East Lancashire Hospitals NHS
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Tunneled Central Venous Line Insertion

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Cumbria and Lancashire Vascular and Endovascular Centre
Operative Department Training – 1st March 2016

Safe | Personal | Effective

Disclosure

- No disclosures declared.
- No financial relationship with content.
- Personal experience with clinical evidence.

Learning Outcomes

- Indications for Tunnelled Line Insertion.
- Pre-Operative Planning.
- Operating Theatre Set-Up.
- Intra-operative scanning.
- Procedure.
- When it goes wrong !!!!

Clinical Indications

- Peripheral versus Central.

- Treatment Required;
  - Oncological.
  - Nutrition.
  - Antimicrobial.

- Patient Status;
  - Haemodynamic stability.
  - Previous lines and/or surgery – breast.
  - Current sepsis.
  - Blood test abnormalities – FBP / INR.

Pre-operative Workup

- Effective and experienced team;
  - Patient status judgement.
  - GA vs. LA.
- Patient monitoring.
- Careful skin shaving.
- Wound dressing care.

Contraindications

- This procedure has no absolute contraindications.

- However, relative contraindications include the following;

  - Severe coagulopathy.
  - Physical status unfit for anaesthesia.
  - Unavailability of a suitable access site.
  - Thrombosed veins.
  - Overlying skin infection.

Theatre Set-Up

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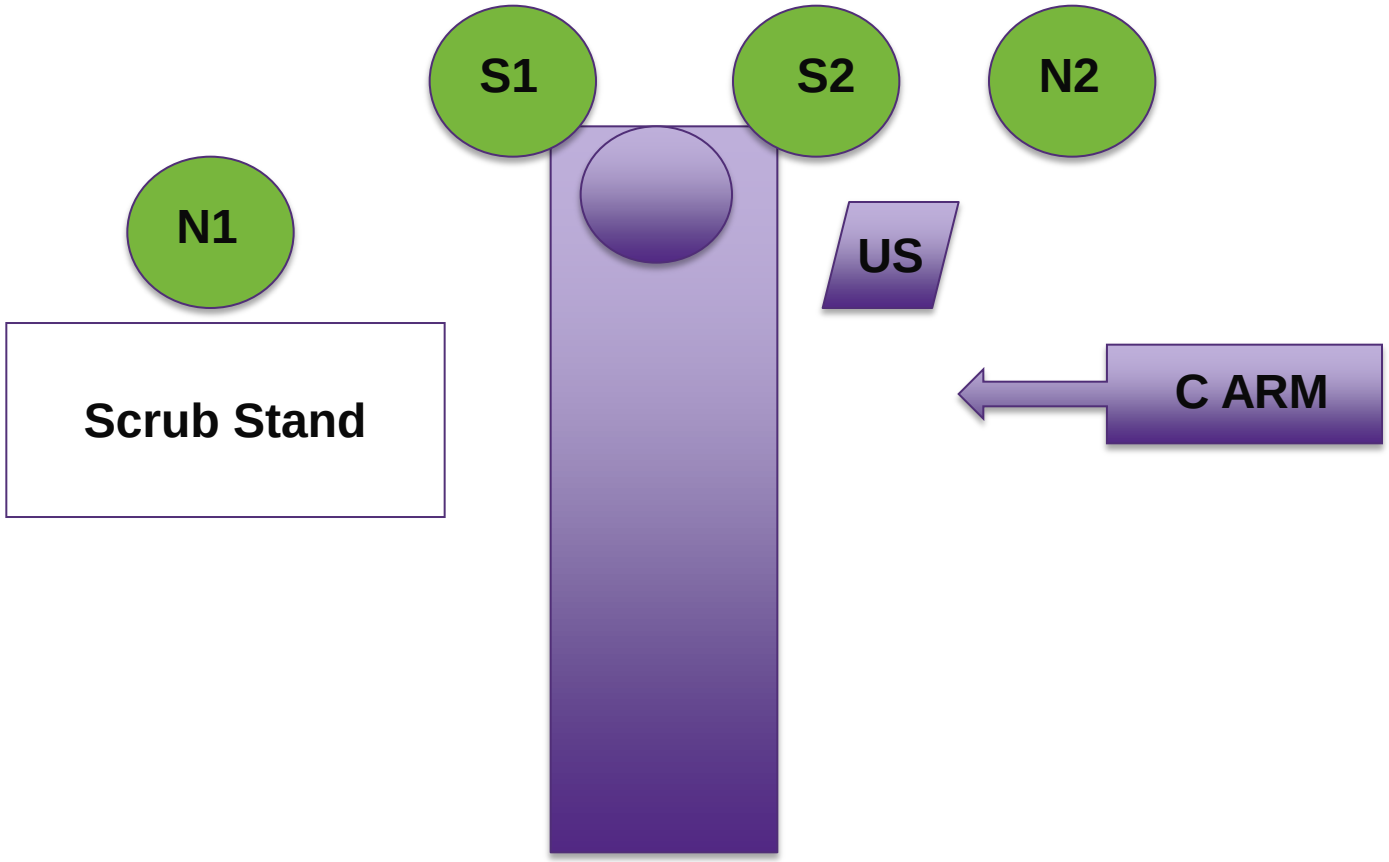

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Patient Positioning

- Trendelenburg position with the head turned to the opposite side of the central venous line (CVL) insertion is optimal, as the internal jugular vein (IJV) distends in this position, providing a maximal cross-sectional area for access, as shown in the image below. The ipsilateral arm should be extended minimally at the axilla.

