

EU-ME1

Common Terms and Definitions

FUNCTION	DEFINITION
FREEZE	Allows user to freeze and unfreeze ultrasound image.
RELEASE	This will print ultrasound image only (for use with black and white printer). For endoscopic image capture, use scope button.
GAIN	Level of shades of gray. Increases or decreases image brightness. Accurate gain setting would show a vessel as anechoic (black).
CONTRAST	Level of blacks and whites.
DIR: NORMAL	The DIR button switches the viewing direction of the ultrasound image. When a curvilinear array ultrasound endoscope is used, a green dot indicates the proximal end of the endoscope. The green dot is located in the top right of the ultrasound image for NORMAL and will move to the top left for INVERSE.
IMAGE: NORMAL	Indicates gamma curve, controlled via touch panel. Normal (shows most shades of gray) S-L2-L1. Image gets progressively darker.
DEPTH	Arrow keys adjacent to "FREEZE" key; adjusts depth in centimeters. Arrows pointing out make image larger. Arrows pointing in make image smaller. Can also activate via numbers on touch panel.
DOPPLER	"POWER" is most sensitive option. Shows non-directional blood flow. "COLOR" shows directional flow.
CINE REVIEW	After freezing image, allows user to go back frame-by-frame to desired image for labeling and/or measurements before capture.
MEASURE	After freezing the image, select caliper (+, x, diamond, triangle). Place at starting position using trackball. Press set. Again using trackball, place caliper at end position. To create second measurement, choose another caliper. Repeat steps above.
COMMENT	Allows user to label a frozen image by either free text or by using customizable terms via touch panel. To activate, press "COMMENT".
CURSOR	For use as a pointer on screen.
FREQUENCY	Adjusting frequency will optimize image based on depth of area of interest. Lower frequencies penetrate deeper; higher frequencies show better near-field resolution.
I.R.	Image rotation: This allows for rotation of radial image for orientation.

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EU-ME2

Common Terms and Definitions

FUNCTION	DEFINITION
FREEZE	Allows user to freeze and unfreeze ultrasound image.
RELEASE	This will print ultrasound image only (for use with black and white printer). For endoscopic image capture, use scope button.
GAIN	Level of shades of gray. Increases or decreases image brightness. Accurate gain setting would show a vessel as anechoic (black).
CONTRAST	Level of blacks and whites. Activate via touch panel. Press "IMAGE ADJUST", then "CONTRAST +/-".
DIR: NORMAL	The DIR button switches the viewing direction of the ultrasound image. When a curvilinear array ultrasound endoscope is used, a green dot indicates the proximal end of the endoscope. The green dot is located in the top right of the ultrasound image for NORMAL and will move to the top left for INVERSE.
GI/PB/RSP	Located on bottom right corner of touch panel GI/PB used for optimal EUS images. RSP used for optimal EBUS images.
DEPTH	Arrow keys adjacent to "FREEZE" key; adjusts depth in centimeters. Arrows pointing out make image larger. Arrows pointing in make image smaller.
DOPPLER	"H-FLOW" is the most sensitive option. "POWER" flow shows non-directional blood flow. "COLOR" flow shows directional flow. "PW" (Pulsed Wave Doppler) allows user to differentiate between artery and vein by sound and wave form.
CINE REVIEW	After freezing image, allows user to go back frame-by-frame to desired image for labeling and/or measurements before capture.
MEASURE	Select caliper (+). Place at starting position using trackball. Press set. Again using trackball, place caliper at end position. Once set is pressed again it will automatically start next caliper. Repeat steps above.
COMMENT	Allows user to label a frozen image by either free text or by using customizable terms via touch panel. To activate, press "ADD".
CURSOR	For use as a pointer on screen.
FREQUENCY	Adjusting frequency will optimize image based on depth of area of interest. Lower frequencies penetrate deeper; higher frequencies show better near-field resolution.
I.R.	Image rotation: This allows for rotation of radial image for orientation.

