## VATS

If you’re working with WEJ, count on placing an A-line (on the down arm) and a central line. He may want you to place the A-line pre-op.

**Pre-op:**

* + Make sure your patient is at least typed and screened.
  + Check PFTs if available.
  + Look up CT chest to be prepared for any airway difficulties, e.g. deviated trachea secondary to compression from lung tumor.
  + Check labs and make sure your patient is not anemic.

**Room set-up:**

* + You will need 2 preferably large-bore IVs. The patient will get one in day surgery so most likely you will only need to place one intra-op.
  + Hot line tubing for your first IV in case you need to resuscitate.
  + Micro tubing for your second IV because you need to limit the amount of fluids the patient gets intra-op. If you see your patient in day surgery after the IV is placed, make sure to TKO your IVF because the day surgery nurses love to run that sucker wide open.
  + Arterial line set-up: IV bag, tubing, cable, arrow kits, chloro-prep, wrist board, gauze, tape.
  + Call AAA to get you a fiberoptic scope cart. Make sure the scope works. Get your lube and anti-fog ready. You will most likely not need other supplies such as suction and irrigation but it doesn’t hurt to make sure the supplies are in the cart, just in case.
  + Albumin never hurts! Plus to limit your IVF intra-op, you want to replace blood loss with colloids in a 1:1 ratio instead of crystalloid in a 1:3 ratio.
  + Get a pump and set-up your phenylephrine drip, start rate is usually 15 mL/hr (check your units!)
  + Double-lumen tube: everyone uses the left-sided DLT, regardless of which lung gets operated on. For a female patient, you’ll need a 35-French and 37-French. For a male patient, you’ll need a 39-French and 41-French. Make sure someone shows you how to set-up the DLT. Make sure to lube up the outside very well with lidocaine jelly except for the opening of the bronchial and tracheal tubes and around it because it will fog up the fiberoptic scope! Don’t throw away the suction catheters, you will use them.
  + You will need a clamp for one-lung ventilation.
  + If you’re Darren Marchal, check out some IV Acetaminophen, Dilaudid, and Ketamine, in addition to your Fentanyl and Midazolam.

**Induction**: Standard induction with Propofol, Lidocaine, and Fentanyl. Make sure you pre-oxygenated well because those DLT are difficult to put in. Ventilate with Sevoflurane while the Rocuronium kicks in.

**Intubation:** Start with the curved tip facing up. You can give the tube more of a hockey shape with the metal stylet in place. Do your regular DL and once you visualize the cord, pass the tube making sure the curved tip is still facing up. Once the tube is through the cords, rotate it towards the left 90 degrees and advance the tube until you meet resistance. Don’t jam it in there too hard. Then you’ll use the fiberoptic scope to verify tube placement. You’ll go down the tracheal side and visualize the cuff on the left-hand side. Once you’re happy with positioning, make sure both cuffs are inflated.

* + If you had trouble turning the tube 90 degrees, you can use the fiberoptic scope through the bronchial side, advance it into the left main bronchus, and then slide your tube through the scope. Then you’ll verify positioning by passing the scope through the tracheal side as described above.
  + Especially with WEJ, secure your tube in place with umbilical tape, not the regular salmon-colored tape.
  + It doesn’t hurt to put some salmon-colored tape right at the teeth so you can tell if your tube migrated.
  + You will likely verify positioning again after the patient is repositioned to a decubitus position.

**Positioning patient in the lateral decubitus position**:

* + Make sure the tube is secured before turning!
  + The axillary roll is a misnomer, it’s a chest roll. If it’s in the axilla, it is too high up and your patient will end up with a brachial plexus injury. It should be about at the level of the patient’s breasts.
  + Once the arms are positioned on egg crates, check radial pulses to make sure you still have good peripheral circulation.
  + Check your pressure points: shoulders, elbows, ears, eyes.
  + Now re-check the position of your tube with the fiberoptic scope.

**\*\*The following descriptions are for a left-sided VATS, just reverse it if you’re doing a right-sided VATS\*\***

* While the surgeons are scrubbing, deflate the operative lung by clamping the bronchial tube and opening the cap. You should still be ventilating through the tracheal tube.
* Here the book says to start on an FiO2 of 100% when you first go on one-lung ventilation but if your patient’s O2 sats are fine, you’re ok leaving it on 50% (like you do for regular cases.)
* Watch out for hypoxemia.

At some point, they will want you to **ventilate the operative lung** to make sure that they don’t have an air leak.

* + Take the patient off the ventilator.
  + Increase your FiO2 to 100%.
  + Unclamp the bronchial tube and close the cap.
  + Clamp the tracheal tube and open the cap.
  + Close your pop-off valve to a maximum of 20 cm H2O.
  + SLOWLY apply pressure to the bag. You do not want to blow up the lung too quickly or it will get poked by the trochars. Watch the screen and your peak pressures as you slowly inflate. The surgeon should also be guiding you at this time as far as how much to inflate the lung.
  + Once he is happy, you go back to one-lung ventilation and you can decrease your FiO2 again if your patient is doing well.

Troubleshooting: what if the operative lung isn’t blowing up?

* + The surgeon messed up and ligated a bronchus.
  + You have gunk clotting up your tube. Use the suction catheter but make sure to only put it down the length of the tube and not much further.
  + The DLT may be abutting against the wall of the bronchus. You can pass the fiberoptic scope through the bronchial tube and check where the end of your tube is. You may need to pull it back a little bit (you should probably deflate the cuff if you’re going to move it.)

That’s it! Once they’re done, just do your standard emergence and hopefully you’ll be taking your patient to PACU extubated and not the SICU, intubated, on pressors =)

Contributed August 2014 by Rita Torng, M.D., CA-II