Acil Serviste Bilgisayarlı Tomografi Kullanımı

Doç. Dr. M. Ruhi Onur
Fırat Üniversitesi Tıp Fakültesi
Radyoloji ABD

Sunu Hedefleri

- Acil serviste BT kullanımı neden artıyor?
- Acil departmanında BT özellikle hangi durumlar için tercih ediliyor?
- Abdominal acillerde BT'nin önemi

Acilde BT kullanımında trend nedir?

- Acil servislerde BT kullanımı travma ve travma dışı nedenlerle acil servislere başvuran hastalarda giderek artmaktadır

- ABD: BT kullanımı 1996 – 2007 arasında %330 artmıştır oysa acile başvuru %30 artmıştır

- En fazla artış karın ağrısı ve yan ağrısı (10 kat). Göğüs ağrısı ve nefes darlığında ise bu artış 5 kattır

- Kocher KE, Meurer WJ, Fazel R, et al. National trends in use of computed tomography in the emergency department. Ann Emerg Med. 2011;58:452-462.

Acil Serviste BT kullanımı ne kadar artıyor?

- 1996'da AD'na başvuran hastaların %3.2'si, 2007'de %13.9'u BT çektirmiş
- 2007'de ABD' de her 7 hastadan birine BT çekilmiş
- ABD' de tüm BT çekimlerinin %25'i acil BT

Kocher et al. **Ann Emerg Med. 2011;58:452-462.**

Acil Serviste BT Kullanımını Arttıran Nedenler

- BT cihazlarının acil servislere yakın olması
- Yatakbaşı bakım için sınırlı zaman
- Diğer kliniklerin artmış defansı
- İşleyişi hızlandırması

Acil Serviste Hangi Parametreler BT Kullanımını Etkiler?

- 3.217.396 hasta içeren metaanaliz
- Yetişkinlerde BT kullanım oranı: %16.7, çocuklarda %5.3
- BT kullanım oranı 20-29 yaş arası: %11.3, > 65 yaş: %24.6
- Acil servise başvuran hastalarda BT kullanım oranı %27.8, başka merkezden transfer edilenlerde %23.2

Kirsch et al. The Journal of Emergency Medicine, Vol. 41, No. 3, pp. 302–309, 2011

- Yıllık <20000'den az acile başvuru olan acil servislerde BT kullanım oranı %9.3, 20000-40000 arası %13.8, >40000'den fazla olanlarda %17.8

- Acil yeterlilik diploması olan uzmanlarda BT kullanim oranı %16.1, olmayanlarda ise %11.3

Kirsch et al. The Journal of Emergency Medicine, Vol. 41, No. 3, pp. 302–309, 2011

Uzmanların yaş dağılımına göre BT istem oranları

- <40 yaş: %16
- 40-49 yaş: %14.6
- 50-59 yaş: %13.1
- > 60 yaş: %11.8

Kirsch et al. The Journal of Emergency Medicine, Vol. 41, No. 3, pp. 302–309, 2011

Acil Serviste BT kullanım trendi

- 368.680 hasta
- 96'da %3.2, 2007'de %13.9
- En sık BT kullanım artışı karın ağrısı (10 kat), yan ağrısı (9 kat), göğüs ağrısı (5.5 kat), nefes darlığı (5.2 kat)

Kocher et al. **Ann Emerg Med. 2011;58:452-462.**

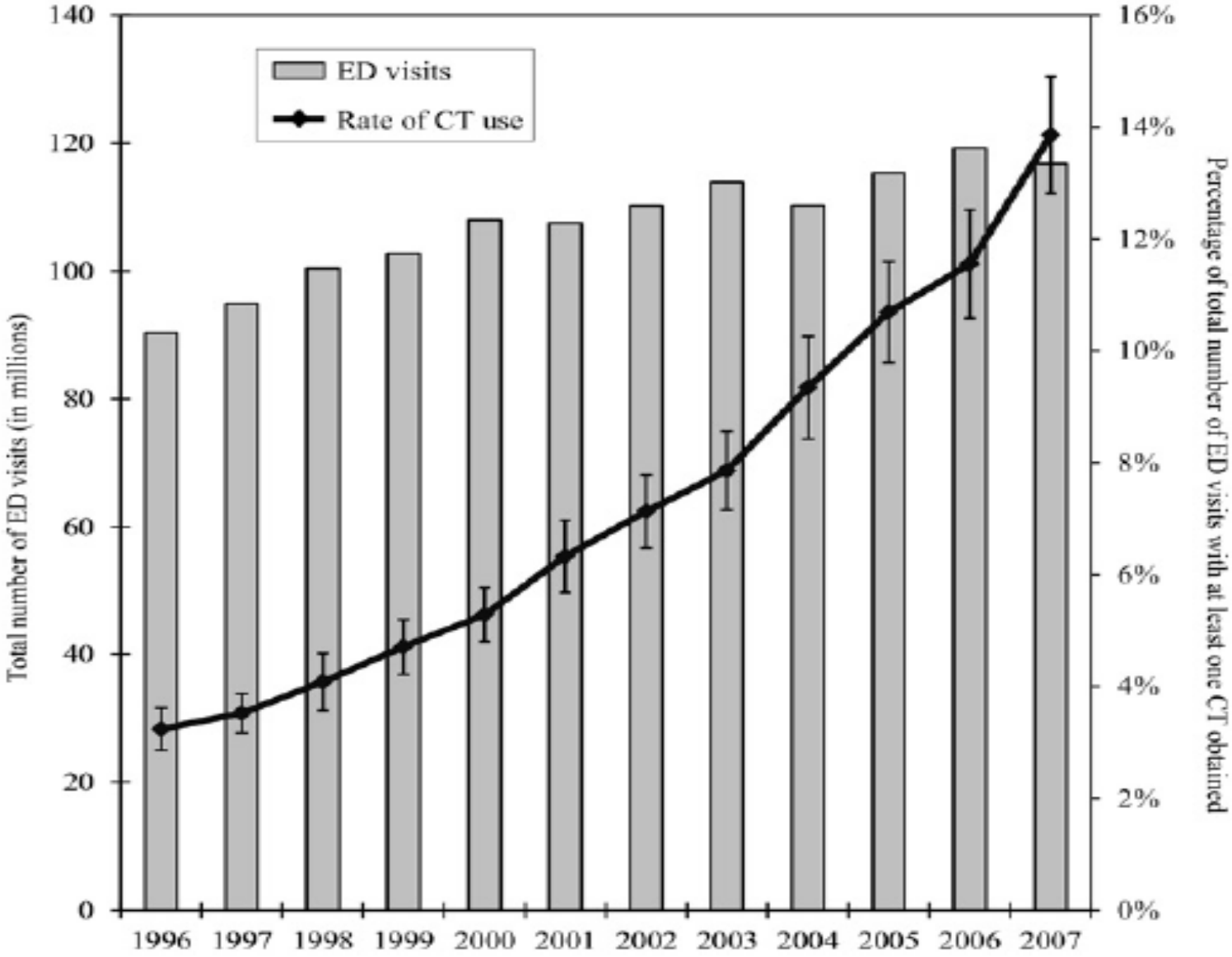
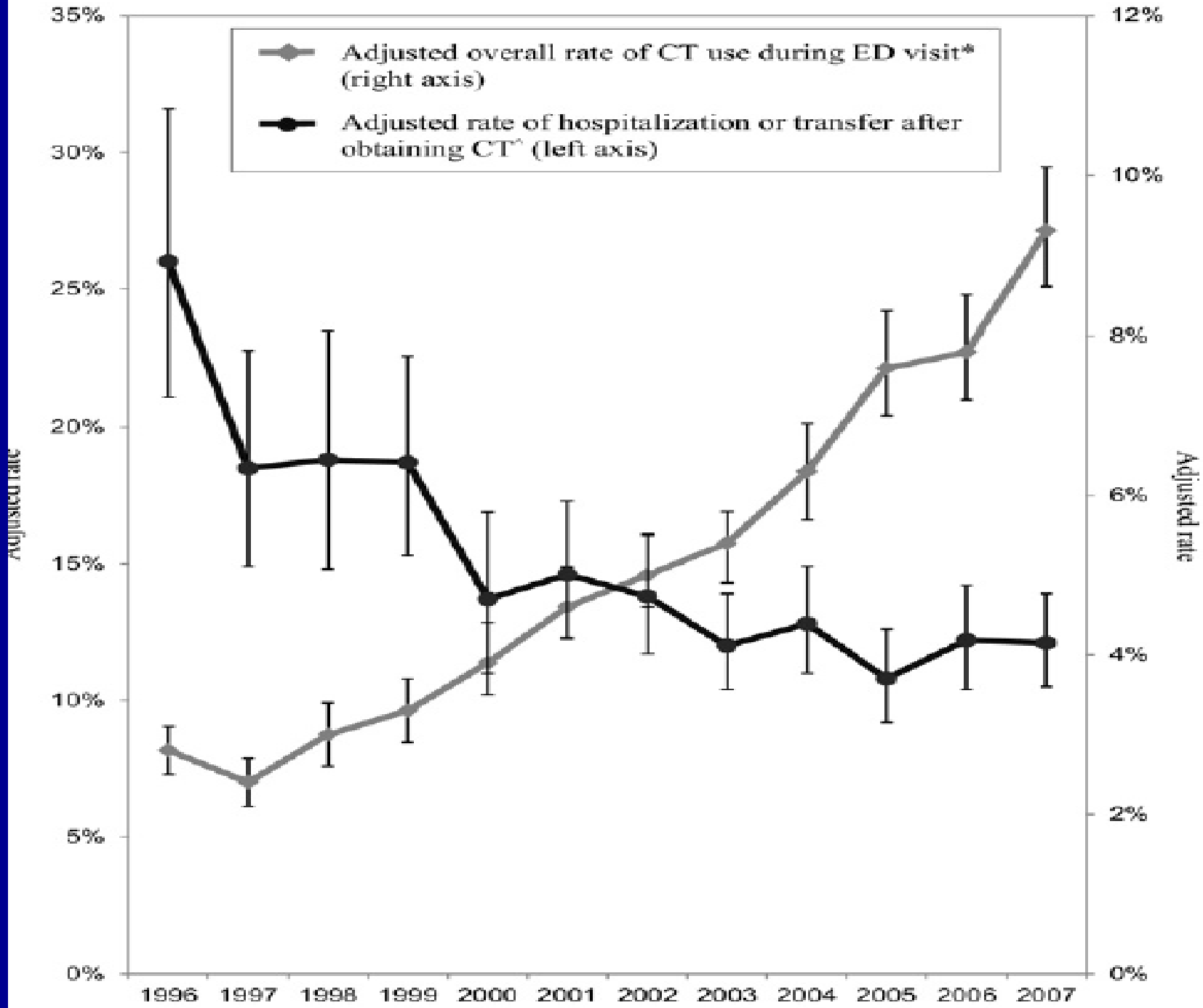


Figure 1. Number of ED visits and CT use by year, with 95% CI.


Adjusted overall rate of CT use during ED visit* (right axis)
Adjusted rate of hospitalization or transfer after obtaining CT^ (left axis)
35%
30%
25%
20%
15%
10%
5%
0%
12%
10%
8%
6%
4%
2%
0%
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Adjusted rate

BT kullanımını arttıran diğer etken

- BT teknolojisindeki gelişmeler
- Çok dedektörlü BT
- Multiplanar rekonstruksiyon
- İleri BT teknikleri

Pediatri acilde durum nasıl?

- 682.980 hasta
- BT kullanım oranı %5.2
- Radyasyon farkındalığı
- ABD' de kanserlerin %0.9'unun diagnostik işlemlere bağlı olduğu sanılıyor
- Çocuklarda radyasyondan kanser gelişme riski daha fazla
- Buna rağmen çocuklarda BT kullanım oranı artıyor

Macias et al. Pediatr Radiol (2011) 41 (Suppl 2):S498–S504

- Servikal omurga yaralanmasında 2000-2006 arası %366 artış var, toraks BT' de ise %435

- Çocuklarda kafa travmasında kranial BT oranı 1995'te %12.3 iken 2003'te %28.6

Macias et al. Pediatr Radiol (2011) 41 (Suppl 2):S498–S504

Travma

Table 1. The distribution of computerized tomography (CT) requests for emergency orthopedic trauma patients according to the anatomic locations

	Adults		Child		Total	
	n	%	n	%	n	%
Extremity CT	493	33.2	56	30.9	568	34.1
Pelvis CT	169	11.3	6	3.3	156	9.3
Cervical CT	504	34	107	59.1	611	36.8
Thoracic CT	44	2.9	4	2.2	48	2.9
Lumbar CT	273	18.5	8	4.4	281	16.9
Total CT	1.483	100	181	100	1.664	100

İmerci et al Türkiye Acil Tıp Dergisi - Tr J Emerg Med 2013;13(2):75-80.

Travma

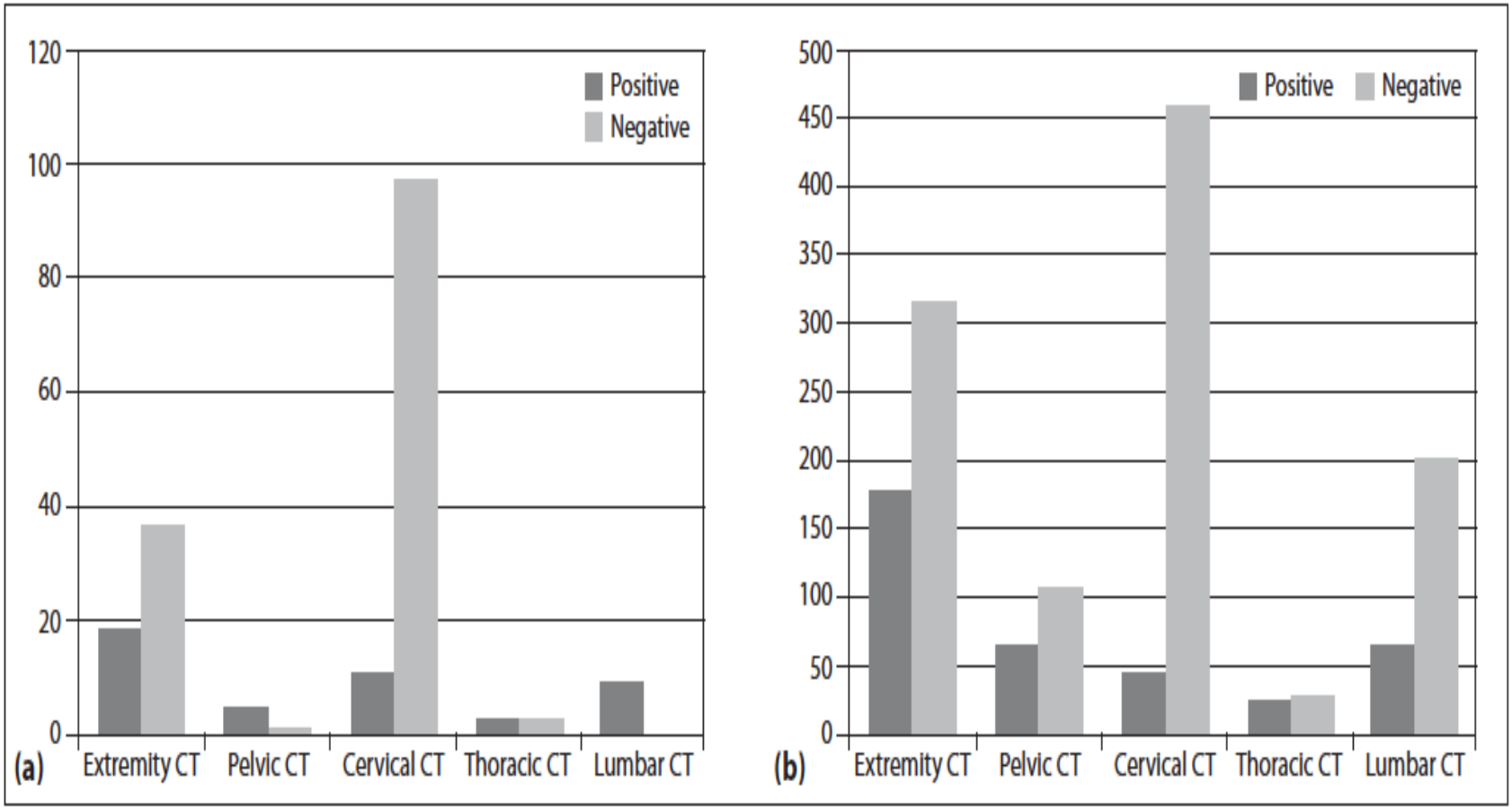


Figure 1. The distribution of the negative and positive CTs according to the anatomic locations in **(a)** children and **(b)** adults. CT: Computerized tomography.

