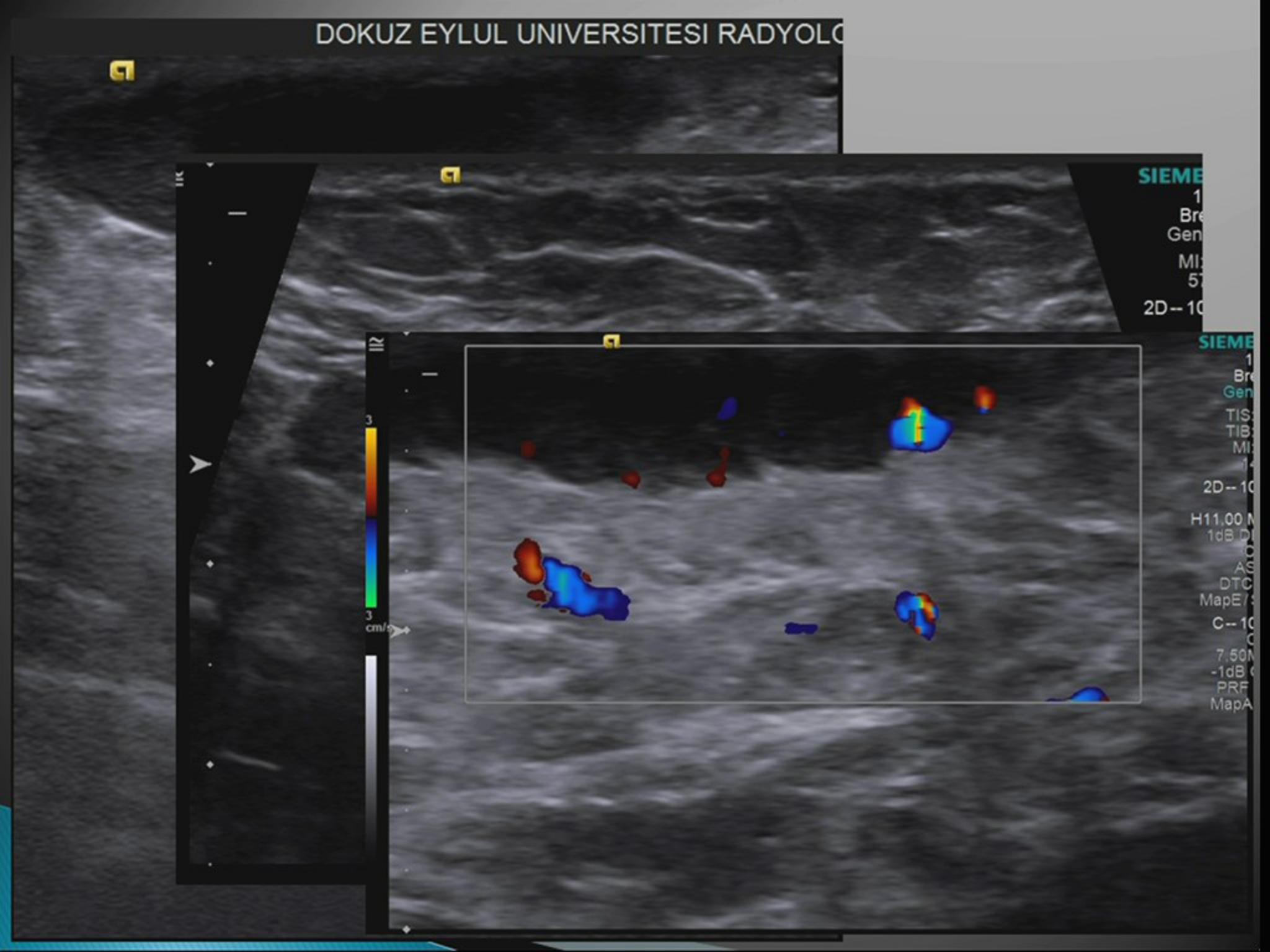
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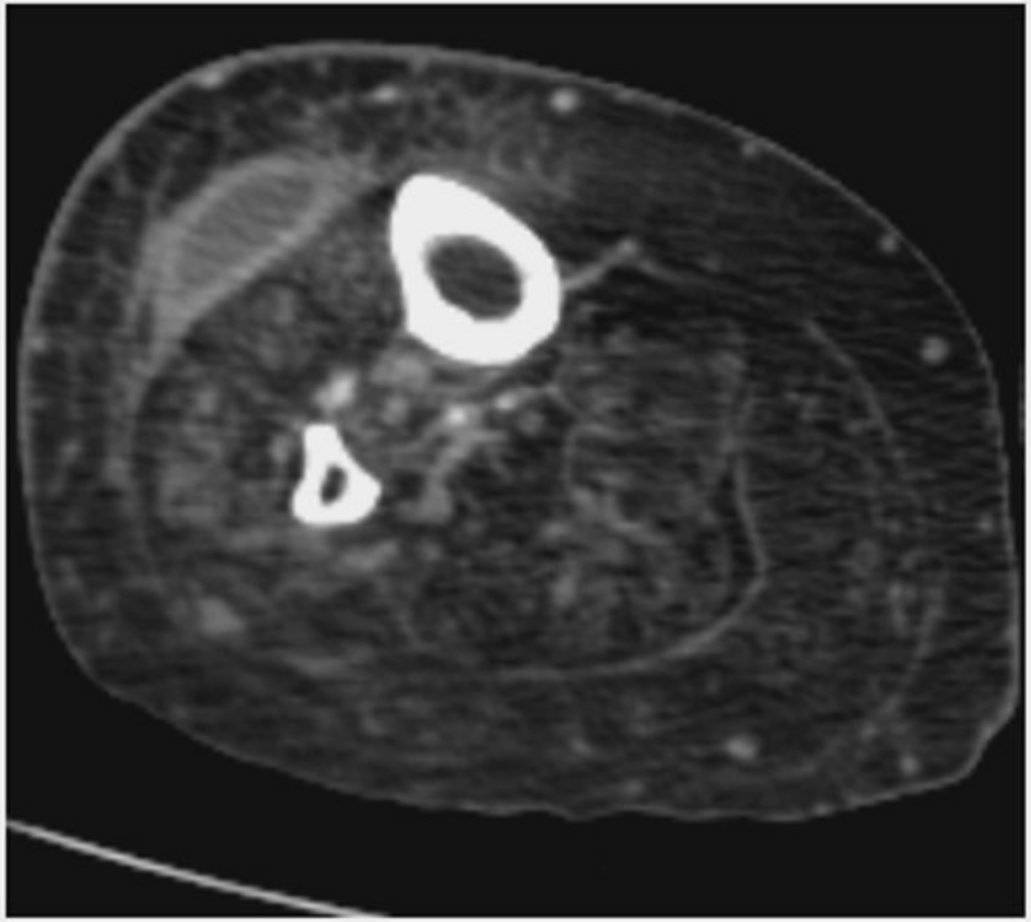

