USG Eşliğinde Periferik Sinir Blokları

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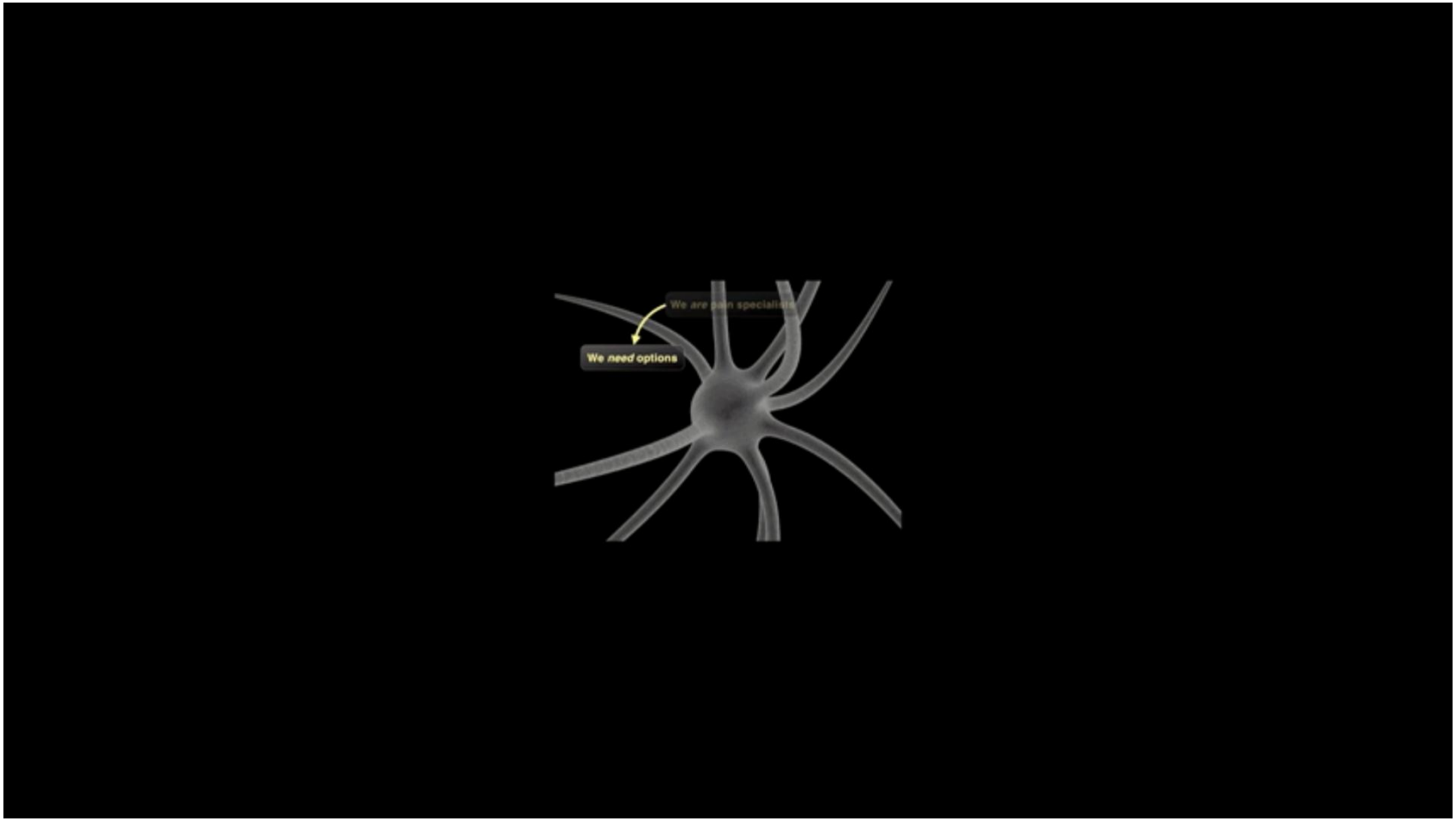
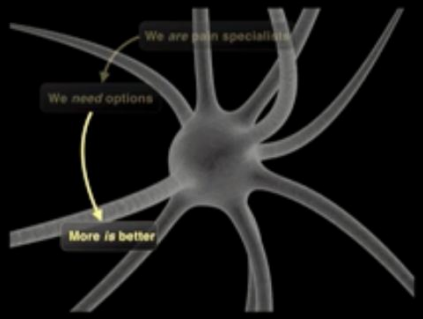
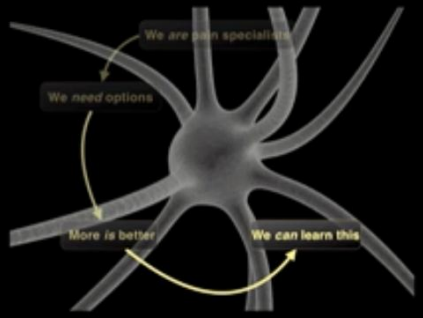
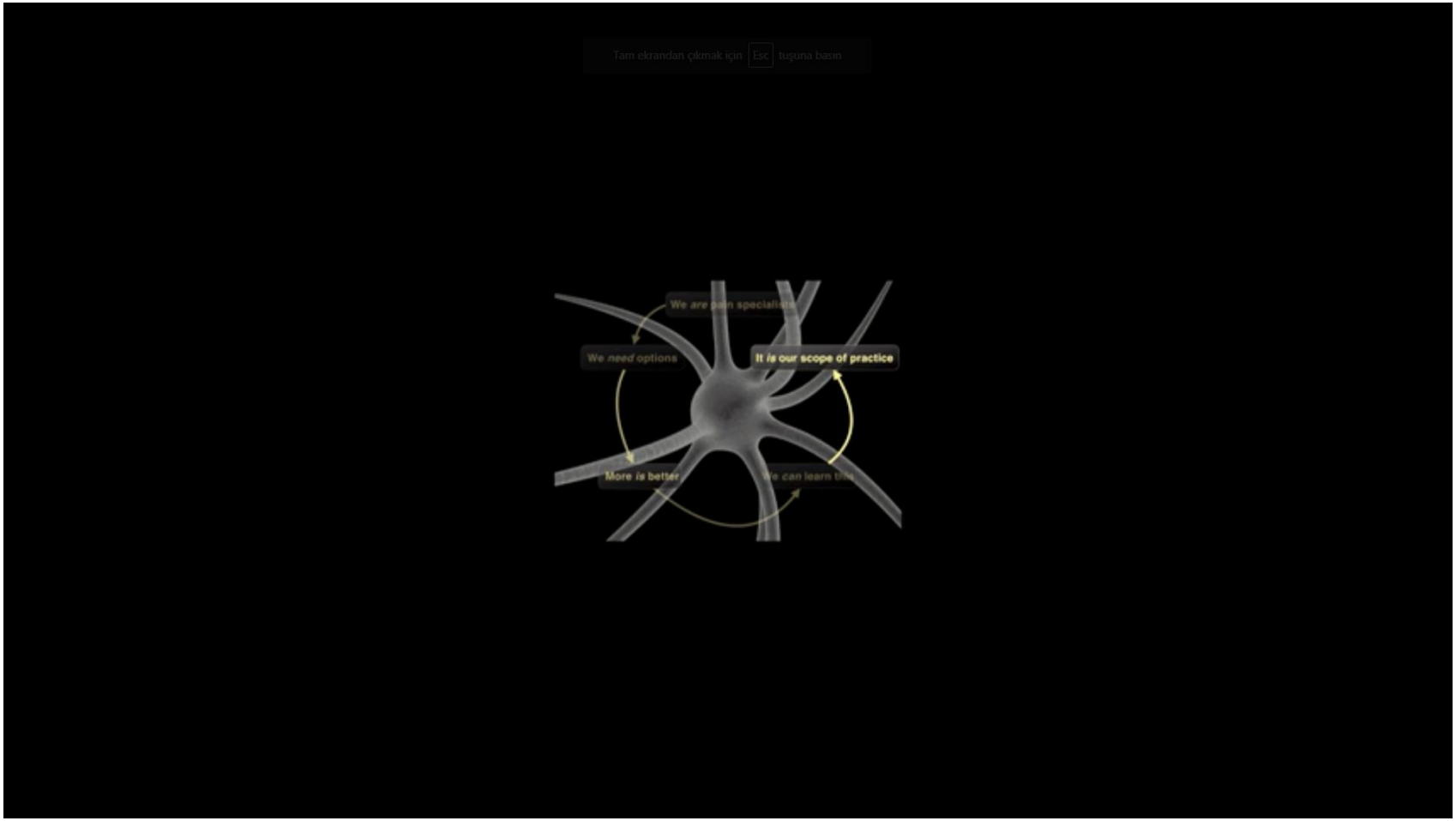
Dr. Sadi Konuk Eğitim ve Araştırma Hastanesi
Acil Tıp Kliniği

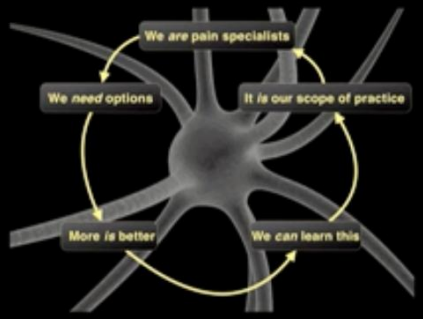
Bakırköy
Dr. Sadi Konuk Eğitim ve Araştırma Hastanesi
Acil Tıp Kliniği


We need options


We are pain specialists
We need options
More is better


We *need* options
More *is* better
We *can* learn this


Tam ekrandan çıkmak için Esc tuşuna basın
We need options
It is our scope of practice
More is better


We *are* pain specialists
It *is* our scope of practice
We *can* learn this
More *is* better
We *need* options

Sunu Planı

- Tarihçe
- Periferik sinir blok tipleri
- Anatomik dağılımları
- Malzemeler: USG cihaz, transduser, iğne
- Sinirlerin USG'de tanınması
- Acil uygulamalar

Tarihçe

- 1978, LaGrange et al. Doppler US'nin ilk defa supraclavicular brachial plexus bloklarında kullanımı

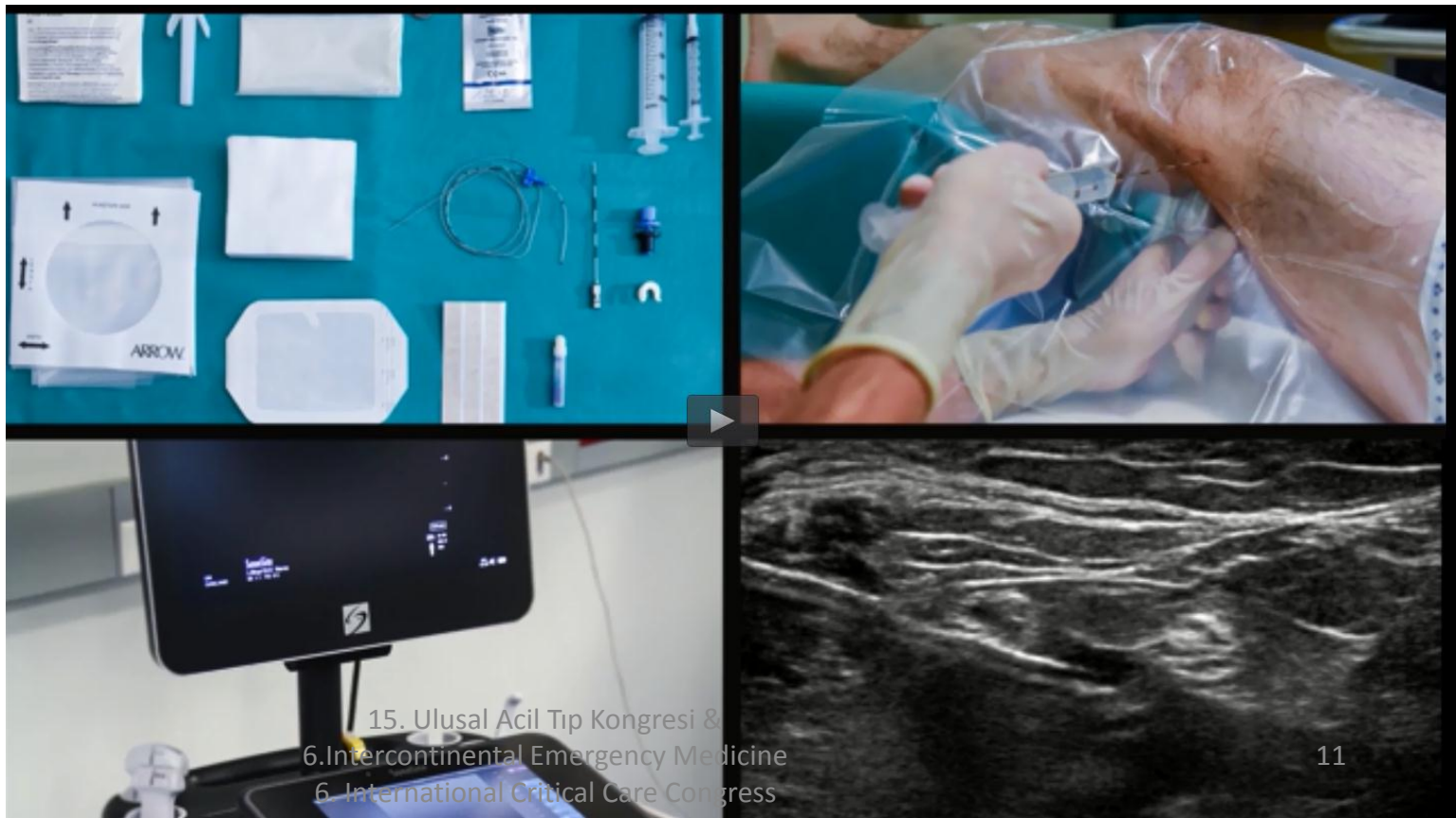
- 1994. Kapral et al, supraclavicular brachial plexus bloklar hakkında basılmış ilk literatür

Periferik sinir blok Endikasyon

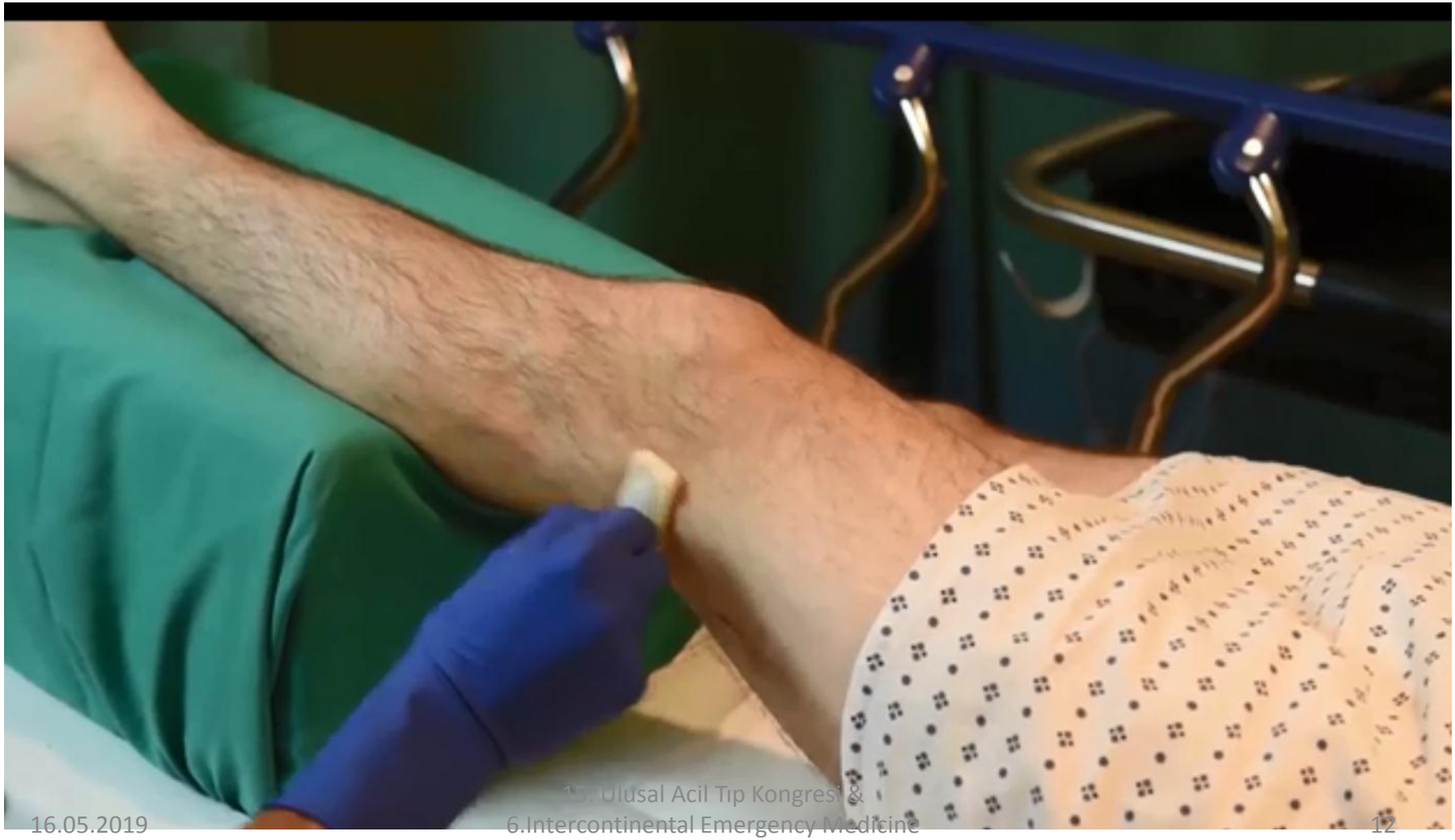
- Fraktürler
- Laserasyonlar
- Abse drenajı
- Yabancı cisim
- Paranteral medikasyon kullanımının riskli olduğu zamanlarda

Periferik sinir blokları

- doğru doz
- doğru ilaç
- doğru yer
- doğru hasta seçimi



Sterilite



İlaç ; Lidocaine

- 4 mg/kg , 300 mg max (15 ml,2%)
- 7 mg/kg (epinefrin kullanacaksak)

- El bloklarında: maks doz 5 ml (2% lidocain)
- Daha büyük sinirler için: max 15 ml Lidocain

- Toksisite :

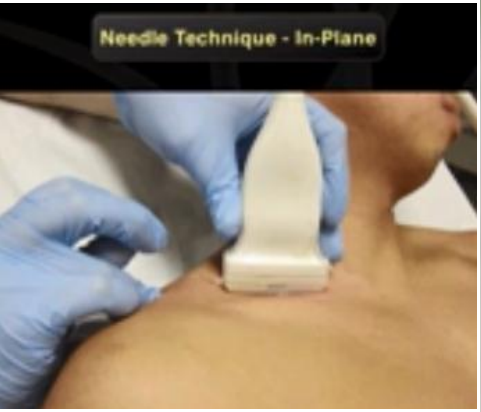
intranöral verirsek, lokal nerve toksisitesi oluşur

(parestezi, nörpatik ağrı,duyu ve motor kayıp),

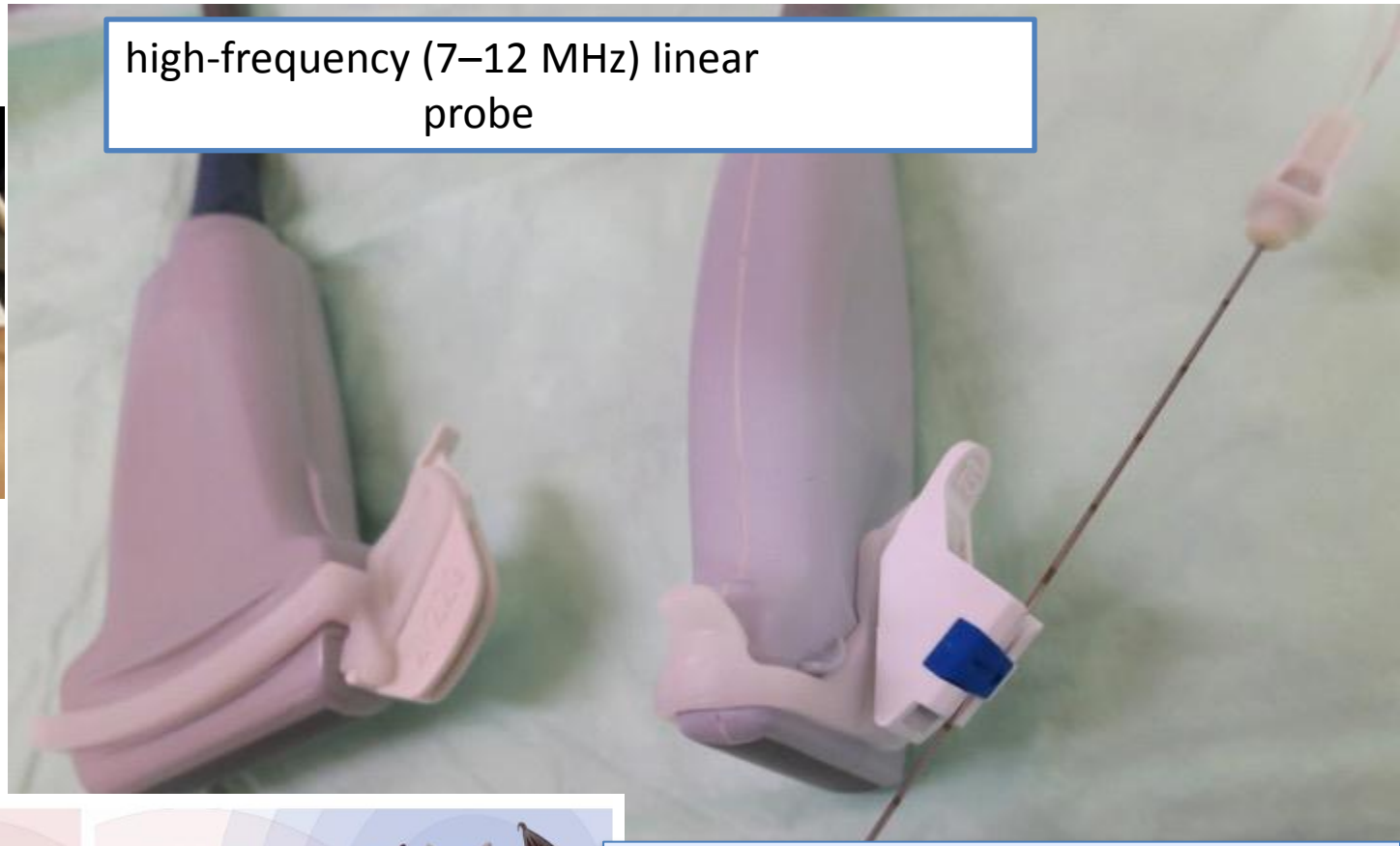
CNS eksitasyonu, oral paresteziler, dizziness, tinnitus, nöbet, solunum depresyonu, koma ve arrest olabilir