BT' de Radyasyon Dozları

Table 2. Mean effective dose for radiographies used in the radiological imaging of the extremity, pelvis and spine, and doses reported in the literature[19]

	Examination	Mean effective dose (mGy)	Doses reported in the literature (mGy)
Plain radiography	Cervical spine	0.2	0.07-0.3
	Thoracic spine	1.0	0.6-1.4
	Lumbar spine	1.5	0.5-1
	Pelvis	0.6	0.2-1.2
	Hip	0.7	0.18-2.71
	Other extremities	0.001	0.0002-0.1
CT	Spine CT	6	1.5-10
	Pelvic CT	6	3.3-10

CT: Computerized tomograph; mGy: Miligray.

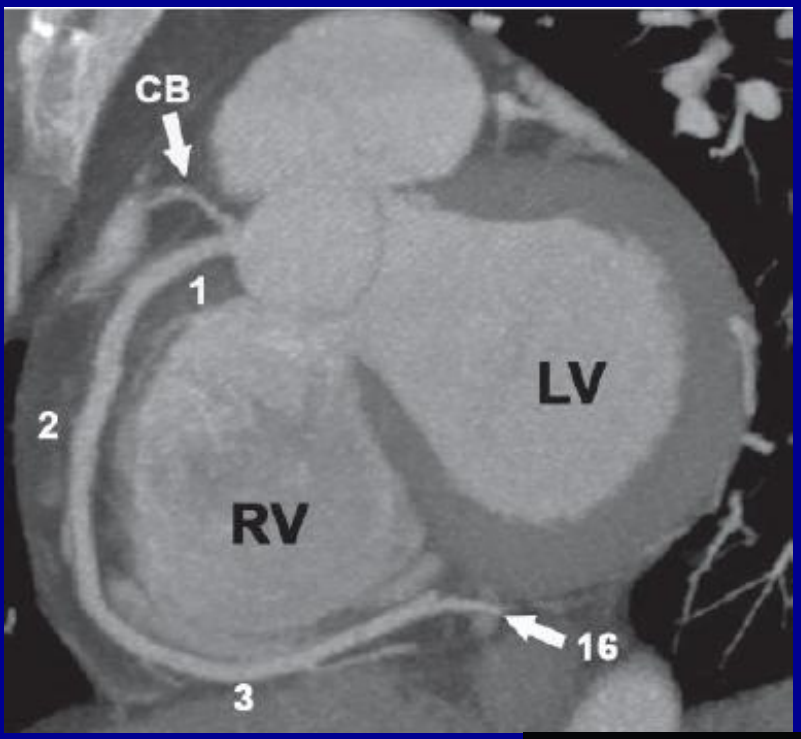
Acil Kardiak BT

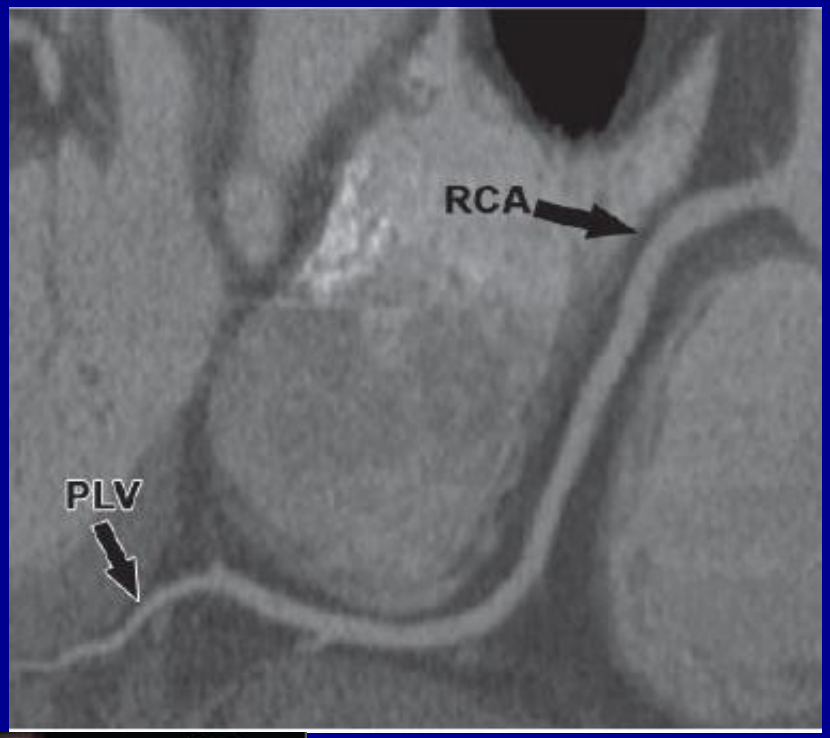
- Acile göğüs ağrısı şikayeti ile başvuran hasta grubunda %15 – 30'unda akut koroner sendrom
- Bu hastaların %2-3'ü yetersiz tanı ve tedavi
- ROMICAT, CT-STAT, ACRIN-PA: 3000 hasta
- Acile başvuran göğüs ağrısı olan düşük riskli hasta grubunda negatif koroner BT ile hastalar daha hızlı ve güvenli taburcu edilebilir

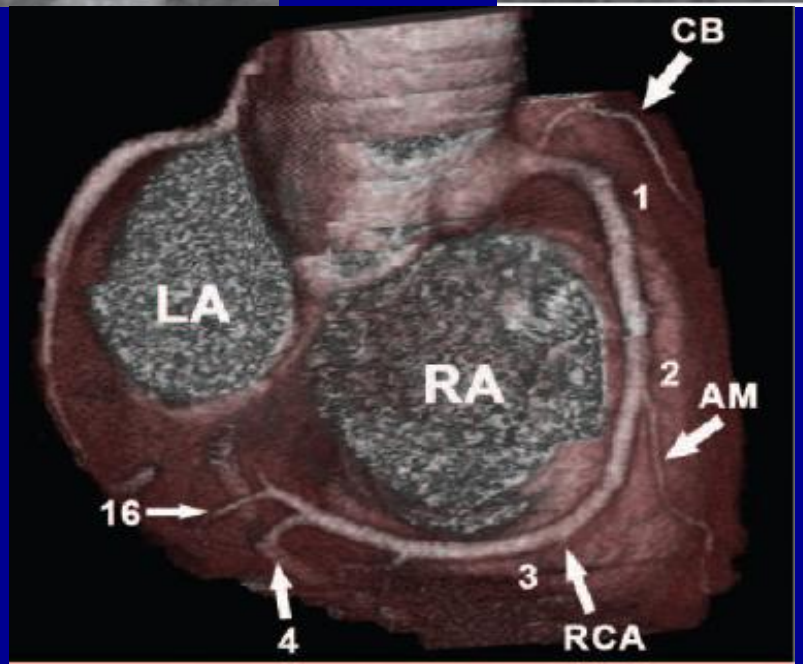
Acil Kardiak BT

- 368 hasta ile yapılan çalışma
- Şikayet: Göğüs ağrısı
- EKG bulguları iskemiyi düşündürmüyor
- İlk troponin değerleri normal
- 31 hastada akut koroner sendrom tanısı konulmuş.
- 386 hastanın %50'sinde BT' de koroner arterler normal, %31'inde tıkatıcı olmayan aterosklerotik değişiklik, %19'unda anlamlı stenoz
- Koroner BT' de plak saptanmayan hiçbir hastada akut koroner sendrom saptanmamış

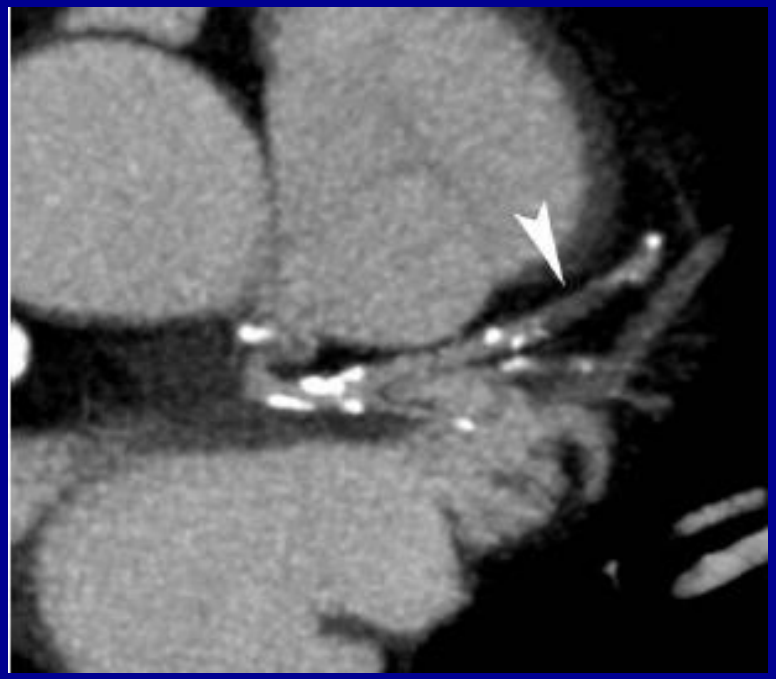
Hoffmann U, et al. J Am Coll Cardiol 2009;53:1642–50)

