

# ***Airway Care in Newborns***

**Jen Tien Wung, M.D., FCCM**

***Neonatal Intensivist***

***Professor Emeritus of Pediatrics***

***Columbia University***

***Neonatal Respiratory Care Consultant***

***The Bristol-Myers Squibb Children's Hospital***

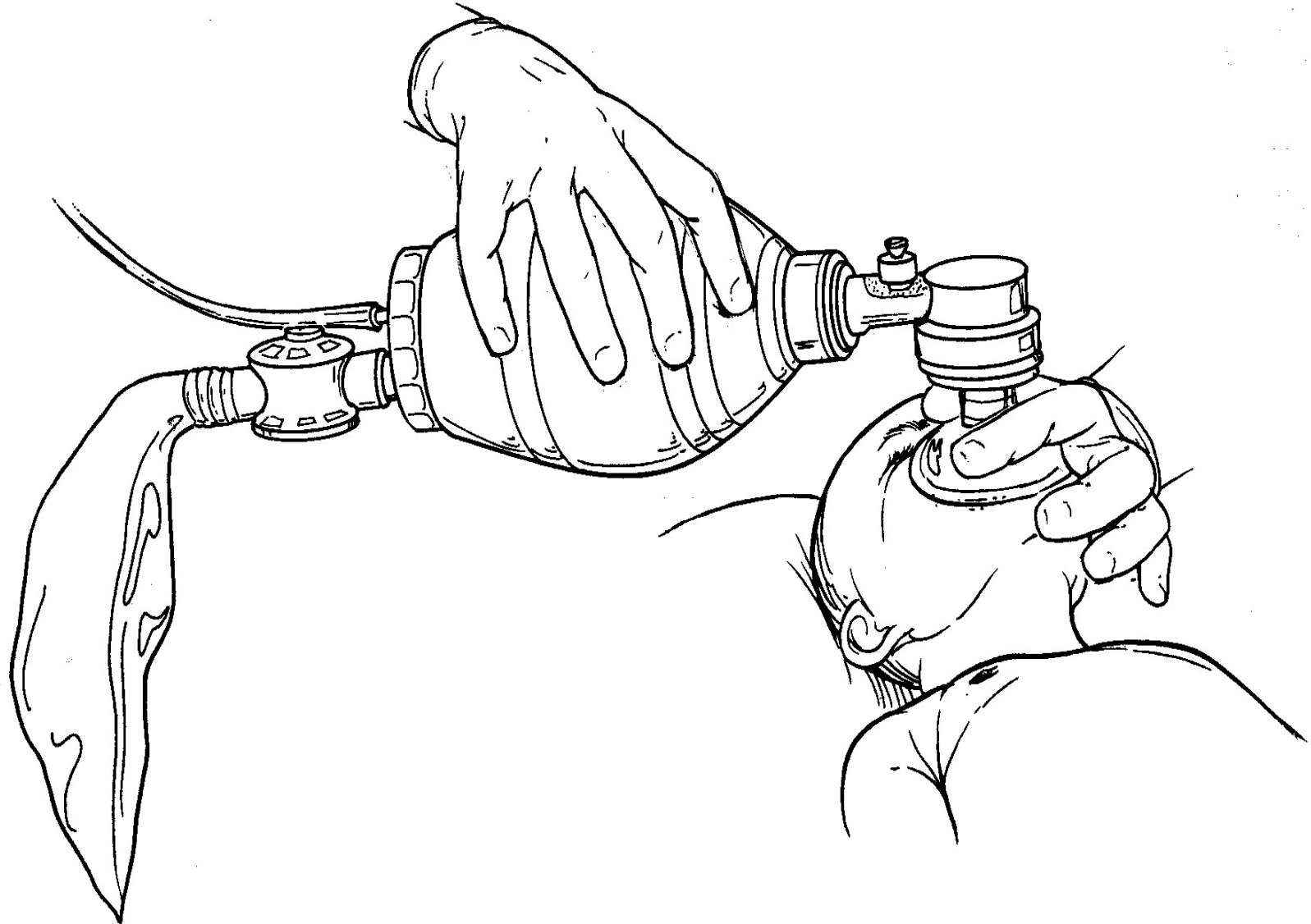
***Robert Wood Johnson University Hospital***

***New Jersey, USA***

**I Congresso Internacional de Neonatologia do DF,**

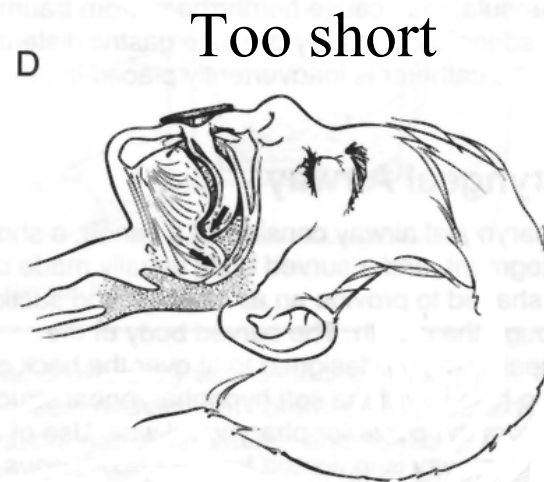
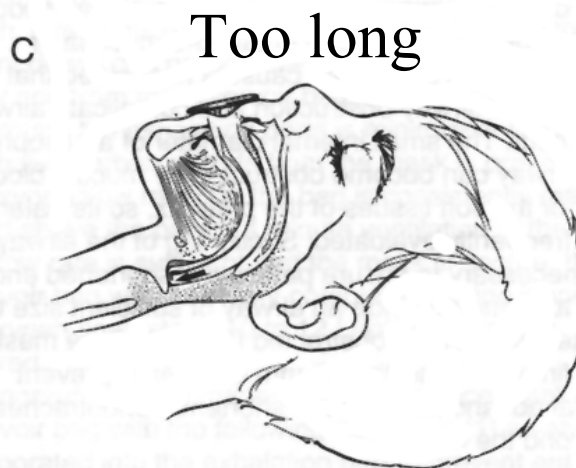
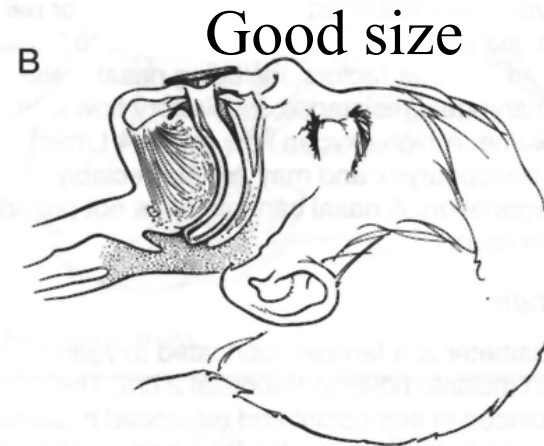
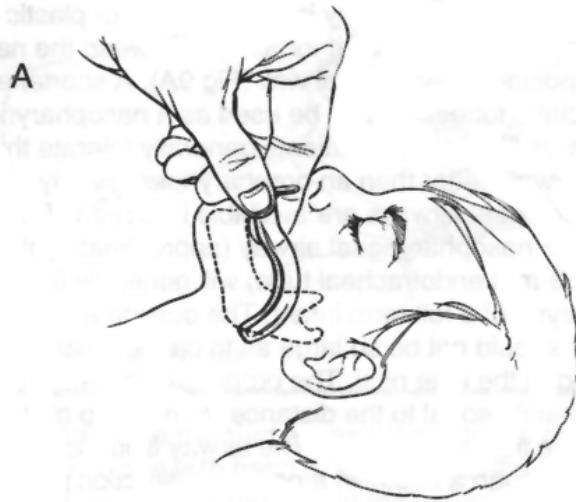
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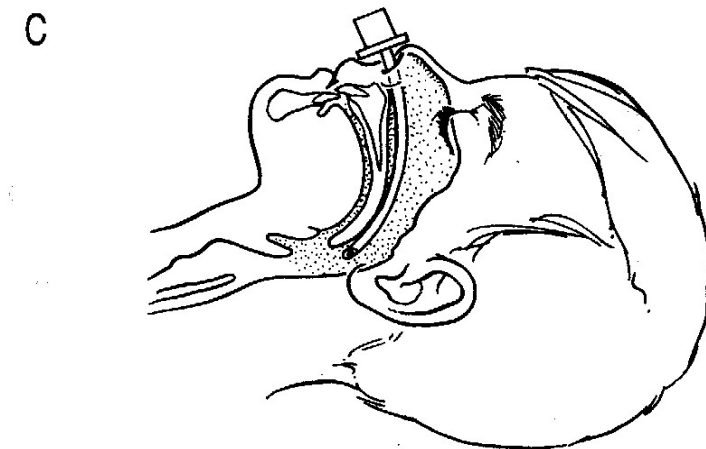
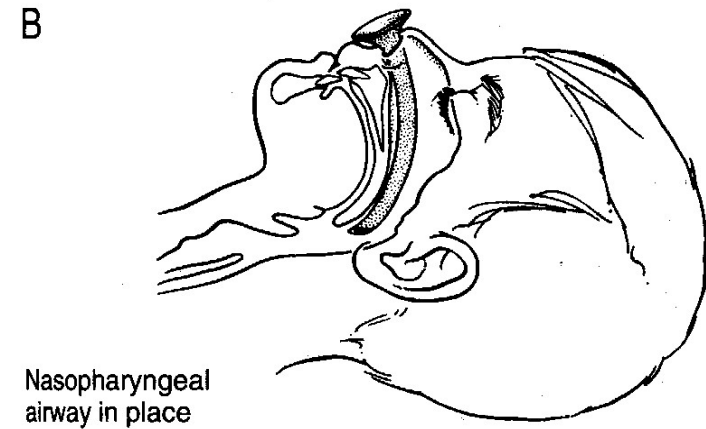
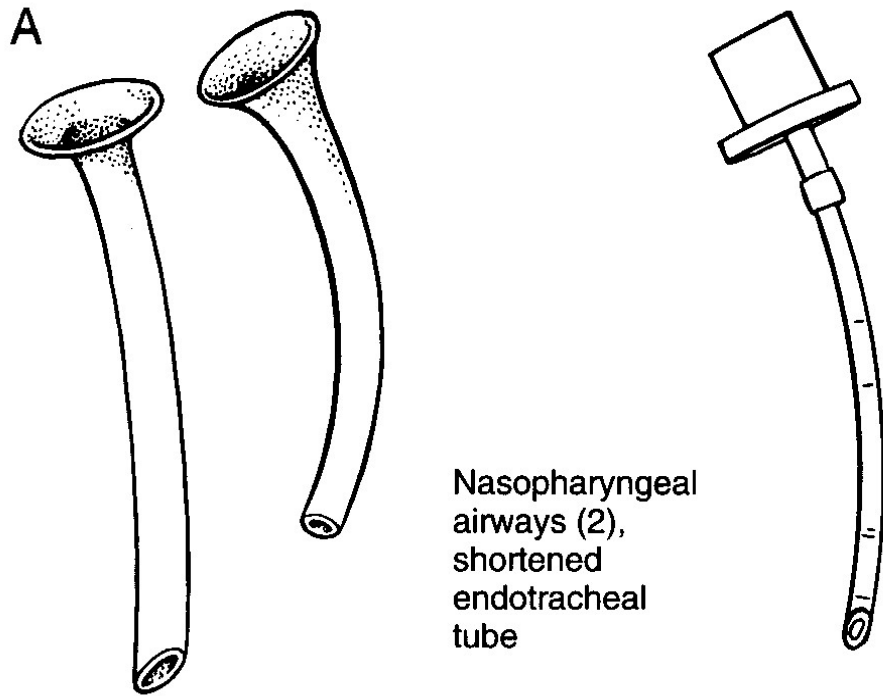


One-handed face mask application technique. Note that the fingers avoid pressure on the soft tissues of the neck, which could cause laryngeal/tracheal compression.

