

*University of Cincinnati
Academic Health Center
Department of Otolaryngology-
Head & Neck Surgery
at University Hospital*

*Adult Airway Reconstruction Program
Tracheal T-tube Care Handbook*



CARING FOR YOUR TRACHEAL T-TUBE

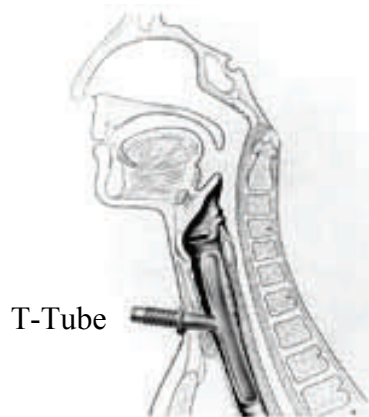
While you are at University Hospital, you will learn to care for your tracheal T-tube. Below is a list of what you will be asked to learn. We encourage you to check off things as you are feel comfortable doing them. When you are ready, the respiratory therapist to watch you complete the care.

- Where the T-tube is positioned in the airway
- Size and length of your T-tube
- Parts of the T-tube
- Why, how and when to clean the T-tube site
- How to care for the skin near the T-tube, and sign of skin infection and how to manage
- Why, how and when to clean the outside limb and rings of the T-tube
- Why, how and when to suction the T-tube
- Why, how and when to use 4.2% sodium bicarbonate through the T-tube
- Side effects of sodium bicarbonate solution
- Why, how and when to irrigate the T-tube with normal saline
- Why, how and when to cap the T-tube
- Use of a mist collar if the T-tube must be uncapped
- What equipment to have with you at all times
- How to prevent and manage emergency situations
- How to help others learn T-tube care
- Who to call if you have questions

WHAT IS A T-TUBE AND WHY DO I HAVE ONE?

A tracheal T-tube is a soft silicone tube that is shaped like a “T”. T-tubes are used for many reasons. In most cases, the T-tube is used to help your airway heal after surgery. A tracheal T-tube also is used when a condition occurs that requires a breathing tube and a typical tracheotomy tube is not suitable.

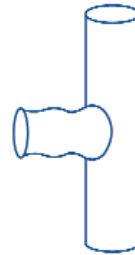
The shape of the T-tube allows the upper part of the tube to hold open the airway that was surgically repaired while the other parts act like a breathing or tracheotomy tube.



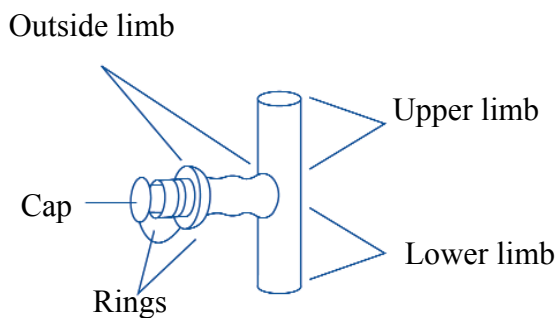
WHAT ARE THE PARTS OF A T-TUBE?

A T-tube has five parts. These are the parts are:

1. Outside limb
2. Upper limb
3. Lower limb
4. Rings
5. Caps



T-tube without caps and rings



T-tube cap attached to ring

HOW DOES A T-TUBE FIT IN MY AIRWAY?

- The outside limb is what you can see from your neck. This limb is connected to the upper and lower limb.
- The upper limb rests in your airway keeping open the larynx (voice box) and upper trachea (windpipe).
- The upper limb extends to an area just below at, or just above the vocal cords.
- The lower limb extends down the airway acting like a tracheotomy tube.
- The rings set on the outside limb between grooves and should be placed just slightly off the neck. The rings keep the T-tube from moving back and forth in the stoma. The rings can be moved back and forth for cleaning.
- The cap fits into the outside limb. By capping the T-tube you are able to keep your airway and T-tube humidified without the use of an outside moisture source.
- Every T-tube has a size. My T-tube size is _____.



SKIN CARE AND YOUR T-TUBE

Because of the T-tube you will have an incision on your neck after surgery and a stoma or hole in the neck where you will see the T-tube. Your neck may be tender and swollen after surgery. There also may be bloody drainage and redness at the site as well. The swelling, redness, drainage and pain will improve. To help your neck incision and T-tube stoma heal, we recommend keeping these sites clean and dry. T-tube skin care should be done at least twice a day or whenever the site has drainage or crusts.