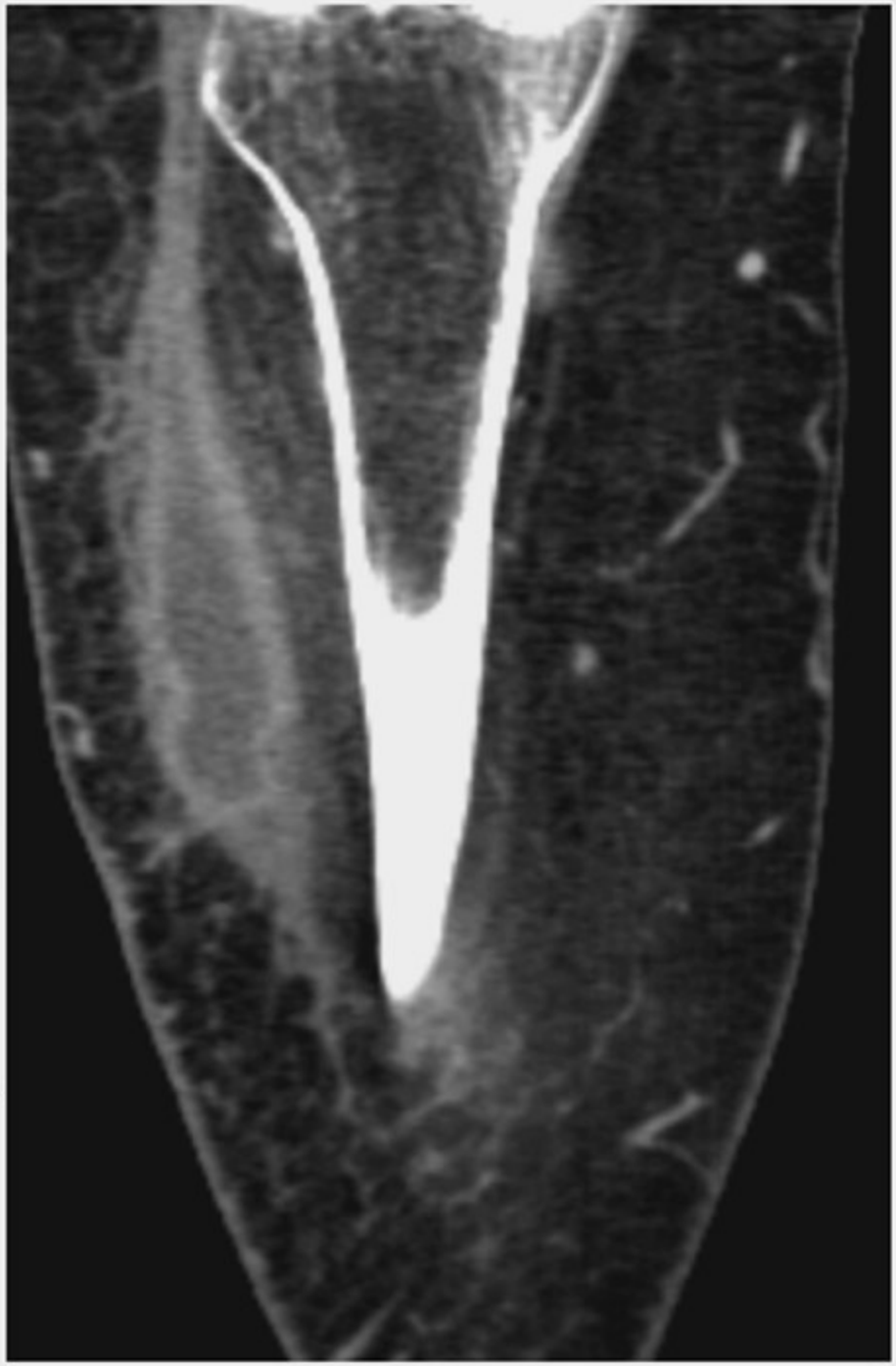

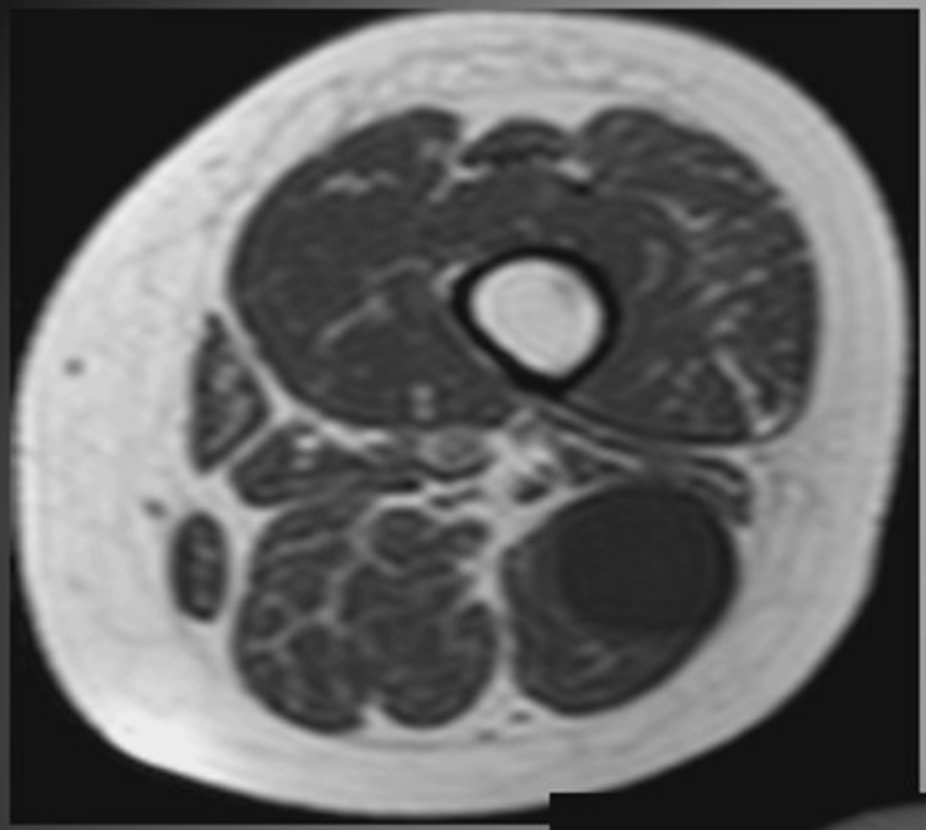

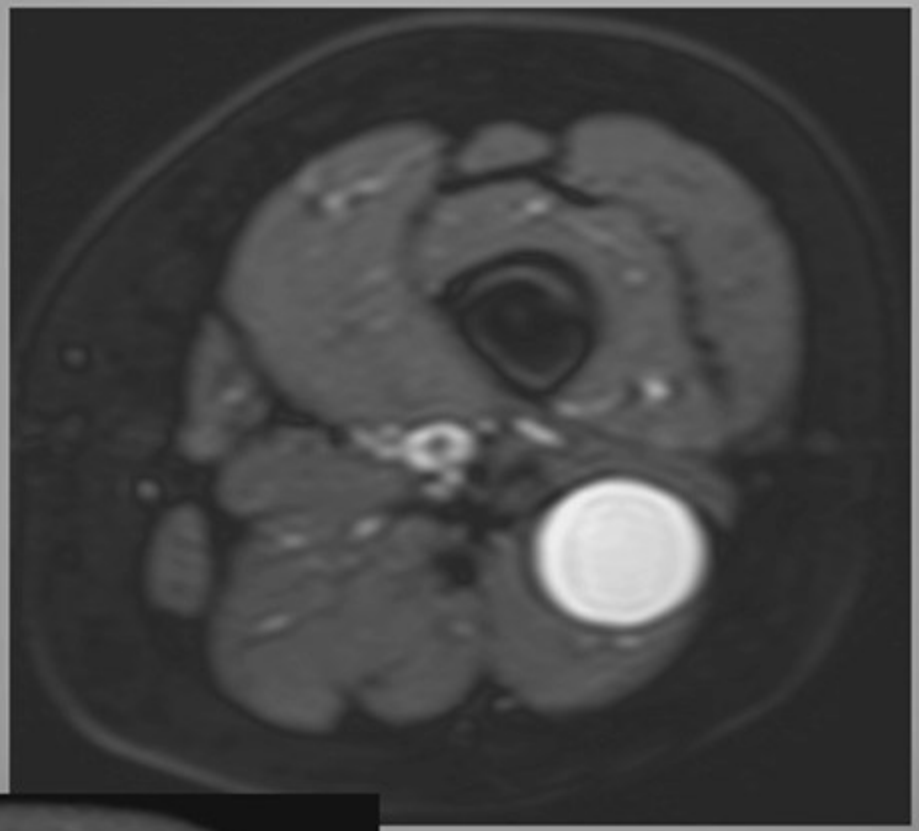

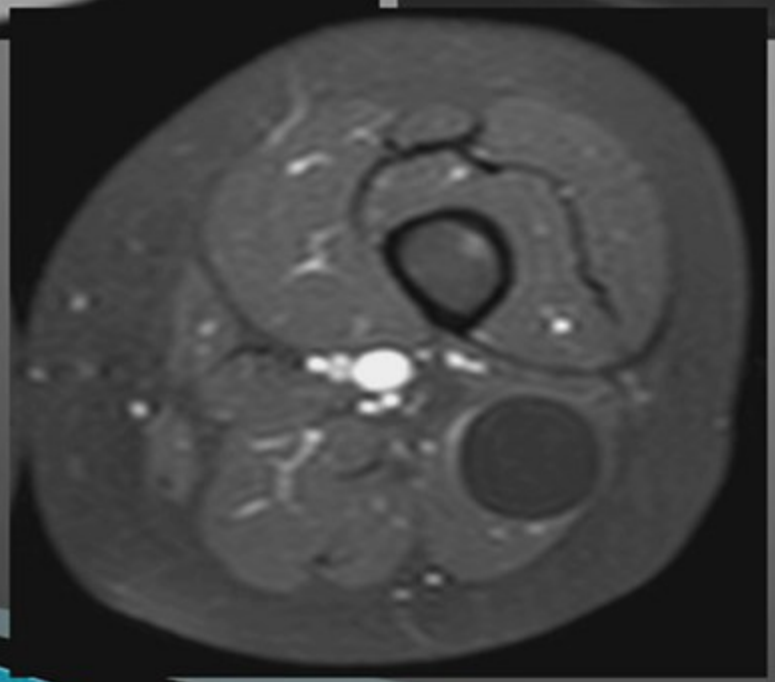

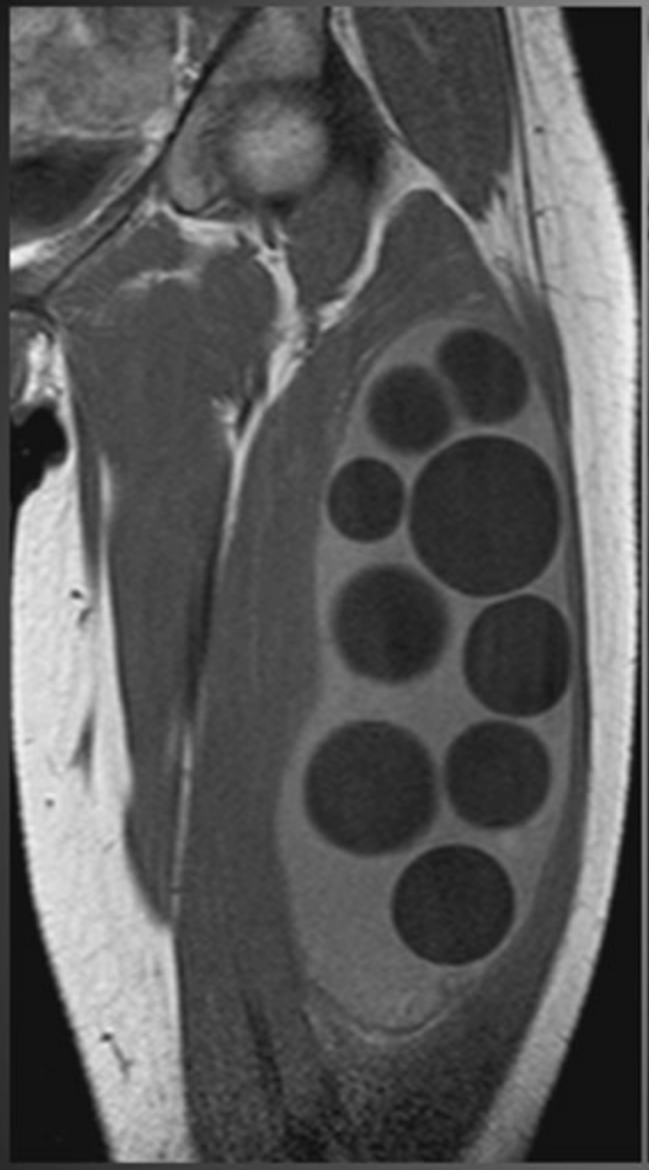
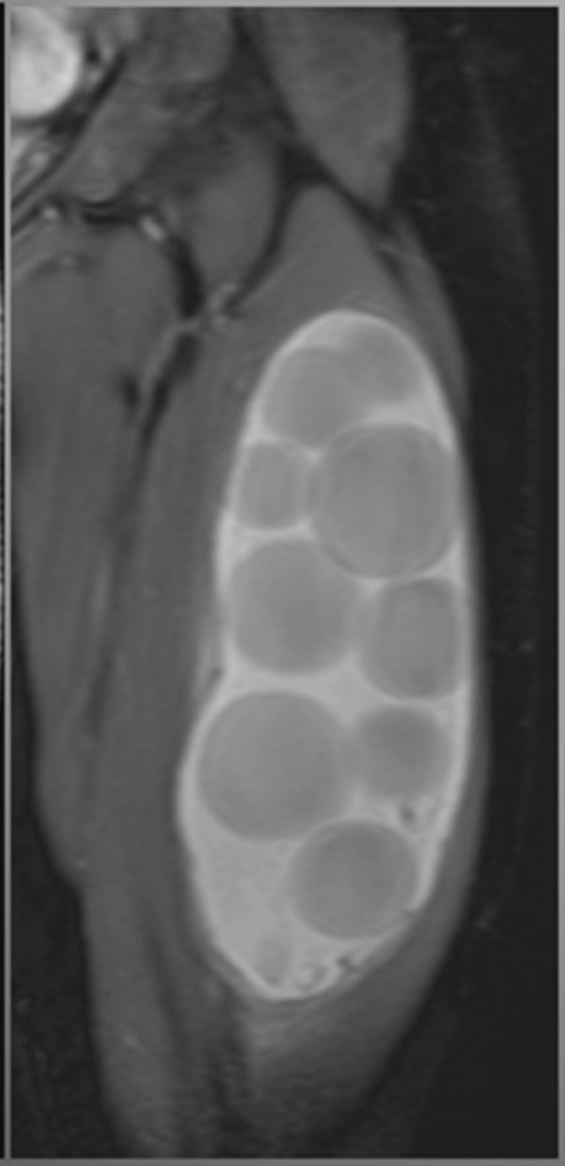
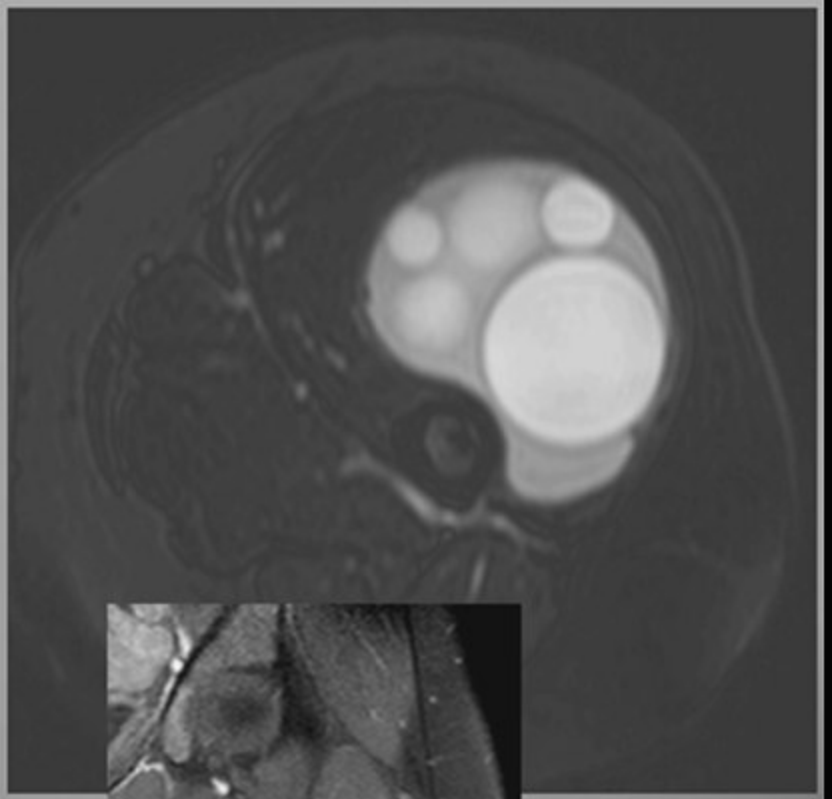
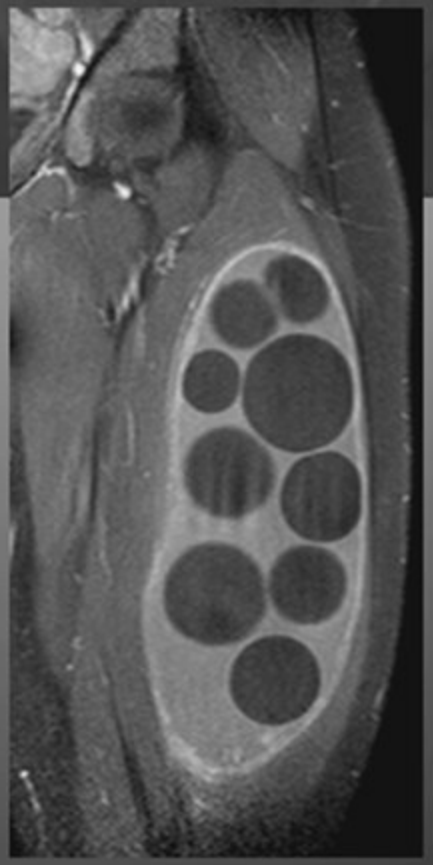

Fasiyit

- MRG'de yağ baskılı T2A serilerde subkutan yağda ve kaslarda hacim artışı, hiperintensite, heterojenite, interfasyal ve subfasyal kresentik sıvı koleksiyonları izlenir.
- Kontrastlı seriler lezyon yayılımını daha iyi gösterir. Fasyada kalınlaşma ve kontrast tutulumu görülür.