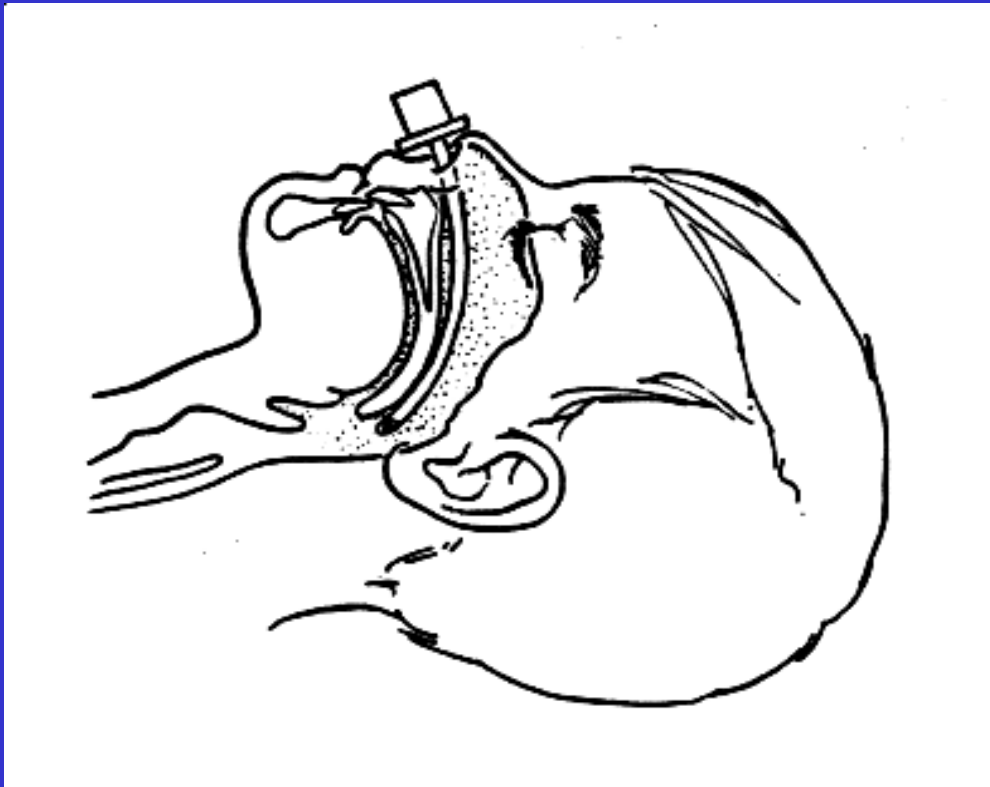
# Oral Airway



# Nasopharyngeal airway



# Endotracheal tube as Nasopharyngeal airway

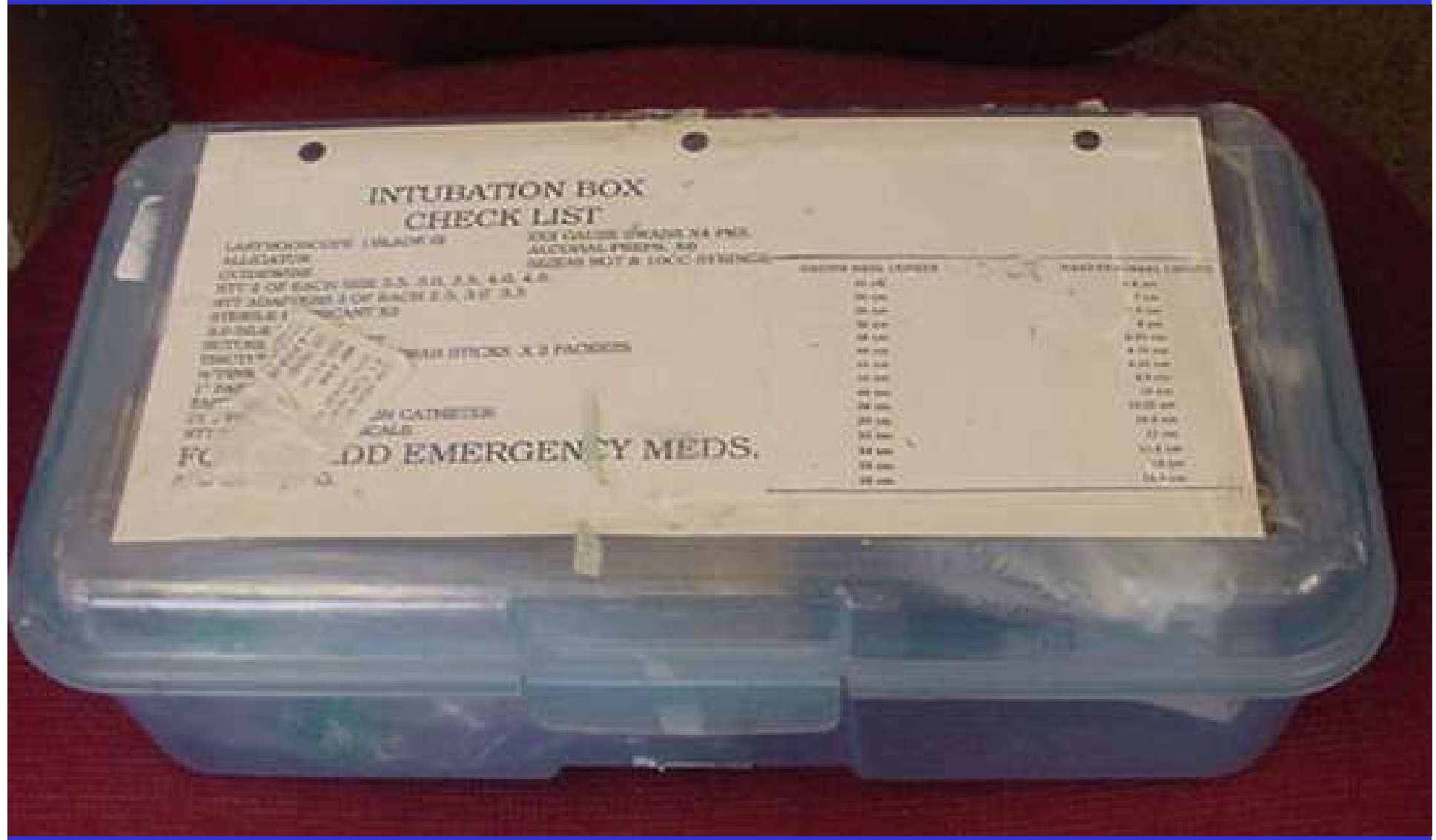


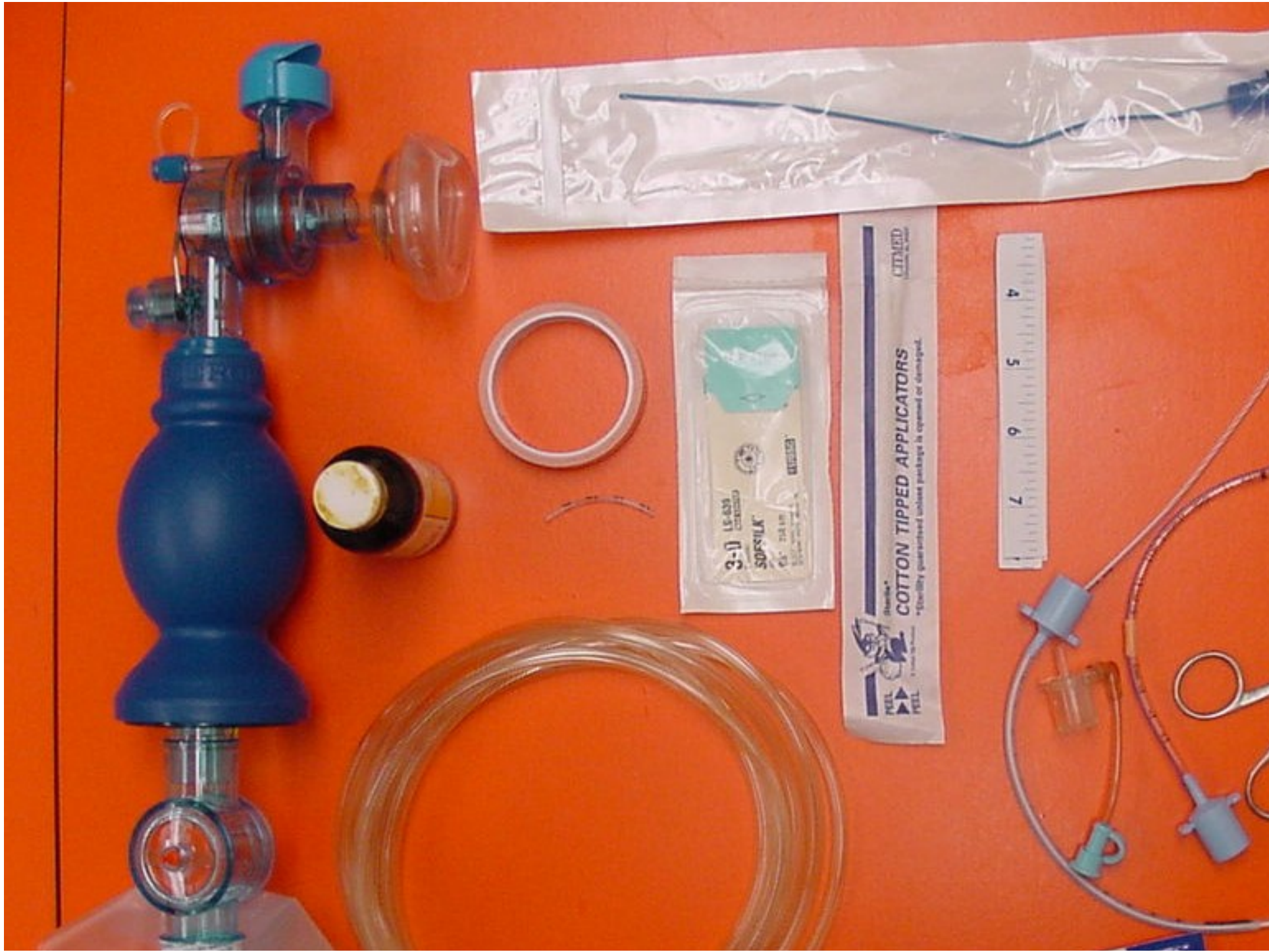
# Nasopharyngeal Airway

**Length: Nostril to Tragus**



# Endotracheal Intubation Box





# Endotracheal Intubation

## Head Position

192

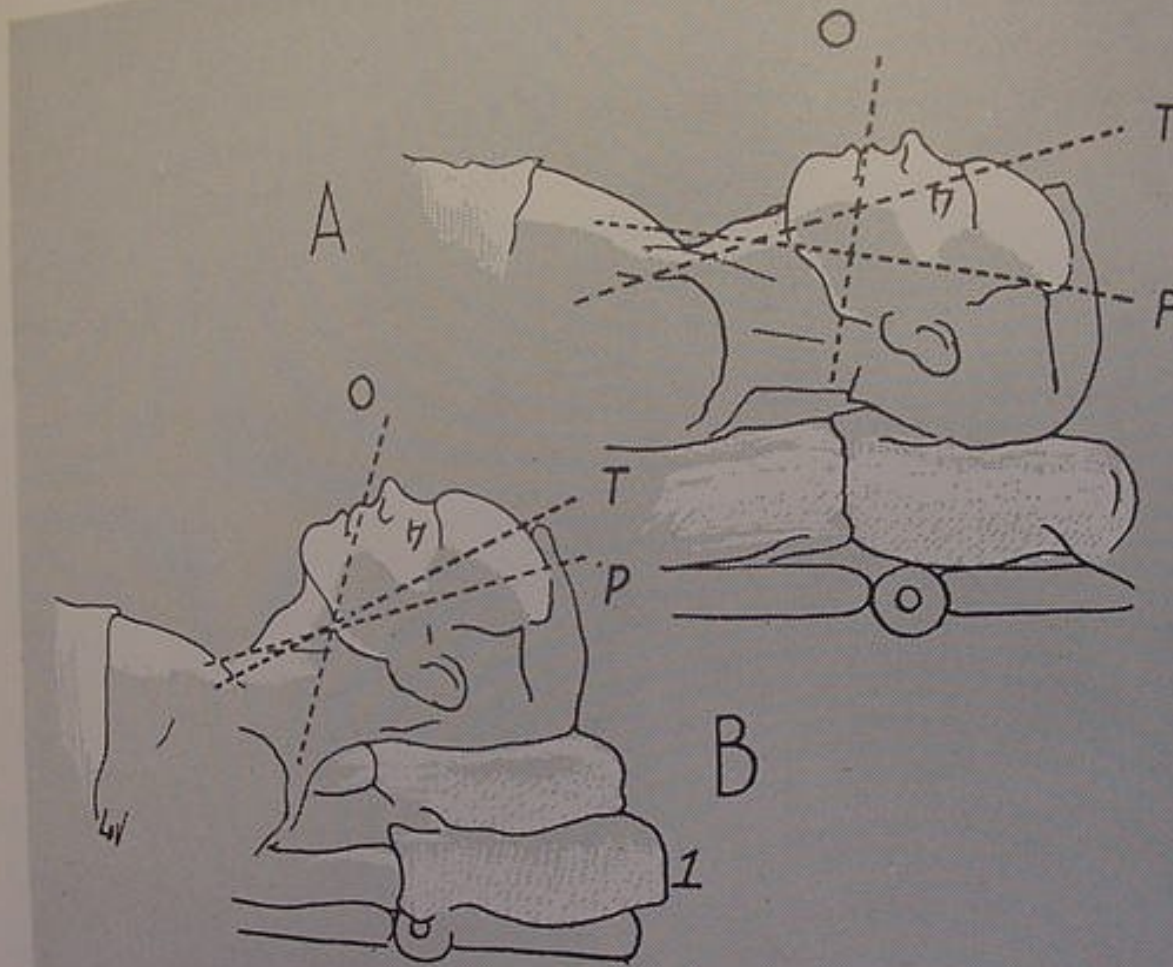
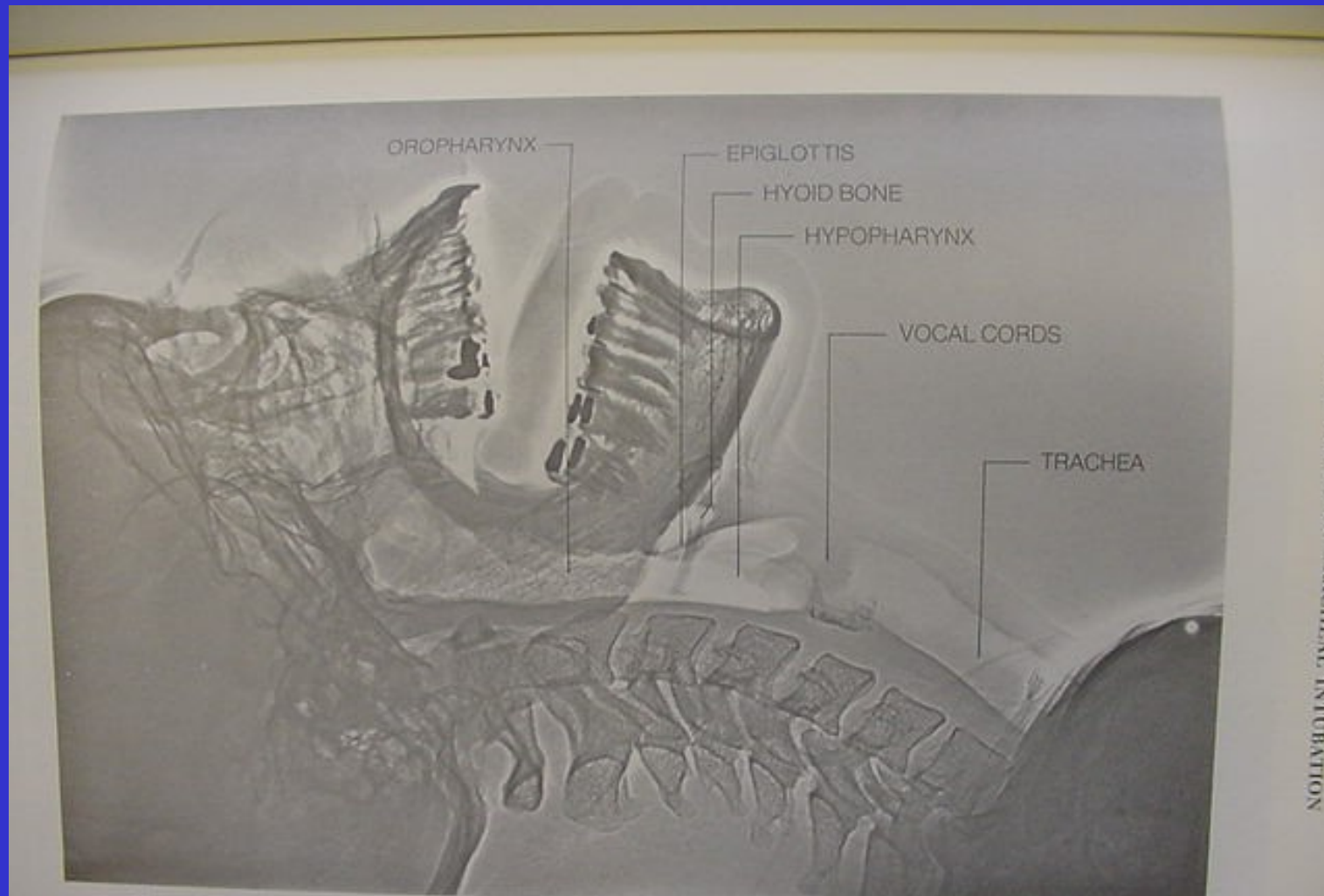


Figure 14-4. Position of the head for laryngoscopy and intubation of trachea. A. Ordinary position; T, axis of the trachea; P, axis of the pharynx; O, axis of the oral cavity. B. Modified position.

# Endotracheal Intubation

## Head Position



# Endotracheal Intubation

## Head Position- **Wrong**

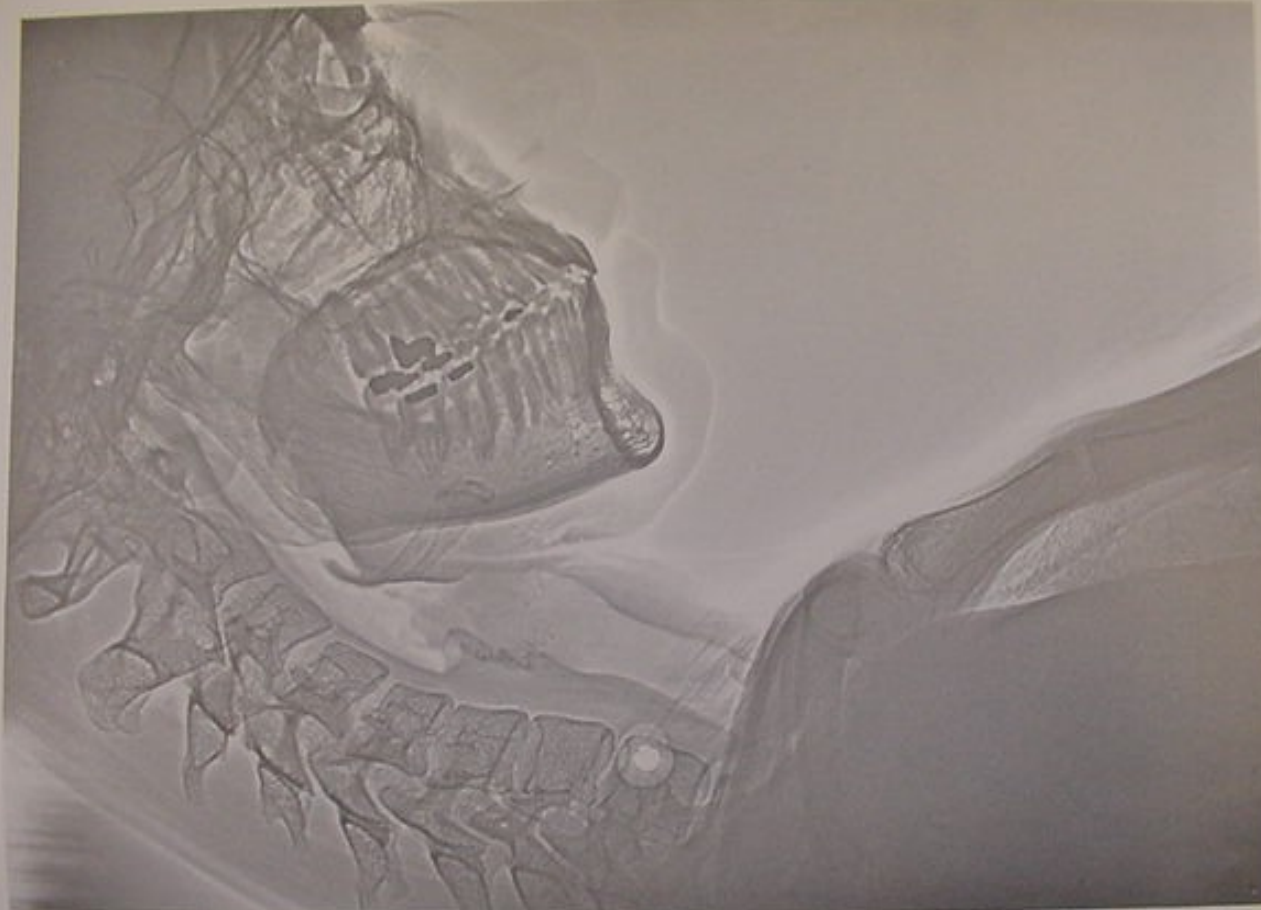


Figure 7-2 Xeroradiograph of a normal subject with head and neck flexed. Note the narrowing of the pharyngeal air column and marked angulation between the oral cavity and pharyngeal air column.