SUPPLES NEEDED:

To clean the T-tube site you will need:

1. 1/2 strength hydrogen peroxide
2. Cotton tip swabs

HOW TO CLEAN:

To clean the T-tube site:

1. Wash and dry your hands.
2. Dip one swab in the 1/2 strength peroxide then clean directly around the T-tube site. After circling around the tube once, throw the swab away. With a new swab continue to clean around the T-tube working out from the last place you cleaned. Never reuse swabs. Clean the entire area around the T-tube and neck incision.
3. Dry the entire area in the same way you cleaned it.
4. As you clean and dry the site, be sure to look for signs of infection.
5. Clean the T-tube rings by sliding them away from the neck on the external limb and then cleaning around the rings with 1/2 strength peroxide. After cleaning the rings, dry them.
6. When the area is dry, return the rings to the original position.
7. With a new swab dipped in the 1/2 strength peroxide, uncap the T-tube and gently clean the inside of the external limb. Avoid soaking the swab in peroxide to prevent extra peroxide from going down the inside of the T-tube.
8. Dry the inside of the limb carefully, and then recap the T-tube.



SKIN CARE AND YOUR T-TUBE

SIGNS OF INFECTION:

Signs of infection include:

1. Redness, swelling or drainage that does not improve.
2. Drainage becomes green or yellow.
3. Poor skin healing.
4. Fever

CALL YOUR DOCTOR:

- If you see signs of infection.
- Before applying any creams, lotions or dressings to the site.



HOW TO SUCTION A T-TUBE

Like trach tubes, T-tubes are suctioned to allow air to enter and exit the lungs. Yet, suctioning a T-tube is different from suctioning a tracheotomy tube.

To suction a T-tube you have three limbs to suction. You must suction the outside, upper and lower limbs of the T-tube. Also, when caring for your T-tube, you must instill a medicine into the T-tube twice a day. This medicine is called 4.2% sodium bicarbonate. You will probably hear it called “bicarb” for short. The bicarb helps keep the mucus from sticking to the inside of the T-tube.

The respiratory therapist (RT) will show you how to suction the T-tube. When you are comfortable, you may suction the T-tube with the RT present. When you are ready to suction by yourself, ask the RT to check you off in this area.

SUPPLIES NEEDED:

To suction you will need:

- Suction catheters
- Suction machine
- Marked suction catheter (this will remind you how far to suction up and down the T-tube)
- Saline

HOW TO SUCTION A T-TUBE

SUCTIONING THE T-TUBE:

To suction the T-tube:

1. Wash and dry your hands.
2. Prepare your suction equipment and marked suction catheter.
3. The RT will give you exact measurements for how far to suction up and down.
 - Write the depths here: suction _____ cm up and _____ cm down.
 - Also to help you remember how far to suction you should keep the marked suction catheter. Measure against the marked suction catheter with the clean suction catheter how far you will be suctioning up or down. (Be careful not to touch the two catheters together).
 - When you have measured how far you will be suctioning, mark the depth with your fingers on the clean suction catheter.
 - The distance you will be suctioning up and down might be different, so be sure to re-measure against the pre-marked suction catheter each time you switch the direction of your suctioning.
4. Uncap the T-tube and lace the clean suction catheter into the outside limb. Gently lift up on the external limb with your opposite hand and guide the catheter down the T-tube to the measured distance, then apply suction and remove the catheter from the T-tube within five seconds.
5. Before you suction again, take a few deep breaths, you are encouraged to cough between suction passes.
6. You may suction down the tube again if there is mucus remaining. If you are finished suctioning down the tube, you must now suction up the tube.
7. To suction up the T-tube. measure how far to suction up against the marked catheter. Insert the clean suction catheter into the outside limb and with the opposite hand gently push down on the outside limb. With the outside limb in the down position, guide the catheter up the T-tube to the measured distance.
8. Apply suction pressure, and remove the catheter within five seconds.
9. After suctioning is complete, recap the T-tube.



HOW TO SUCTION A T-TUBE

CALL YOUR DOCTOR:

- If you are producing thick or discolored mucus.
- If you cannot be comfortable capped.

TIPS:

- Remember to rinse your suction catheter between each time you suction.
- Sometimes you may find that the suction catheter does not easily glide up and down the T-tube when you start to suction. Try to reposition the outside limb at a different angle and try to advance the catheter again.
- Between suctioning, you should be able to cough mucus up into your mouth and swallow it or spit out the mucus into a tissue.
- We recommend, suctioning the T-tube at least two times a day, but you may need it more often than this if you are unable to clear your mucus.
- You may also use saline drops when suctioning if mucus is thick or blood tinged.

HOW TO USE SODIUM BICARBONATE OR “BICARB”

Sodium bicarbonate, “bicarb”, is used to keep mucus from sticking to the inside of the T-tube. During the first seven days after you get a T-tube, the bicarb will be put into the T-tube every four hours. After the first seven days, your doctor may decrease how often it is instilled to twice a day. You may say that bicarb is uncomfortable when it is placed into the T-tube. The bicarb also may make you cough.

