UVECD
ULUSAL VASKÜLER VE ENDOVASKÜLER CERRAHİ DERNEĞİ
1982

2. ULUSLARARASI
TRAVMA
KONGRESİ
KONYA ŞEHİR HASTANESİ
27-30 KASIM 2025

NECMETTİN ERBAKAN ÜNİVERSİTESİ

KAROTİS ARTER VE BOYUN YARALANMALARINA YAKLAŞIM



DR. ÖMER TANYELİ

N.E.Ü. MERAM TIP FAKÜLTESİ

KALP VE DAMAR CERRAHİSİ AD

2. Uluslararası Travma Kongresi, 28 Kasım 2025, KONYA

ÇIKAR ÇATIŞMASI

YOKTUR..

When you've been stabbed thru the neck,
but don't let it ruin your good mood



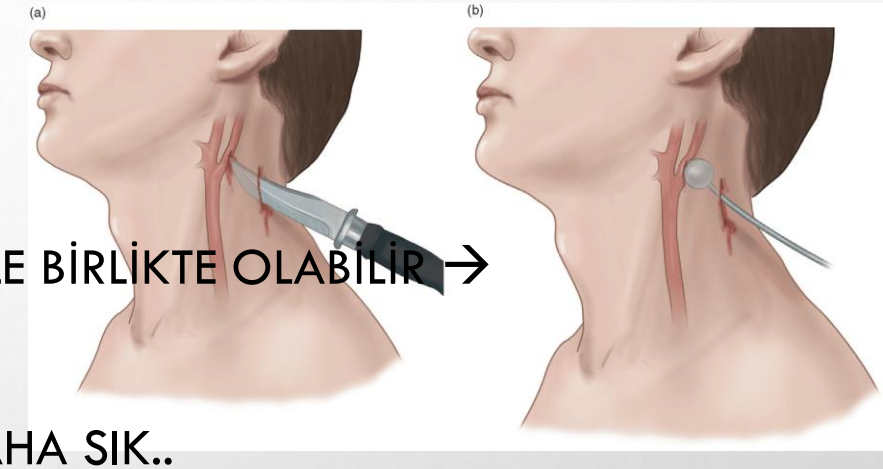


TORASİK ÇIKIM VE BOYUN TRAVMALARI

- NİÇİN ÖNEMLİ?
  - YAKLAŞIK %80-90 → OLAY YERİNDE HAYATLARINI KAYBEDER
  - HASTANEYE ULAŞABİLENLERDE MORTALİTE YÜKSEK
  - EŞLİK EDEN ARTERİYEL (SUBKLAVİYEN, AKSİLLER, KAROTİS) VE/VEYA VEN YARALANMASI (İNTERNAL JUGULER VEN) MEVCUT…
  - PROKSİMAL YARALANMALAR DAHA ÖLÜMCÜL →PLEVRAL KAVİTEYE KANAMA!!
  - DİSTAL KANAMALAR → KISMEN KENDİSİNİ SINIRLAYABİLİR

BOYUN DAMAR YARALANMALARI





- KÜNT VEYA PENETRAN YARALANMALAR..
- DİĞER VİTAL ORGAN YARALANMALARI İLE BİRLİKTE OLABİLİR → SEMPTOMLAR GÖLGELENEBİLİR
- PENETRAN YARALANMALARDA ÖLÜM DAHA SIK..
- KÜNT YARALANMALARDA KALICI NÖROLOJİK HASAR DAHA YAYGIN..

KÜNT BOYUN TRAVMALARI

- TÜM KAROTİS YARALANMALARININ %3-10'U
- MEKANİZMALARI:
  - SERVİKAL HİPEREKSTANSİYON – ROTASYON (EN SIK): TRAFİK KAZASI / EMNİYET KEMERİ TRAVMALARI..
  - BOYUNA DİREKT DARBE
  - İNTRAORAL TRAVMA
  - BAZİLER KAFATASI KIRIĞI
- DİSEKSİYON, ENDOTEL HASARI → TROMBOZ
- PSÖDOANEVRİZMA, TRANSEKSİYON, KAROTİKO-KAVERNÖZ FİSTÜL
- DİSTAL İKA> KKA (%90:%10)



TRAVMA MEKANİZMALARI

- GENELLİKLE YÜKSEK HIZLI PENETRAN TRAVMALAR VEYA KAFAYA DARBE
  - DİREKT ARTERİYEL / VASKÜLER YARALANMA
  - SERVİKAL BÖLGEDEKİ KEMİK FRAGMANLARININ ETKİSİ İLE İNDİREKT YARALANMA
- ÖZEFAGUS VE TRAKEAL YARALANMA İLE BİRLİKTE OLABİLİR
  - HEMOPTİZİ, SUBKUTAN AMFİZEM, HEMATEMEZ, SES KALINLAŞMASI..

European Review for Medical and Pharmacological Sciences 2013; 17: 673-688

Endovascular treatment of carotid injury

V.G. MARTINAKIS, I. DALAINAS*, V.C. KATSIKAS, K. XIROMERITIS*

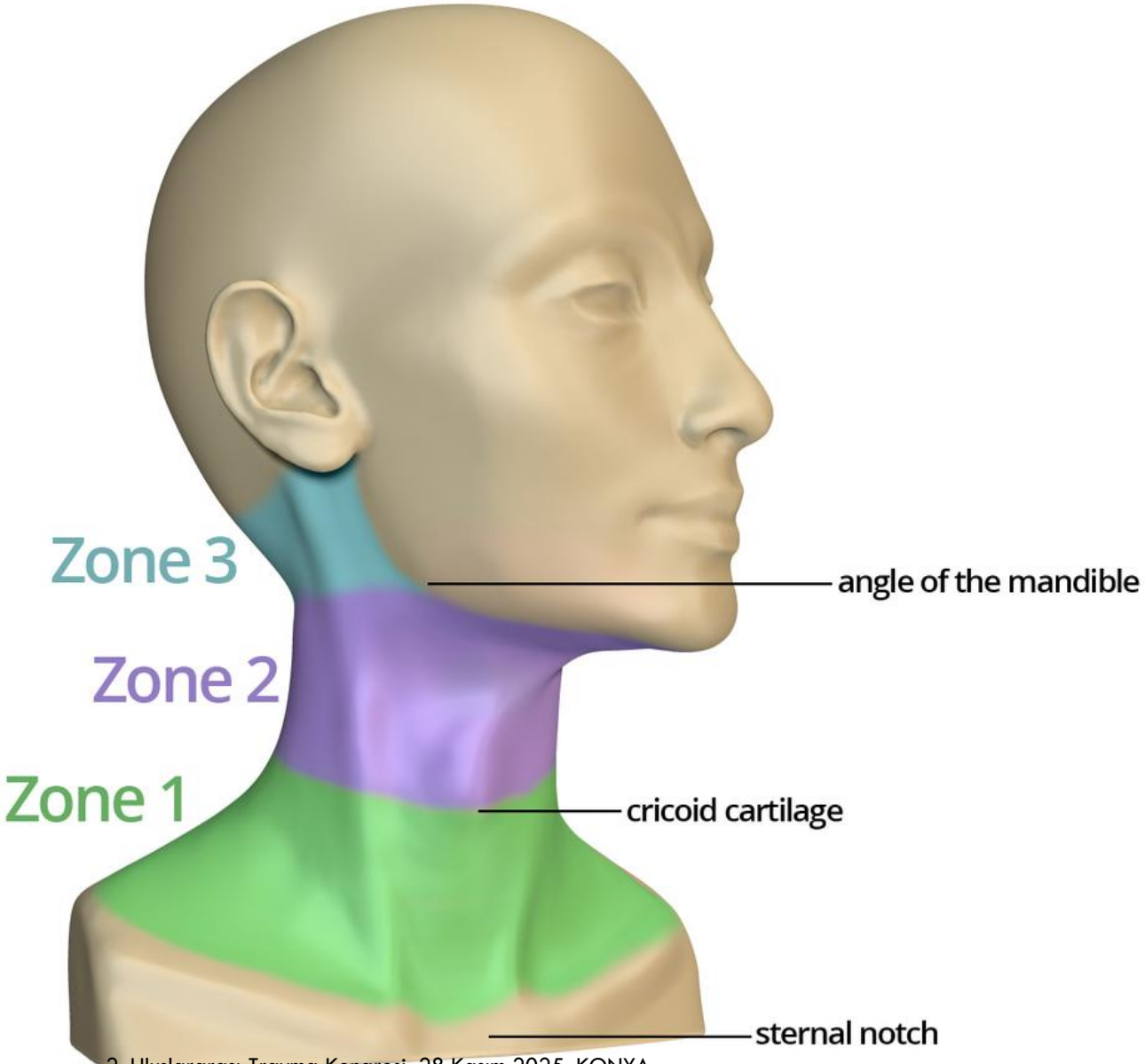
Department of Vascular Surgery, "G. Gennimatas" General Hospital, Athens, Greece
*Department of Vascular Surgery, Attikon University Hospital, Athens, Greece

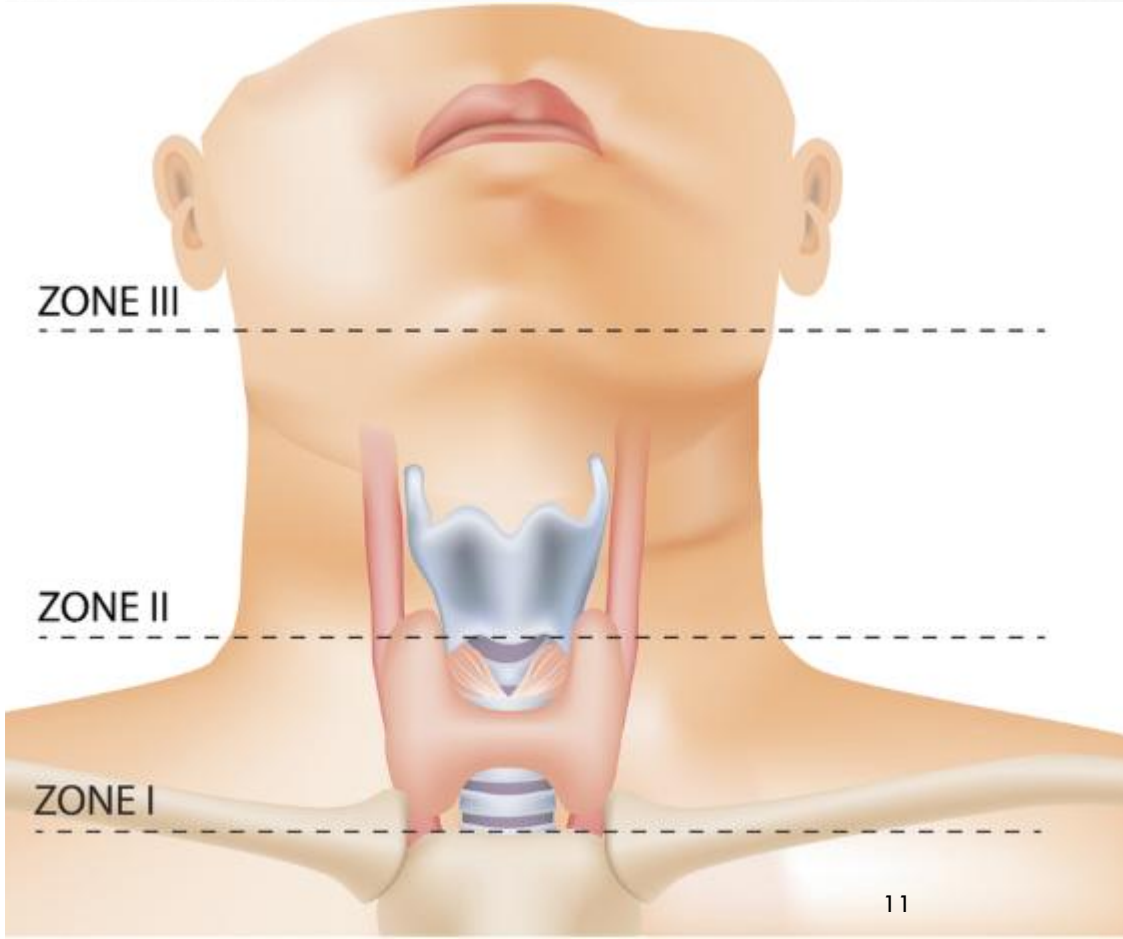
Table II. Comparison of measured variables before and after intervention in plasma.