# Endotracheal Intubation

## Head Position-**Bad**

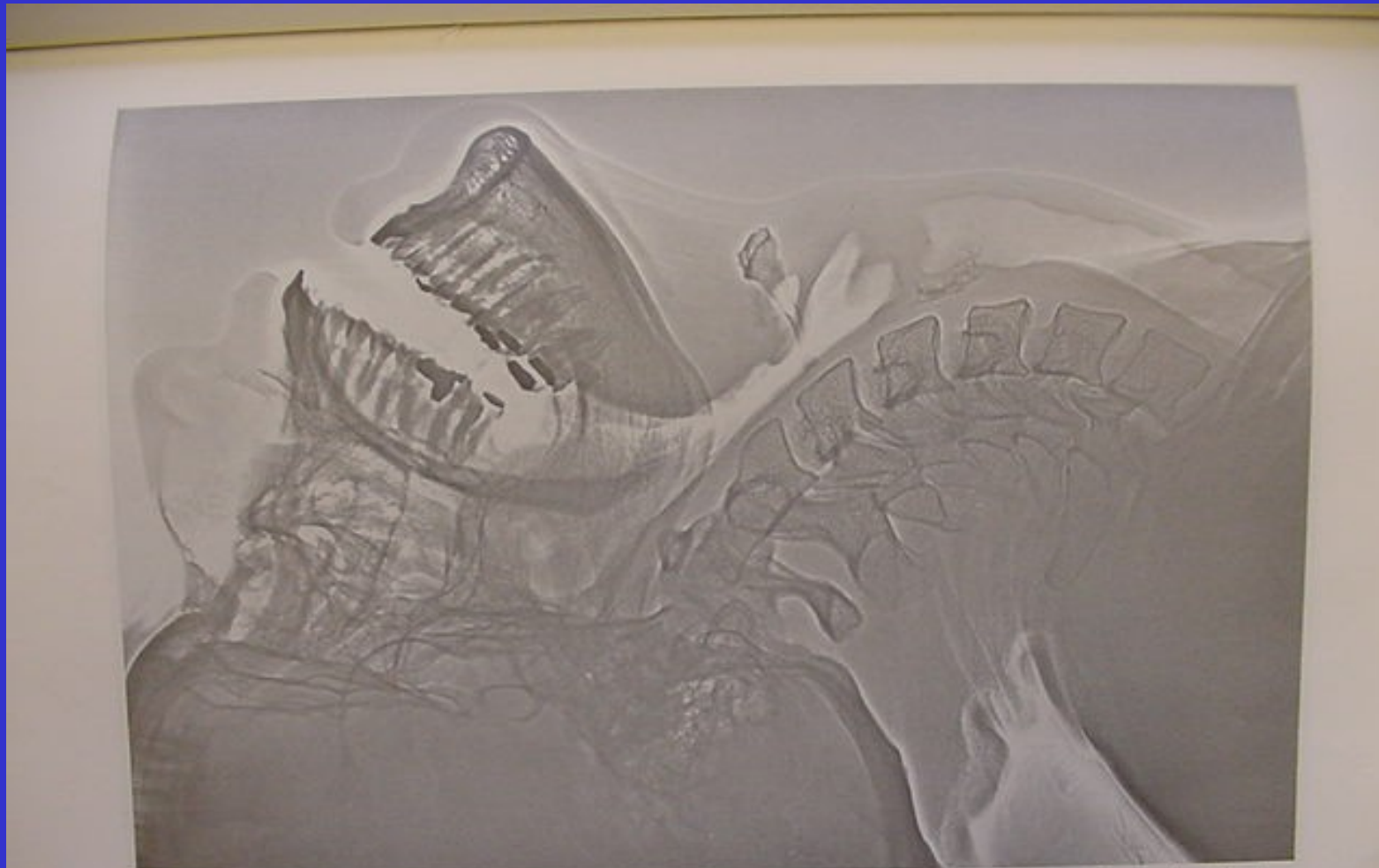


Figure 7-1 Xeroradiograph of a normal subject with head and neck extended. Note the marked angulation between the tracheal and vertebral axes.

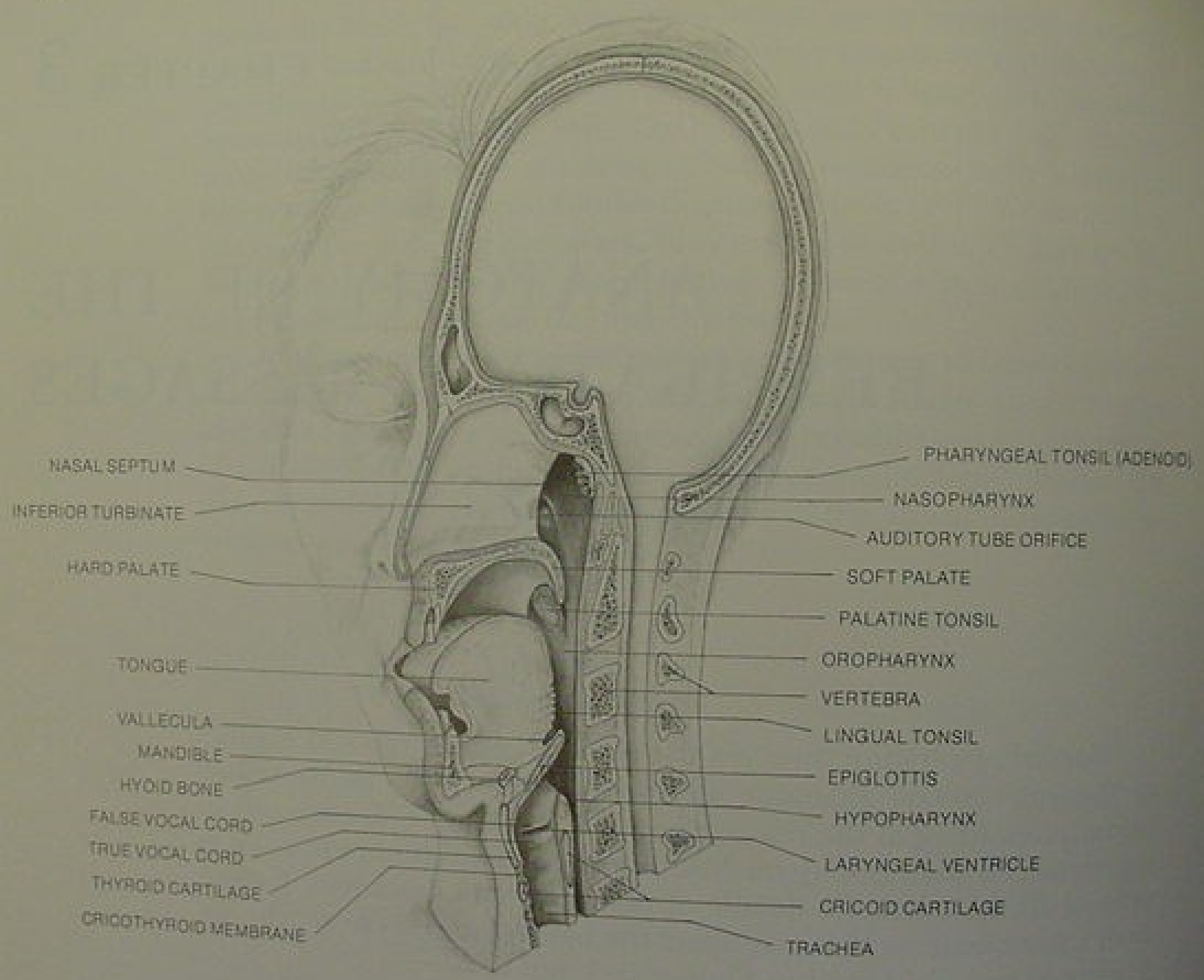


Figure 3-1 Sagittal section of the head and neck

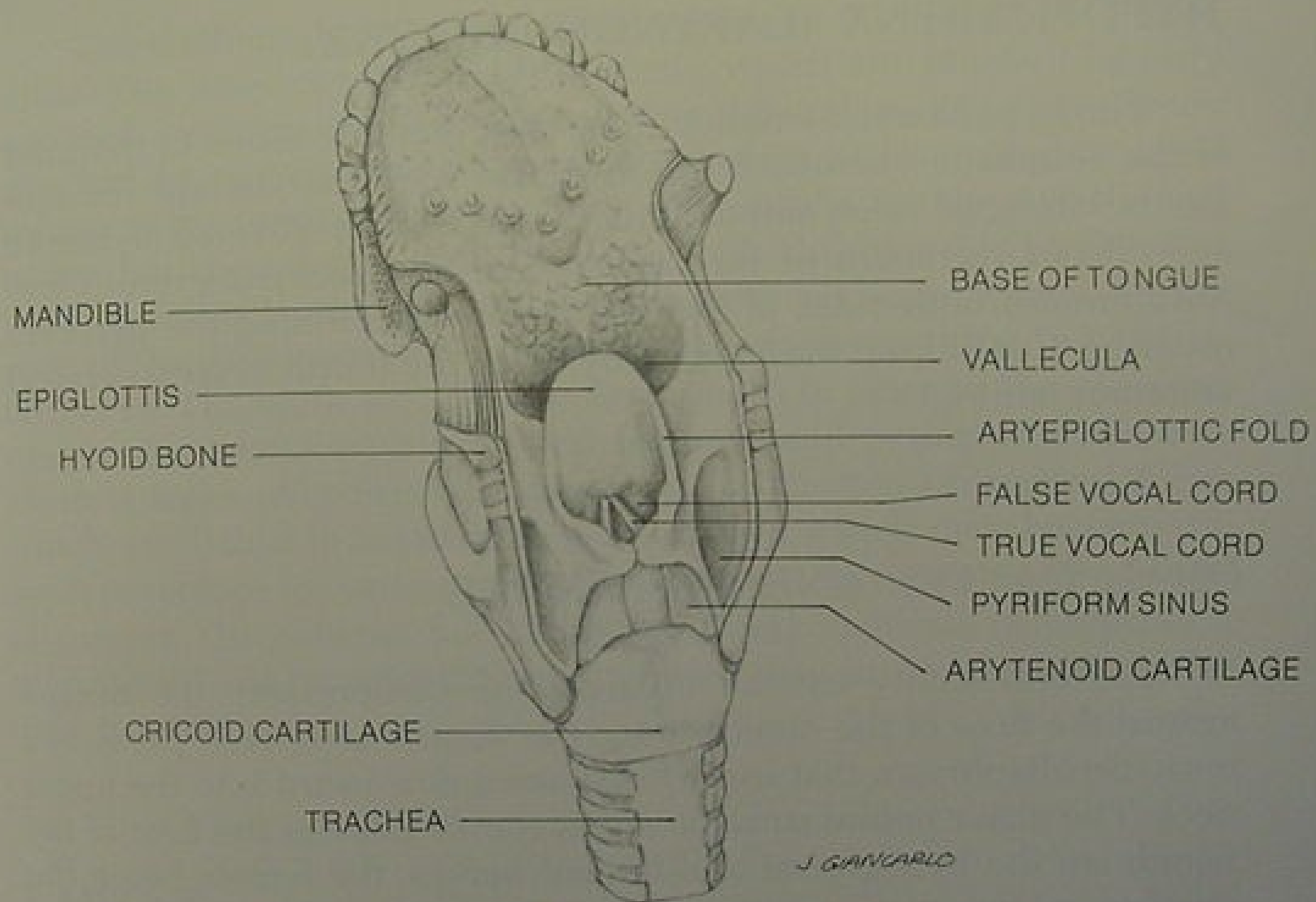
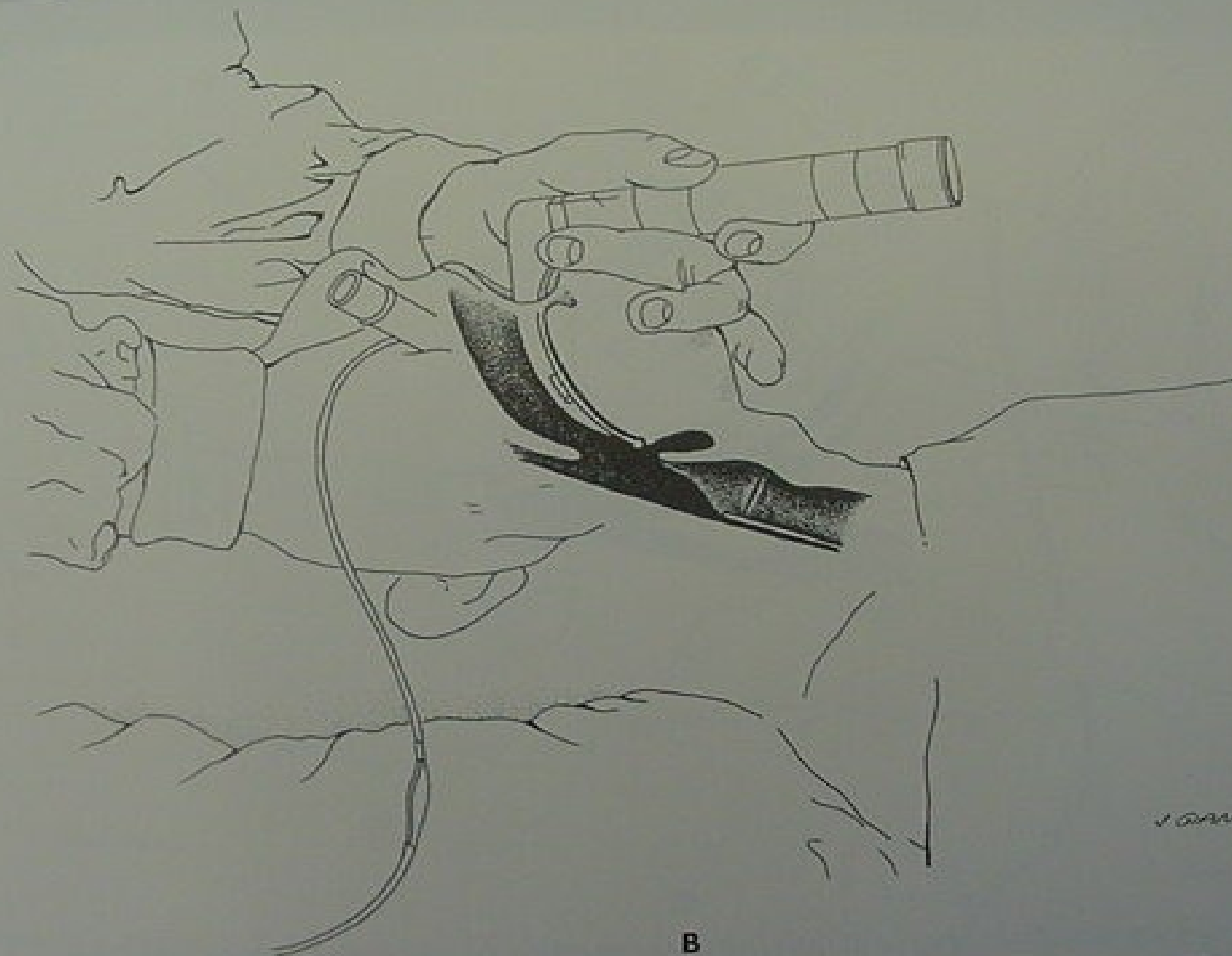


Figure 3-2 Posterolateral view of tongue, hypopharynx, larynx, and trachea.

necessitates emergency intubation of the trachea followed by ton-



Figure 7-4 Technique of orotracheal intubation. A. Laryngoscope blade is inserted in