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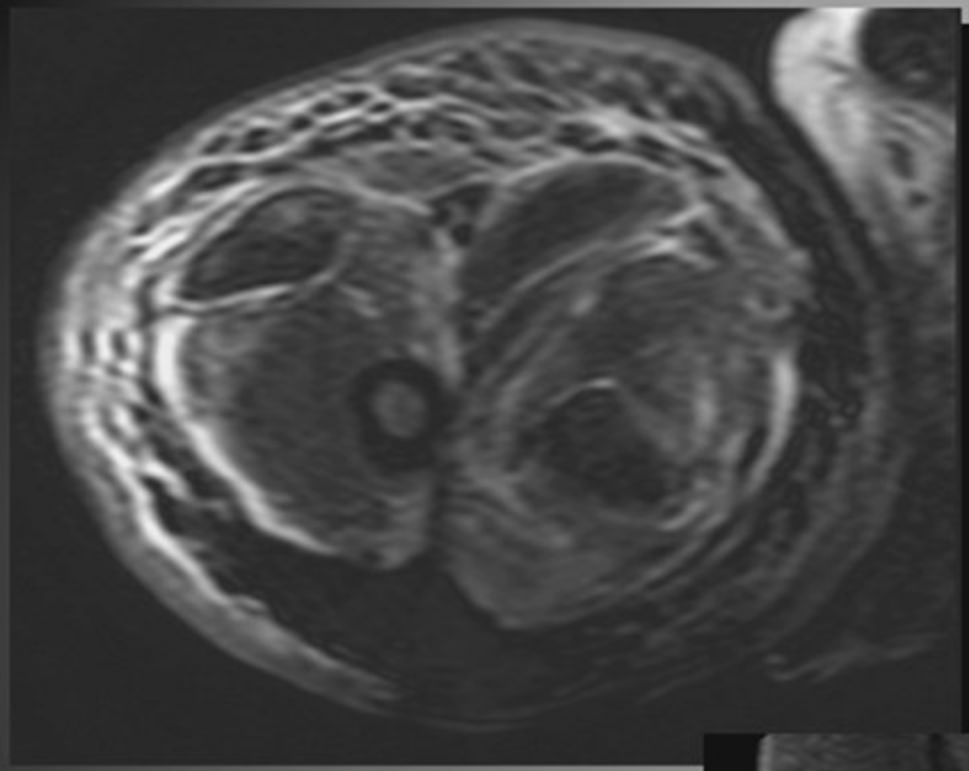

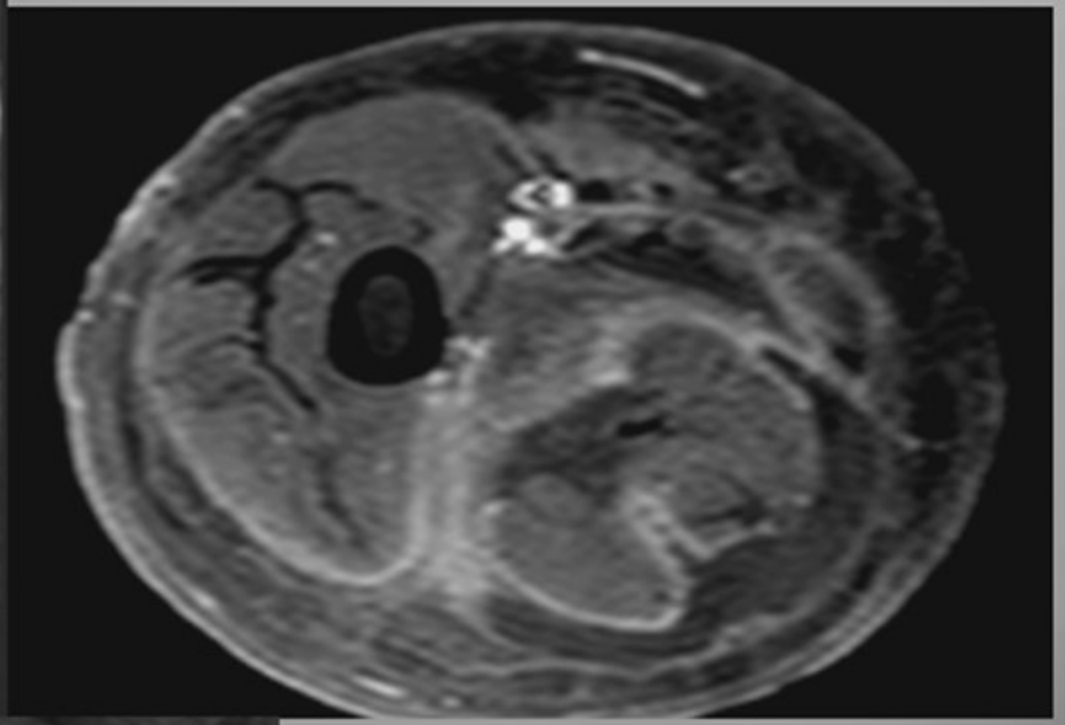

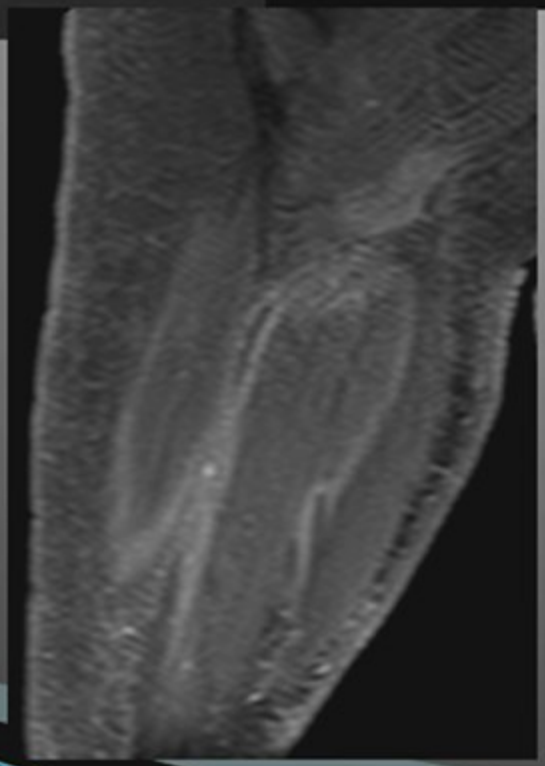

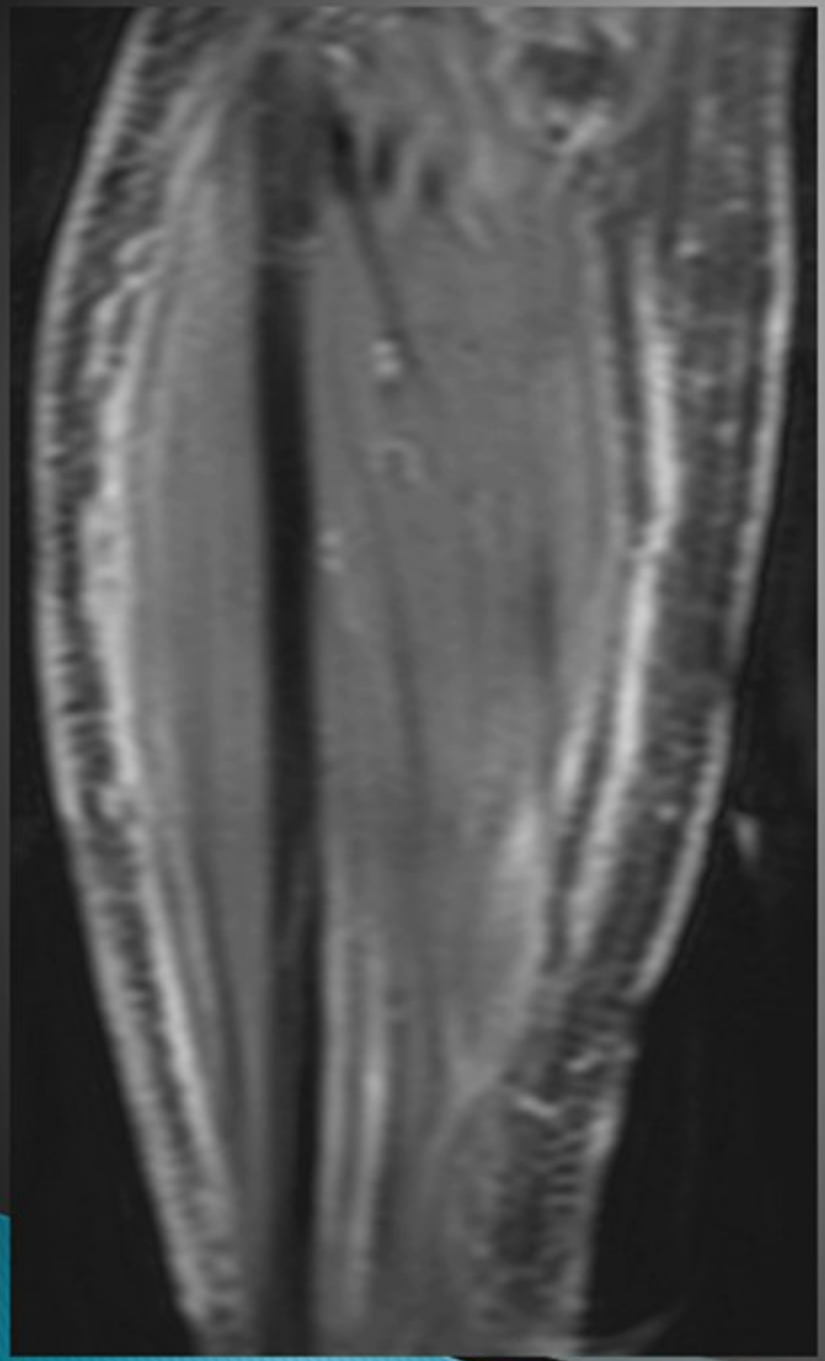

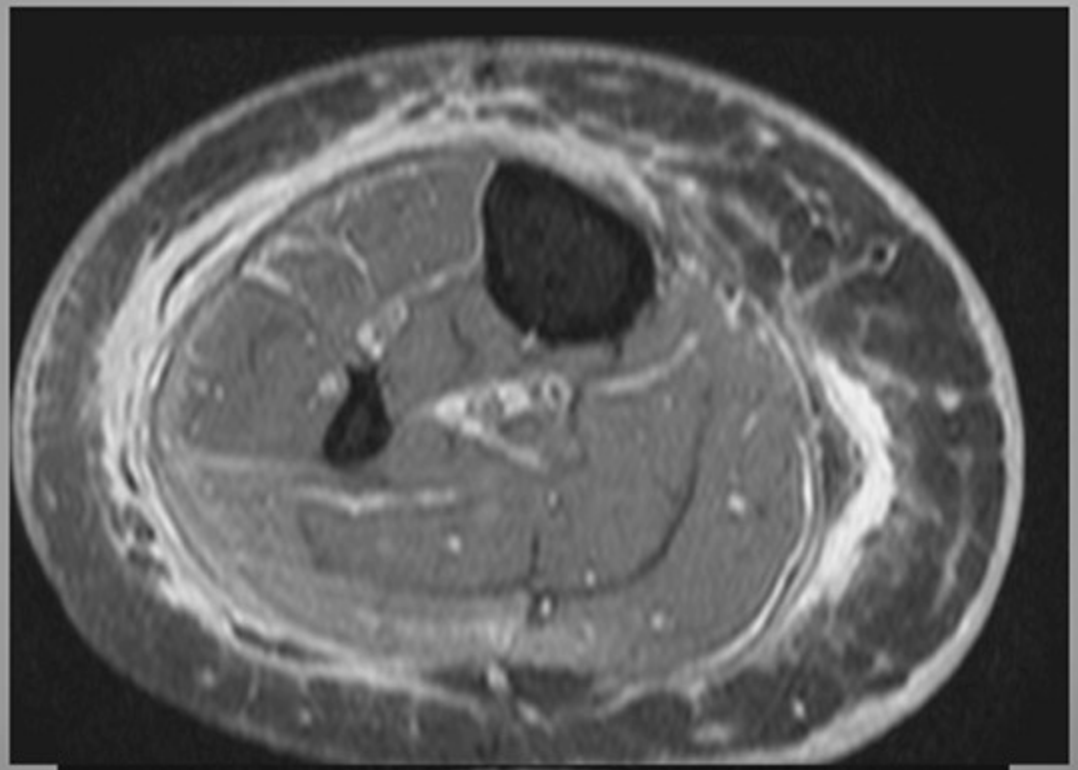

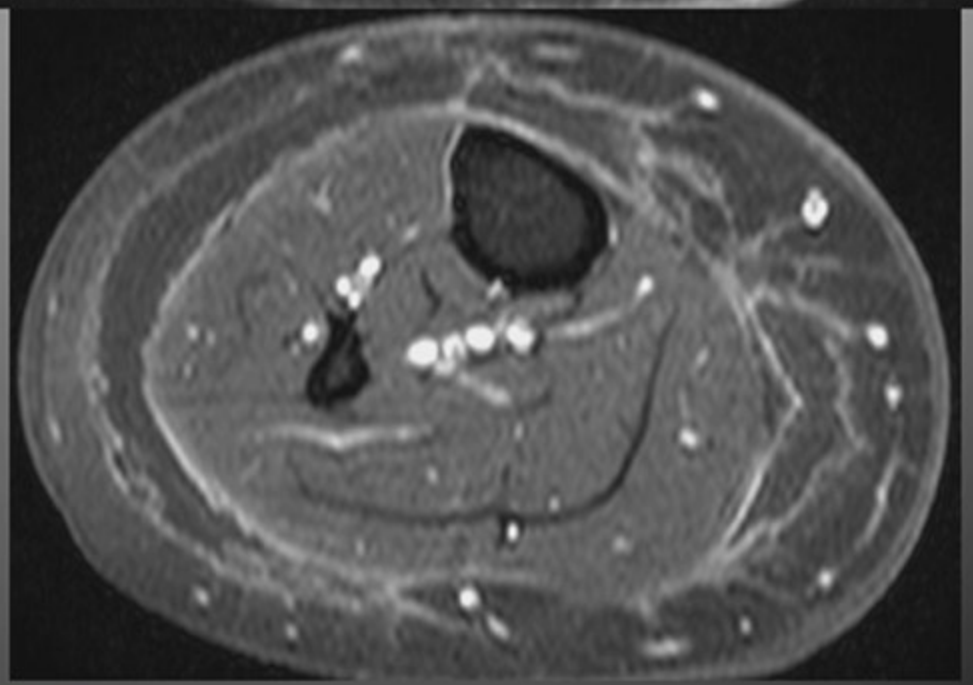

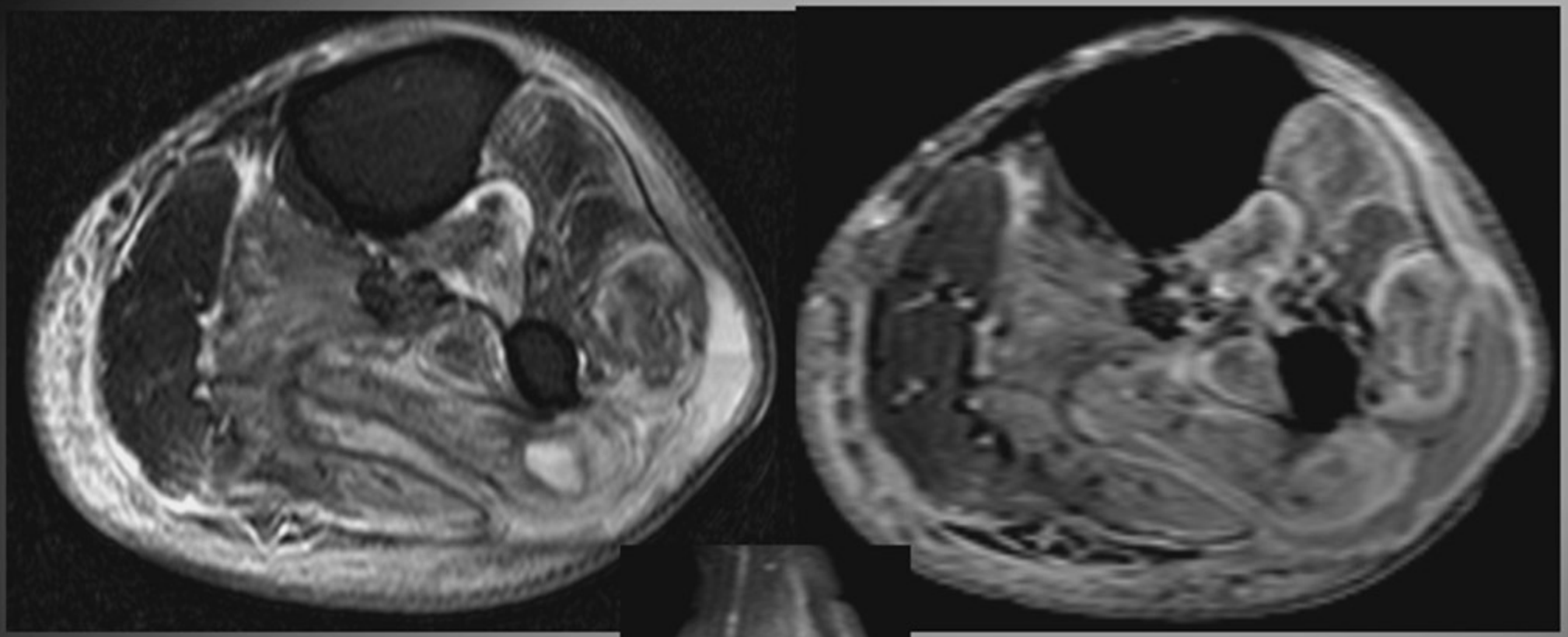

Nekrotizan Fasiyit

- Subkutan dokular ve fasyanın hızlı ilerleyen nekrotizan infeksiyonu
- Yüzeyel fasyadan derin fasyaya doğru
- Alkolizm, DM, immun yetm., Tx.
- CT de fasyalar boyunca hava ve YD ödemi
- MRG'de, fasiyit bulgularına ek olarak yumuşak doku amfizemi ile uyumlu sinyalsiz alanlar, kontrastlı serilerde kontrastlanmama veya değişken C+

