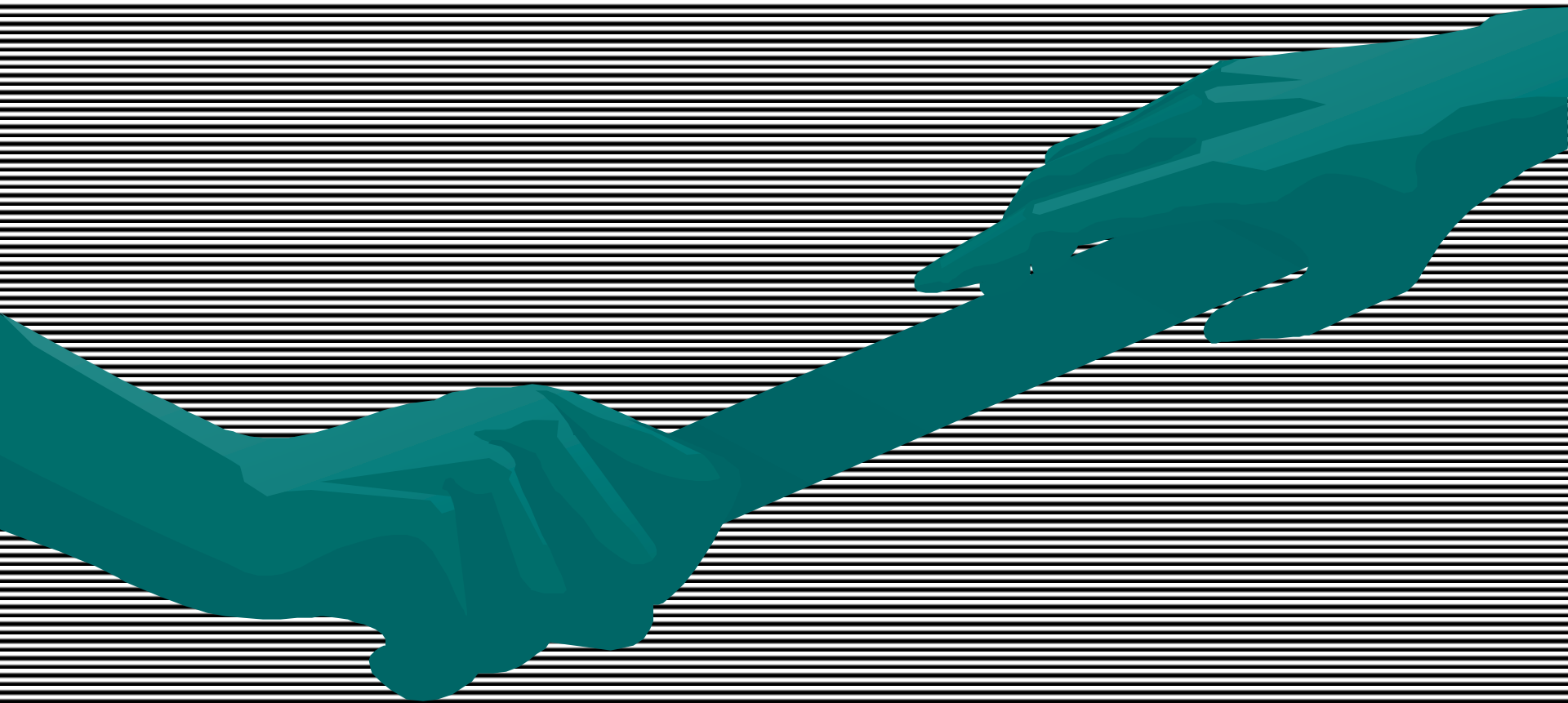
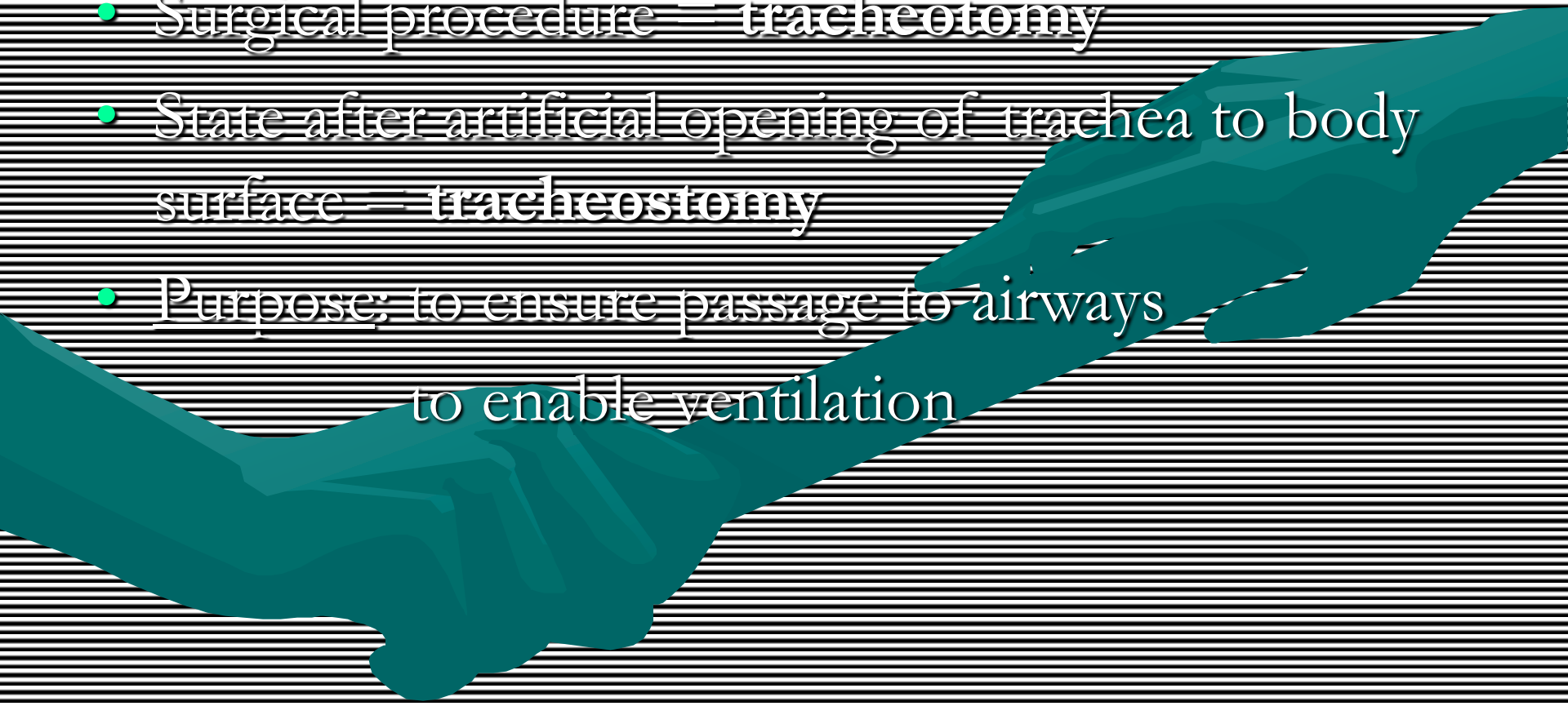