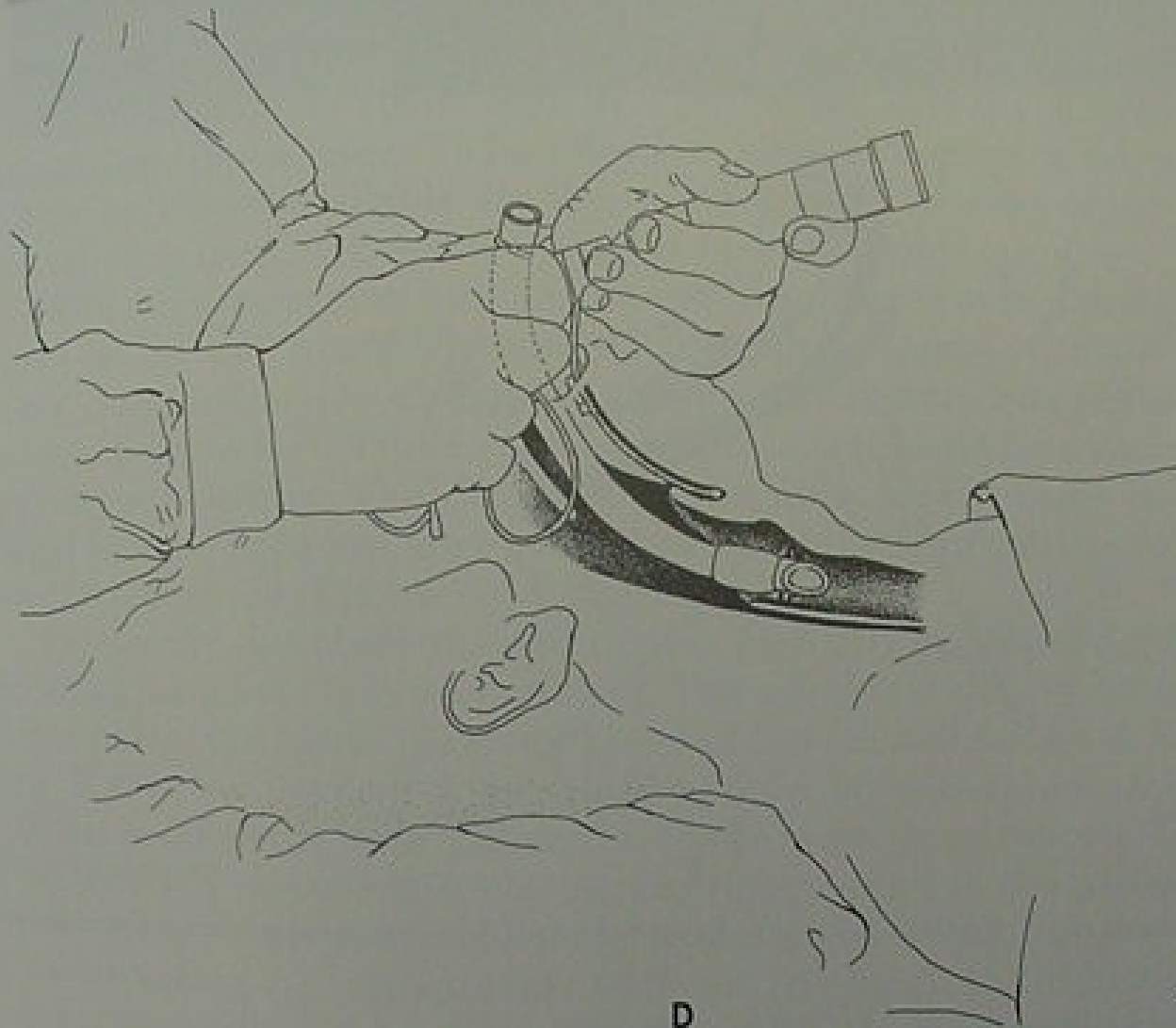
**B**

Figure 7-4 Continued B, Blade is advanced into oropharynx and laryngoscope is lifted to expose the epiglottis.



Figure 7-4 *Continued* C. Tip of blade is placed in vallecula, and laryngoscope is lifted further to expose glottis. The tube is inserted through the right side of the mouth.





**D**  
Figure 7-4 Continued D. Tube is advanced through vocal cords into trachea.  
*Illustration and legend continued on the following page*

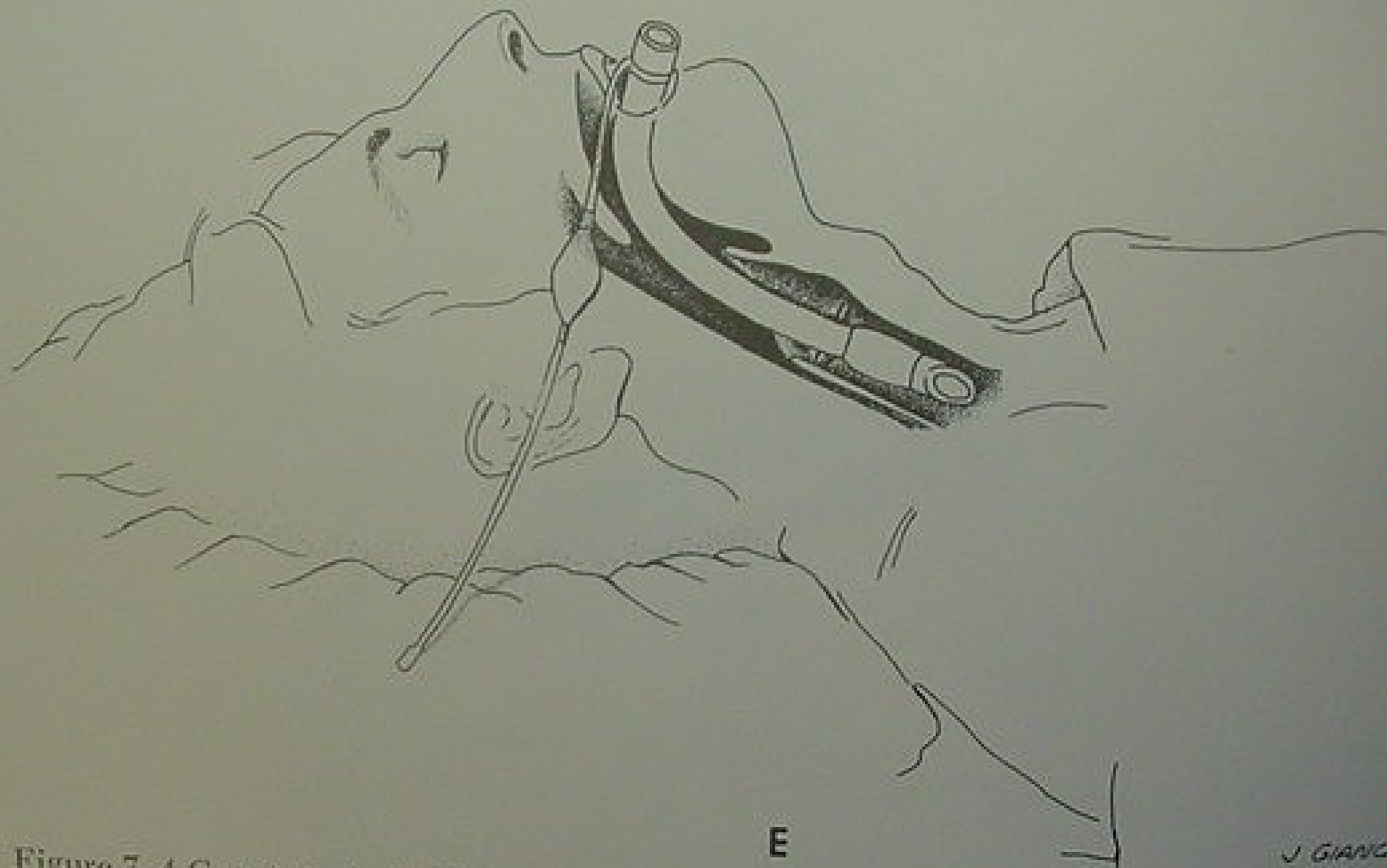


Figure 7-4 Continued E, Tube is positioned so that its cuff is below vocal cords, and laryngoscopy is removed.

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# Oxygen Supplement during laryngoscopy



# Sedation for Intubation

Sodium pentothal (6mg/kg)

Propofol

Versed (0.1mg/kg)

Fentanyl (2-5 mcg/kg)

Morphine (0.1mg/kg)

Precedex (Dexmedetomidine)

None



# Endotracheal Tube Size

- <700 gm                      2.5 mm I.D.
- 700 – 1500 gm              3.0 mm I.D.
- >1500 gm                    3.5mm I.D.

Crown Heel Length(cm)	Nasotracheal Tube Length (cm)
30	6.50
32	7.00
34	7.50
36	8.00
38	8.25
40	8.75
42	9.25
44	9.50
46	10.00
48	10.25
50	10.50
52	11.00
54	11.50
56	12.00
58	12.50

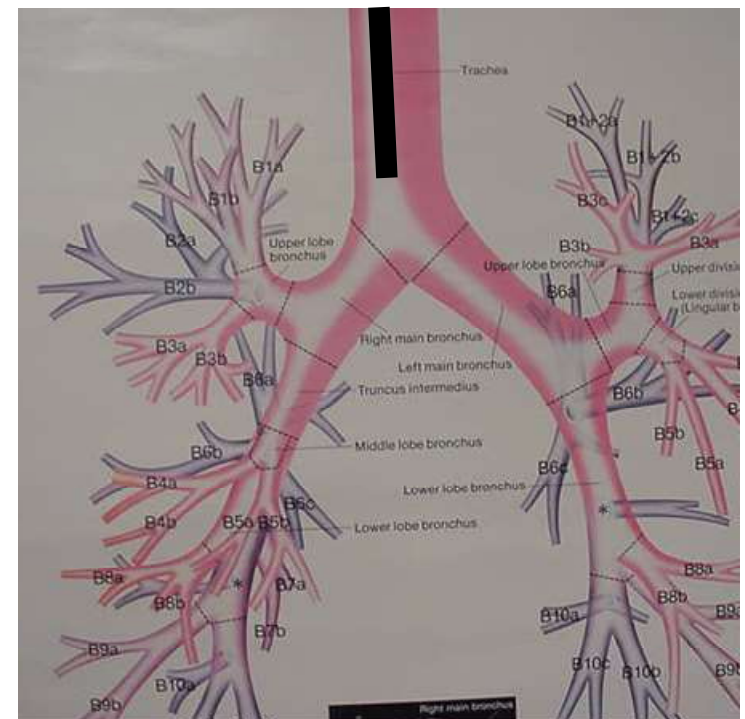
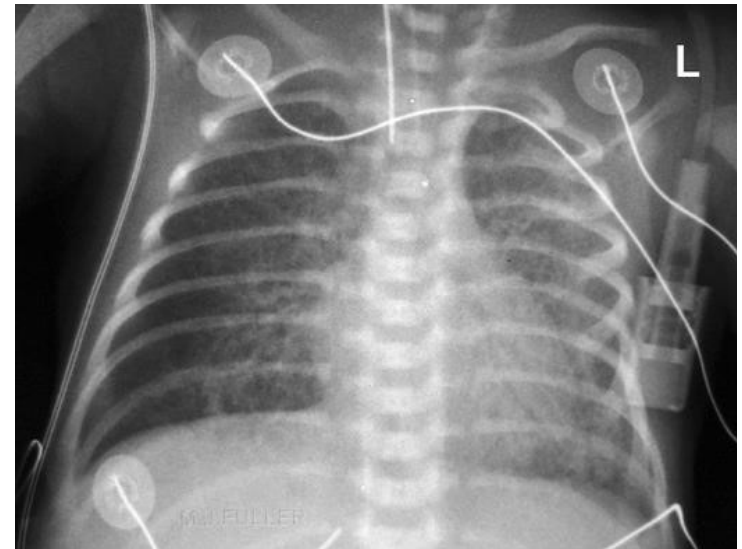
# Endotracheal Tube Length

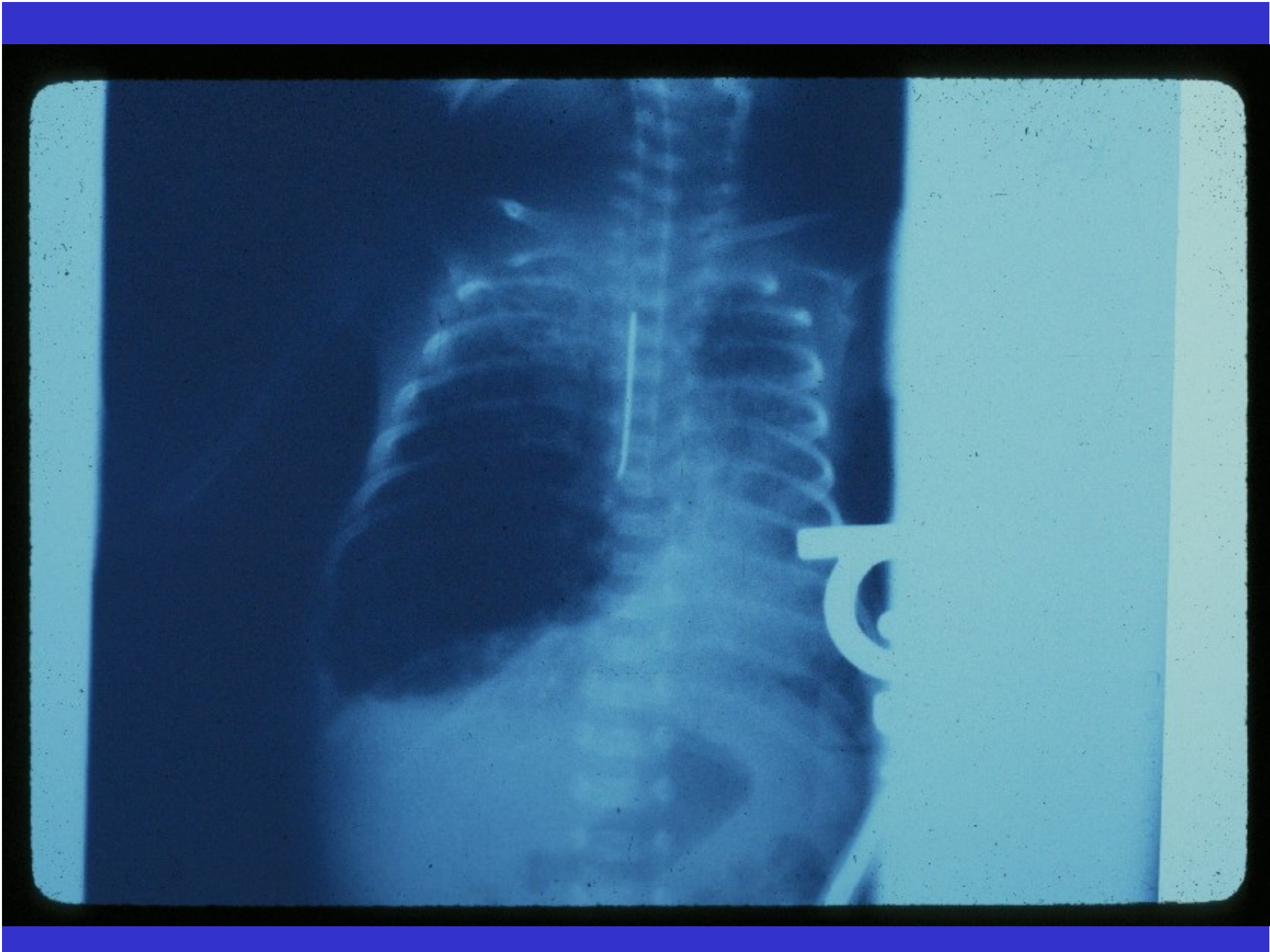
- Orotracheal Tube :  
6 cm + BW (kg)
- Nasotracheal Tube:  
8 cm for 1000 gmemie  
10 cm for 2500 gm

# Endotracheal Tube *Depth*

Chest X-ray  
(head in neutral position)