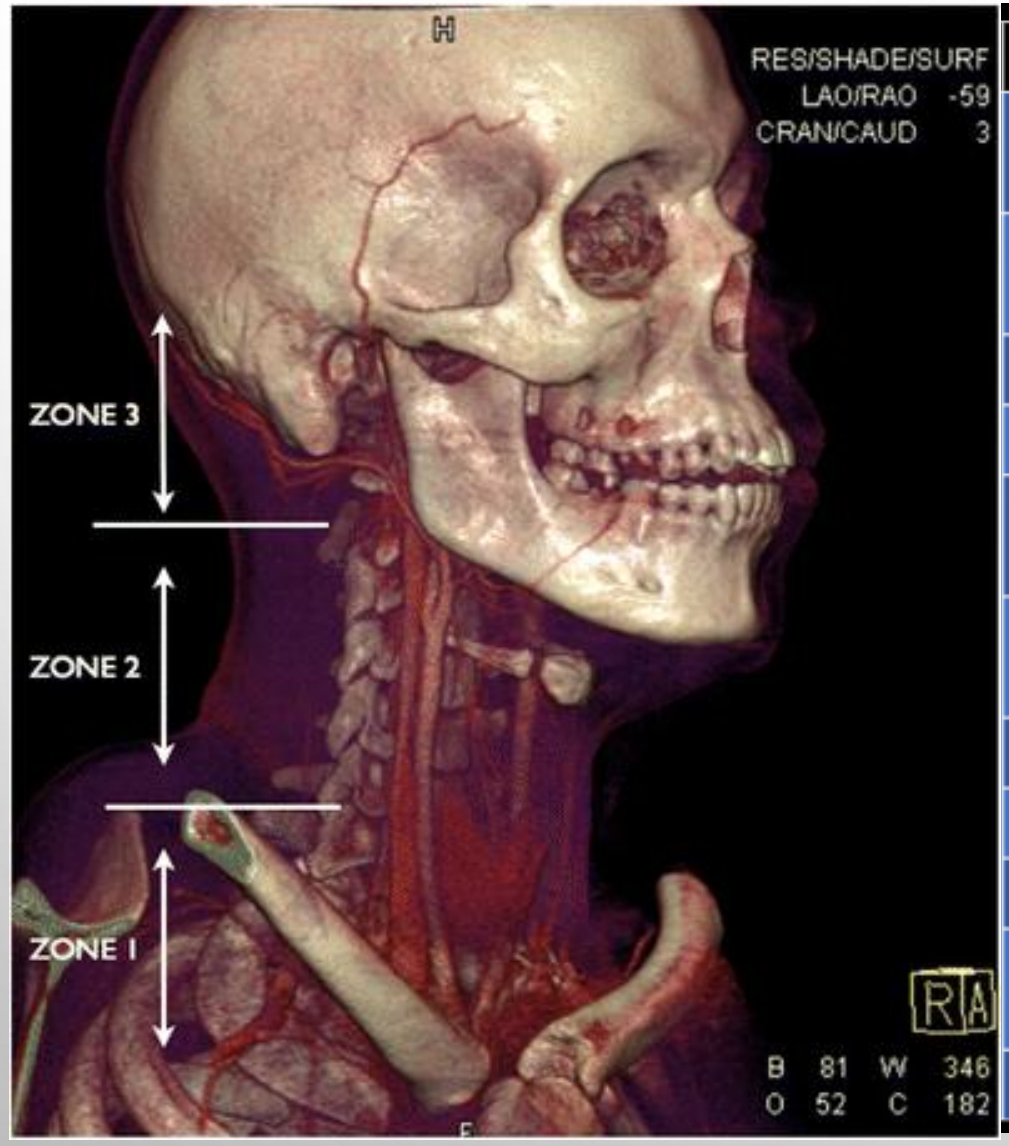
Denver criteria*	Memphis criteria†	Biffl's modified criteria‡
Signs and symptoms	**Signs and symptoms**	**Signs and symptoms**
Arterial hemorrhage or expanding hematoma	Neurologic exam not explained by brain imaging	GCS < 6 (1.98)
Cervical bruit	Horner's syndrome	
Neurologic exam inconsistent with head CT findings	Neck soft tissue injury (seat-belt sign, hanging, or hematoma)	
Stroke on follow-up head CT		
Focal neurologic deficit		
Risk factors	**Risk factors**	**Risk factors**
Le Fort II or III fracture pattern	Le Fort II or III fracture pattern	Le fort II or III fracture pattern (3.7)
Basilar skull fracture with involvement of carotid canal	Basilar skull fracture with involvement of carotid canal	Petrous fracture (2.64)
Diffuse axonal injury with GCS < 6		Diffuse axonal injury (3.09)
Cervical spine fracture	Cervical spine fracture	
Near-hanging with anoxic brain injury		

PENETRAN BOYUN YARALANMALARI

- PBY: ERİŞKİNLERDE TRAVMATİK YARALANMALARIN %5-10'U
- PRİMER OLARAK KURŞUN, BIÇAK, DİĞER OBJELER (ŞARAPNEL, CAM.. VS)…
- HEM SİVİL, HEM SAVAŞ POPÜLASYONUNDA PBY MORTALİTESİ: %5
- PBY ANATOMİK ZONLARLA SINIFLANDIRILIR..


Zone 3
Zone 2
Zone 1
angle of the mandible
cricoid cartilage
sternal notch


ZONE III
ZONE II
ZONE I



Zone I	Zone 2	Zone 3
Clavicle/Sternum to Cricoid Cartilage	Cricoid Cartilage to the Mandible	Superior Angle of the Mandible
Proximal Common Carotid Artery	Carotid Artery	Vertebral Artery
Subclavian Artery	Vertebral Artery	Distal Carotid Artery
Vertebral Artery	Jugular Vein	Distal Jugular Vein
Lung Apices	Pharynx	Salivary and Parotid Glands
Trachea	Trachea	Cranial Nerves IX - XII
Thyroid	Esophagus	Spinal Cord
Esophagus	Larynx	
Thoracic Duct	Vagus Nerve	
Spinal Cord	Recurrent Laryngeal Nerve	
	Spinal Cord	

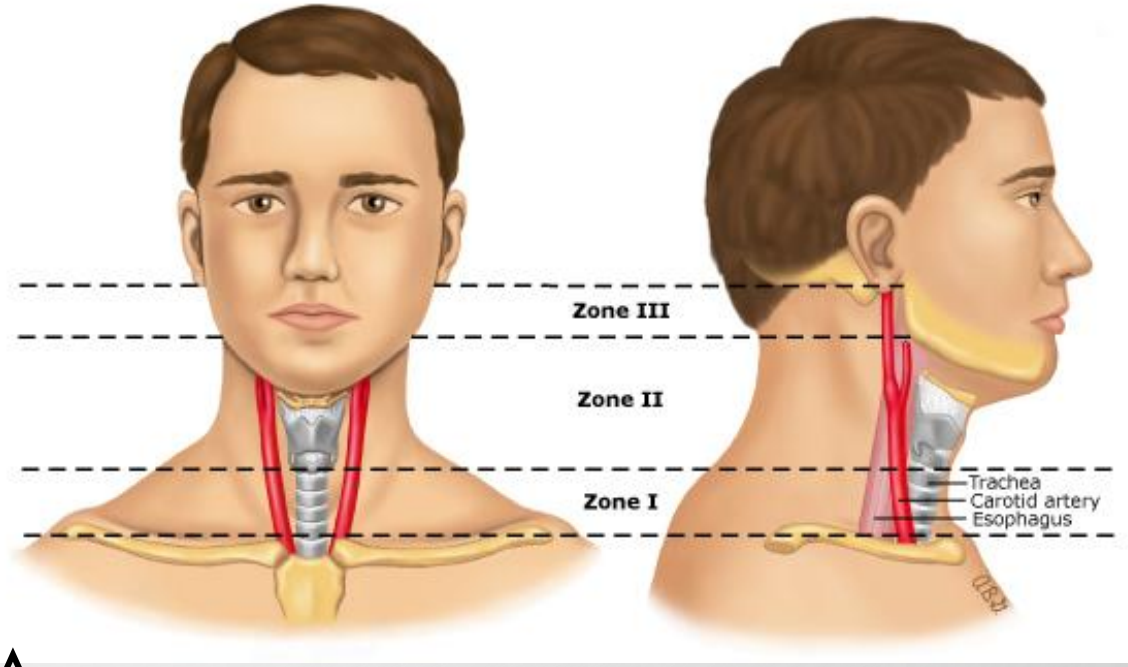
The Journal of TRAUMA® Injury, Infection, and Critical Care

Clinical Practice Guideline: Penetrating Zone II Neck Trauma

Samuel A. Tisherman, MD, Faran Bokhari, MD, Bryan Collier, DO, John Cumming, MD, James Ebert, MD, Michele Holevar, MD, Stanley Kurek, DO, Stuart Leon, MD, and Peter Rhee, MD

Key Words: Trauma, Neck, Carotid artery, Trachea, Esophagus.

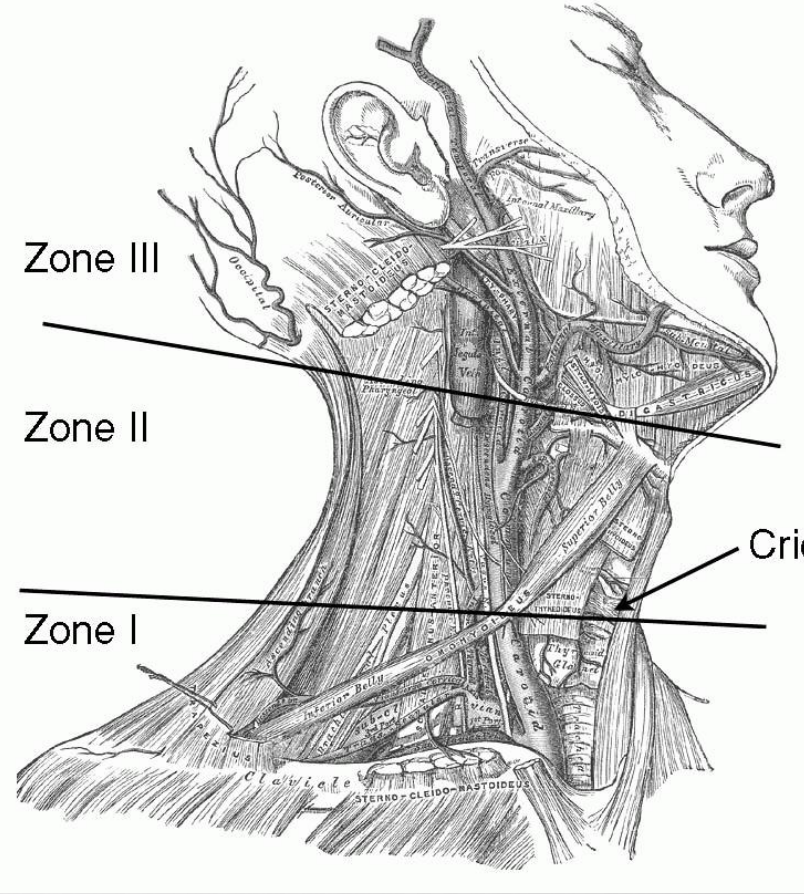
J Trauma. 2008;64:1392–1405.