Ergonomik pozisyon: yatak yüksekliği usg konumu

Malzeme/Transduser



high-frequency (7–12 MHz) linear probe

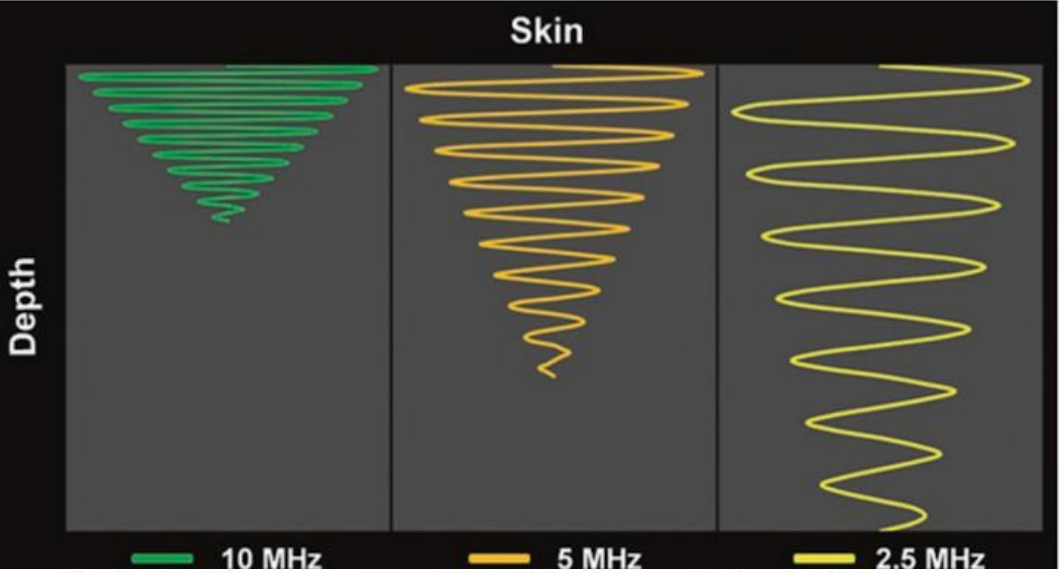


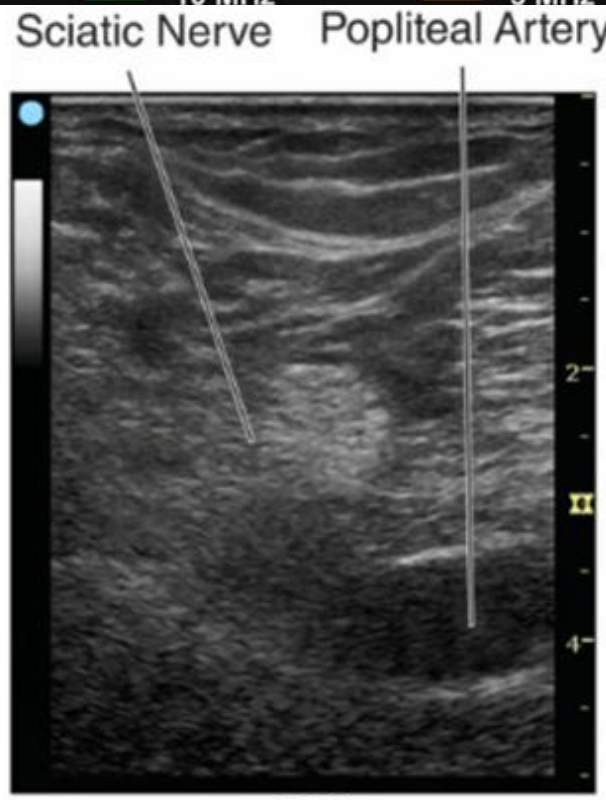
A

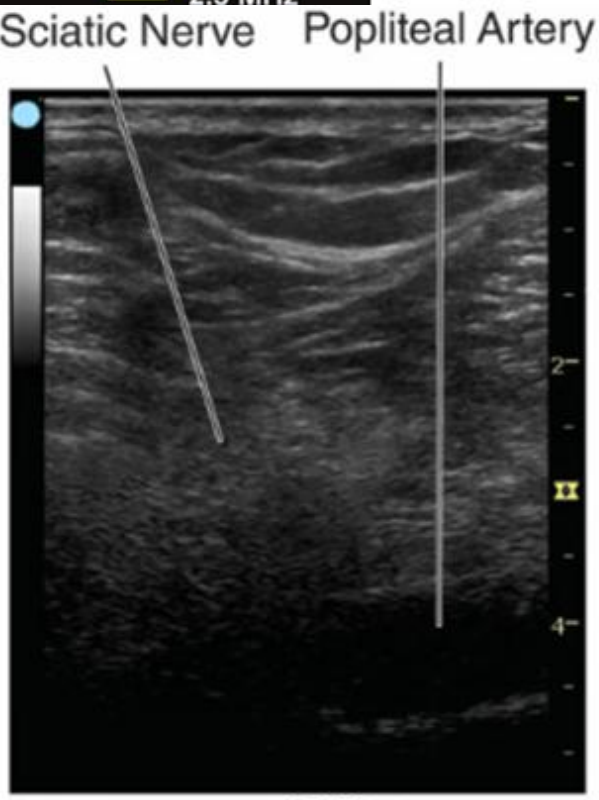
B

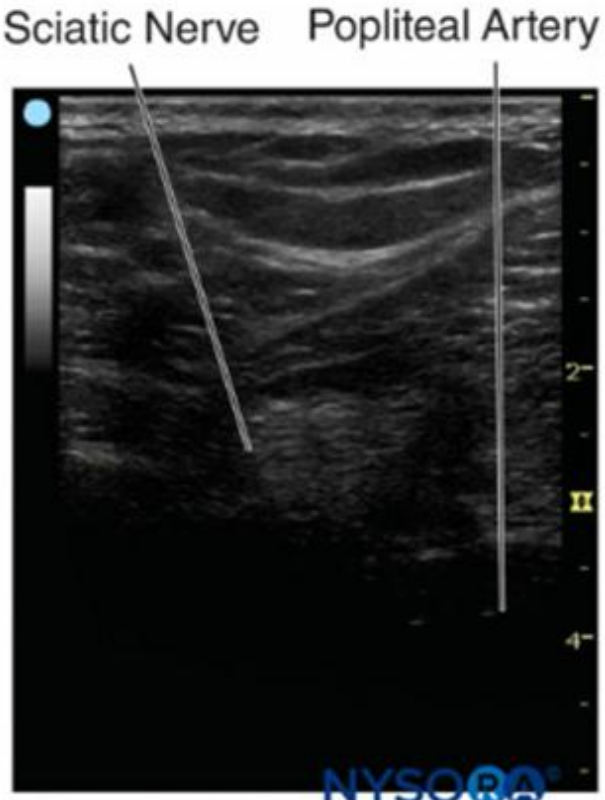
Filler, uzun mesafeli iletişim için 20 Hz'den daha düşük frekansların sesini üretebilir ve algılayabilir. B: Yarasalar ve yunuslar, navigasyon ve mekansal yönlendirme için 20–100 kHz aralığında sesler üretir.

Frekans

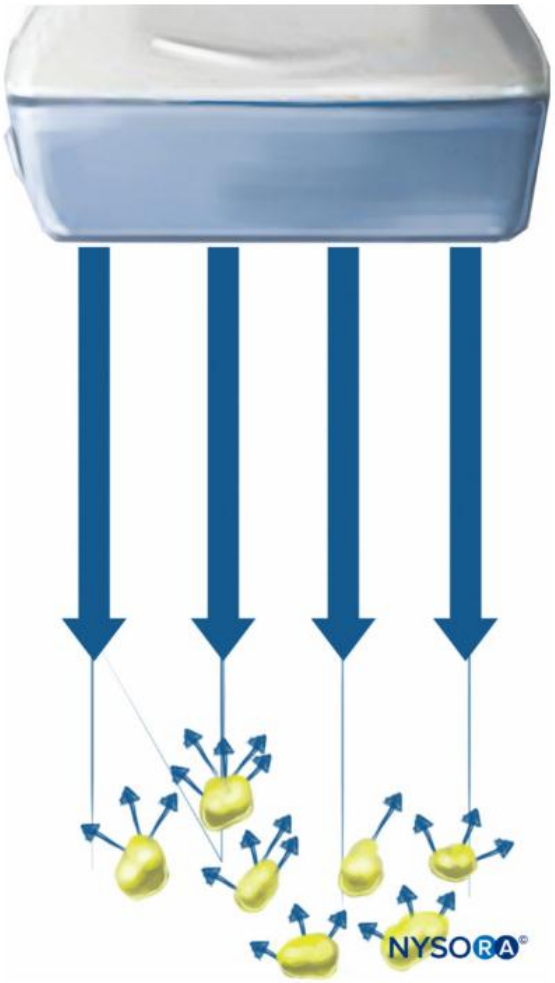

Skin
Depth
10 MHz
5 MHz
2.5 MHz


Sciatic Nerve
Popliteal Artery
8 MHz

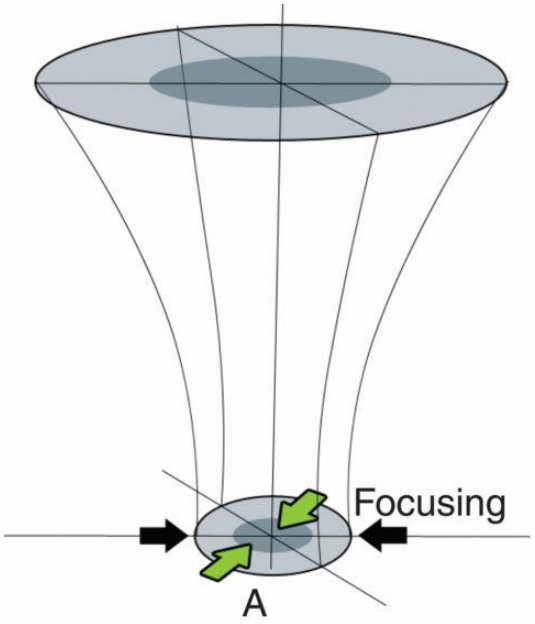

Sciatic Nerve
Popliteal Artery
10 MHz

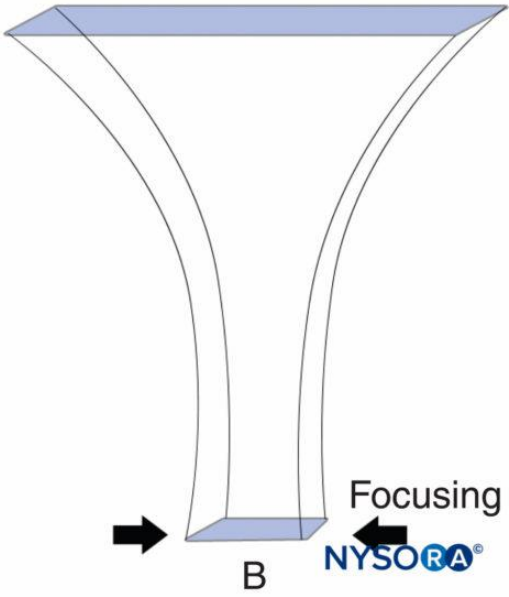

Sciatic Nerve
Popliteal Artery
12 MHz
NYSORA

Saçılma



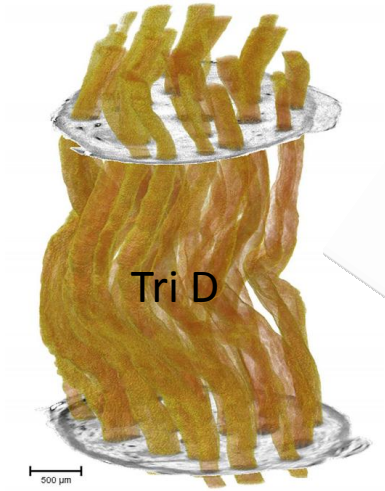
Fokus

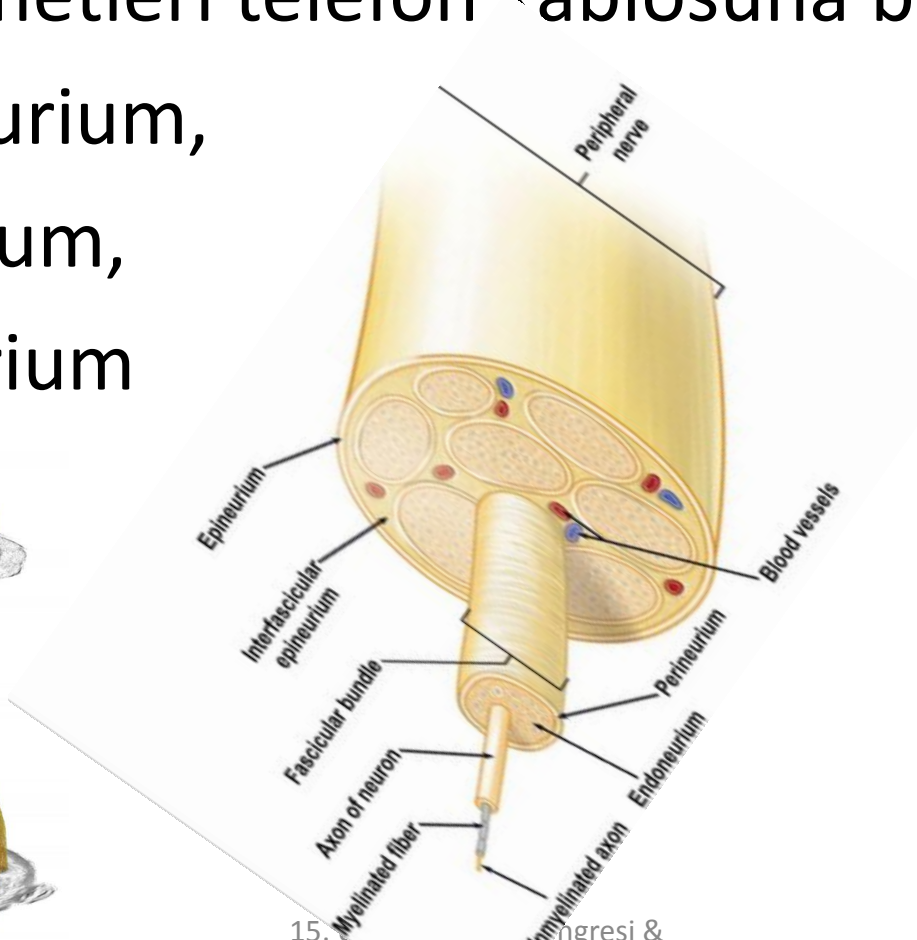


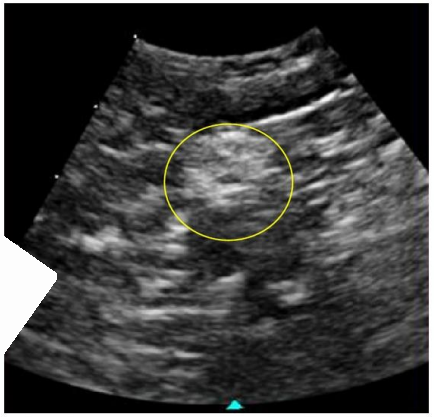


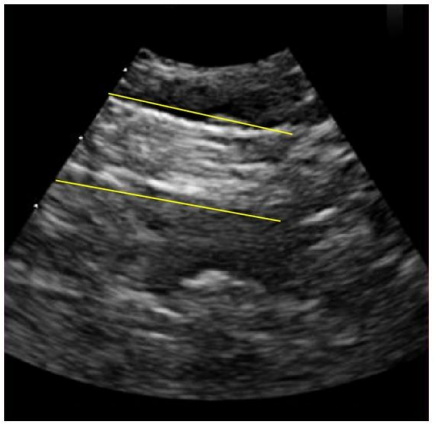
Sinirler ve Ultrason

- Sinir demetleri telefon kablosuna benzer
- mesoneurium,
- epineurium,
- perineurium

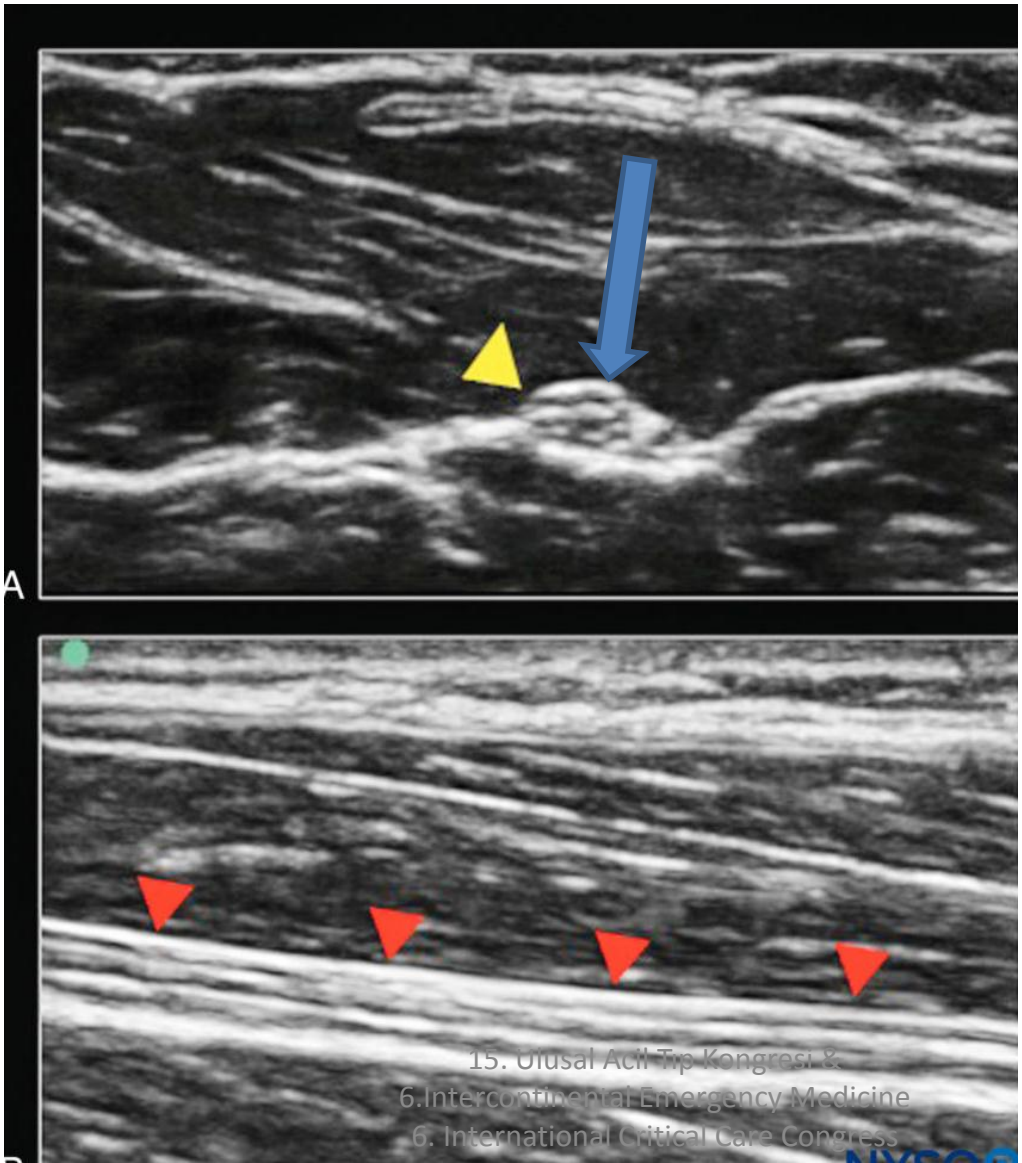








The median nerve. A: Cross-section
B: Longitudinal section

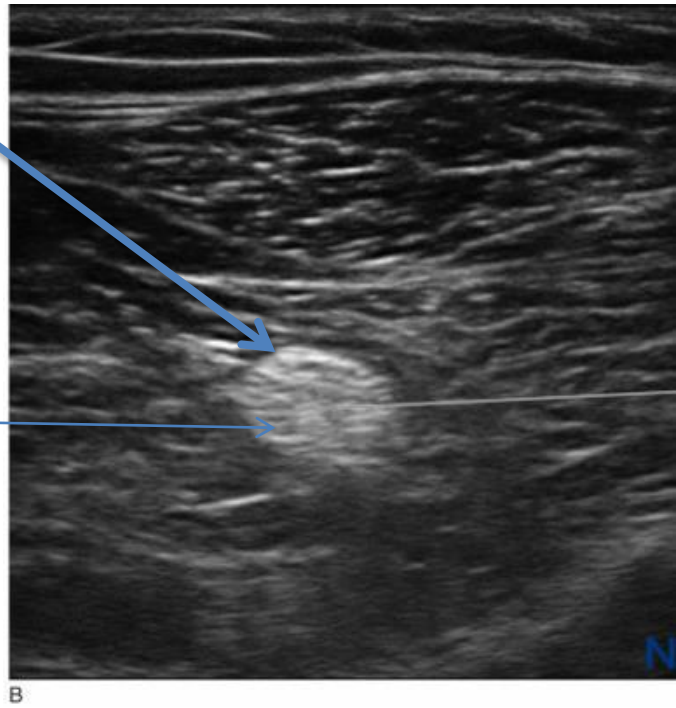


3 D

190x254mm (300 x 300 DPI)

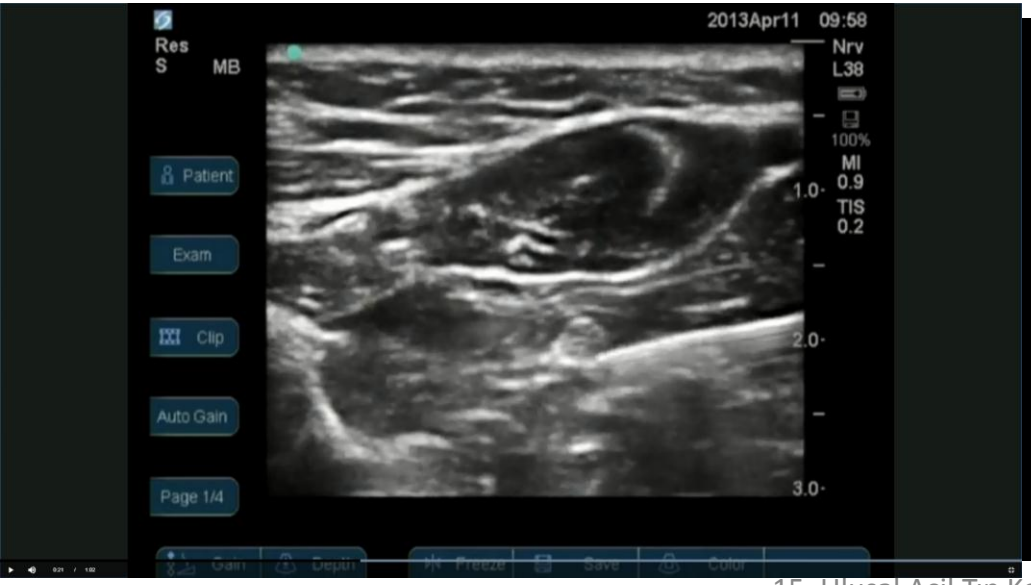
- Sinirler herzaman kısa akslarında görüntülenir

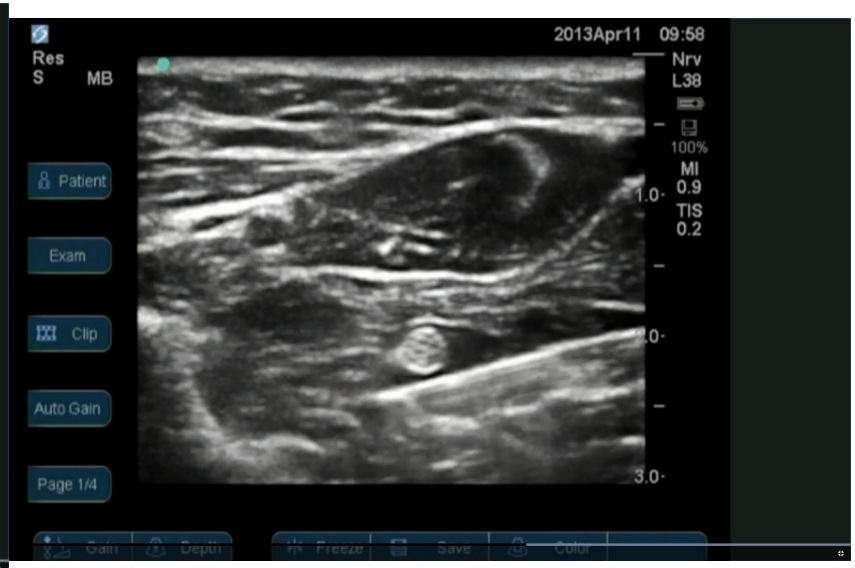
- Hiperekoik distal ‘‘balpeteği’,
- ‘patlamış mısır’ görüntüsü



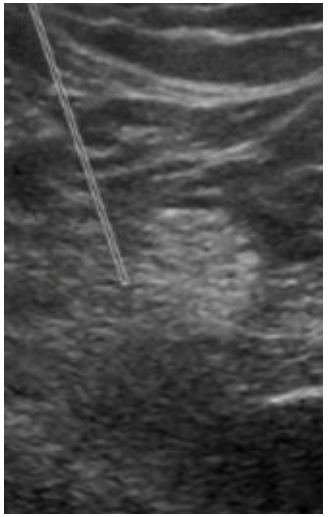
Hidrolokasyon

- Az miktarda LA, transduseri ilerletirken verilir ve hipoekoik koleksiyon yaratılarak iğne lokalize edilir İğne ucunun daha net görüntüsü elde edilir