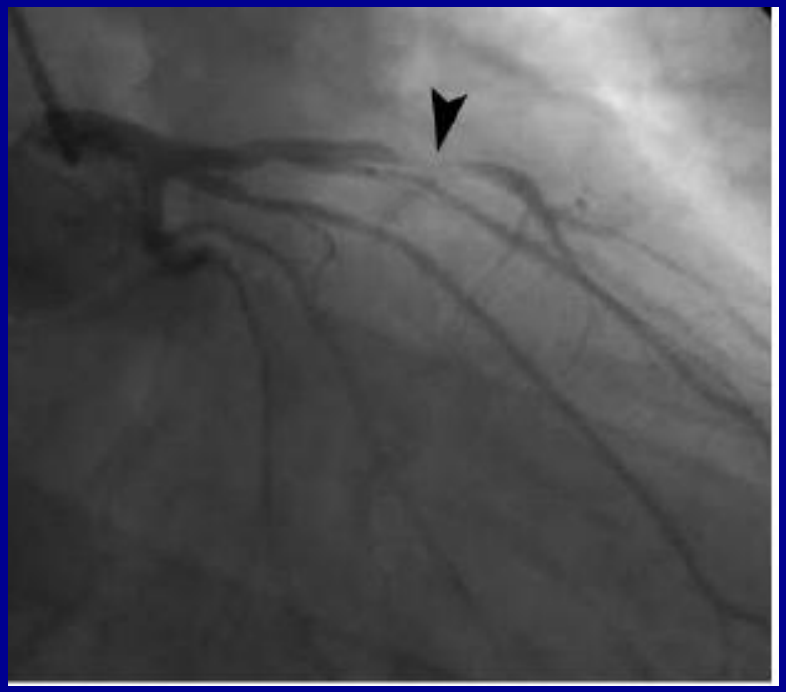


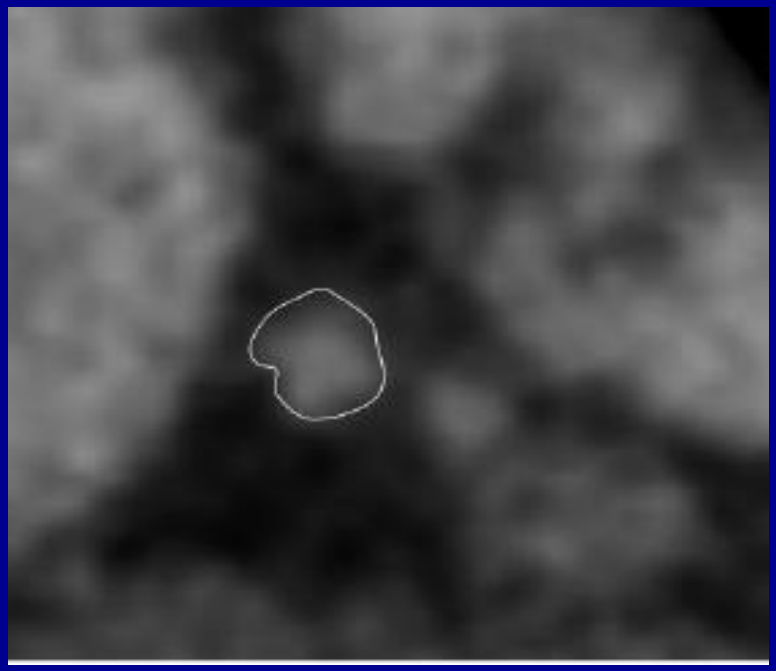


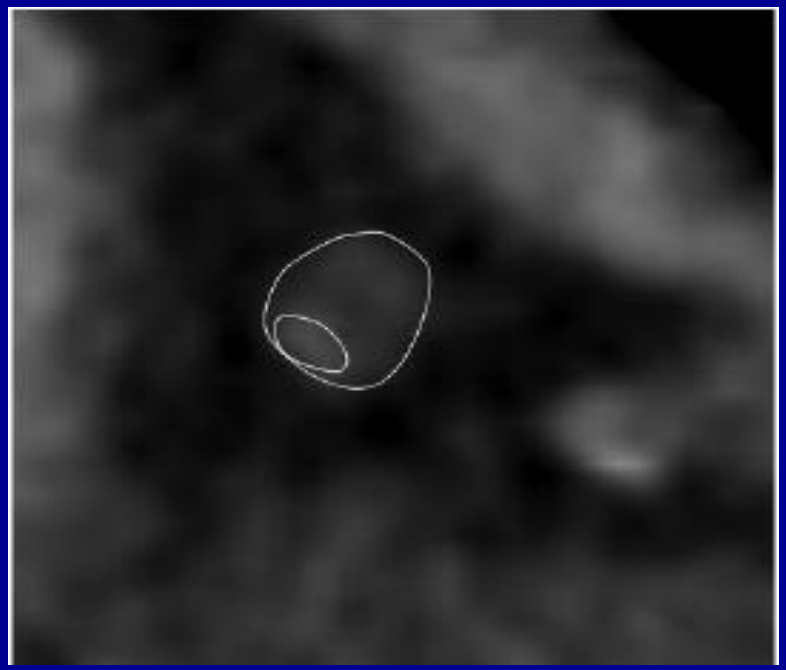


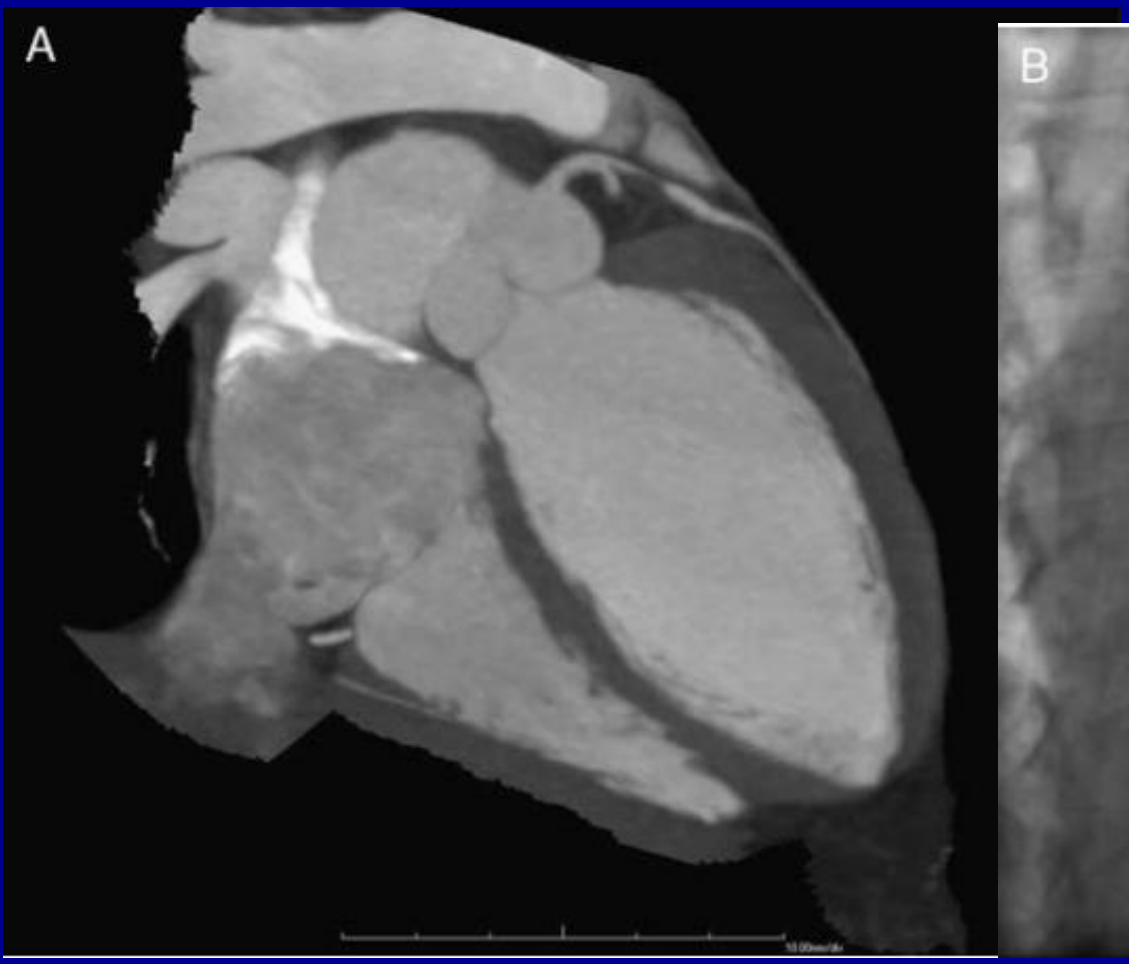
RadioGraphics 2006; 26:963–980







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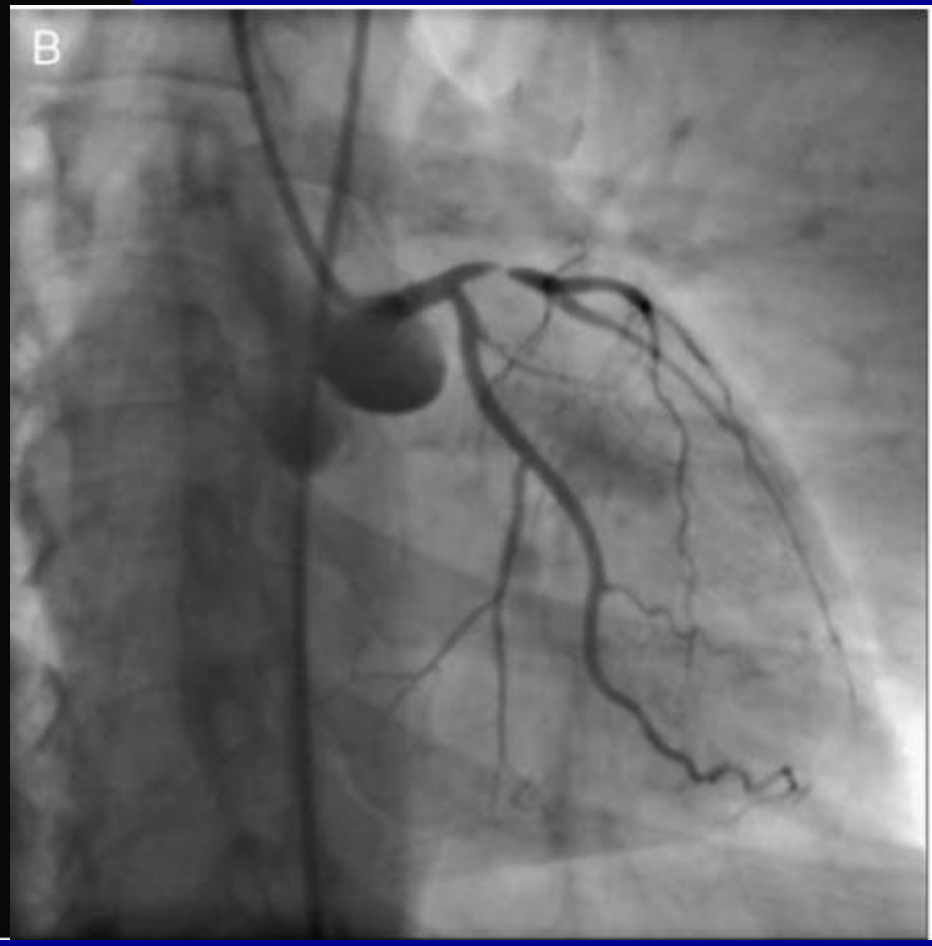
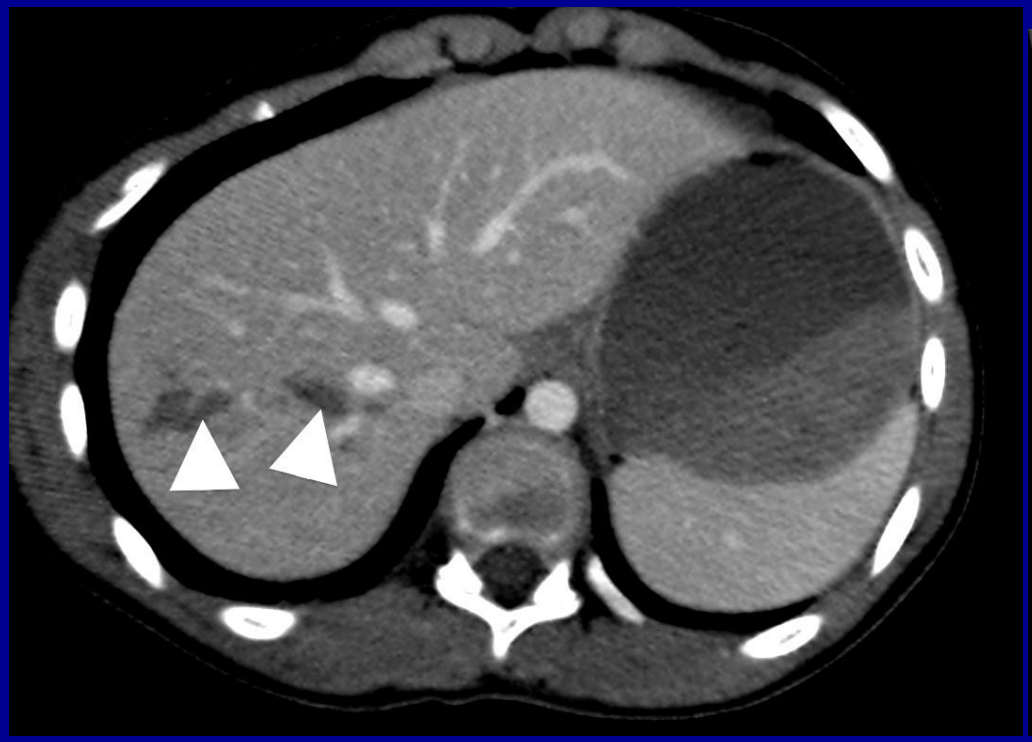
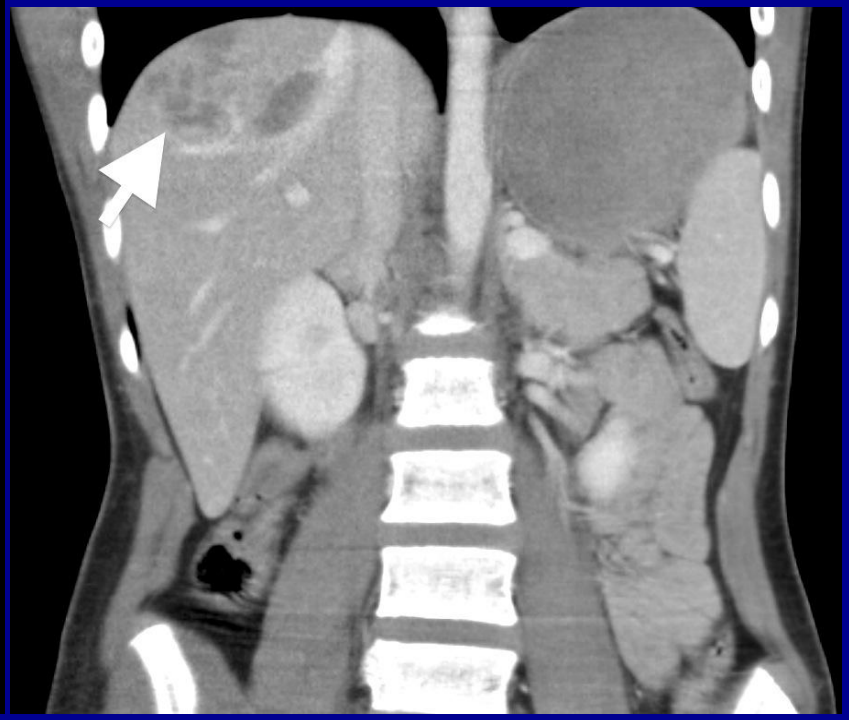

B

ACİL ABDOMEN BT - KARACİĞER

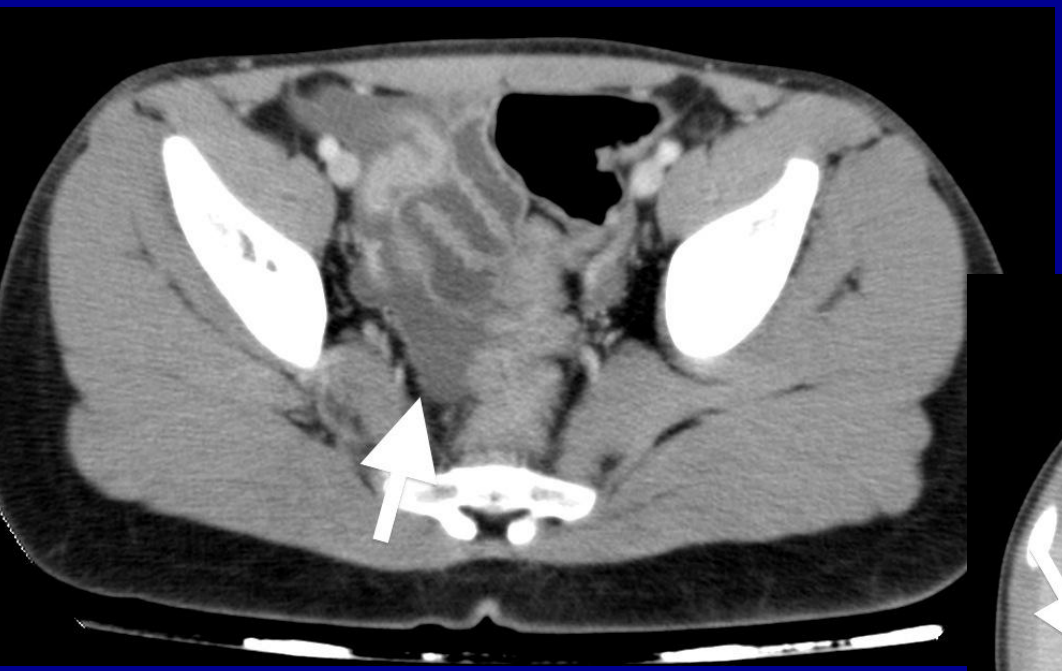
- Kitle rüptürlerine bağlı abondan kanamalarda
- Abse ya da kist hidatik gibi sağ üst kadran ağrısına neden olan fokal kistik lezyonlarda
- Safra yollarının değerlendirilmesinde