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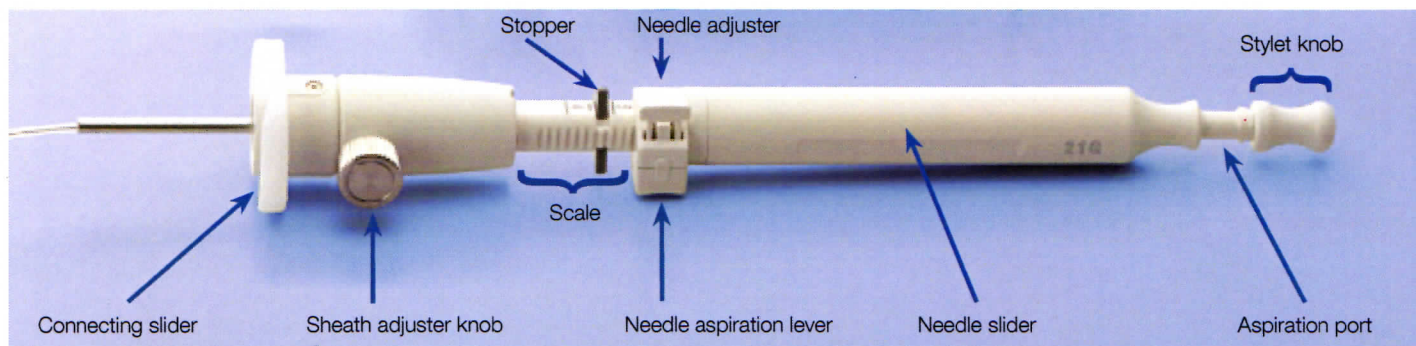
ViziShot EBUS-TBNA Needle

Quick Reference Guide

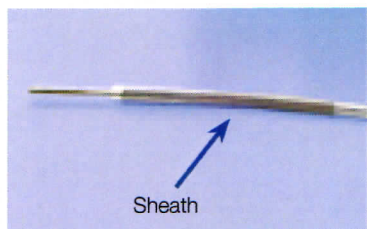
Below are steps for Endobronchial Ultrasound Transbronchial Needle Aspiration (EBUS-TBNA). This minimally invasive procedure enables real-time ultrasound-guided sampling of tissue from the anterior and posterior mediastinum and hilar regions.

CAUTION: This guide is for your general knowledge and background only. EBUS-TBNA is to be performed according to standard technique and is left to the operator's experience and skills.

Product Overview



ViziShot aspiration needle



Needle



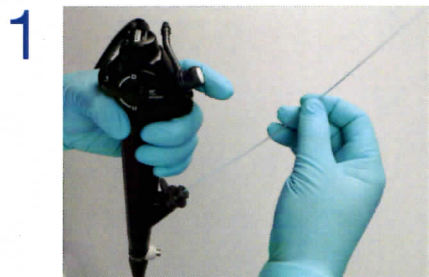
Vaclok syringe



Single use adaptor biopsy valve

This adapter should be attached to the instrument channel port of the endoscope before the needle is inserted.

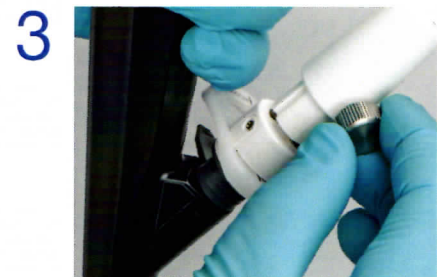
ViziShot Needle Steps



Advance needle through the working channel (ensure scope is in neutral position).



Secure the needle on the scope. Push connecting slider to lock the position until it clicks.



Release the sheath adjuster knob.

MORE INSTRUCTIONS ON REVERSE

4a



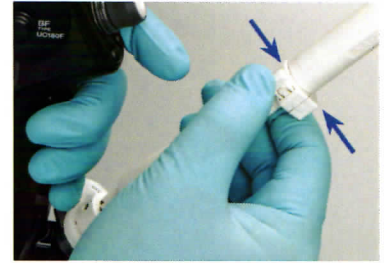
Adjust sheath so that it is visible in the endoscopic view. Tighten the screw.