- PBY MORTALİTESİ EN FAZLA → ZON1
  - MEDİASTİNEL DOKULARA YAKINLIK
  - VASKÜLER HASARIN ŞİDDETİ
  - CERRAHİ ZORLUKLAR
- ANİ ÖLÜMÜN EN SIK SEBEBİ: KANAMA
- EN SIK SEBEP: KAROTİS ARTER YARALANMASI
- PBY'DE KAROTİS ARTER TUTULUMU: %6-17



McConnell DB, Trunkey DD. Management of penetrating trauma to the neck. Adv Surg 1994; 27:97.

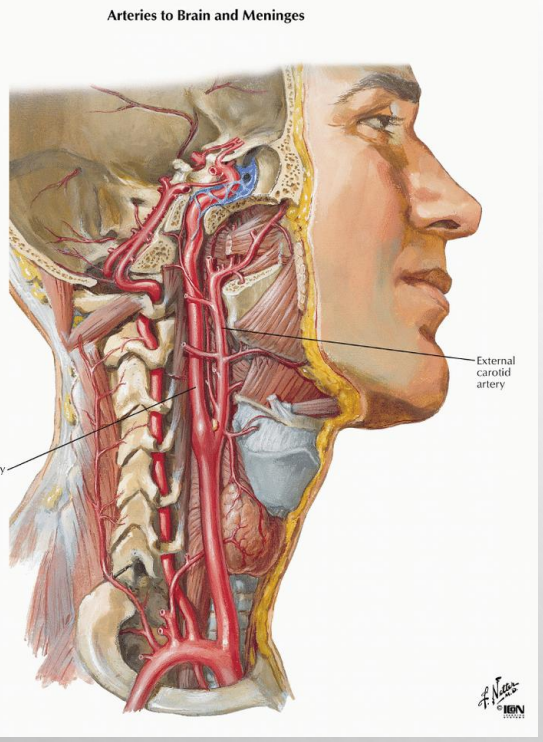


- 1963-1990: PBY OLAN 2495 HASTA
  - ZONE II > ZONE I > ZONE III
- EN SIK SOLUNUM VE SİNDİRİM SİSTEMİ YARALANMASI GÖZLENİR
- %10 LARİNGEAL VEYA TRAKEAL YARALANMA
- %9.6 FARİNGEAL VEYA ESOFAGEAL YARALANMA
- VASKÜLER: %9 İNTERNAL JUGULER VEN, %6.7 KAROTİS ARTER KANAMASI, %2.2 SUBKLAVYEN ARTER, %1.3 VERTEBRAL ARTER…

ARTERİYEL YARALANMALAR VE ÖZELLİKLERİ

- **İNNOMİNATE ARTERE** OLAN KÜNT YARALANMALAR NADİR OLMAKLA BİRLİKTE %75'İ EŞLİK EDEN ÇOKLU YARALANMALAR İLE BİRLİKTEDİR..
- EN TİPİK BULGU AYNI TARAFTA ZAYIF ÜST EKSTREMİTE NB → İSKEMİ NADİRDİR..
- **SUBKLAVİYAN ARTERLER** GENELLİKLE KLAVİKULA VE 1. KOT FRAKTÜRLERİNDE ZEDELENİR → İSKEMİ BULGULARI ÖN PLANDADIR..
- **BOYUN YARALANMALARINDA** CİDDİ DAMAR YARALANMASI BULUNSA BİLE KLİNİK OLARAK KENDİNİ GİZLEYEBİLİR..
- BAŞVURU ANINDA SEMPTOM YOKKEN, İLK24 SAATTE SEMPTOMLAR ORTAYA ÇIKABİLİR..
- **PENETRAN YARALANMALARDA** → KANAMA, HEMATOM VEYA BASI SEMPTOMLARI..

KAROTİS ARTER YARALANMALARI



- TÜM KAROTİS ARTER YARALANMALARININ %3-10'U **KÜNT**; YAKLAŞIK %80'İ **PENETRAN**…
- EN SIK ETKİLENEN **İNTERNAL KAROTİS ARTERİN DİSTAL KISIMLARIDIR..**
- **PENETRAN YARALANMALAR:** BIÇAK VB KESİCİ ALETLER, ATEŞLİ SİLAHLAR, YABANCI CİSİMLER..
- **KÜNT YARALANMALAR:** BOYNUN HİPEREXTN & ROTASYONU, DAMAR ÜZERİNE DİREKT BASINÇ ETKİSİ, KIRIK KEMİK PARÇALARININ VASKÜLER HASARI..



- KÜNT YARALANMALAR

TRAFİK KAZALARI,
DİKKATSİZ EGZERSİZLER VE
FİZİK TEDAVİ İŞLEMLERİ..



FİZİK MUAYENE

- KÜNT YARALANMALARIN YALNIZCA YARISINDA FM BULGULARI (+)
- OSKÜLTASYON → HEMOTORAKS VE PNÖMOTORAKS
- ÜFÜRÜM → SUBKLAVİYAN / KAROTİS ARTER YARALANMASI ??
- KARŞILAŞTIRMALI ÜST EKSTREMİTE NABIZ MUAYENESİ.!!
- AYRINTILI NÖROLOJİK MUAYENE..
  - KÜNT BOYUN YARALANMALARINDA SIKLIKLA KARŞI TARAF NÖROLOJİK HASAR VE BİLİNÇ DEĞİŞİKLİKLERİ..
  - YARALANMAYA BAĞLI DAMAR TIKANIKLIĞI, KANAMA, EMBOLİ VB'E BAĞLI BULGULAR..

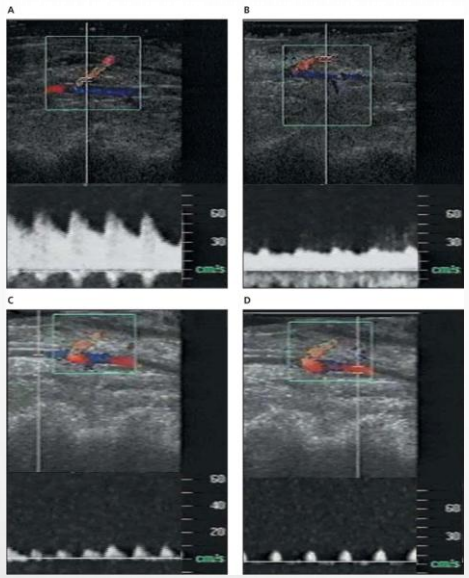
Hard and soft signs of penetrating neck injury

Hard signs of vascular injury*
Severe or uncontrolled hemorrhage
Large, expanding, or pulsatile hematoma
Thrills or bruits
Shock unresponsive to IV fluid resuscitation
Absent or diminished radial pulse
Neurologic deficit (eg, hemiplegia) consistent with cerebral ischemia
Hard signs of aerodigestive injury*
Air bubbling from a wound
Massive hemoptysis or hematemesis
Respiratory distress
Soft signs of injury
Proximity wounds
Minor hemorrhage
Mild hypotension responsive to IV fluid resuscitation
Minor hemoptysis or hematemesis
Subcutaneous or mediastinal air
Non-pulsatile, non-expanding hematoma
Dysphonia
Dysphagia

GÜÇLÜ BULGULAR!!

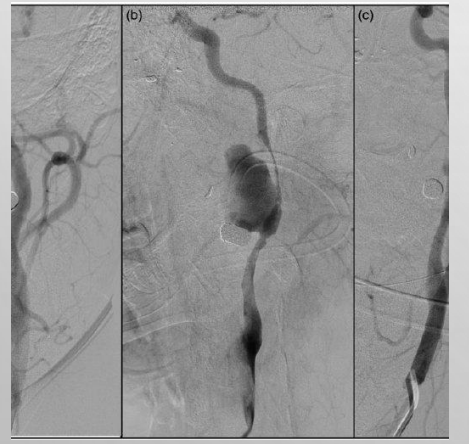
- **GÜÇLÜ** BULGULARIN VARLIĞINDA EKSPLORASYON GEREKTİRİR..
- **ZAYIF**'BULGULARIN VARLIĞINDA HASTA GENEL DURUMU MÜSAADE EDER İSE İLERİ TETKİK VE TANISAL DEĞERLENDİRME YAPILMASI UYGUNDUR..

- GÜÇLÜ BULGULARI OLAN PENETRAN TRAVMALI HASTALAR BEKLETİLMEDEN AMELİYATA ALINMALIDIR..
- ZAYIF BULGULARI OLAN KÜNT TRAVMALI HASTALARDA İLERİ TETKİKLER PLANLANABİLİR..
- İLK TETKİK – PAAC GRAFİSİ (PNÖMO/HEMOTORAKS, KEMİK FRAKTÜRLERİ…)

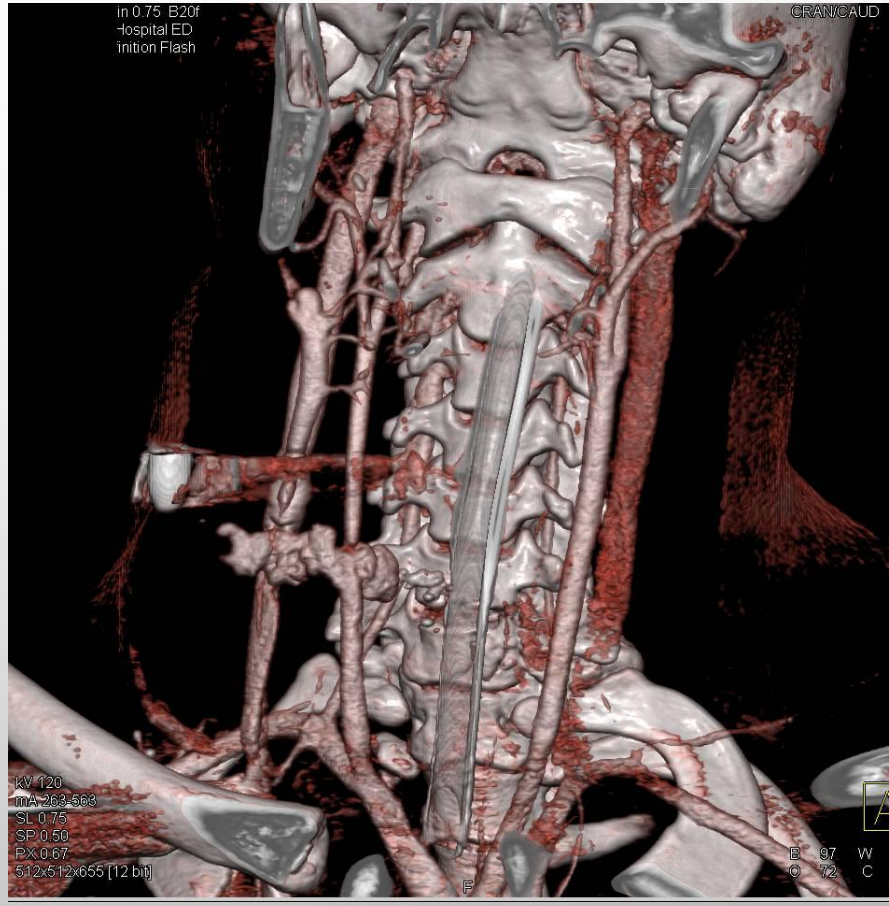


TANISAL..

