



NON-INTUBATED ANESTHESIA FOR THORACIC SURGERY IN VIETNAM

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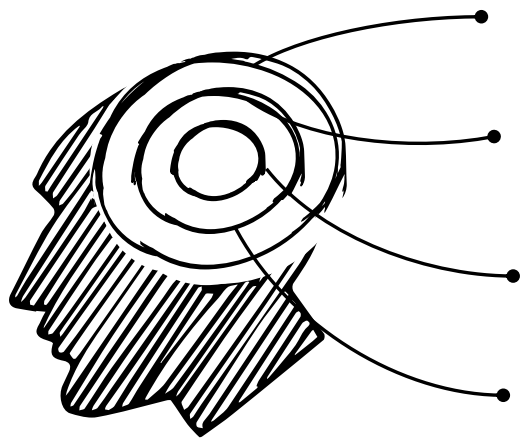
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Introduction

GA for thoracic surgery-GAVATS

Experience

Equipment

- DLT
- Flexible bronchoscope
- Anesthetics drug: **Muscle relaxants, opioids**



Introduction

Complications of GAVATS

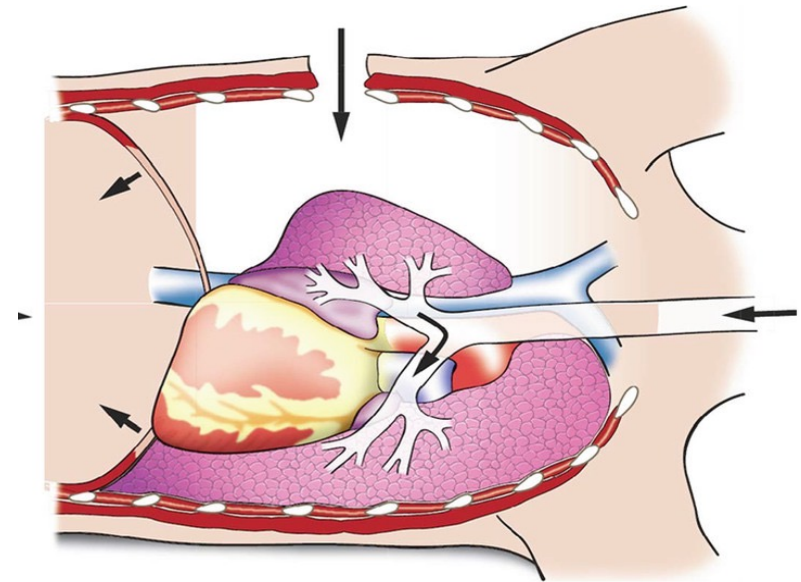
- Airway Rupture
- sore throat (50%), hoarseness (55%)
- Malposition of DLT or BB,
- Airway mucus obstruction.
- Laryngitis or tracheal irritation
- Ventilation associated lung injury
- Residual neuromuscular blockade, nausea and vomiting



Non-intubated for thoracic surgery

Scientific basis

- ✓ Create an iatrogenic spontaneous pneumothorax
- ✓ Provide an excellent lung isolation



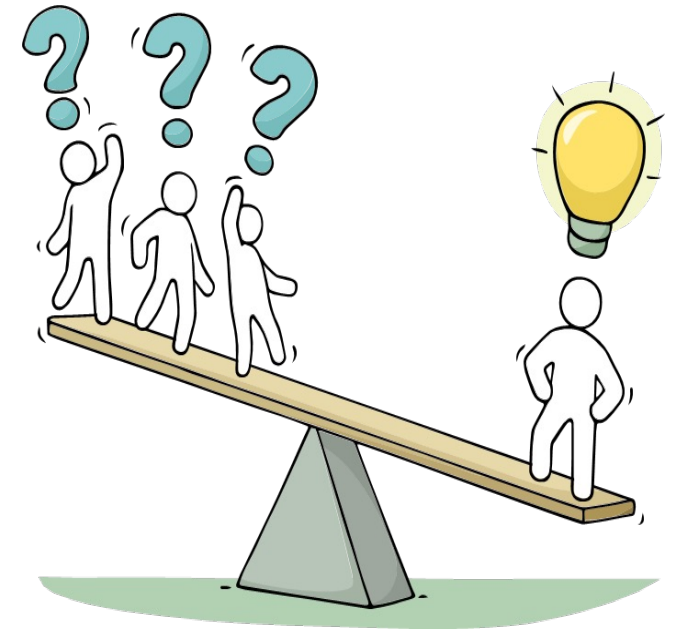
Emma Louise Coley (2017)
J Vis Surg. 2018; 4: 18