Patient Skin Prep and Draping

- Prep as if using both sides.
- 4 sticky drapes to enclose.

Patient Skin Prep and Draping

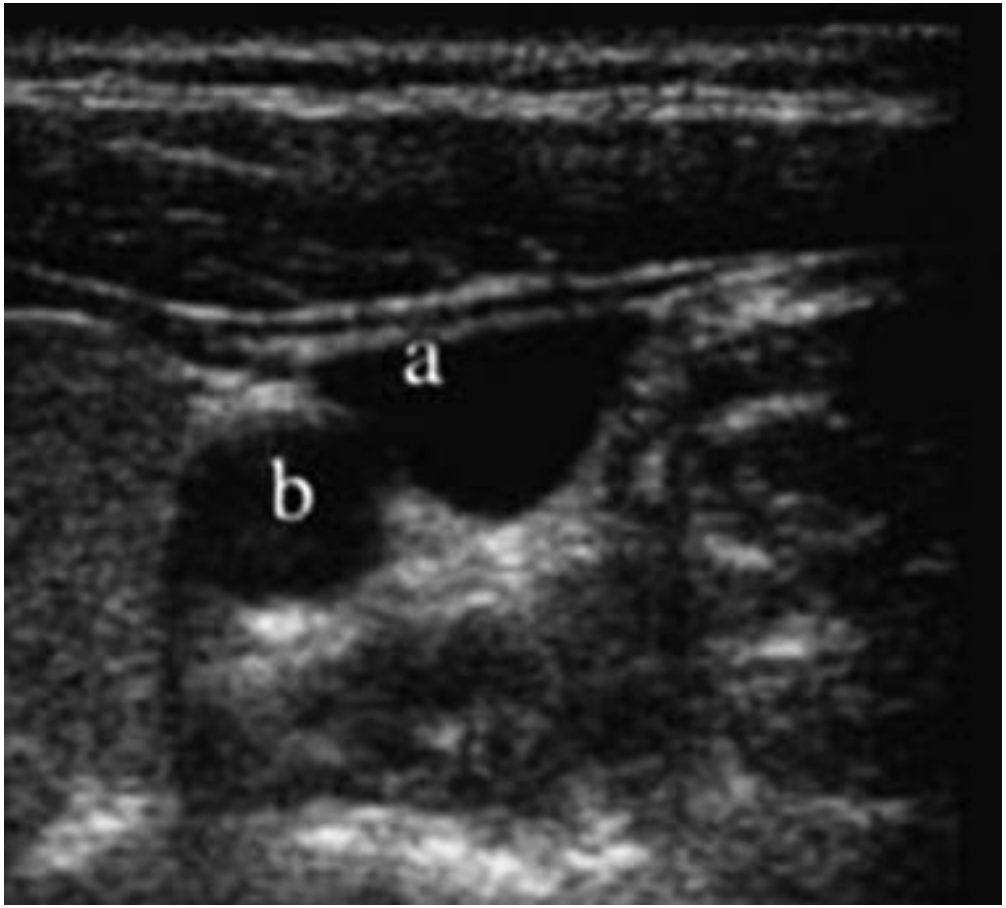
Locating the Jugular Vein

- The internal jugular vein (IJV) is located between the clavicular heads of the sternocleidomastoid. It is accessed best at the apex of the triangle the muscle heads make with the clavicle (see the image below).Prep as if using both sides.