Lokalizayson

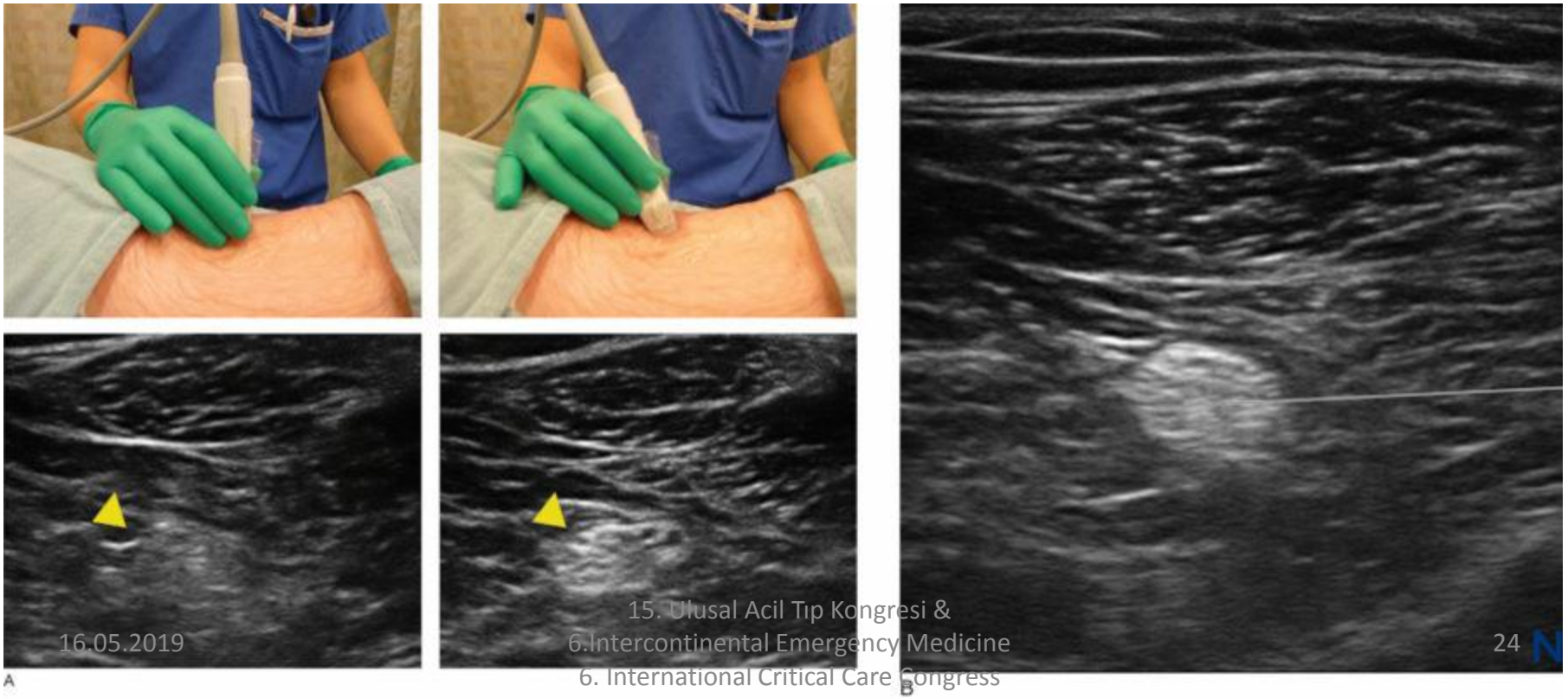


- US ile LA enjeksiyon yeri
- İğne herzaman ekstranöral yerleşimde olmalıdır
- Sub-fascial kılıf ejeksiyonları yapılabilir
- Hedefimiz LA ajanı sinirin çevresini çember şeklinde saracak şekilde bir birikim sağlamaktır ‘‘donut sign

Transduser kontrolü

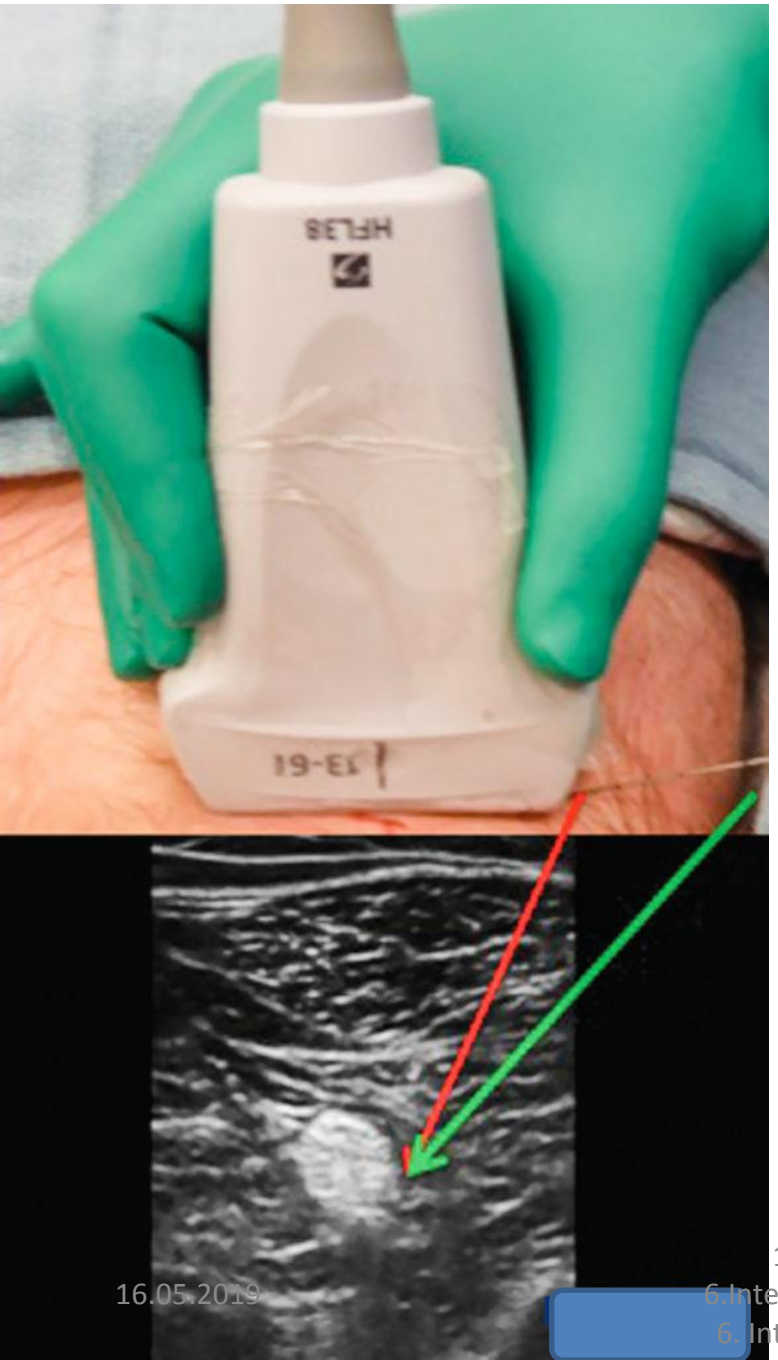
- İğne veya transduserin sadece biri haraket ettirilir, her ikisi değil

Ekojeniteyi optimize etmek için prob eğimi gereklidir (*probe tilt*)



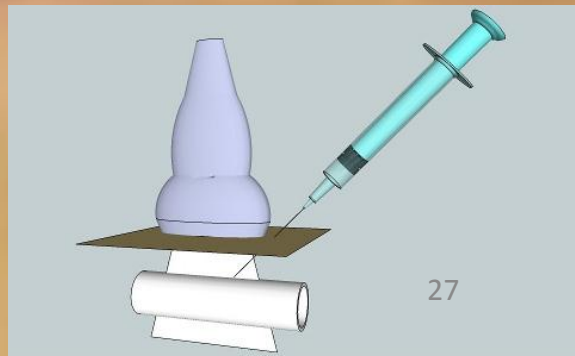
İğne

- Quincke tip spinal iğneler (22 gauge 3.5) künt uçlu olduğundan güvenlidir

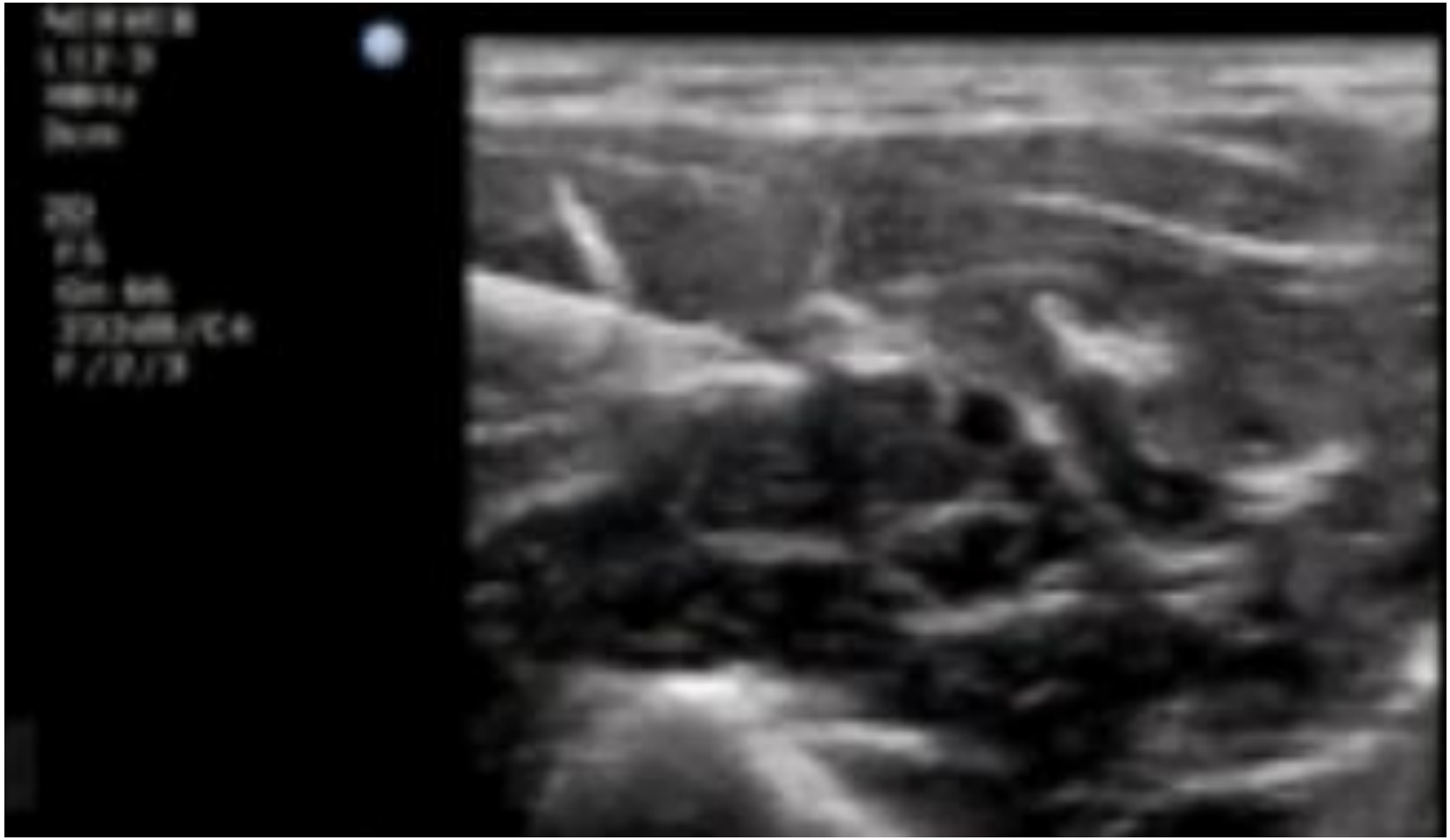


İğne yönü

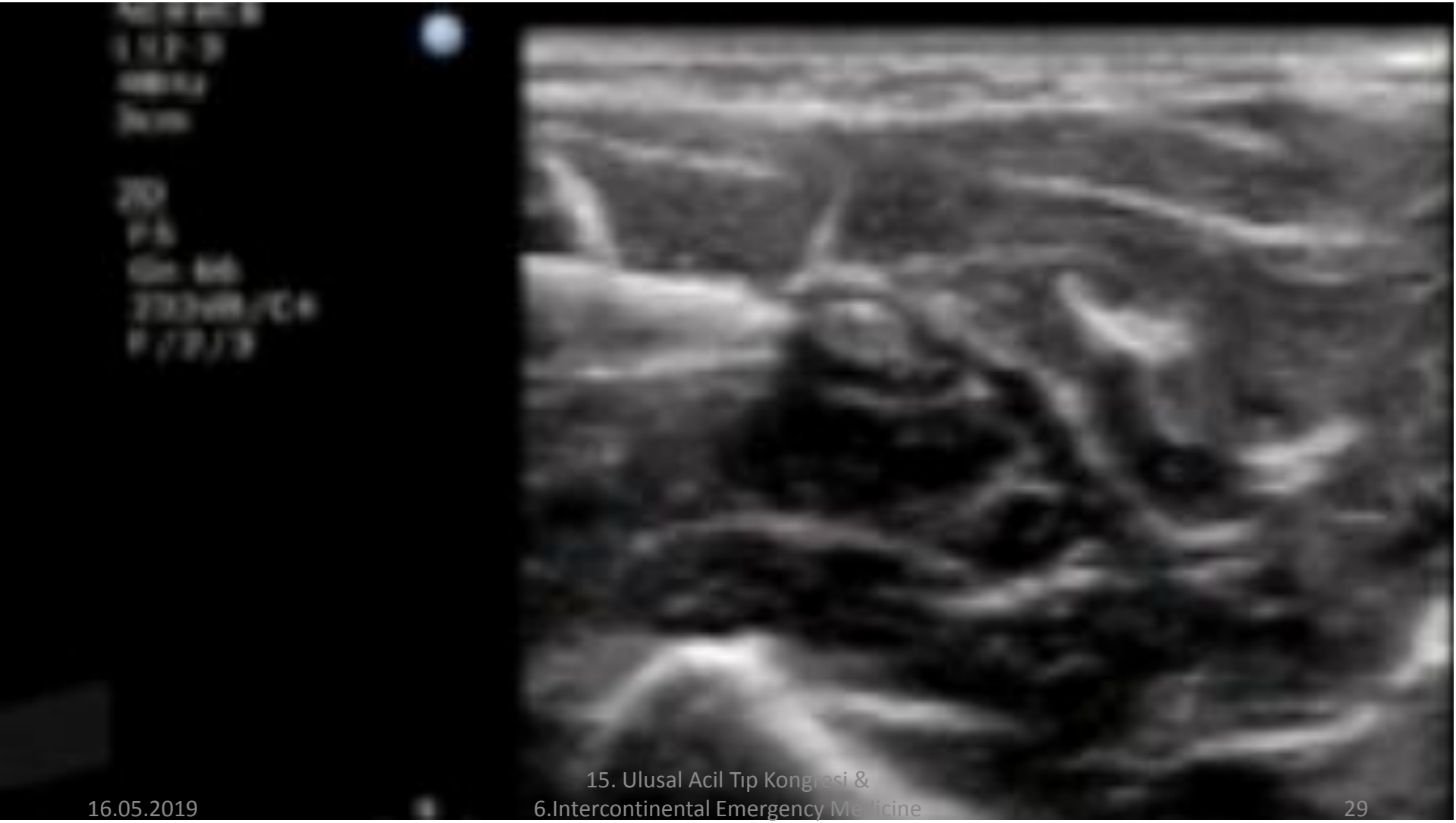
İğne Tekniği: Düzlemsel (In Plane)



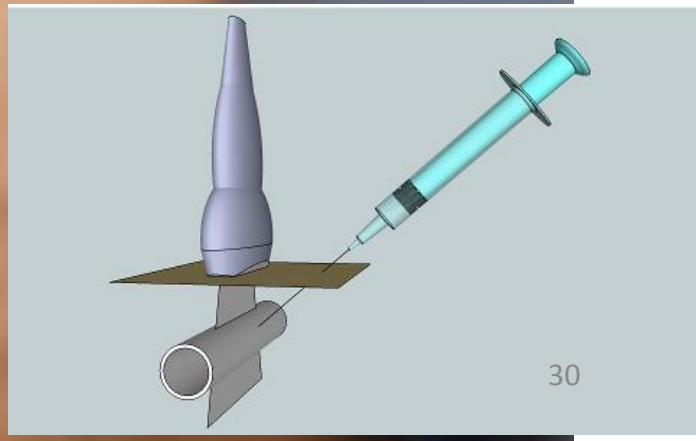
İğne Tekniği: Düzlemsel (In Plane)



İğne Tekniği: Düzlemsel (In Plane)

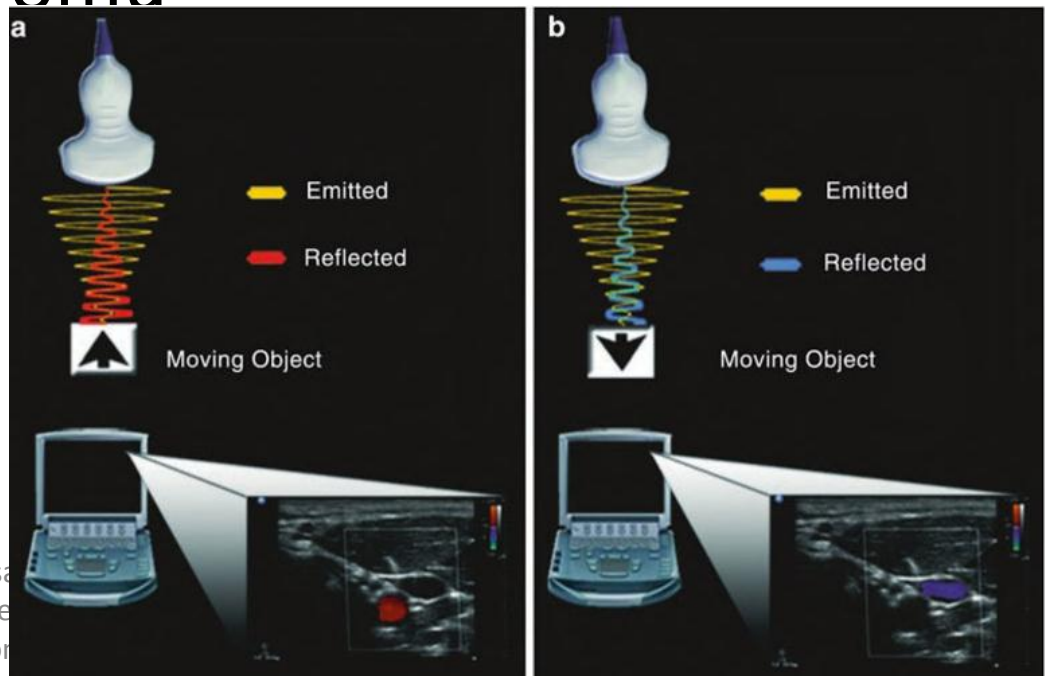


İğne Tekniği: Düzlem dışı (Out Of Plane)

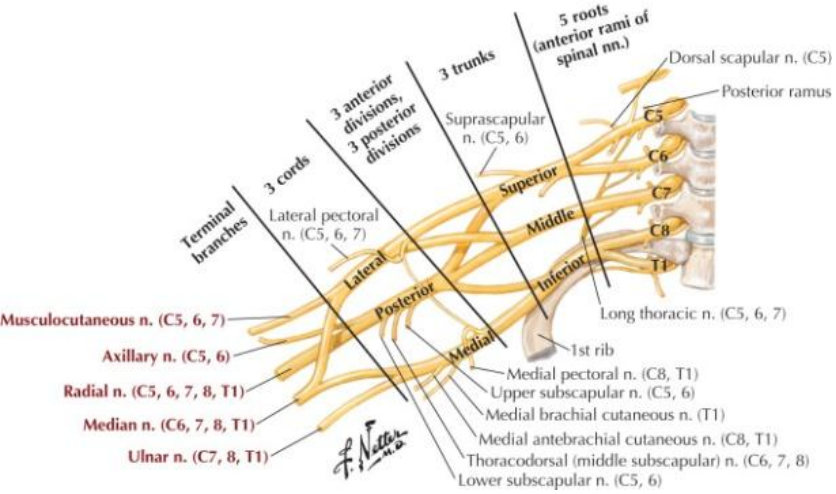


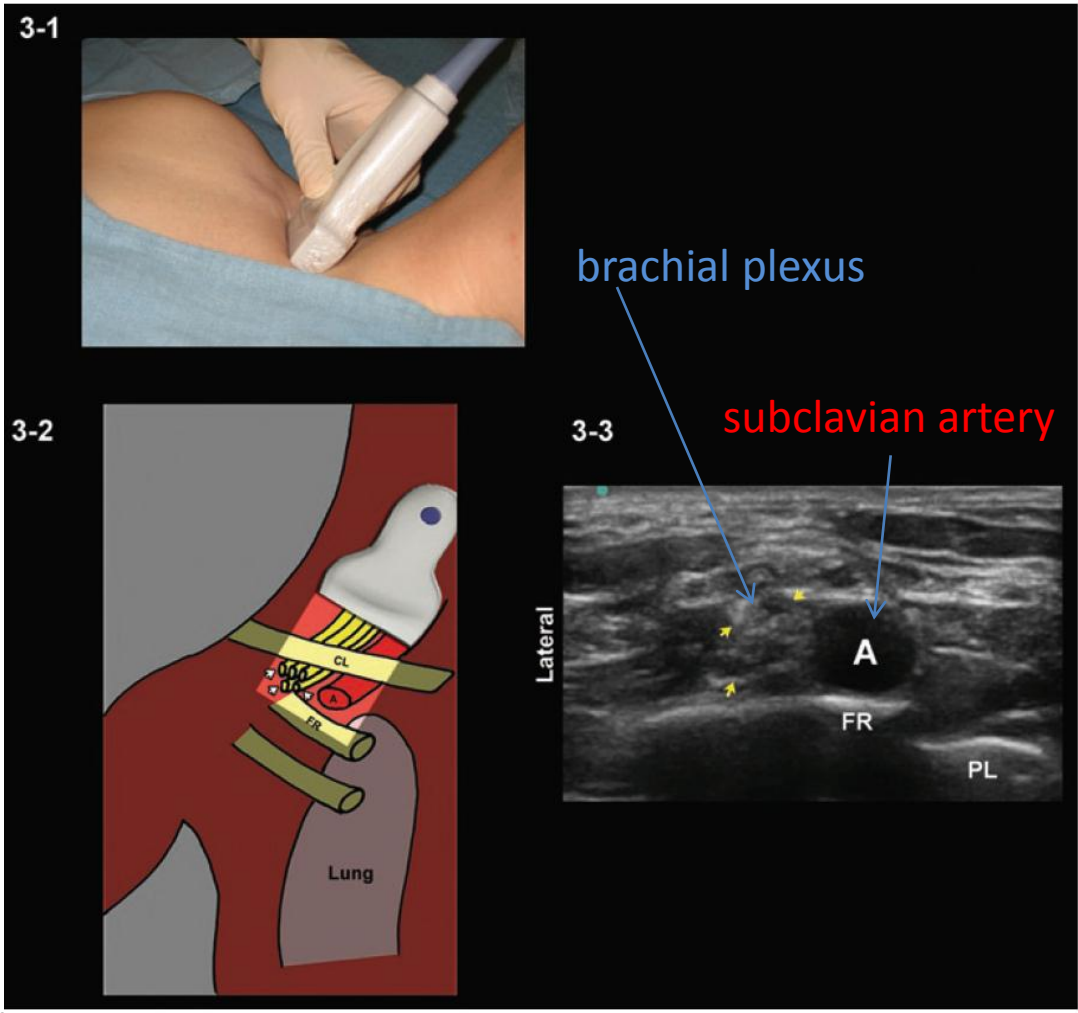
Riskler

- Parastezi oluşursa iğne ucunun lokalizasyonunu değiştir, geri çek
- Koagülopati,
- Kompartment sendromu
- Cilt enfeksiyonları