- DURUMU STABİL OLAN HASTALARDA..
  - HEMO-PNÖMOTORAKS
  - MEDİASTİNEL GENİŞLEME – SHİFT
  - TRAKEAL DİSLOKASYON
  - YABANCI CİSİM VARLIĞI
  - KEMİK DOKULARDA KIRIK VEYA FRAGMANTASYON



- DOPPLER USG / **BTA** / DSA



- BTA → ALTIN STANDART
- KEMİK KIRIKLARI VE ÖZ. METALİK YABANCI CİSİMLE OLAN YARALANMALARDA → YAYGIN ARTEFAKT → ARTERİYOGRAFİ (DSA)

TEDAVİ

- **A, B, C…** AIRWAY, BREATHING, CIRCULATION, DISABILITY, ENVIRONMENT..
- GÖĞÜS TÜPÜ TAKILMASI..
- HASARIN ONARIMI..

Blunt Cerebrovascular Injury Practice Management Guidelines: The Eastern Association for the Surgery of Trauma

William J. Bromberg, MD, Bryan C. Collier, DO, Larry N. Diebel, MD, Kevin M. Dwyer, MD, Michelle R. Holevar, MD, David G. Jacobs, MD, Stanley J. Kurek, DO, Martin A. Schreiber, MD, Mark L. Shapiro, MD, and Todd R. Vogel, MD

MEDİKAL TEDAVİ..

- ERKEN DÖNEMDE İNTİMAL FLEP, DİSEKSİYON VE YALANCI ANEVRİZMALARDA → HEPARİN → ANTİKOAGÜLAN TEDAVİ NÖROLOJİK MORBİDİTE ORANLARINI AZALTIR..
- ARDIŞIK BTA VEYA DSA – 1. HAFTA VE 3. AYDA
- ANTİKOAGÜLAN KAYNAKLI KOMPLİKASYONLAR !!!!
  - İKK
  - GİS KANAMASI
  - RETROPERİTONEAL KANAMA
  - CERRAHİ ALAN YENİDEN KANAMASI



ENDOVASKÜLER TEDAVİ

- CERRAHİ OLARAK ULAŞILMASI İMKANSIZ OLAN BÖLGEDEKİ YARALANMALARDA
- BÜYÜMEYE DEVAM EDEN PSÖDOANEVRİZMA OLUŞTURAN KÜNT YARALANMALARDA
- MEDİKAL TEDAVİYE RAĞMEN DURUMUNDA BOZULMA OLAN HASTALARDA

- ÖZELLİKLE 1. VE 3. BÖLGE YARALANMALARINDA İYİ BİR TEDAVİ SEÇENEĞİDİR..

CERRAHİ TEDAVİ

- 2. BÖLGE YARALANMALARINDA İLK SEÇENEK OLMALIDIR..
- TEDAVİ ENDİKASYONLARI, ENDOVASKÜLER TX END. İLE BENZER..
- EĞER LEZYON KAFA TABANINDA İSE, EVT ÇOĞUNLUKLA TEK SEÇENEKTİR..
- PROKSİMAL İNTERNAL VEYA ANA KAROTİS ARTERDE İSE EN UYGUN YAKLAŞIM → ANTERİOR YAKLAŞIM İLE CERRAHİ TEDAVİ

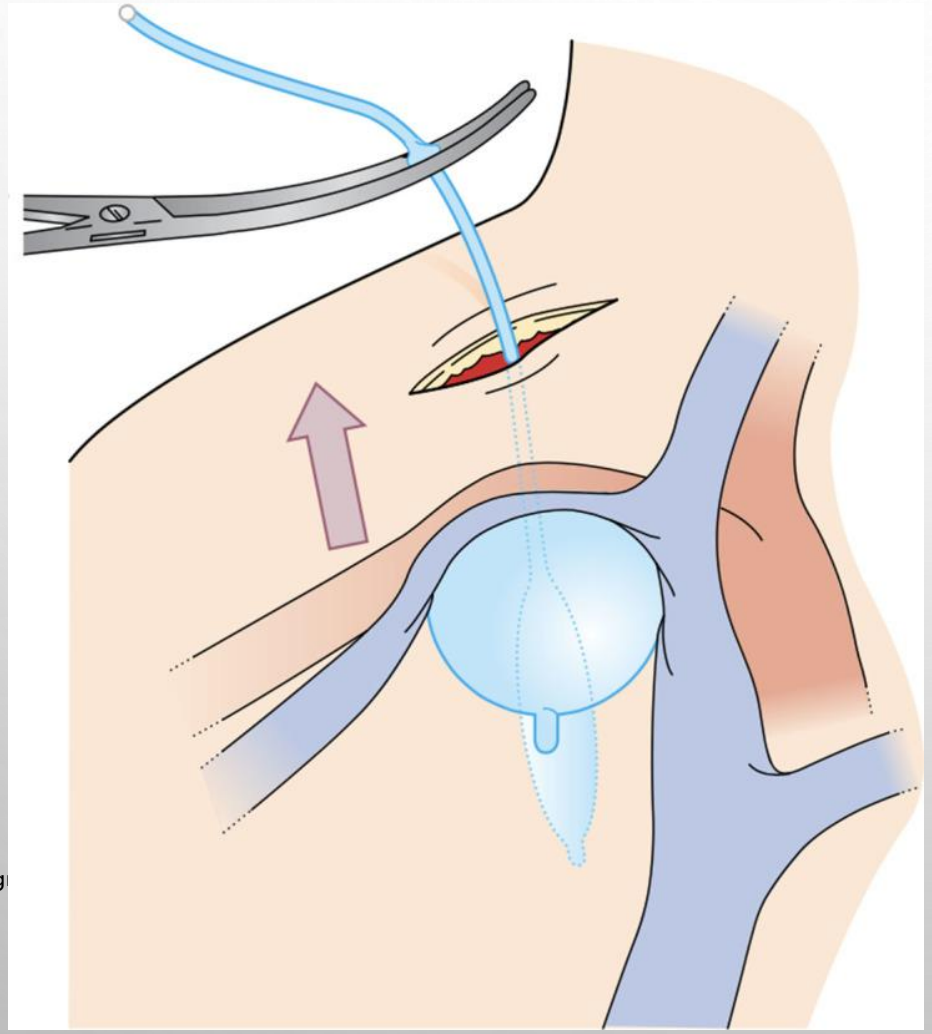
Royal College of Surgeons
ADVANCING SURGICAL CARE

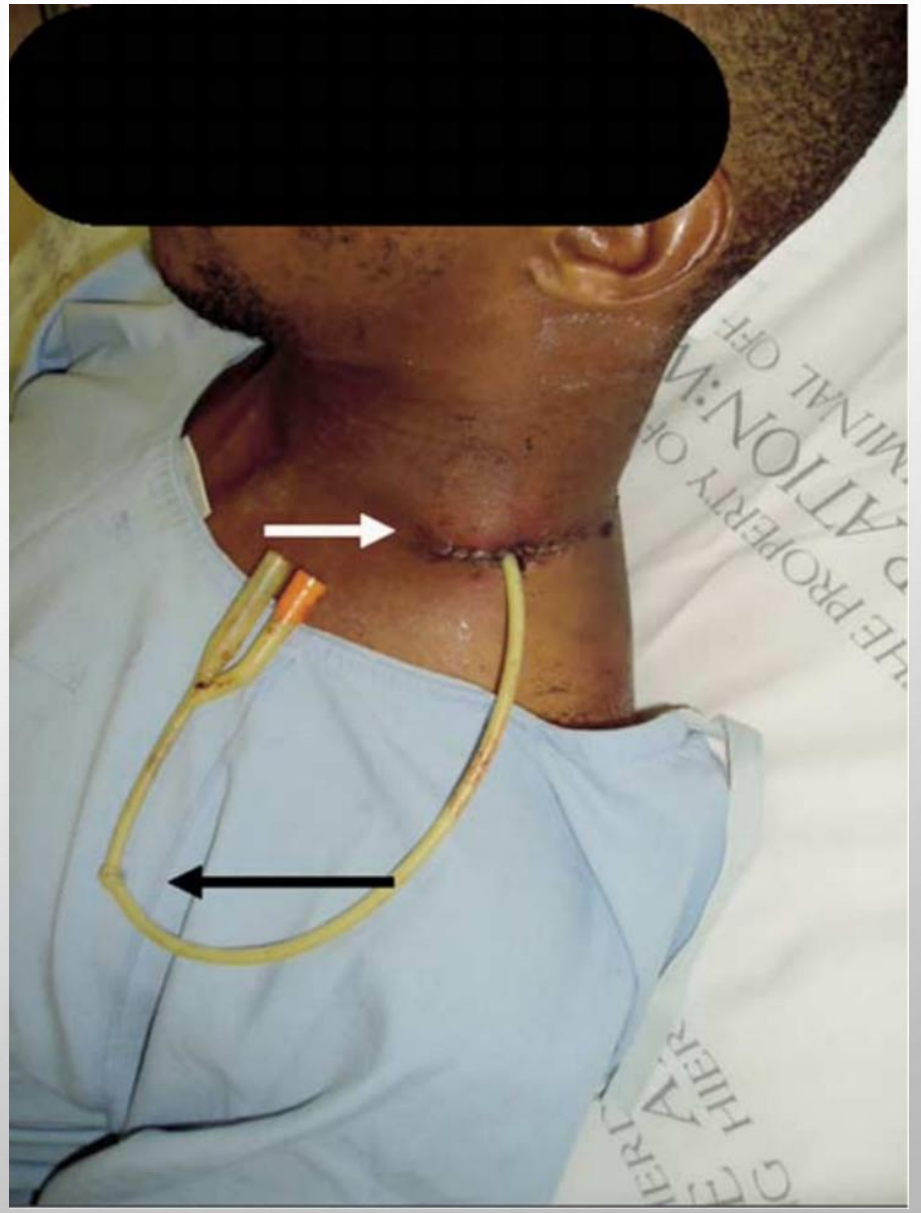
REVIEW

Ann R Coll Surg Engl 2018; **100**: 6–11
doi 10.1308/rcsann.2017.0191

Penetrating neck injuries: a guide to evaluation and management

JL Nowicki[1], B Stew[1], E Ooi[1,2]





Management of Penetrating Injuries to Carotid Artery

David V. Feliciano, M.D.