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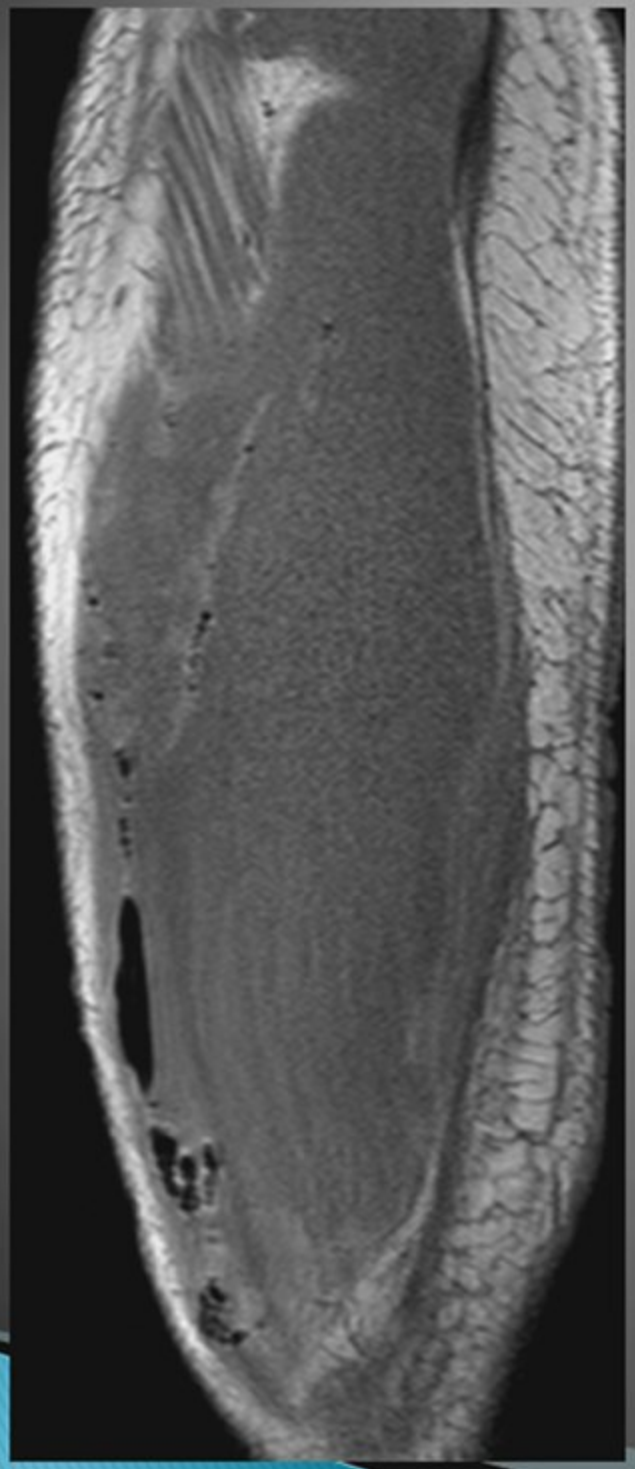

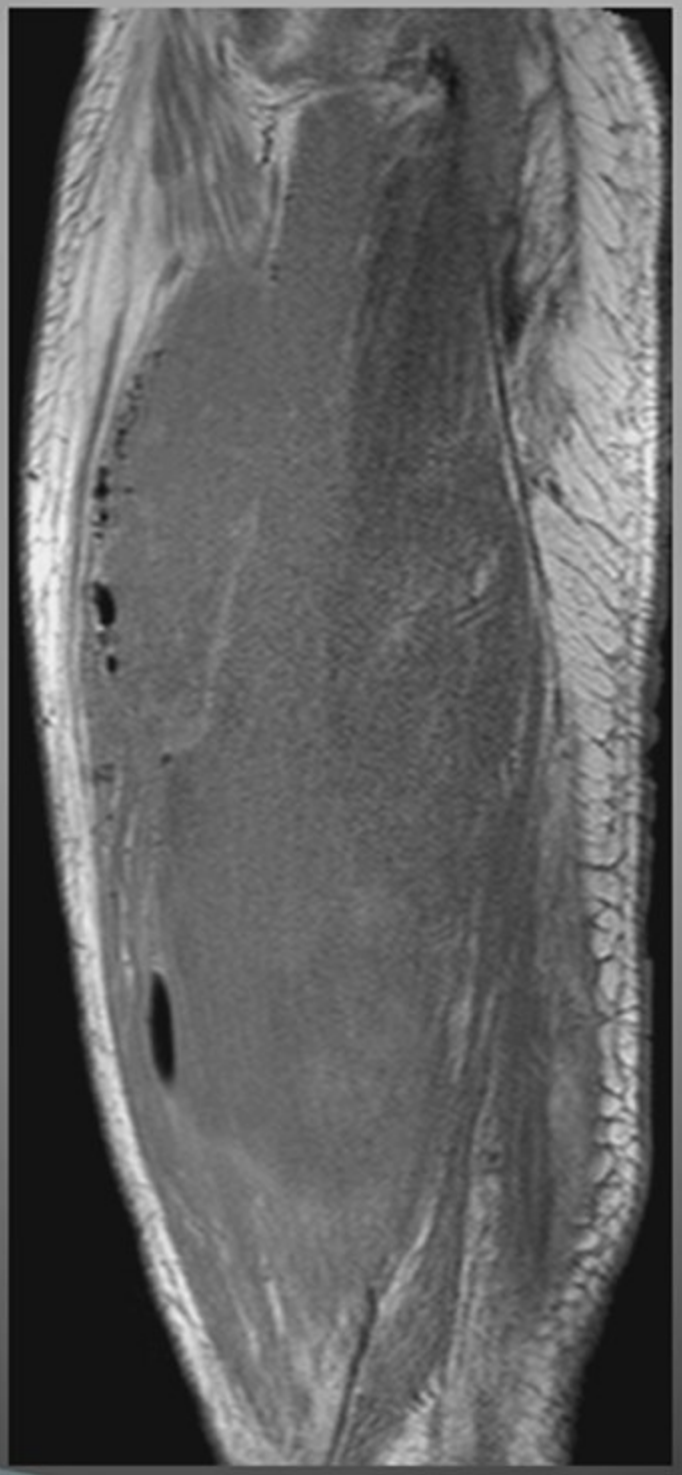

Bursit

- Primer inceleme yöntemi US
- US'de bursada sıvı artışı, internal ekojeniteler, komplike bursitlerde septasyonlar izlenebilir.
- MRG tanıda altın standarttır.
- MRG'de ise bursada sıvı koleksiyonu ve kontrastlı serilerde periferik kontrast tutulumu görülür.

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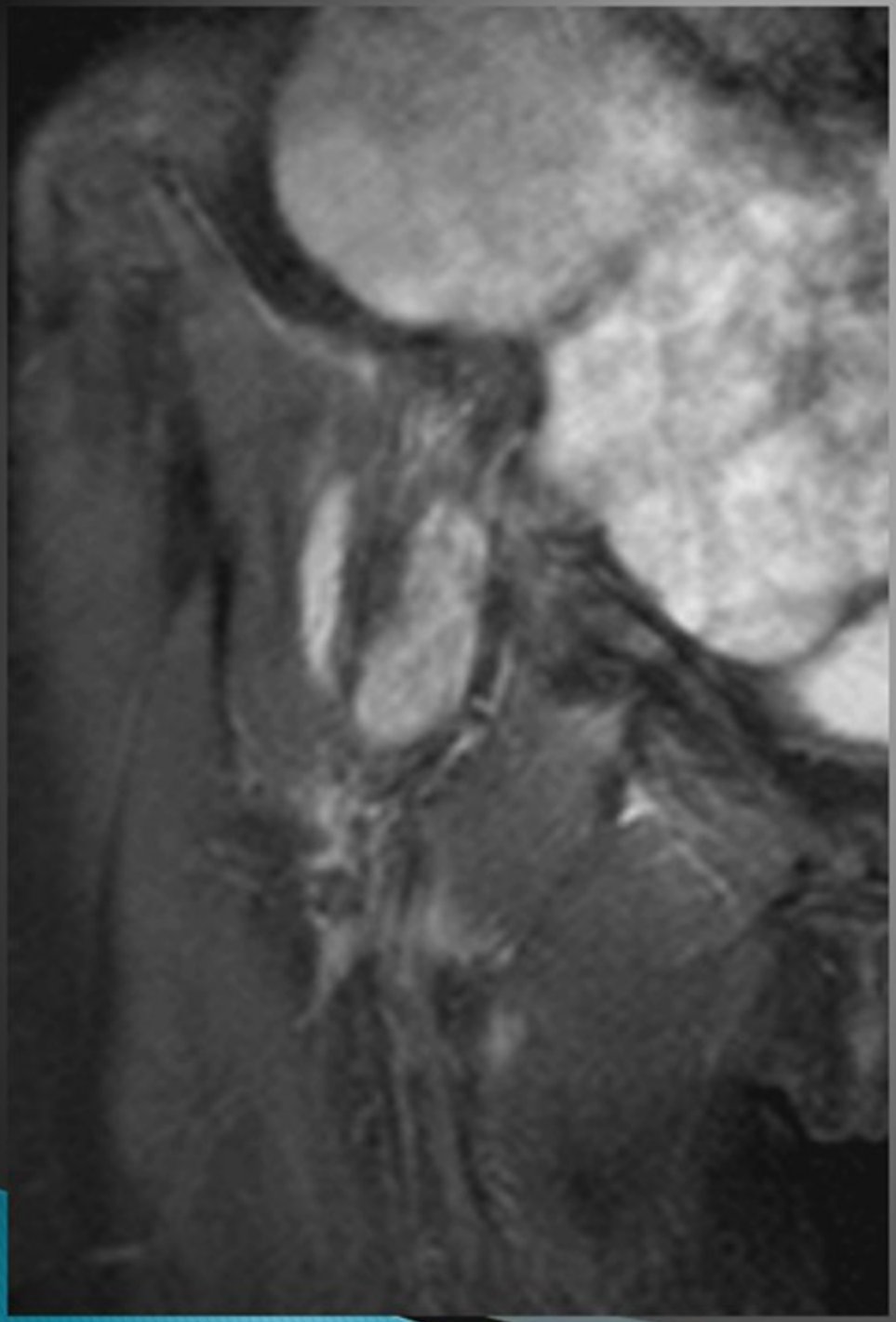
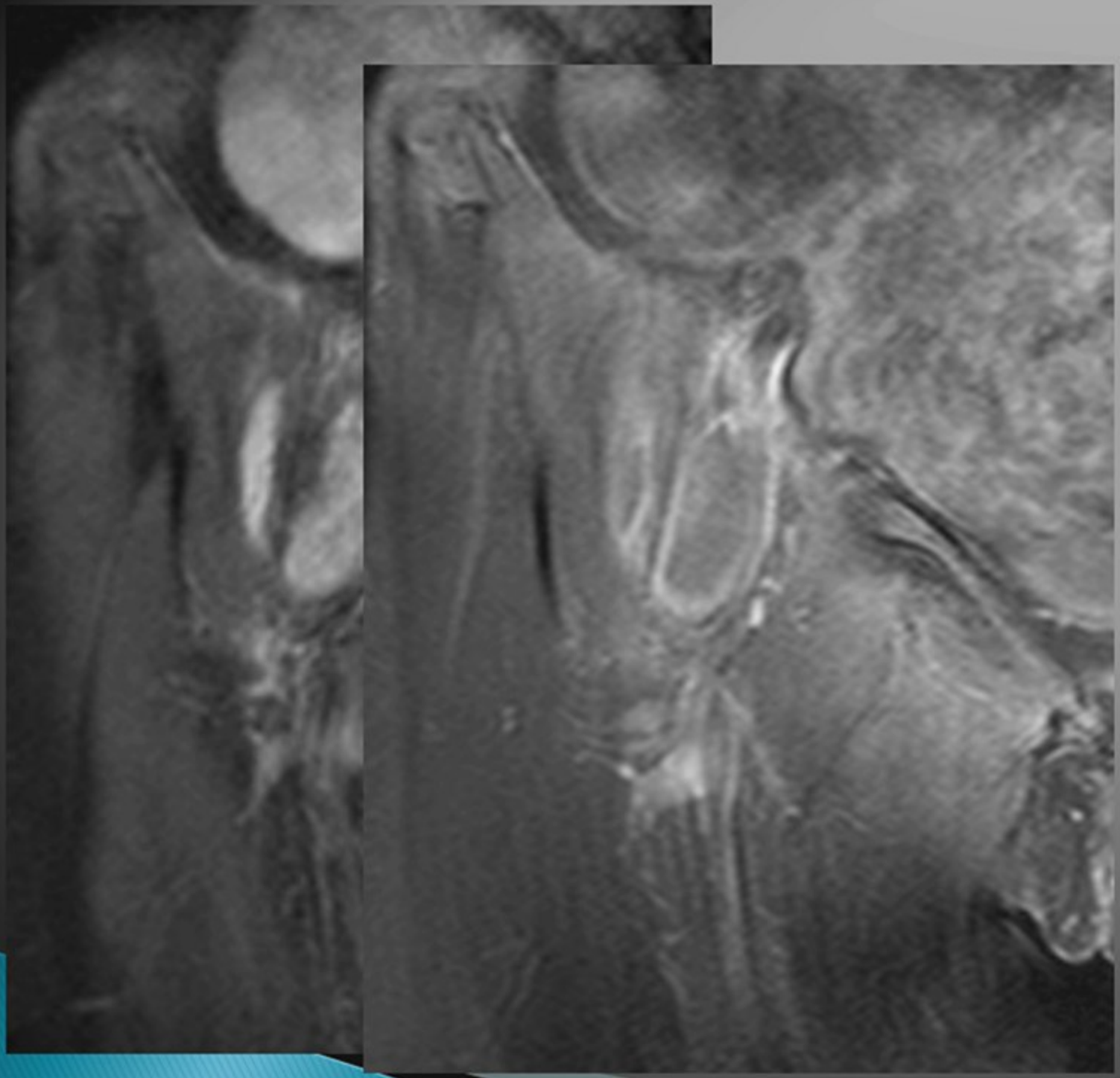
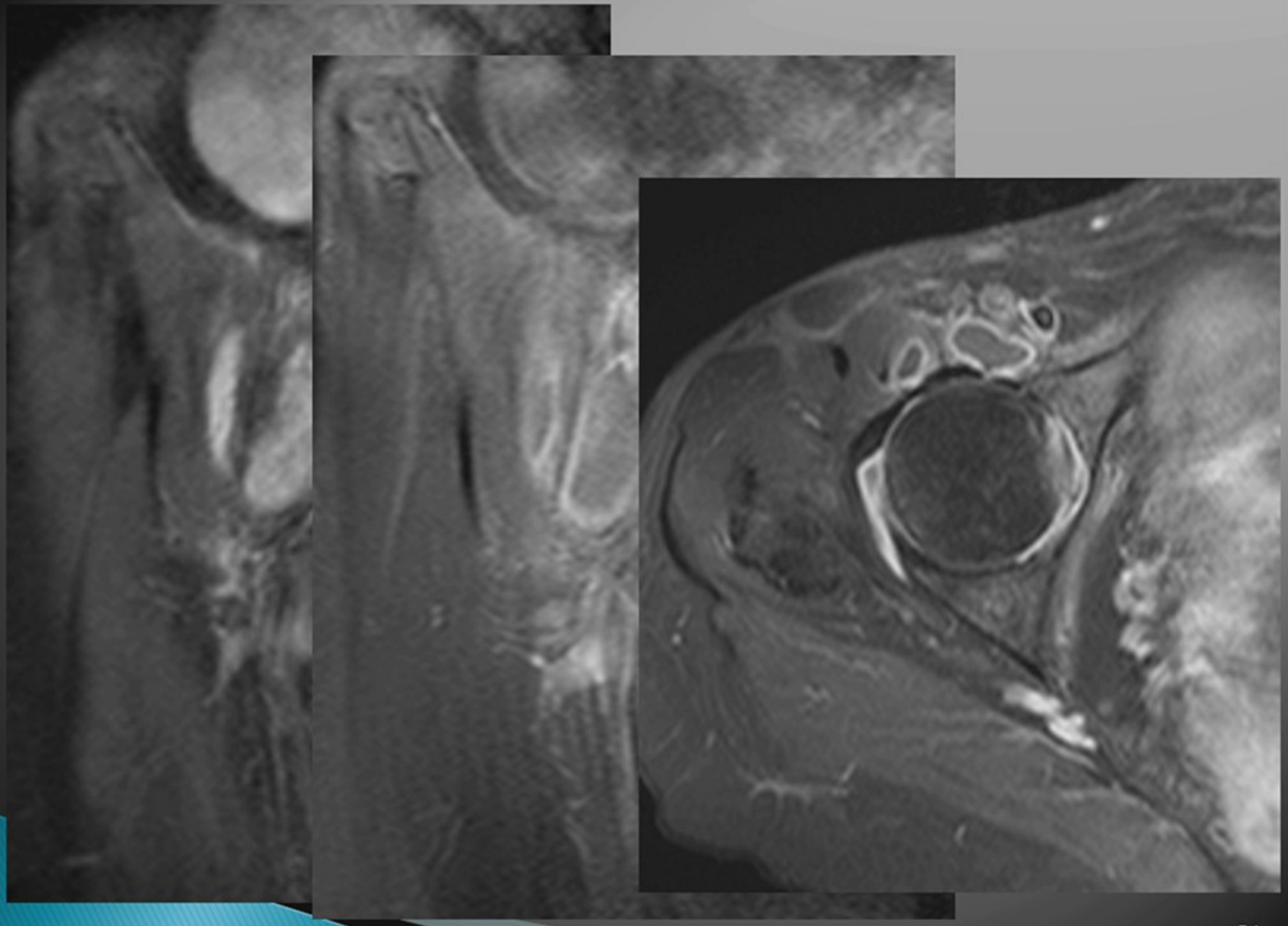
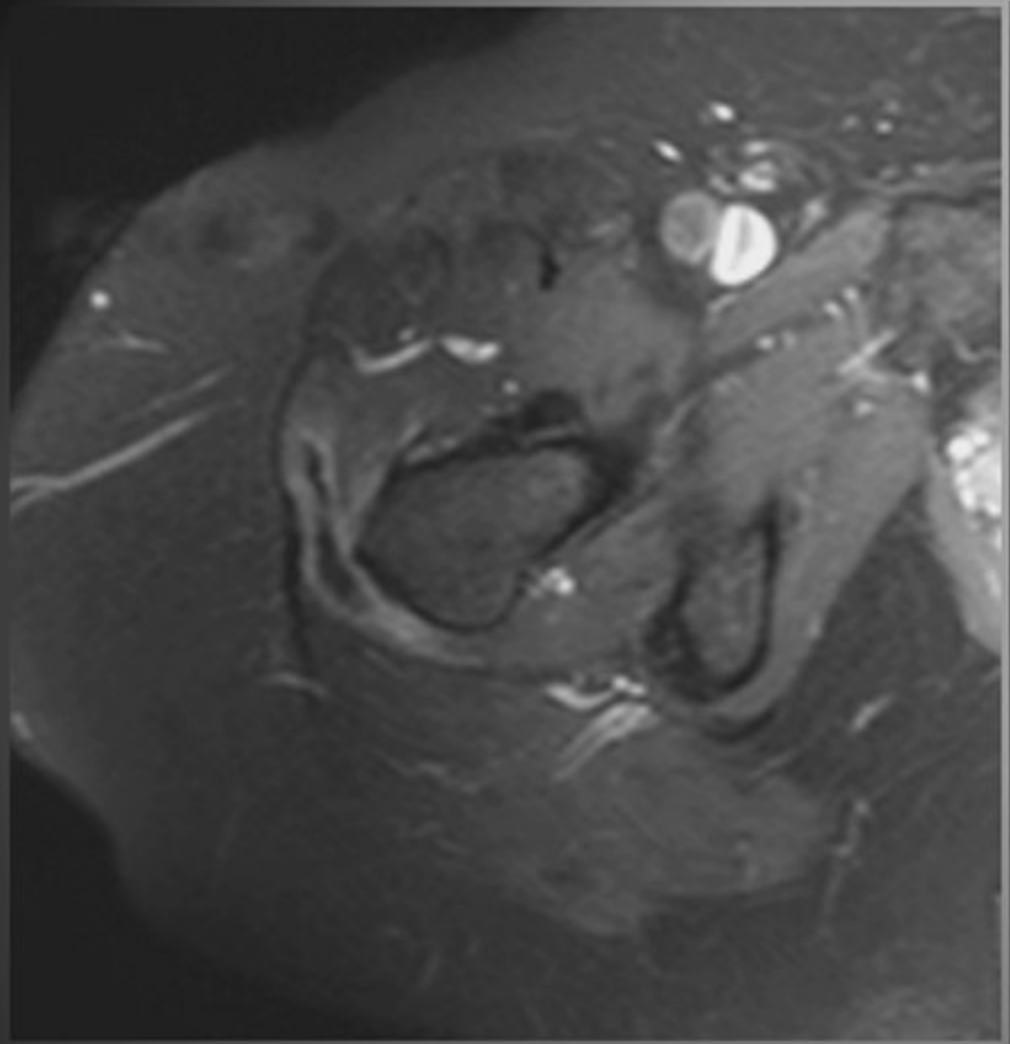
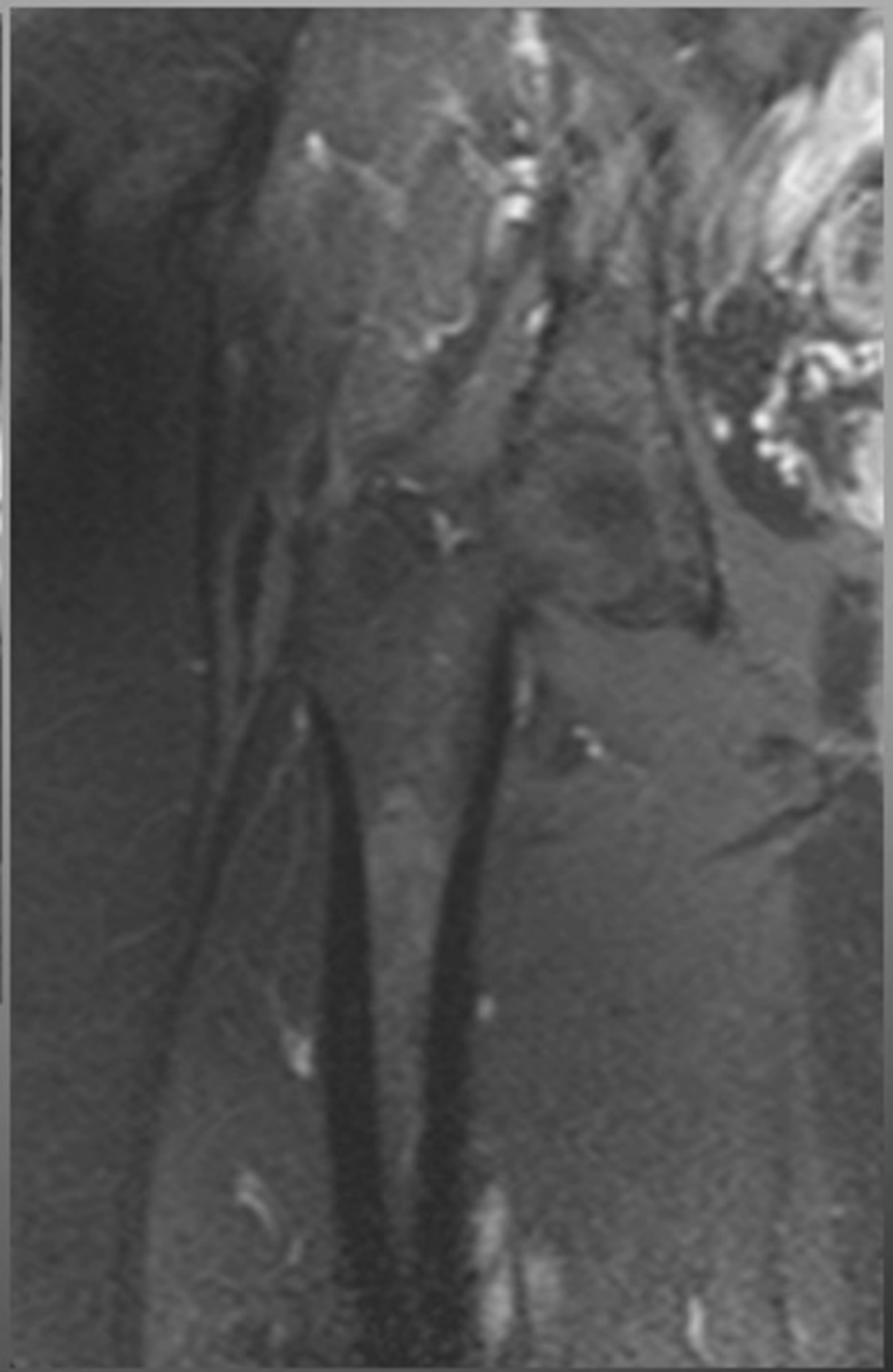
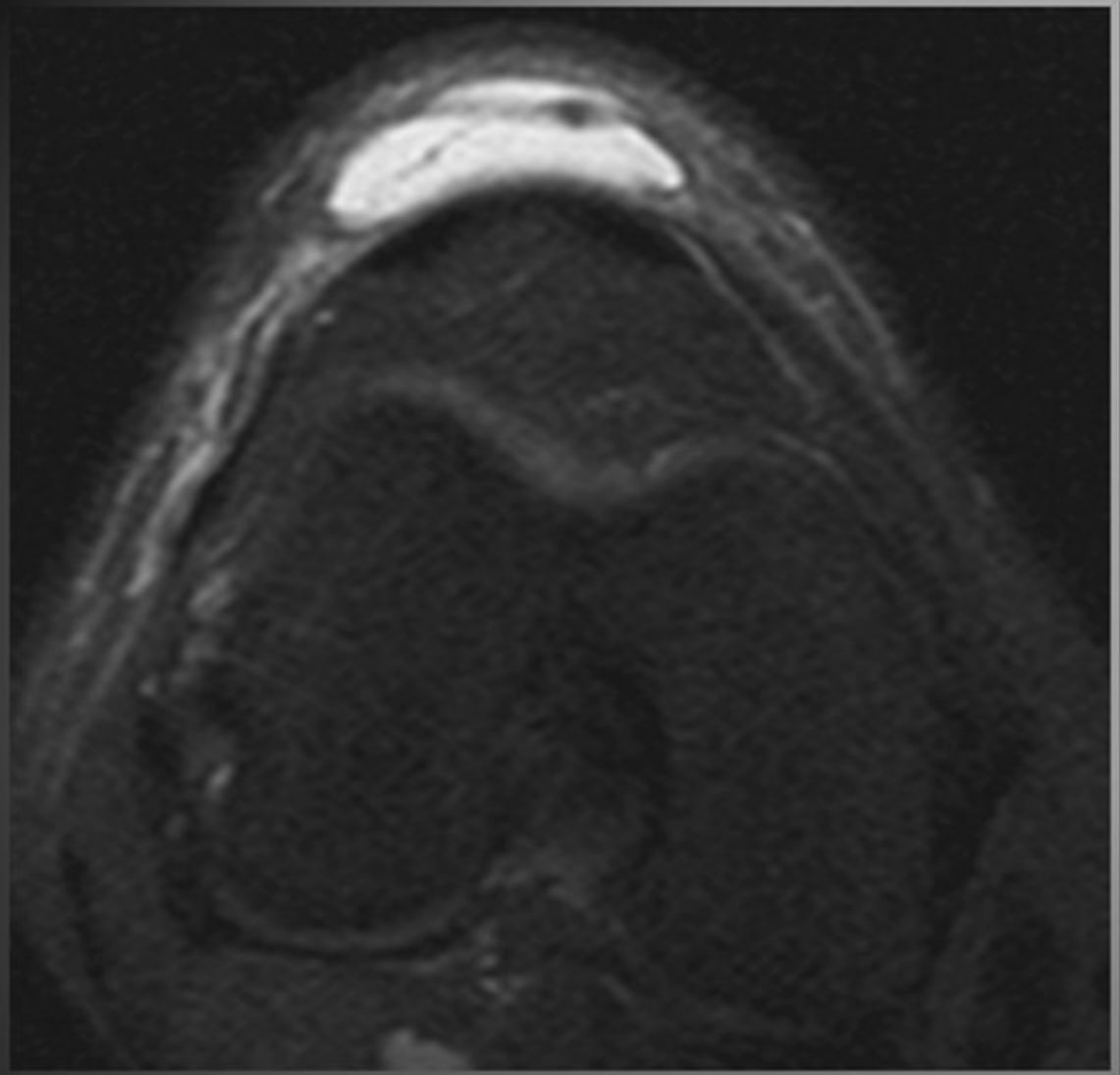