4b



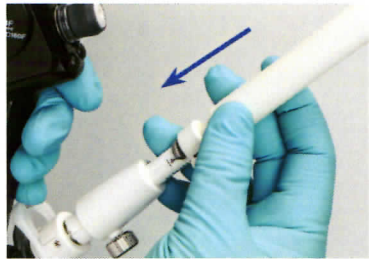
Locate target area on the ultrasound image.

5



Release needle adjuster.

6a



Advance needle into the target.

6b



Artifact in lymph node.

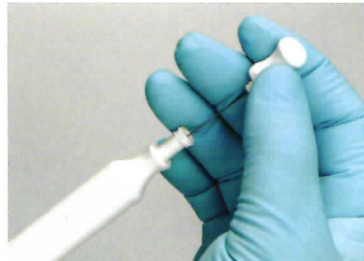
If artifact is visible, adjust EBUS scope tip until artifact disappears.

7



Visualize needle entering target lymph node.

8



Remove the stylet.

9



Attach the prepared syringe.

10



Apply suction by turning the stopcock to parallel position.

11



Move the needle slider in the target area several times. This advances the needle into the target area.

12



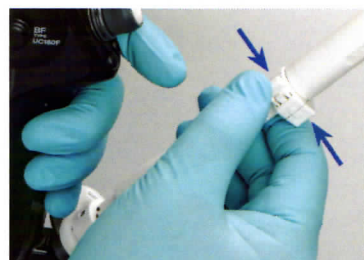
Turn the stopcock to horizontal position to release suction. Remove the syringe.

13



Pull the needle slider upwards until it clicks. This retracts the needle into the sheath.