- < 1000 gm premie  
1 cm above carina
- >2000 gm newborn  
2 cm above carina

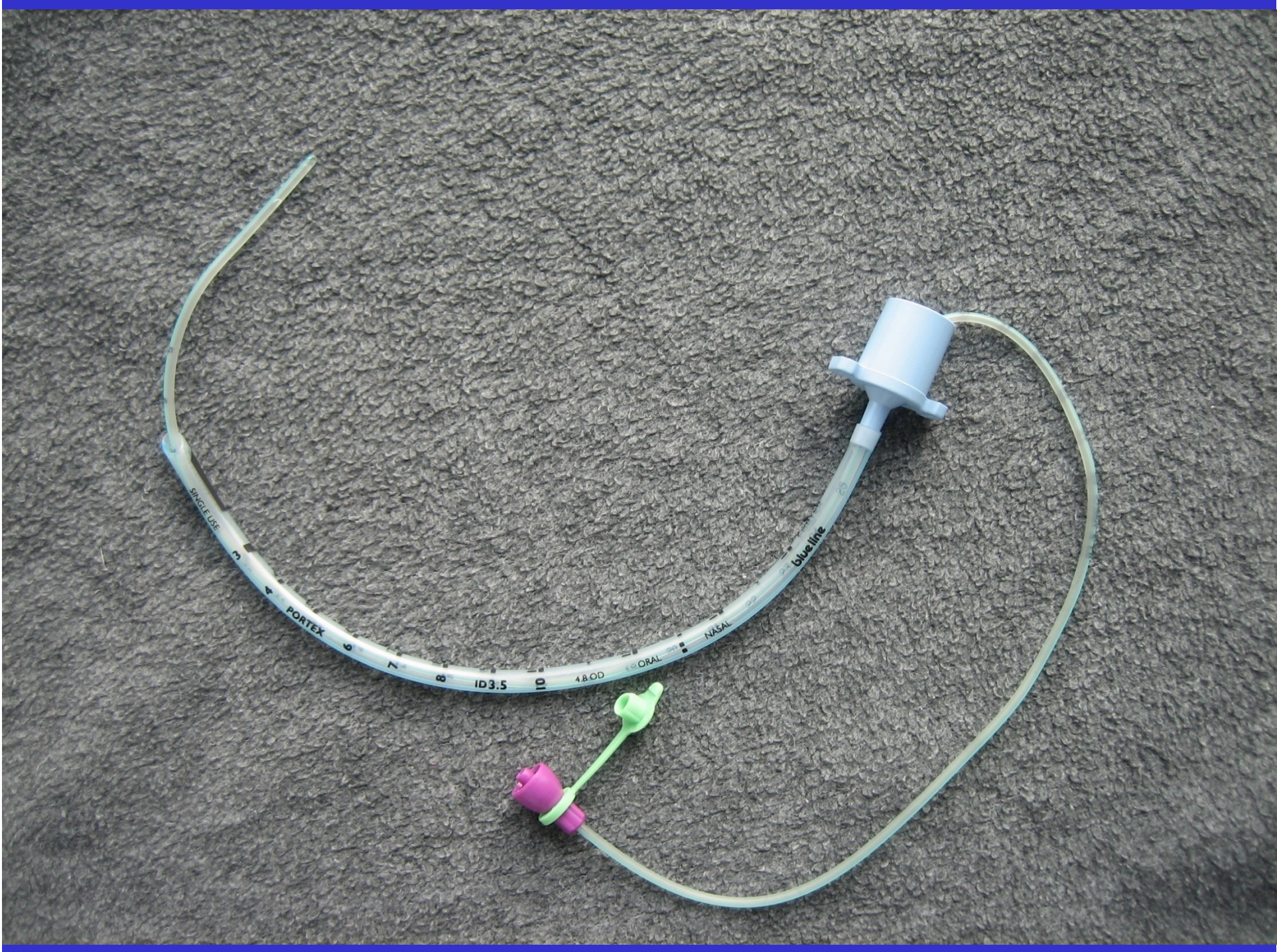




# Endotracheal Intubation

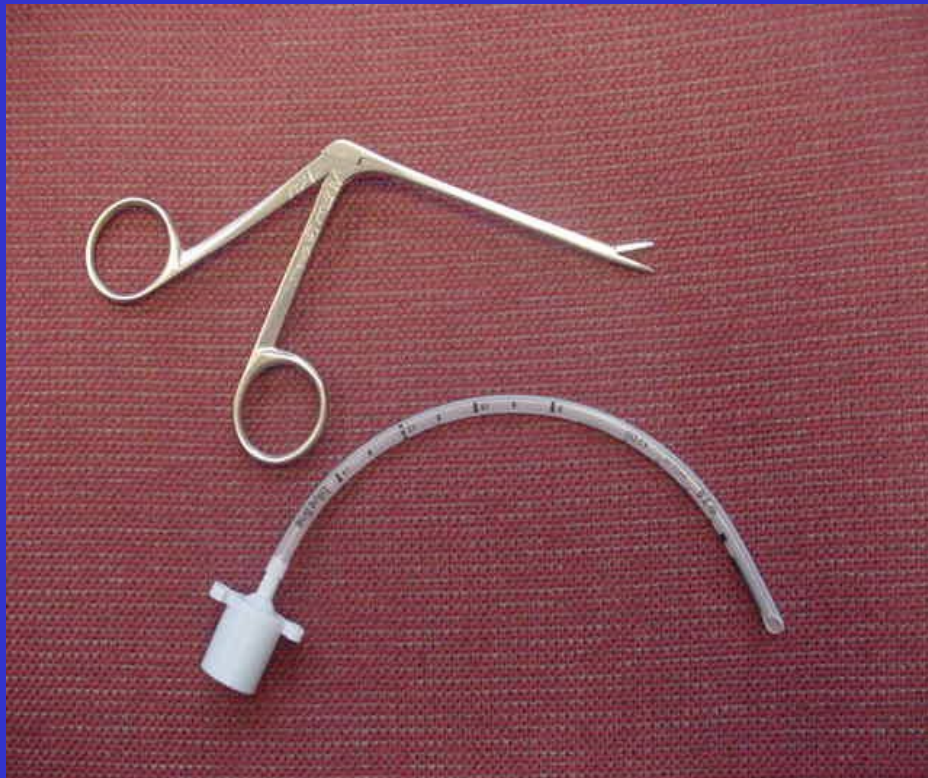
## Nasotracheal vs Orotracheal

- Better fixation
- Less inadvertant extubation
- Less tracheal irritation
- More comfortable
- Better oral hygiene



# Nasotracheal Intubation

## Alligator forceps



# Endotracheal tube taping



Oral ETT with NeoBar



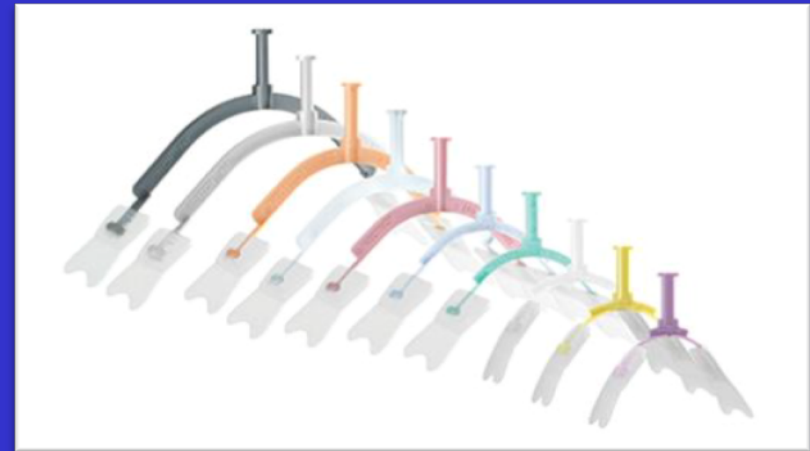
Nasal ETT with 3M  
Multipore tape



Nasal ETT with pink  
Hy-tape

# Oral tube securement

## NeoBar ET tube Holder









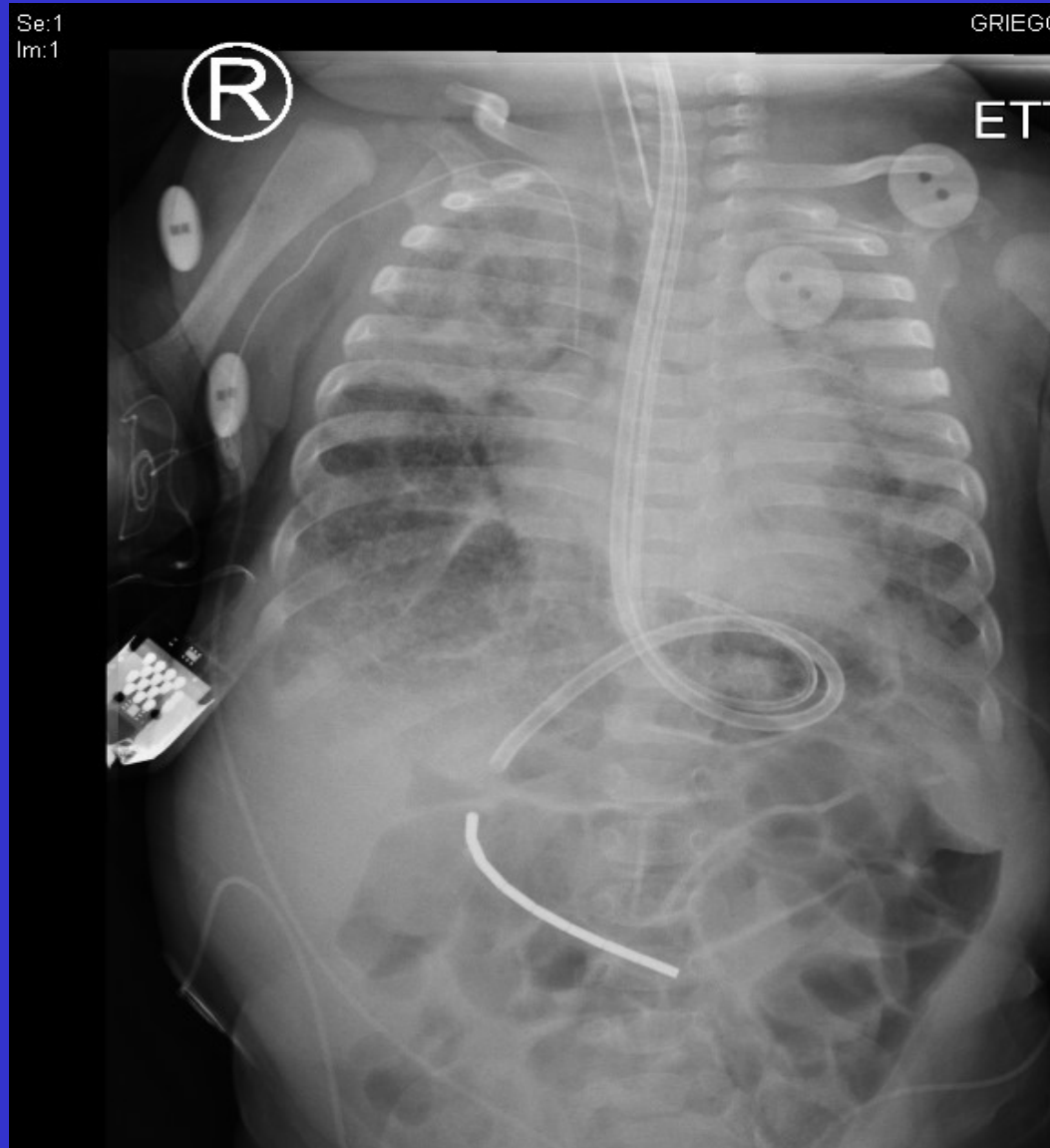
# Secure Nasotracheal Tube





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# Et tube suctioning is mandatory



# Suction of endotracheal tube is mandatory

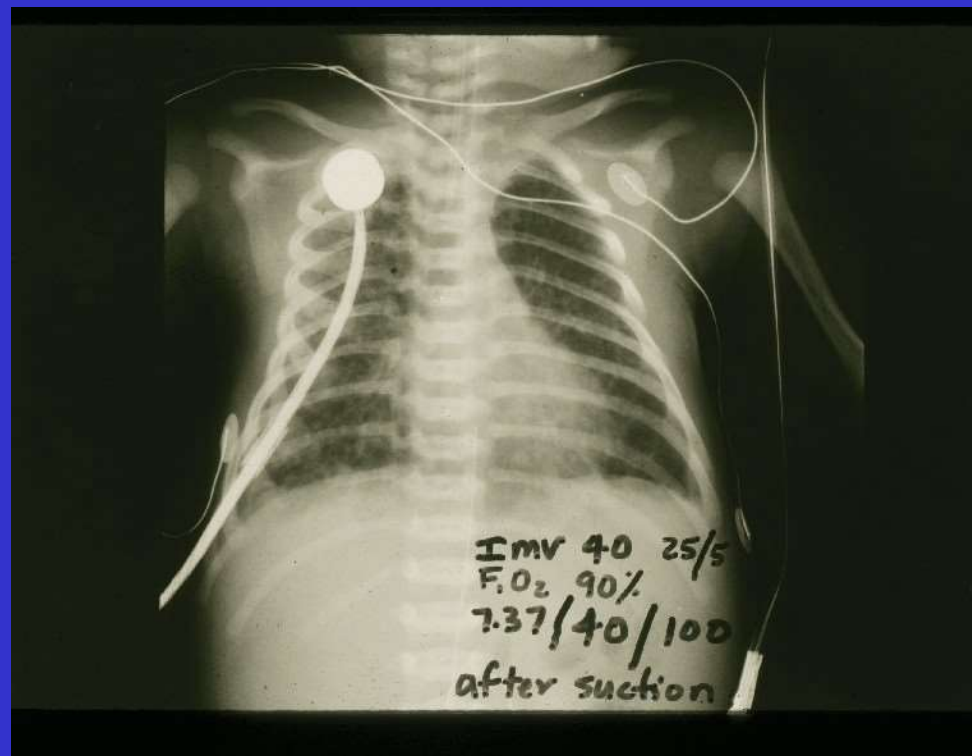
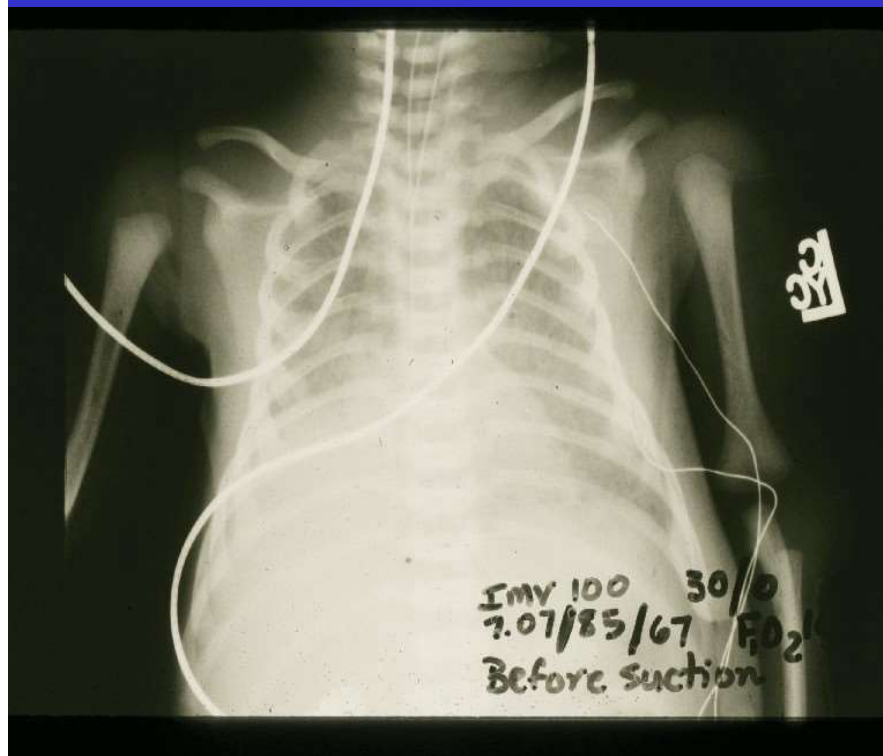
## Endotracheal tube in the trachea:

- cause irritation and produce more secretions
- Suppress normal mucous-ciliary function
- Can not cough up secretions
- Endotracheal tube suction is necessary to clear secretions and to maintain airway patency
- Depth of suction should be down to main-bronchus
- Suction pressure should be 100 -200 cmH<sub>2</sub>O
- Ventilated patients often become agitated is due to secretions accumulated in airway and need suction