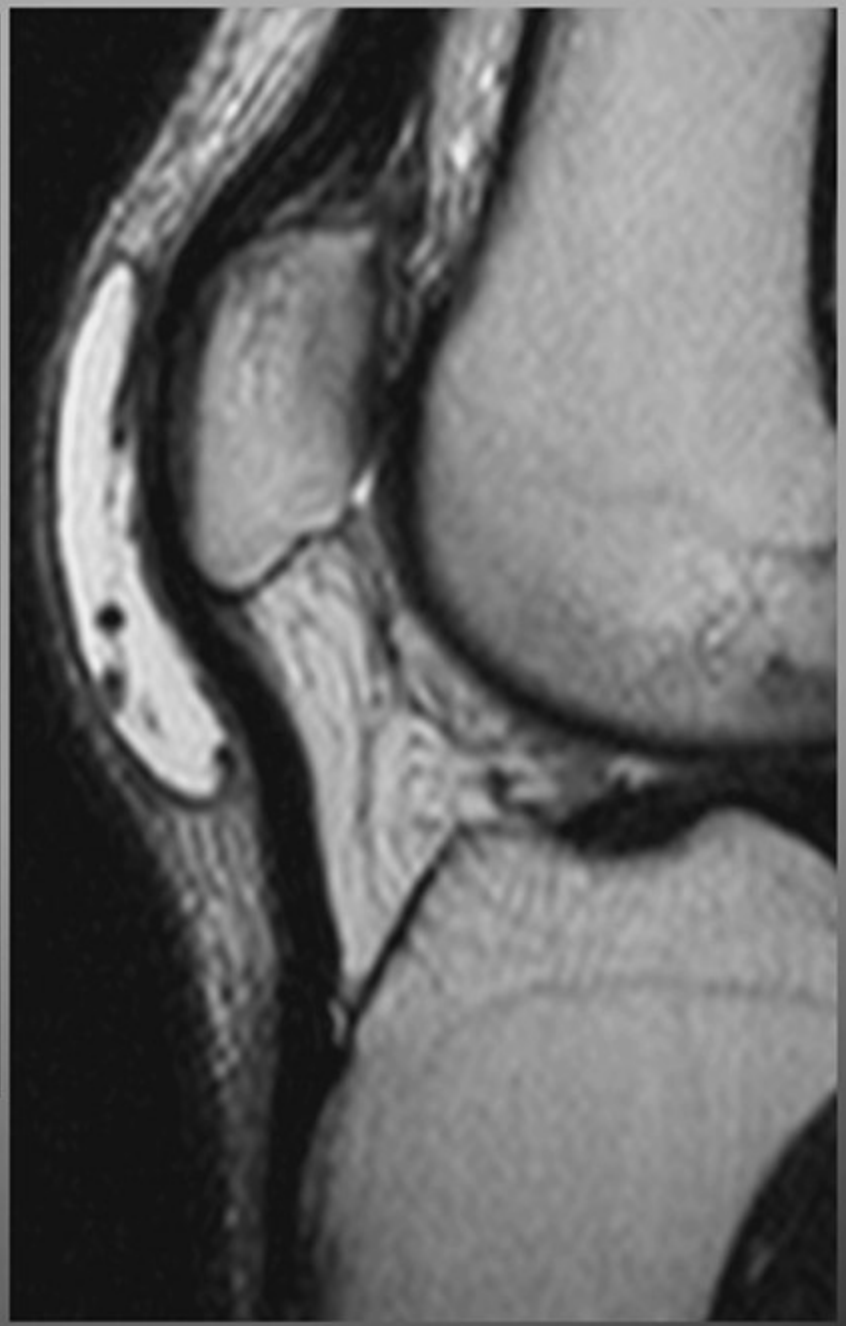


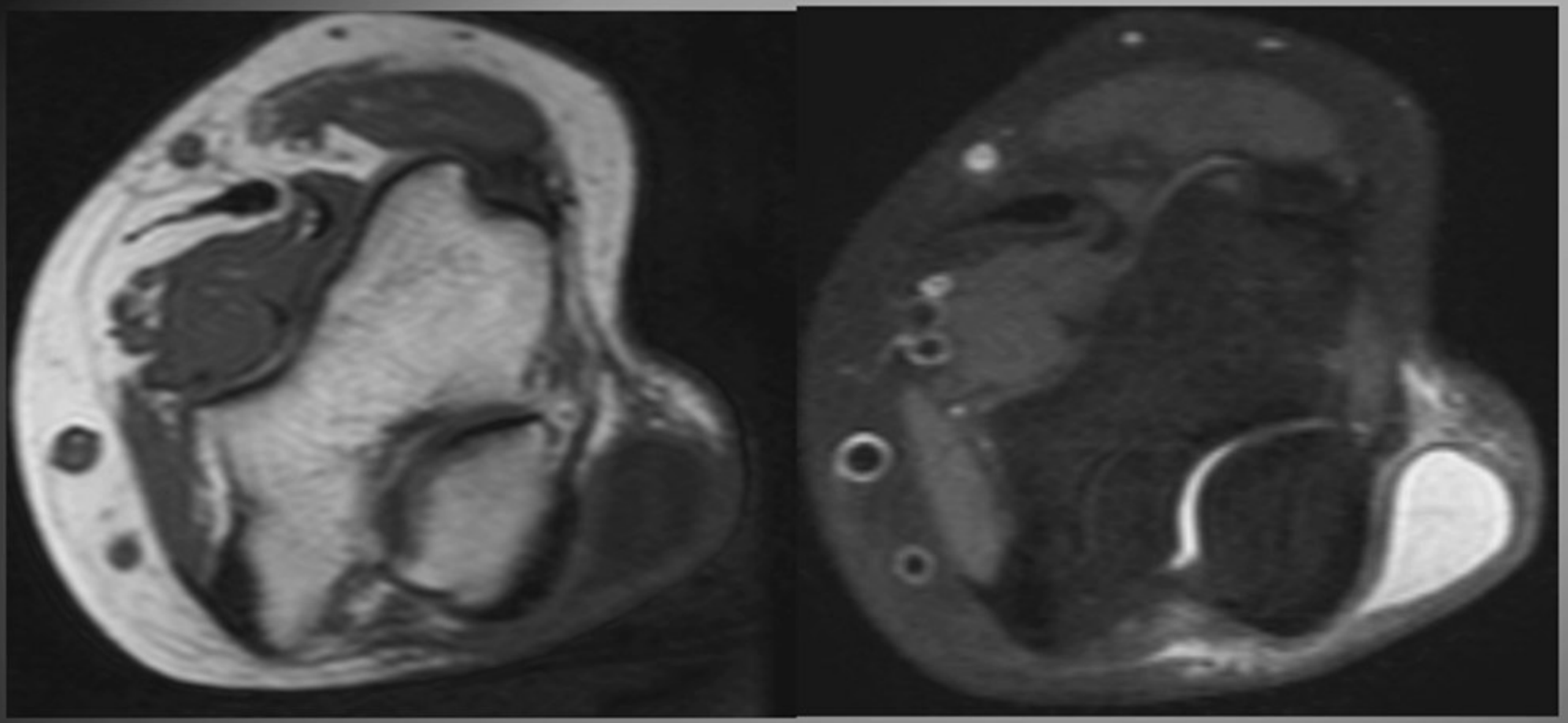


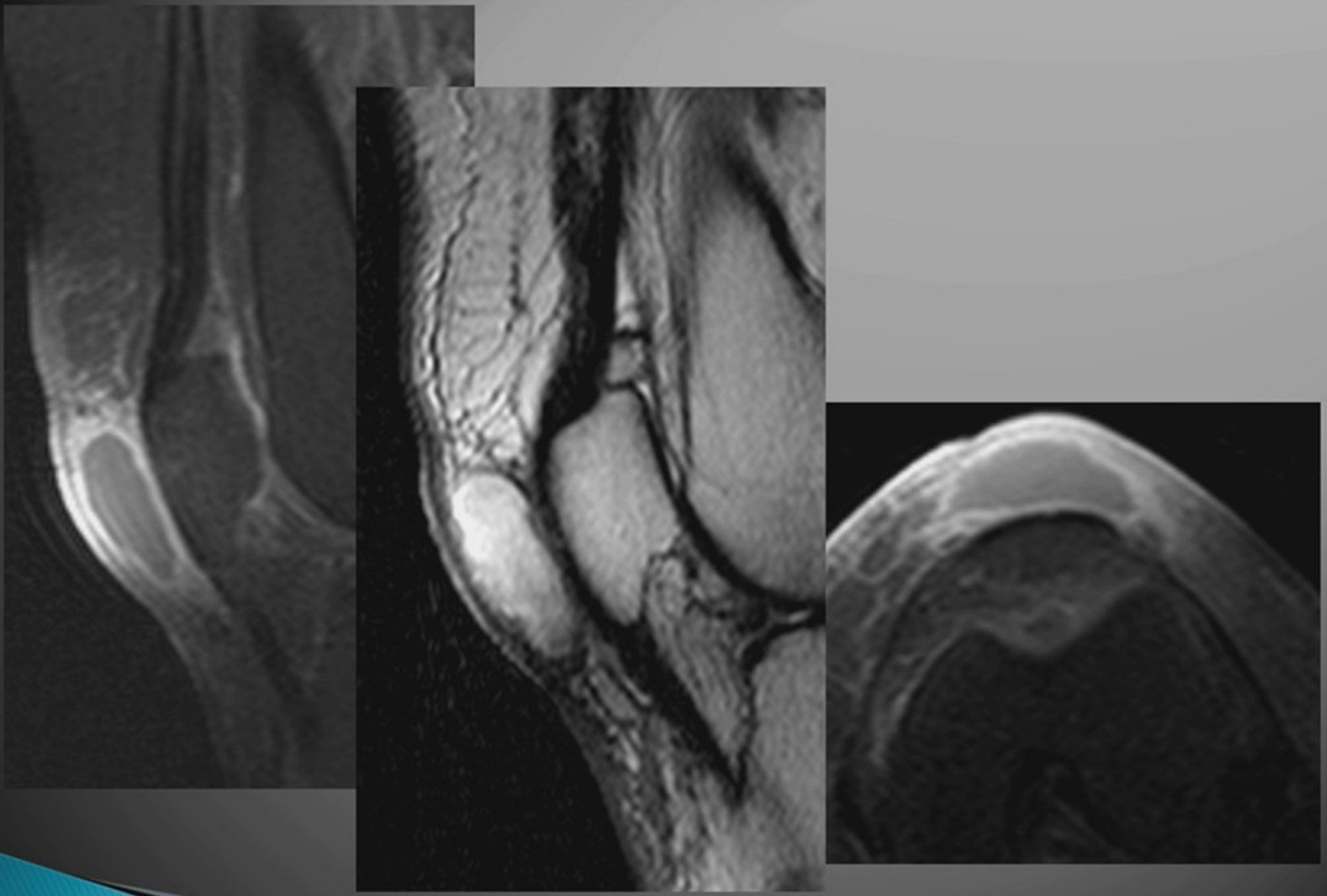


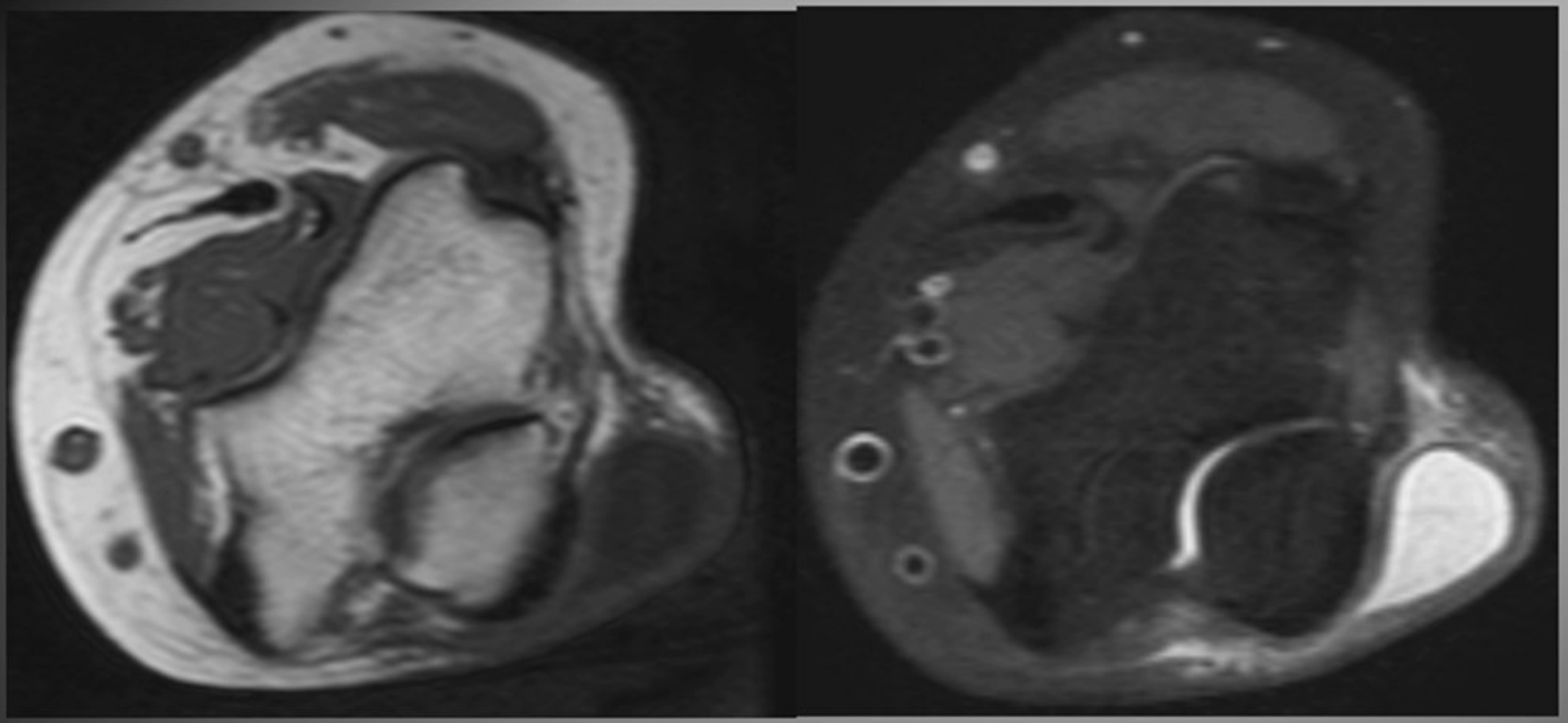


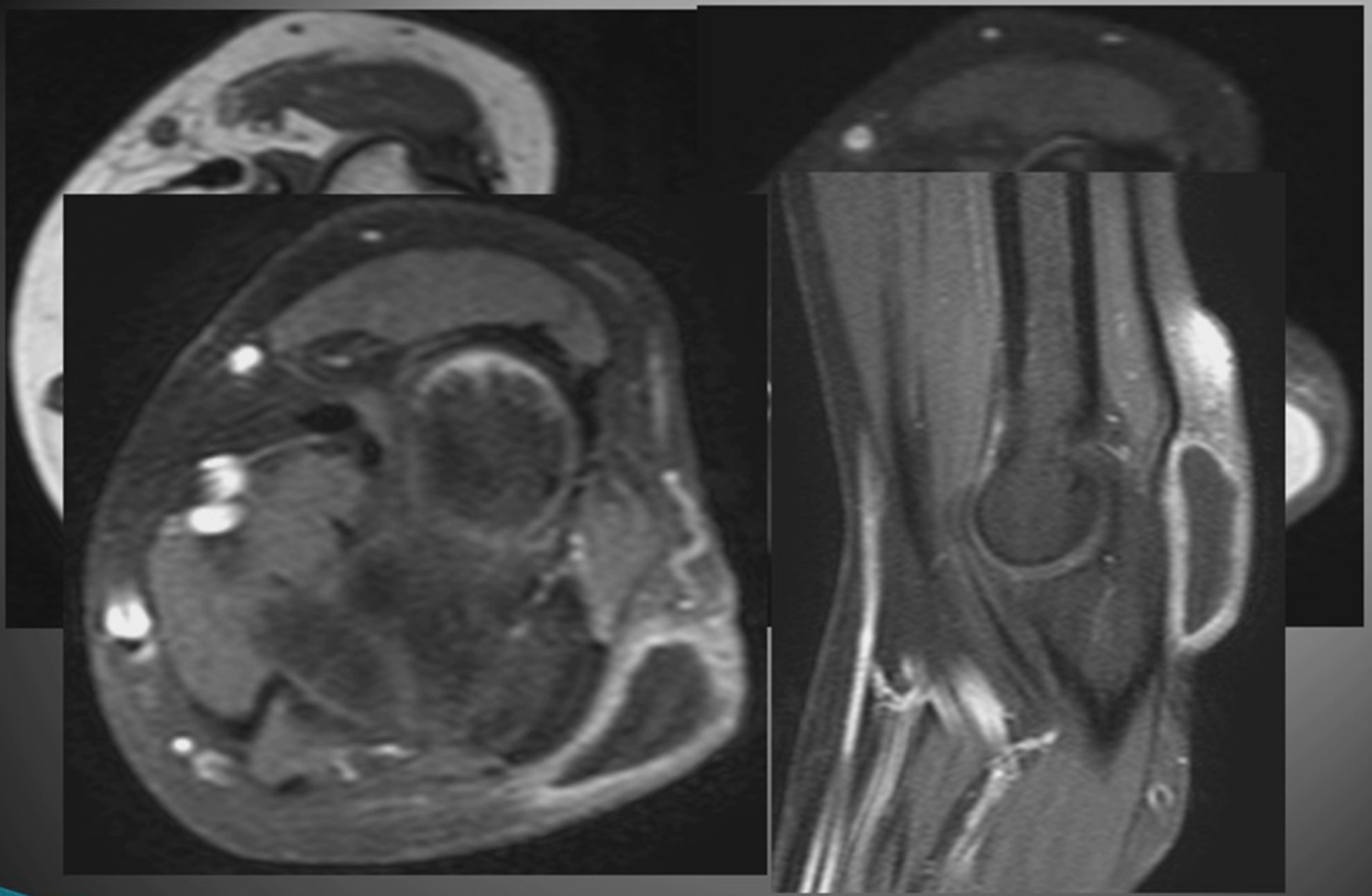


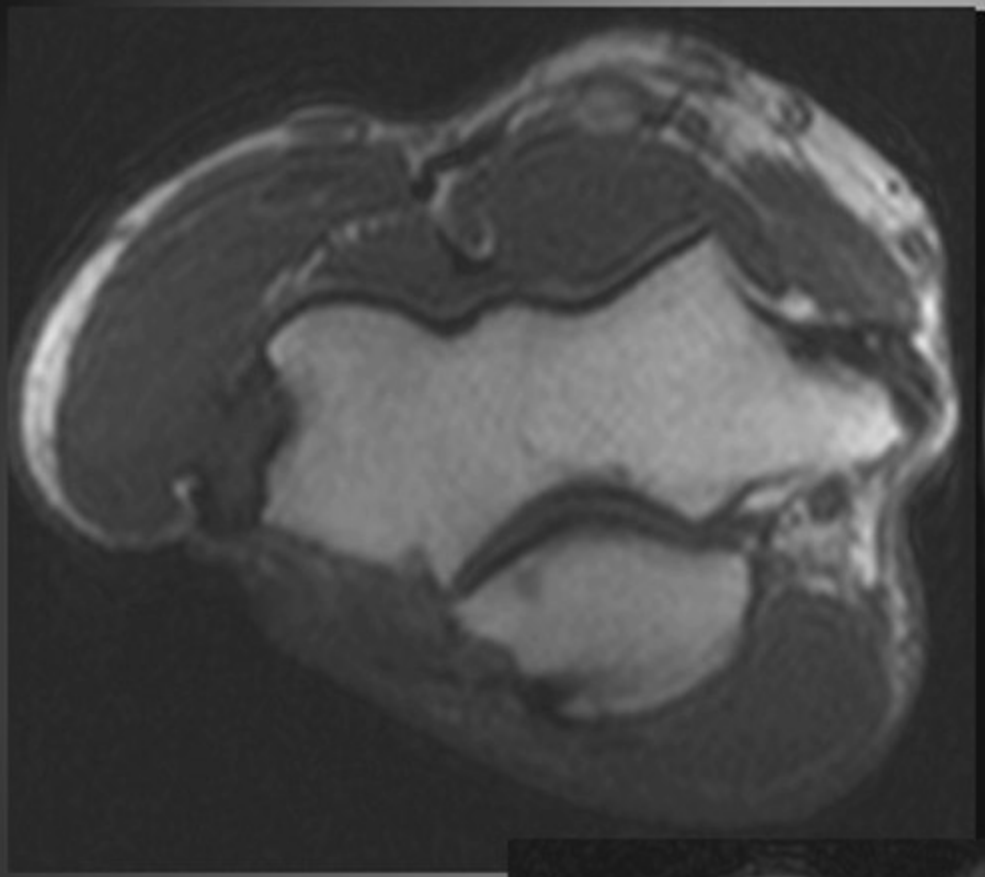


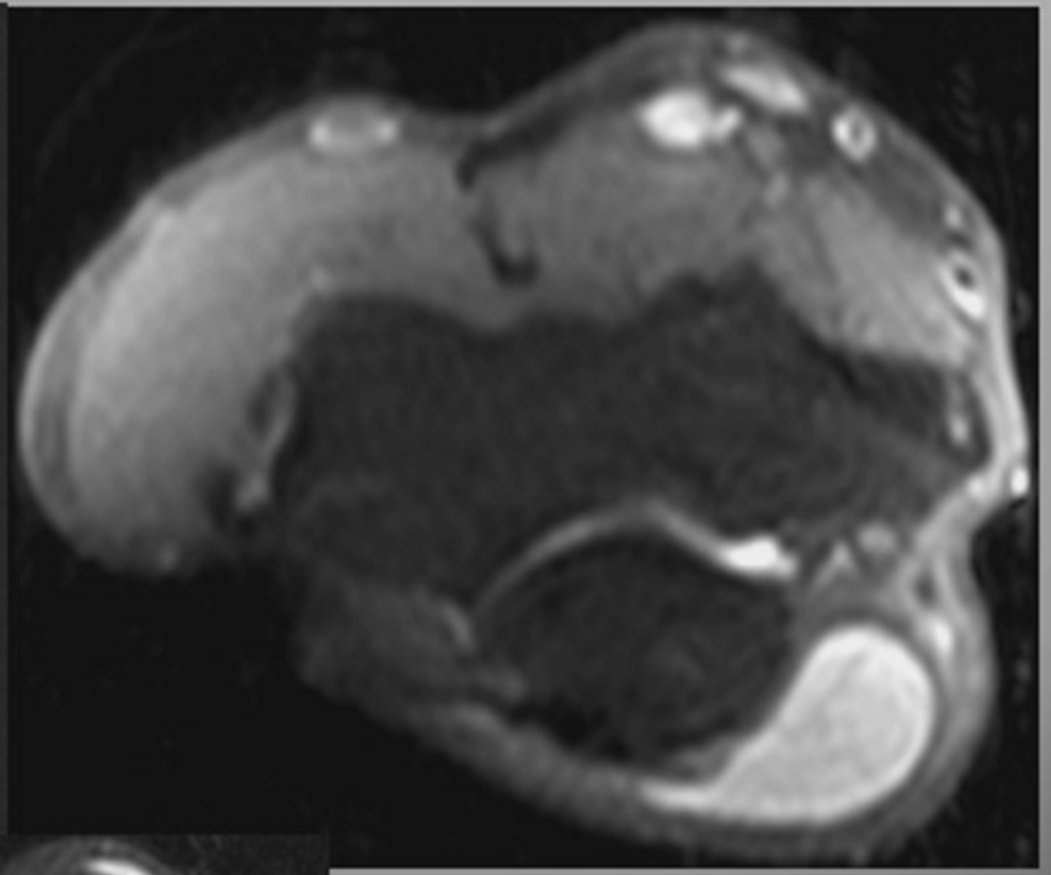


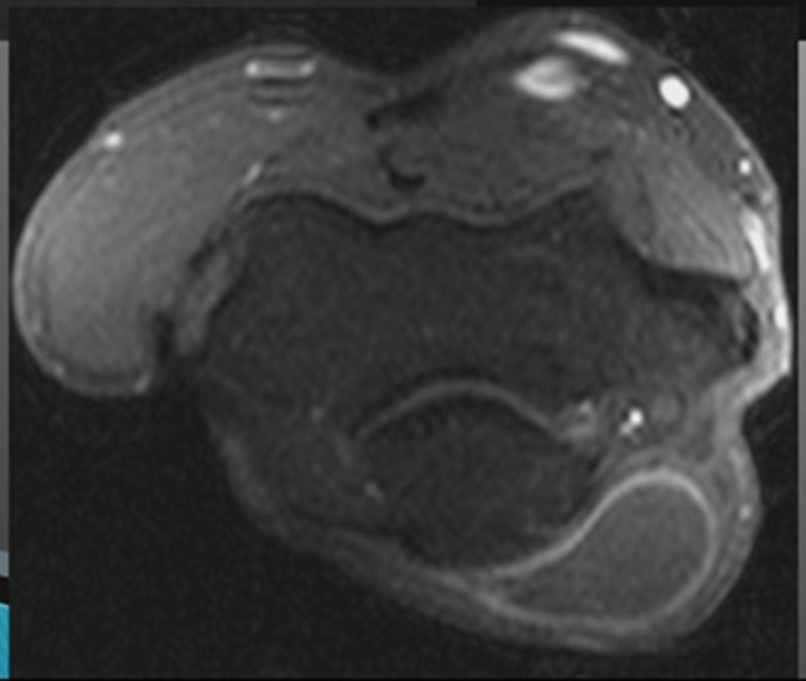


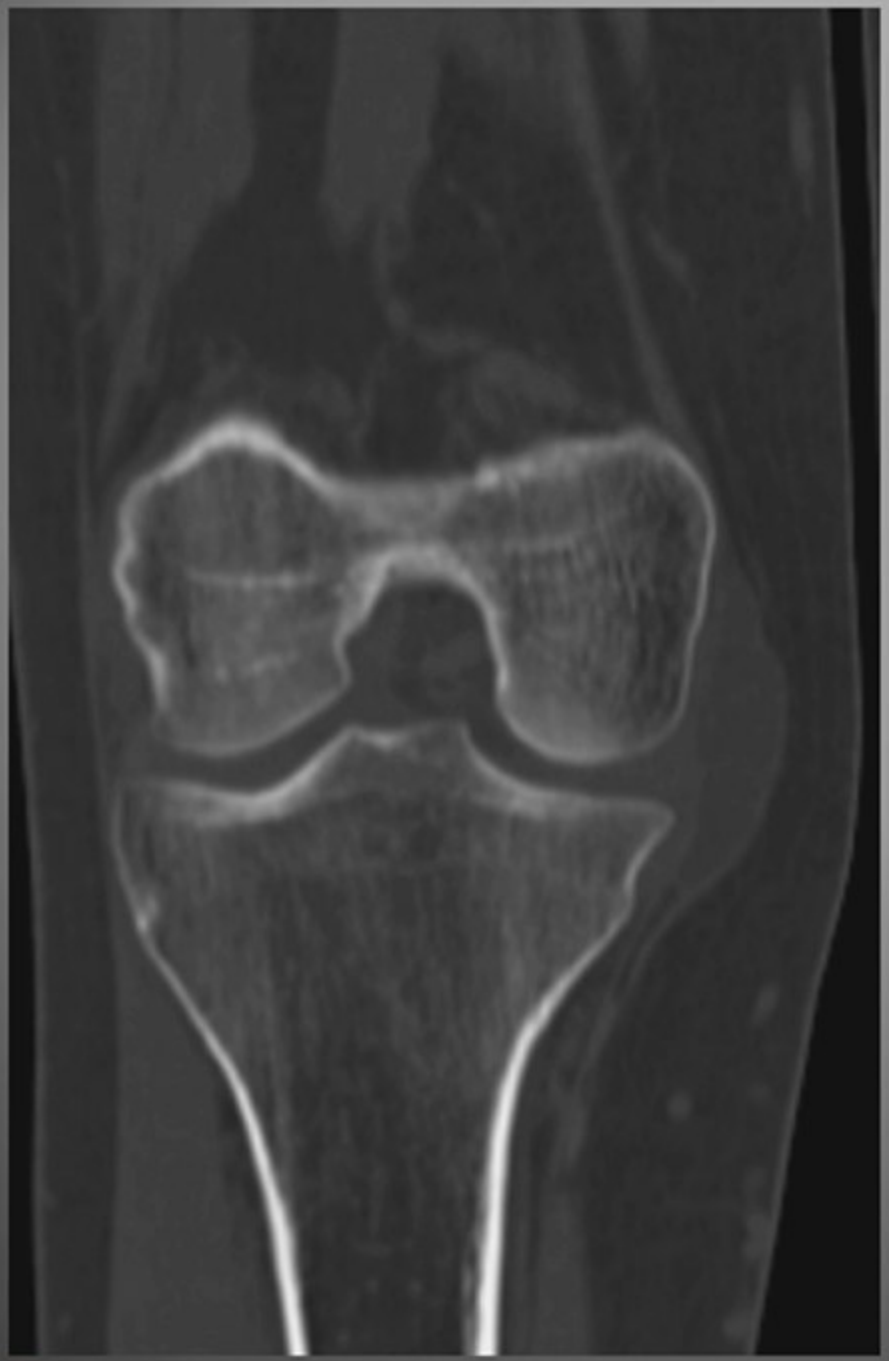


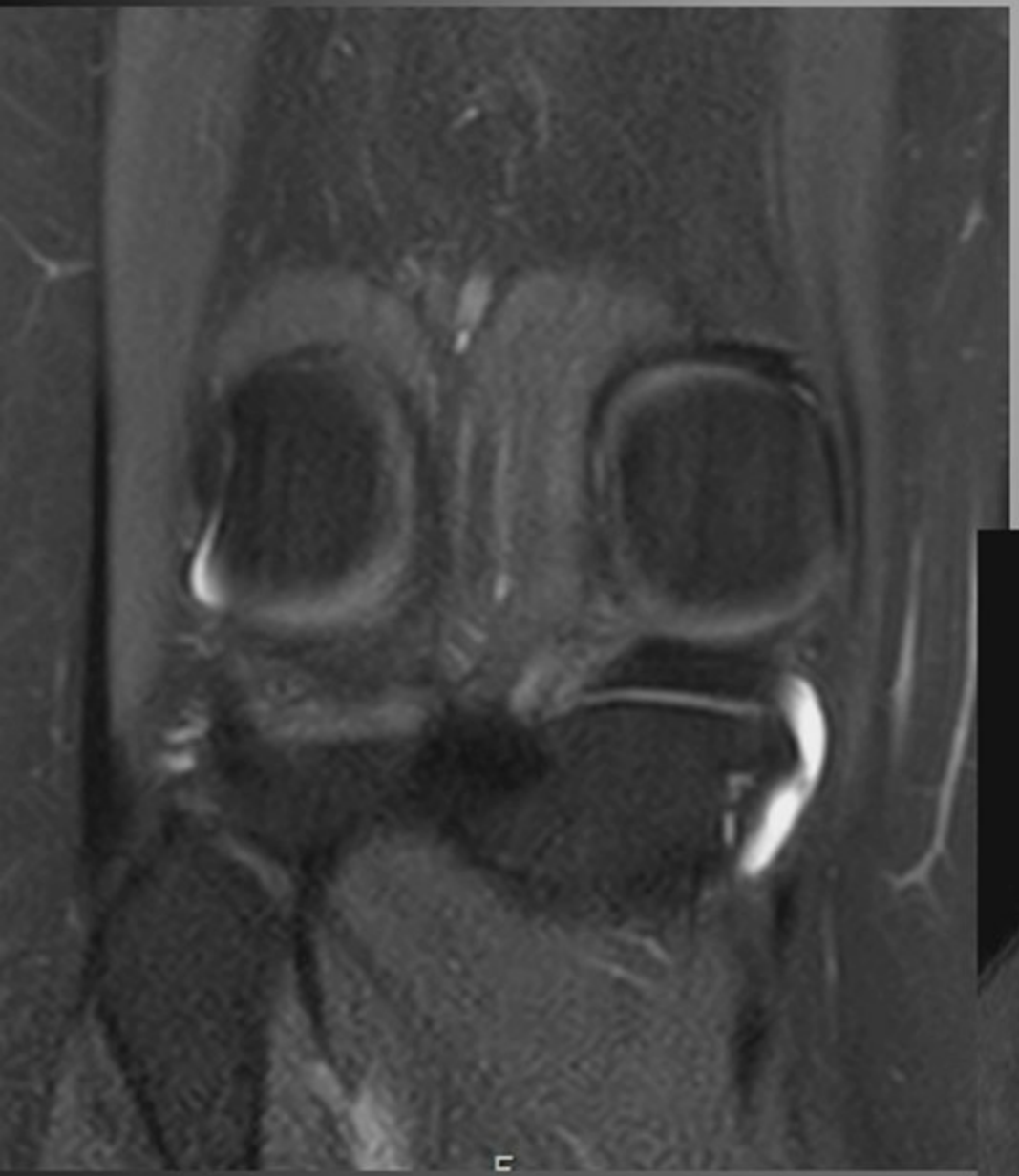


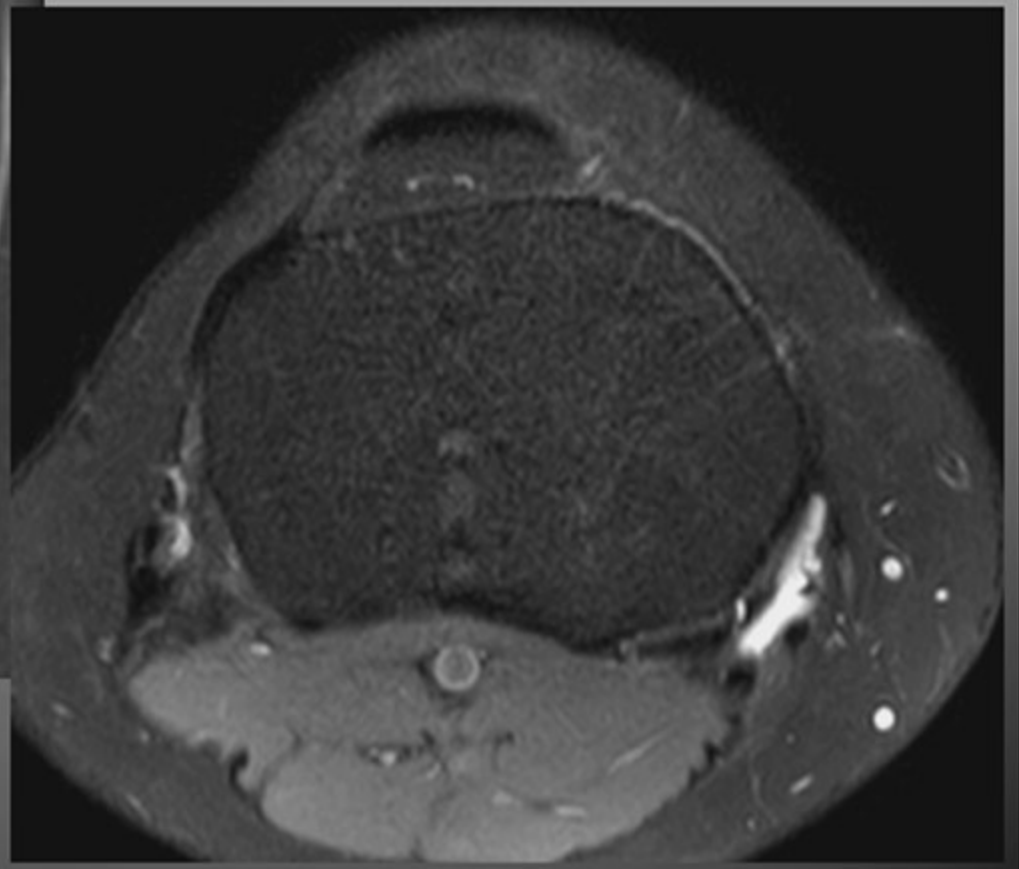