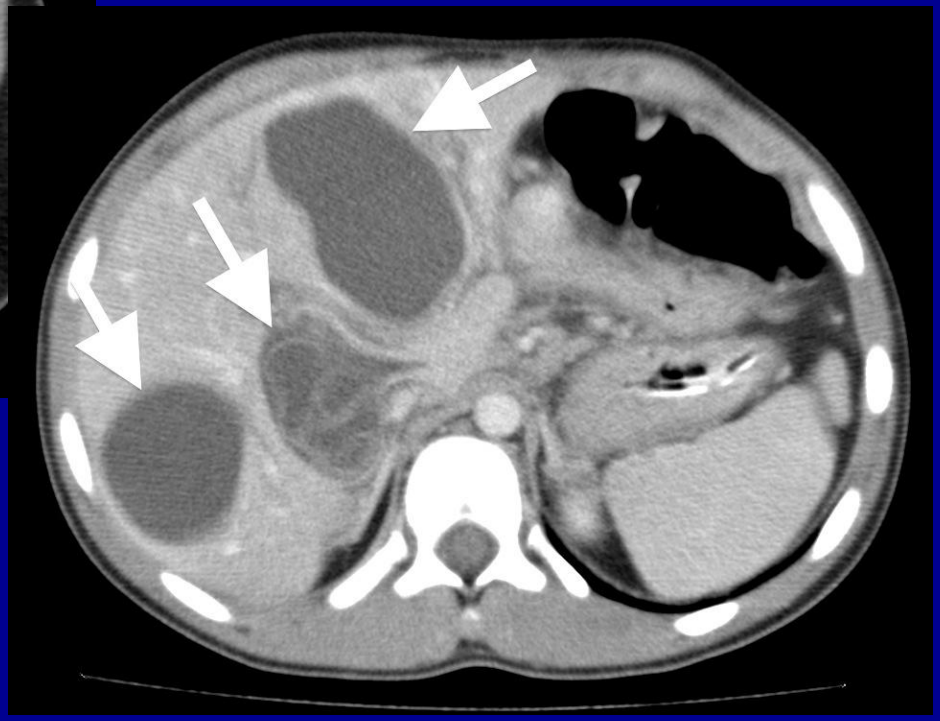
Karaciğer Laserasyonu





Kist Hidatik Rüptürü





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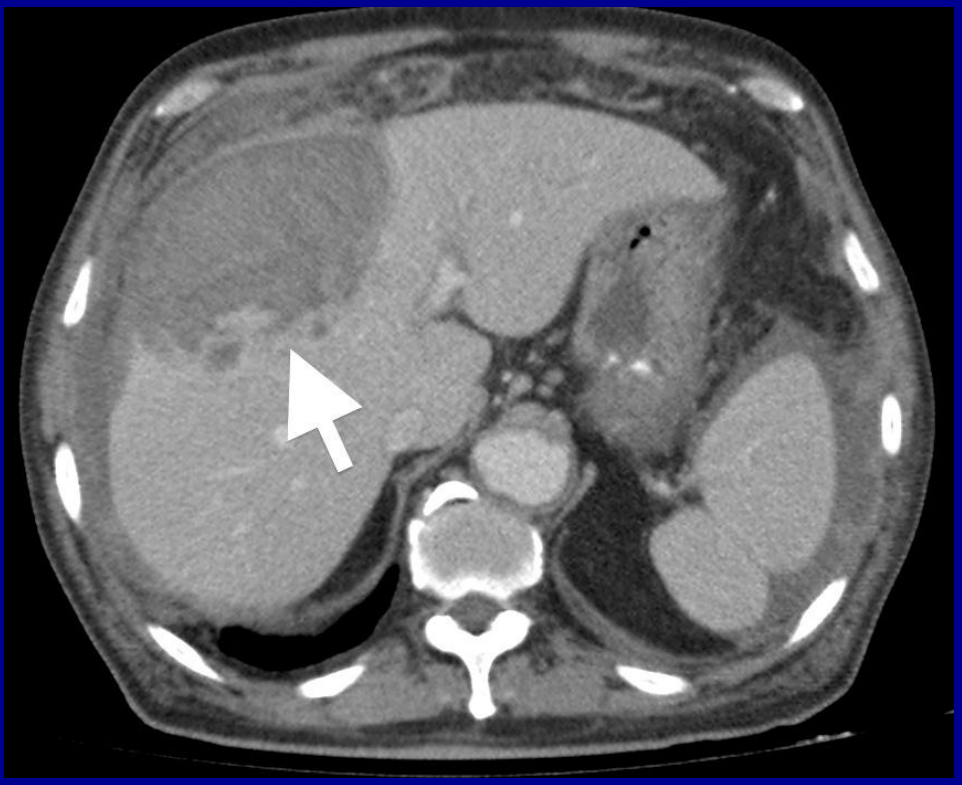

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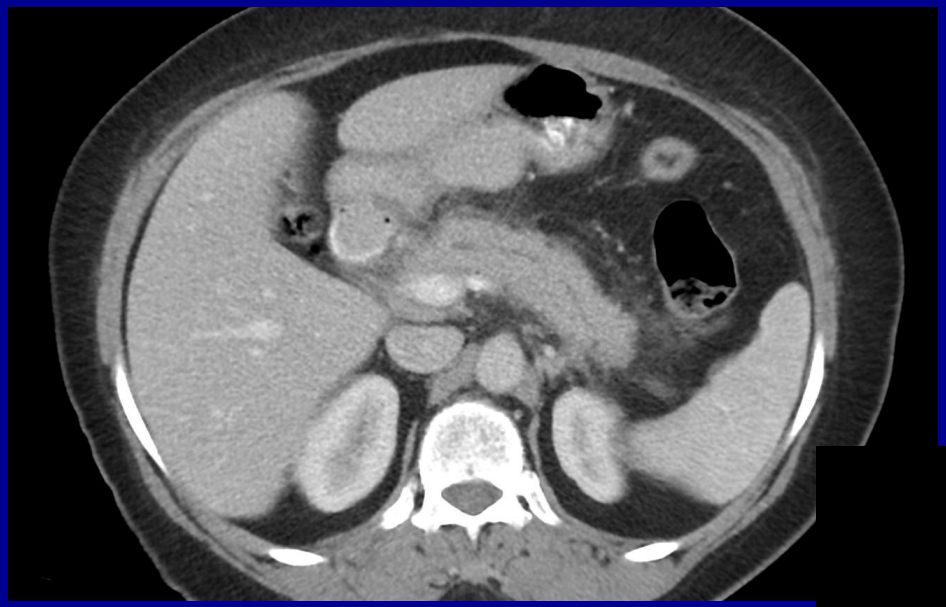

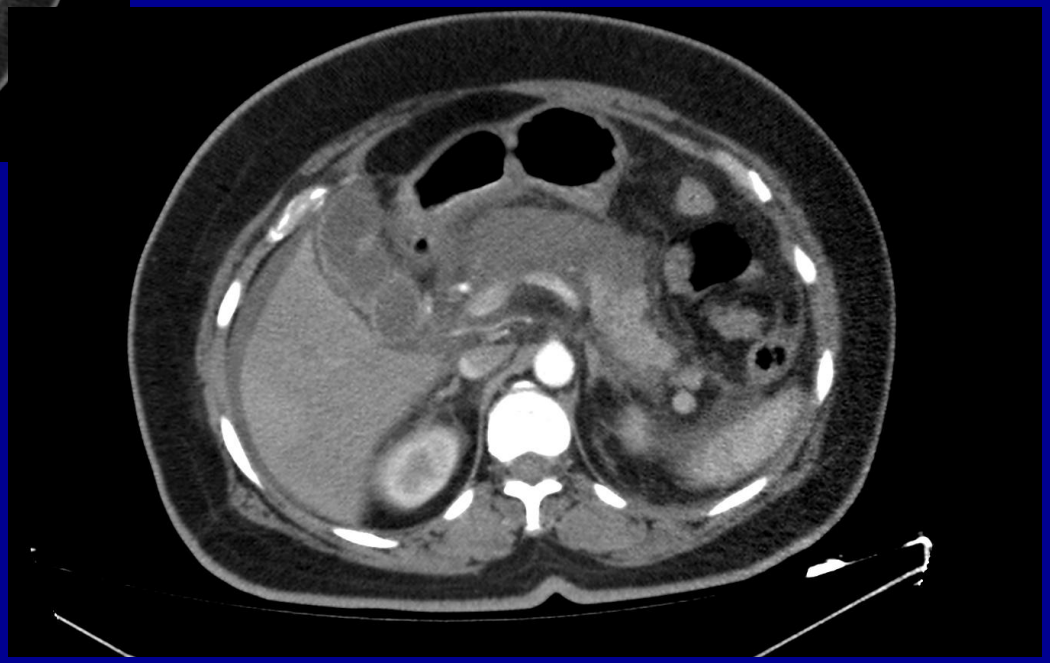

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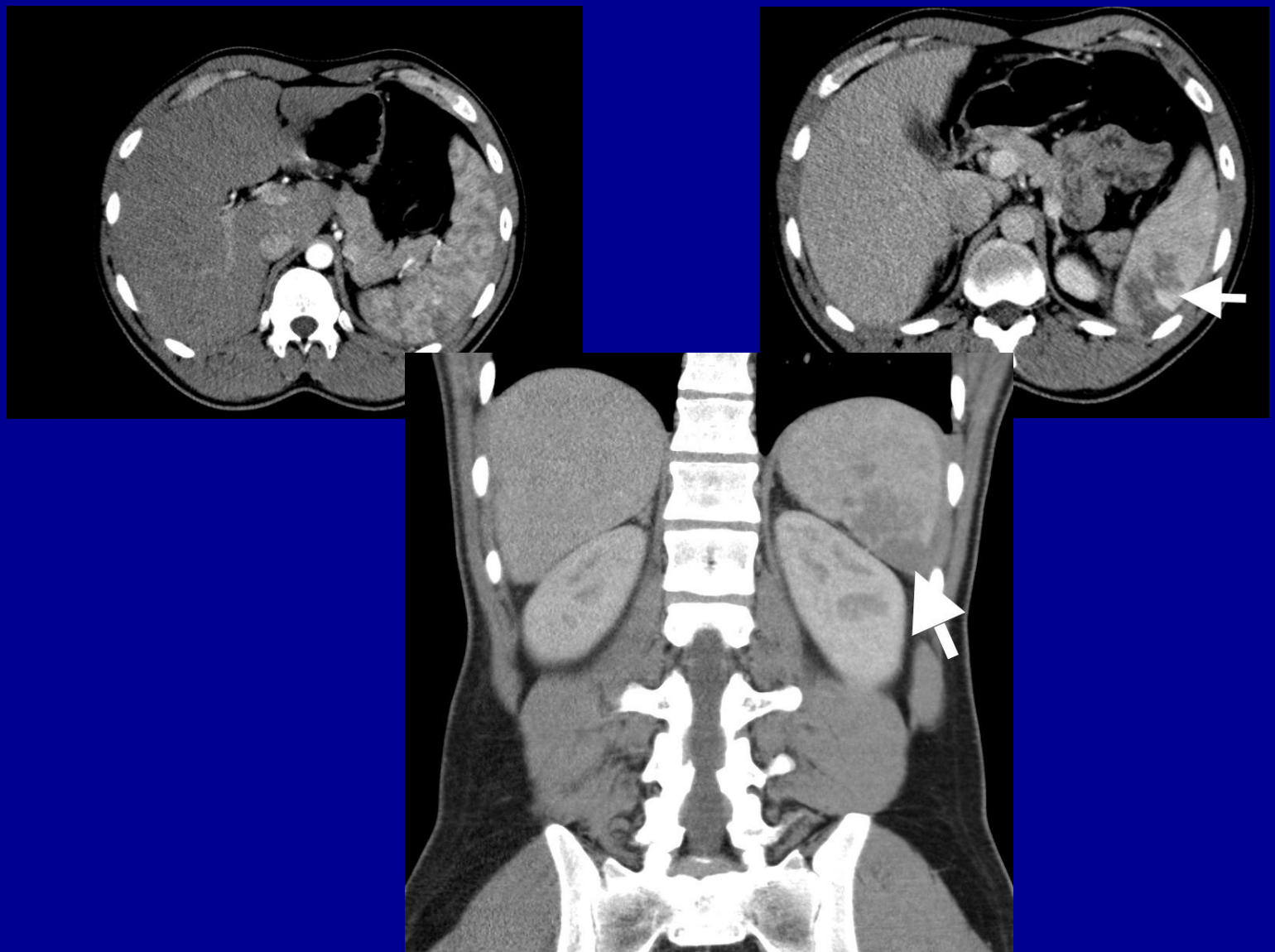

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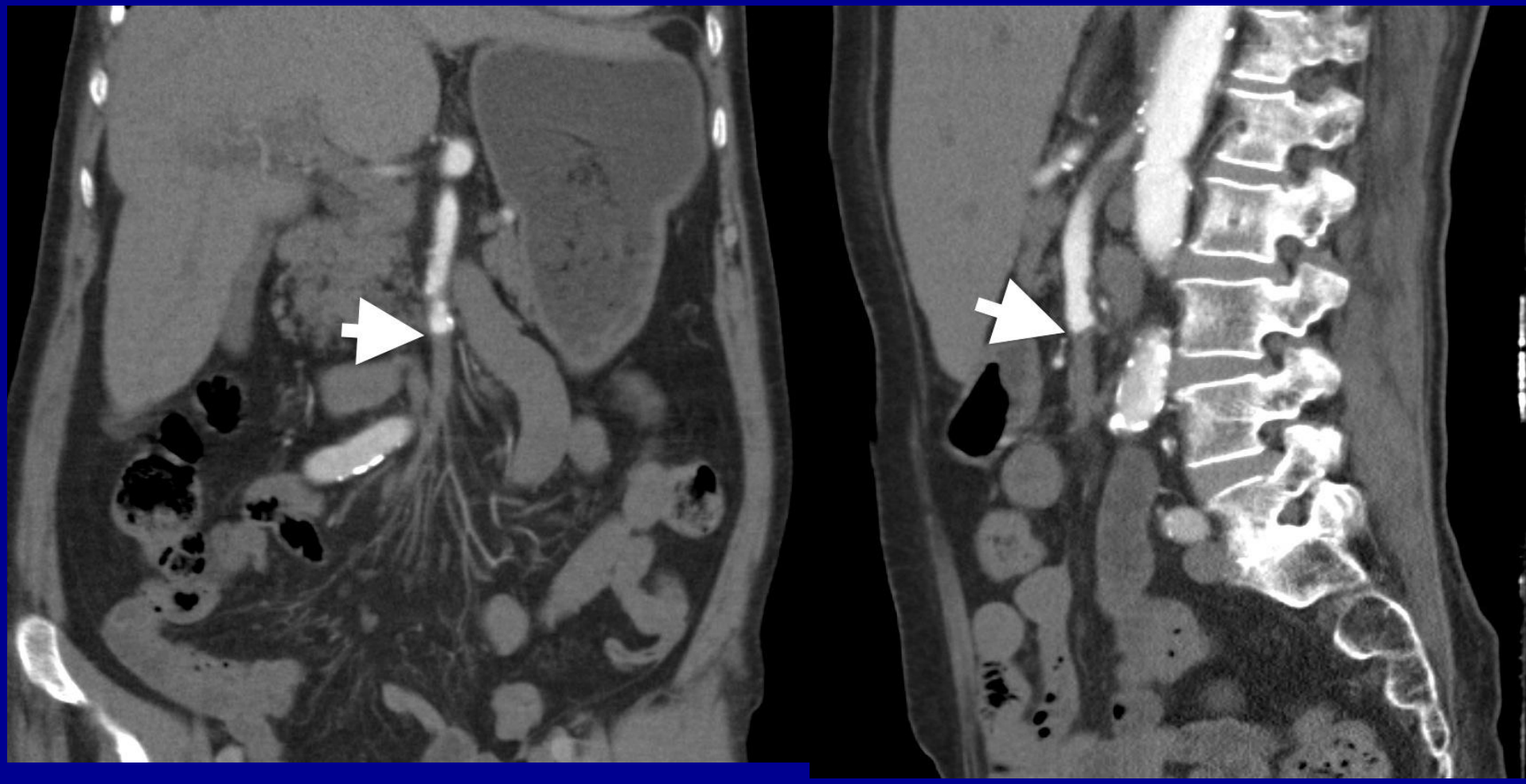