14

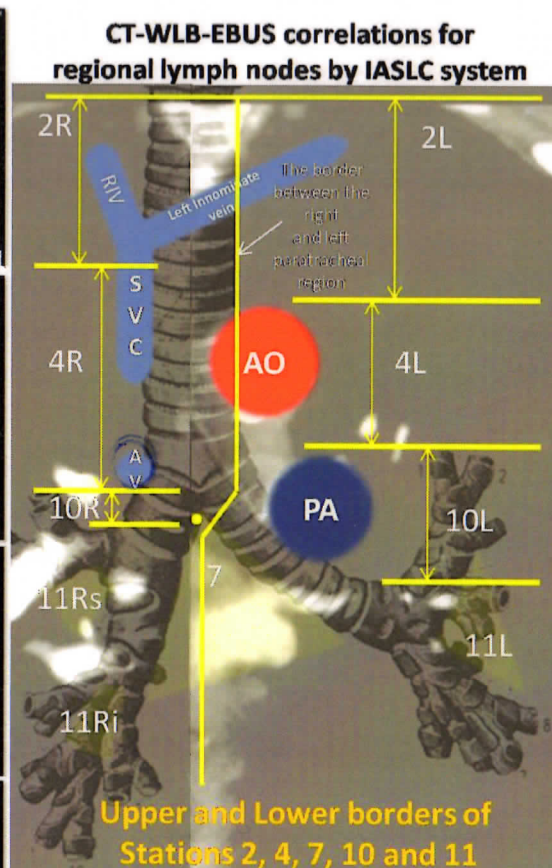
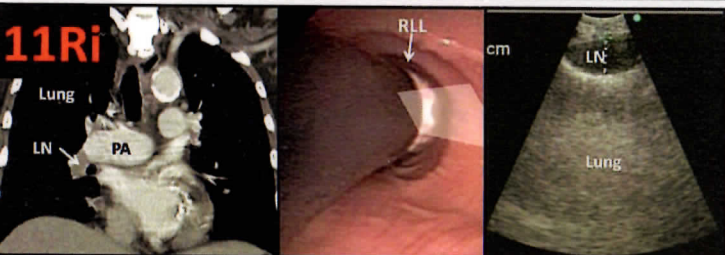
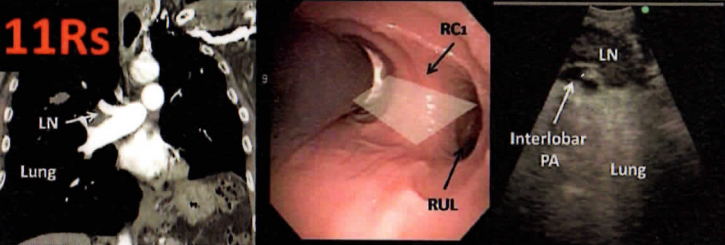
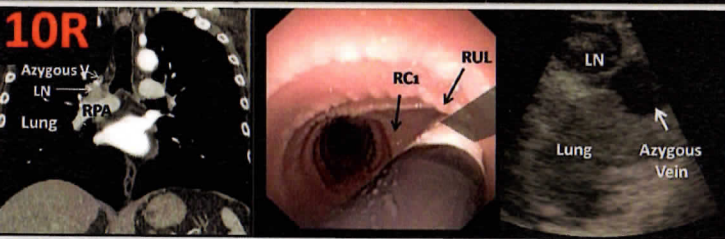
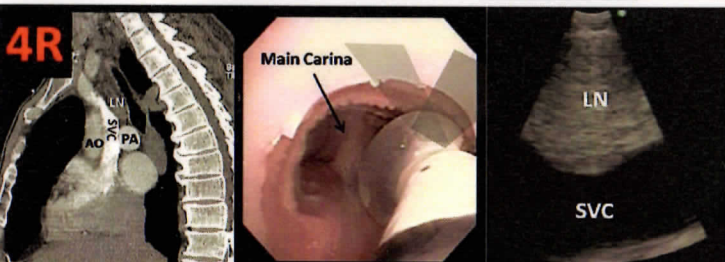
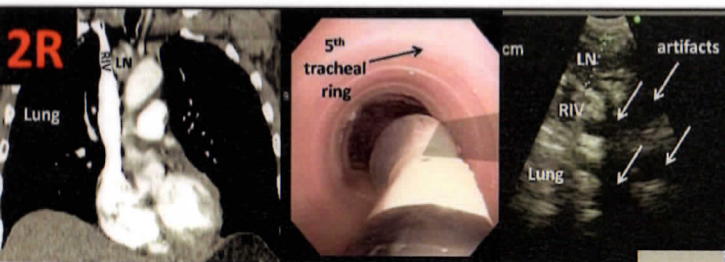


Pull the needle adjuster upwards and slide to lock it into position.