Locating the Jugular Vein

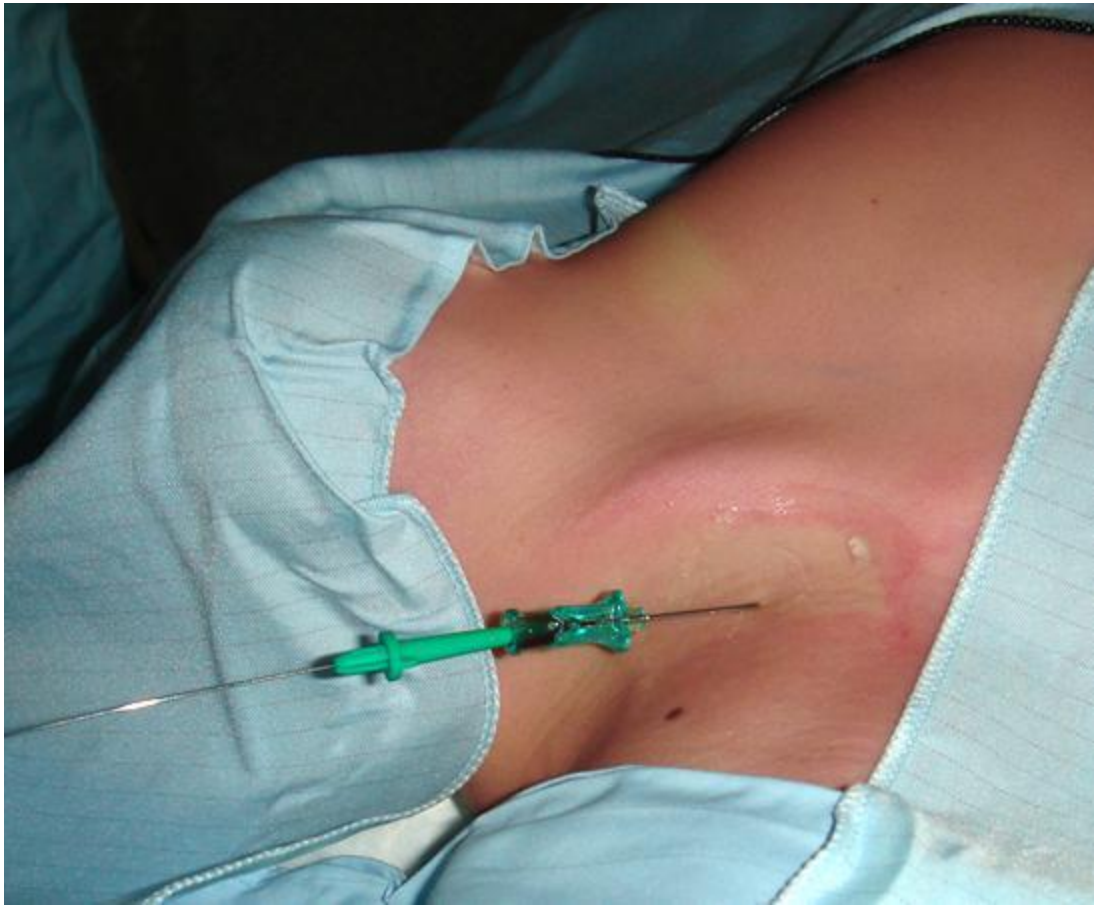
- Use the anterior approach to access the IJV under ultrasound guidance.
- US has reduced failure rate, reduction in multiple attempts, reduction in misplacements, preservation of vein patency, and decrease in the incidence of line sepsis.
- Risk of pneumothorax.