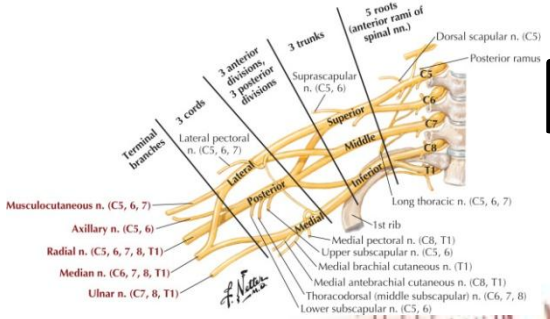


Supraclavicular yaklaşım brachial plexus blok

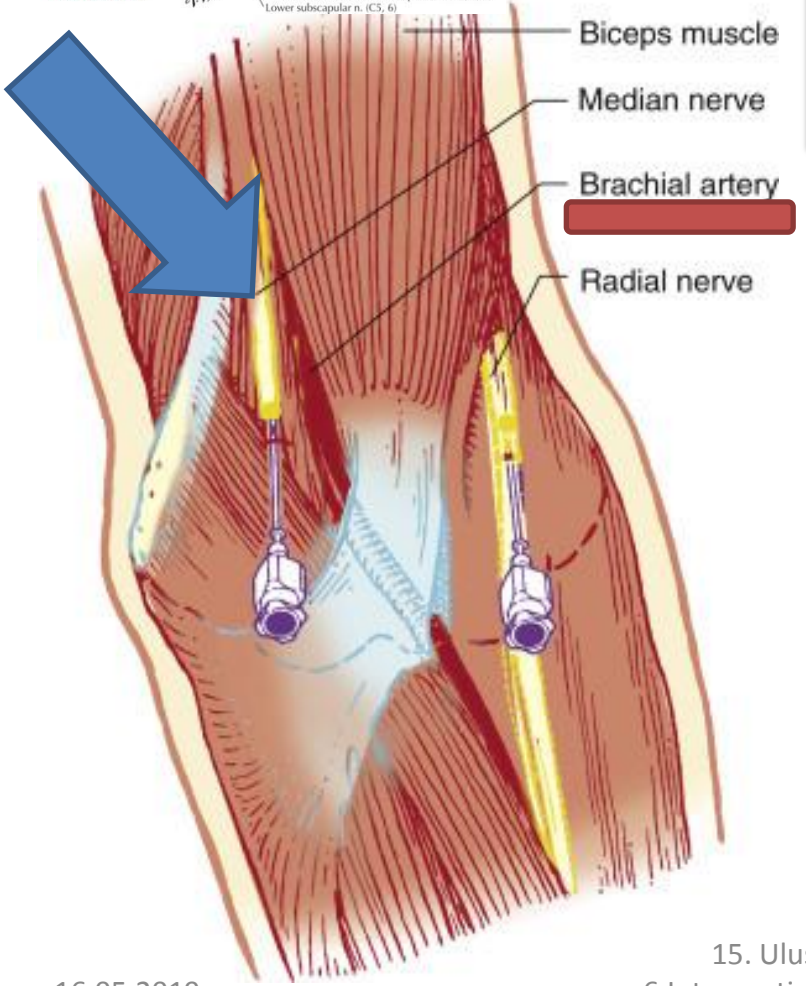


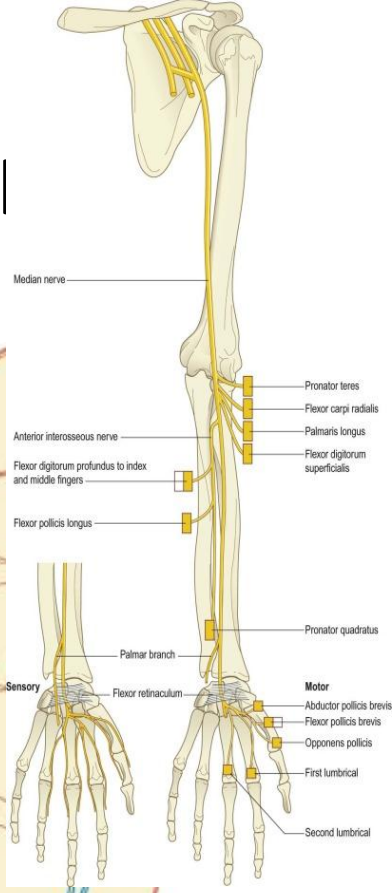


Median Sinir Blokları

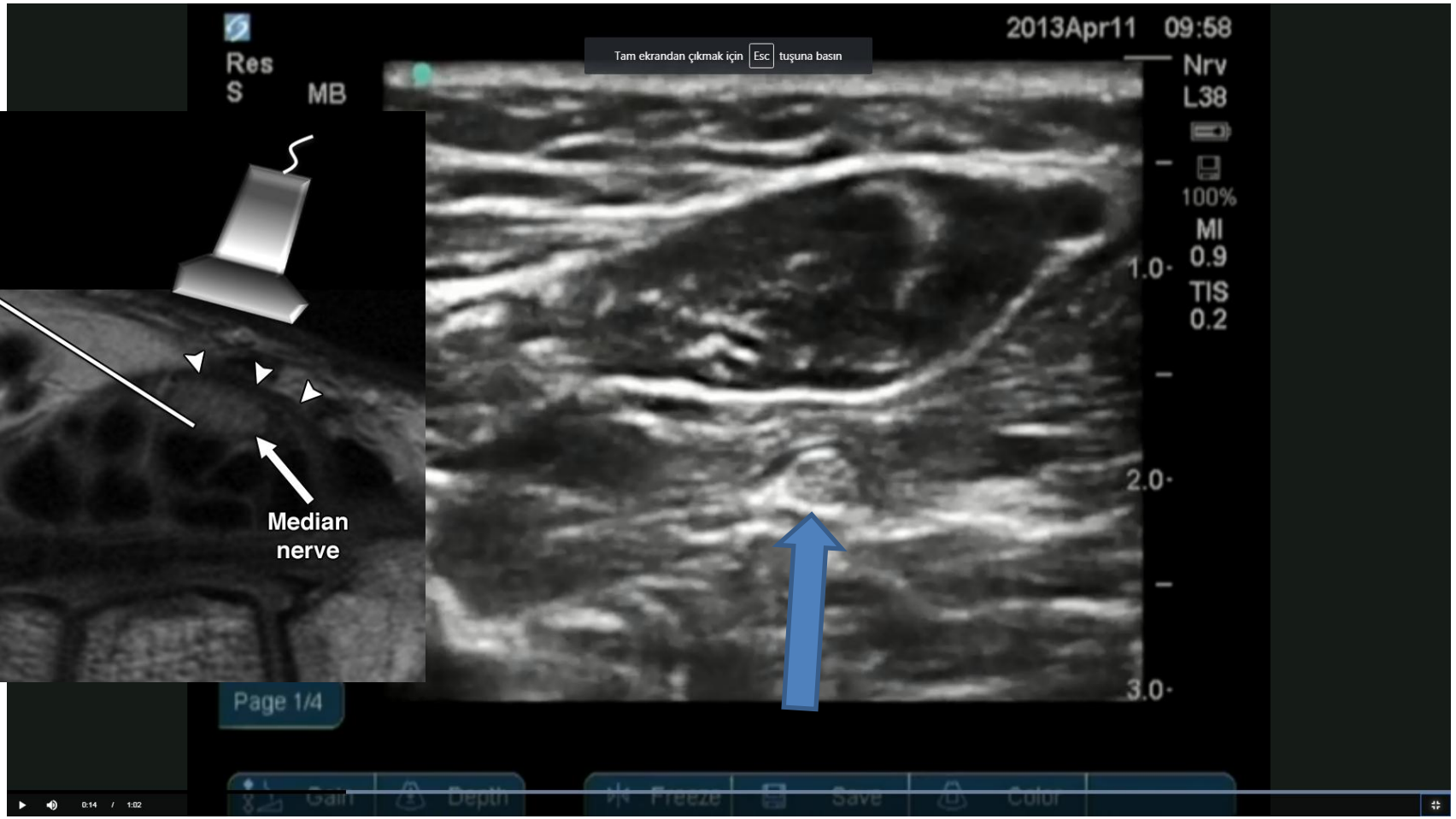


- *Elbileği volar-radial kısmına transvers orientasyonda prob konulur,*
- *Mediale doğru 10 cm proksimale doğru median sinir takip edilir*
- *Lokalizasyon önkolda süperfisial ve derin fleksör kaslar arasındadır*
- *5-8 ml LA*

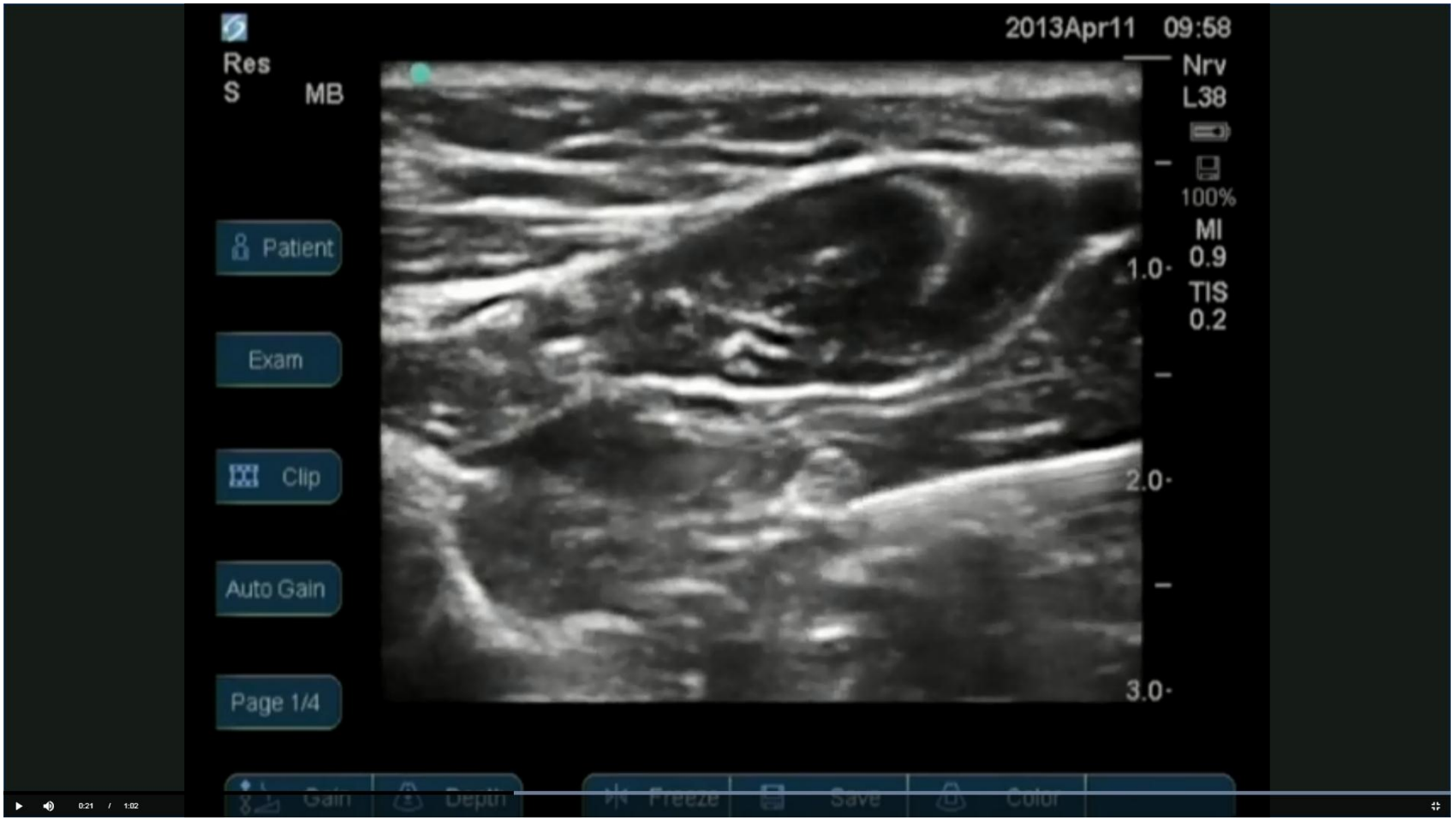




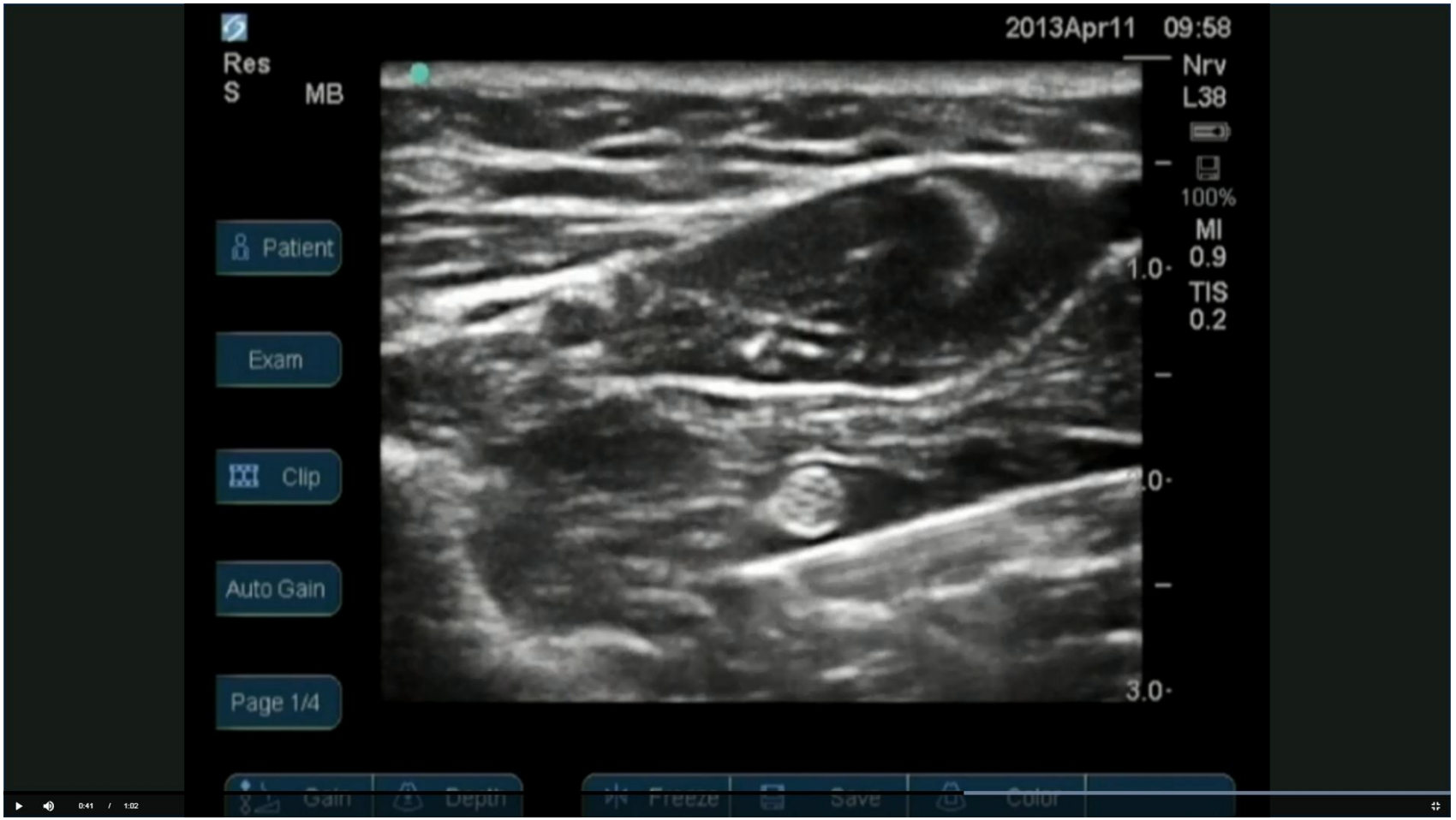
Ultrasound-guided median nerve block at the middle of the forearm

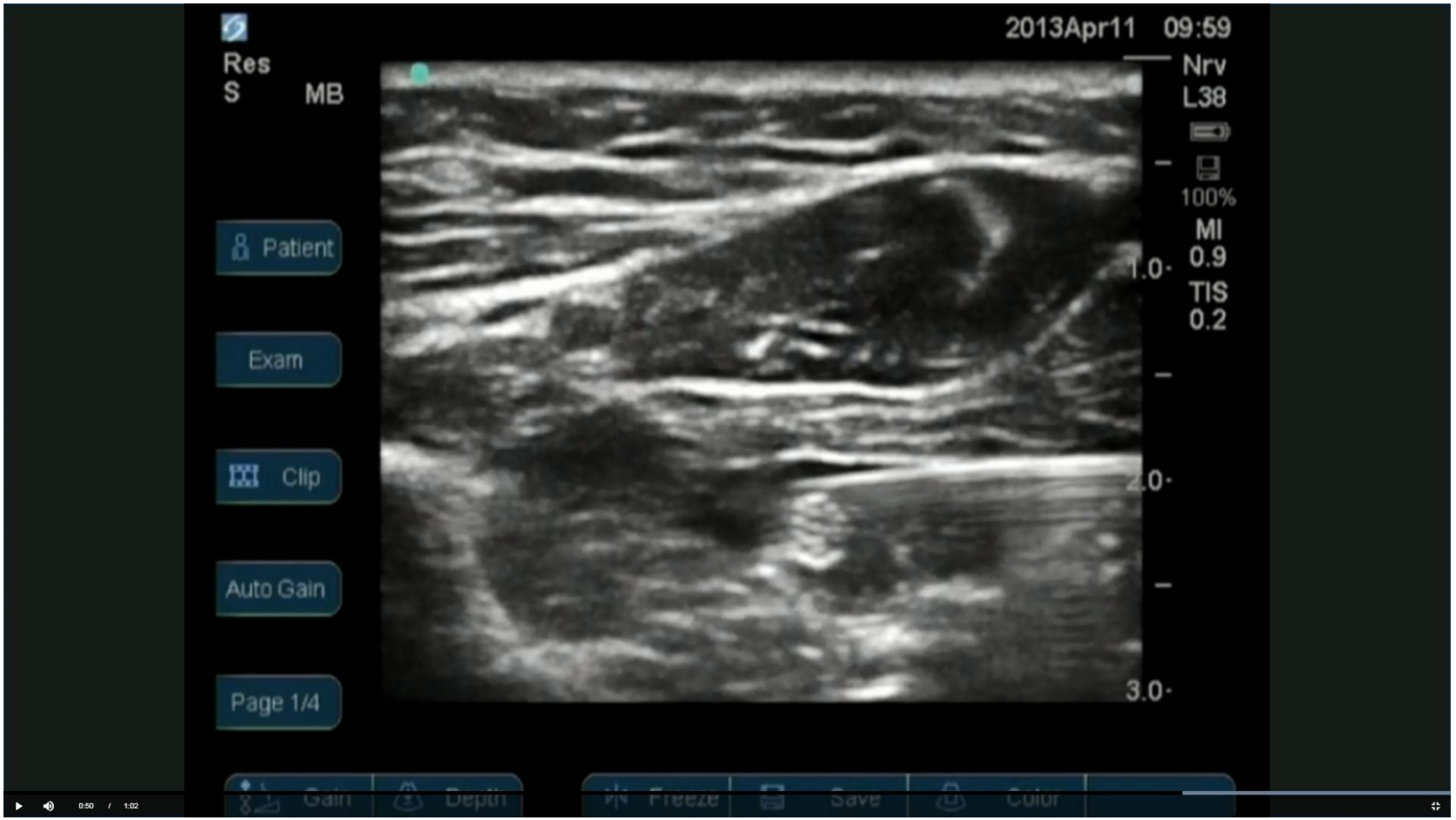


median nerve block at the forearm



Median nerve block at the forearm




2013Apr11 09:59
Res
S MB
Nrv
L38
100%
MI
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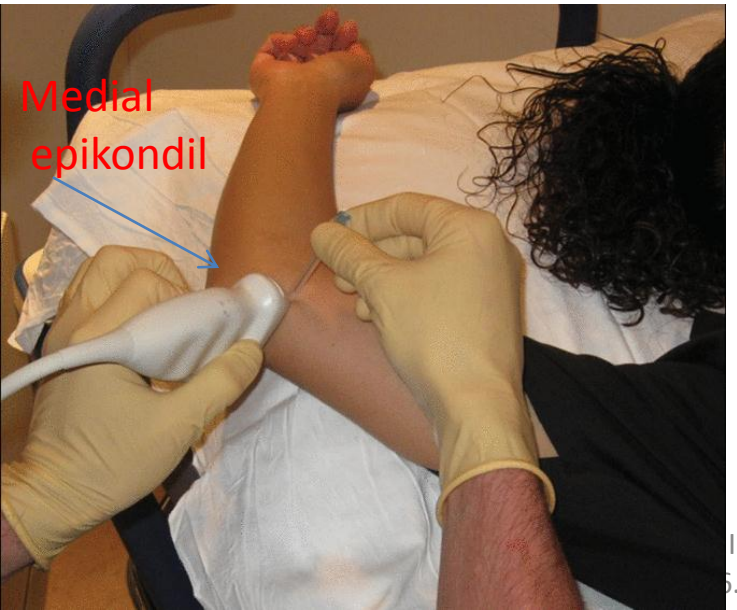
TIS
0.2
Patient
Exam
Clip
Auto Gain
Page 1/4
1.0
2.0
3.0
Freeze
Save
Color
0:50 / 1:02

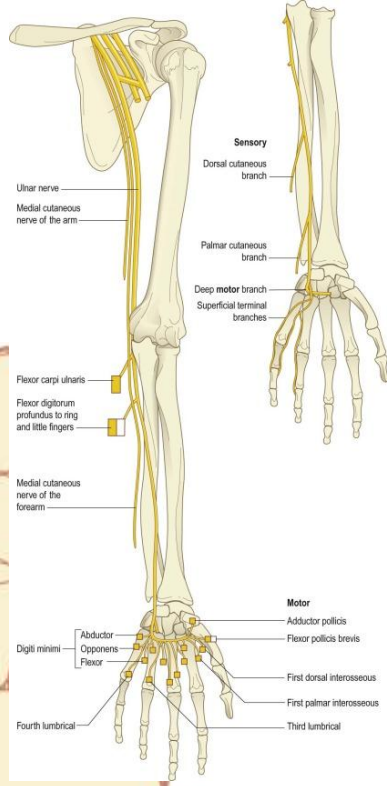
Ulnar Sinir Blokları

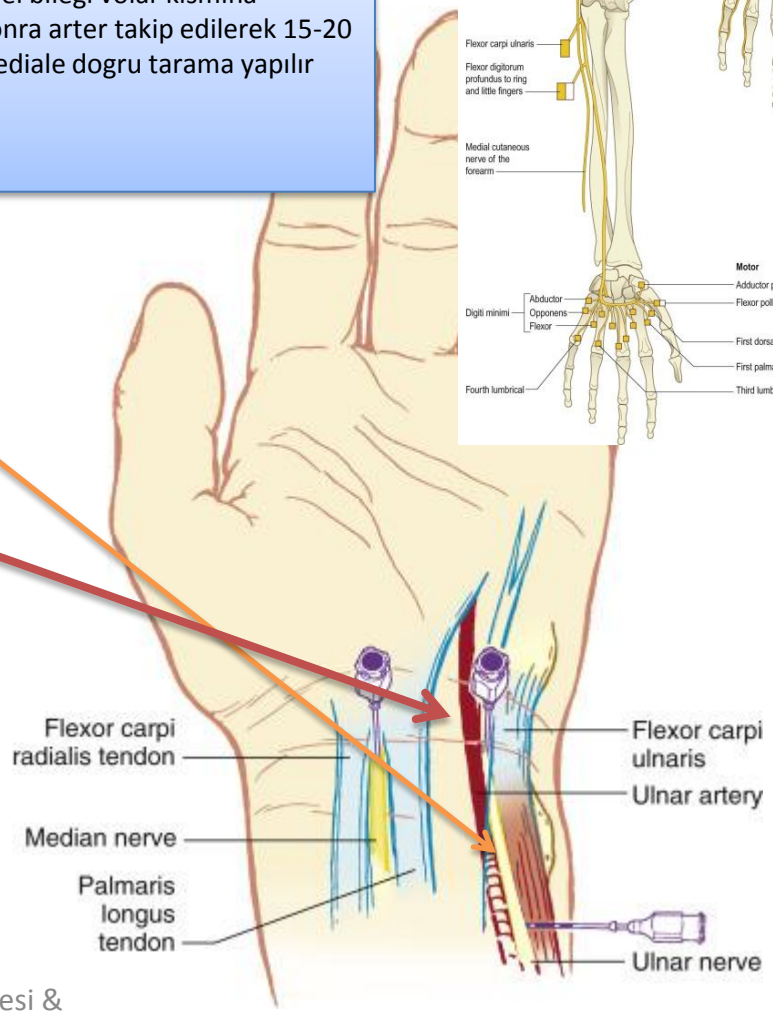
- Elbileği volar/ulnar seviyesinde fleksör karpi ulnaris tendonun hemen altında ulnar arter lokalize edilir
- Ulnar arter proksimale ve mediale doğru takip edilir ve ayrışma görülür

Prob transvers planda ulnar arterin hissedildiği yere el bileği volar kısmına konulur, daha sonra arter takip edilerek 15-20 cm proksimal mediale dogru tarama yapılır