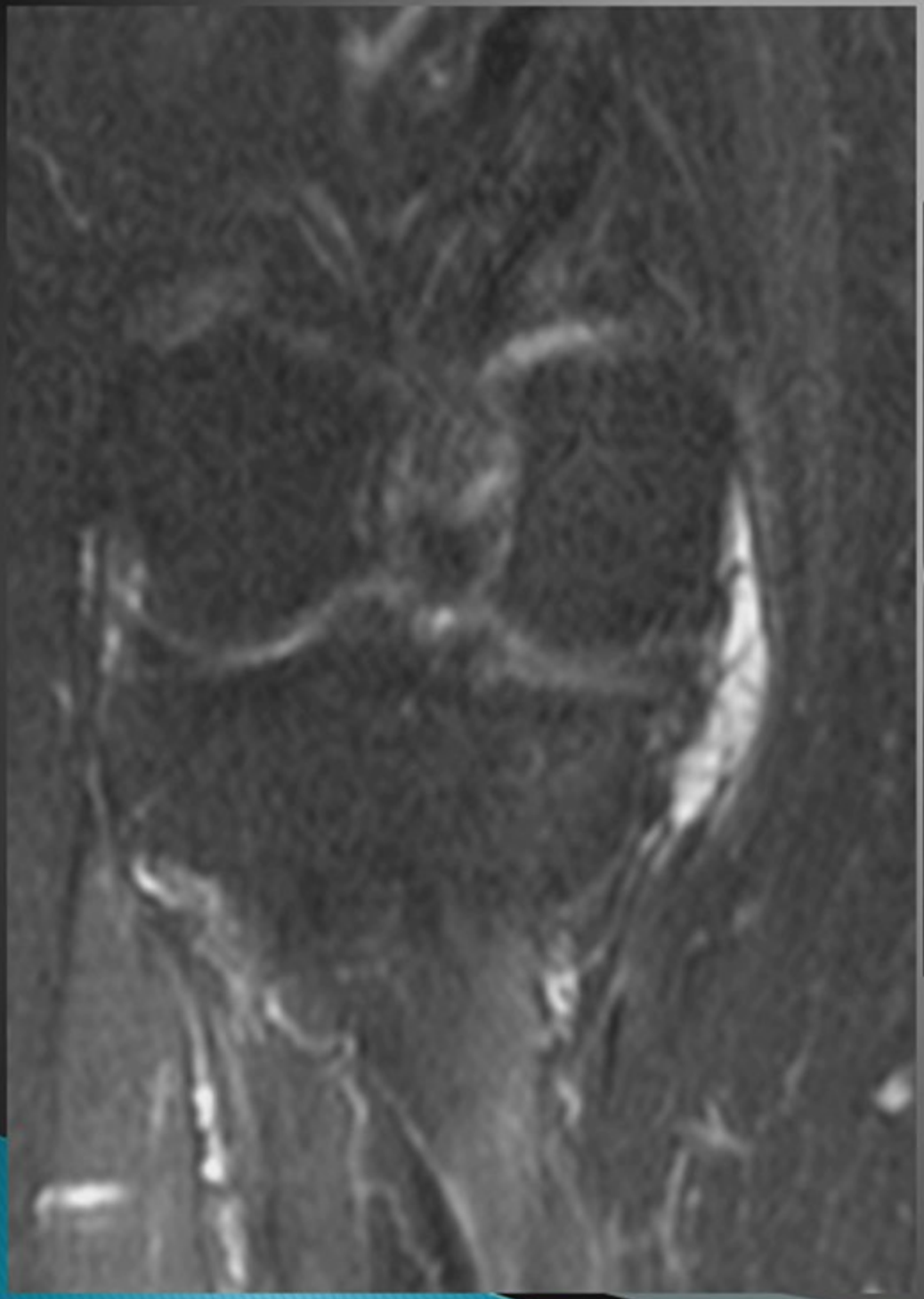


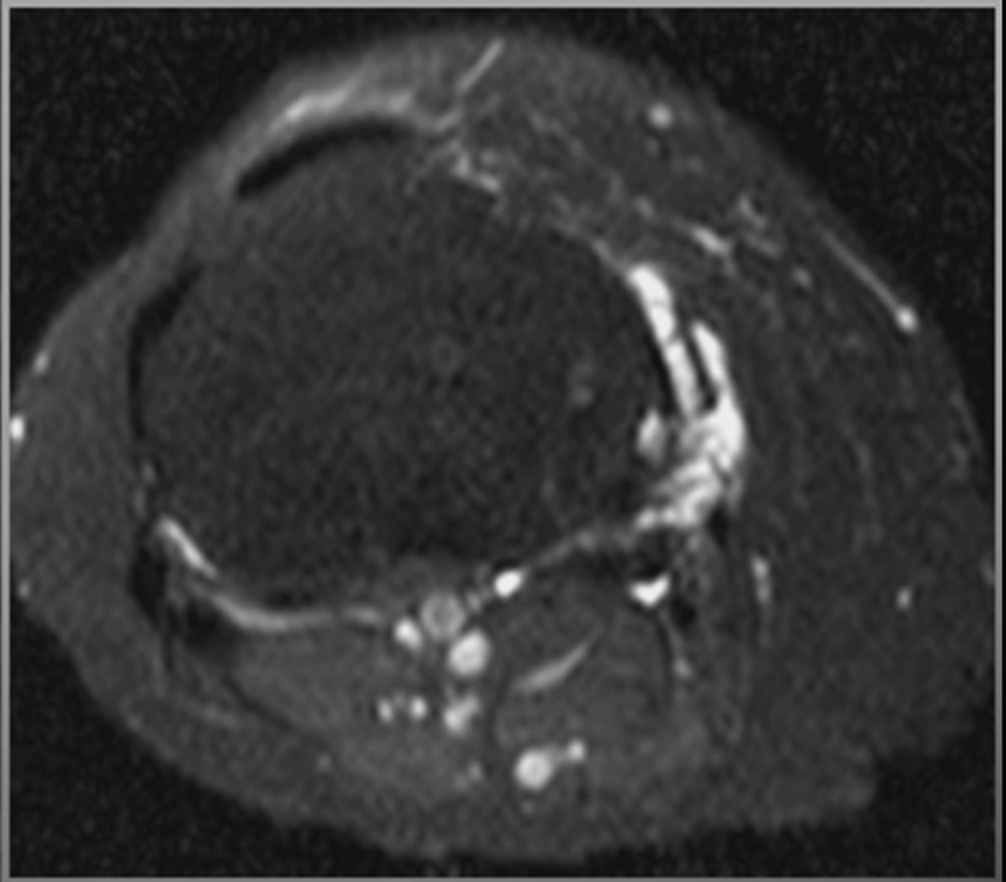


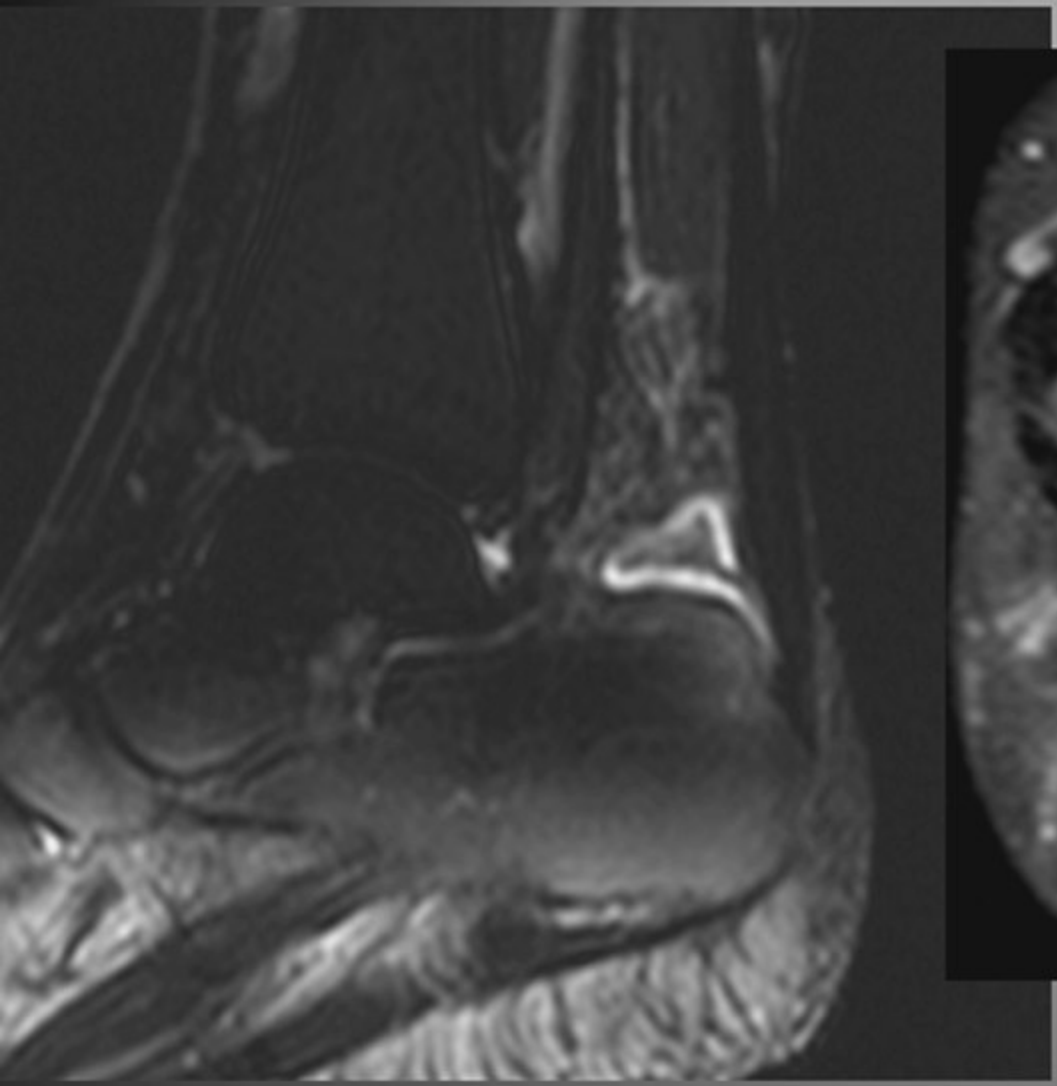


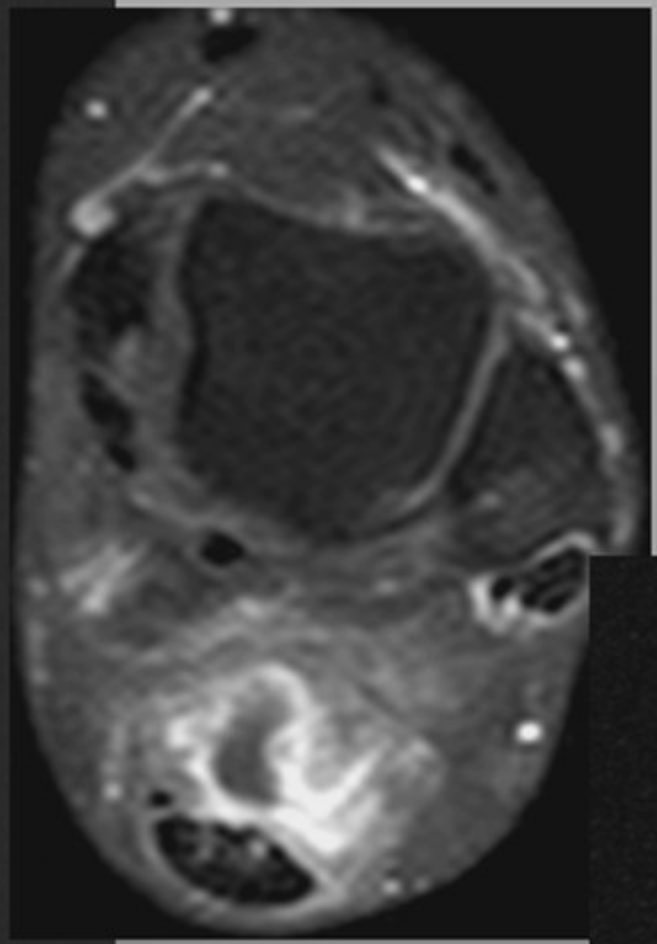


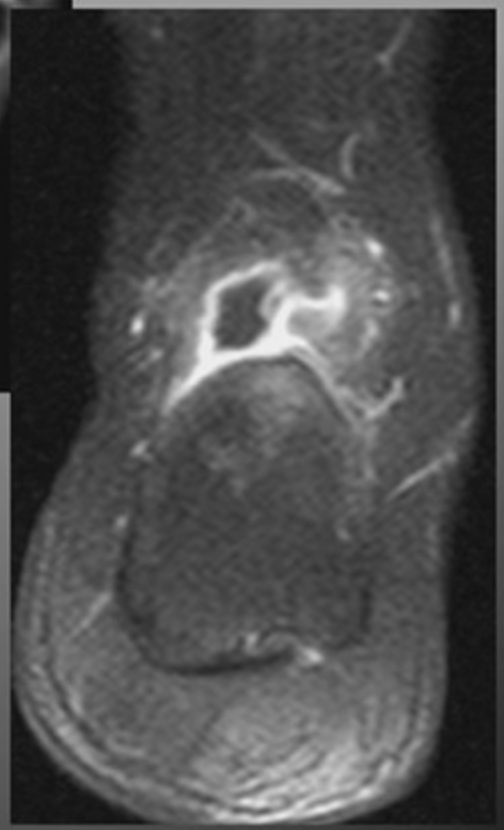






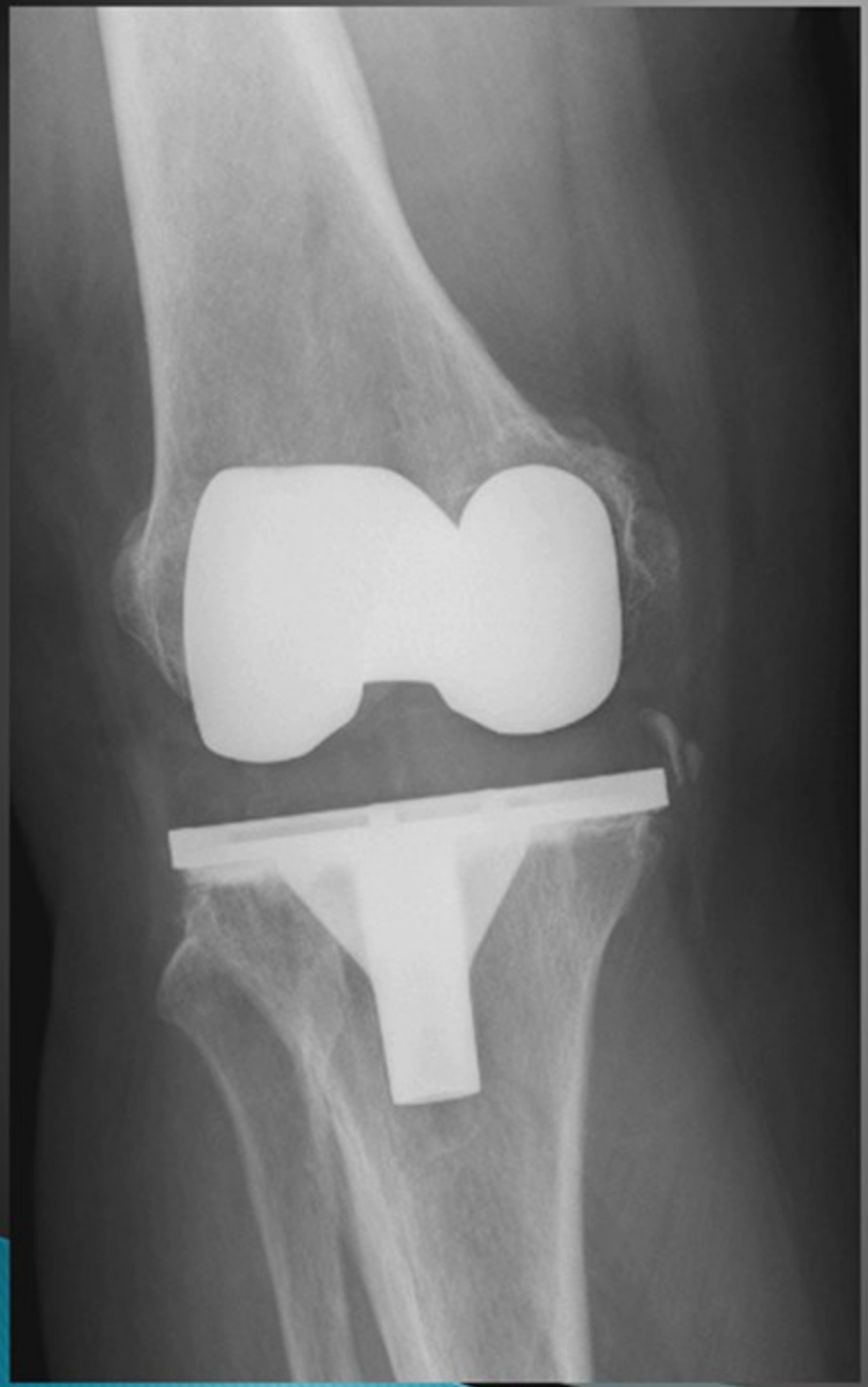


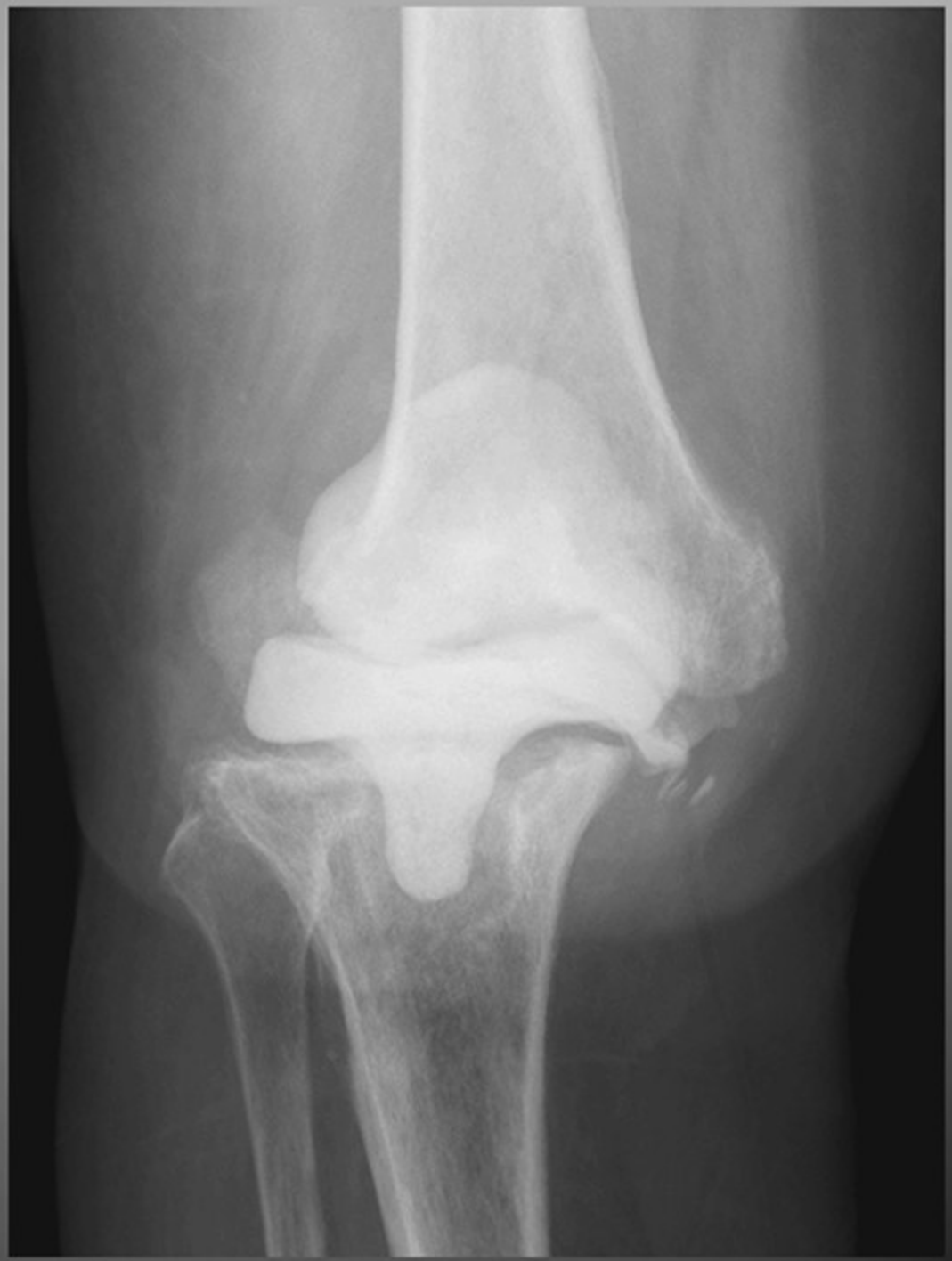


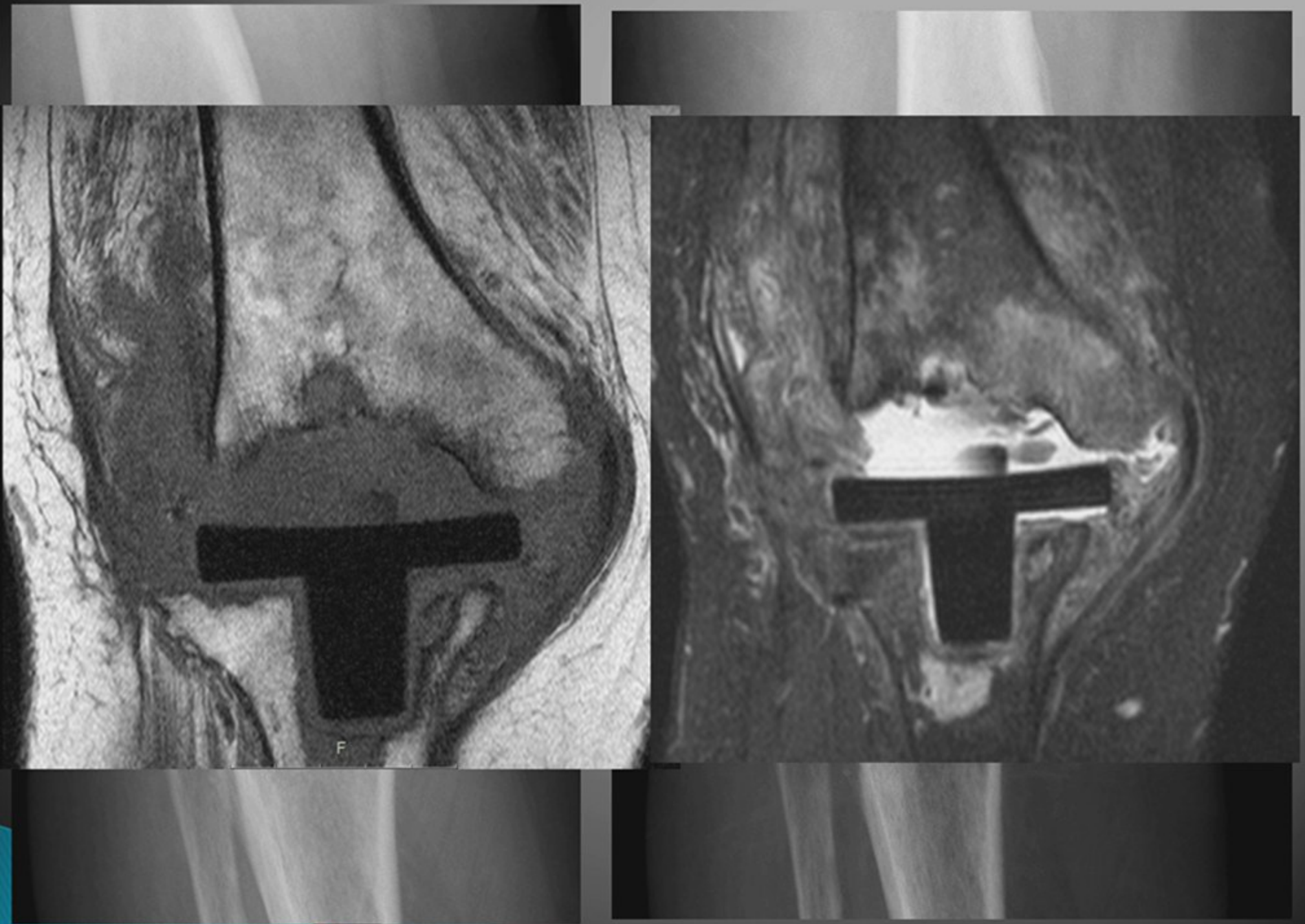


Protez İnfeksiyonları

- Periprostetik infeksiyon tanısında birinci basamak öneri: Direkt radyografi ve eklem aspirasyonu