# Tracheostomy



# Tracheostomy

- Surgical procedure — tracheotomy
- State after artificial opening of trachea to body surface — tracheostomy
- Purpose; to ensure passage to airways to enable ventilation



# Tracheostomy

- Ancient method (Egypt, Greece)
- 18<sup>th</sup> century Pierre Joseph Desault used the term “tracheotomy”



# Tracheostomy

## - indication

- Mechanical obstruction in lower airways
- Secretion retention in lower airways
- In patients suffering from respiratory insufficiency
- Prolonged endotracheal intubation

# Tracheostomy

## - indication

- **Obstructed airways**

- - *upper airways*

foreign body, lingual swelling

epiglottitis ac., Quincke's edema

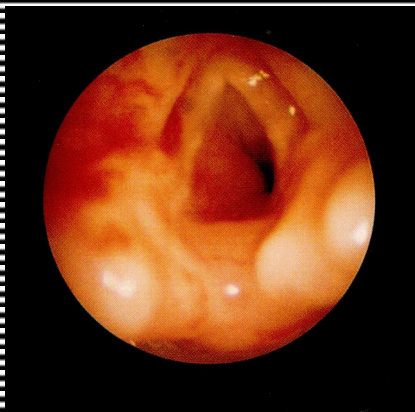
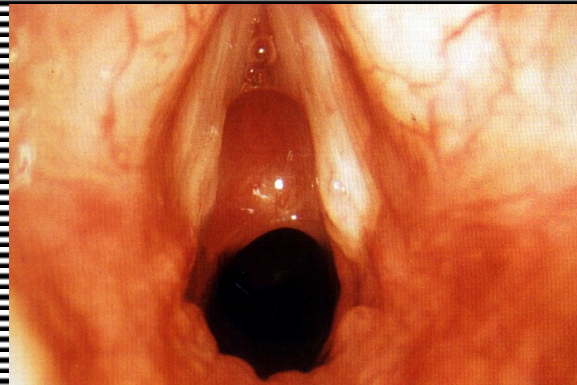
neurogenic disorders,

traumatic stenosis

injuries of larynx and basis of oral cavity

tumors

# Usual pathologies



# Tracheostomy

## - indications

- Obstructed airways :

*lower airways* - chronic pulmonary diseases

(COPD)

- emphysema

- cystic fibrosis (advanced state)

- asthma (severe conditions)