SUPPLIES NEEDED:

To instill the bicarb you will need:

1. A 3ml syringe
2. 4.2% bicarb solution
3. Suction machine and catheters
4. Normal saline
5. Tissues

To instill the bicarb:

1. Wash and dry hands.
2. Draw up 2 ml of the bicarb.
3. Uncap the T-tube.
4. Slowly instill the bicarb in small amounts (be prepared to cover the end of the T-tube with a tissue to prevent you from coughing the bicarb out of the T-tube.)
5. After the bicarb is instilled, recap the T-tube.
6. Wait 15 minutes then uncap the T-tube.
7. Slowly place a total of 2-5ml saline drops into the T-tube and suction the T-tube up and down as described earlier (instilling small amounts of saline into the T-tube before each suction pass helps rinse the T-tube of the mucus bicarb).
8. After suctioning is complete, recap the T-tube.

*University of Cincinnati Department of Otolaryngology-Head & Neck Surgery
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WHAT TO KEEP IN YOUR EMERGENCY BAG

Even though you can prevent most breathing problems by providing T-tube care, breathing problems can occur and you must be prepared. To be prepared, you must have your emergency equipment with you at all times.

SUPPLIES NEEDED:

Your emergency equipment will include:

1. Size _____ ET tube
2. Size _____ tracheotomy tubes with ties already in place
3. Fully charged suction machine
4. Suction catheters size _____
5. Yankauer mouth suction
6. Breathing bag with _____ size face mask and _____ size T-tube adapter
7. Normal saline
8. Extra tracheotomy tube ties
9. Scissor
10. Hemostats
11. Water based lubricant
12. Manual suction
13. Marked suction catheter
14. 4.2% sodium bicarb with 3 ml syringe
15. Emergency phone list

To help you feel prepared for potential emergencies, we will review the signs of breathing trouble with you.

SIGNS OF BREATHING TROUBLE:

The early signs of breathing trouble may include:

- Fast breathing
- Noisy breathing
- Sweaty, clammy skin
- Restlessness
- Change in breathing pattern
- You tire easily



WHAT TO KEEP IN YOUR EMERGENCY BAG

SIGNS OF BREATHING TROUBLE:

The later signs of breathing trouble may include:

- Hard breathing seen as sinking in of the chest, neck, ribs or head bobbing
- Flared nostrils
- Blue, gray or pale color around the lips, nails and skin

The earlier you notice the signs of breathing trouble, the easier it is to correct the problem. If you are having breathing trouble and do not get help, you could stop breathing.

POTENTIAL EMERGENCIES:

Potential emergencies that might occur at home include:

- Accidental dislodgement of the T-tube
- Aspiration
- Bleeding from the T-tube
- Mucus plugging

ACCIDENTAL DISLODGEEMENT:

The T-tube design with limbs and rings help hold itself in place without the use of tracheotomy ties. But it is important to remember that the T-tube could accidentally be pulled out. You can prevent this from happening by:

- Watching you activities
- Not allowing anyone to pull at the T-tube

If the T-tube is accidentally dislodged:

1. Remain calm
2. Take the tracheotomy tube you have in your emergency bag and place the tube in your stoma (if you need to learn or review how to place a tracheotomy tube, be sure you have discussed this with your nurses before going home)
3. Keep the tracheotomy tube open with suctioning as need

ASPIRATION

Aspiration is another potential emergency. Aspiration is the passage of solids, liquids, or saliva into the airway instead of the esophagus or swallowing tube. You may have trouble swallowing after the T-tube is placed. This difficulty may be related to swelling or positioning of the T-tube in the airway.

SIGNS OF ASPIRATING:

Some signs you may be aspirating:

- Choking or coughing with swallowing
- Watery secretions from the T-tube especially after swallowing
- Drooling or holding saliva and fluids in the mouth
- The color of liquid or food particles are coughed from the T-tube after swallowing
- You have frequent pneumonia

PREVENTING ASPIRATION:

You can prevent aspiration by:

- Thickening liquids with artificial thickeners or foods like puddings, baby foods, cereals, Jell-O, or yogurt (thickened fluids may be easier to swallow than thin liquids)
- Chewing or swallowing slowly
- Sitting upright when drinking or eating
- Following the doctor's orders with eating or drinking

IF YOU ASPIRATE:

1. Stay calm
2. Suction the T-tube until it is clear of the fluid or food
3. Suctioning with saline drops may help rinse the food or fluid from your airway
4. Have the emergency equipment ready at all times
5. Call your doctor if you are showing signs of aspirating
6. If necessary, refer to the section on mucus plugging to clear your airway (food and fluids can be like a mucus plug)

Remember you can aspirate vomit too. Try to keep vomit out of the T-tube by turning you head to the side.