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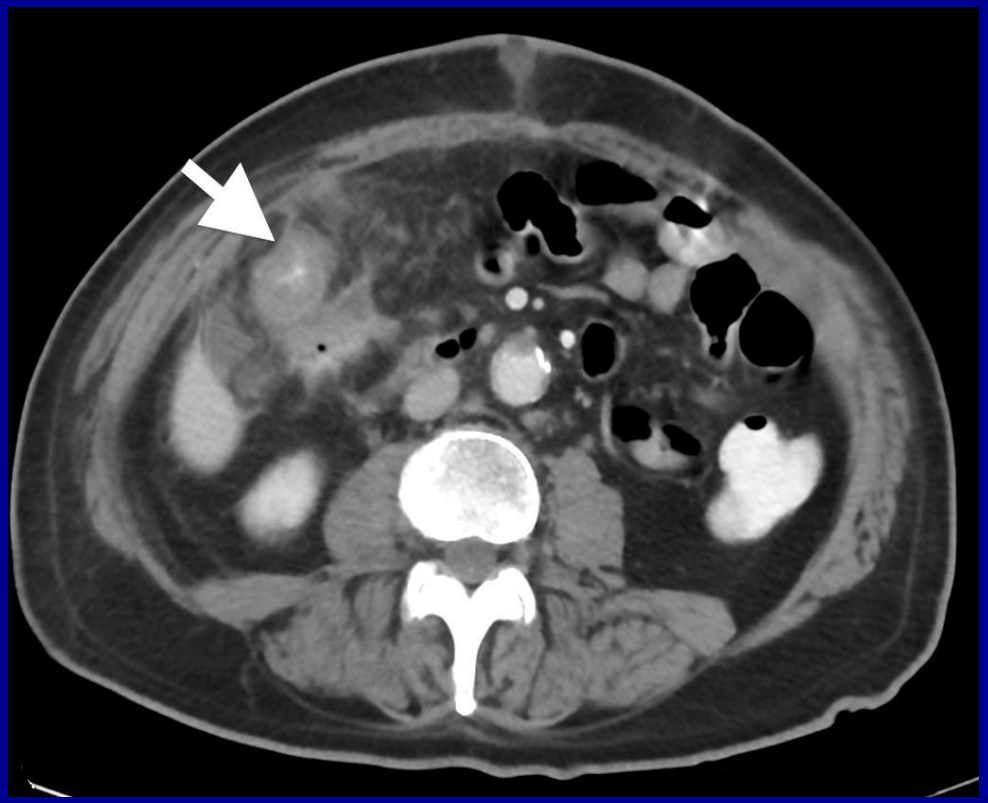

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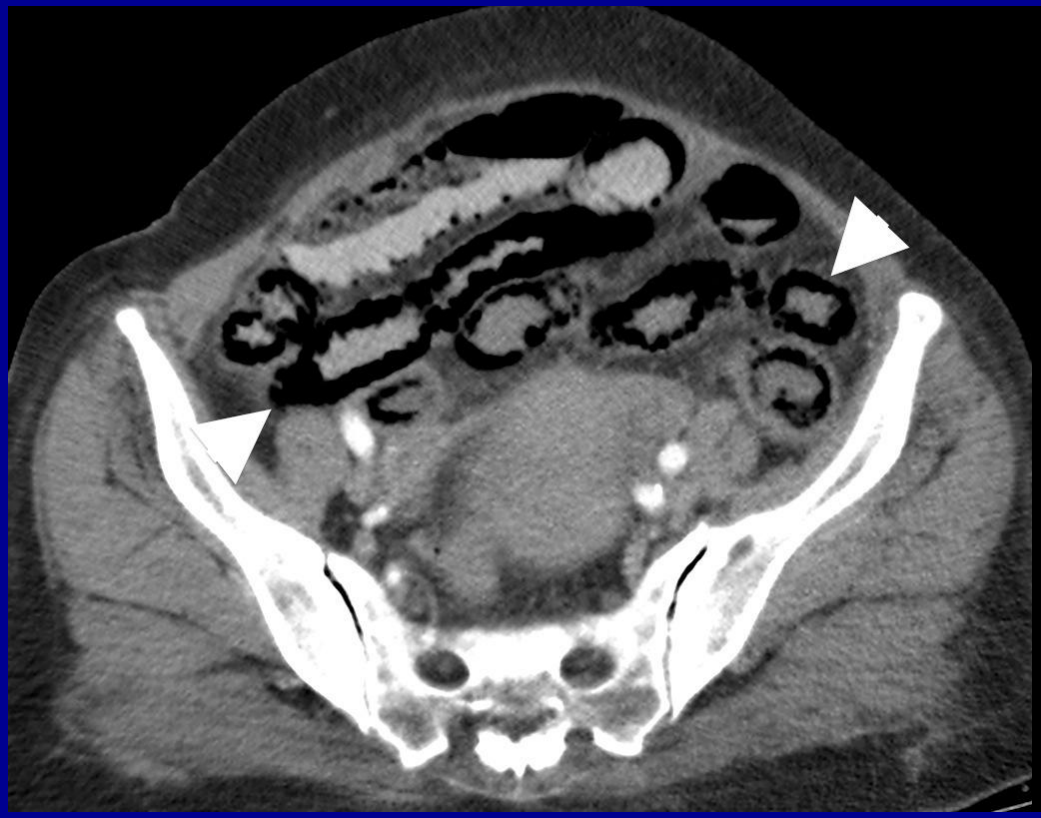

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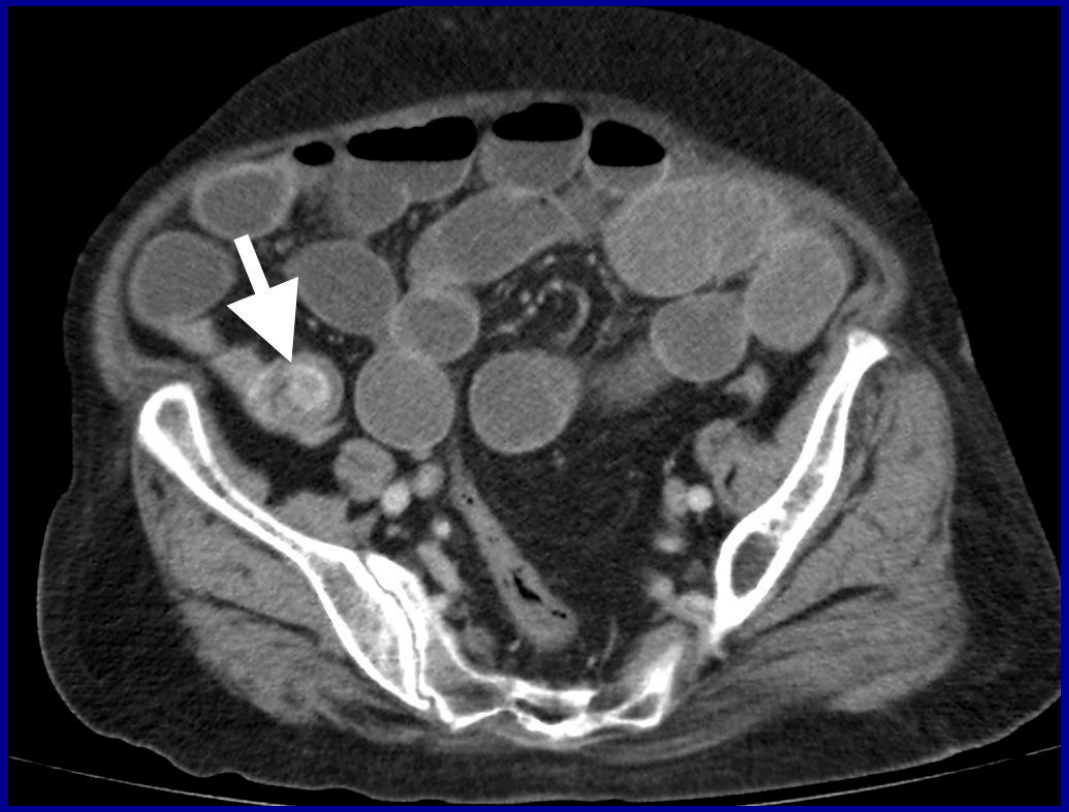
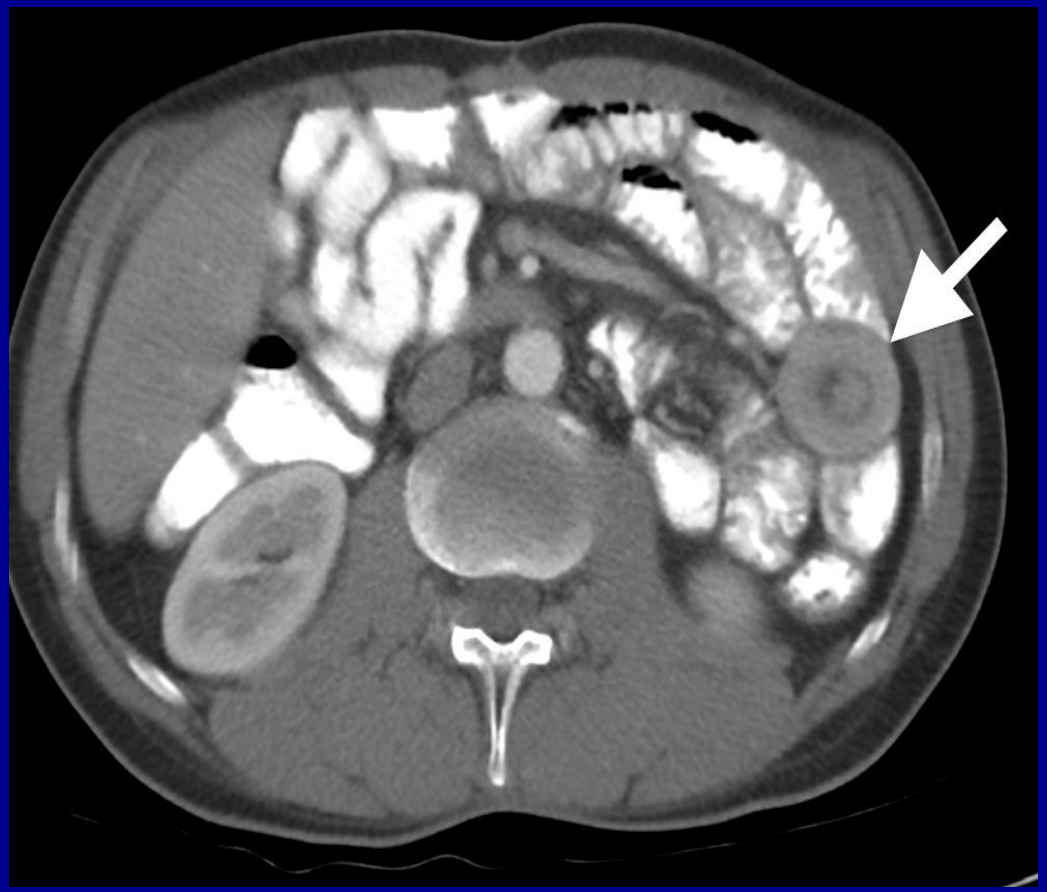
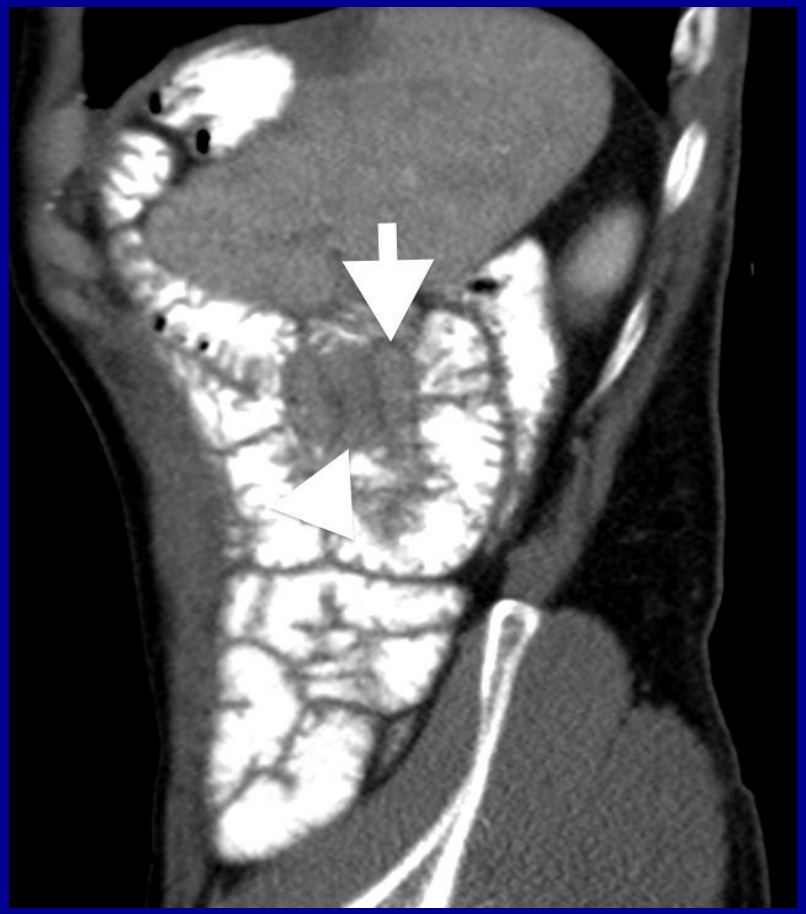
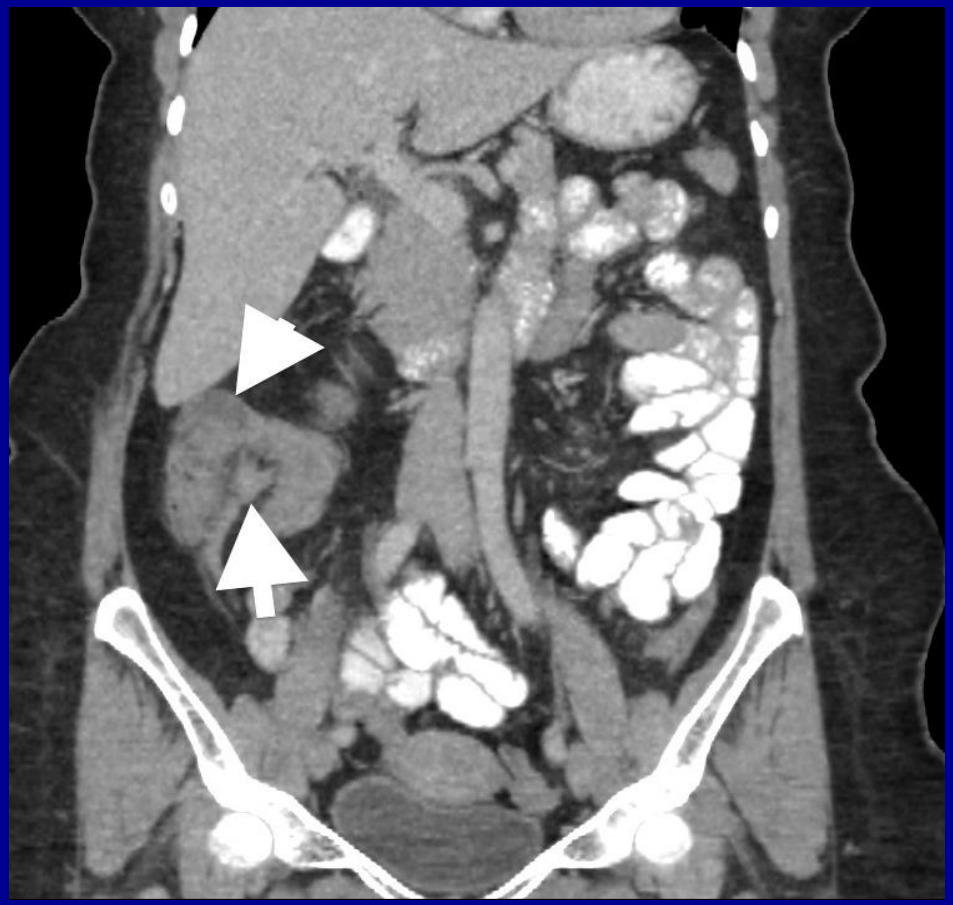