# Tracheostomy

## - indication

- **Respiratory failure**

central - cerebral hemorrhage/trauma

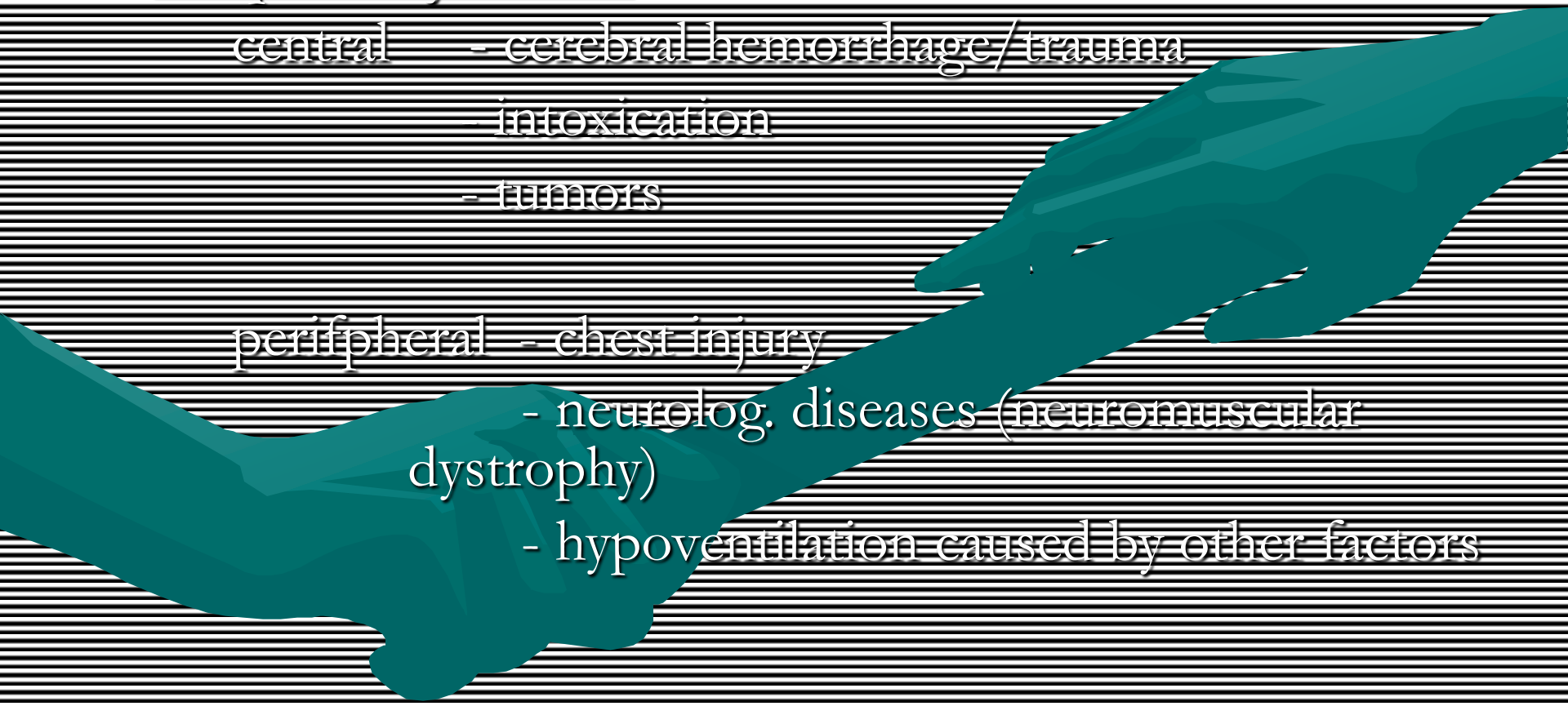
- intoxication

- tumors

peripheral - chest injury

- neurolog. diseases (neuromuscular dystrophy)

- hypoventilation caused by other factors





# Tracheostomy

- **Temporary**
- **Permanent**

severe tracheomalaciae, stenoses

myopathy

conditions after total laryngectomy

children cerebral palsy, epilepsy, other  
congenital disorders

# Tracheostomy

## *Elective tracheostomy*

- lowering of resistance in airways
- easier hygiene of airways
- prevention of complications of long-term intubation (e.g. subglottic stenosis)

# Tracheostomy

## *Urgent tracheostomy*

acute conditions prohibiting endotracheal intubation

LA, contraindication: lying positions, sedatives (!)

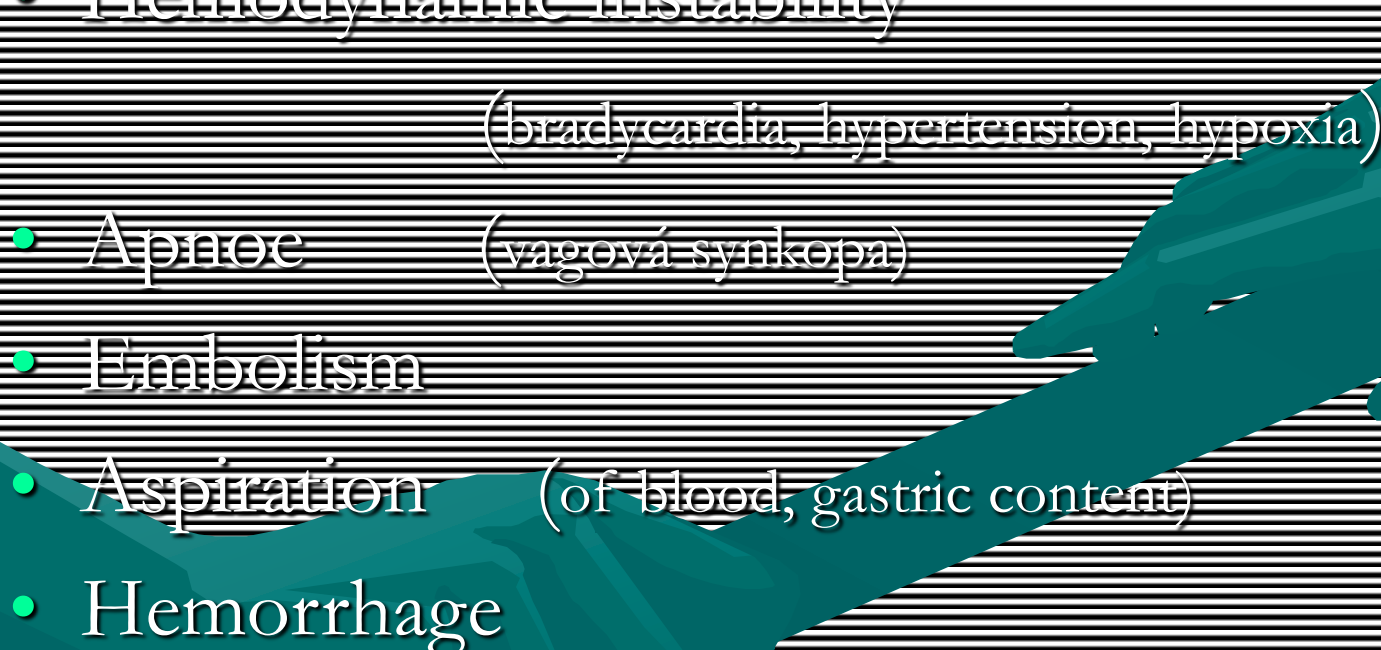
# Benefits

- More effective breathing
- Increased effectiveness of medicament application to lower airways
- Improved conditions for hygiene of airways, diagnostic and therapeutic procedures (mucus suction bronchoscopy, BAL)
- Promptly performed TS prevents formation of late morphological and functional changes of larynx