Intra-operative Scanning

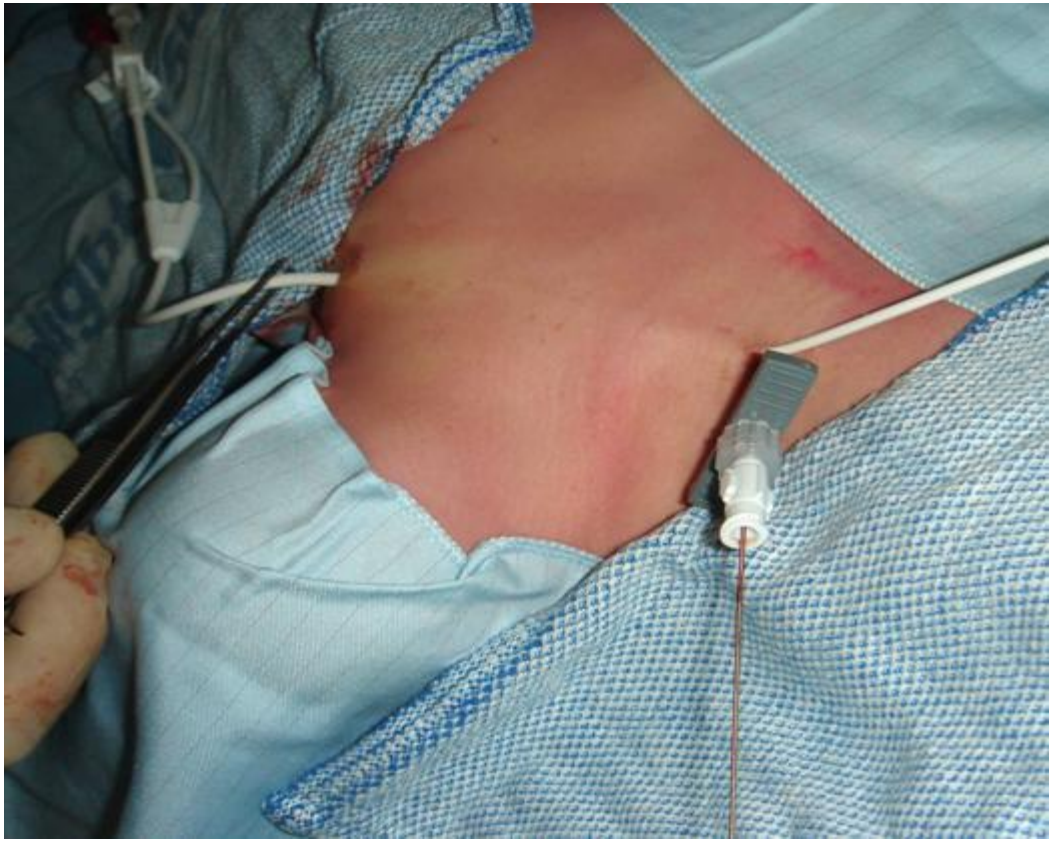


Procedure

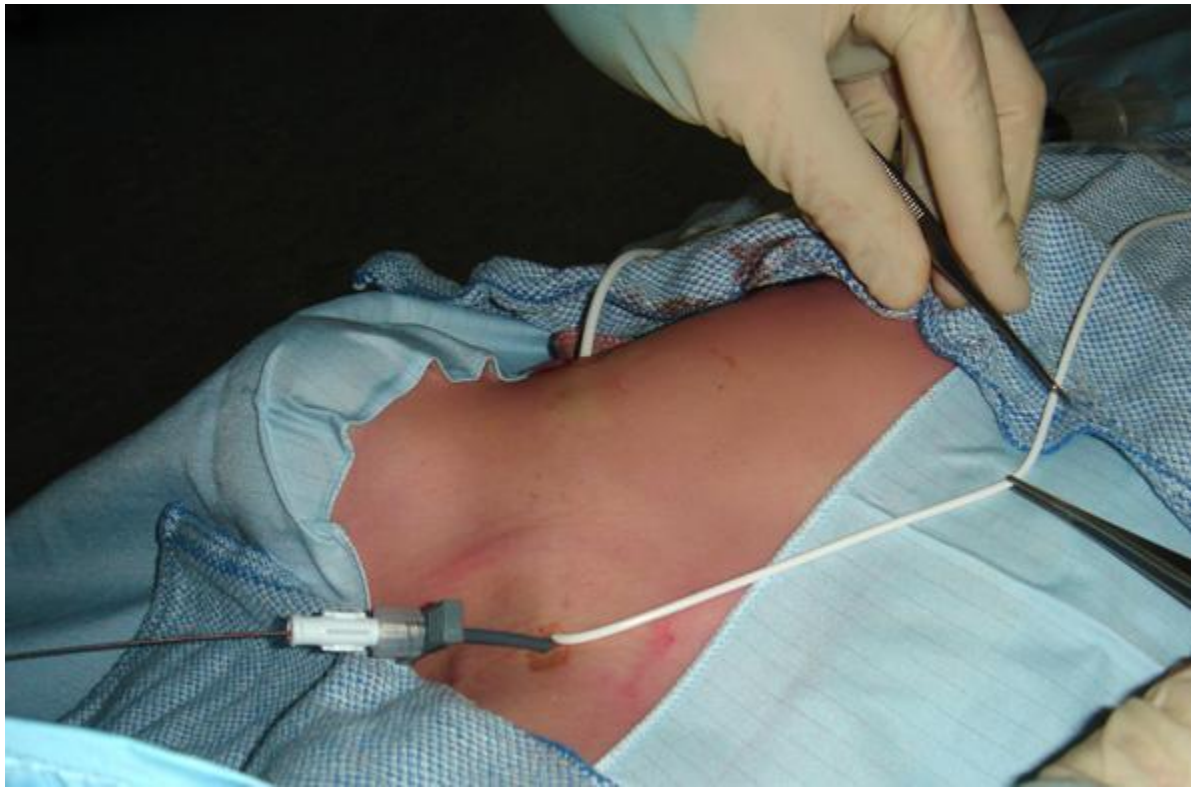
Procedure



Procedure



Procedure