15

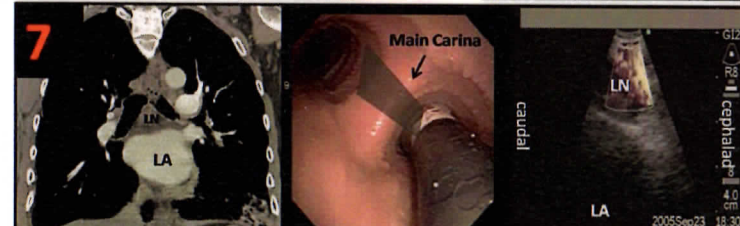
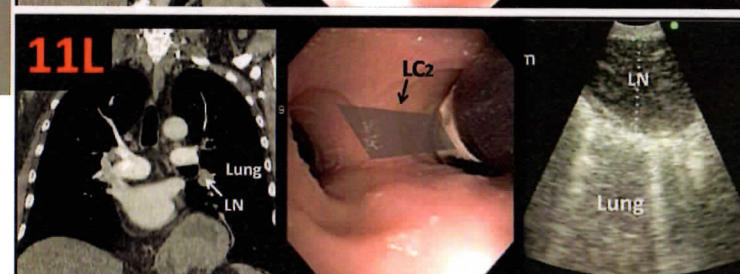
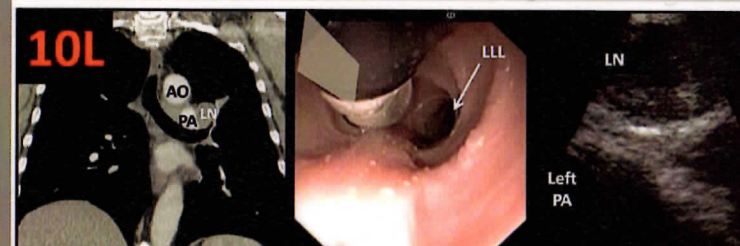
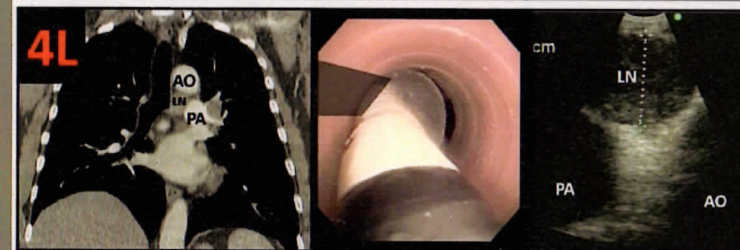
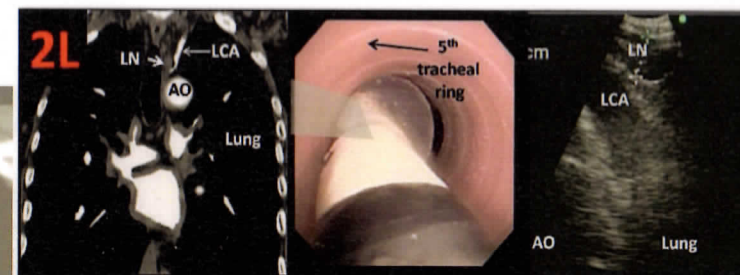


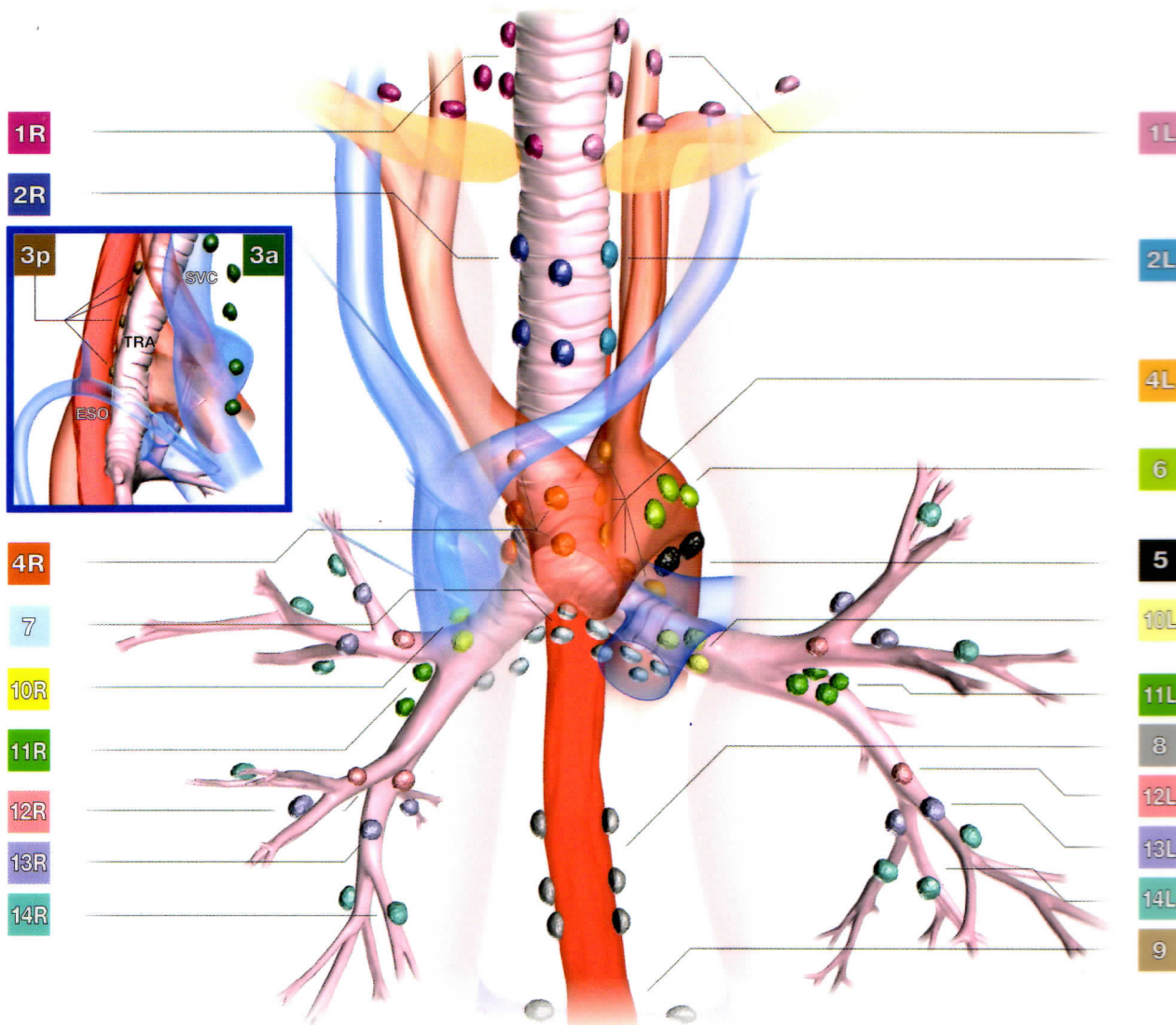
Place scope in neutral position. Unlock and remove the needle.



