

**Percutaneous Tracheostomy Protocol**  
Trauma, Emergency General Surgery, and Surgical Critical Care  
Vanderbilt University Medical Center  
Revised 2007

**PURPOSE: 1) Define the Indications / Contra-indications**  
**2) Describe the accepted SAFE protocol for the performance of a bedside percutaneous tracheostomy**

**INDICATIONS:**

1. Presence of pathologic conditions predicting prolonged mechanical intubation and/or inability to protect airway.
2. Airway edema & high-risk airway following maxillofacial / surgery and /or trauma
3. High-risk airway due to cervical immobilization for fracture fixation
4. Need for a emergent surgical airway due to the inability to intubate the patient
5. Indications for “**Bedside Percutaneous Tracheostomy with Bronchoscopy**”:  
*Attending should be scrubbed for “**High Risk Airway**”.*
  - a. Halo
  - b. Multiple Facial Fractures limiting ability to safely orally intubate
  - c. Morbid Obesity (BMI  $\geq$ 40)
  - d. Surgeons preference

**CONTRA-INDICATIONS FOR ELECTIVE TRACHESOTOMY**

1. High Ventilator requirements such as PEEP > 15 or High FIO<sub>2</sub> (>60%)

**TIMING:**

1. Severe TBI – proceed when the patient does not require active ICP management
2. Early Tracheostomy (by day 5) is recommended in patients expected to require mechanical ventilation longer that 10-14 days.

**PREPARATION & THE PROCEDURE**

1. Consent must be obtained for “elective” *bedside percutaneous tracheostomy* (See Bedside Surgery protocol).
2. Anesthesia Medication pack:
  - Fentanyl 500 mcg
  - Vecuronium 20 mg
  - Versed 10 mg
  - Diprivan 50 cc vial (drip needs to be utilized for severe TBI with ICP monitoring)

**NOTE: The ventilator must be adjusted appropriately when paralytics are administered, usually a rate of 12, and pre-oxygenation with ventilator settings of FiO<sub>2</sub> of 100%.**

**3. SUPPLIES & INSTRUMENTS - SETUP**

- Percutaneous Tracheostomy Trauma cart, to include:
- Ciaglia percutaneous tracheostomy kit
  - 1 pair - scissors

## Percutaneous Tracheostomy Protocol

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2 pair - curved hemostats  
1 - Needle holder  
1 - Scalpel  
2 - Weitelanders  
Trach tubes: (1) #8 Shiley and (1) XXL #8 Shiley  
Sterile towels Gowns, gloves  
Syringes Betadine solution  
Suture 1 - large drape  
Intubation set  
Chemical CO2 detector  
Continuous BP monitor

### THE PROCEDURE:

- a. Induction of General Anesthesia (Attending must be present for induction):
  1. Sedated with *Versed* and / or *Diprivan*,
  2. Anesthesia *Fentanyl* bolus (150 – 250 mcg IV)
  3. Surgical paralysis *vecuronium* (*cisatracurium* for patients in renal or hepatic failure)
- b. Surgical Set up
  - a. A sterile perimeter is designated around the patient's bed, and the surgical instruments are setup by the proceduralist.
  - b. Sterile prepped and draped.
- c. TIME OUT:
  - a. Confirm Patient, Consent, Allergies
- d. The Surgical Procedure:
  - a. The area is infiltrated with 1% Lidocaine with Epinephrine and a vertical incision is made. Dissection is carried down to the level of the trachea.
  - b. The tapes holding the endotracheal tube are cut and the proceduralist at the head of the bed manipulates the ET tube while the surgeon palpates for its presence within the trachea. Tidal volumes should be closely monitored during this time. The tube is slowly withdrawn until the balloon can be palpated, and then withdrawn further until its tip is palpated at the level of the second tracheal ring.
  - c. The percutaneous tracheostomy is completed in the standard fashion.
- e. Confirmation of Position
  - a. CO2 monitor is connected to the tracheostomy tube and color change is confirmed, expiratory tidal volumes are confirmed
  - b. At this point the ET tube may be fully withdrawn.
  - c. The tracheostomy tube can be sutured to the neck.
- f. Post Procedure Chest x-ray is always obtained.
- g. Ventilator settings are returned to prior levels after sedation and paralytics have worn off.