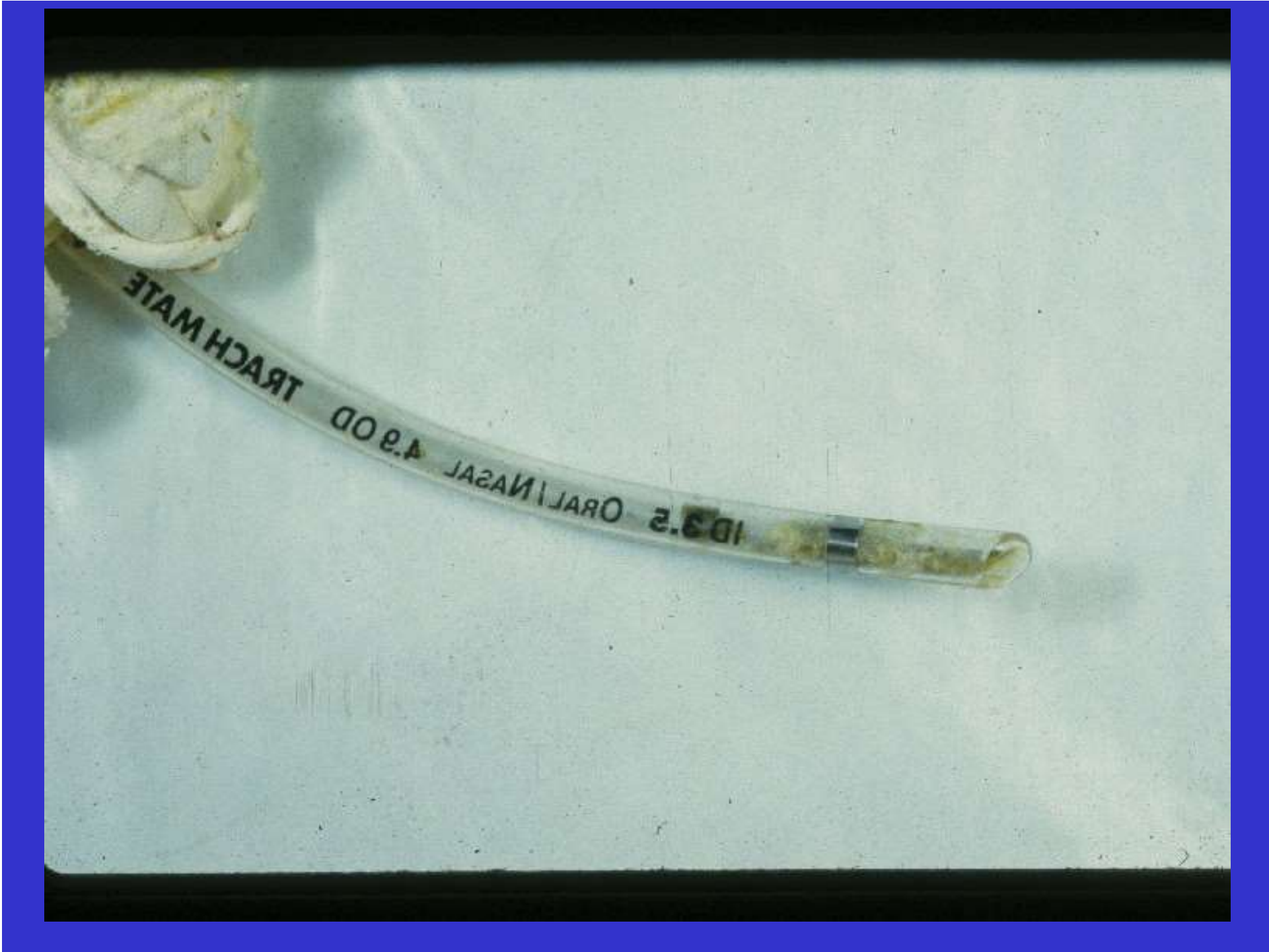
# Endotracheal suction

Before

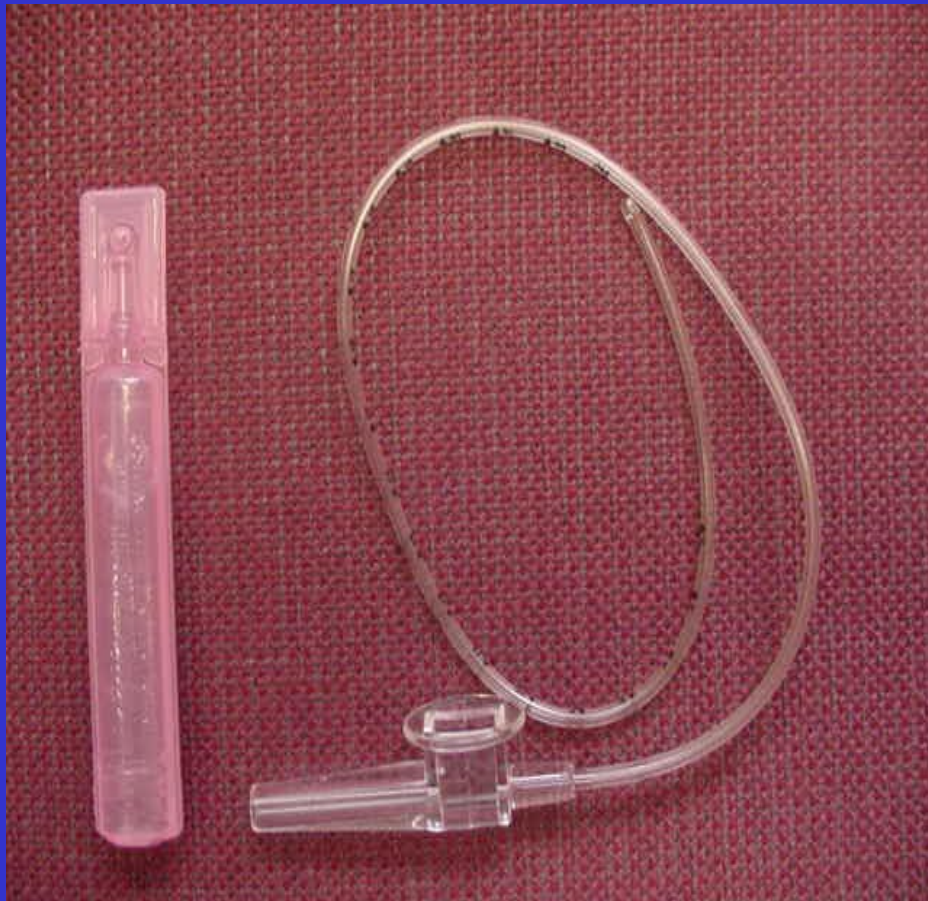
After



TRACH MATE  
4.8 OD  
ORAL/NASAL  
ID 3.5



# Endotracheal Tube Suctioning



## Suction Catheter size:

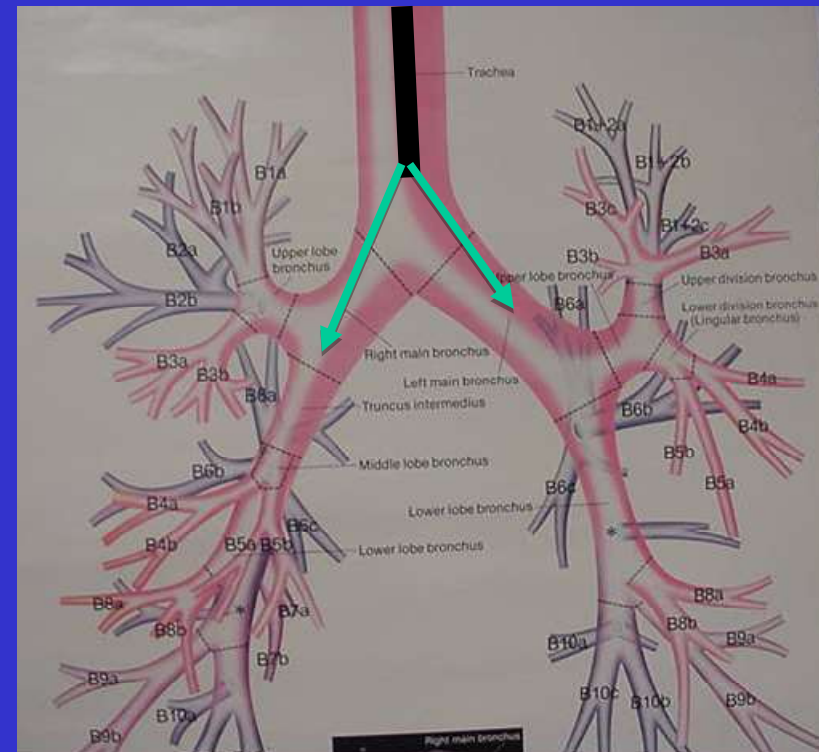
- 6.5 Fr. for 2.5 mm I.D. ET tube
- 8.0 Fr. for 3.0 & 3.5 mm I.D. ET tube

# Endotracheal Tube

## Suction depth (down to main-bronchus)

ET tube length (inside + outside)

- +3 cm:  
for <1000 gm premie
- +4 cm:  
for 1000 – 2000 gm
- +5 cm:  
for >2000 gm



# Endotracheal Tube Suctioning



# Endotracheal Tube Suctioning

Time:

As short as possible

# Endotracheal Tube Suctioning

Pressure:

-100 to -200 cmH<sub>2</sub>O  
(-80 to -150 mmHg)

1mmHg = 1.36 cmH<sub>2</sub>O

# Endotracheal Tube Suctioning

Frequency:

Q 2-4 hr & prn

# Endotracheal Tube Suctioning

Lubricate catheter with  
sterile water or saline if necessary

# Endotracheal Tube Suctioning

Head position:

- Turn to **left side**  
for suction of  
**right main-stem bronchus**
- Turn to **right side**  
for suction of  
**left main-stem bronchus**

Name: \_\_\_\_\_

Length(C-H): \_\_\_\_\_

Depth of suction: \_\_\_ cm. = NTT length  
(\_\_\_ cm. Inside + \_\_\_ cm. Outside) + 3 to  
5cm. (3 cm for 1000 gm premie and 5  
cm. for term infant)

NTT size: \_\_\_\_\_

Nurse signature: \_\_\_\_\_

Date: \_\_\_\_\_

# Chest Physical Therapy

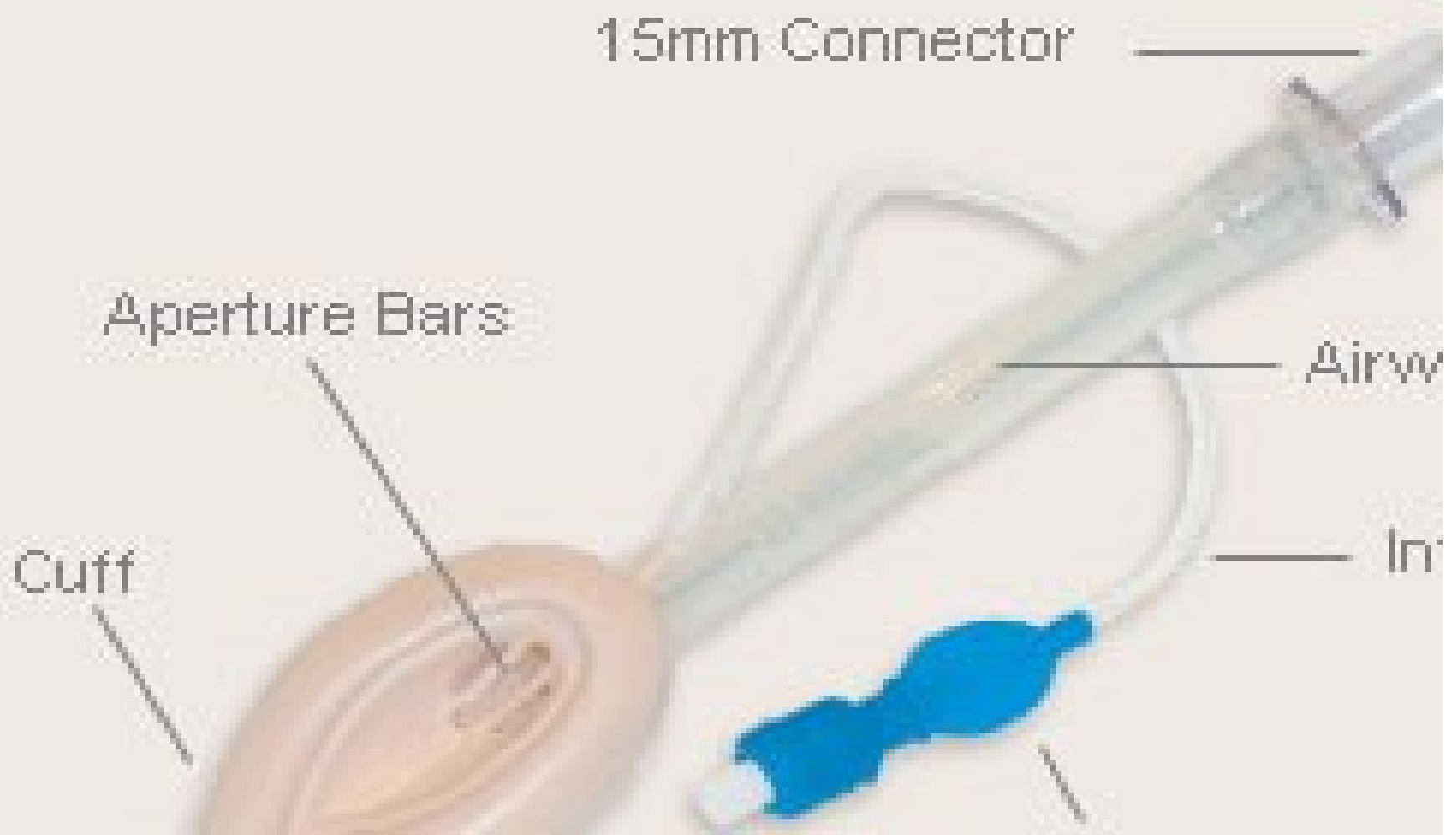
- Percussion
- Vibration



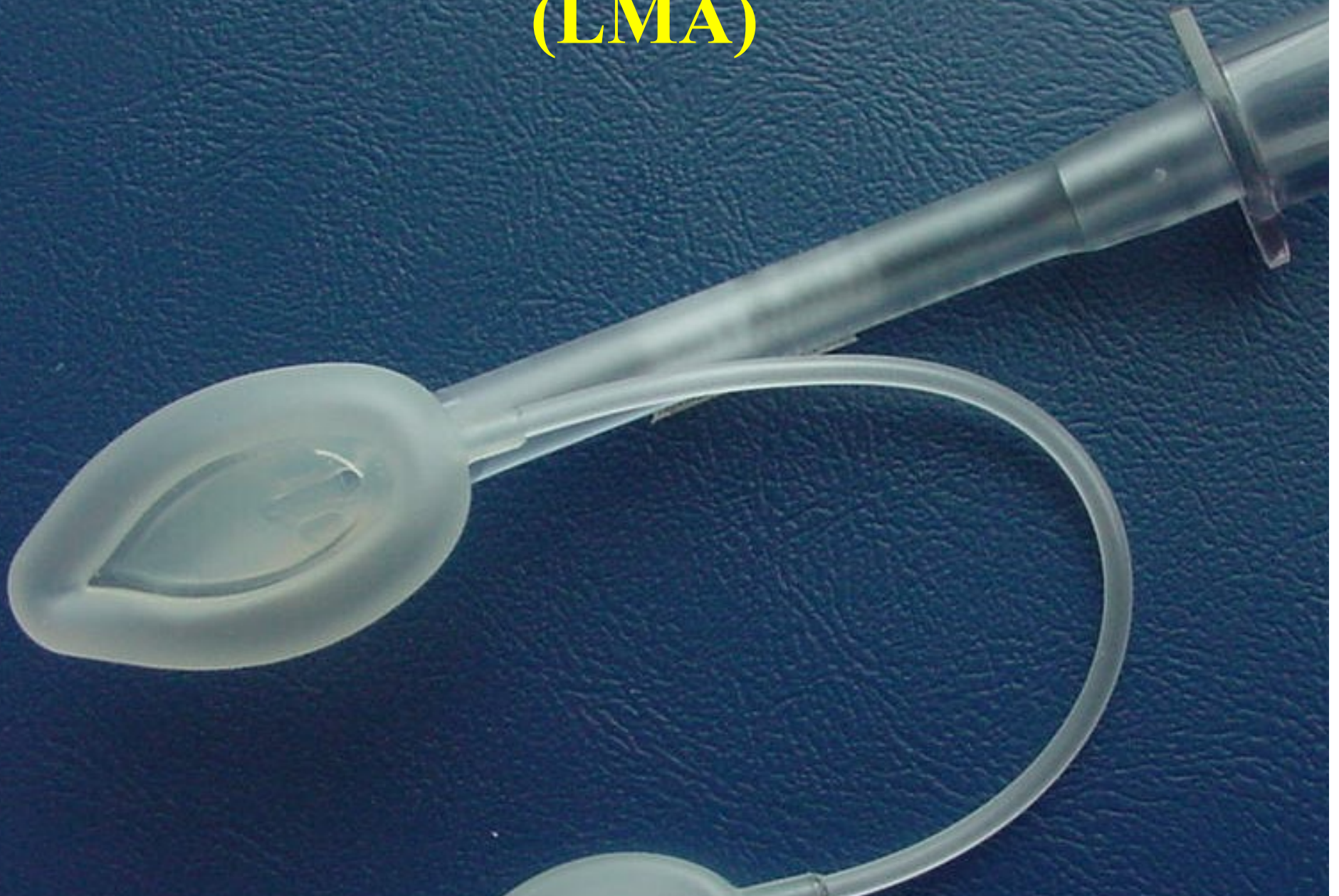
# Changing Chest Positioning

- Alternate supine, side to side , or prone position
- Affected side up for atelectasis
- Affected side down for pulmonary interstitial emphysema (PIE)