BLEEDING FROM THE T-TUBE

Bright red blood coming from the T-tube is also an emergency. The bright red blood may be a sign of irritation or infection in the airway. You need to be seen right away if bright red blood is coming from the T-tube.

YOU CAN PREVENT BLEEDING BY:

- Suctioning to the ordered lengths
- Calling your doctor early if you are showing signs of infection or have an increased cough
- Keeping the T-tube capped except when suctioning or keeping a mist collar at the T-tube if you are not tolerating the T-tube being capped

IF YOU SEE BRIGHT RED BLOOD FROM THE T-TUBE:

1. Stay calm
2. Keep the T-tube clear of mucus and blood with gently suctioning while called for emergency help
3. Use saline drops when suctioning to keep the blood from crusting and plugging the T-tube
4. The doctors will want to know when the bleeding started, how much bleeding there has been, and anything that may have happened before the bleeding started

MUCUS PLUGGING:

Mucus can collect in the T-tube and airway and cause plugging. You can prevent mucus plugging by:

- Making sure you are drinking adequately or getting enough fluids through your feeding tube
- Encouraging you to cough and expel mucus from your mouth
- Suctioning as ordered and as needed if you cannot clear the mucus from your airway
- Using saline drops with suctioning if the mucus is thick or blood tinged
- Using the sodium bicarb as ordered through the T-tube
- Calling your doctor if you notice any signs of resistance when suctioning the T-tube
- Keeping your T-tube capped unless you are suctioning or checking for breathing trouble (when the T-tube is capped, you are humidifying your own airway)

SIGNS THAT THE T-TUBE MAY BE PLUGGED

If the T-tube does plug with mucus, you will not be able to get the air that you need to breath. Some signs that the T-tube may be plugged are:

- Fast, noisy or hard breathing
- Dry whistling sound from your airway
- Restlessness
- Clammy, sweaty skin
- You cannot breathe
- Unable to pass a suction catheter down or up the T-tube
- Blue color around the lips, skin and nails

IF YOU THINK YOUR T-TUBE HAS A MUCUS PLUG:

1. Uncap the T-tube and try to suction up and down the tube.
2. If you can pass the suction catheter without difficulty up and down the tube, watch to see if your breathing is easier with the T-tube uncapped. If the breathing trouble eases when the T-tube is uncapped, leave the T-tube uncapped and apply the mist collar to the T-tube. Call your doctor.
3. If the breathing trouble does not ease when the T-tube is uncapped, place saline drops through the T-tube and try to suction again. Deeper suctioning past the ordered length may be done , if done gently. If someone is with you ask him or her to call for emergency help.
4. If you find a mucus plug in the upper limb of the T-tube but do not find a mucus plug in the lower limb, attempt to remove the mucus plug by suctioning.
 - If you cannot clear the plug from the upper limb, suction the lower limb of the T-tube again to keep it open, and leave the T-tube uncapped. You should be able to breathe through the lower limb with the T-tube capped.
 - Remember to apply the mist collar to the T-tube if you must keep it uncapped.
 - Call your doctor immediately.



SIGNS THAT THE T-TUBE MAY BE PLUGGED

5. If there is a plug in the lower limb, the plug must be removed to allow you to breath. Try to suction the T-tube using saline to help loosen the plug. If unable to remove the plug, gently tilt the outside limb up and try to place the _____ size ET tube down the T-tube _____ cm. If you cannot dislodge the mucus plug and suction the plug out, remove the ET tube. You must now remove the T-tube and place the ordered tracheotomy tube. (Remove the T-tube by gently applying pressure with your first finger above and thumb below the T-tube on your neck. With your other first finger and thumb or hemostats enter the T-tube stoma at the back of the external limb and collapse the T-tube while pulling the T-tube out of the airway.)

HOW TO HELP OTHER LEARN T-TUBE CARE:

By the time you are ready to go home, you should be comfortable in caring for your T-tube. Other people at home will also need to learn how to care your T-tube.

QUESTIONS OR CONCERNS AFTER GOING HOME:

If you have an emergency once you are home, call 911 or the local emergency number for your area. Once at a hospital, the staff there can contact one of the doctors.

If you have questions or non-emergent needs when you get home, you may call our office at 513/475-8400 or 1-800-272-4645 from 8am to 5pm. After hours, if you need to speak to a doctor, you may call the hospital operator at 513/584-1000 and ask to speak to the ENT resident on-call.



DISCLAIMER

We would thank our affiliates at Cincinnati Children's Hospital Medical Center, the Division of Pediatric Otolaryngology-Head and Neck Surgery for materials provided in the University of Cincinnati, Department of Otolaryngology-Head and Neck Surgery, Adult Airway Reconstruction Program, Tracheotomy Care Handbook. We acknowledge their efforts and appreciate their partnership.

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