Safra Taşı İleusu

İnvajinasyon







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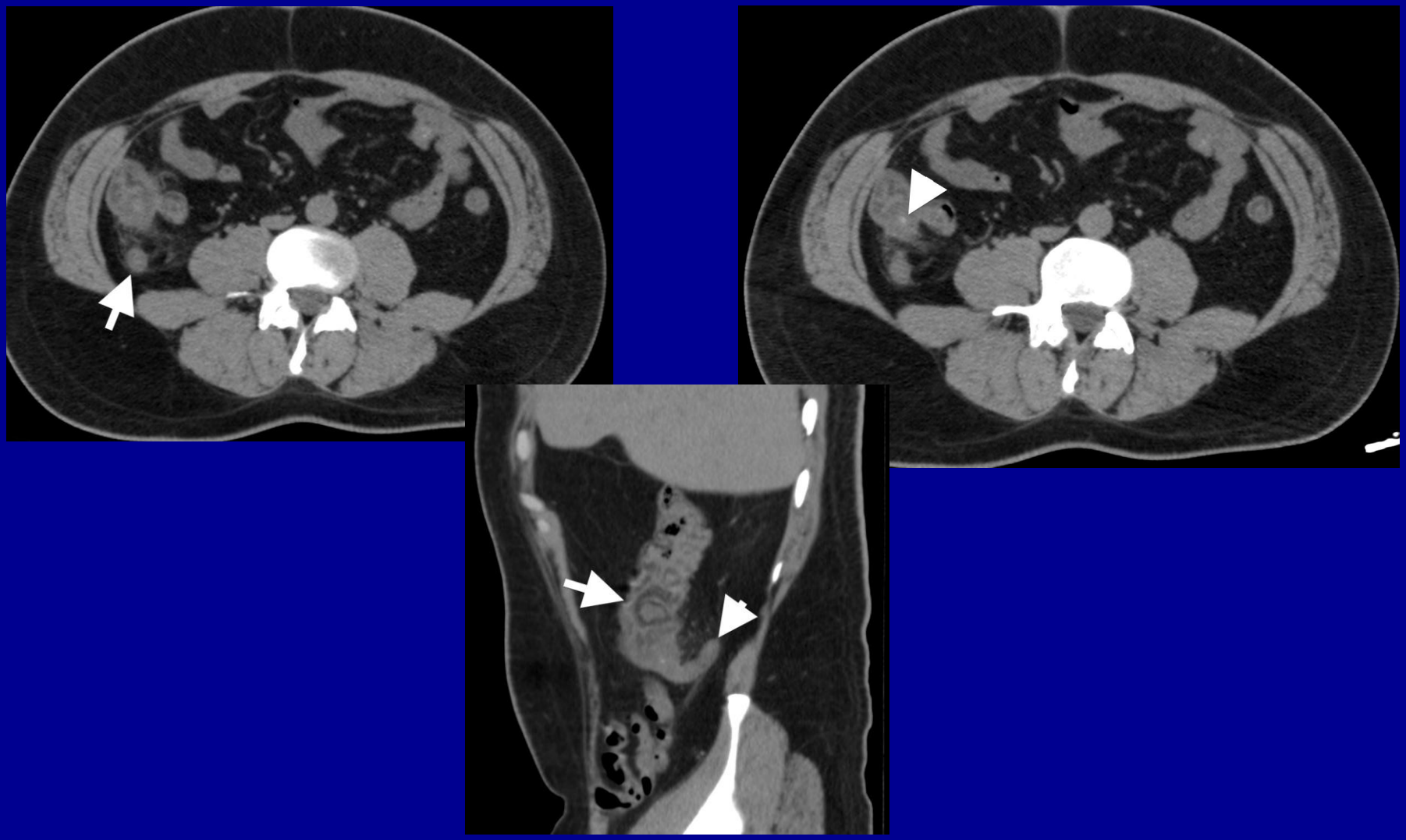

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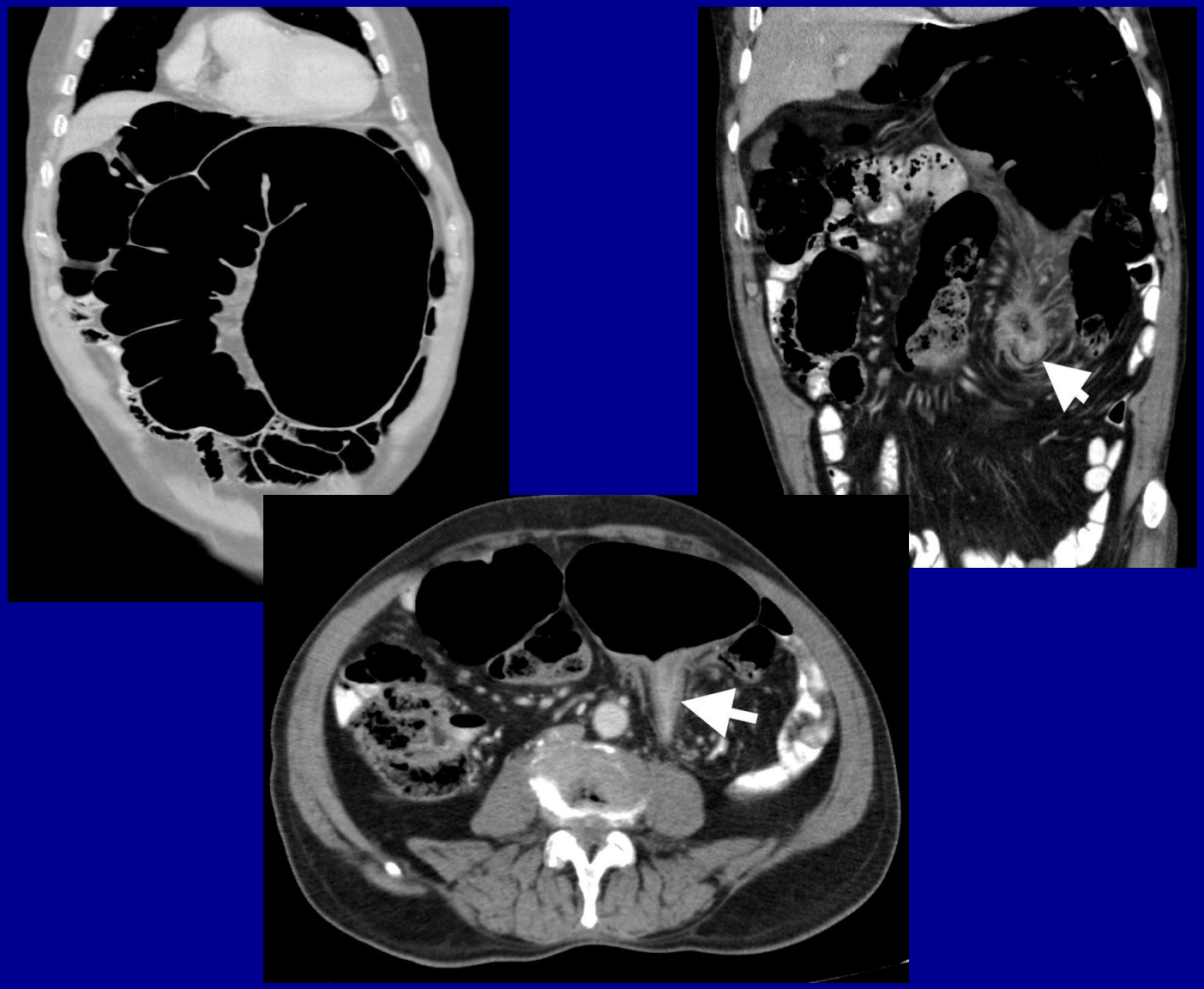

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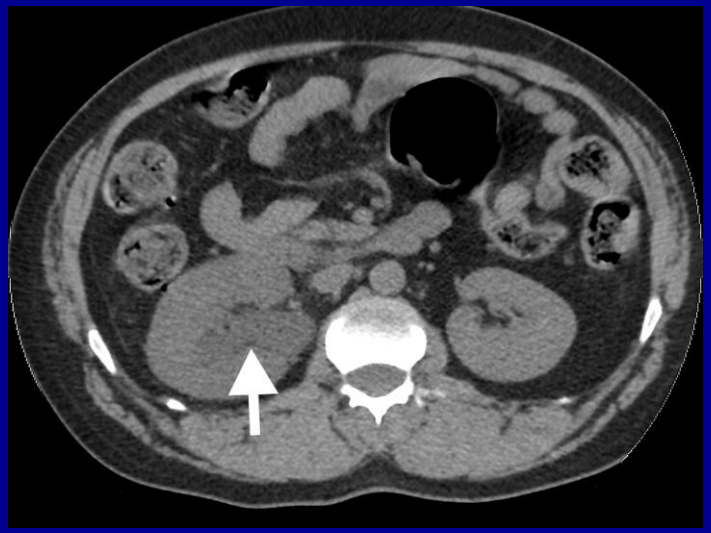