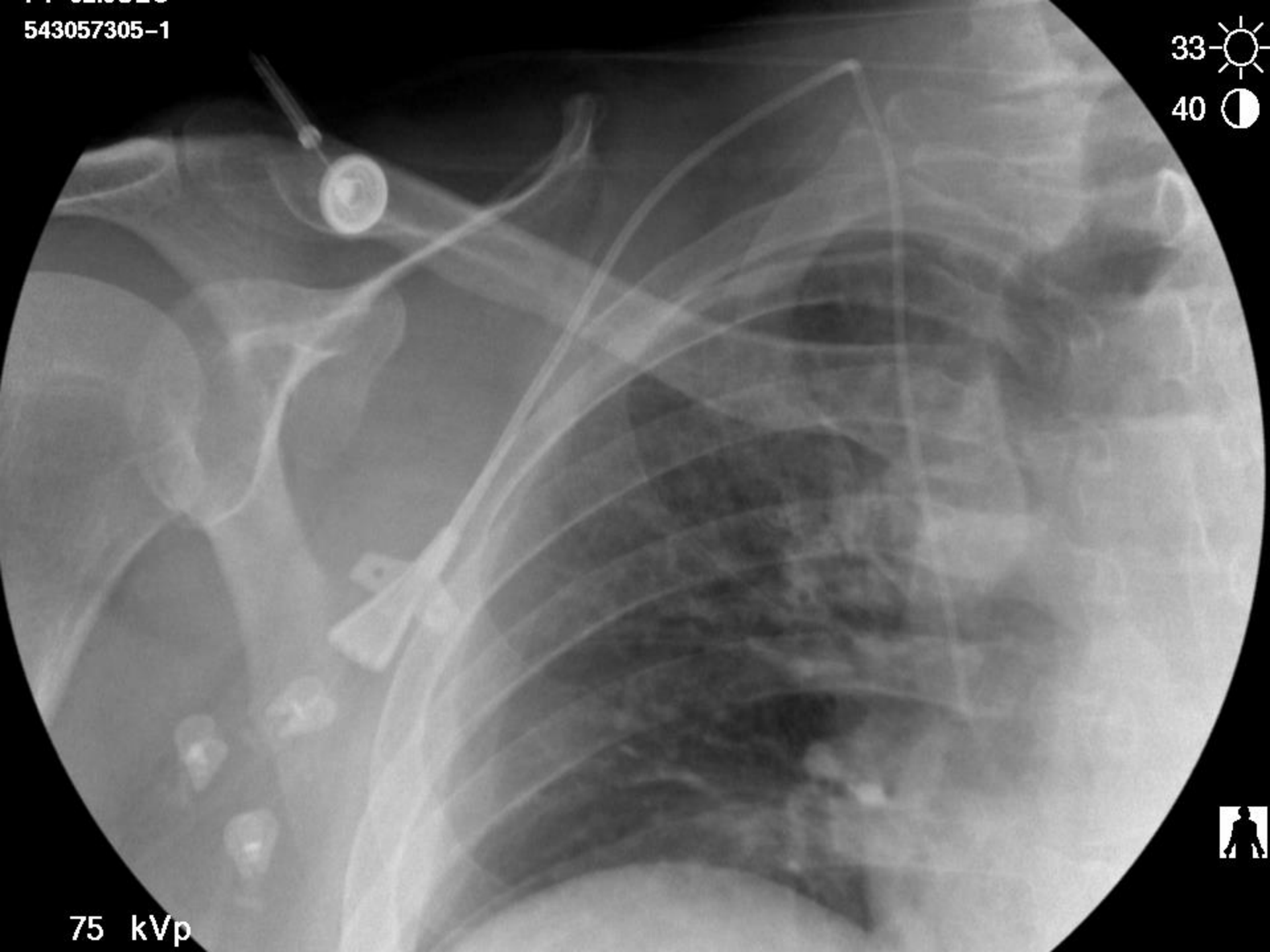
Procedure

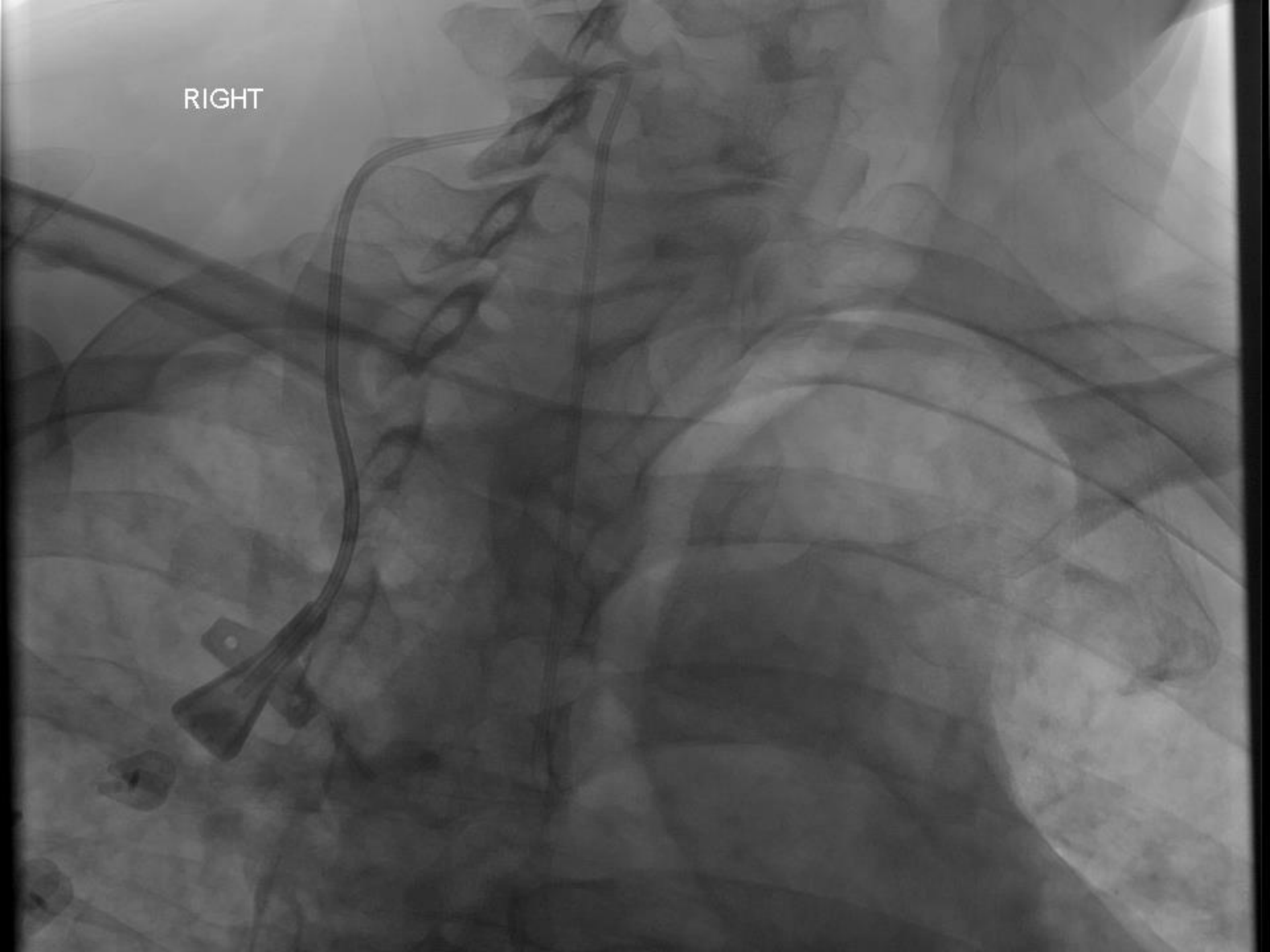
Procedure

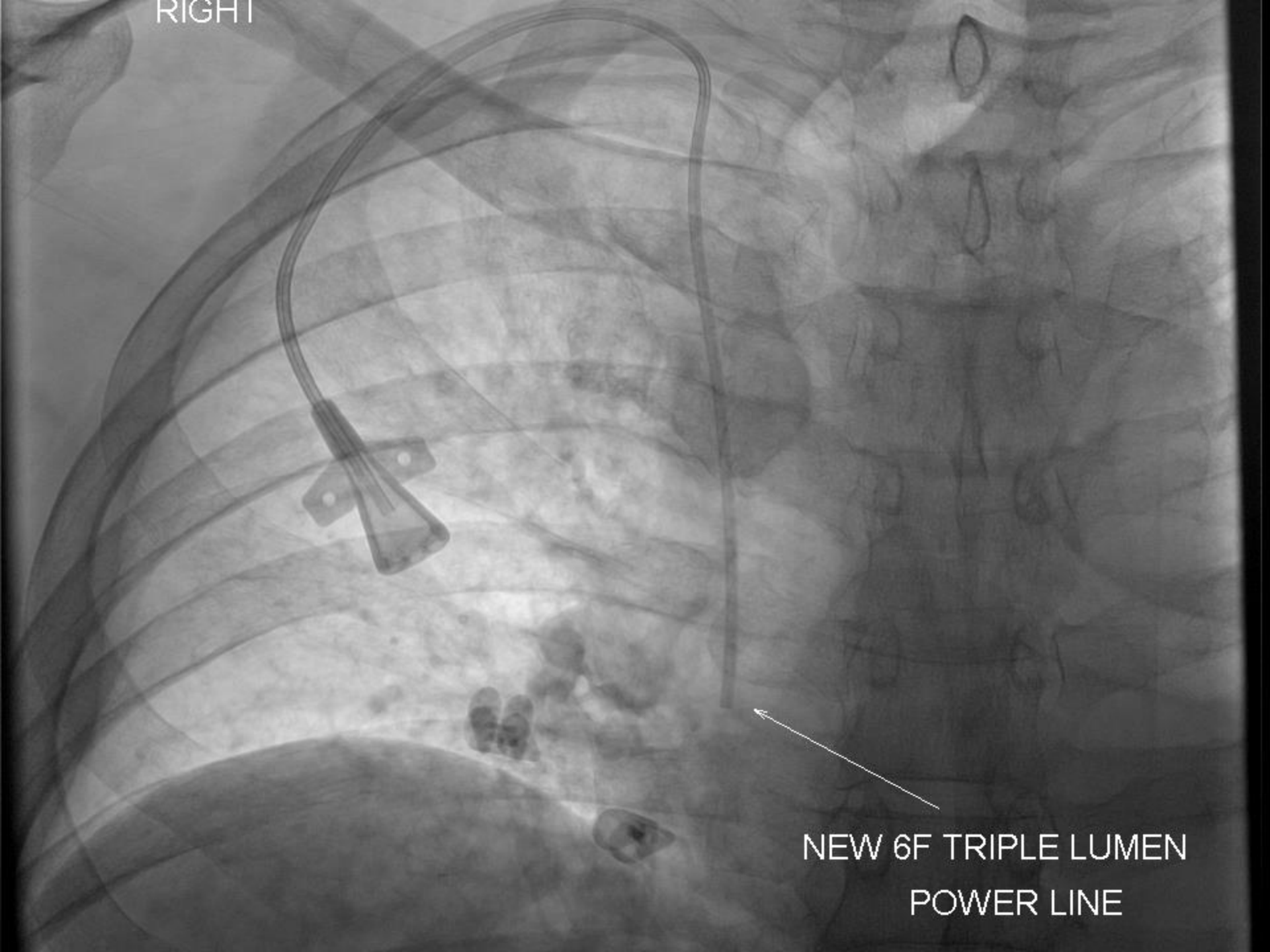
Procedure

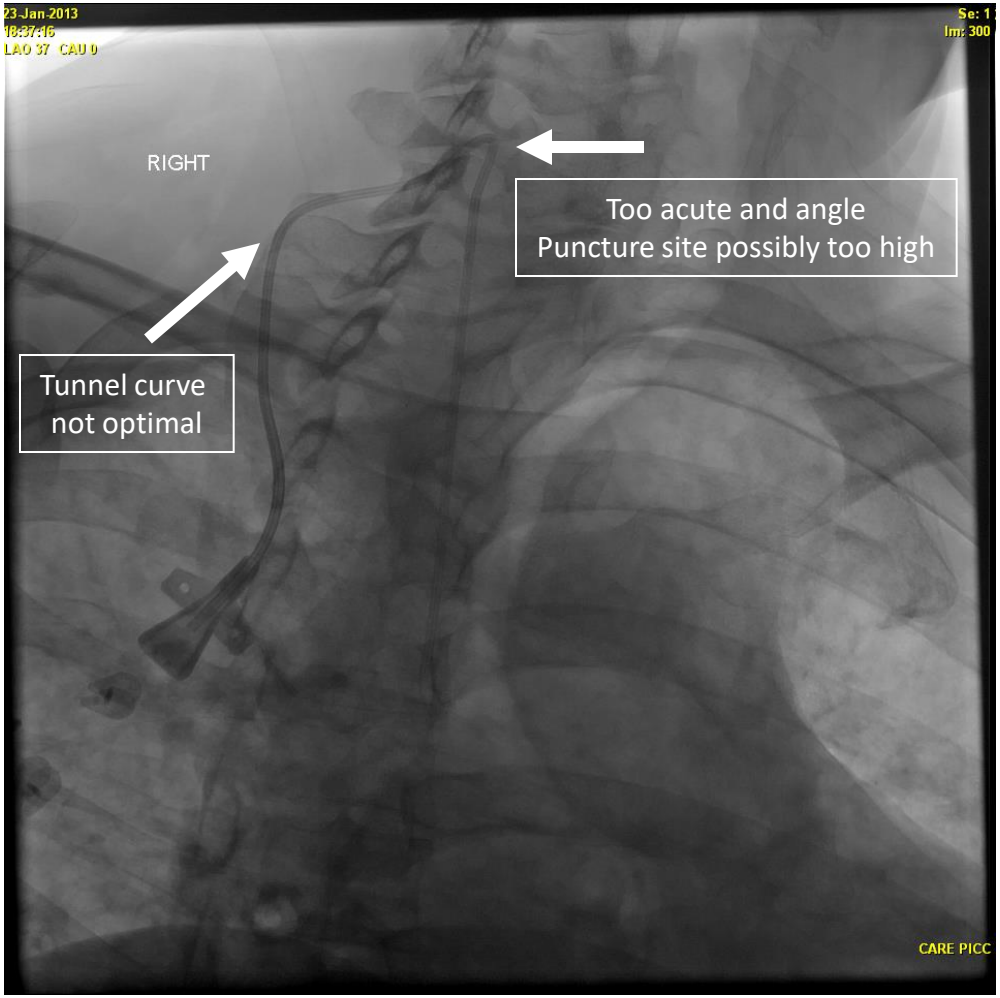