- DR: periprostetik lüsensi (>2mm), sement fraktürleri ve periost rxn.
- BT ve MRG tanı için rutin olarak kullanılmaz (metal artefaktları)
- YD absesi, sinüs traktları durumunda MRG önerilir.



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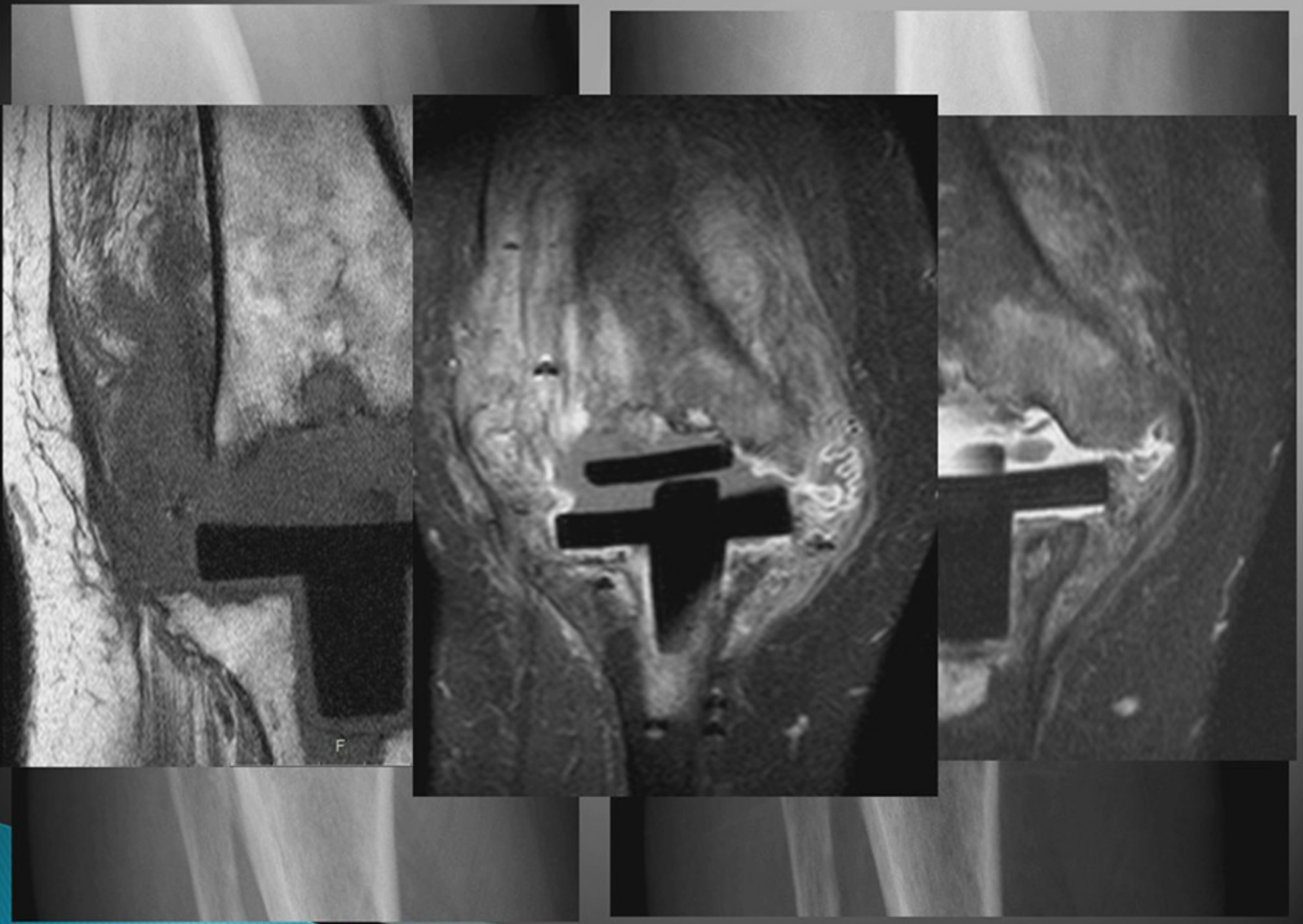
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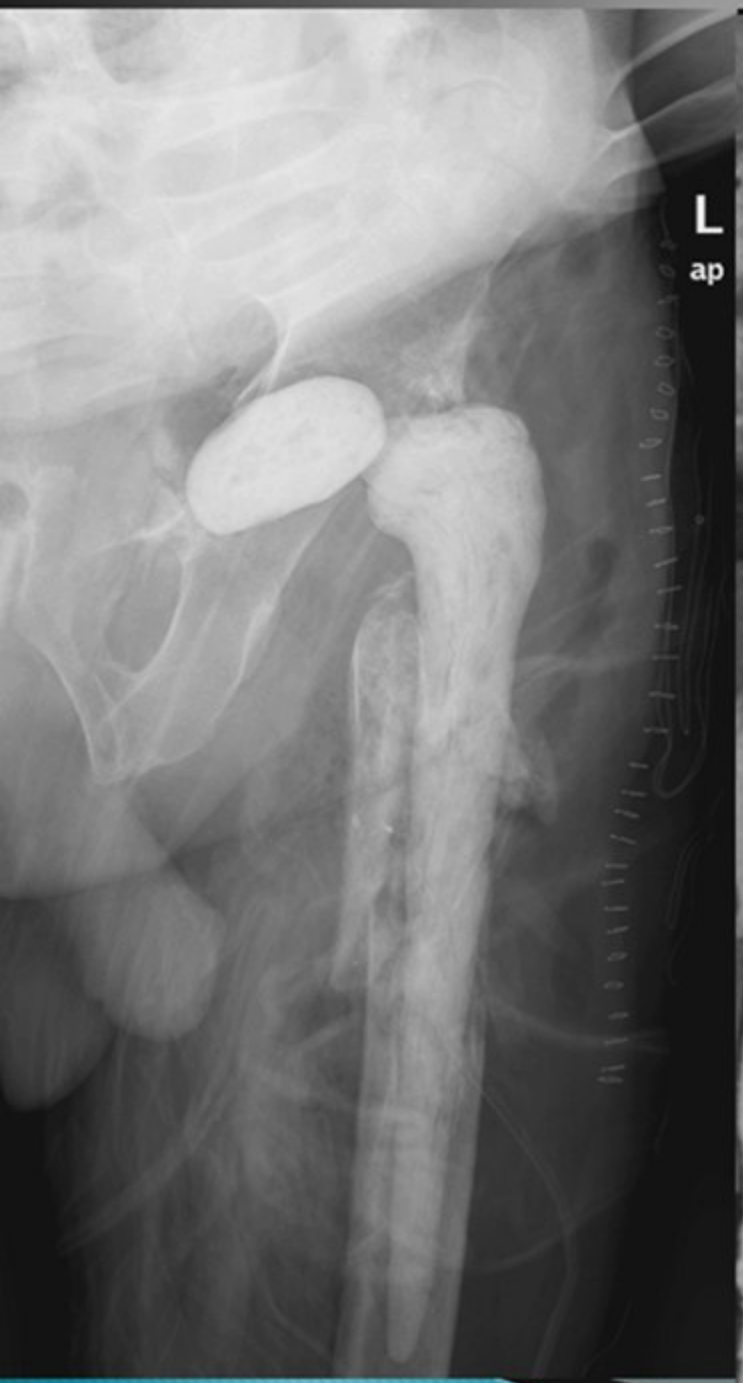
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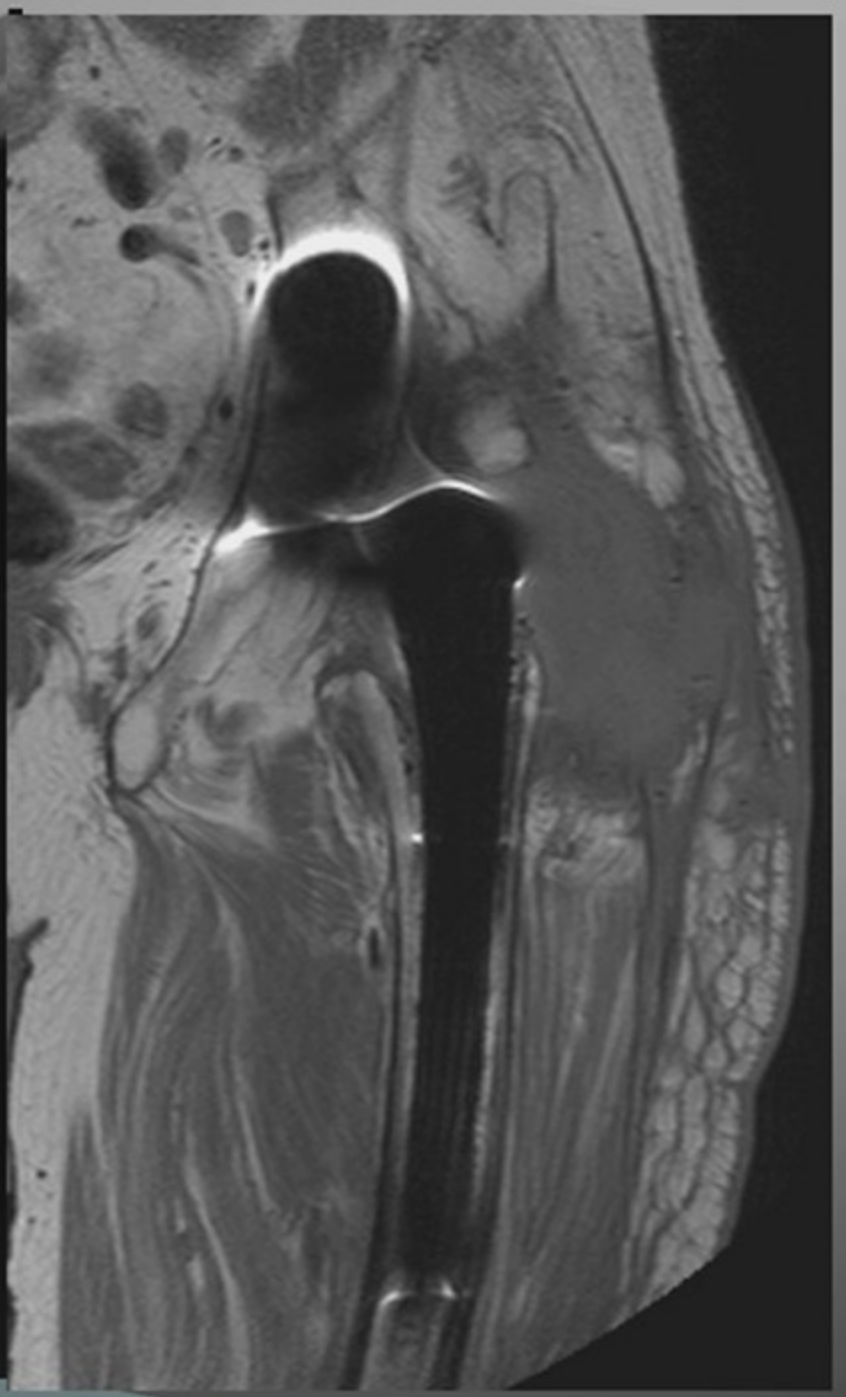