# The Original LMA™ Airway



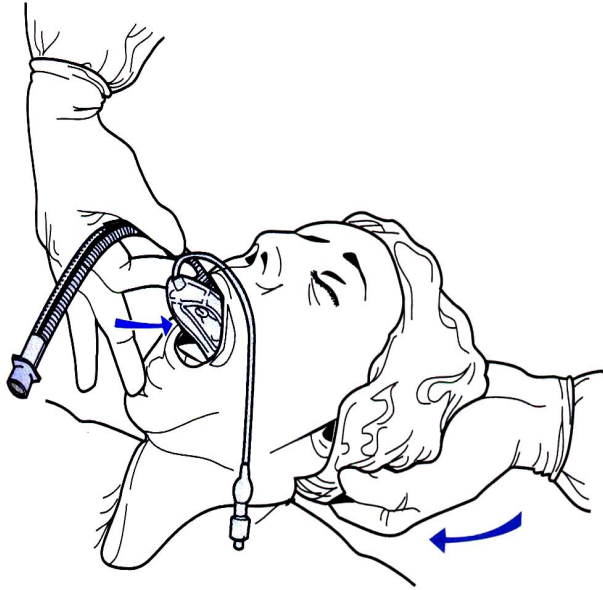
# Laryngeal Mask Airway (LMA)



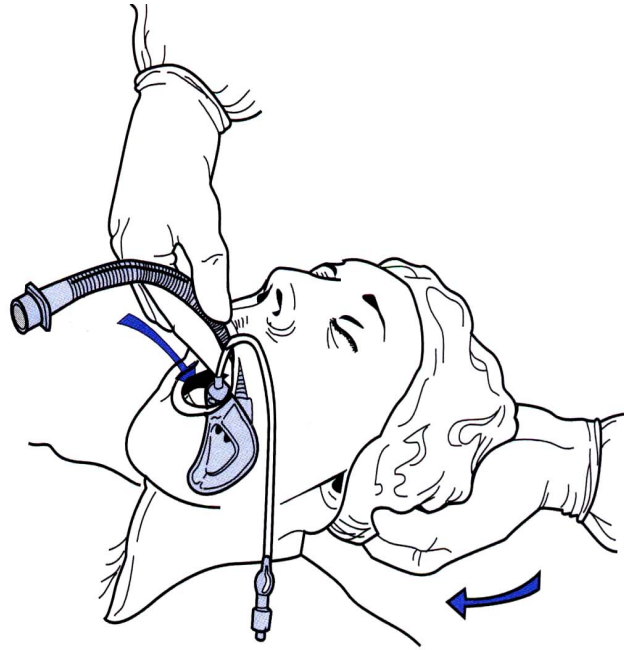
# Laryngeal Mask Airway (LMA)

## Insertion Technique:

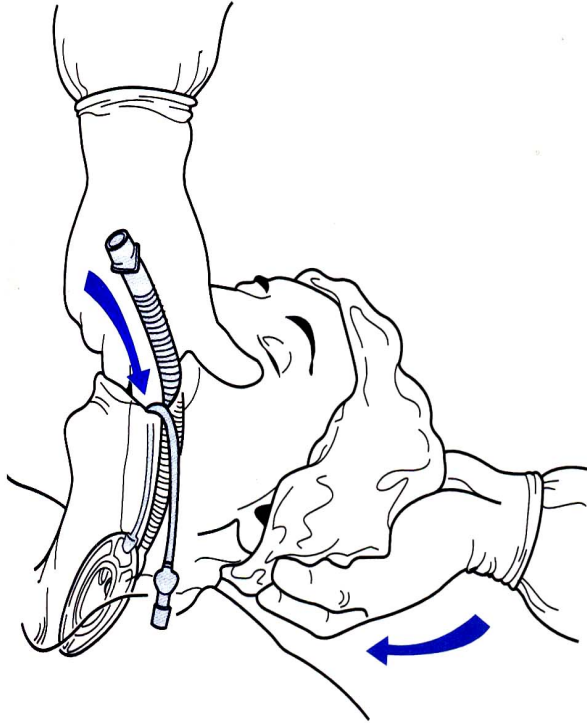
- The LMA is completely deflated to form a smooth, flat wedge shape (Some are preferred partial inflation)
- A water-soluble lubricant is placed on the back of the mask
- The patient is placed in sniffing position
- A finger is placed on the anterior surface where the tube joins the mask, the posterior aspect of the LMA is pushed along the hard palate, following the natural curvature of the oropharynx, until seated
- The flattened mask allows the LMA to pass behind the epiglottis/arytenoids and for the tip to lodge in the area of the upper esophageal sphincter



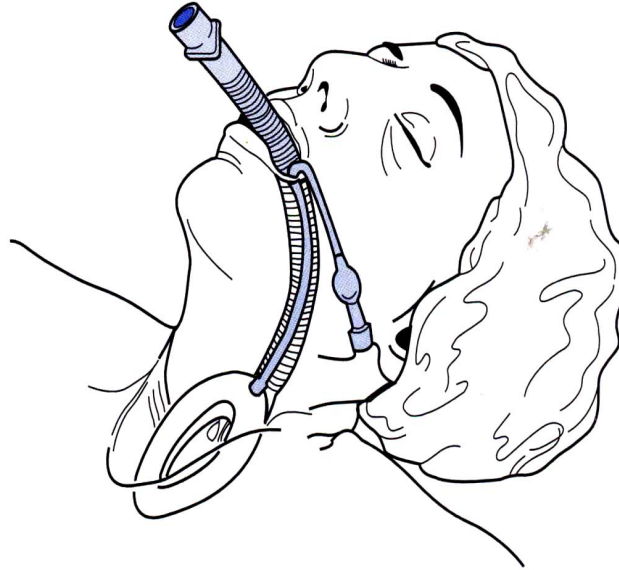
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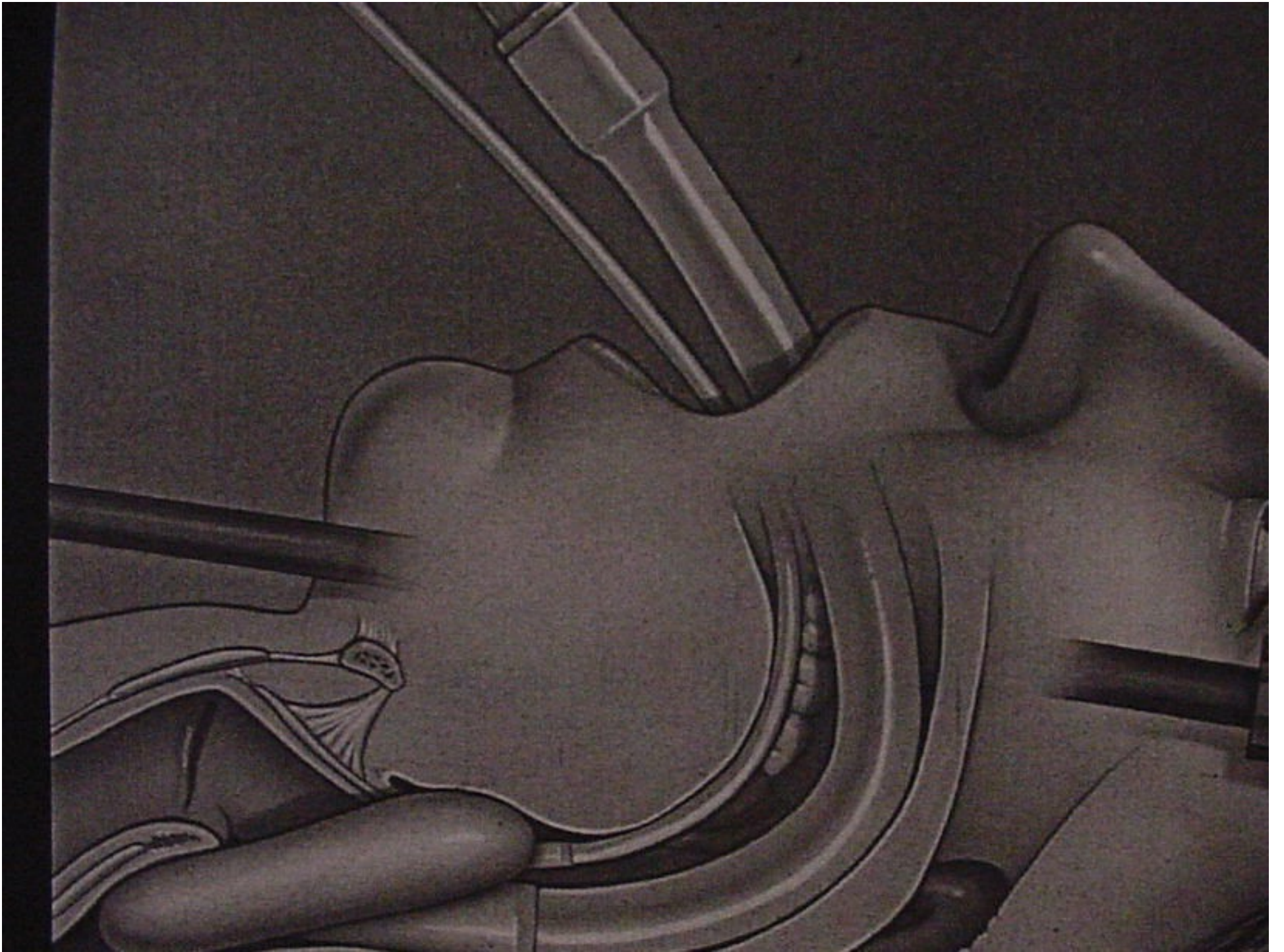
B



C



D







# Case Presentation(1)

- GA 40 weeks,
- BW 2900g
- Micrognathia, retrognathia, glossoptosis, Cleft palate

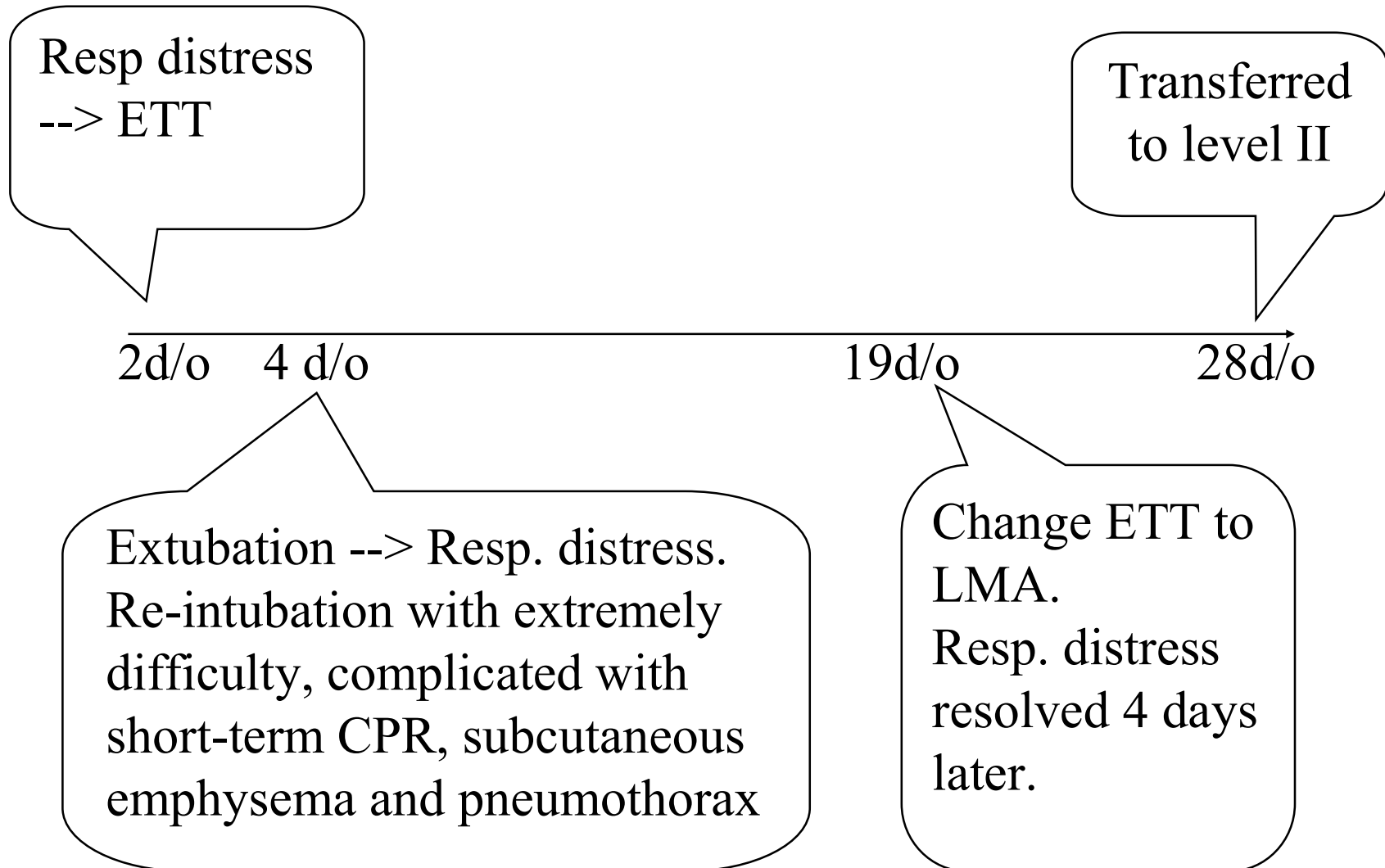


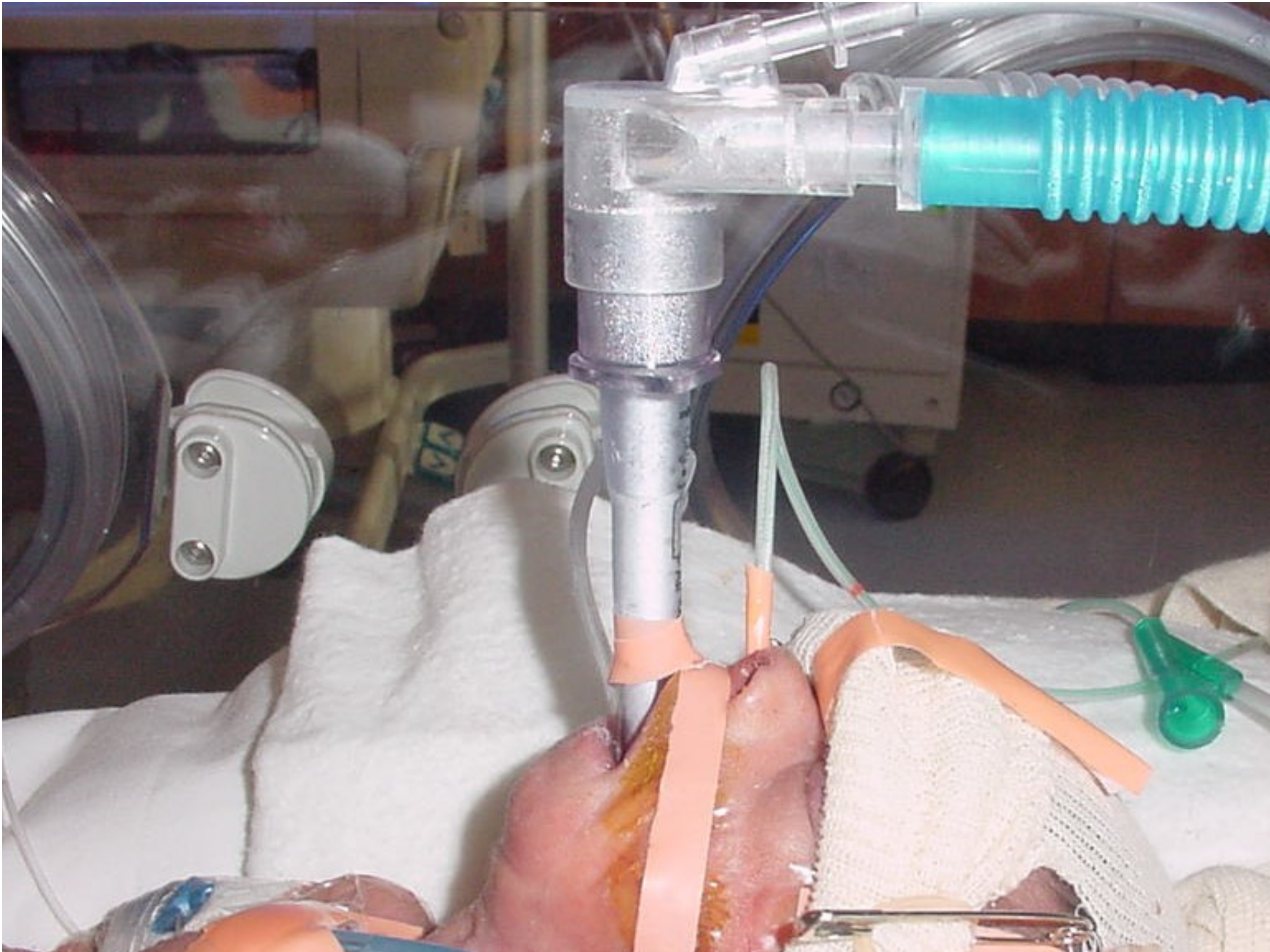
# Case Presentation(2)

