

Transbronchial Needle Aspiration (TBNA)

TBNA should be used to aspirate mediastinal lymph nodes and as an adjunct to biopsy in the diagnosis of airway lesions, in particular where tumor surface appears necrotic or concerns about bleeding exist (e.g. carcinoid).

TBNA is a safe procedure for the patient but can be harsh on the bronchoscope. The following guidelines will help improve yield while minimizing damage to the bronchoscope.

Pre-bronchoscopy Checklist:

- 1) Consider TBNA when there is suspicion of lung cancer or unexplained mediastinal enlargement present on CT.
- 2) Alert bronchoscopy suite of likelihood that procedure will be performed and select needle size:
 - a. When lung cancer is most likely -- use 21G 'cytology' needle
 - b. When granulomatous disease or lymphoma is highly possible -- consider using the 19G or 'Histology' needle. These procedures must be attended by staff trained to use 19G needles, e.g., Darrell Kotton, Chris Reardon, or John Berk.
- 3) Alert Cytopathology. Rapid onsite evaluation of specimens (ROSE) increases diagnostic yield. Cytopathology requests at least 24 hrs notice whenever possible. Call pathology fellow pager #6773 to arrange.

Procedure: *adapted from Harkin and Wang, Journal of Bronchology 1997, 4:238-249*

General guidelines:

- 1) Where appropriate, mediastinal lymph node TBNA should be performed before other interventions due to the potential for contamination and a false-positive result.
- 2) When multiple lymph node groups are enlarged, aspirate the highest station nodes first (N3, then N2, then N1, then endobronchial lesion if present). The same needle can be used throughout the procedure.
- 3) Before inserting the needle into the bronchoscope, check that needle is within the metal hub and that needle control knob is locked.
- 4) Insert the catheter through the scope with the bronchoscope in the neutral position (unflexed) in the tracheal lumen.
- 5) Advance the catheter until the metal hub can be seen in the viewing screen.
- 6) Fully extend the needle and lock the plastic control knob.

- 7) Pull back the catheter until only the needle tip is in view. From this point on, if the needle cannot be seen it must be retracted and removed from the scope. Never push the needle forward to bring into view.

Aspiration (“jabbing” method)

- 1) Select target sites based on the CT findings and using the Bronch Room endobronchial map of landmarks for TBNA.
- 2) Flex and advance the scope to bring needle tip in contact with bronchial wall and anchor the needle at the target site
- 3) Ask the assistant to hold the bronchoscope at the nose (fixing it in position) and then advance the catheter until the metal housing is seen
- 4) Slowly flex and advance the scope further to obtain a 90 degree angle between the needle and the wall; the entire length of the needle should be visible
- 5) Firmly hold the catheter against the instrument port and advance the scope and needle catheter as a unit until the needle penetrates the wall.
- 6) Vision is usually lost at this time. To ensure the needle is completely through the wall (hubbed), advance the bronchoscope down the catheter permitting view of the point where needle enters the wall. The needle hub should be up against the bronchial wall.
- 7) Using a 20 ml syringe, ask assistant to aspirate at least 10mls to check for a good vacuum and to determine whether a vessel has been punctured. If blood fills the catheter, suction should be released and the needle withdrawn and re-sited.
- 8) While on full suction, agitate the needle in and out to obtain sample.
- 9) Release the vacuum by disconnecting the syringe from the catheter, not by releasing the plunger.
- 10) Pull back on the scope until the needle is clear of the wall. Then with the scope in the neutral (unflexed) position, retract the needle into the catheter before removing the catheter from the scope in a single motion.

The sample:

- 11) If cytologist is not present, sample should be placed in green cytology solution; samples for culture should be placed in sterile saline solution.
- 12) If cytologist is present, expel part of the sample onto glass slide for staining and immediate review. Ask cytologist simply whether lymphocytes or a diagnostic specimen are present. If so, 2-3 passes from this location should be attempted to maximize yield. If lymphocytes or a diagnostic specimen are not present, recheck landmarks and move to different location, repeating outlined procedure technique.

On completion:

- 13) Following the procedure, the bronchoscope should be checked for leaks prior to immersion in water.
- 14) Document use of TBNA, number and gauge of needles used, presence of ROSE and complications in TBNA logbook provided.

Endobronchial map illustrates the landmarks for nodal TBNA as viewed through bronchoscopy performed from the front of the patient.