Grady Memorial Hospital, Emory University School of Medicine, 69 Butler Street, Suite 301, Atlanta, Georgia 30303, USA

Published Online: July 9, 2001

World J. Surg. 25, 1028–1035, 2001
DOI: 10.1007/s00268-001-0055-y

WORLD Journal of SURGERY

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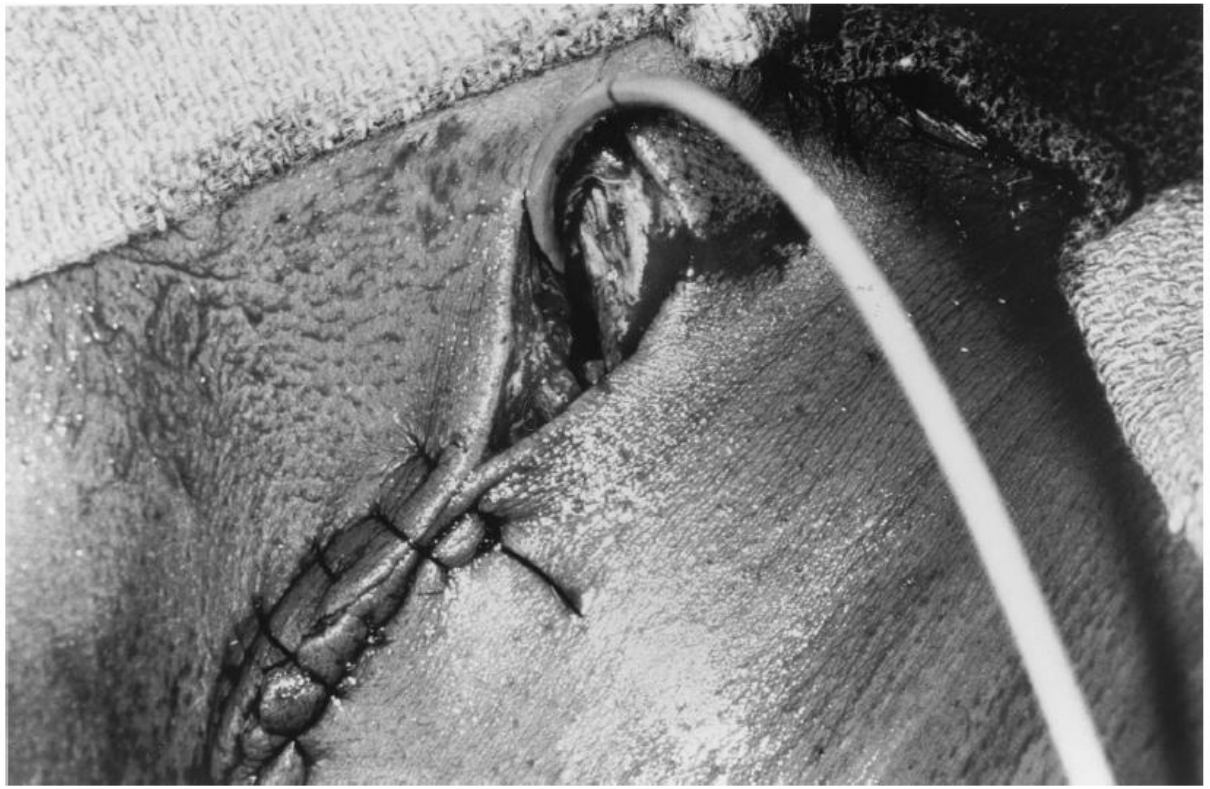


Fig. 8. A #8 Fogarty balloon catheter was inserted into a high cervical stab wound to control exsanguinating hemorrhage. Deflation of the balloon and removal of the catheter were performed on the 4th day after insertion.

CERRAHİ TEKNİKLER

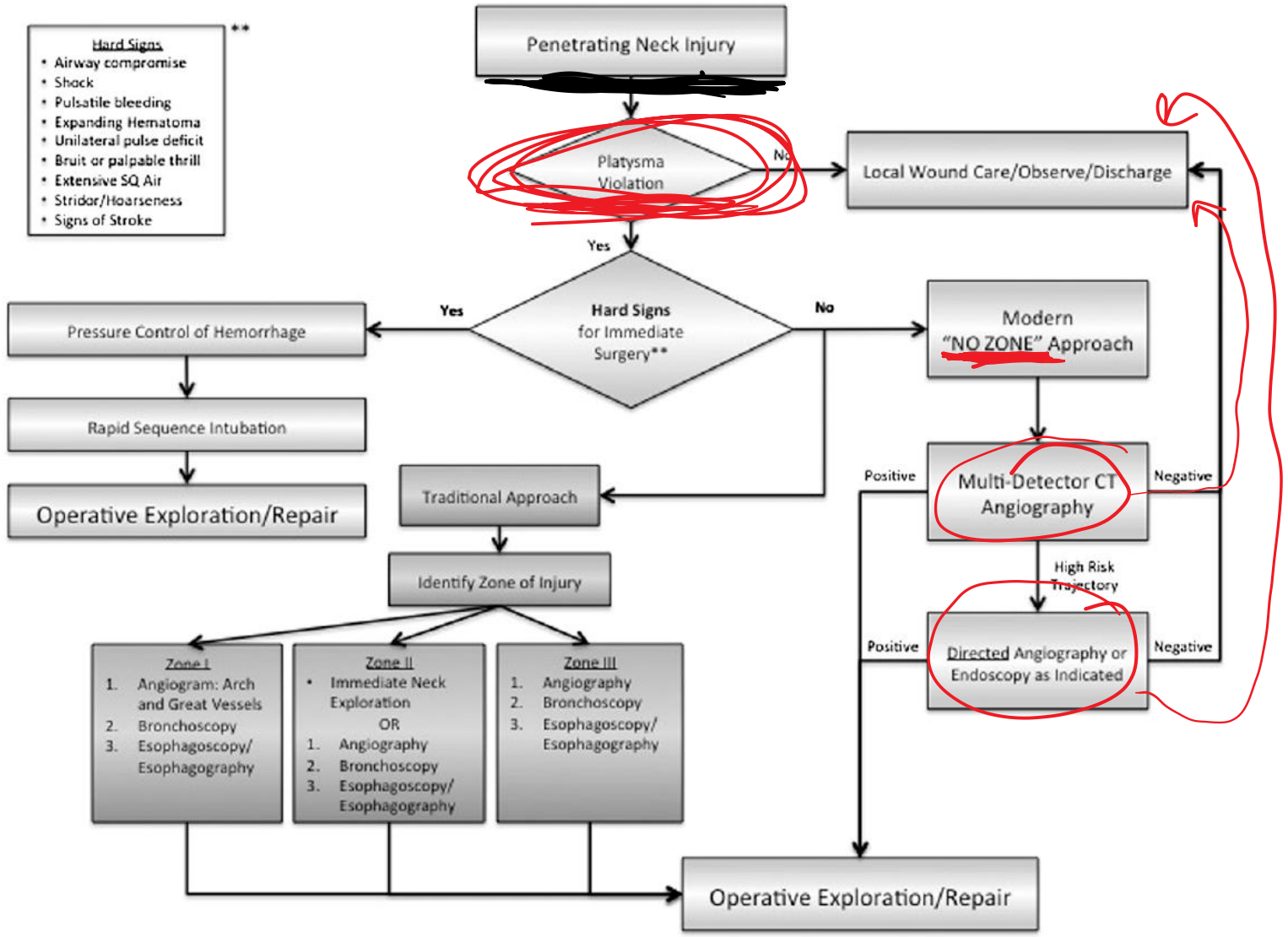
- ARTERİYEL ONARIM → PRİMER, PATCH, GREFT (OTOJEN / NONOTOJEN) – ÖZELLİKLE 2. BÖLGE
- LİGASYON → KANAMANIN KONTROL ALTINA ALINAMADIĞI 3. BÖLGE KANAMALARI
  - İJV VE ECA YARALANMALARINDA GEREKLİ GÖRÜLÜRSE
  - İCA LİGASYONU YALNIZCA TAMİRİN MÜMKÜN OLMADIĞINDA – MORTALİTE %45!!!
- BYPASS

Penetrating Neck Trauma: A Review of Management Strategies and Discussion of the 'No Zone' Approach

ADAM M. SHIROFF, M.D.,* STEPHEN C. GALE, M.D.,* NIELS D. MARTIN, M.D.,† DANIEL MARCHALIK, M.D.,* DMITRIY PETROV, M.D.,* HESHAM M. AHMED, M.B., CH.B.,* MICHAEL F. ROTONDO, M.D.,‡ VICENTE H. GRACIAS, M.D.*

*From the *Department of Surgery, Division of Acute Care Surgery, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, New Jersey; the †Department of Surgery, Jefferson Medical College, Thomas Jefferson University, Philadelphia, Pennsylvania; and the ‡Department of Surgery, East Carolina University Brody School of Medicine, Greenville, North Carolina*

«NO ZONE» YAKLAŞIMI..



CERRAHİ İÇİN İPUÇLARI….

- KESİ VE HAZIRLIKLAR STERNOTOMİYE GİDEBİLECEĞİ DÜŞÜNÜLEREK YAPILMALIDIR..
- KANAMANIN DURDURULAMADIĞI DURUMLARDA FOGARTY KATETER / PERİFRİK BALON İLE OKLÜZYON..
- MÜMKÜNSE OPERASYON ESNASINDA ŞANT KULLANIMI??
- YARALARIN KİRLİ YARA OLDUĞU UNUTULMAMALI – OLABİLDİĞİNCE PRİMER TAMİR..
- MULTİDİSİPLİNER YAKLAŞIM….
  - ACİL + KVC + KBB, PLASTİK CERRAHİ, GÖĞÜS CERRAHİSİ, NÖROŞİRÜRJİ…

VAKA SUNUMU

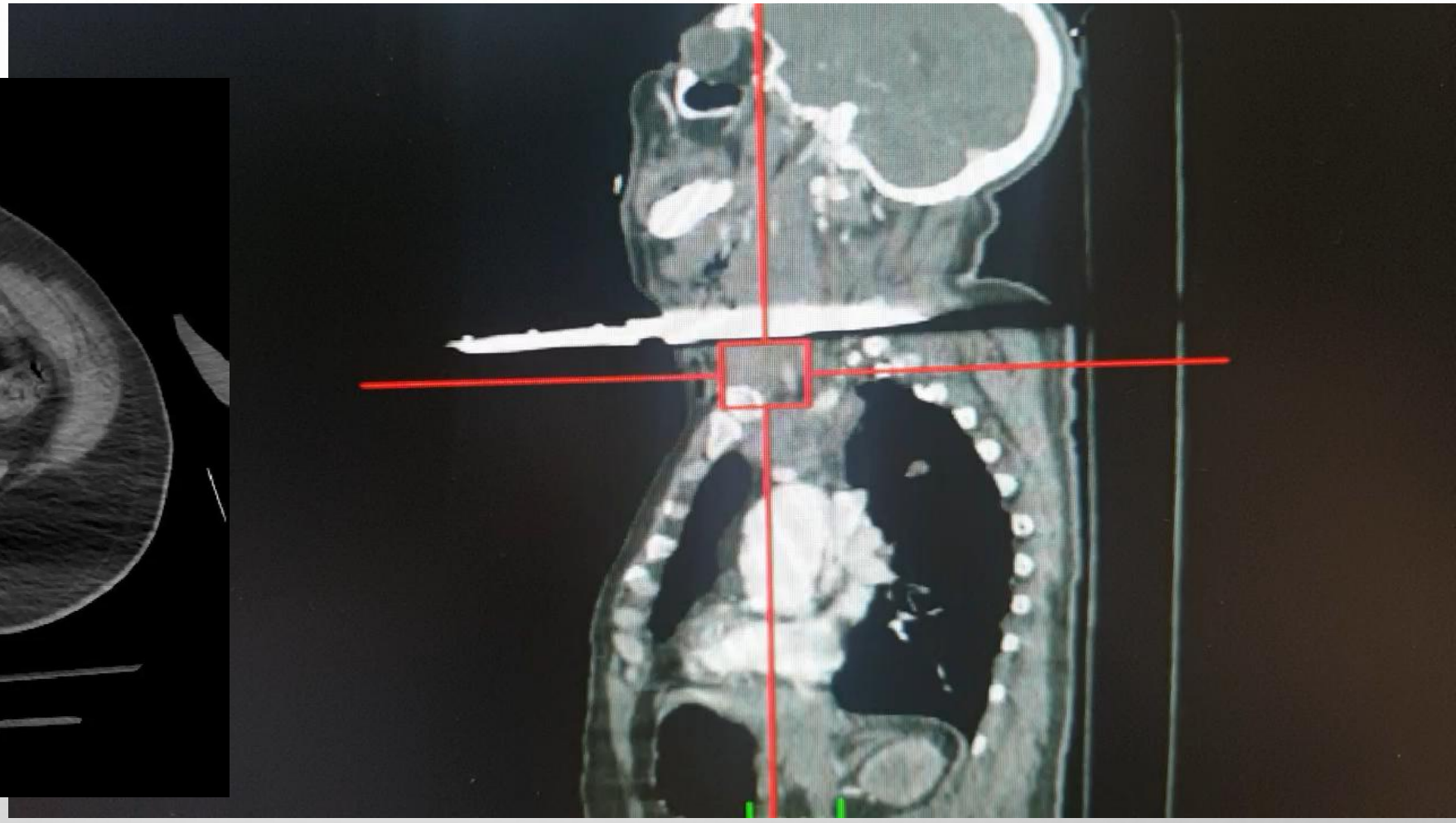
- 60 Y, ERKEK HASTA
- HX: ŞİZOFRENİ (MEDİKAL TEDAVİSİNİ ALMIYOR)
- SUİSİDAL GİRİŞİM..
- KISA SÜRELİ CPR ÖYKÜSÜ MEVCUT..
- SOL TORAKS VE BOYUN SAĞ ORTA HATTA (ZON 2) DKAY