Advantage of NITS

- ✓ Treatment Costs: equipment (Flexible Fiberscopes, DLT, BB), anesthetics drug, drug side-effects, Anesthesia time, Shortened recovery, postoperative hospital stay
- ✓ complications of endotracheal intubation: Teeth and vocal cords damaged, airways rupture, endotracheal malposition, can't intubate.
- ✓ Reducing the risk of PP ventilation complications- (airway, lung injury, and infection)
- ✓ Local Anesthesia: ↓consumption of opioids and their side-effects including gastrointestinal function depression, sedation, drowsiness, nausea, and constipation
- ✓ Mean volume of postoperative pleural fluid drainage
- ✓ Avoids the side-effect of muscle relaxants=> respiratory muscle function

Disadvantages

- ✓ Respiratory movement of the lung and mediastinum
- ✓ Cough
- ✓ Hypoxia, hypercapnia
- ✓ Excessive respiratory and mediastinal movement
- ✓ NITS requires anesthesiologists and surgeons to have more skill and experience





How do we perform NITS in Vietnam?



NITS IN VIET NAM

- ✓ Several studies have assessed the safety and effectiveness of non-intubated anesthesia for thoracic surgery in Vietnam.
- ✓ One prospective, descriptive study of 17 patients (ages 6 to 71) in 2019, who underwent Uniportal video-assisted thoracoscopic surgery (VATS), including major surgeries such as mediastinal tumors (47.1%) and lobectomy (29.4%), concluded that non-intubated anesthesia is safe and feasible.
- ✓ Another RCT study of 52 patients (ages 16 to 71) undergoing VATS, compared to 55 patients with intubated anesthesia, found that non-intubated anesthesia was linked to a shorter introduction time (8.26 ± 3.32 vs 15.57 ± 5.35), higher pO_2/FiO_2 (253.27 ± 83.14 vs 154.35 ± 93.34), and less respiratory intervention during surgery (4.32% vs 23.52%).



Pham LH, Trinh DK, et al 2021 Jan-Feb;16(1):63-67. doi: 10.1177/1556984520969746.
Epub 2020 Nov 12. PMID: 33179550.

Patient selection

- ✓ (ASA) grade of \leq II, III Operation duration < 2 hrs
- ✓ Simple surgeries: bullous resection, lung biopsy, wedge resection, pleural biopsy, sympathectomy, mediastinal tumor. No increased risk of major bleeding
- ✓ Cardiopulmonary function
 - EF >50% and without arrhythmia, (PVCs), atrial fibrillation. coronary stenosis < 75%, other high-risk conditions
 - FEV1% >50% of predicted value), PO2 \geq 75 mmHg and PCO2 <45 mmHg.
- ✓ Other vital organ functions are normal

Exclusion

- ✓ ***Patient-related factors:*** p't refuses AT, severe acute pulmonary infection/tuberculosis, BMI >30, coagulopathy, risk of regurgitation (<6 hours), hypoxemia (PaO₂ <60 mmHg) or hypercapnia (PaCO₂ >50 mmHg), neurological disorders. Relative contraindications: persistent cough or high airways secretions; spinal deformity or brain edema (if TEA to be used).
- ✓ ***Anesthesia-related factors:*** Any contraindications for the use of regional anesthesia technique
Difficult airway management.
- ✓ ***Surgery-related factors:*** Extensive pleural adhesions;
inexperience and poorly cooperative surgical team.
Previous ipsilateral surgery.