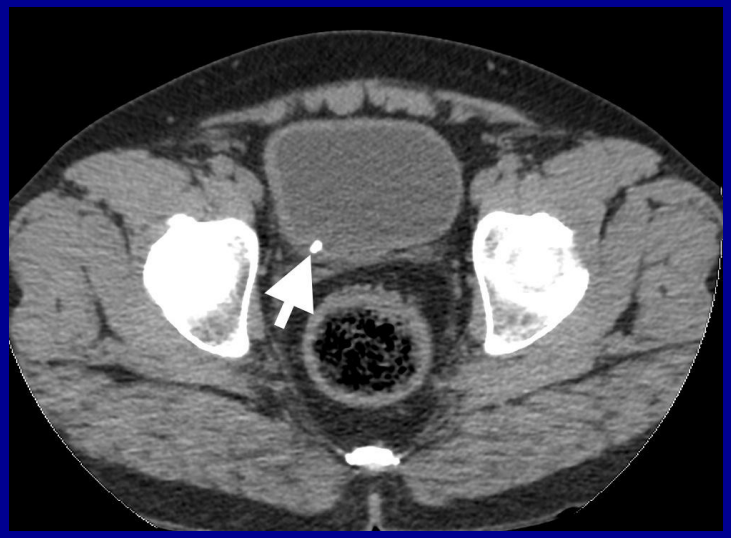

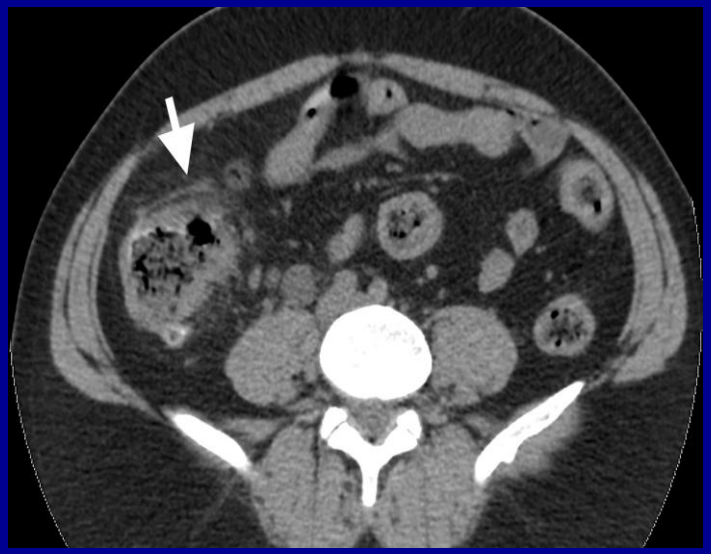

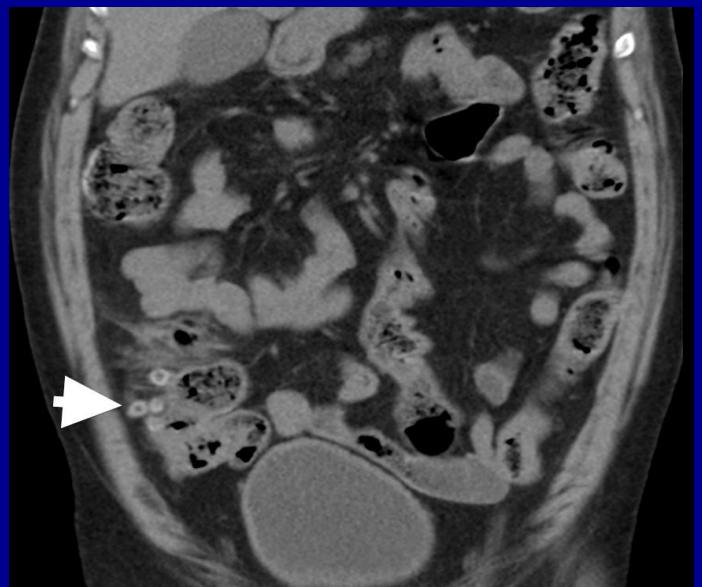

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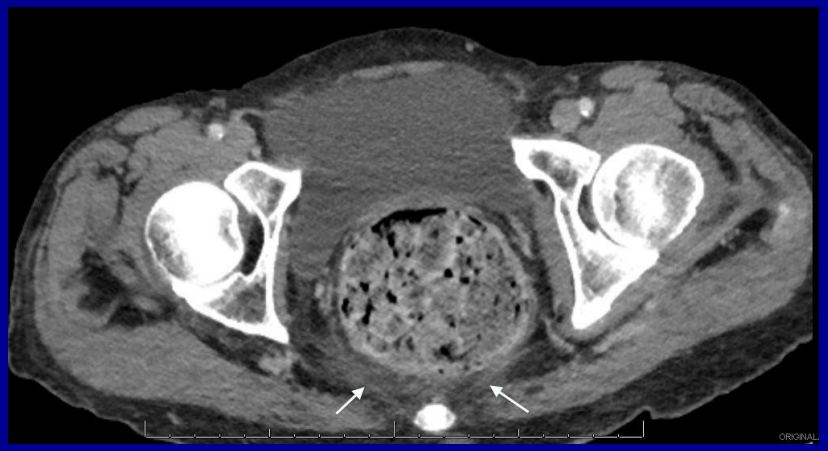
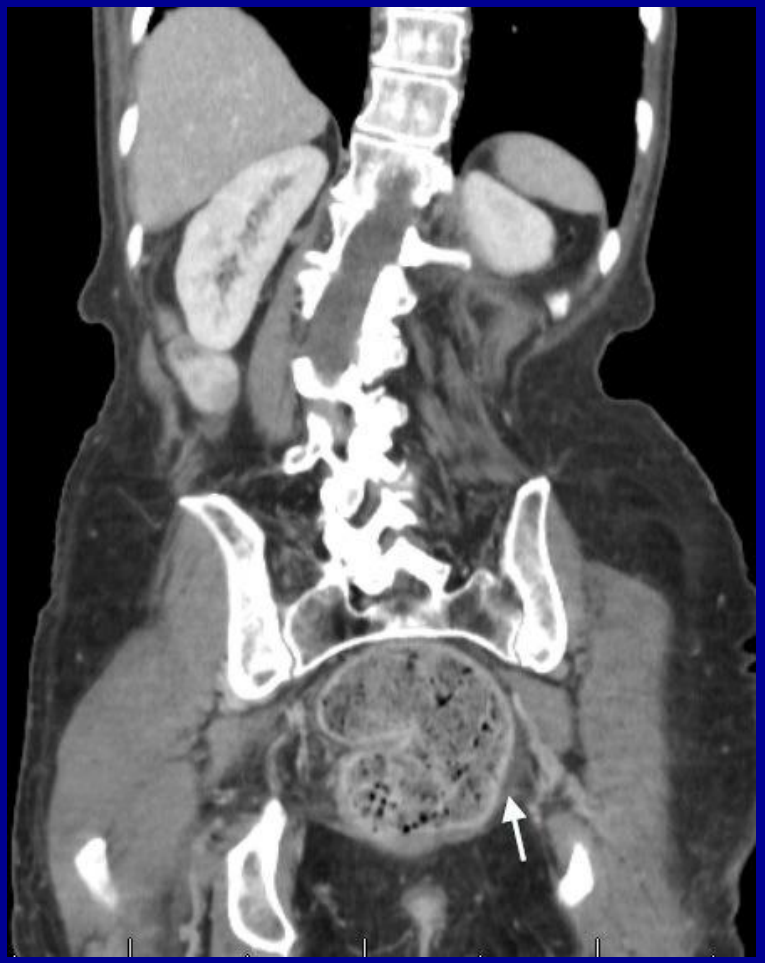
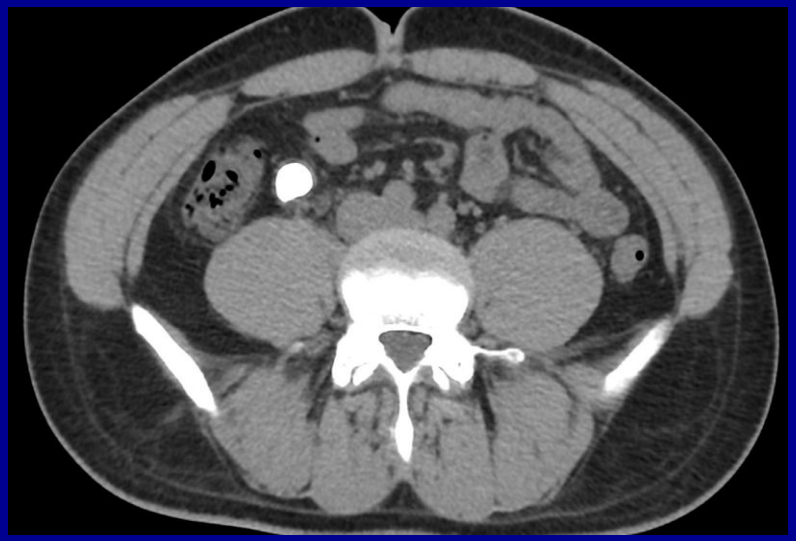
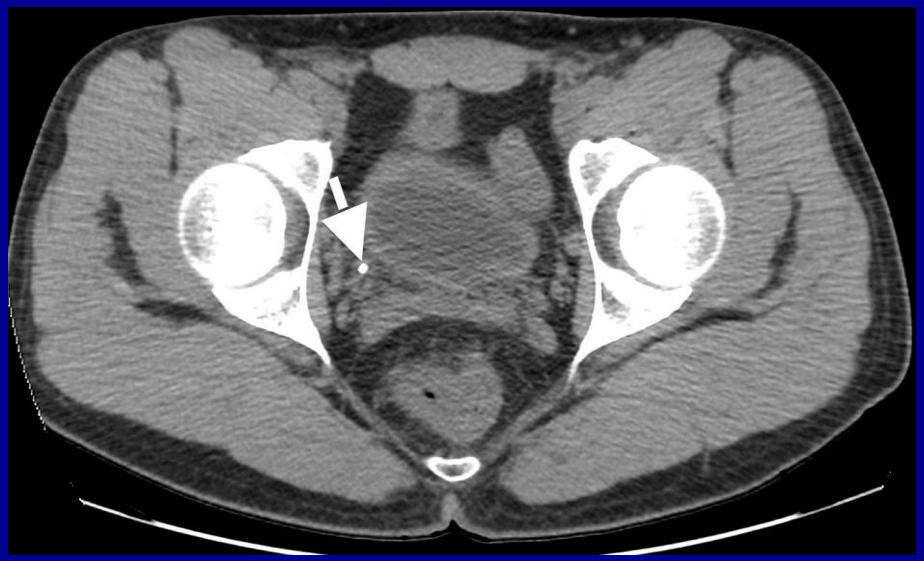
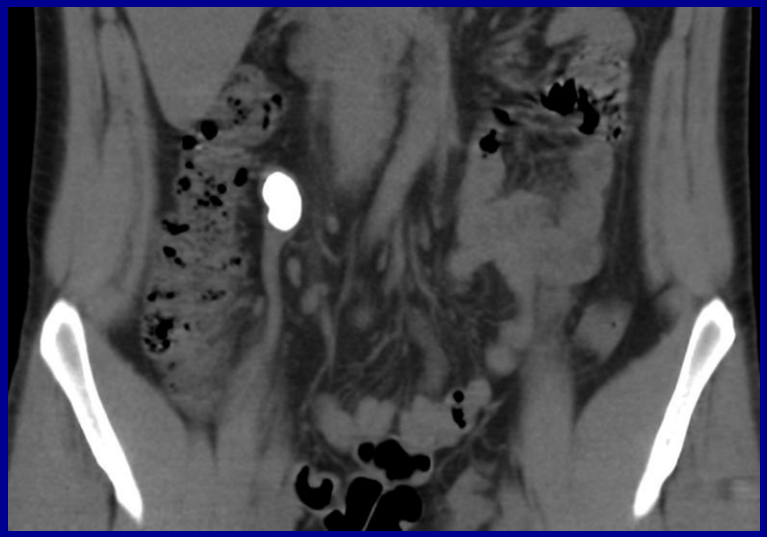