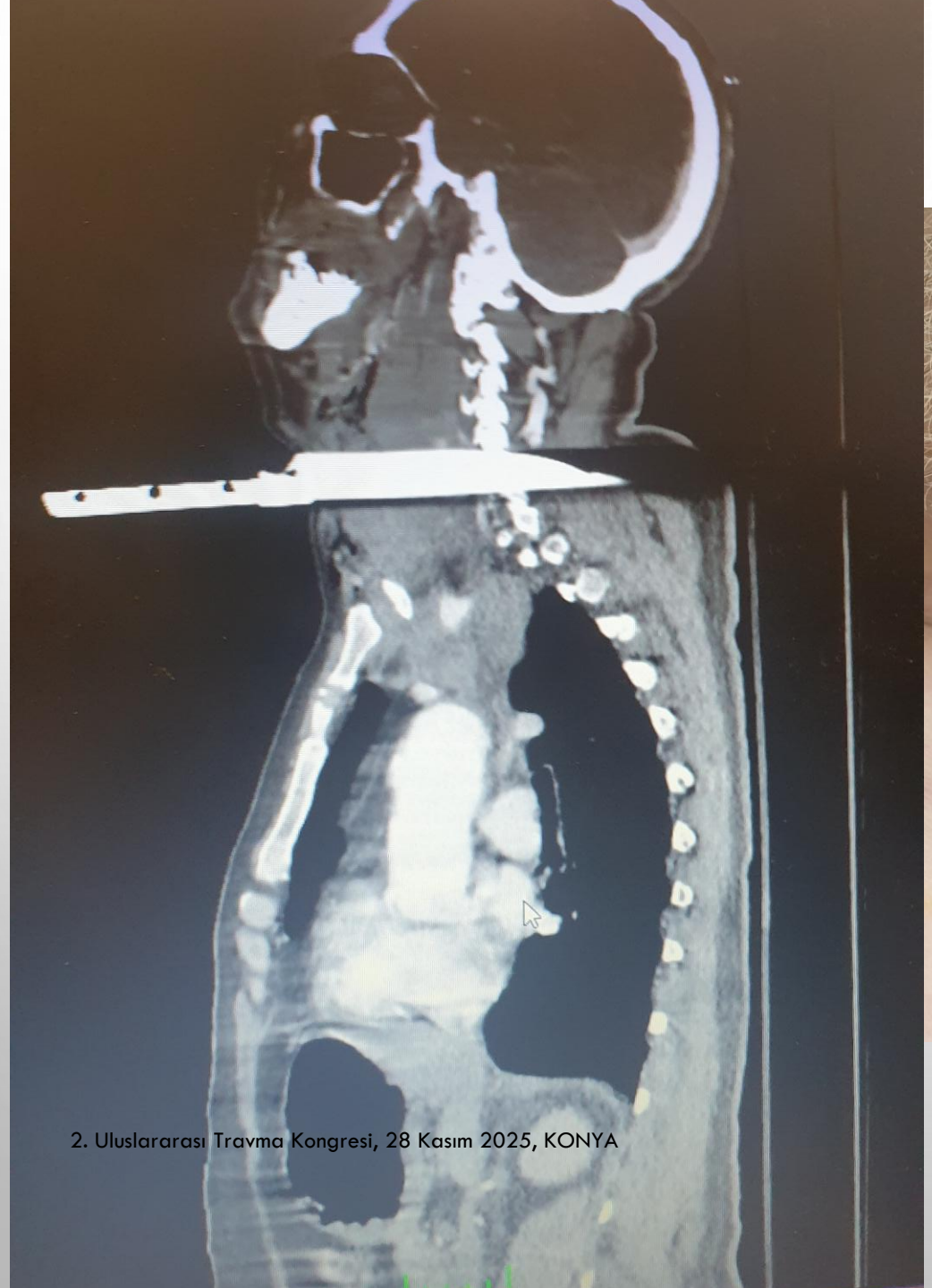
- DIŞ MERKEZDEN (100 KM) KLİNİĞİMİZE ASKOM'LANMIŞ..
- DIŞ MERKEZDE SOL TORAKSA PTX/HTX SEBEBİ İLE GÖĞÜS TÜPÜ (+)
- GD ORTA / ENTÜBE