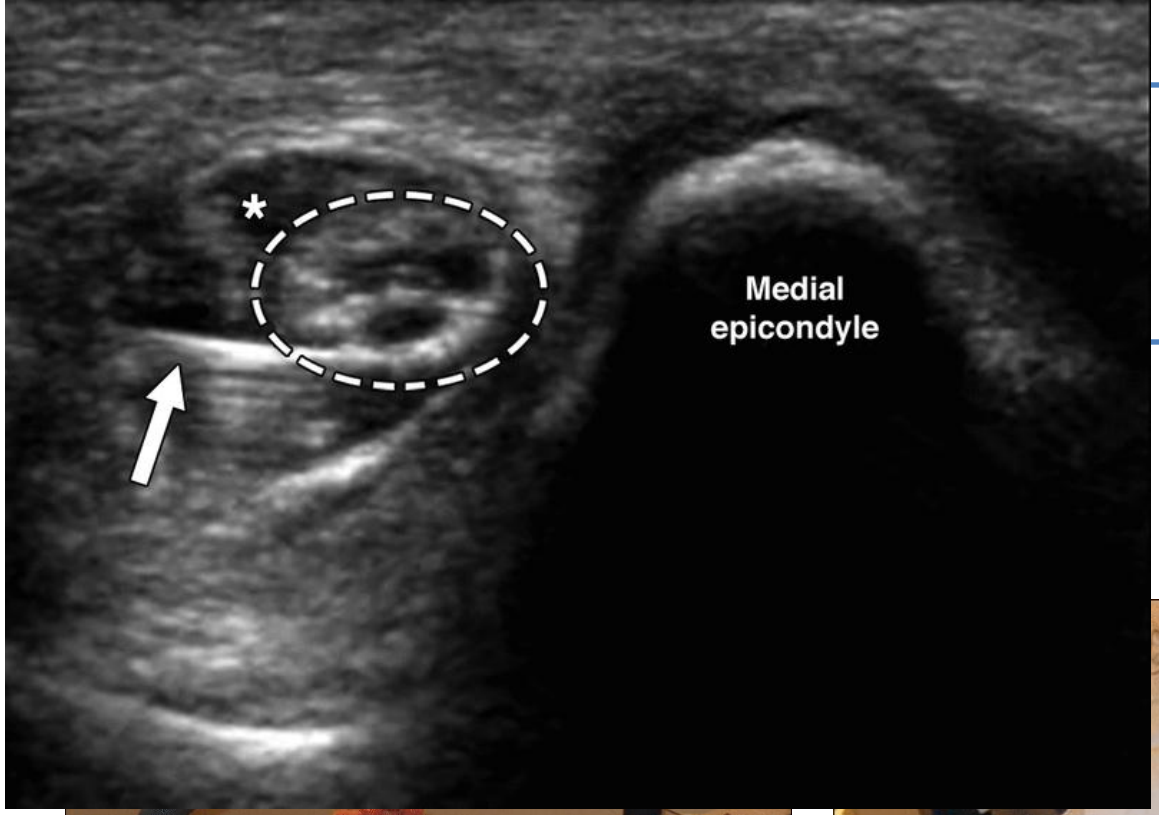
- *5-8 ml LA*

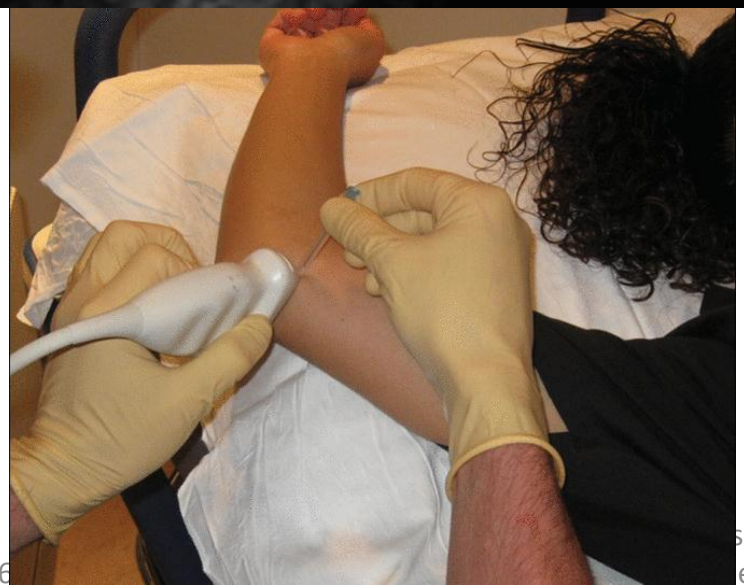


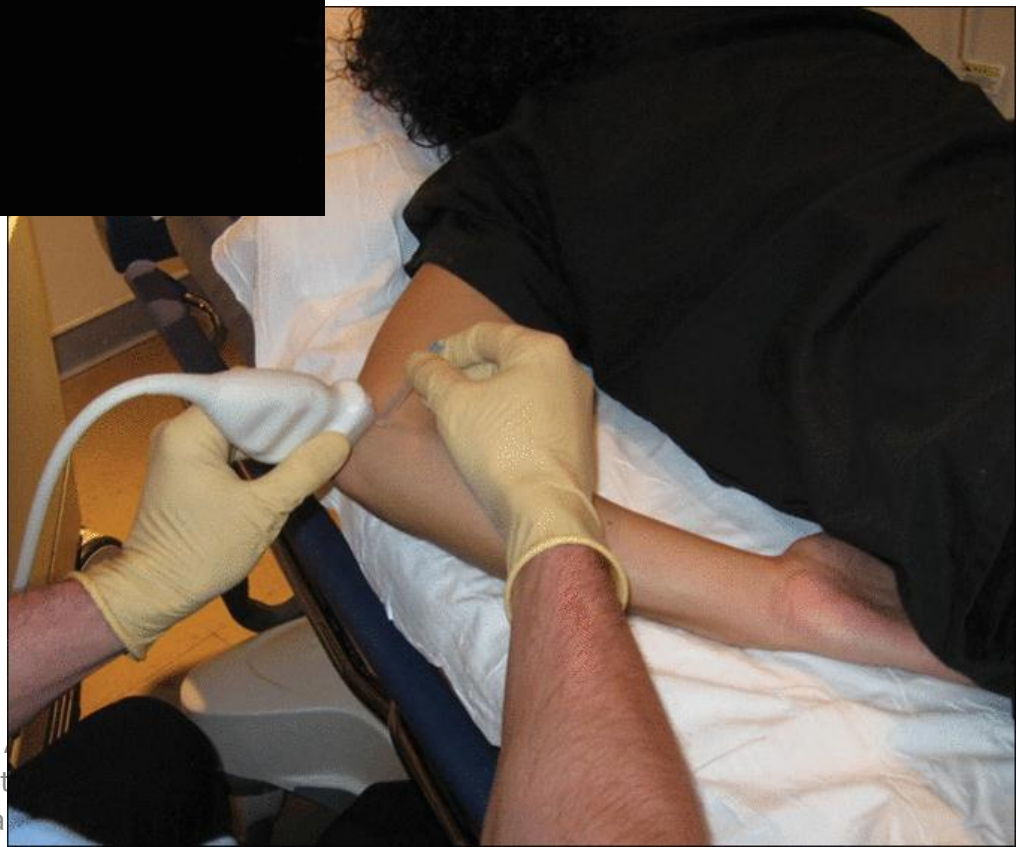




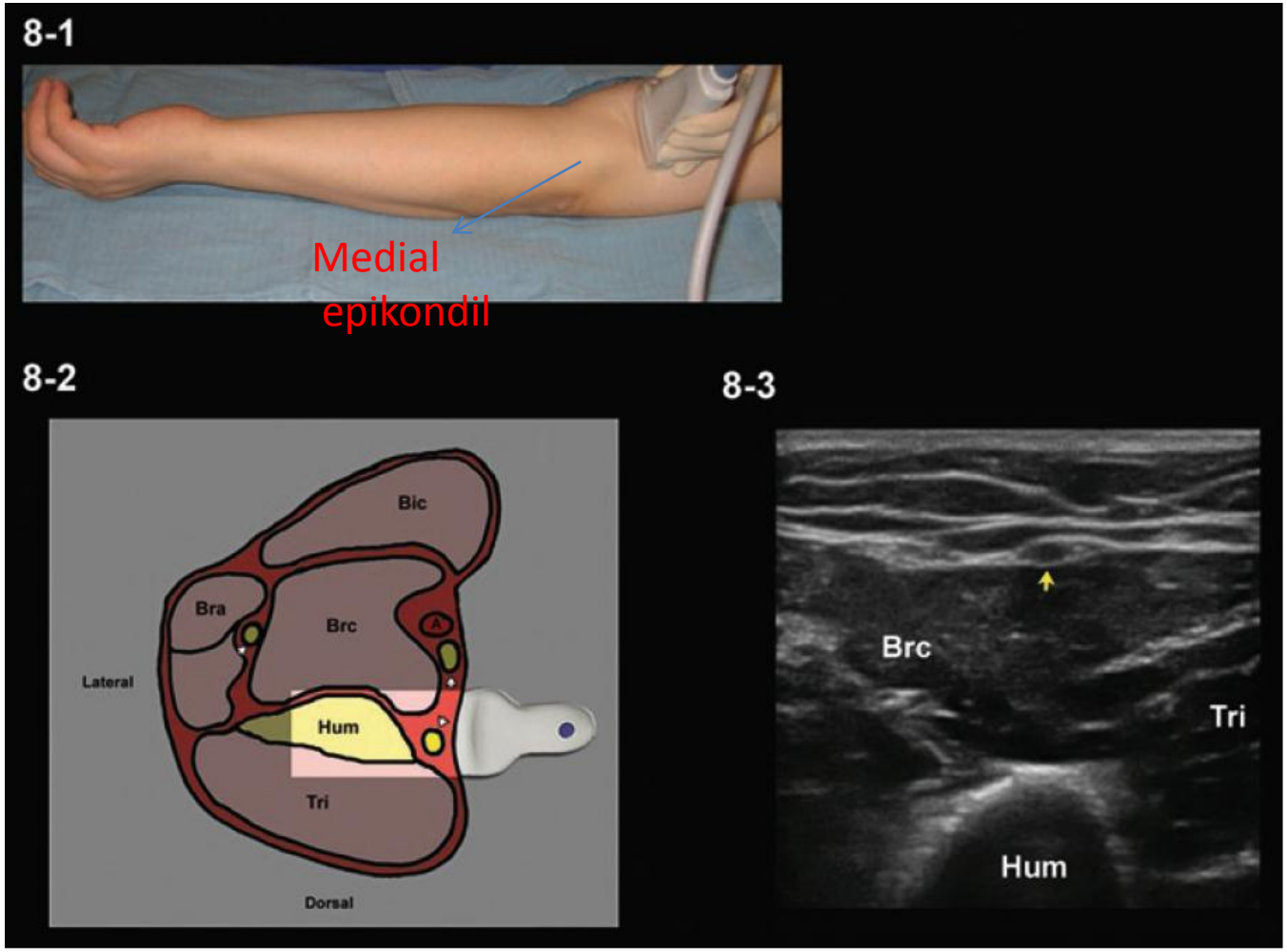
Ulnar Sinir Blokları



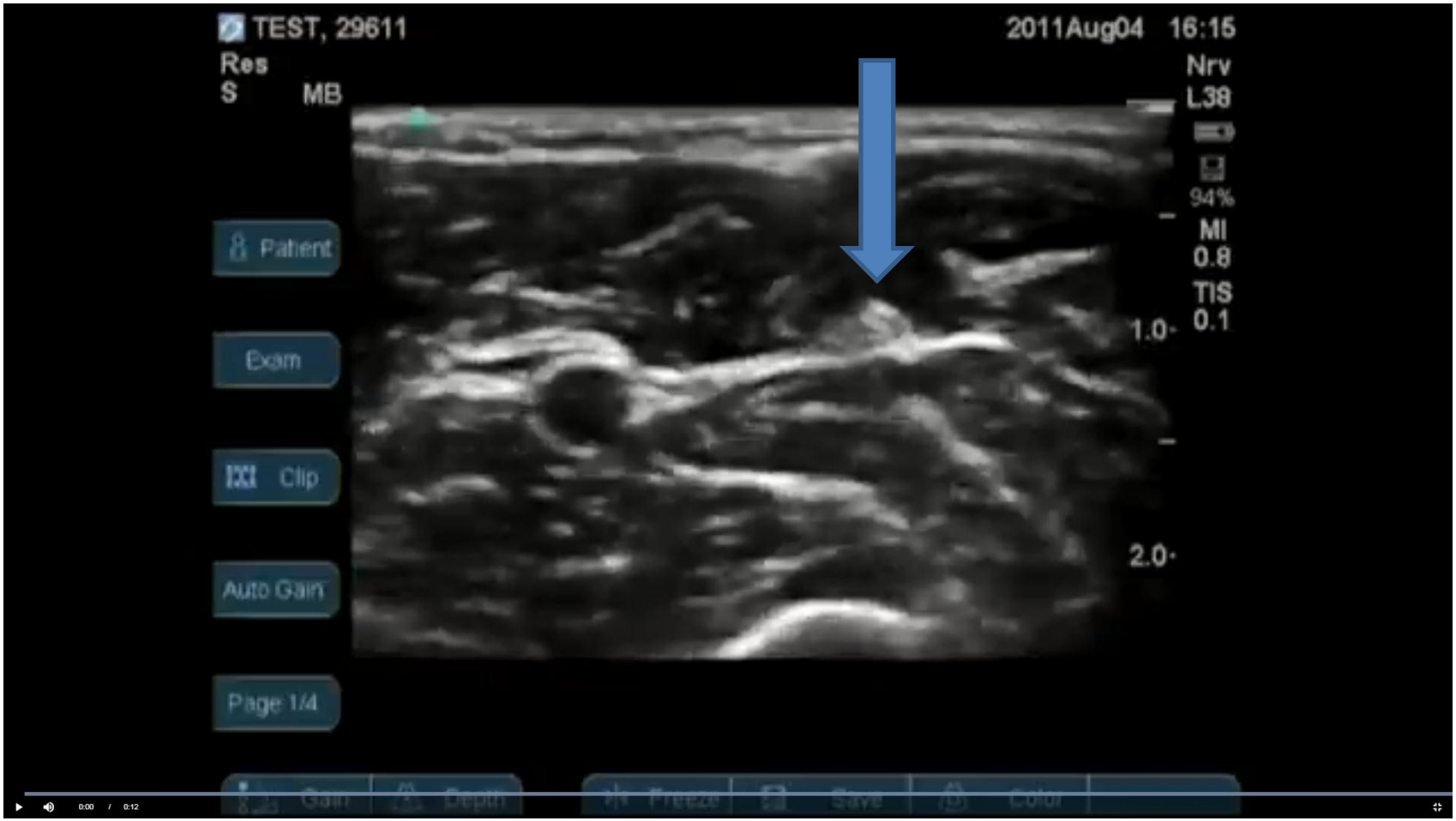




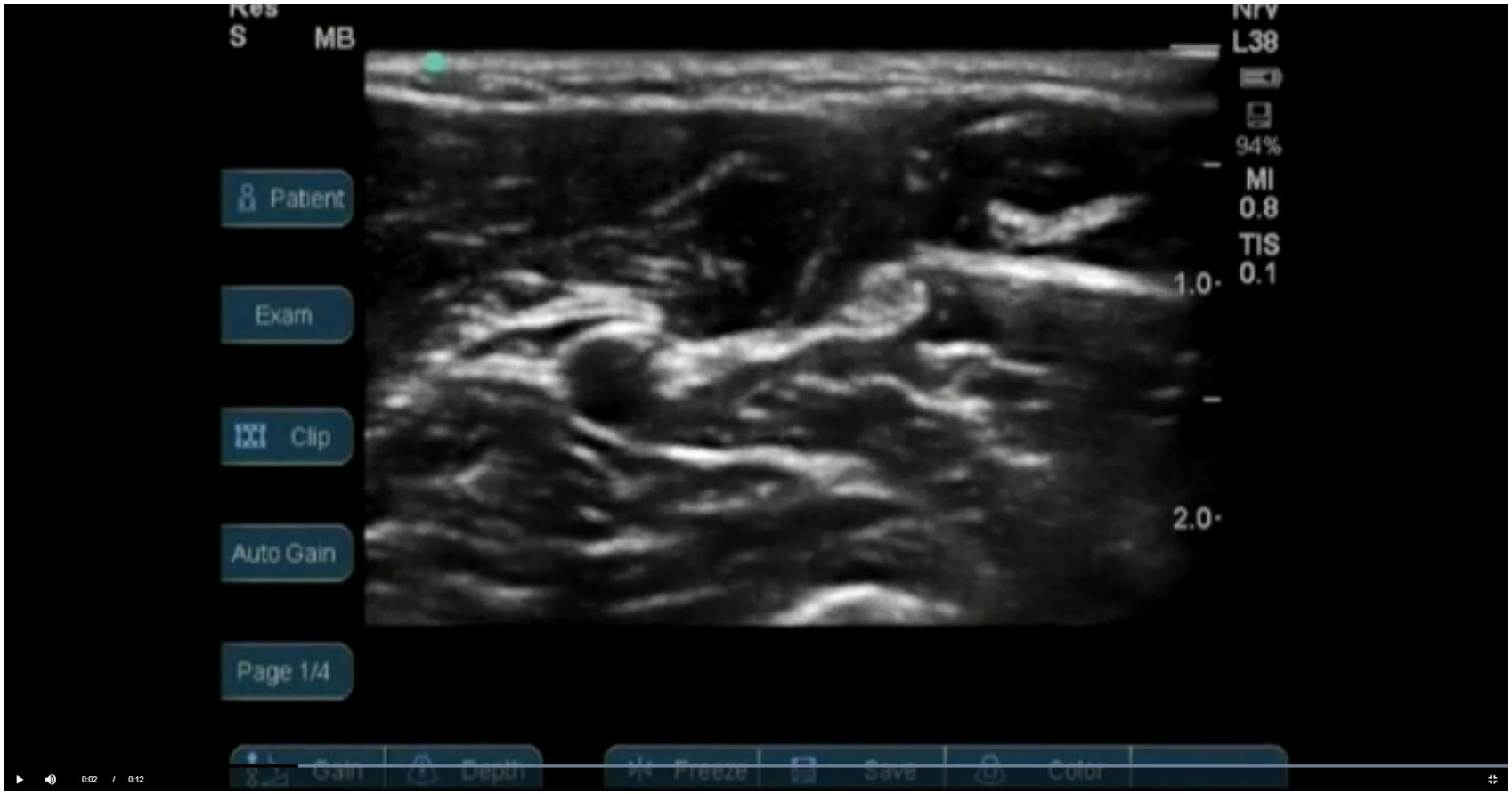
Ulnar Sinir Blokları



ulnar nerve block



ulnar nerve block



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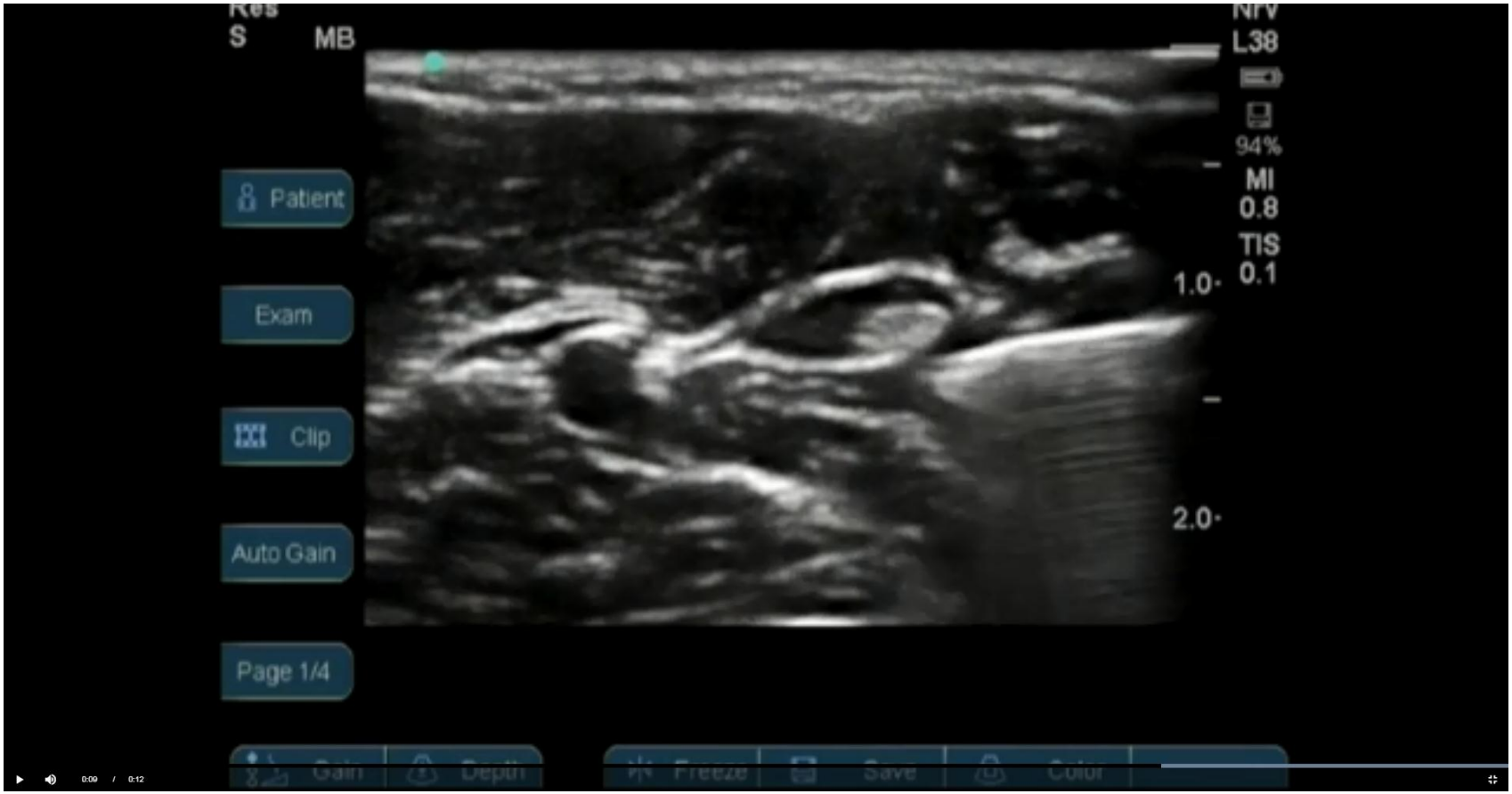