- Progressive dyspnea, stridor
- Severe respiratory distress, subcostal retraction, poor air entry
- ABG: pH 7.22 PCO<sub>2</sub> 66.6 PO<sub>2</sub> 65 HCO<sub>3</sub> 26.5



# Case Presentation (3)



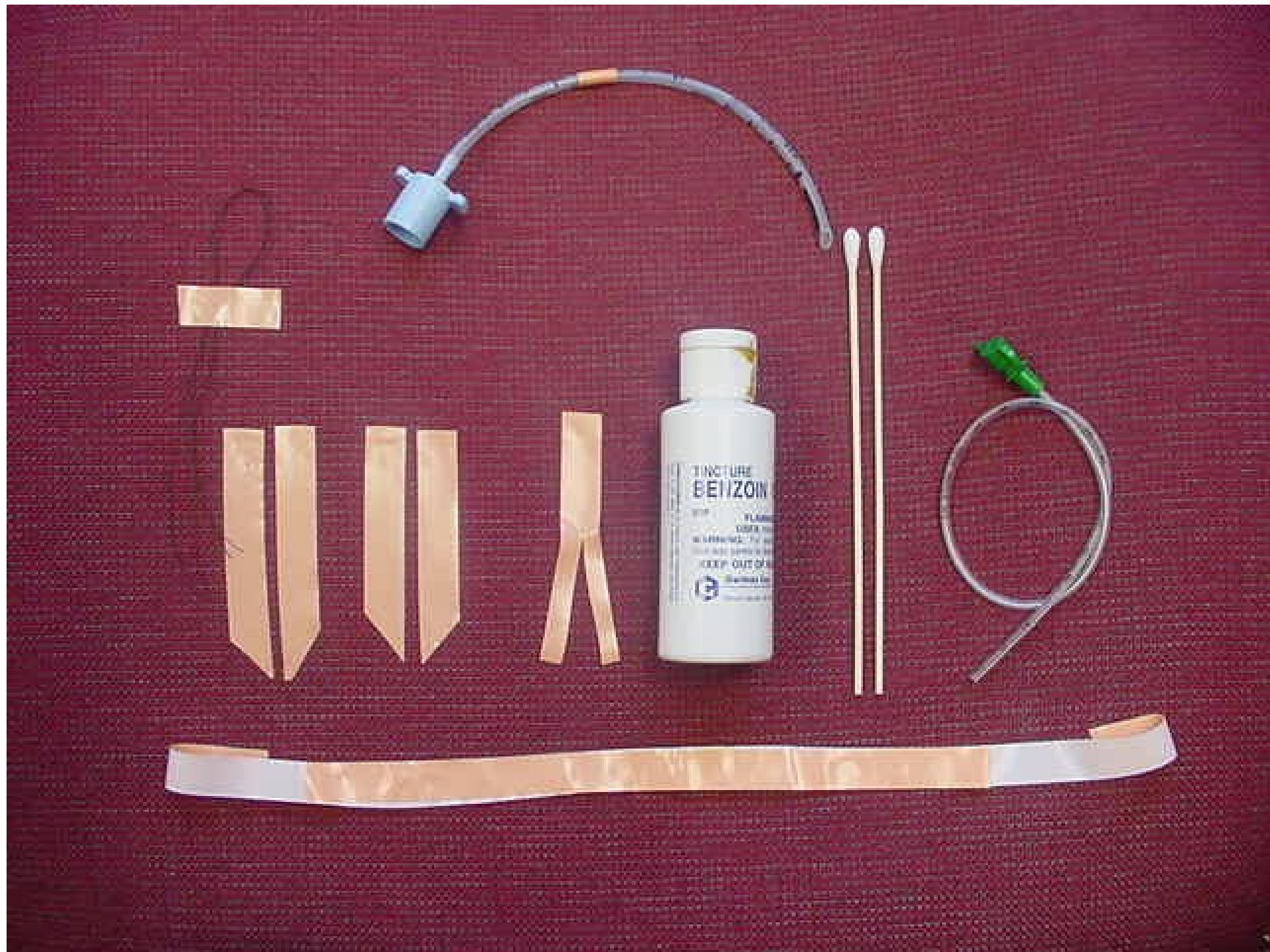






# Nasotracheal Tube taping









**TINCTURE  
BENZOIN**

USP

FLAMMABLE

USES: Internal

WARNING: For external use only  
(See side panels for directions)

KEEP OUT OF REACH OF CHILDREN



Geritrex Corp.

Mount Vernon, NY

Contains Benzoin Resin, Alcohol, and Water. For External Use Only. See Side Panels for Directions. © 2010 Geritrex Corp.



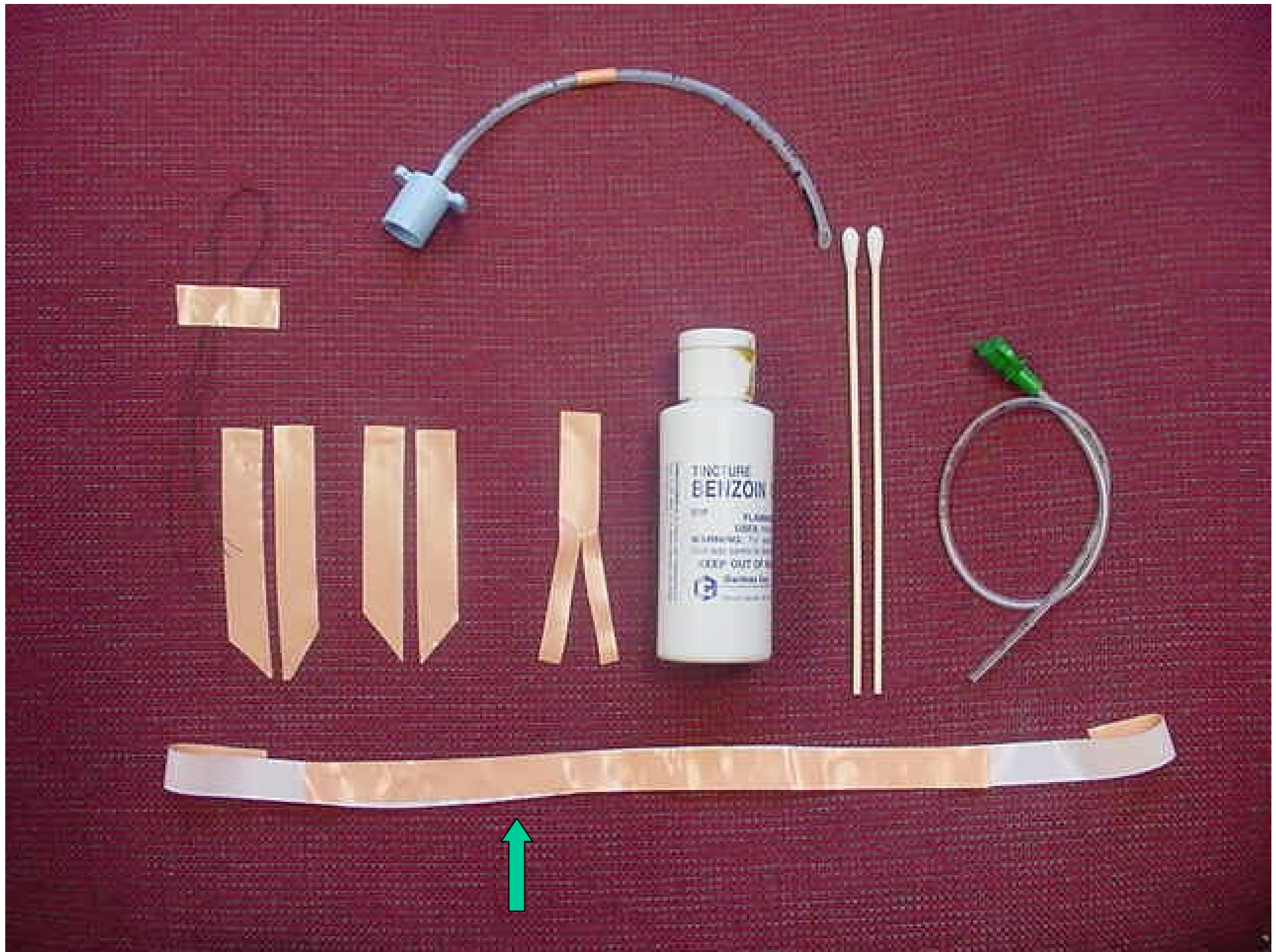










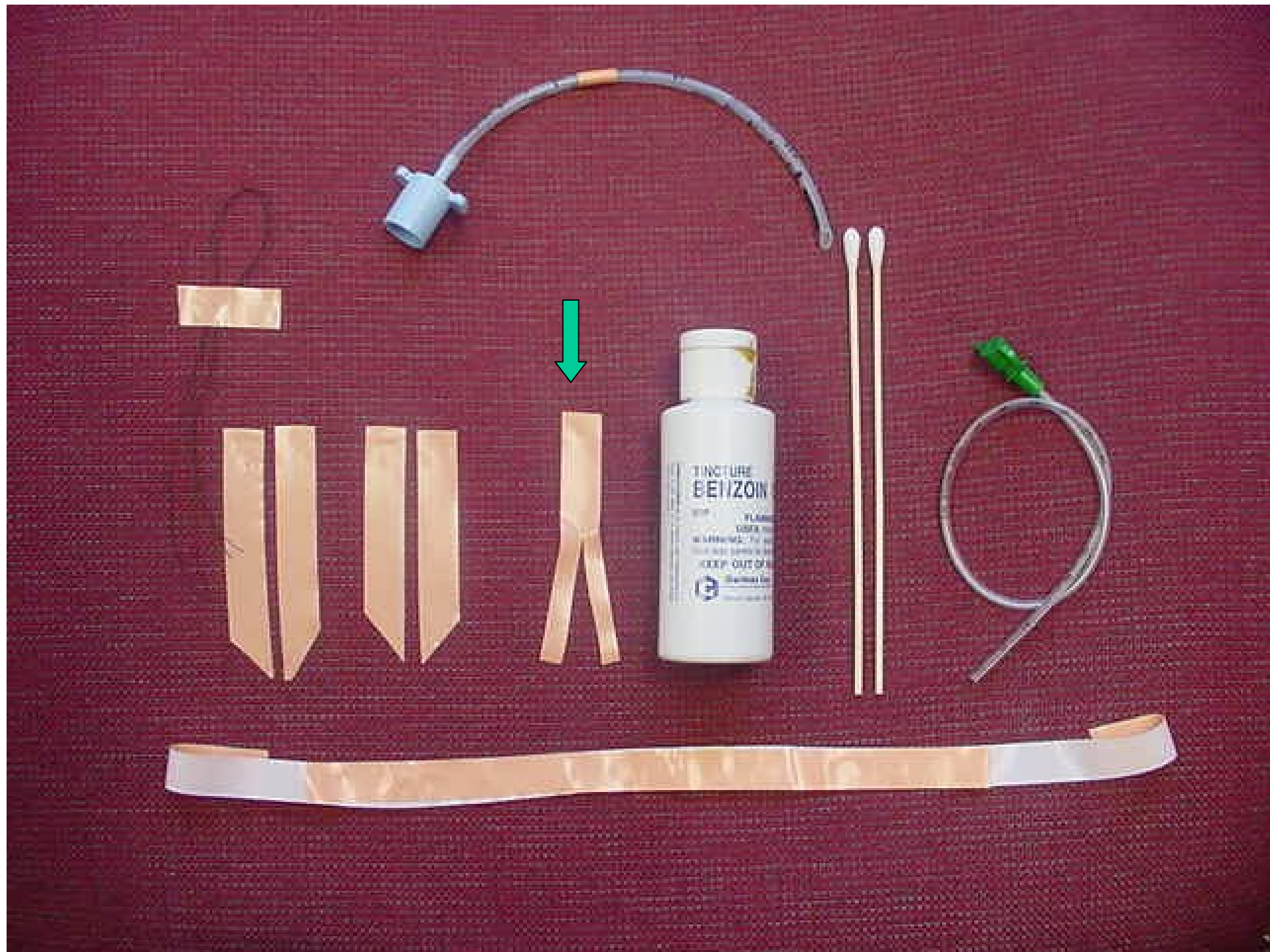








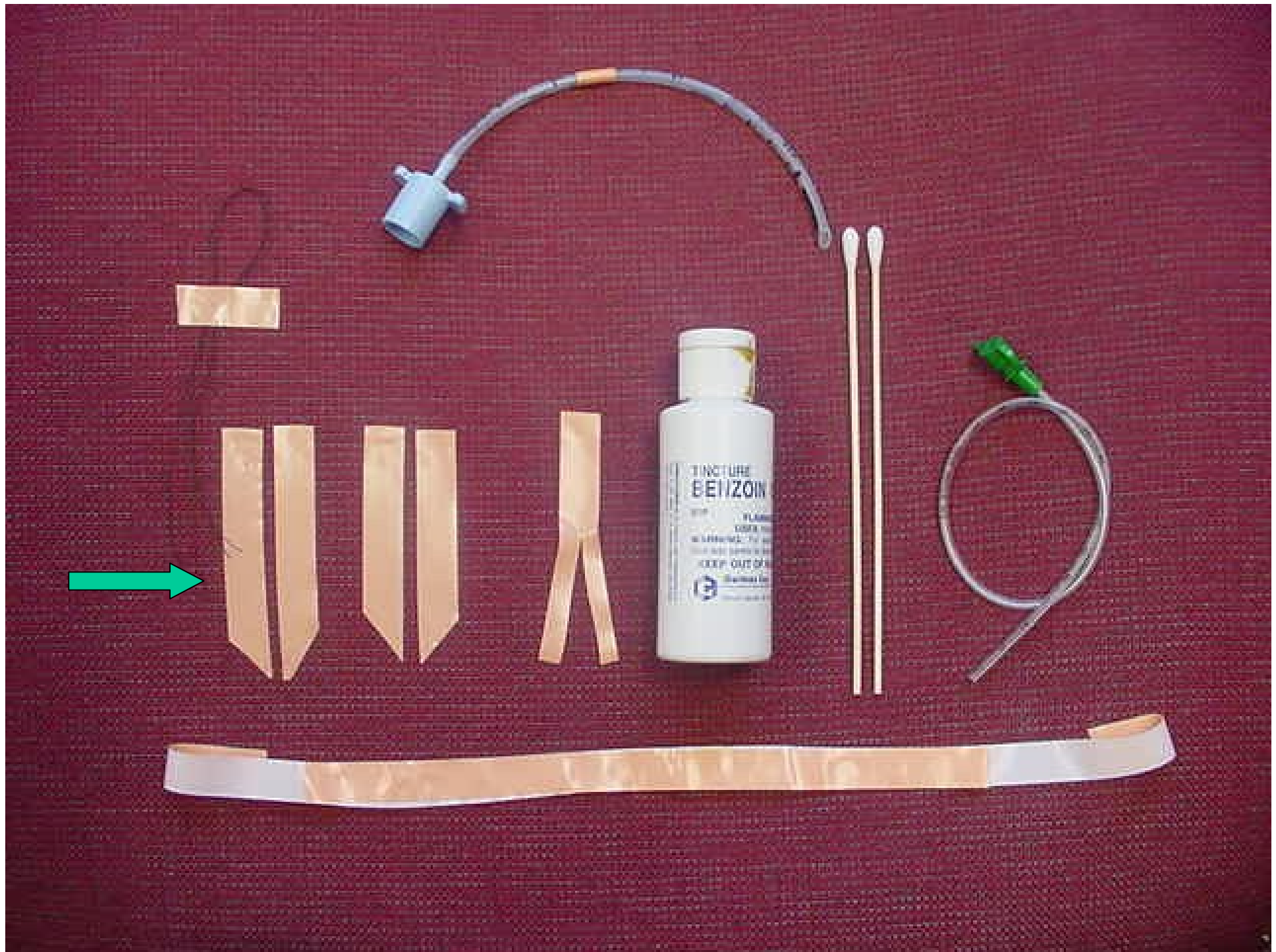




















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