# Disadvantages

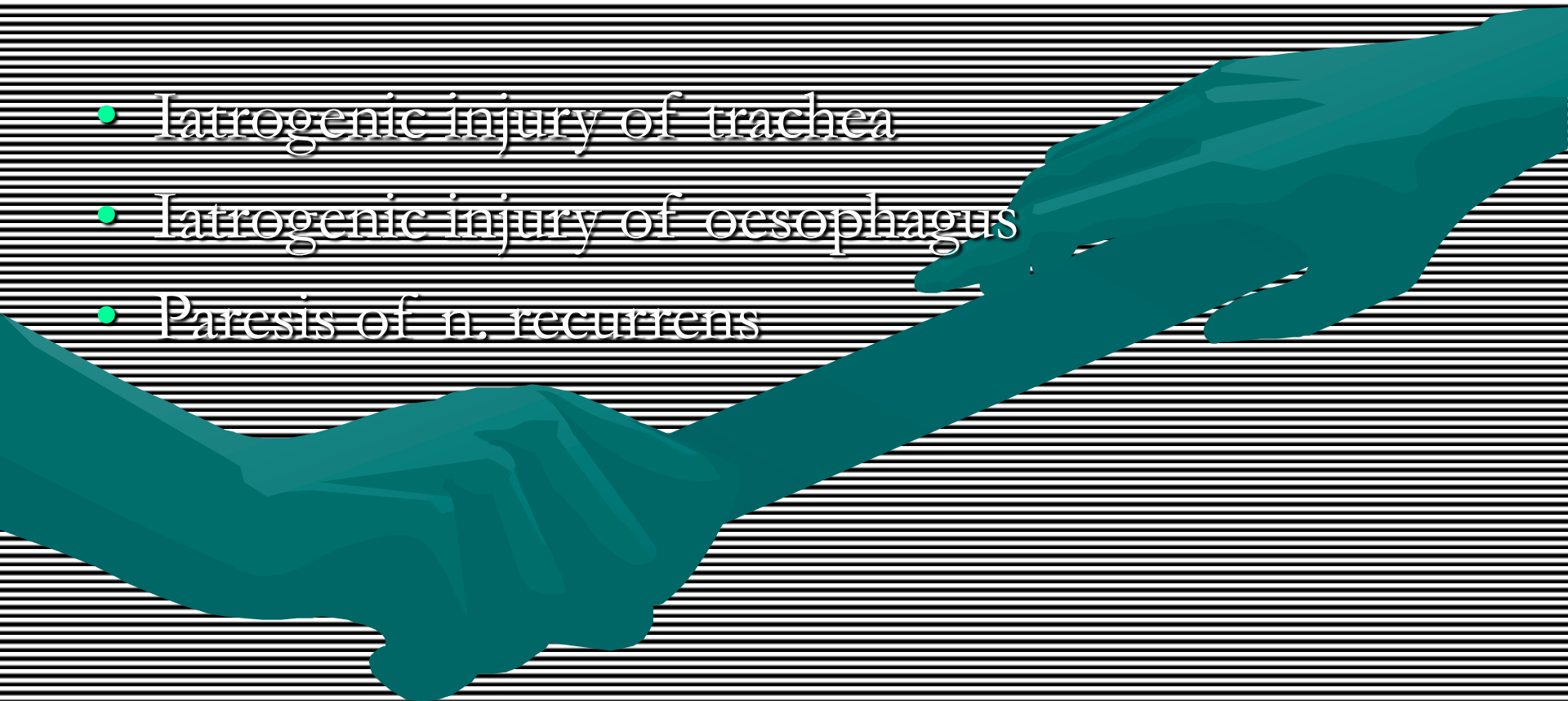
- Elimination of nasopharyngeal part of upper airways
- Phonation loss
- Effective coughing loss
- Lower  $\text{CO}_2$  concentration in blood
- Olfaction loss

# TS - perioperative complications

- Hemodynamic instability  
(bradycardia, hypertension, hypoxia)
  - Apnoe (vagová synkopa)
  - Embolism
  - Aspiration (of blood, gastric content)
  - Hemorrhage
- 

# TS - peroperative complications

- Iatrogenic injury of trachea
- Iatrogenic injury of oesophagus
- Paresis of n. recurrens



# TS - postoperative complications

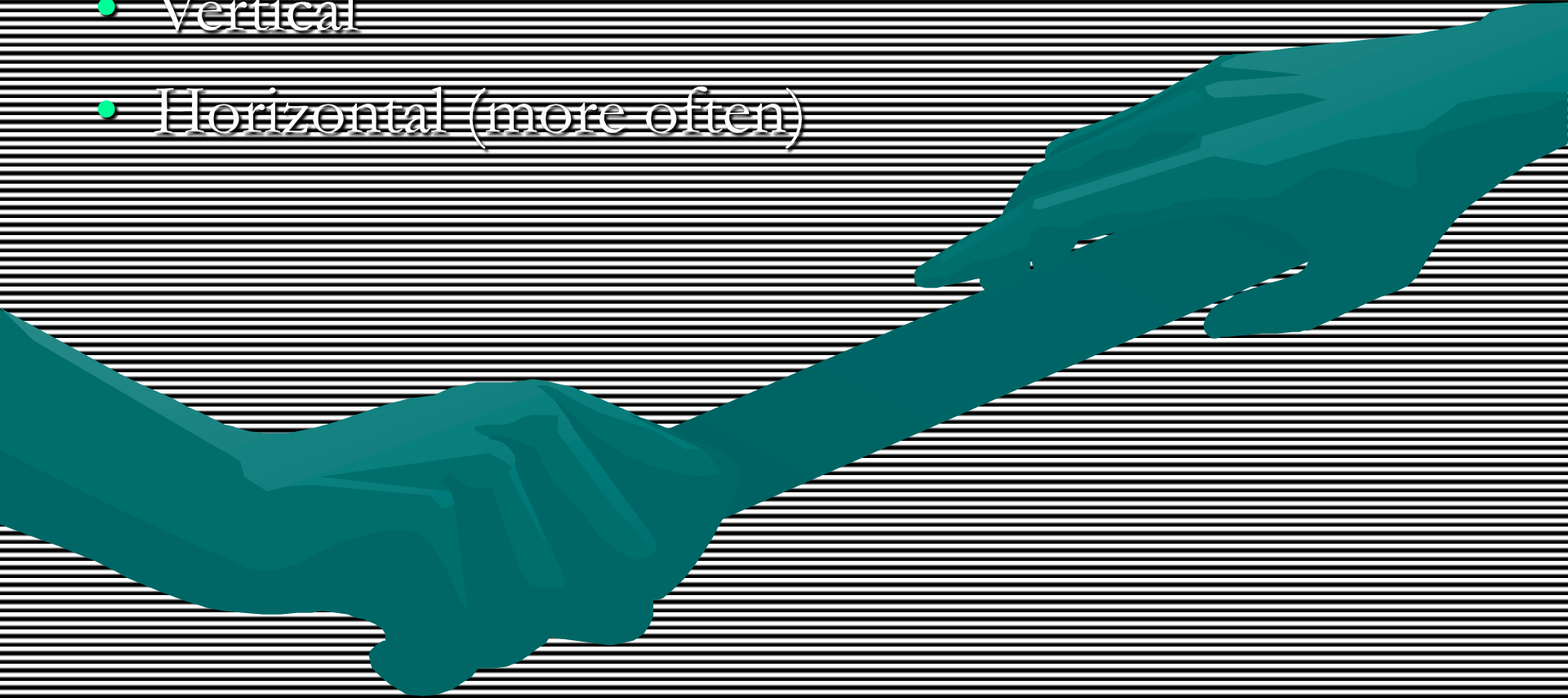
- *Early* - infection of wound, bleeding
  - subcutaneous emphysema, pneumothorax,
  - mediastinal emphysema
- *Late* - granuloma formation
  - tracheocutaneous fistula, keloid scar
  - stenosis, malacia, laryngeal atrophy
  - tracheoesophageal fistula
  - swallowing difficulties - dysphagia, odynophagia