Ming-Hui Hung (2015)/ Jianxing He et al (2019)

Preoperative management

1. Clinical examination.
2. Laboratory tests: blood type, liver, kidney function, electrolytes, and coagulation function; testing for hepatitis virus, and routine urine tests.
3. ECG and in selected instances, cardiac ultrasound is performed. Chest X-ray. CT



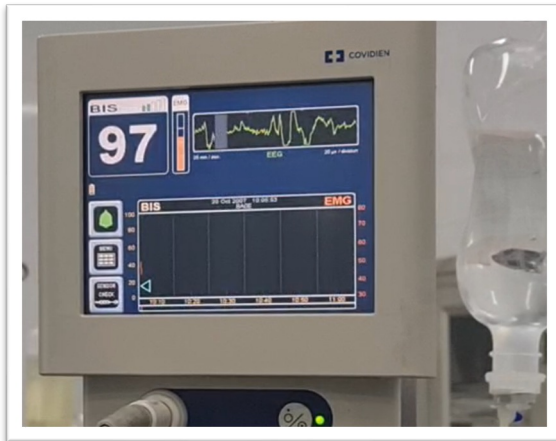
Preoperative management

- ✓ Airway Management Equipment
- ✓ Standard monitor: ECG, SpO2, NIBP, RR, and capnography.
- ✓ Invasive blood pressure monitoring
- ✓ Two IV lines, one for perioperative administration of fluids and intraoperative medications.

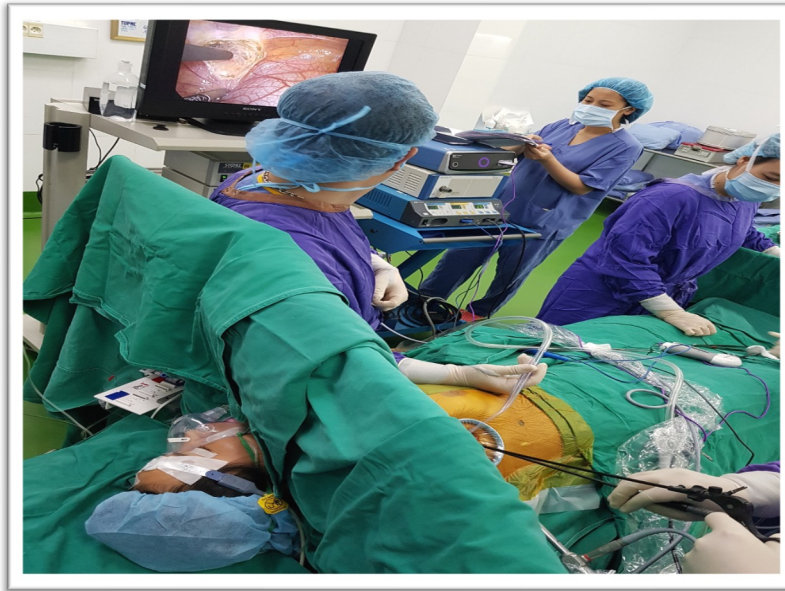


Induction and maintenance of anesthesia

- ✓ Patient awake, light, moderate, or deep sedation.
- ✓ To reduce patient anxiety + provide a good surgical environment: deep sedation with (TCI) of propofol ± BIS monitor.