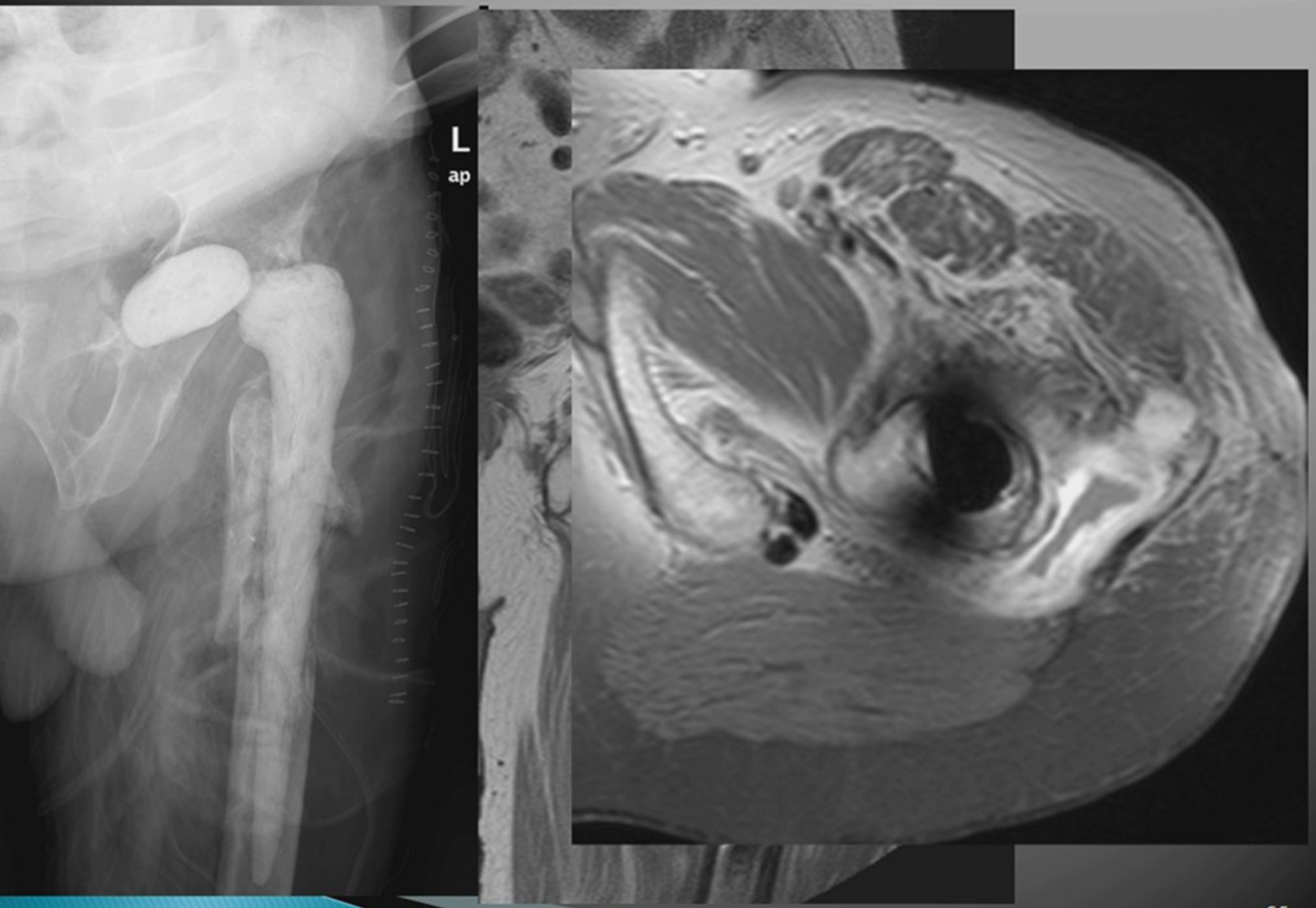
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YD İnfeksiyonlarında Ayırıcı Tanı

- Kas ödemi
  - DM-PM, travmatik kas zedelenmeleri, RT
- Morel-Lavalle lezyonu
  - Travma sonucu (degloving mekanizması)
  - En sık kalça trokanter bölgesinde
  - Deri-yüzeyel fasya arasında seroma benzeri sıvı
- Diabetik miyonekroz
  - Hızlı başlangıçlı, % 40 bilateral
  - MRG'de periferi kontrast tutan alanlar şeklinde görülür

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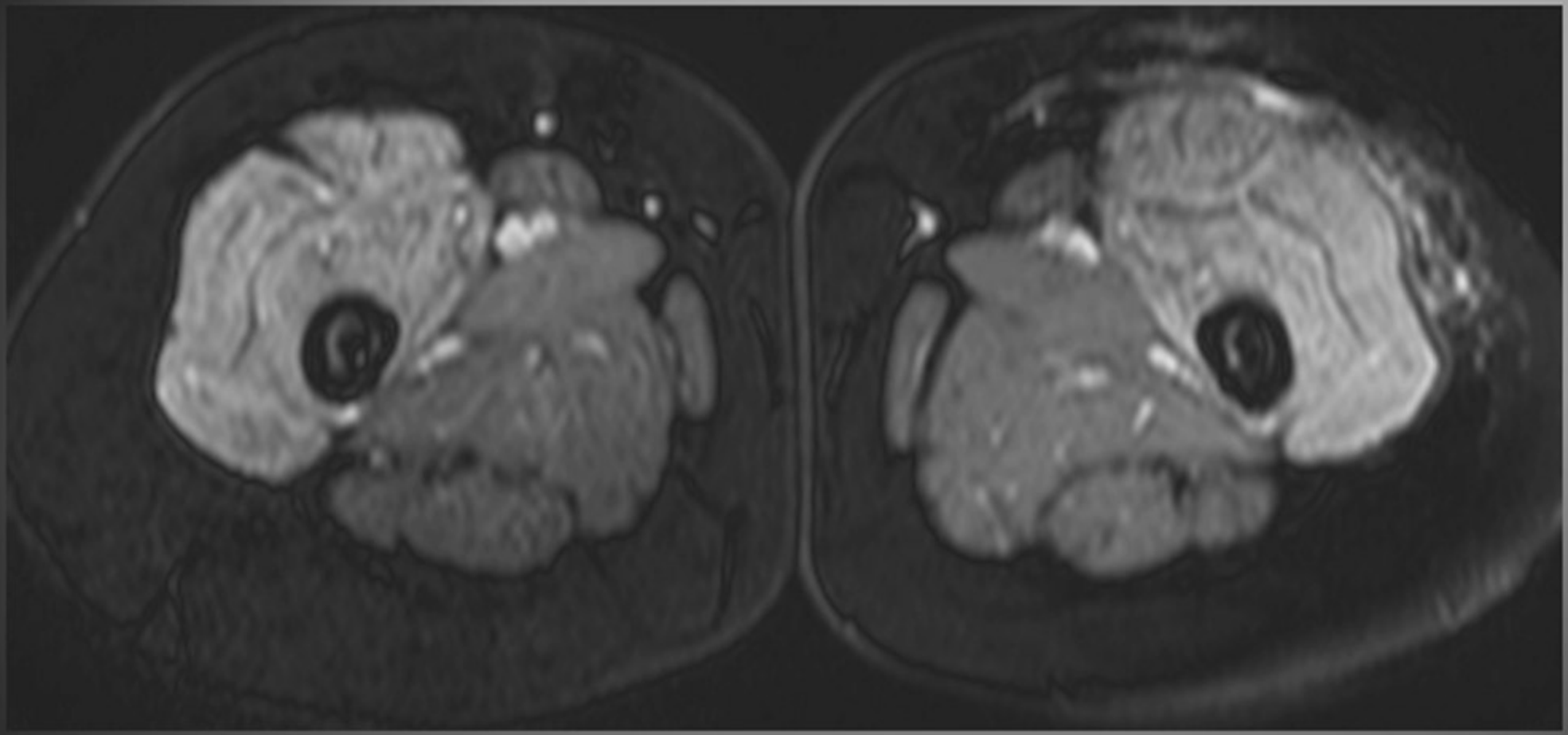

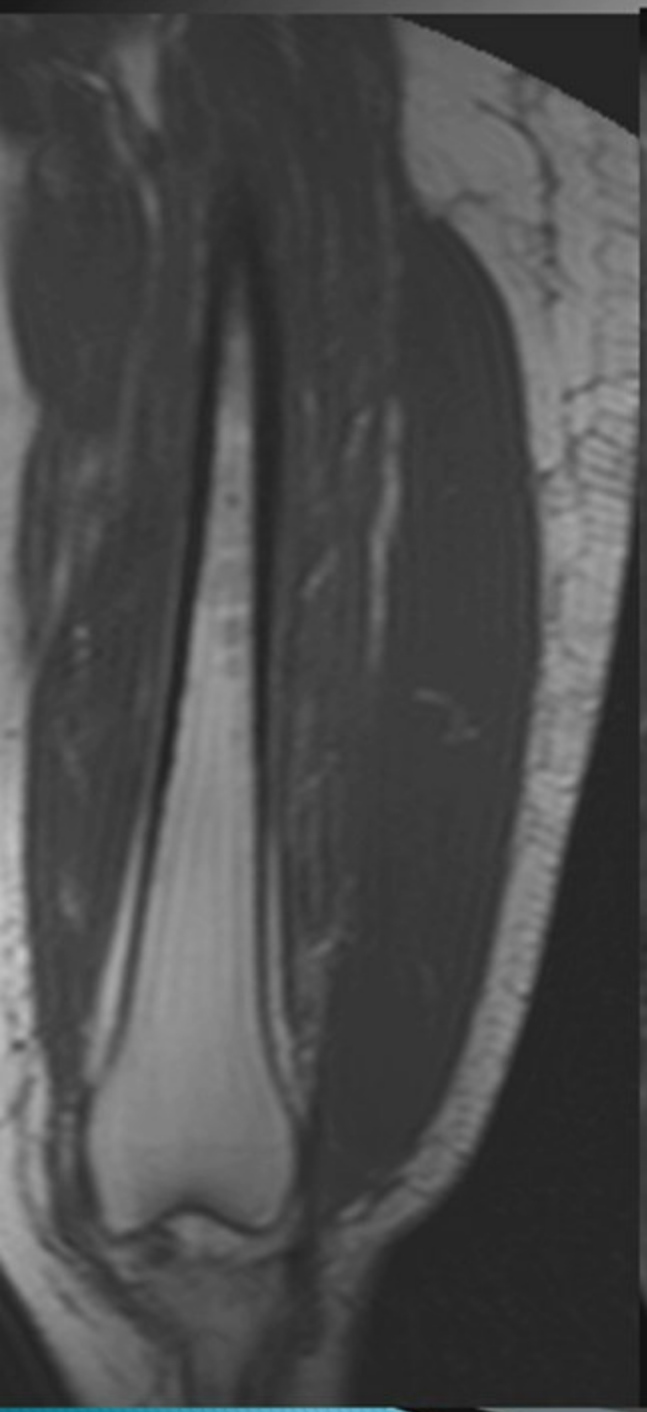

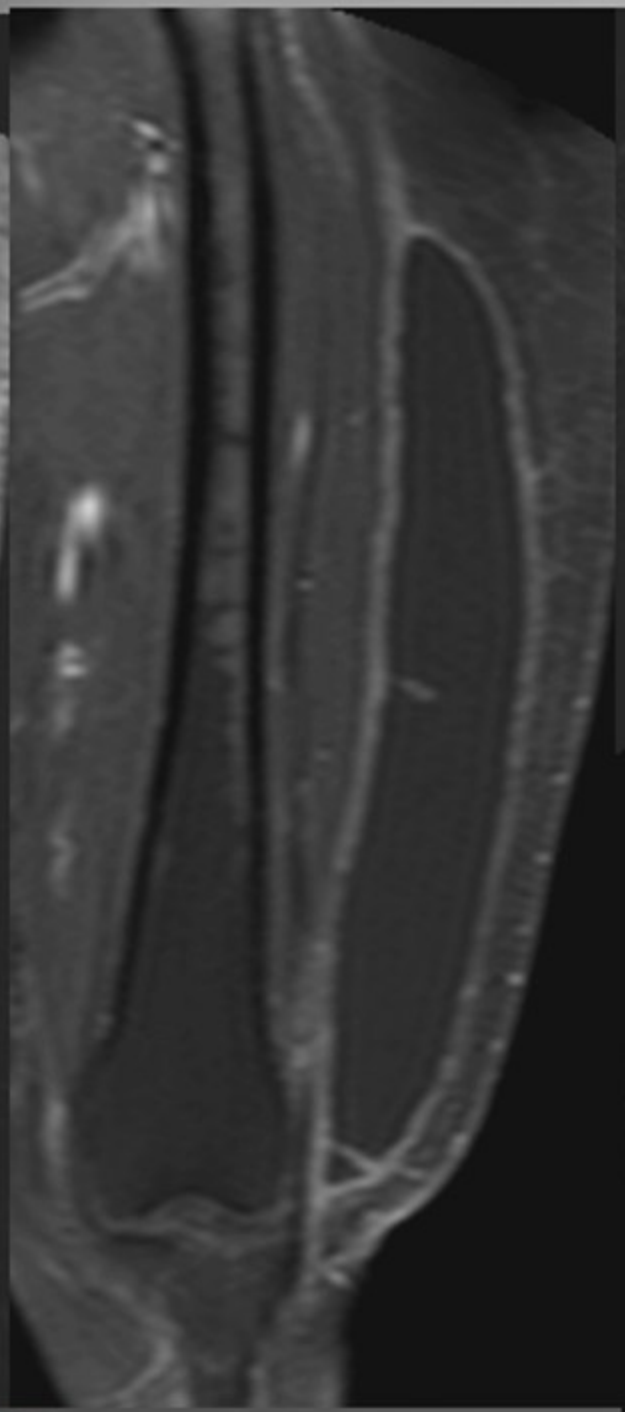

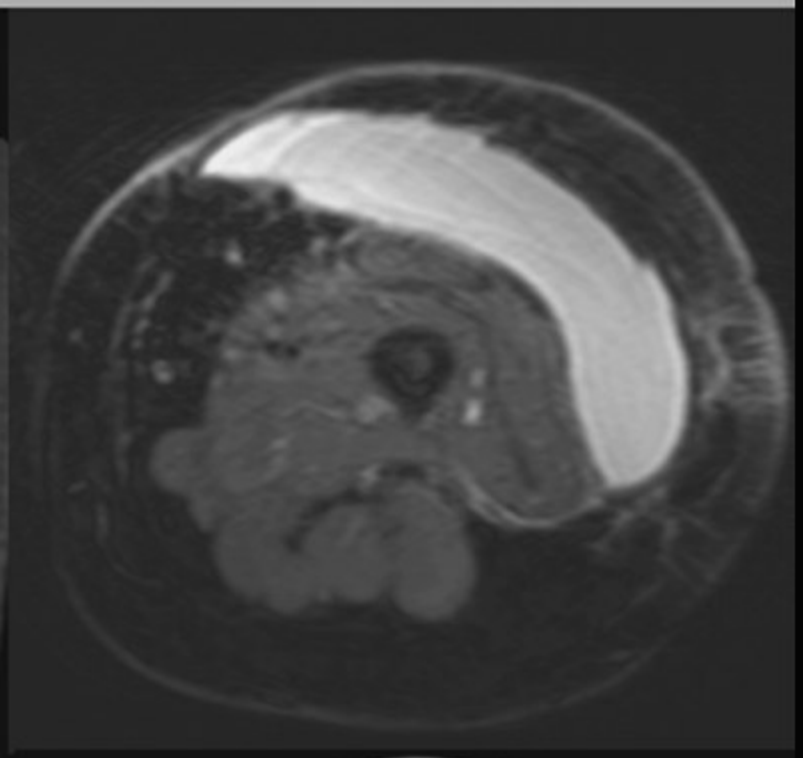

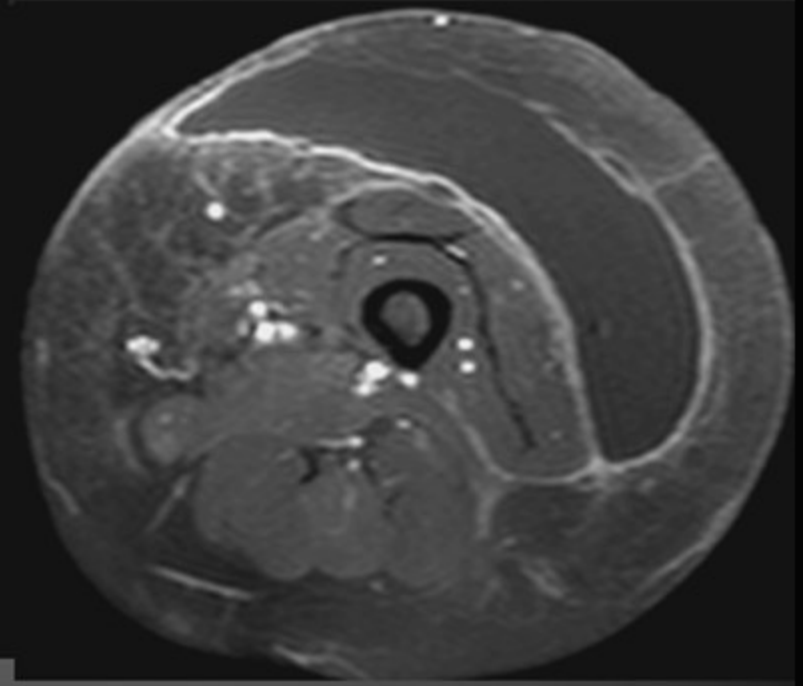

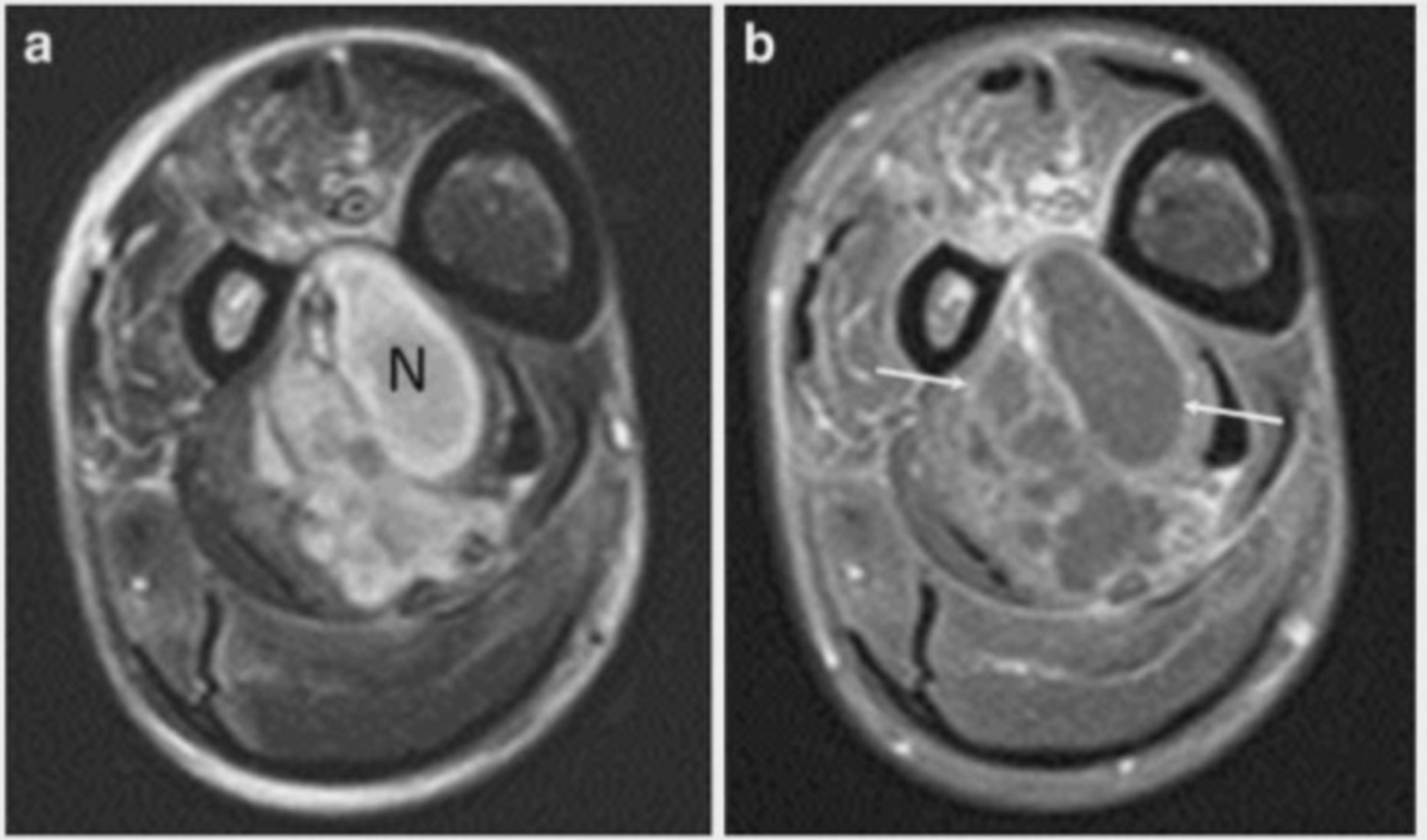

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