When it goes wrong !!!

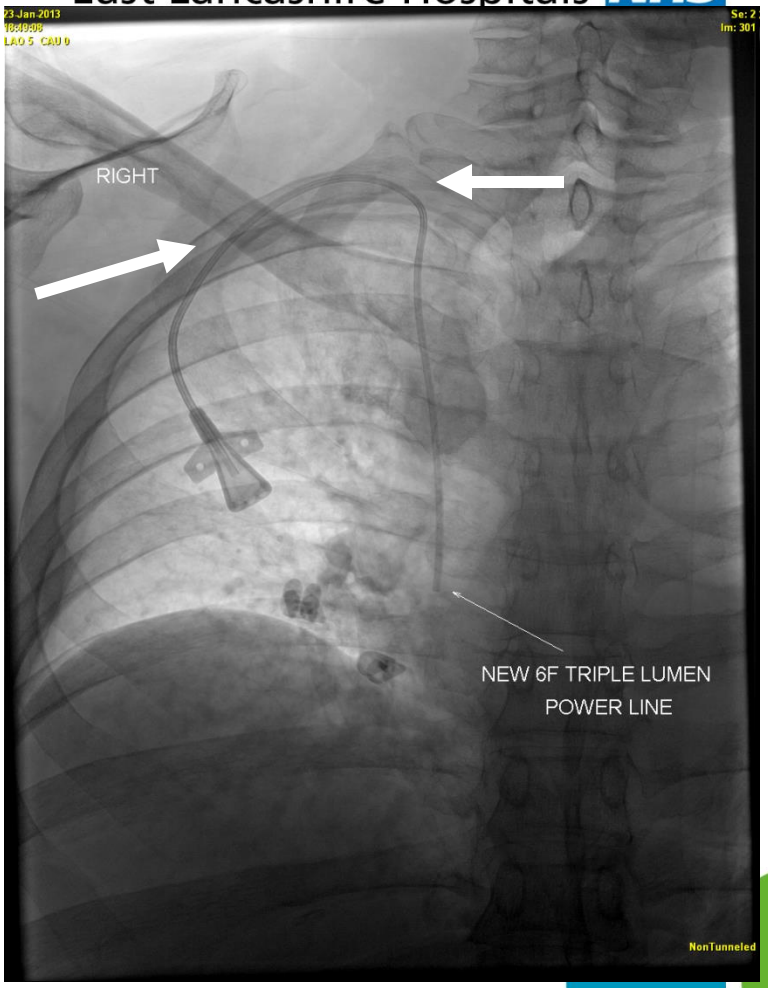
- Arterial Stick.
- Cannot get guidewire to progress.
- Tunnel curve wrong.
- Line tip in wrong place.
- Line won't aspirate.


543057305-1
33
40
75 kVp


RIGHT


RIGHT
NEW 6F TRIPLE LUMEN
POWER LINE


RIGHT
Too acute and angle
Puncture site possibly too high
Tunnel curve
not optimal
CARE PICC