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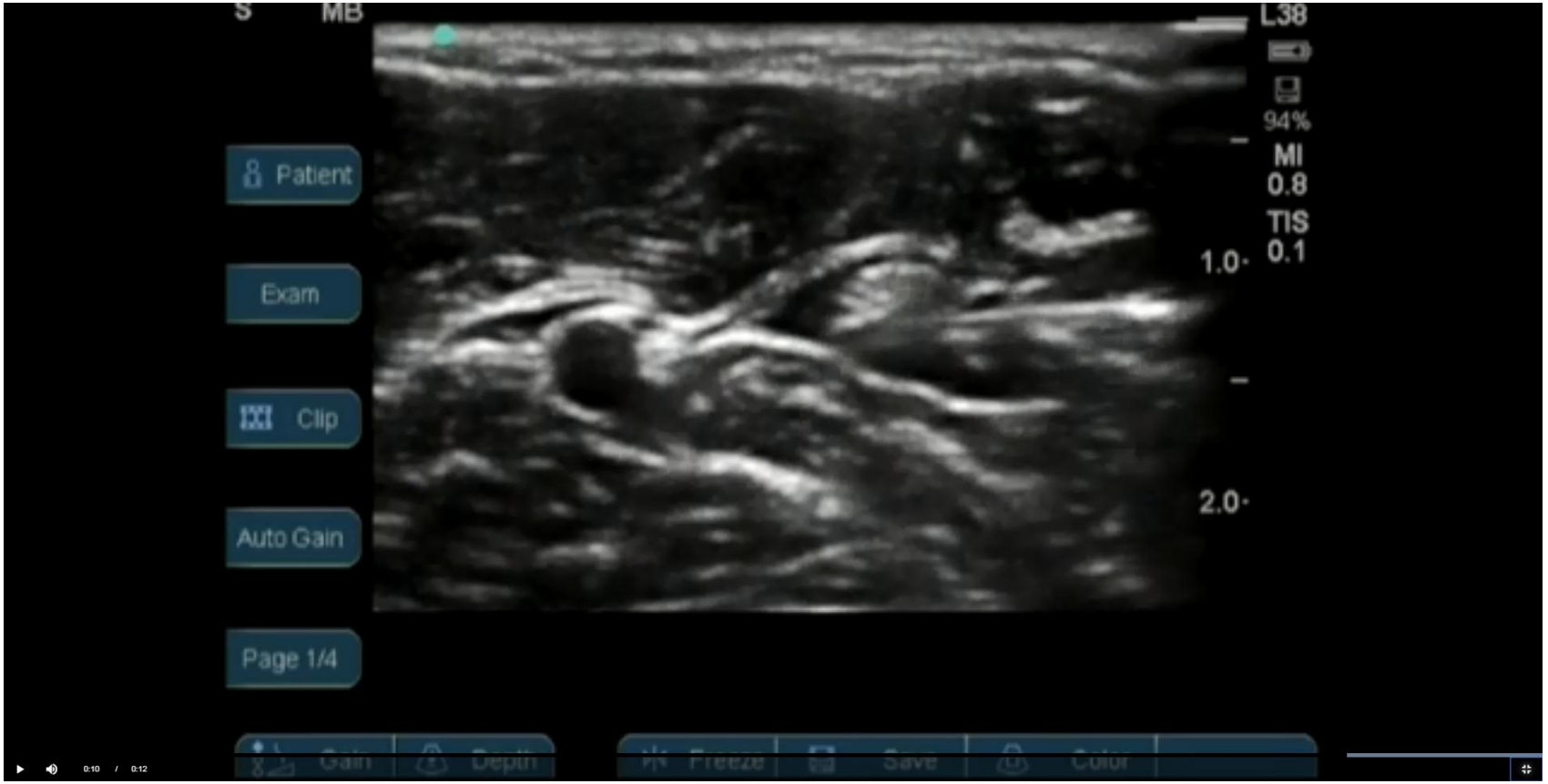
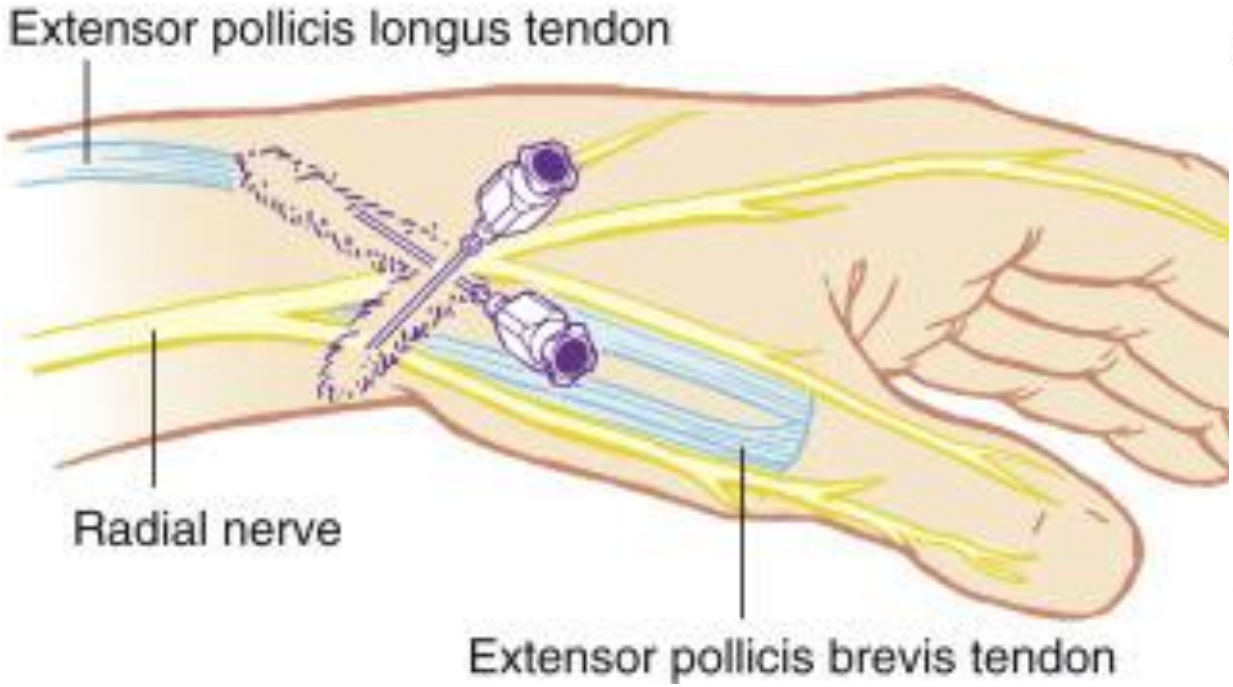
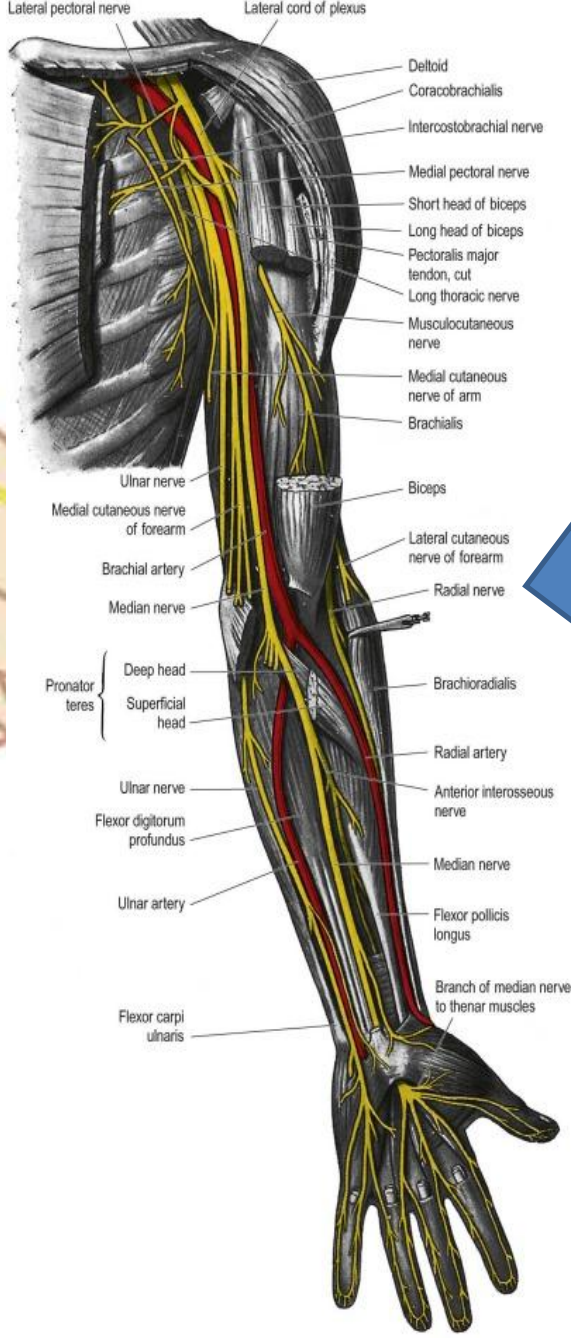
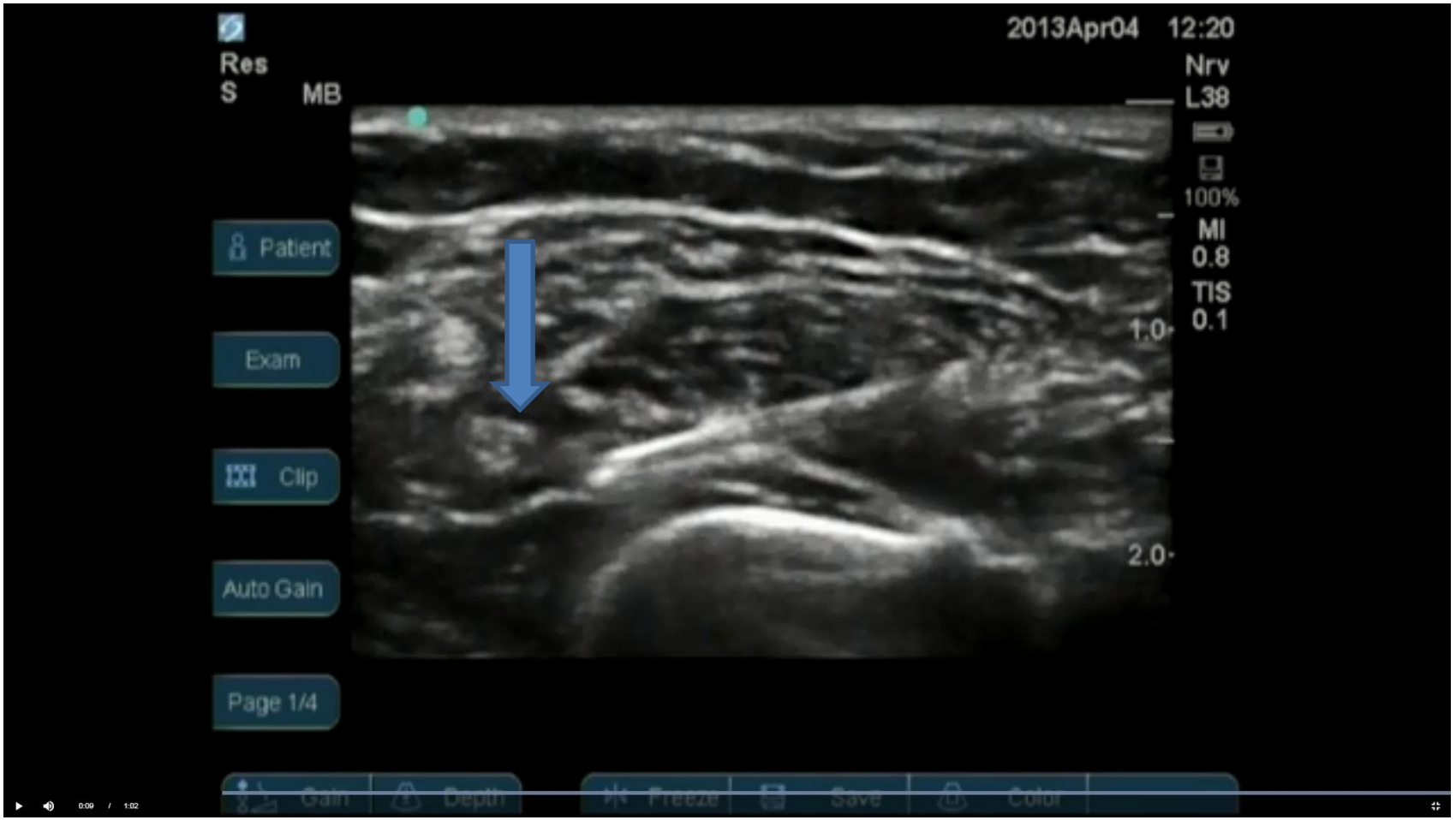


N Radialis blogu

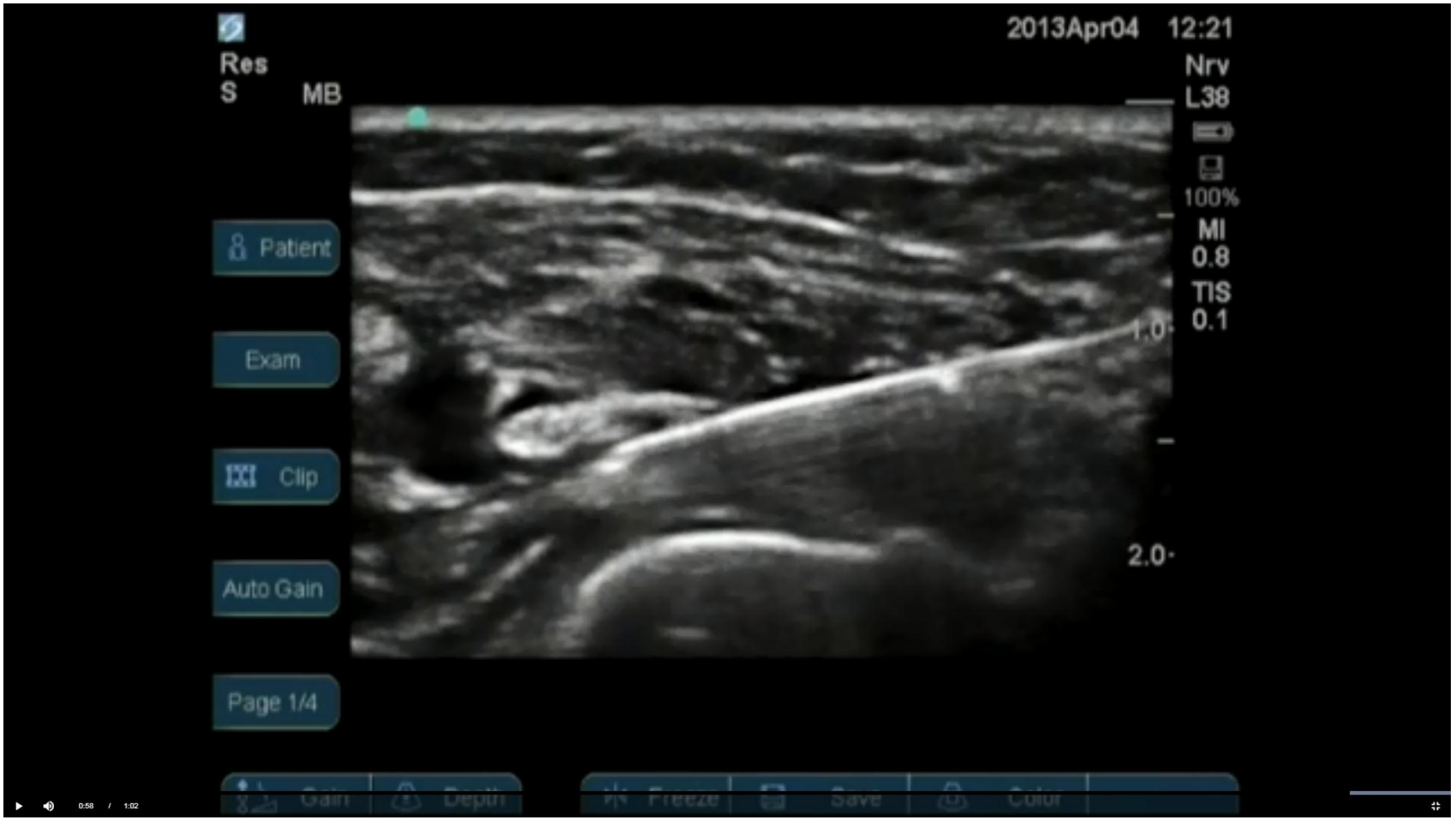


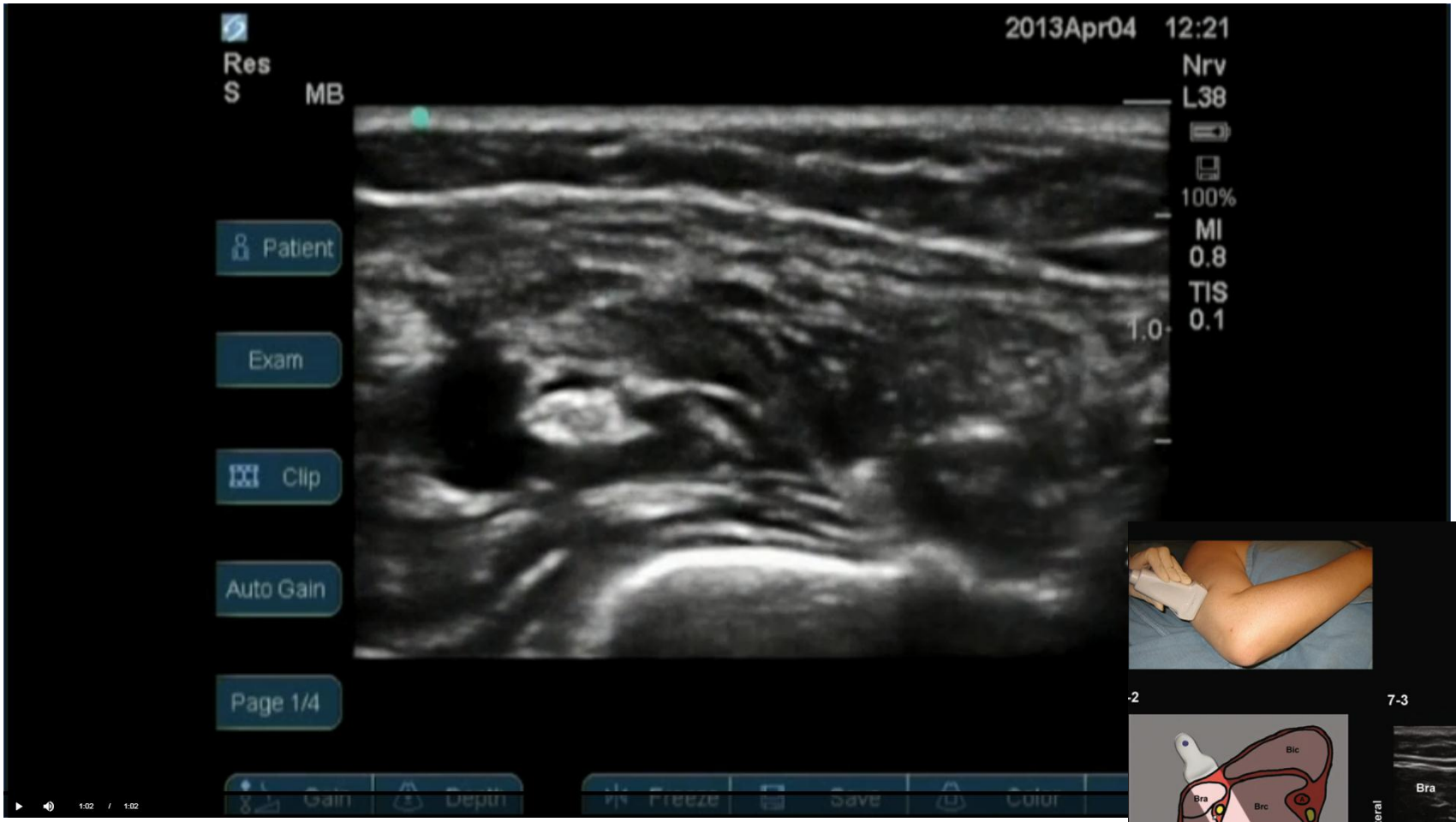


radial nerve block



radial nerve block




2013Apr04 12:21
Res
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Patient
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Auto Gain
Page 1/4
Gain
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Freeze
Save
Color
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Lateral
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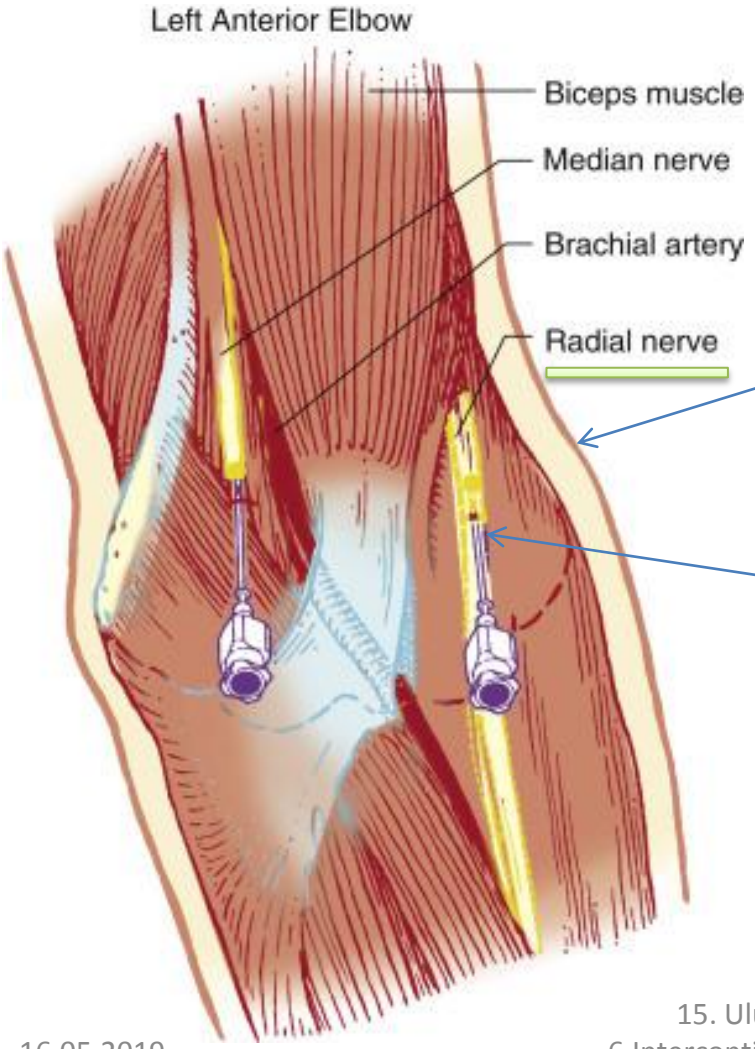
Dorsal
Lateral
Bra
Hum

Suprakondilar Radial Sinir Bloğu



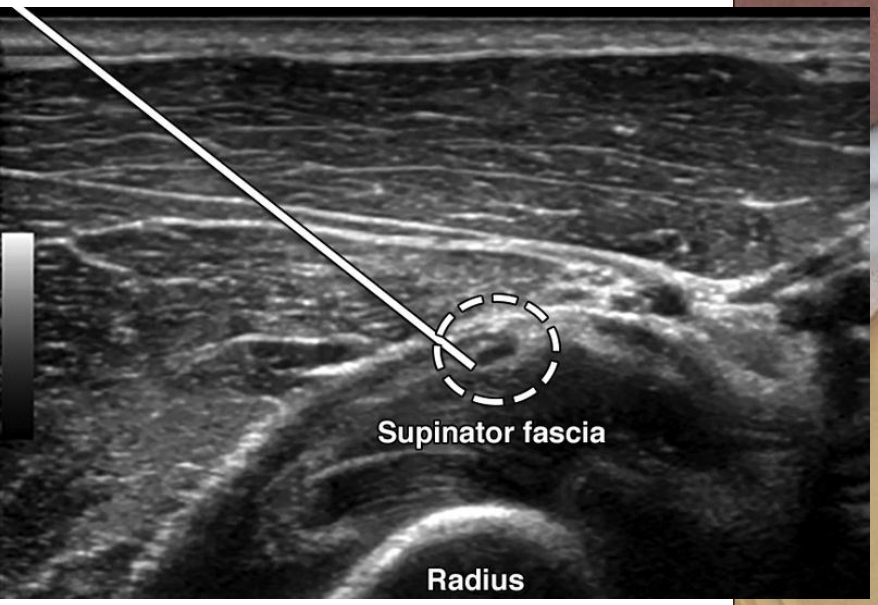
Antekubital çizgiden 4 cm sefalad ve laterale prob transvers şekilde konulur

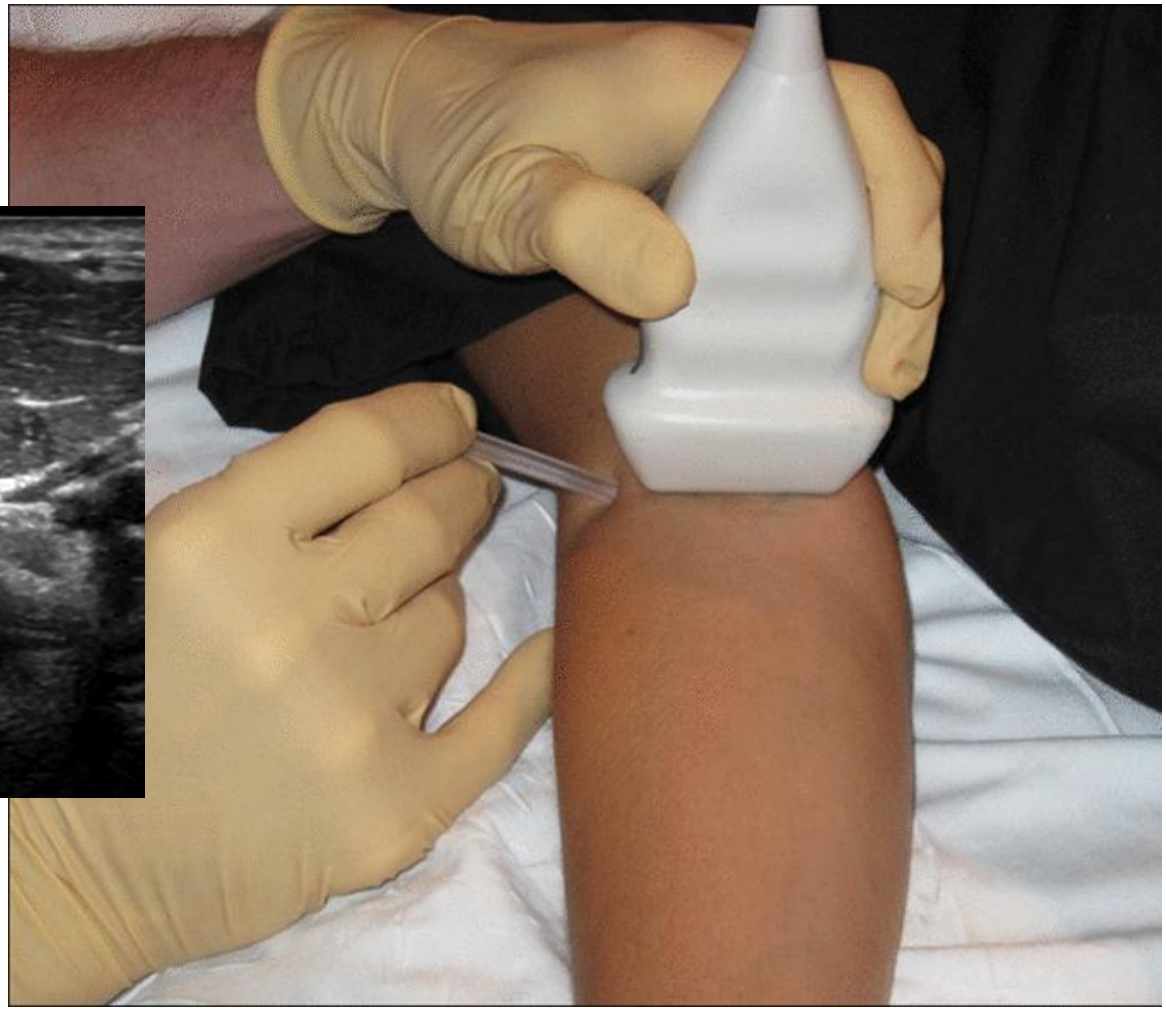
Probe lokasyonu antero-lateral

In plane tekniği, 5 ml Lidocaine

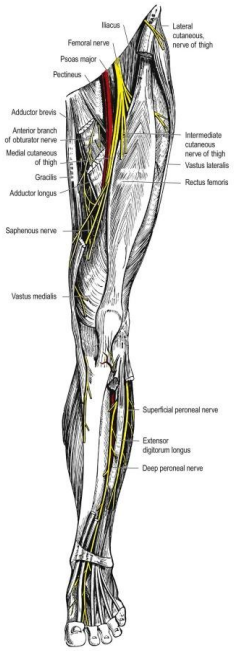
- Lateral epikondil bulunur ve epikondilden laterale doğru iki fasyal plan görülür
- right kolda fasyal planlar sağa, left kolda sola doğru giderler
- Alttaki fasyal plan takip edilir brachialis/ brachioradialis kasları arasında radial sinir bulunur