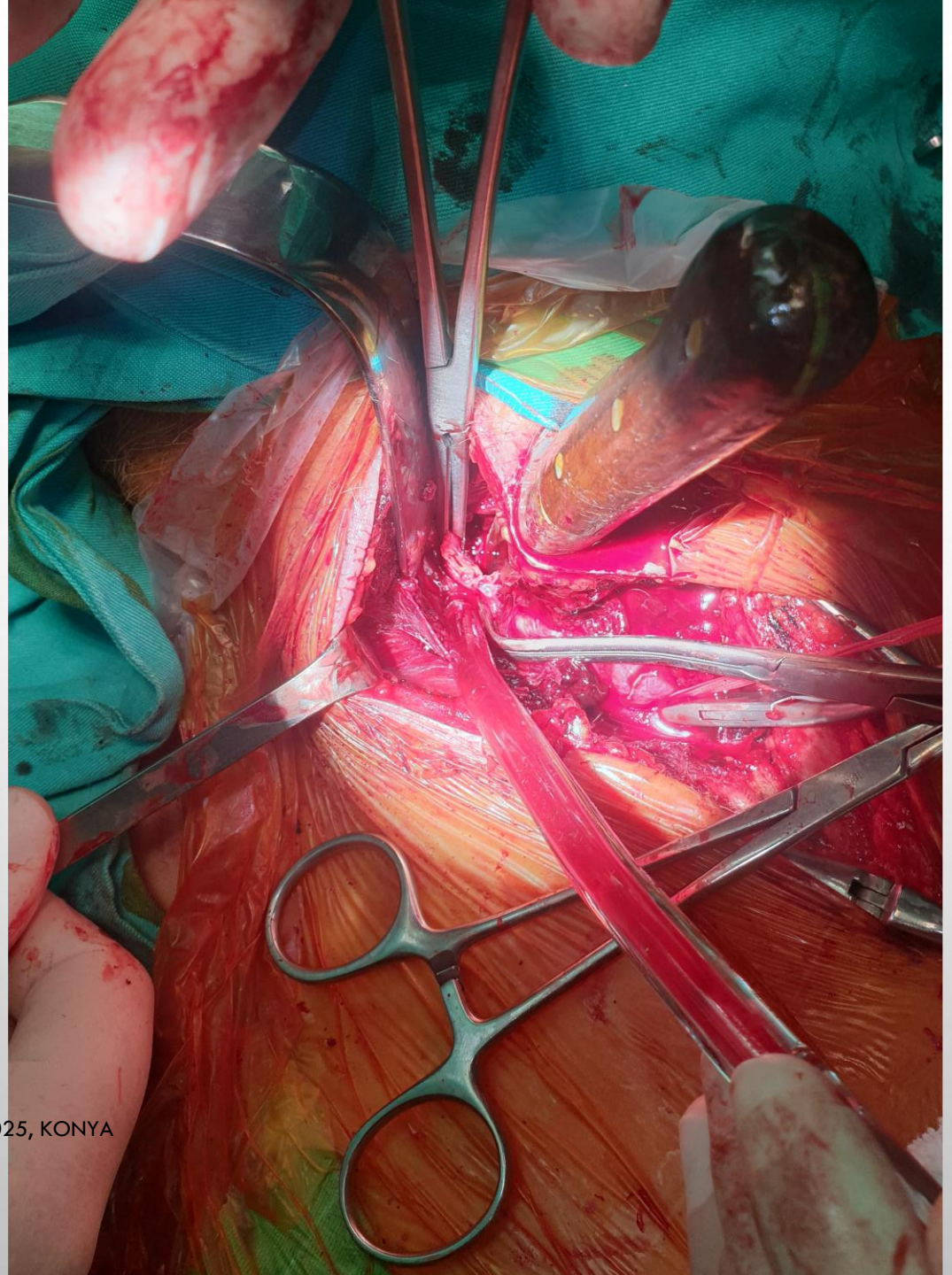

RED LINE

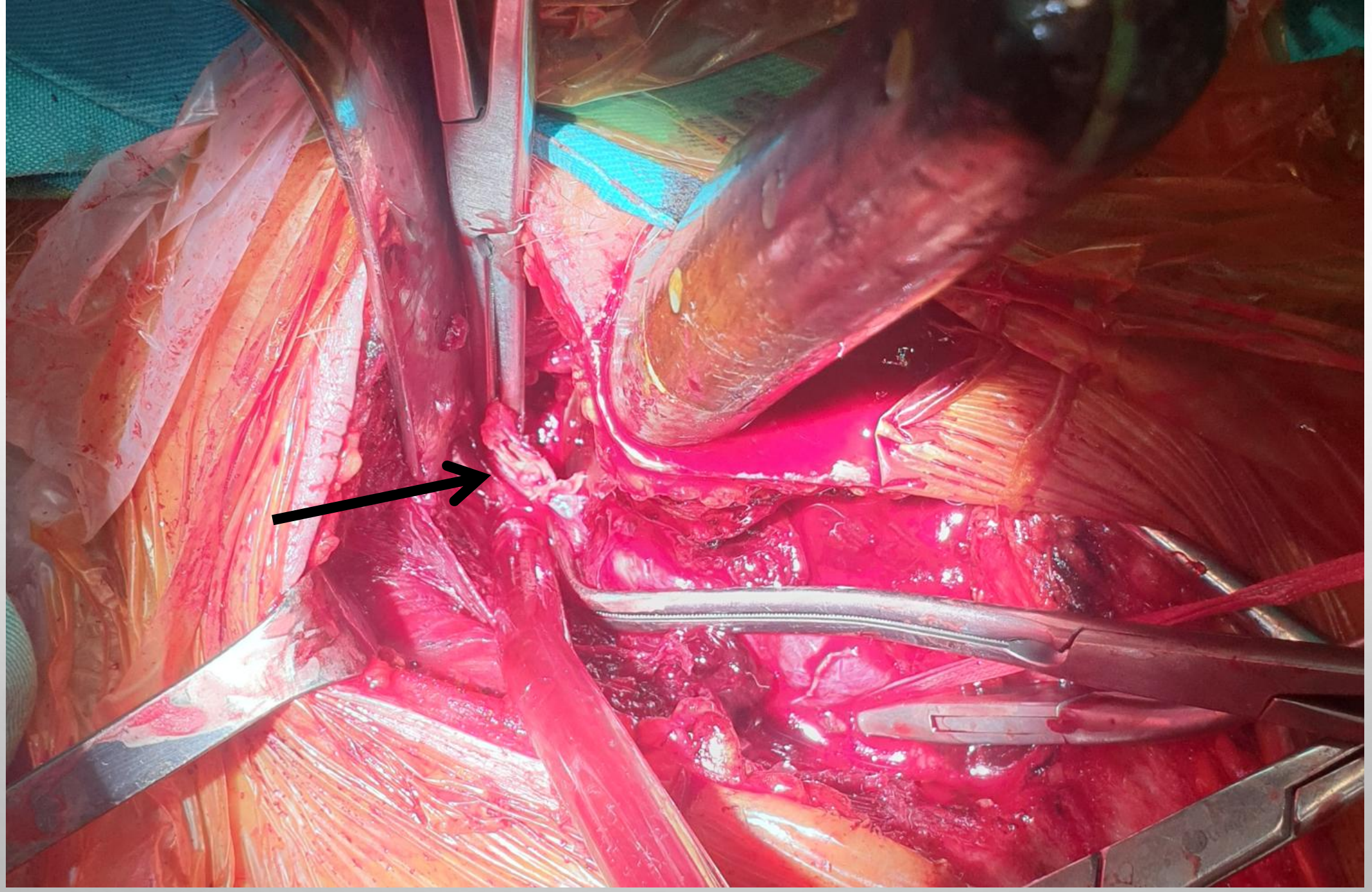


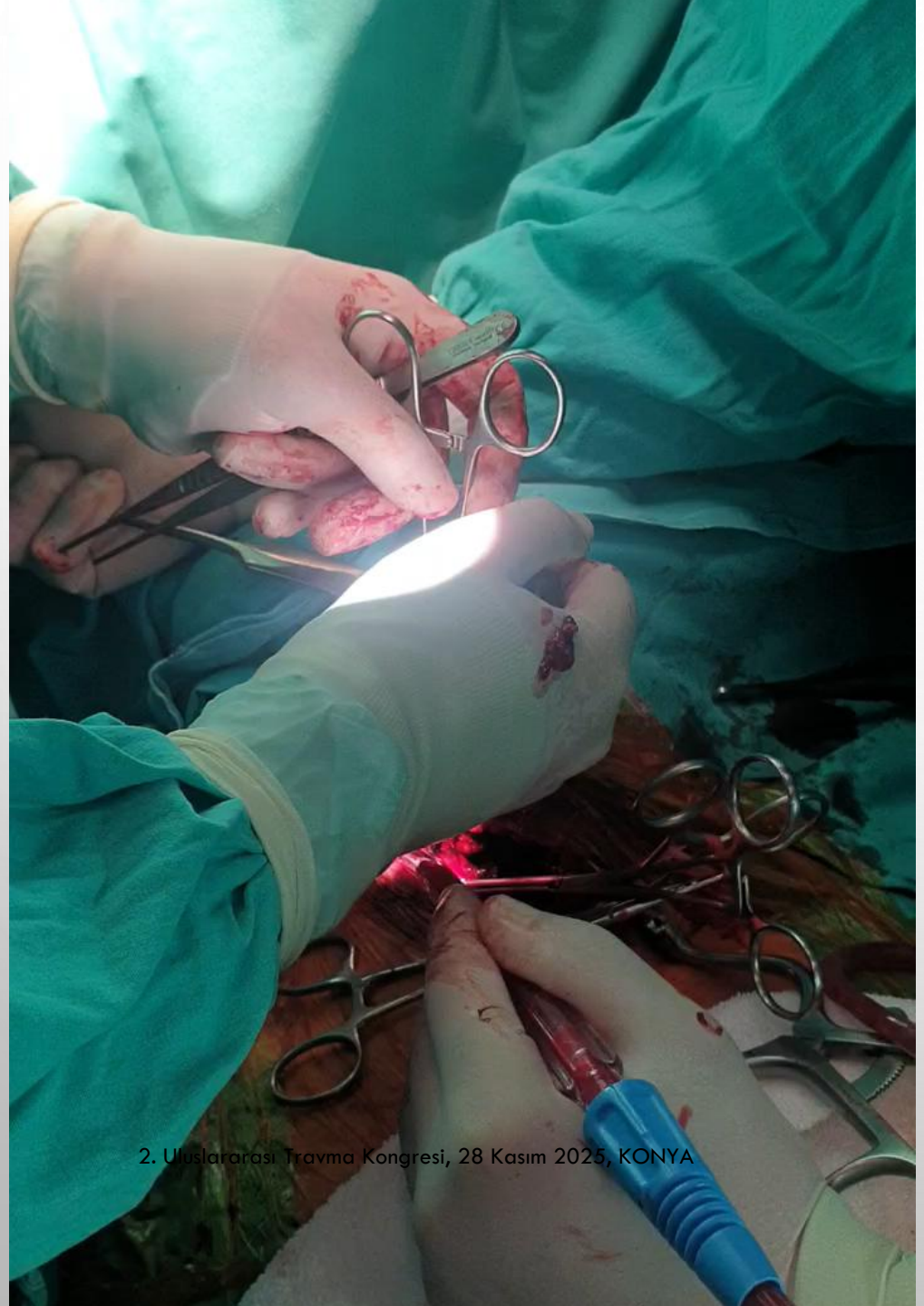


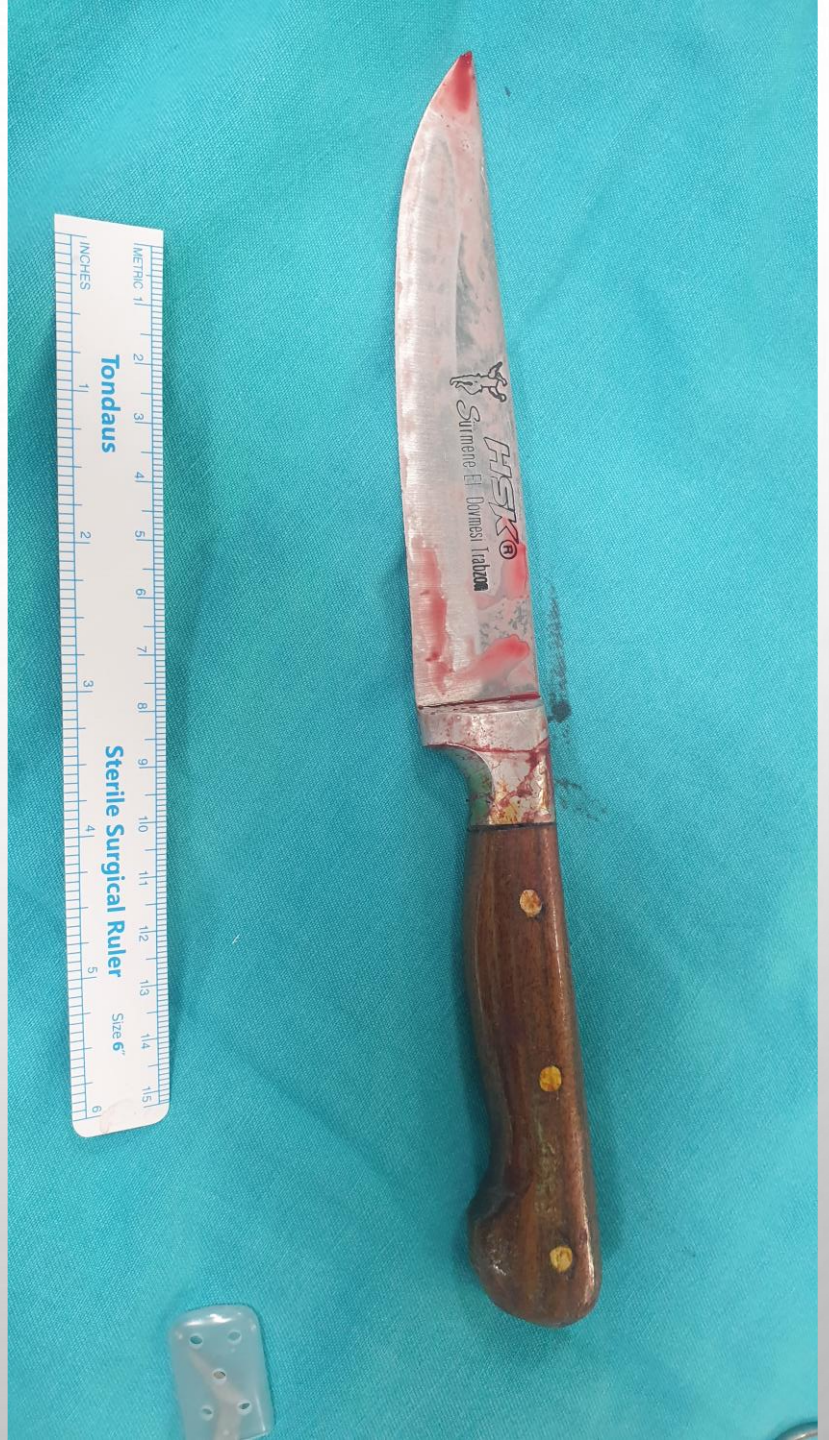


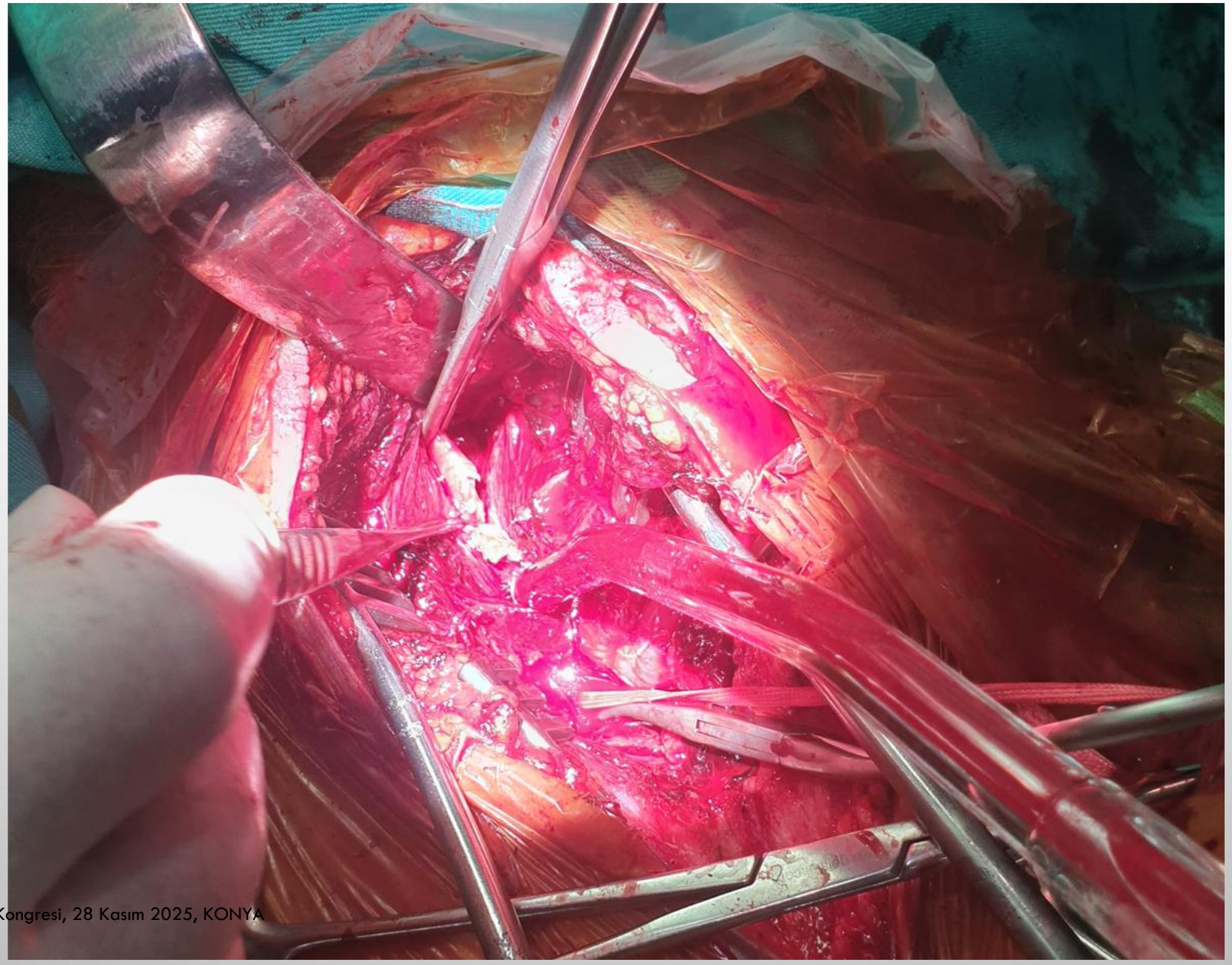


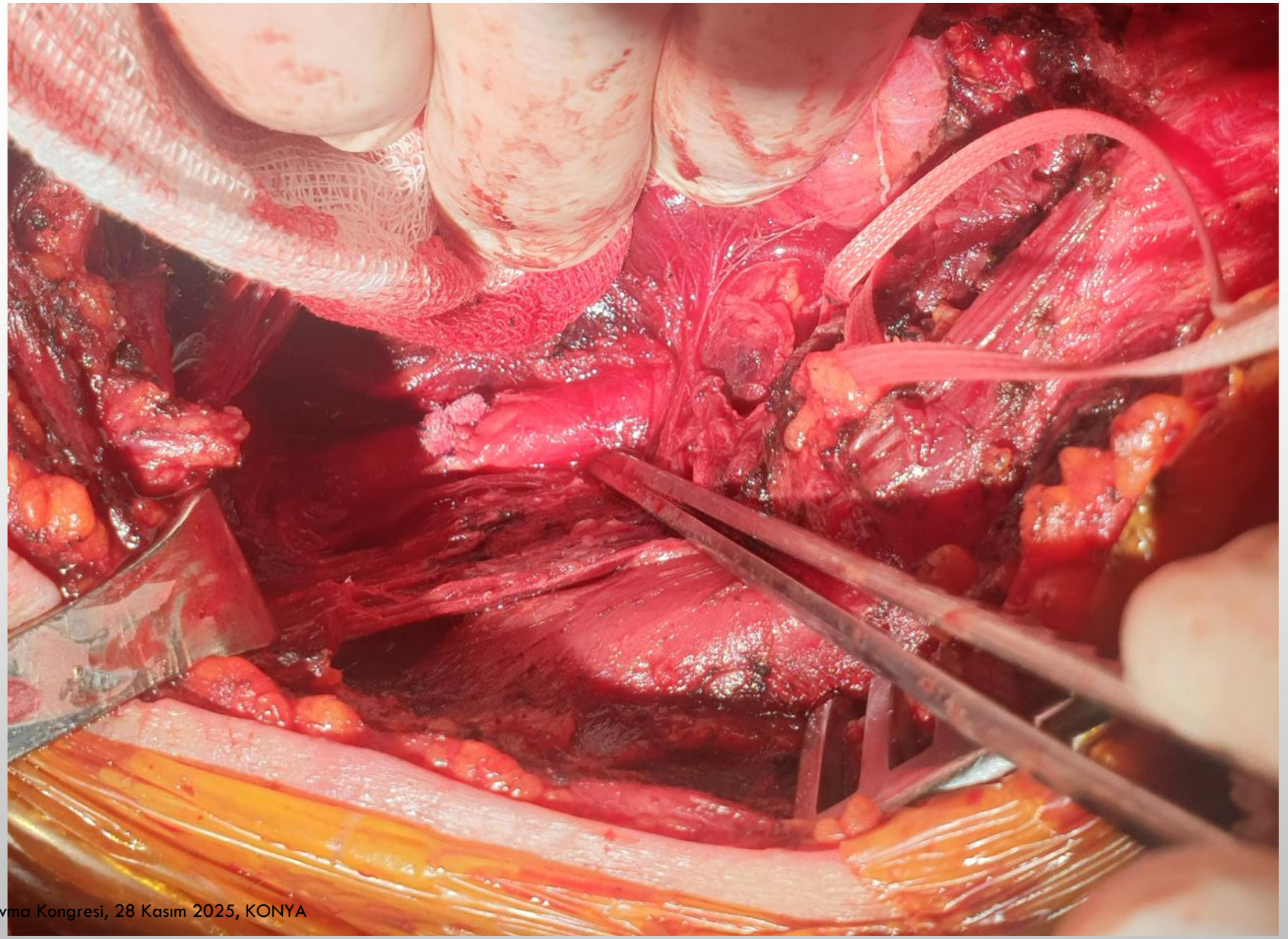







Tondaus
Sterile Surgical Ruler
Size 6"
METRIC
INCHES
HASK
Sürmene Elif Dövmesi Tatuaj





POST-OP BAKIM

- İLK GÜN UYANIKLIK (+) – SOL TORAKS TÜPÜNÜ KENDİ ÇEKTİ..
- SEDASYON & ANTİPSİKOTİK TEDAVİ
- UZUN SÜREN ENTÜBASYON (8 GÜN – SAHİPSİZ HASTA)
- NÖROLOJİK DEFİSİT YOK
- GÖĞÜS CERRAHİSİ, NÖROŞİRÜRJİ VE PSİKİYATRİ KONS…



9. GÜN



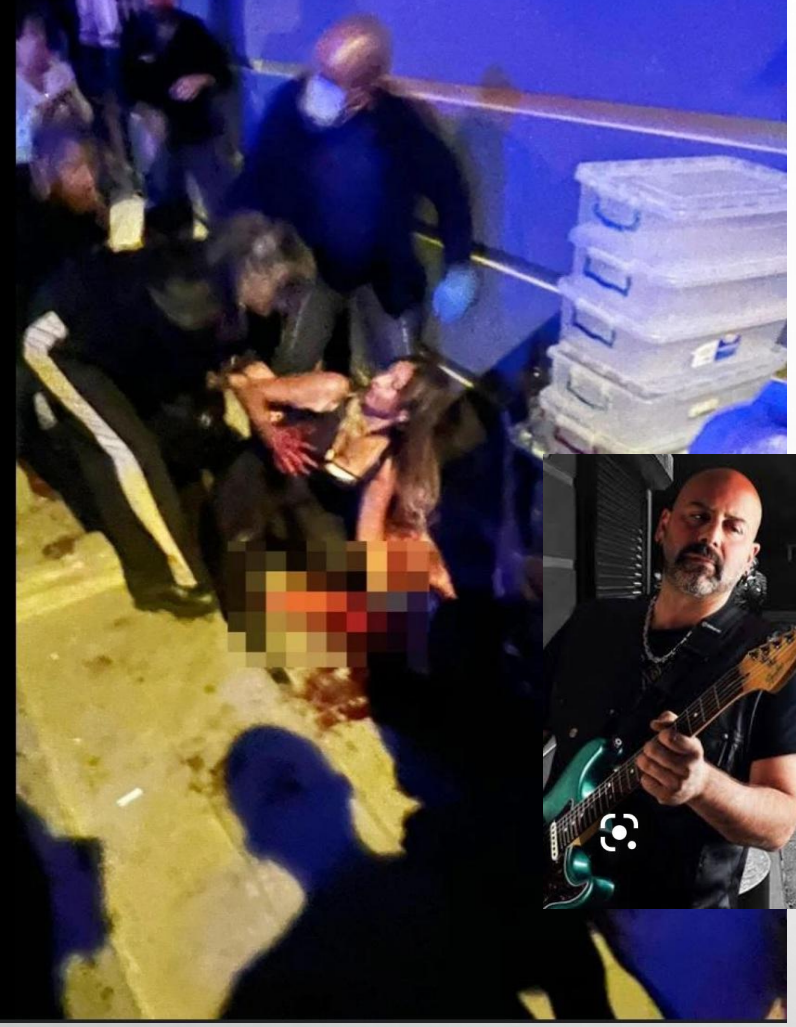


GRİ ALANLAR..

- ACİL CERRAHİ Mİ / TAKİP Mİ?
- HER KVC UZMANI / HER MERKEZ TRAVMAYA MÜDAHALE ETMELİ MİDİR?