# Tracheostomy

## Skin incision

- Vertical
- Horizontal (more often)



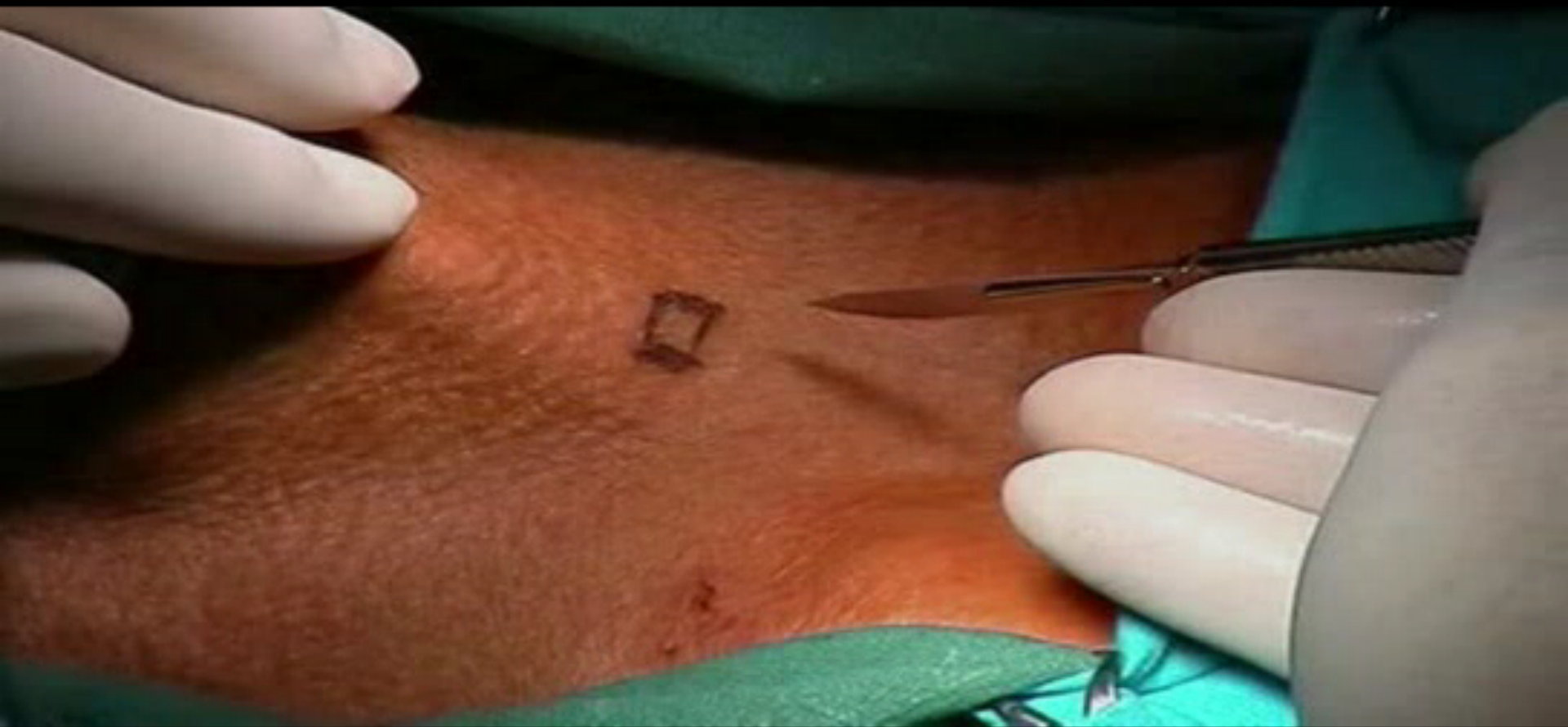
# Tracheostomy

## Incision of tracheal wall

- Bjork flap (U shaped)
- Elliptical opening
- Vertical incision of 3 tracheal rings
- H-shaped incision
- Star plasty