- AV: azygous vein
- AO: aorta
- LN: lymph node
- PA: pulmonary artery
- SVC: superior vena cava
- RC1: primary right carina
- RIV: right innominate vein
- RUL: right upper lobe
- RLL: right lower lobe
- LCA: left carotid artery
- LC2: secondary left carina
- LUL: left upper lobe

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Supraclavicular zone	
1 R	Low cervical, supraclavicular, and sternal notch
1 L	Low cervical, supraclavicular, and sternal notch
SUPERIOR MEDIASTINAL NODES	
Upper zone	
2 R	Upper Paratracheal
2 L	Upper Paratracheal
3 a	Prevascular
3 p	Retrotracheal
4 R	Lower Paratracheal
4 L	Lower Paratracheal

AORTIC NODES	
5	Subaortic
6	Para-aortic (ascending aorta or phrenic)
INFERIOR MEDIASTINAL NODES	
Subcarinal zone	
7	Subcarinal
Lower zone	
8	Paraoesophageal (below carina)
9	Pulmonary ligament

N1 NODES	
Hilar/Interlobar zone	
10 R	Hilar
10 L	Hilar
11	Interlobar
Peripheral zone	
12	Lobar
13	Segmental
14	Subsegmental

aA = Ascending aorta
 LPA = Left pulmonary artery
 dA = Descending aorta
 LSPV = Left superior pulmonary vein
 LCA = Left carotid artery
 LiV = Left innominate vein
 LSCA = Left subclavian artery
 LSPV = Left superior pulmonary vein
 PT = Pulmonary trunk
 RBCV = Right brachiocephalic vein
 RCA = Right carotid artery
 SVC = Superior vena cava
 TRA = Trachea

Clinical images provided by: Prof. FJ Herth, MD, FCCP, and R. Eberhardt, MD, FCCP, Thoraxklinik Heidelberg, Germany, M. Krasnik, MD, and P. Vilman, MD, DSc., Gentofte University Hospital Copenhagen, Denmark