N radialis

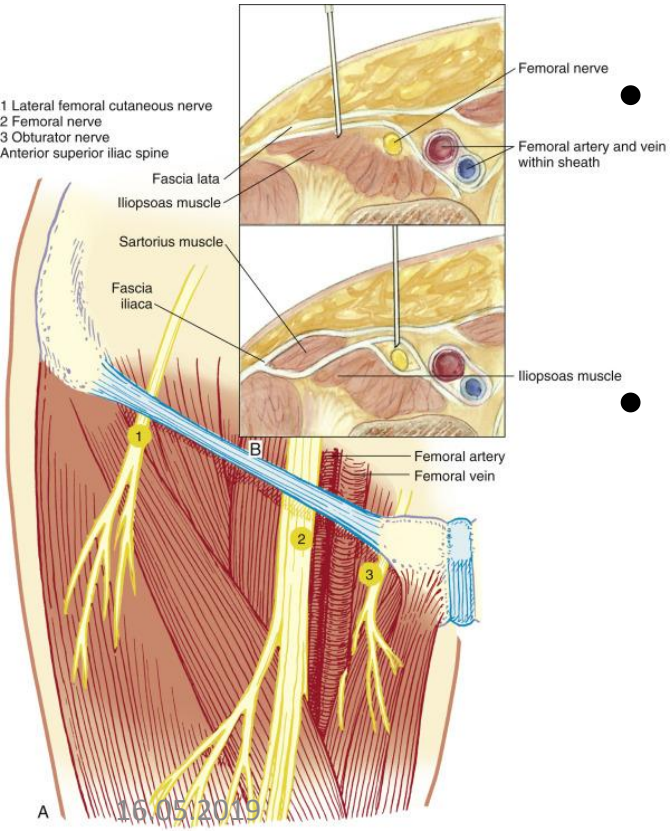


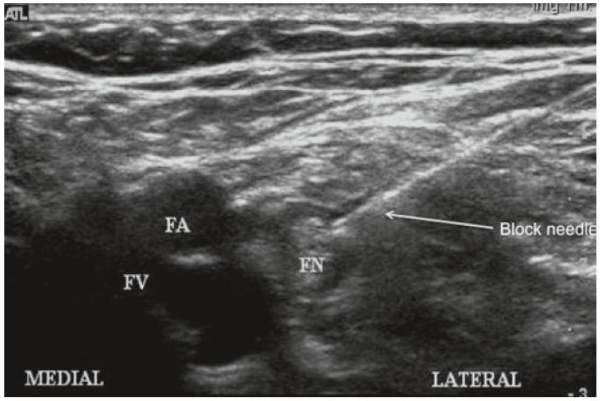


Femoral Sinir Bloğu



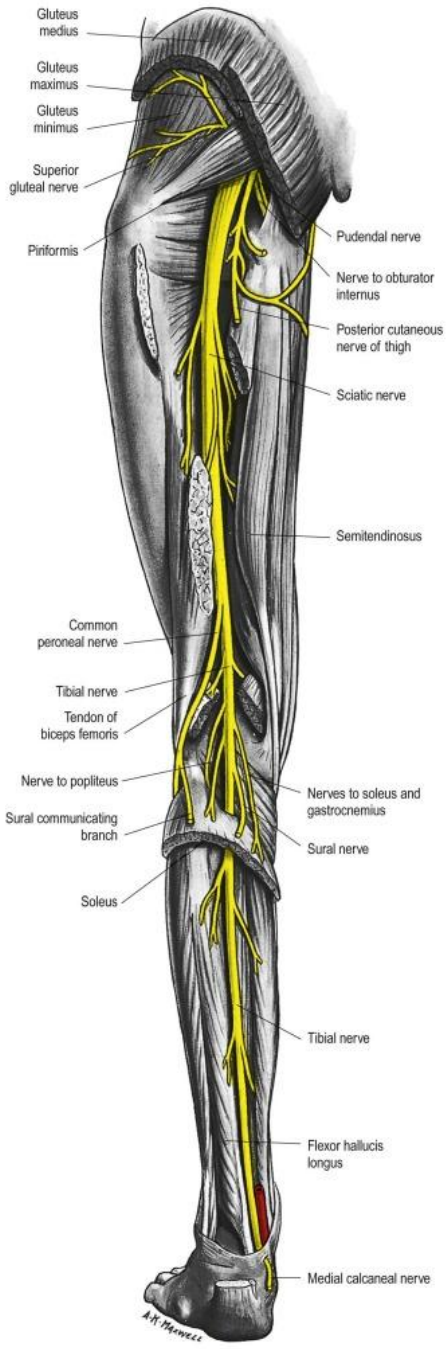
- Supin hasta
- linear array prob
- DVT bakısı yapar gibi inguinal hattan taramaya başlanır, arter ve ven lokalize edilir
- femoral sinir, arterin lateralindedir



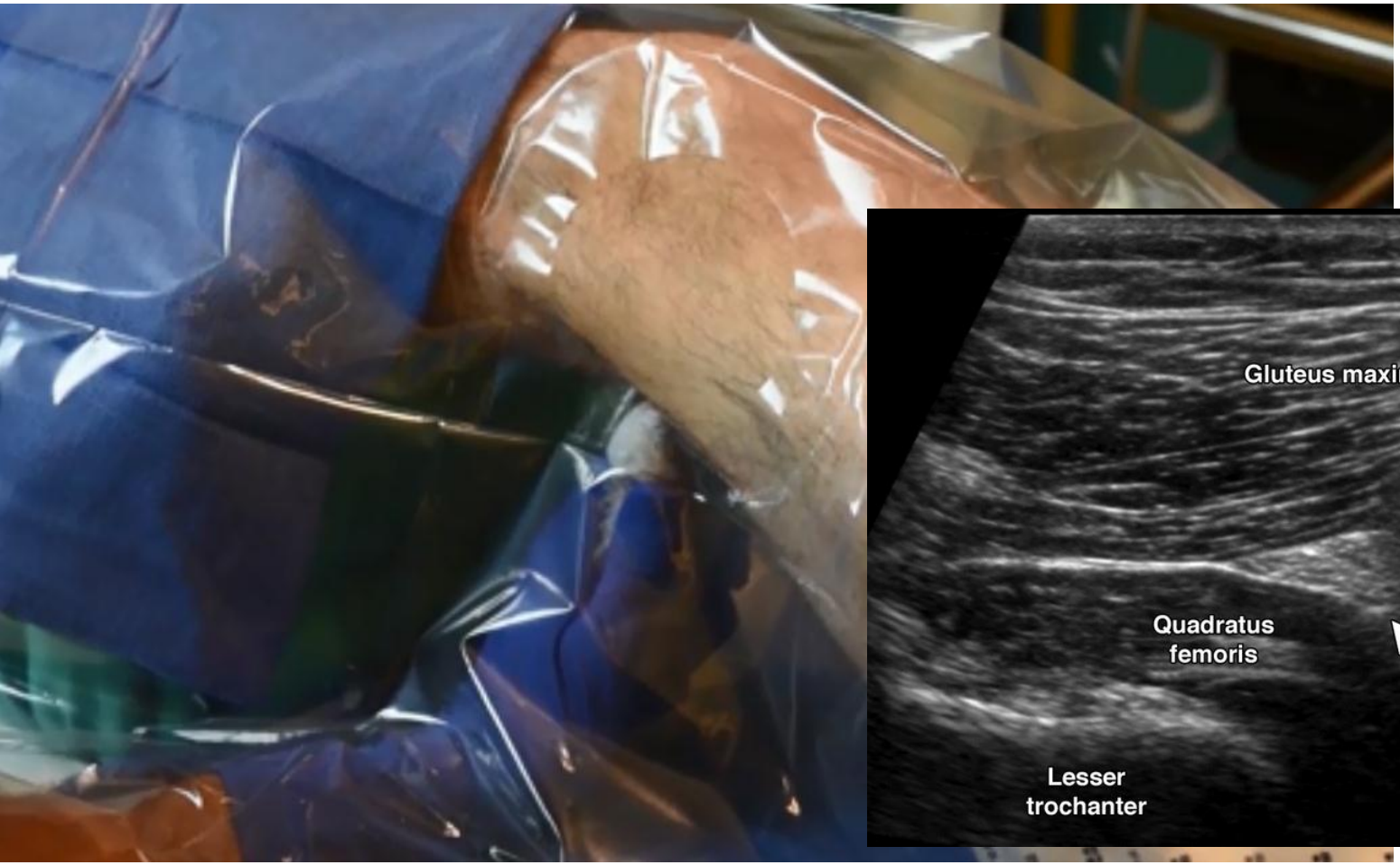


Popliteal Sciatic Sinir Bl

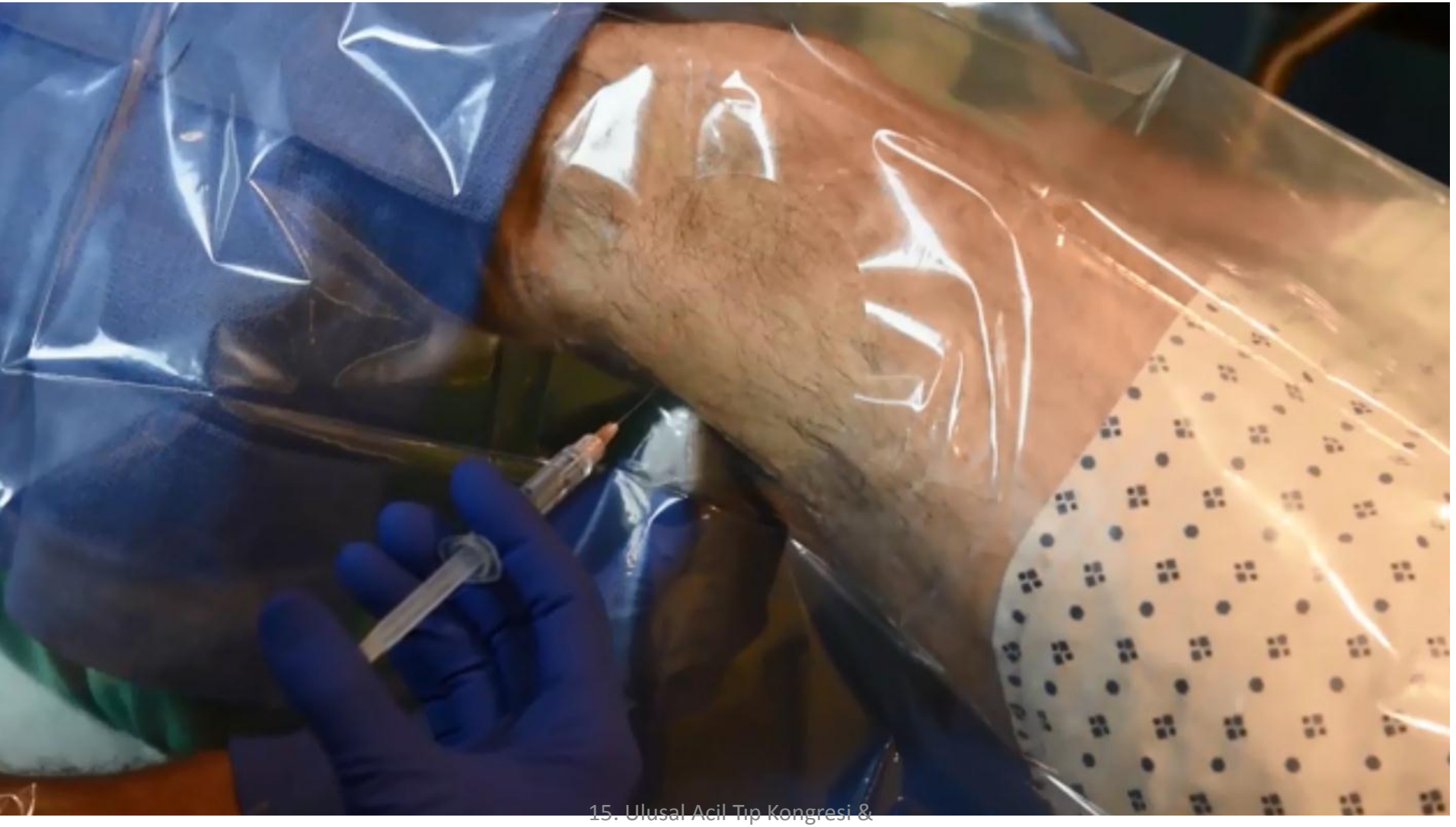
- Kompleks ayakbileği yaralanmaların
- Kalkaneal kırıklarda,
- Ayak laserasyon ve
- Abse drenajlarında faydalıdır.