# Tracheostomy

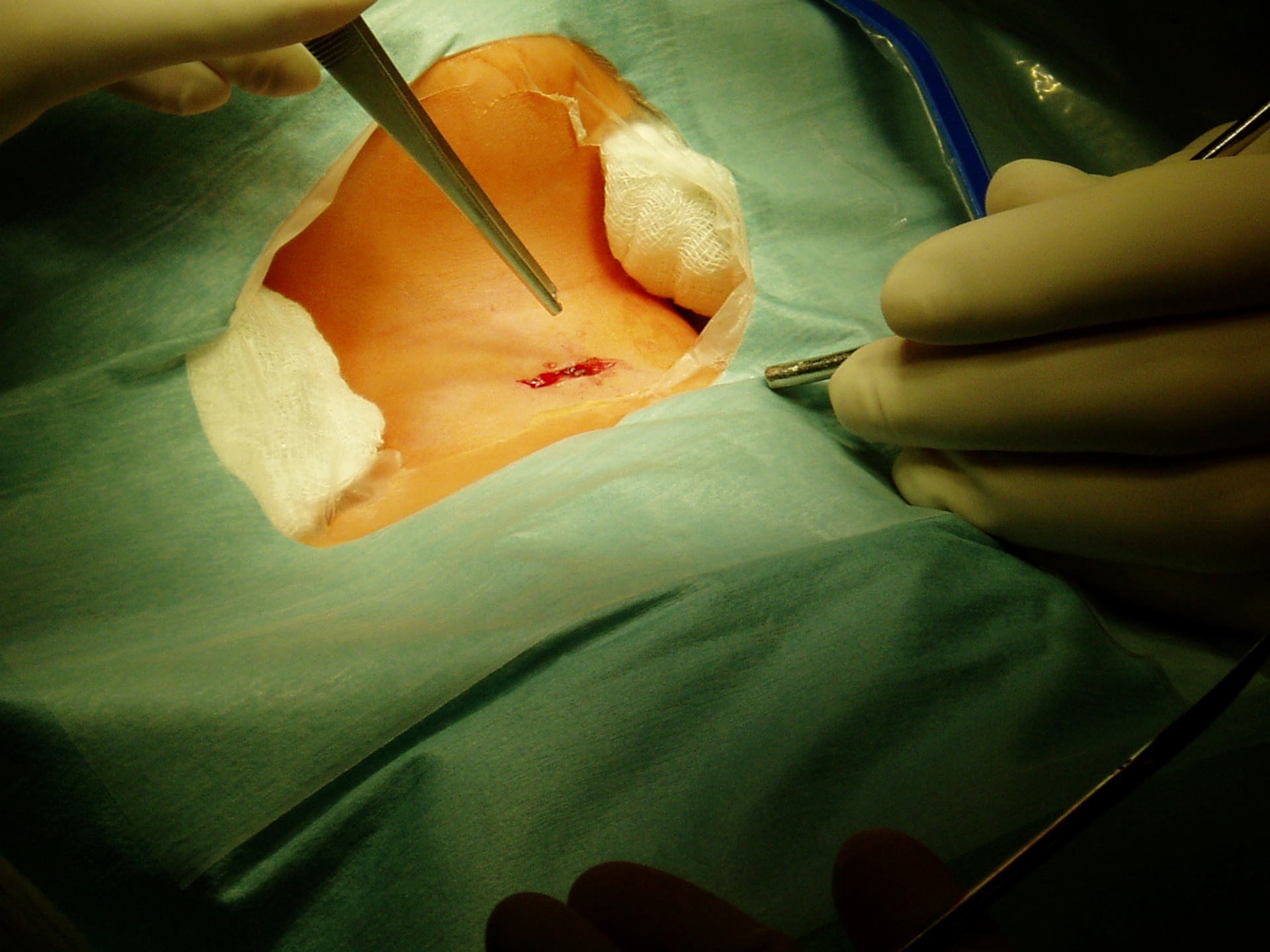


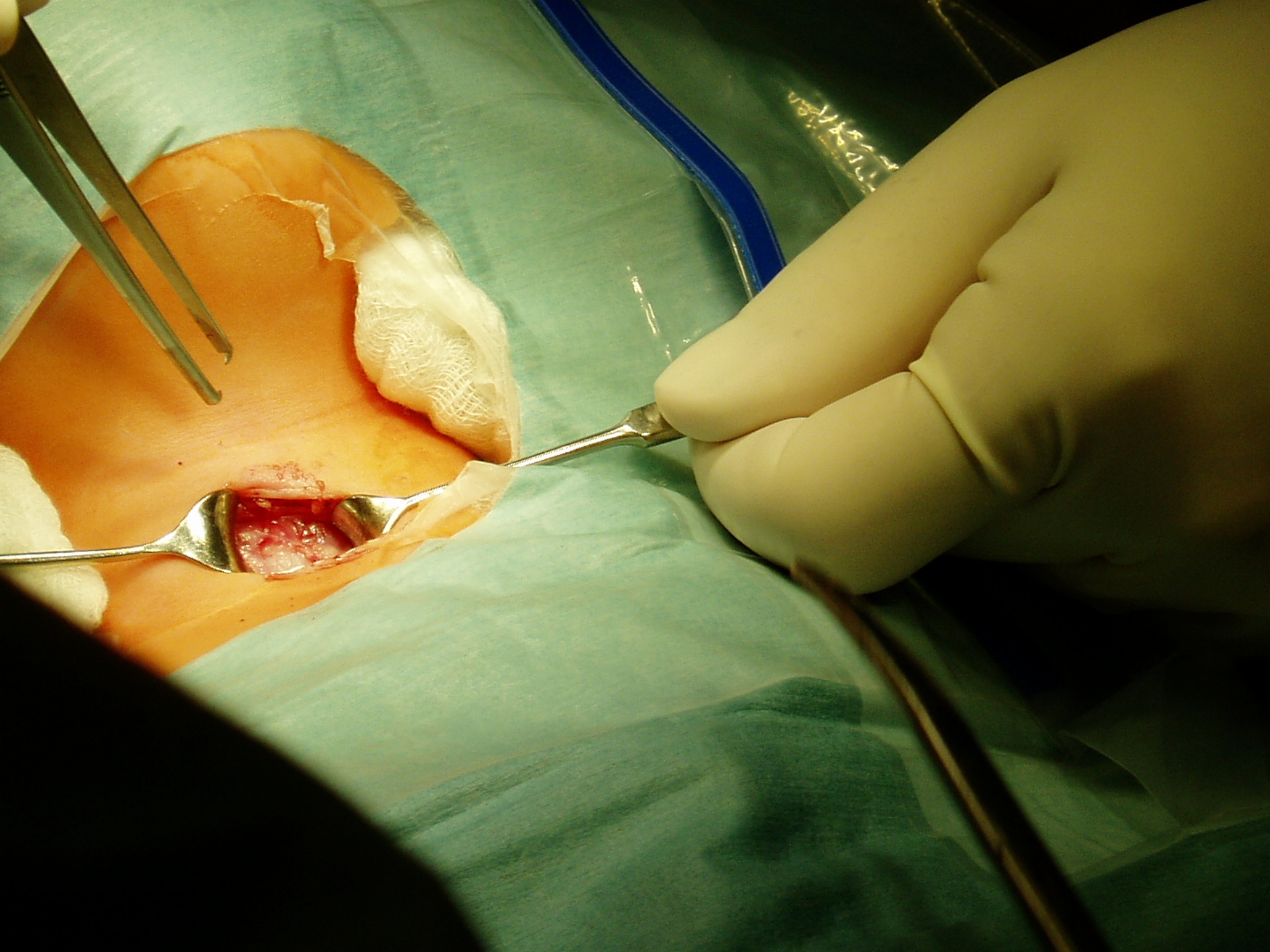
# Tracheostomy in children

- Horizontal incision (vertical is less often)
- Blunt preparation
- Endotracheal intubation
- Middle or lower TS (opening of trachea in relation to thyroid gland)
- U-shaped opening of tracheal wall