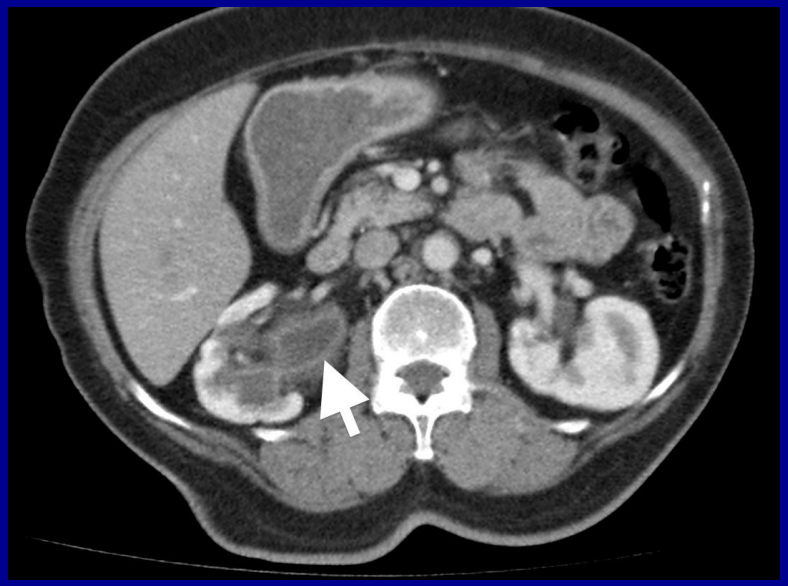
Renal Kolik

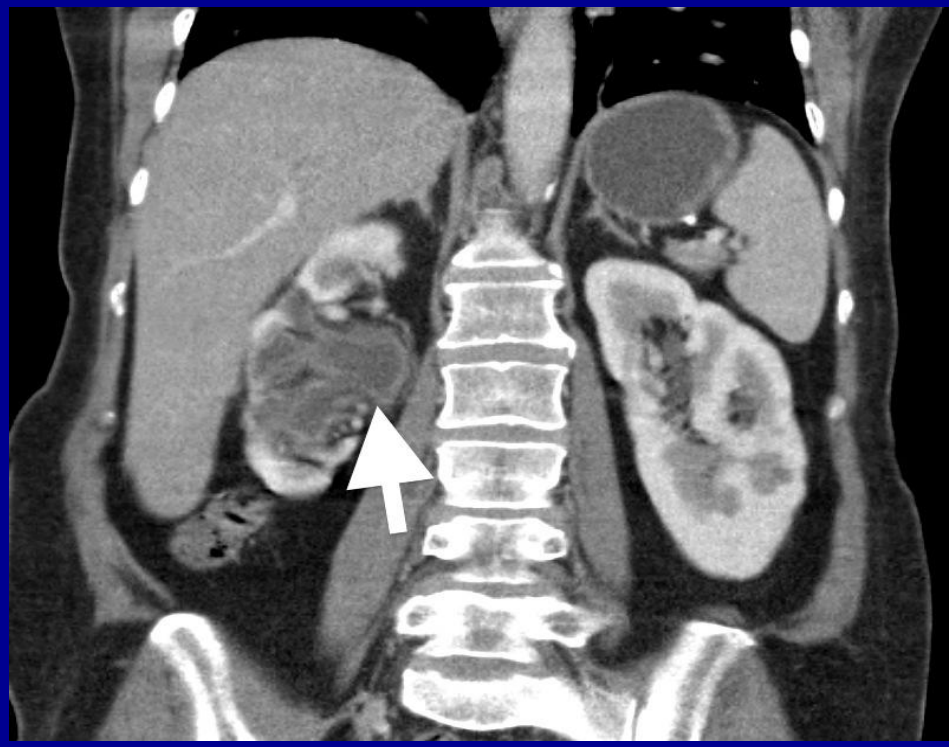






Pyelonefrit





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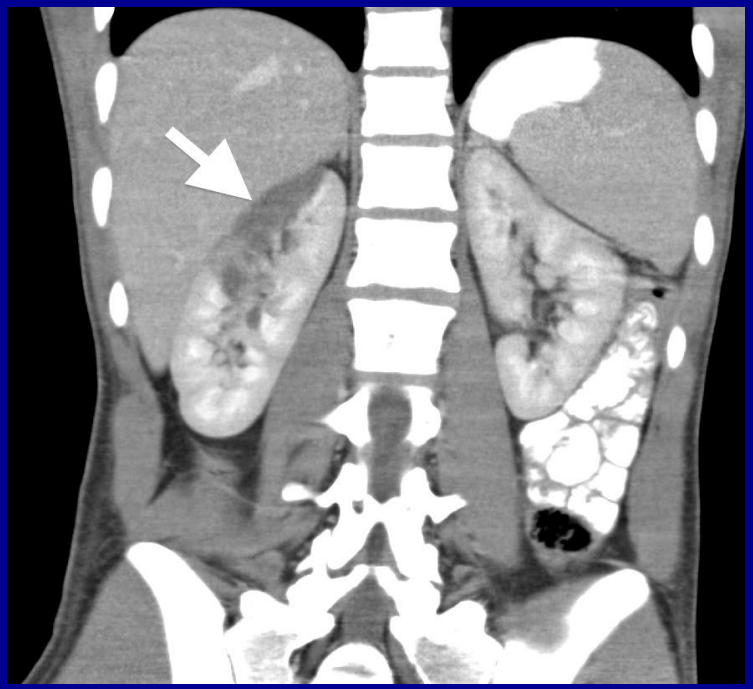
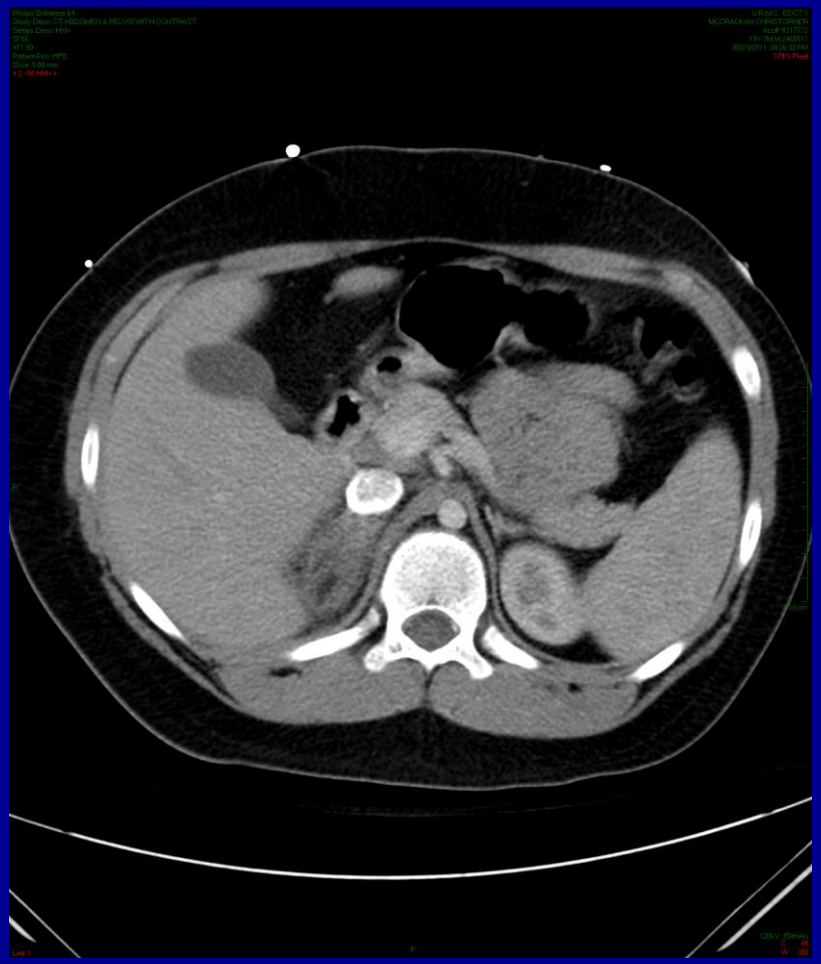
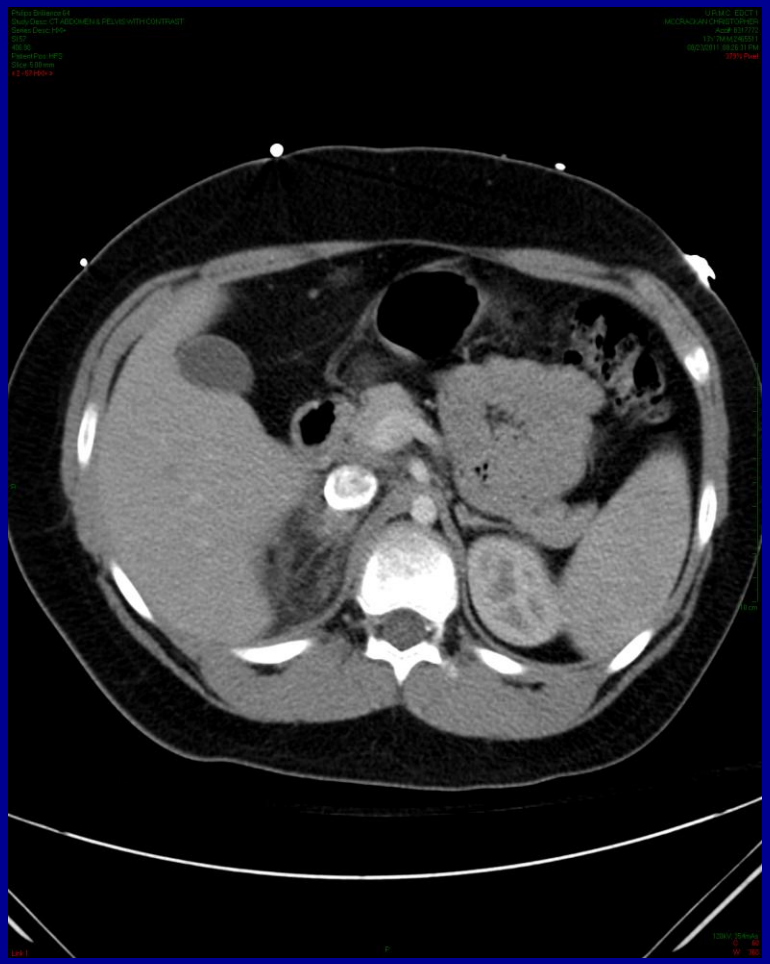
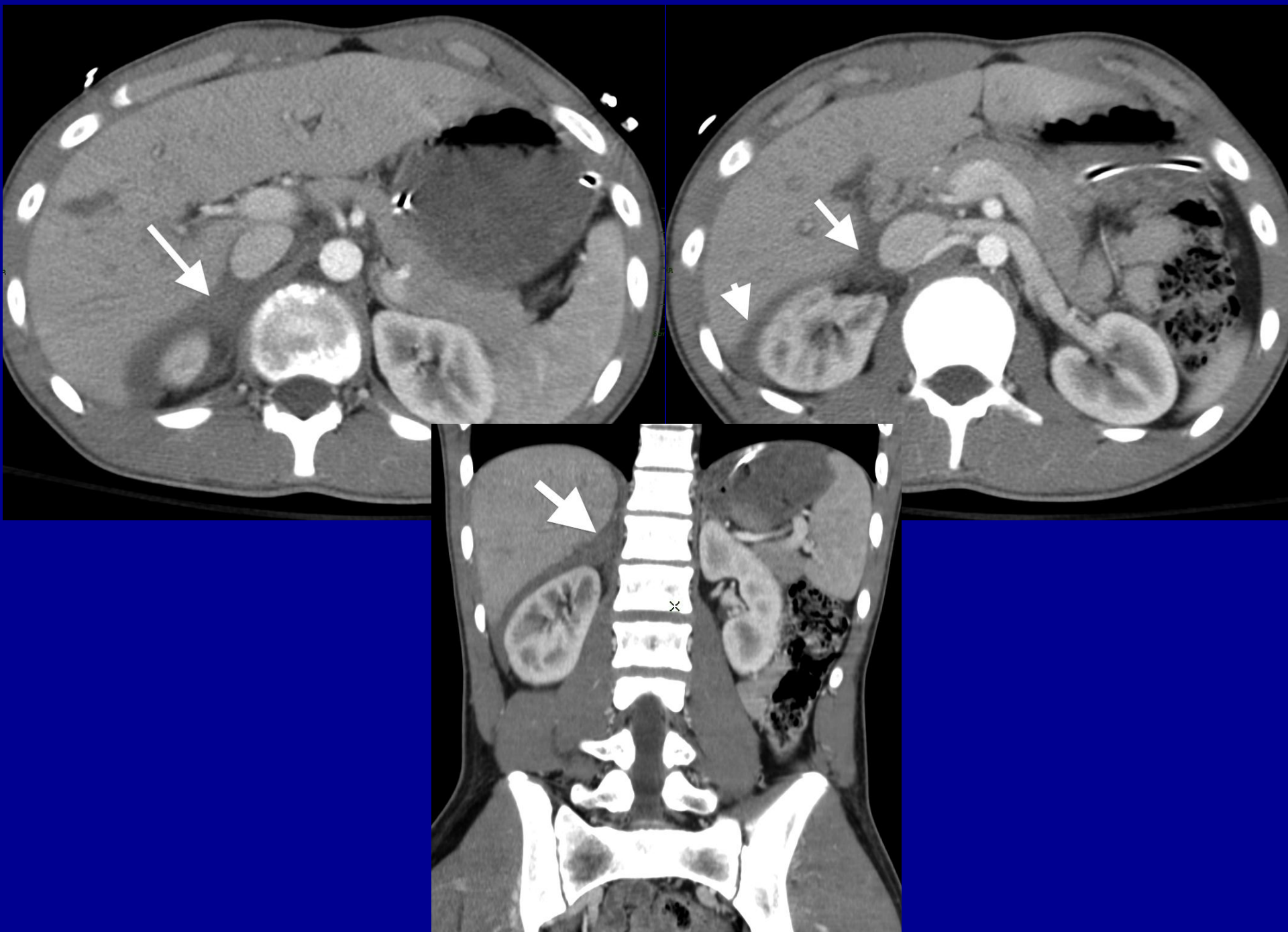


Renal Travma

Adrenal Hemoraji

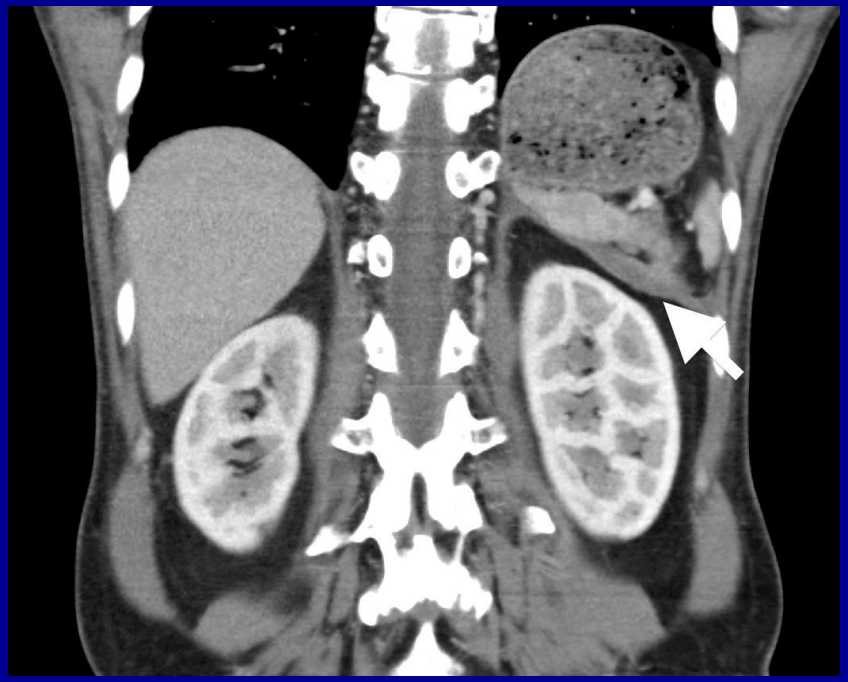




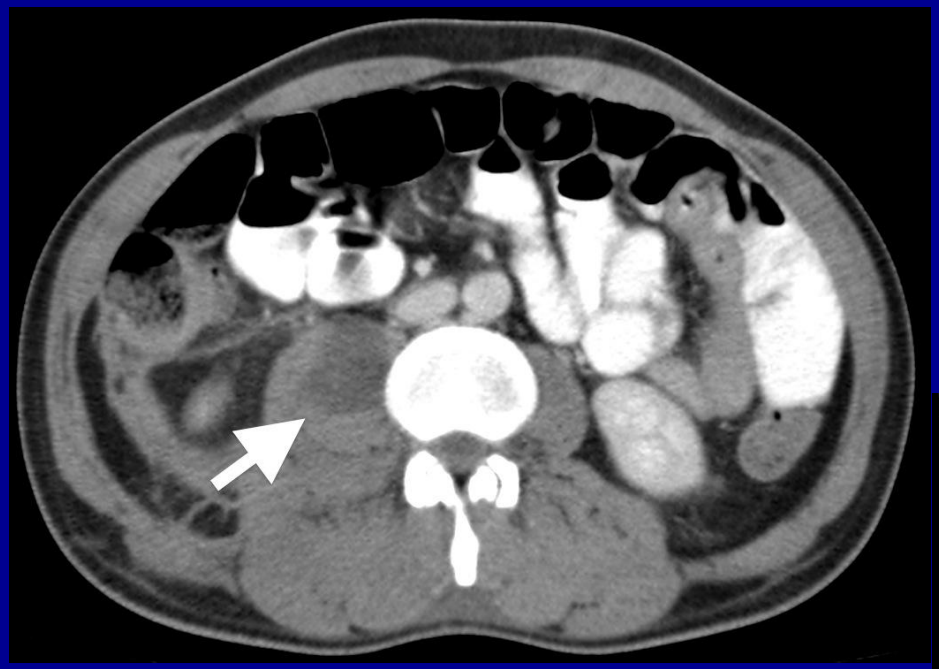
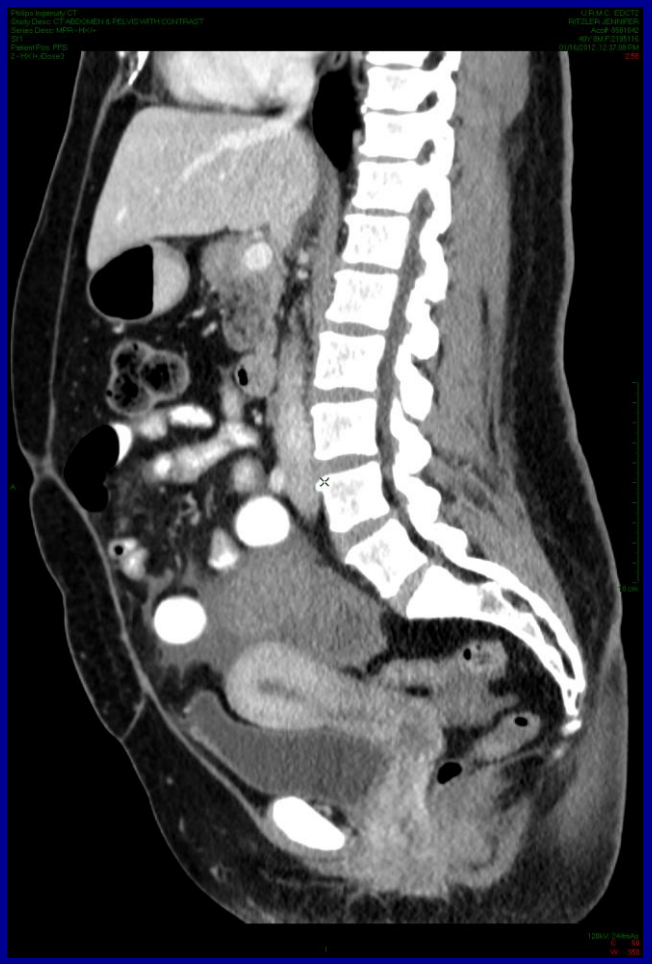


Diafram Yaralanması

- MDBT standart yöntem
- Diafram kruslarının bütünlüğüne dikkat edilmeli



Psoas Absesi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