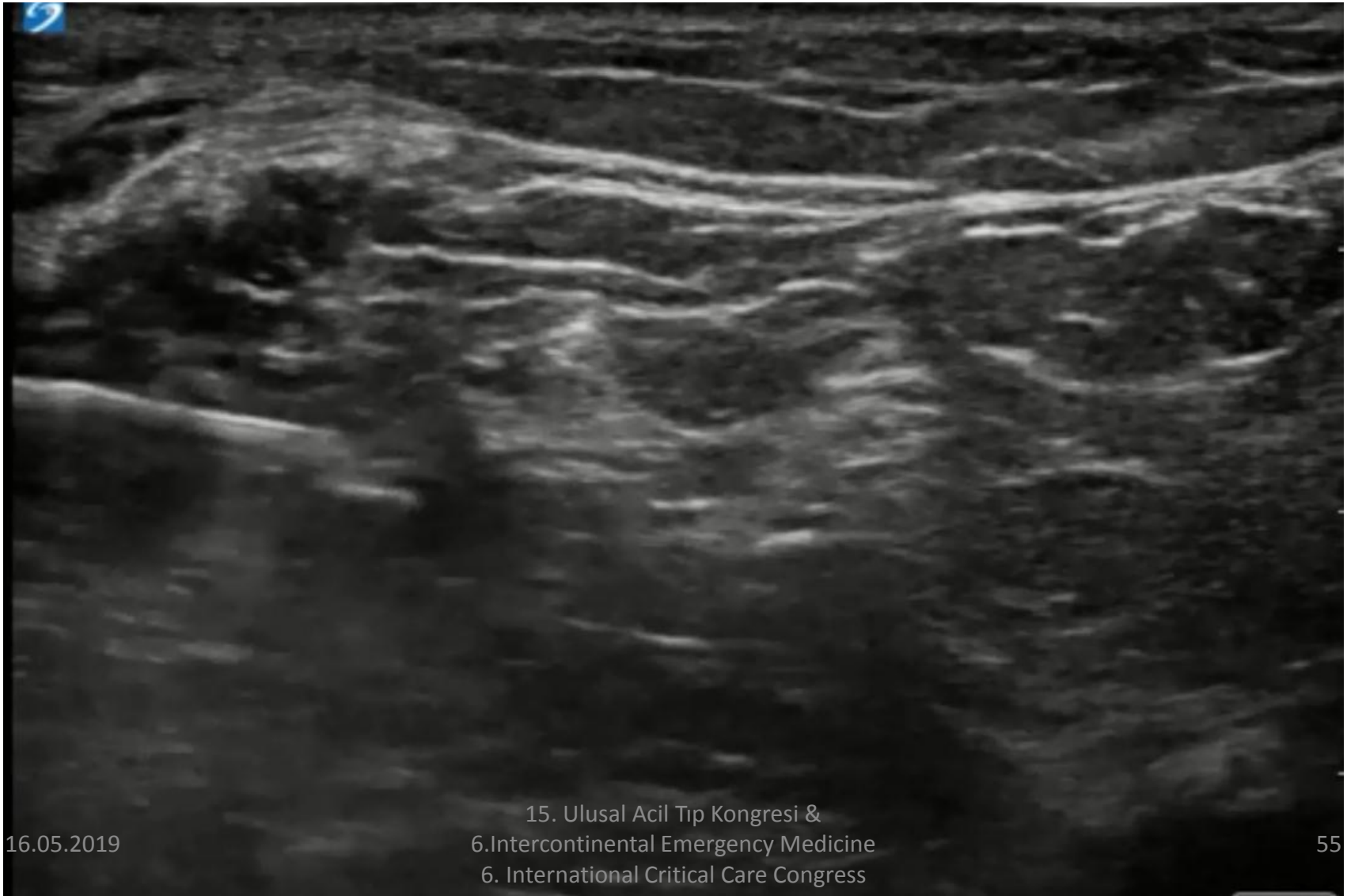
N Siyatikus popliteal fossa da

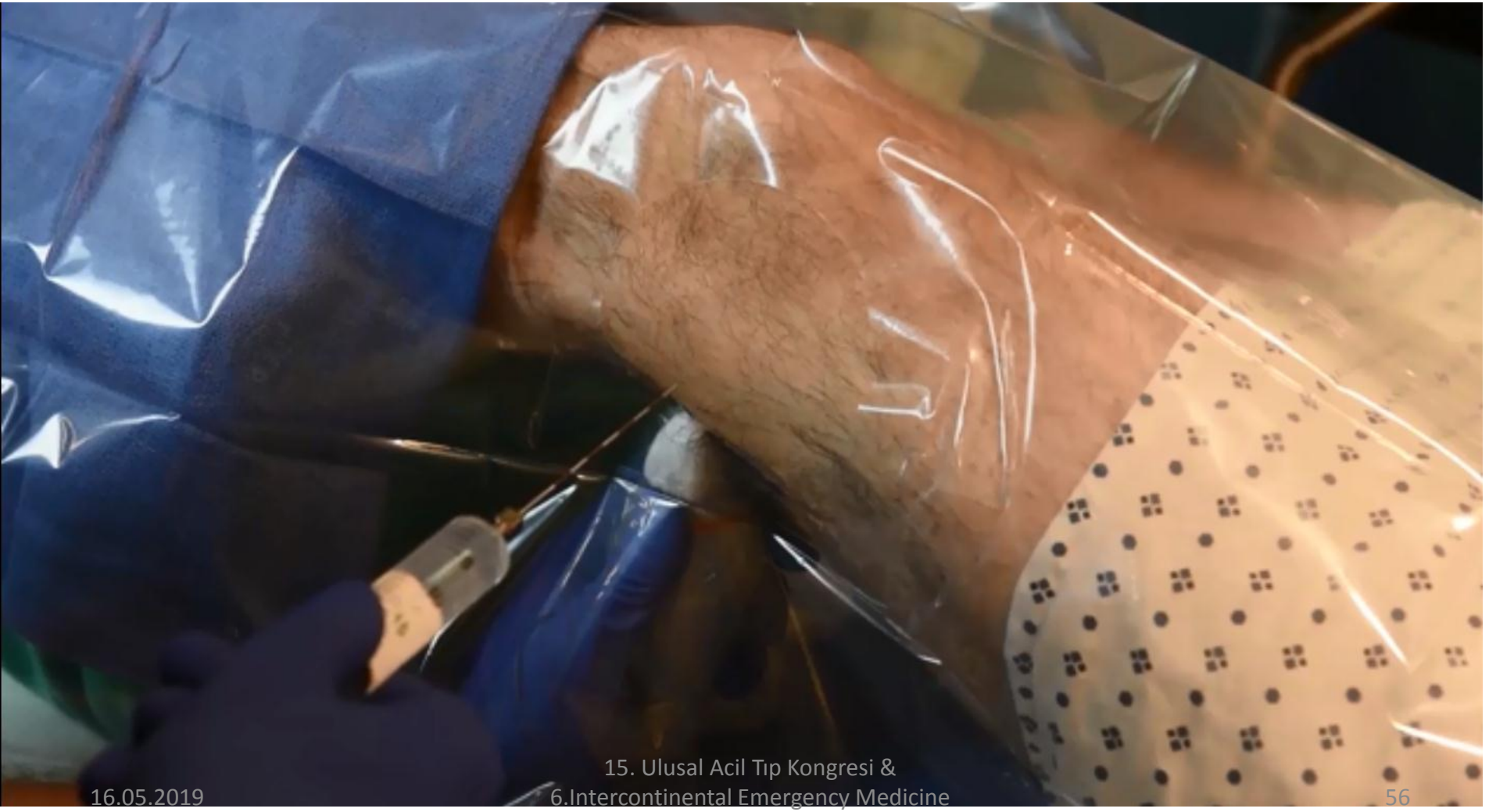


Lidocain uygulanması

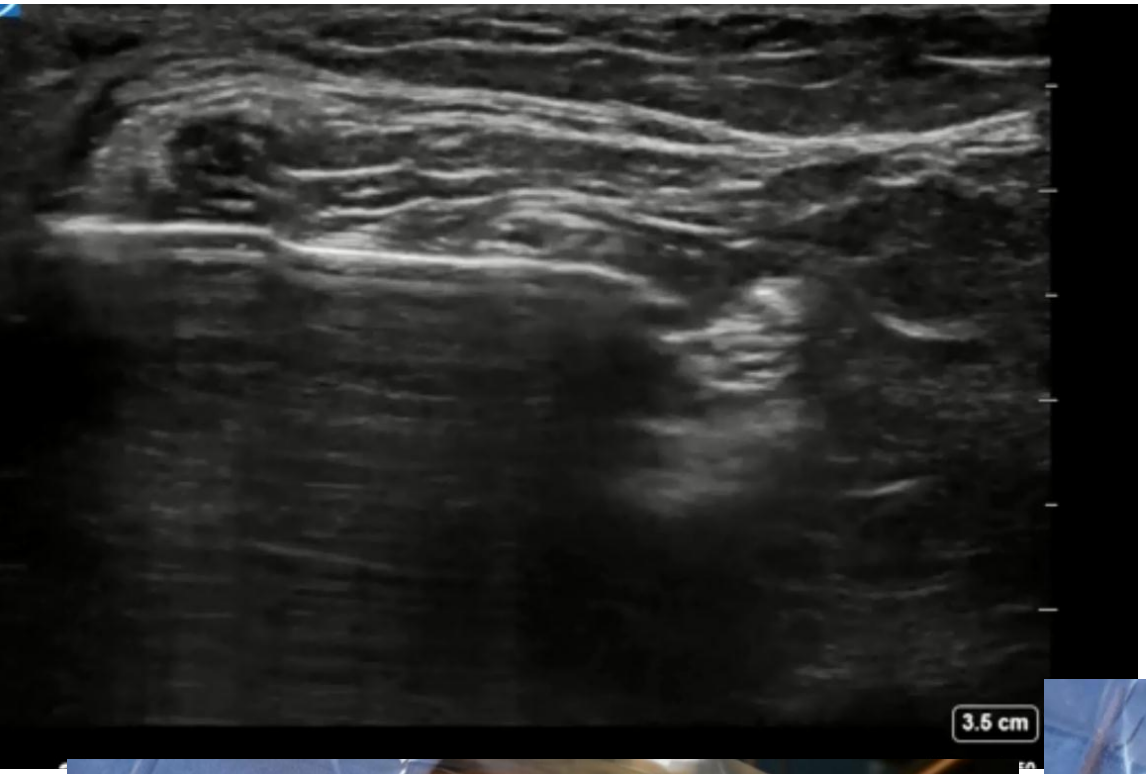


Lidokain lokal

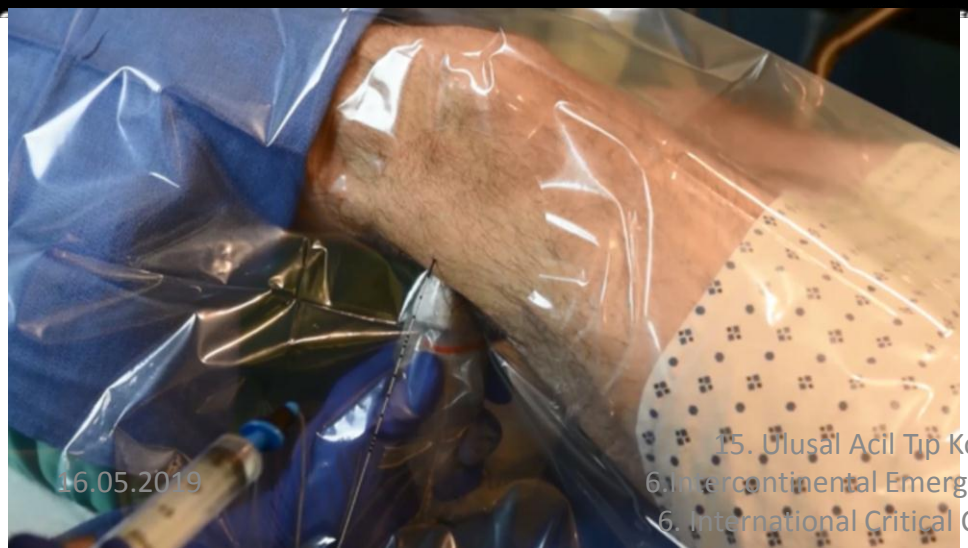


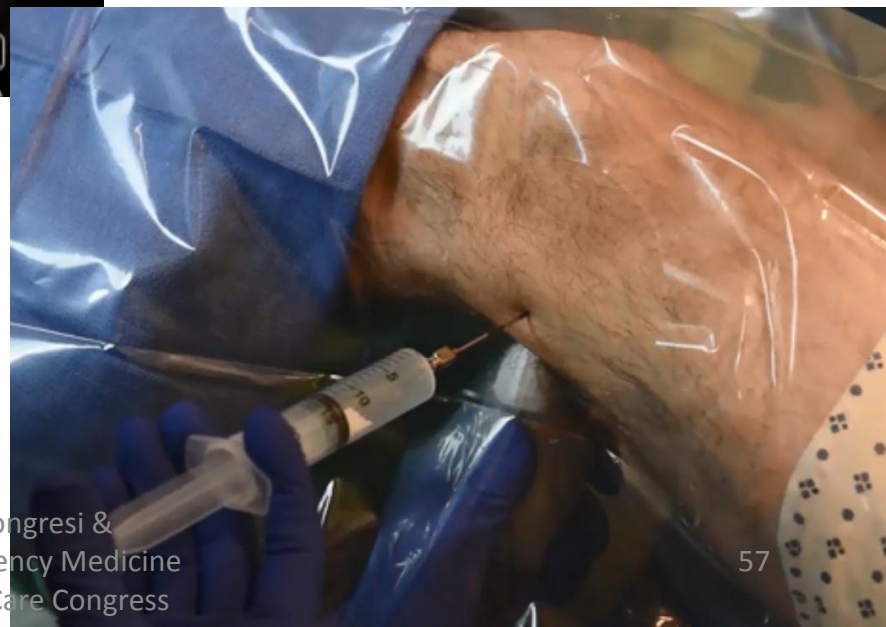


20 ml lidokain

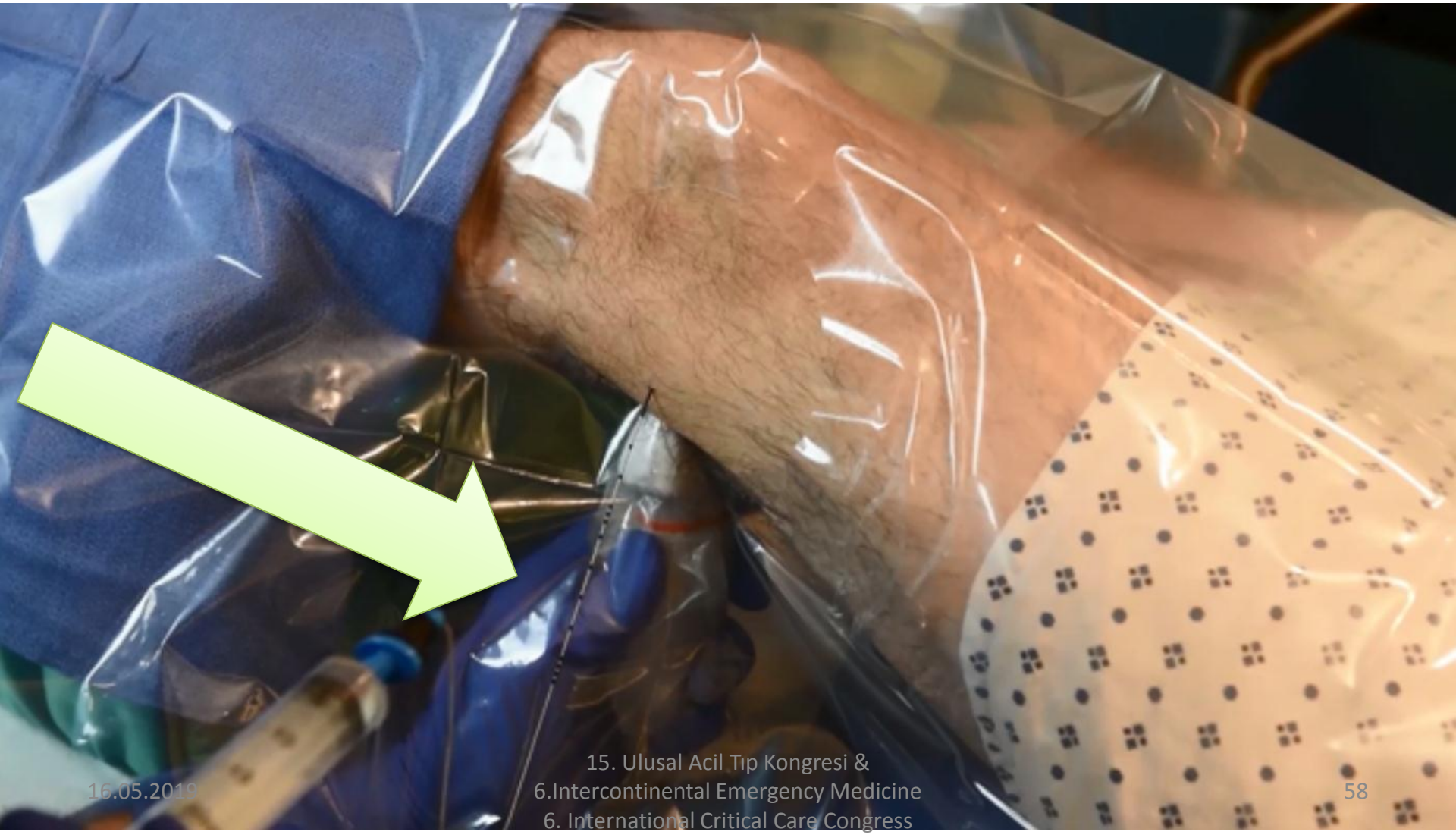


N Comon Perenoal
N Tibialis

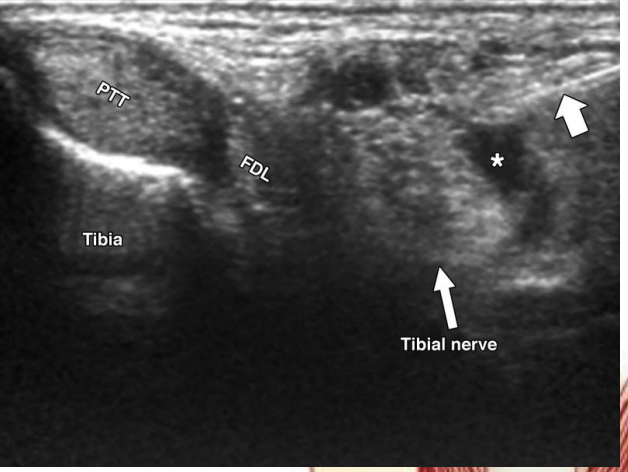


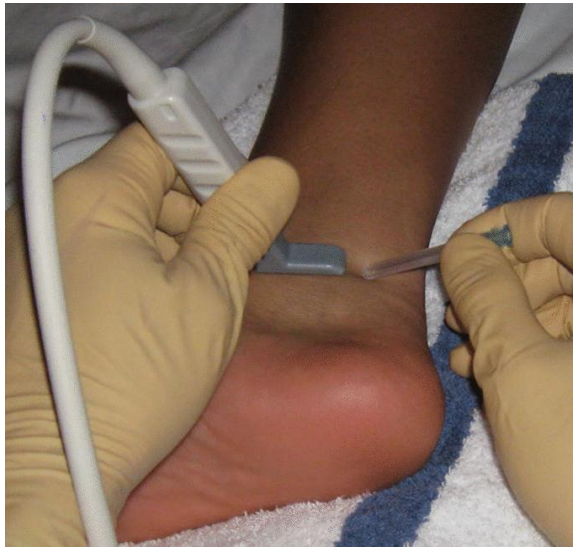


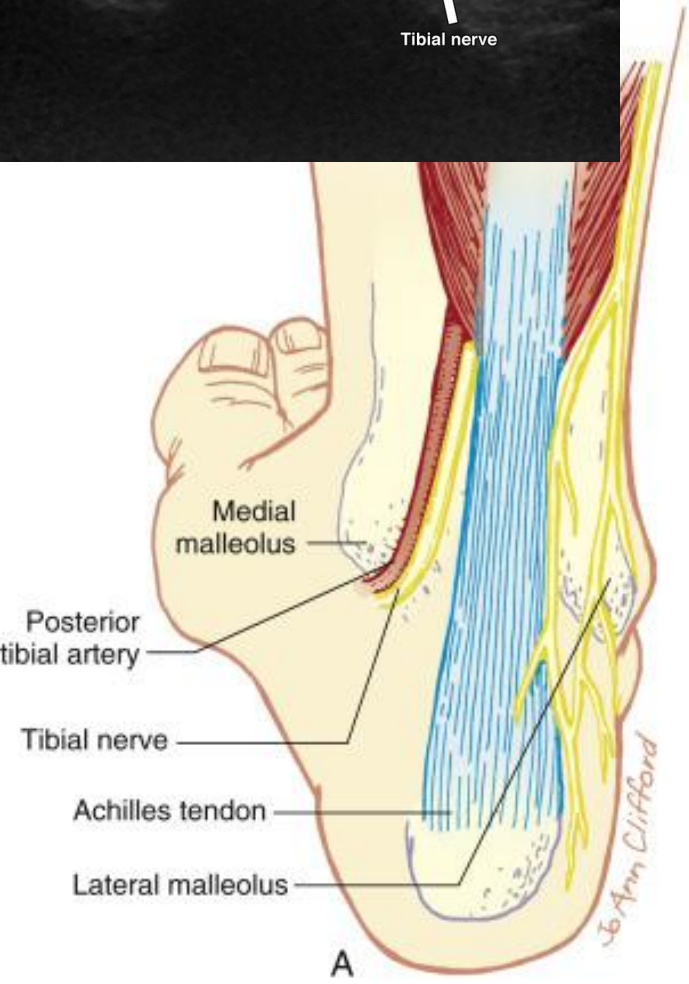
Kateter takılarak sinir blokajı

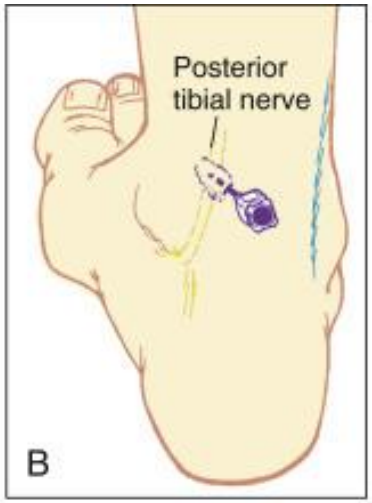


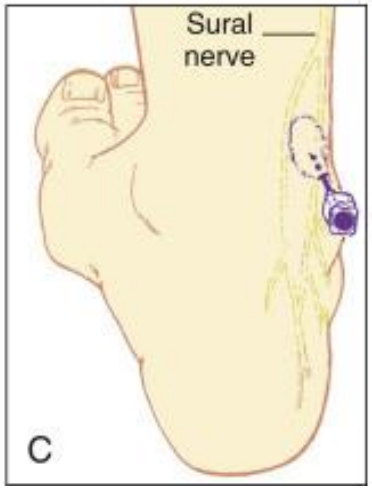
N. Tibialis

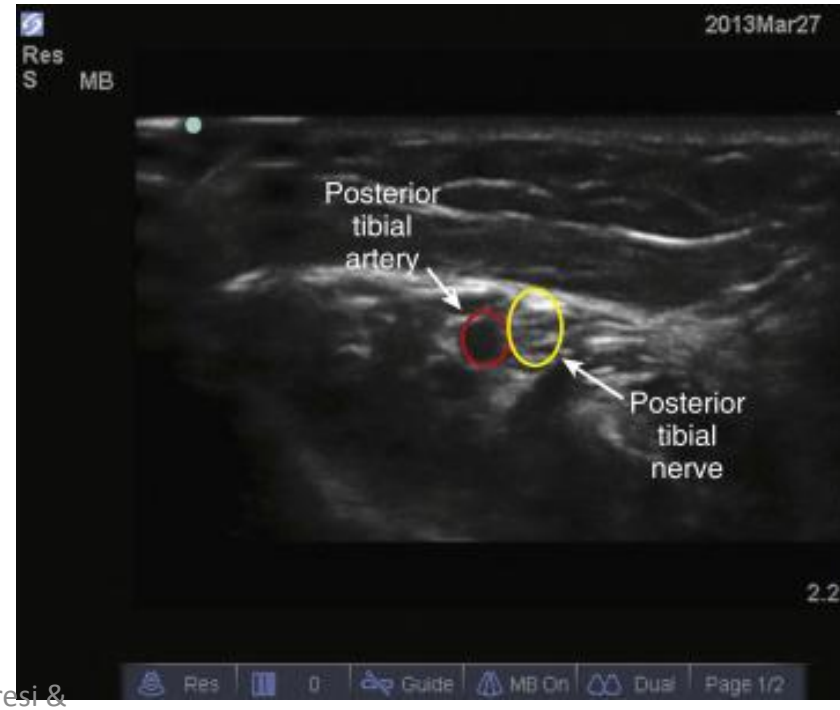

PTT
FDL
*
Tibia
Tibial nerve




Medial malleolus
Posterior tibial artery
Tibial nerve
Achilles tendon
Lateral malleolus
A
Jo Ann Clifford


Posterior tibial nerve
B


Sural nerve
C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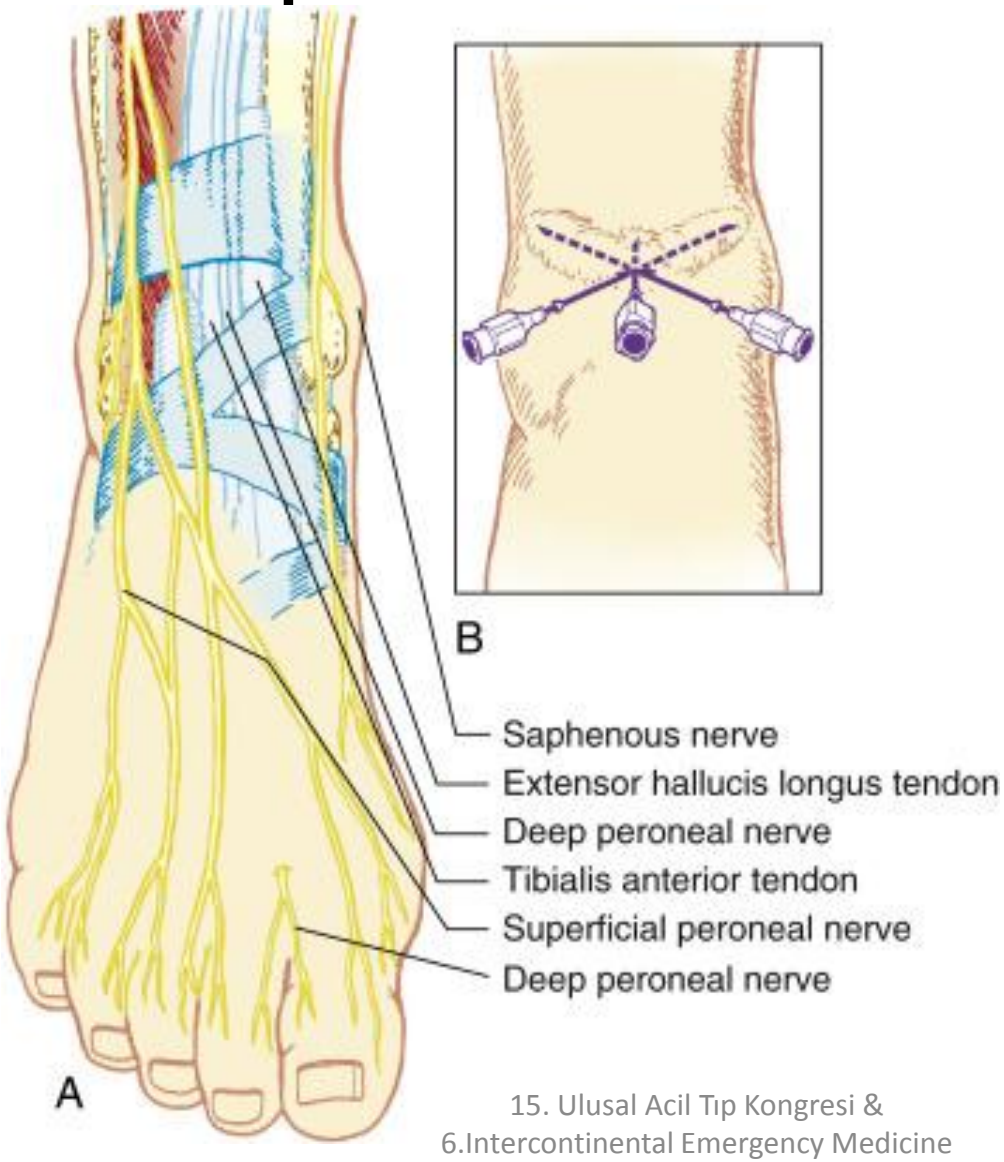
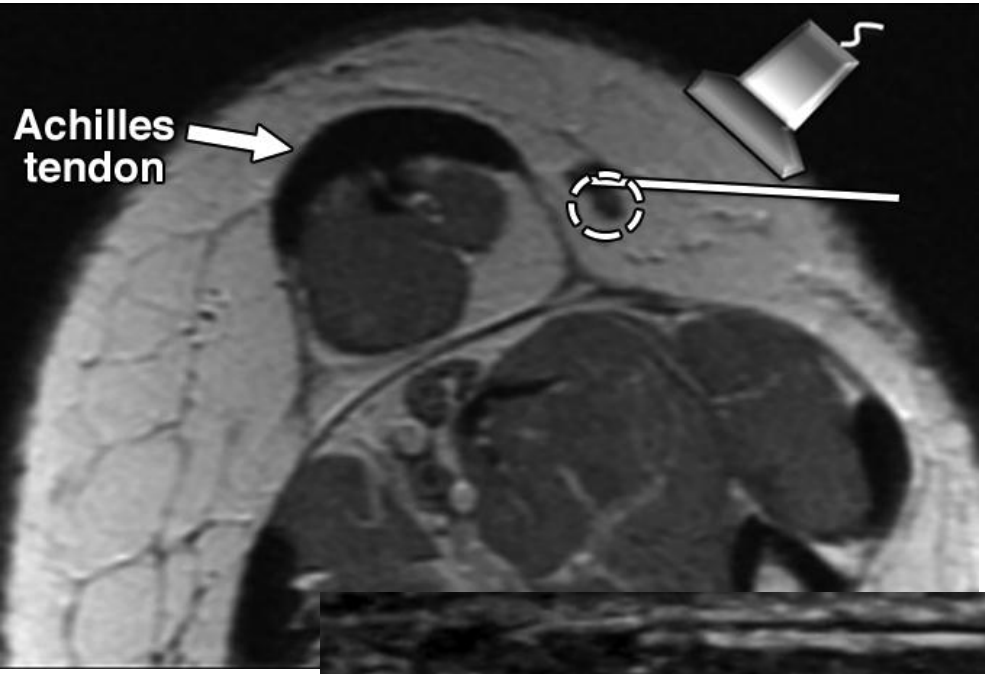
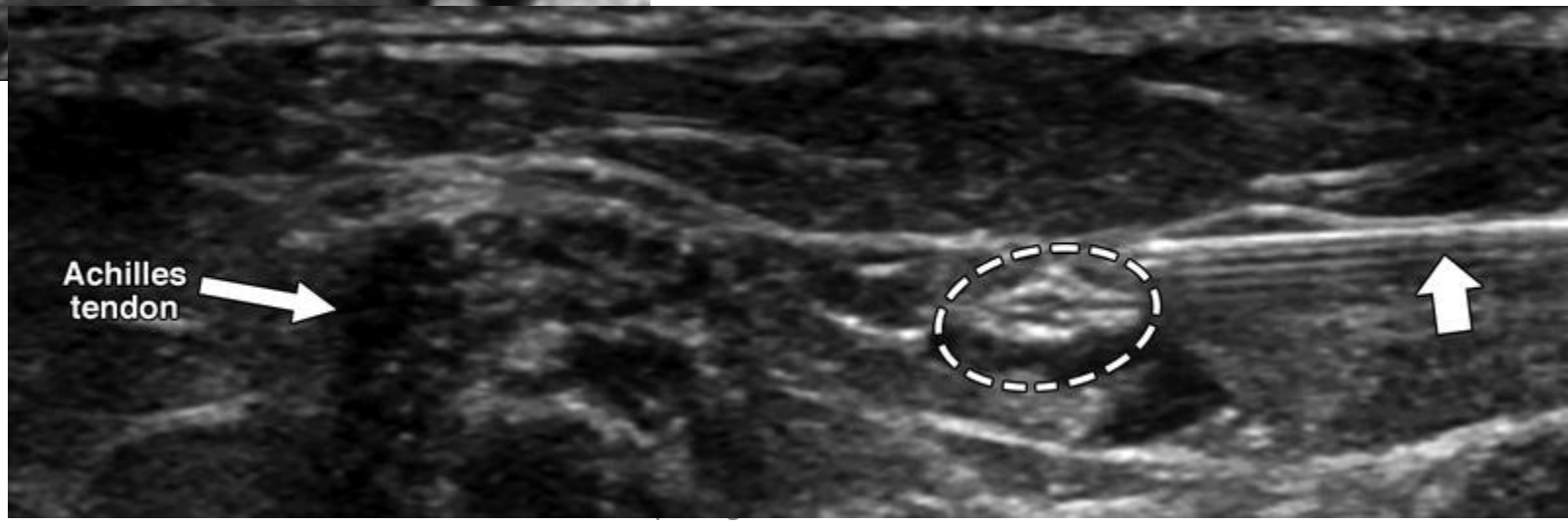
Posterior tibial artery
Posterior tibial nerve
Res
Guide
MB On
Dual
Page 1/2

Sapheneos sinin blogu



Sural sinir





Komplikasyon

Pathophysiology and etiology of nerve injury following peripheral nerve blockade

Richard Brull, Admir Hadzic, Miguel A Reina, Michael J Barrington

Long-term neurologic injury ; 2.4 - 4 per 10,000 blocks,

Regional Anesthesia and Pain Medicine 40 (5), 479-490, 2015

[ALINTI] Ultrasound-guided block and the incidence of intraneural injection
J Szerb, 2017
[1]. We share their concerns with regard to the risk of inadvertent needle trauma and

Local anesthetic-induced neurotoxicity
M Verlinde, M Hollmann, M Stevens… - International journal of …, 2016 - mdpi.com
This review summarizes current knowledge concerning incidence, risk factors, and

Ultrason, doktora sunulan değerli bir araçtır ve acil tedavinin standart bir parçası haline gelmektedir.

Antikoagüle edilmiş hastalarda ultrason eşliğinde periferik sinir blokları

	Aspirin	Age	Blockade	Dyscrasia/drug	Novel neurological deficit	Hematoma	Nerve stimulator
Case 1	3	63	Femoral + sciatic	Aspirin + clopidogrel + heparin	No	No	Yes
Case 2	4	57	Femoral + sciatic	Aspirin + clopidogrel	No	No	Yes
Case 3	3	74	Femoral + sciatic	Aspirin + clopidogrel	No	No	Yes
Case 4	3	54	Interscalene brachial plexus	Liver disease (AP 61%) + thrombocytopenia 97,000 mm^{-3}	No	No	No
Case 5	3	32	Femoral + sciatic	Enoxaparin 60 mg 12/12h	No	No	No
Case 6	4	73	Interscalene brachial plexus	Aspirin + unfractionated heparin	No	No	No
Case 7	3	71	Femoral + sciatic	Clopidogrel + INR 1.57	No	No	No
Case 8	4	65	Femoral + sciatic	Aspirin + clopidogrel + AP 30% INR 3.33	No	No	Yes
Case 9	3	71	Femoral + sciatic	Aspirin + warfarin (AP 10% INR 5.87)	No	No	No

http://dx.doi.org/10.1016/j.bjane.2015.06.005

Teşekürler