RIGHT
NEW 6F TRIPLE LUMEN
POWER LINE
NonTunneled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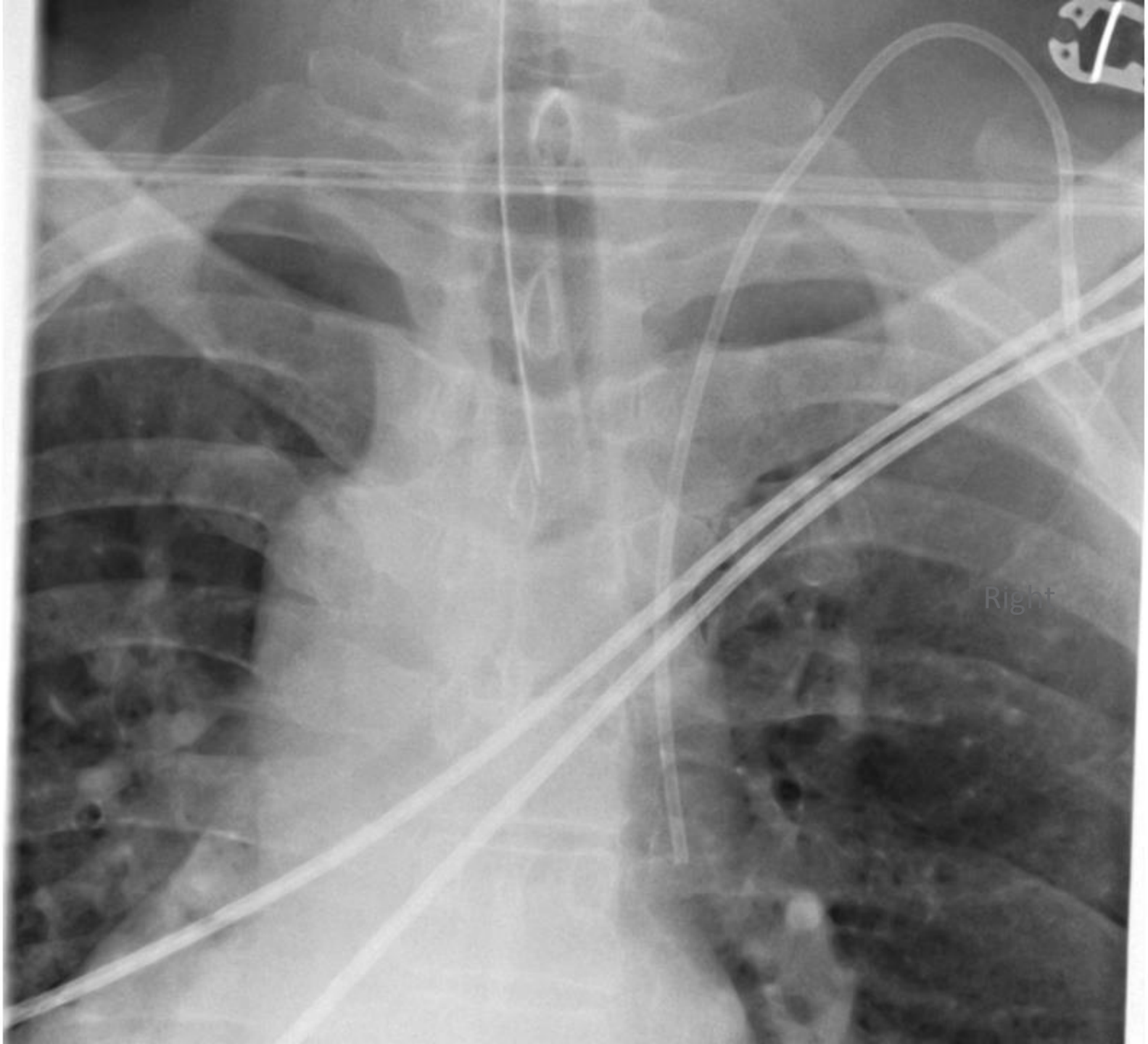
42


Right

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BRIEF ARTICLES

Analysis of risk factors for central venous port failure in cancer patients

Ching-Chuan Hsieh, Hsu-Huei Weng, Wen-Shih Huang, Wen-Ke Wang, Chiung-Lun Kao, Ming-Shian Lu, Chia-Siu Wang

OBJECTIVES

1348 totally implantable venous access devices (TIVADs) into 1280 cancer patients.

METHODS

Cox proportional hazard model to analyze risk factors for failure while log-rank test was used to compare actuarial survival rates.

Infection, thrombosis, and surgical complication rates ($\chi 2$ test or Fisher's exact test) were compared in relation to the risk factors.

Online Submissions: wjg.wjgnet.com
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doi:10.3748/wjg.15.4709

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Analysis of risk factors for central venous port failure in cancer patients

Ching-Chuan Hsieh, Hsu-Huei Weng, Wen-Shih Huang, Wen-Ke Wang, Chiung-Lun Kao, Ming-Shian Lu, Chia-Siu Wang

RESULTS

Increasing age, male gender and open-ended catheter use were significant risk factors reducing survival of TIVADs.

Hematogenous malignancy decreased the survival time of TIVADs. Although not statistically significant by univariate analysis, it became a significant risk factor by multivariate analysis (HR = 1.499, 95% CI: 1.079-2.083, *P* = 0.016) when correlated with variables of age, sex and catheter type.

Close-ended (Groshong) catheters had a lower thrombosis rate than open-ended catheters (2.5% *vs* 5%, *P* = 0.015).

Hematogenous malignancy had higher infection rates than solid malignancy (10.5% *vs* 2.5%, *P* < 0.001).

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CONCLUSION

Increasing age, male gender, open-ended catheters and hematogenous malignancy were risk factors for TIVAD failure.

Close-ended catheters had lower thrombosis rates and hematogenous malignancy had higher infection rates.

Questions