
PERCUTANEOUS TRANSTRACHEAL JET VENTILATION

1. **INTRODUCTION:** Needle cricothyrotomy is indicated when the patient needs a definitive airway and oxygenation and the patient cannot be ventilated or orally intubated. Needle cricothyrotomy may also be referred to as transtracheal oxygenation, percutaneous transtracheal ventilation, percutaneous transtracheal jet ventilation or insufflation
2. **EQUIPMENT:**
 - 2.1 Oxygen supply at 50 psi
 - 2.2 Manual jet ventilator/insufflator device with push-button and high-pressure tubing with locking device (Adult) or Bag-Valve device (Pediatric)
 - 2.3 Cannula - 13 or 14 gauge needle (Transtracheal catheter); side holes, slight curve and a flange for securing it around the patient's neck
 - 2.4 10 mL syringe
 - 2.5 Providone iodine skin preparation solution
 - 2.6 Gloves
3. **PROCEDURE:**
 - 3.1 Place the patient in a supine position. If spinal precautions are indicated, maintain the neck in a neutral position. (Needle cricothyrotomy can be performed without cervical hyperextension)
 - 3.2 Locate the cricothyroid membrane
 - 3.3 Prep the skin of the anterior neck
 - 3.4 Stabilize the cricoid cartilage and palpate the cricothyroid membrane
 - 3.5 Insert the needle through the lower 2 of the cricothyroid membrane at a 45 degree angle toward the feet, aspirating as the needle is advanced. Correct placement is noted when air is aspirated
 - 3.6 While advancing the catheter downward, remove the syringe and withdraw the needle
 - 3.7 Attach oxygen tubing to the needle hub while holding firmly in place. (For adult patients please note: all tubing connections must be tight since the oxygen is being delivered at high pressure)
 - 3.8 Ventilate with 100% oxygen at 20 bursts/minute with an Inspiratory/Expiratory (I/E) ratio of 1:2 (Adult - 50 psi via jet insufflator device. Pediatric - 20 psi (approx) using Bag-Valve device)
4. **COMPLICATIONS:**
 - 4.1 Localized bleeding
 - 4.2 Esophageal perforation
 - 4.3 Subcutaneous emphysema
 - 4.4 Pneumothorax
 - 4.5 Obstruction or kinking of the catheter
5. **CONTRAINDICATIONS:**
 - 5.1 Transection of the trachea
 - 5.2 Significant damage to the cricoid cartilage or larynx
 - 5.3 Inability to palpate landmarks