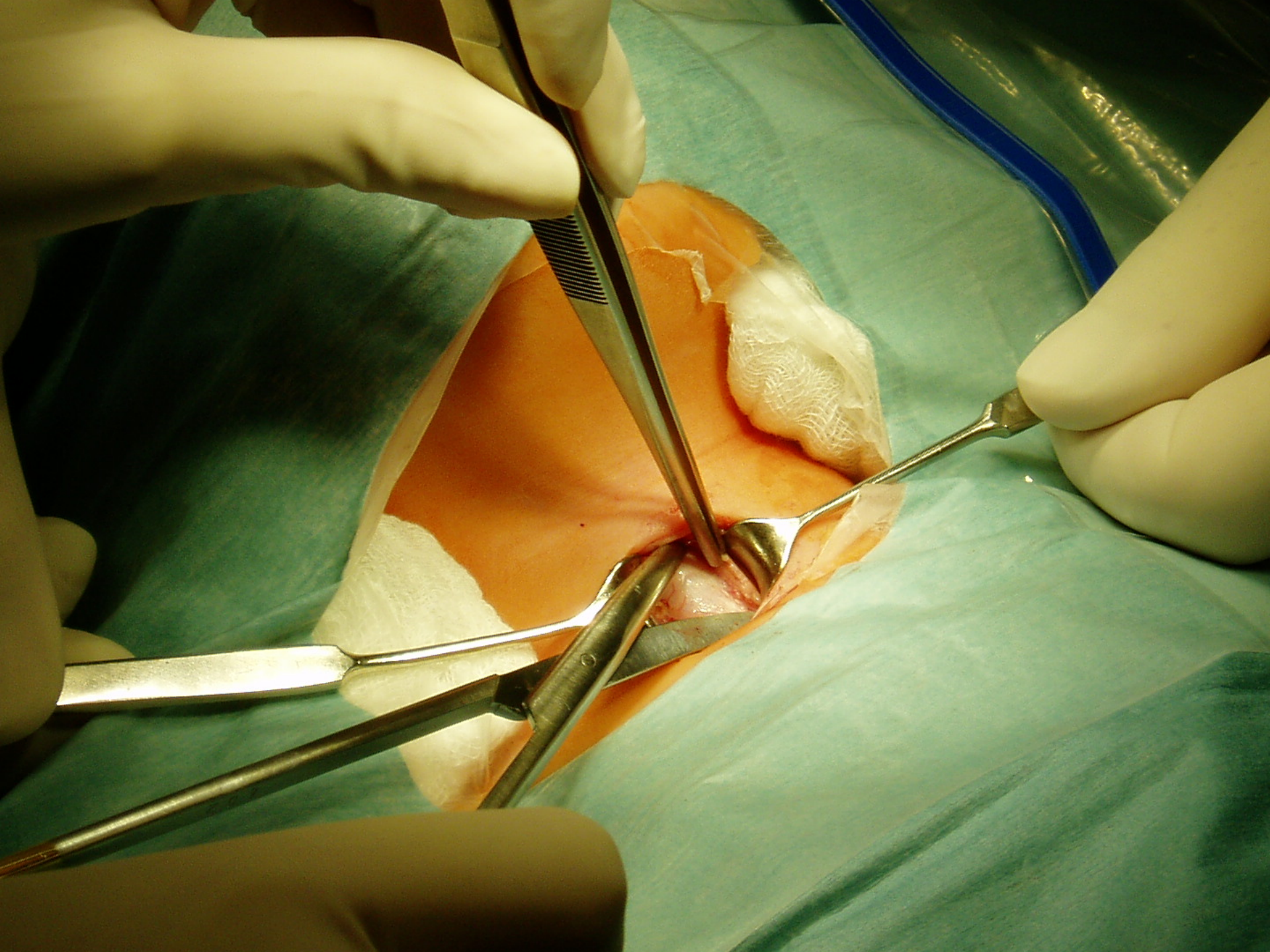




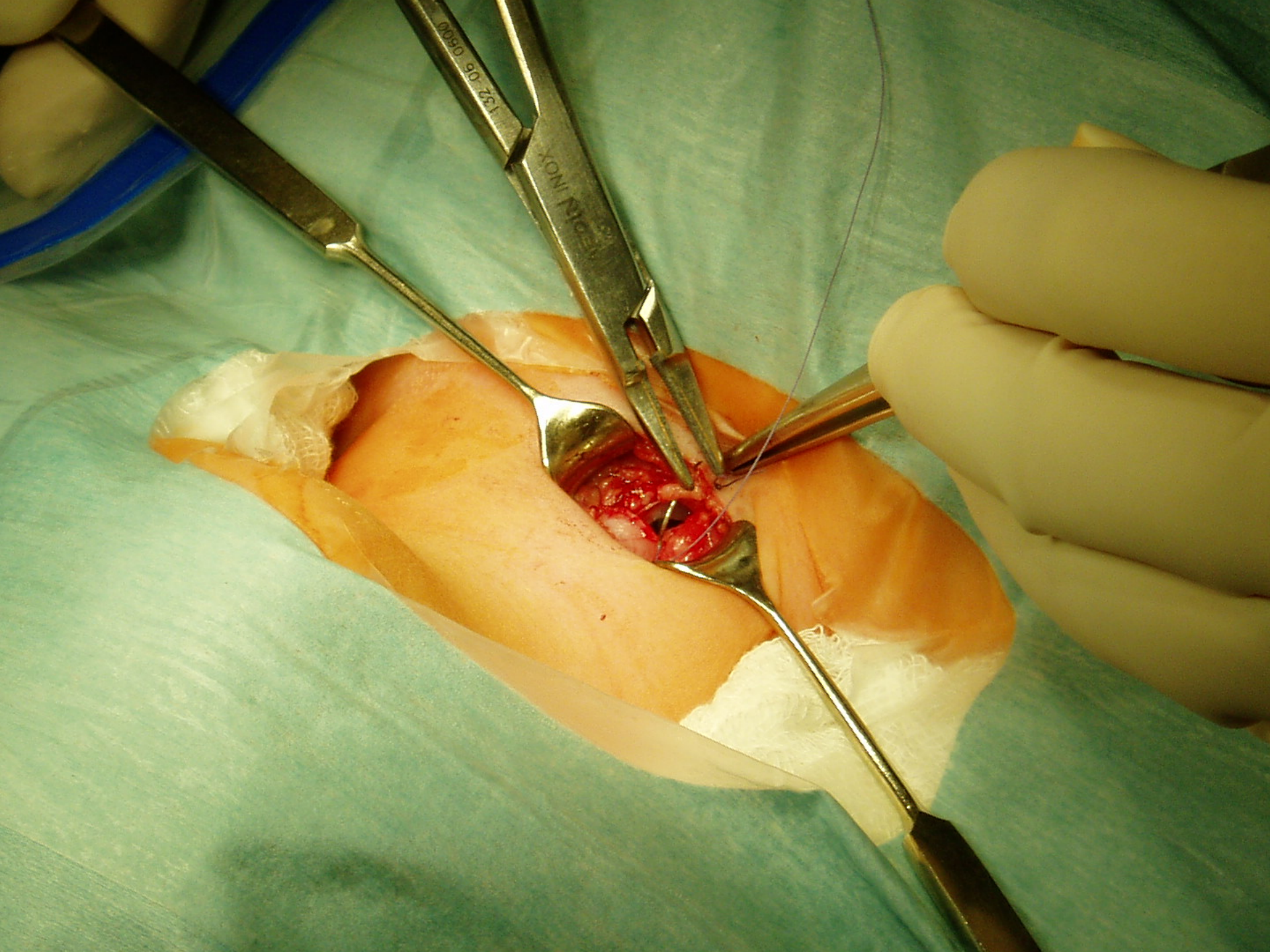


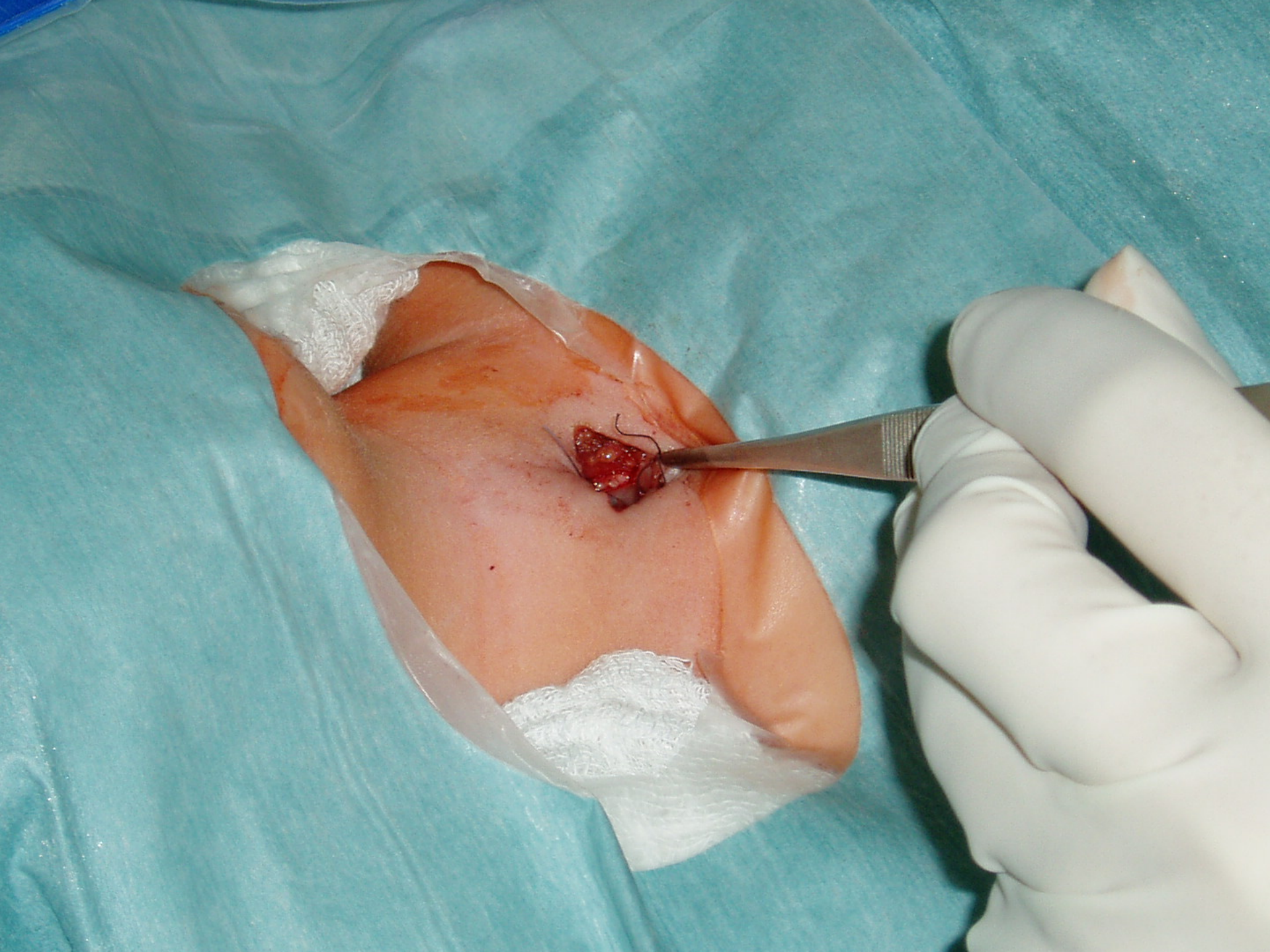
















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# Puncture-dilatation TS

- Indication: **ONLY** adults (trachea in childhood is too soft)
  - Contraindication:
    - tracheal deviations
    - enlarged thyroid gland
    - previously undergone tracheostomy
    - tracheomalacia
    - obesity
- 



# Puncture-dilatation TS

- percutaneous dilatational tracheostomy by Ciaglia – PDT
- Forceps dilatation (by Griggs) – FDT
- Translaryngeal (by Fantoni) – TLT
- Fibroscope-assisted puncture TS



Thank you for your attention