- PRİMER ONARIM MI? / PATCH Mİ? / GREFT İNTERPOZİSYONU MU?
- KANAMALI HASTAYA ANTİKOAGÜLAN TEDAVİ?
- MEDİKOLEGAL SORUMLULUKLAR..

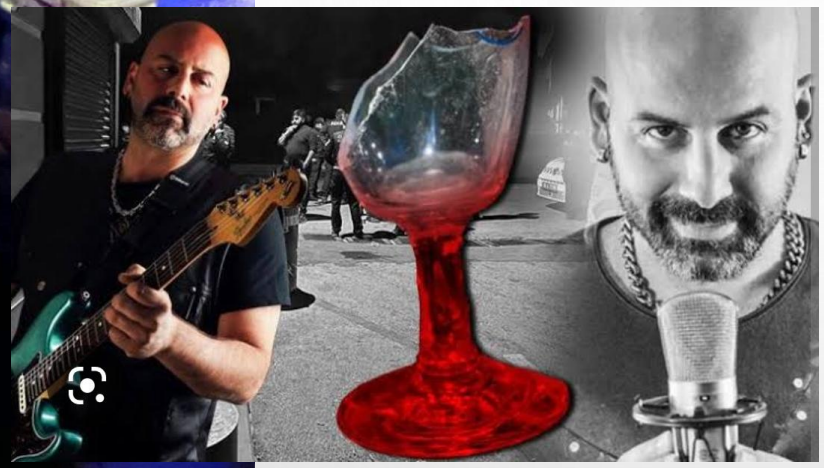
EVE GÖTÜRÜLECEK MESAJLAR..

- ACİL EKİBİNİN TANIDA SON DERECE HIZLI OLMASI HAYAT KURTARIR
- KUVVETLİ BULGULARI OLAN HASTALARDA GECİKME YAŞANMAMALI..
- PLATİSMANIN GEÇİLDİĞİ MUHTEMELEN HER OLGU EKSPLORASYON GEREKTİRİR..
- ACİL / PLANLI CERRAHİ HAYAT KURTARICIDIR..
- STERNOTOMİ İÇİN HAZIRLIKLI OLUNMALIDIR..
- HER ACİL UZMANI KANAMAYI KONTROL ETMEK İÇİN GEREKLİ YAKLAŞIMLARI BİLMELİ,
- HER KVC UZMANI, BOYUN TRAVMASINA YAKLAŞIMI UYGULAYABİLMELİDİR..



İNSAN OLDUĞUNUZU HATIRLAYIN,
GERİDE KALAN HER ŞEYİ UNUTSANIZ DA OLUR..

A. EINSTEIN



- SABRINIZ İÇİN TEŞEKKÜRLER..

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