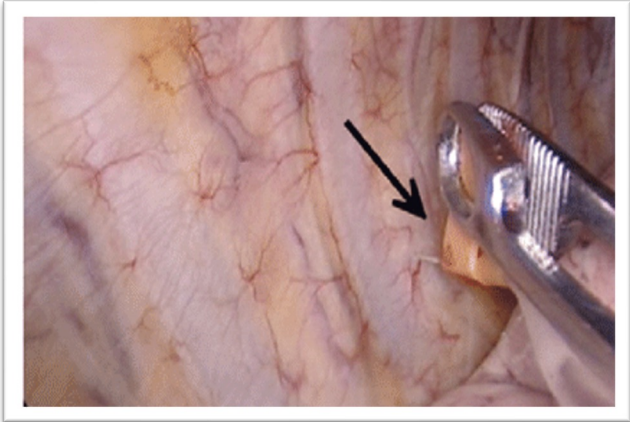
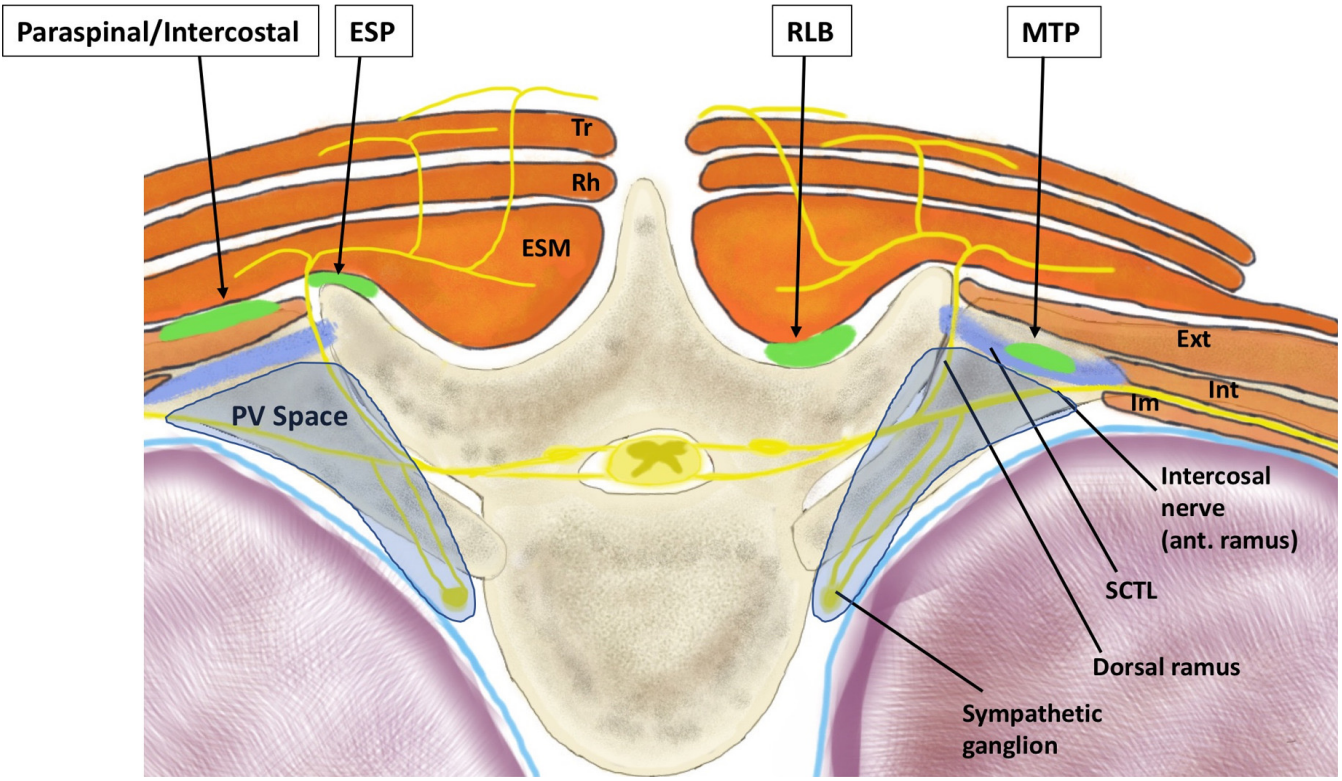


Induction and maintenance of anesthesia



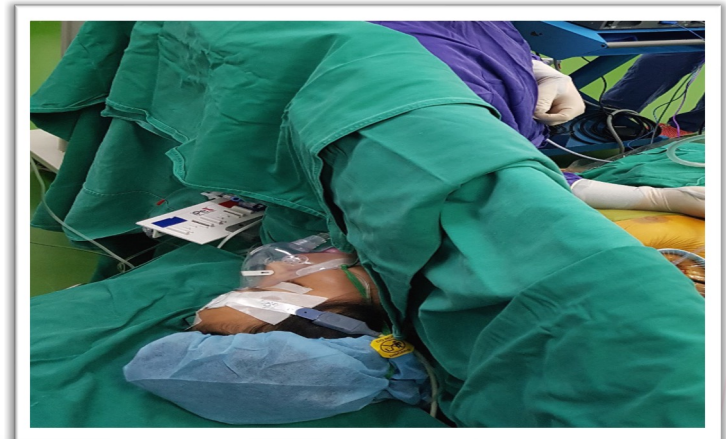
- ✓ Typically, Propofol (TCI) 2–3.5 $\mu\text{g}/\text{mL}$ and sufentanil 0.2 $\mu\text{g}/\text{kg}$ or fentanyl 2 $\mu\text{g}/\text{kg}$. P BIS (40-60)
- ✓ Blood pressure is <90 mmHg, Fluid challenge, inotropes, or vasopressors. Finding hypotension reasons.
- ✓ EtCO₂: spontaneous breathing $\downarrow \Rightarrow$ \downarrow anesthetic/analgesia

Local anesthesia

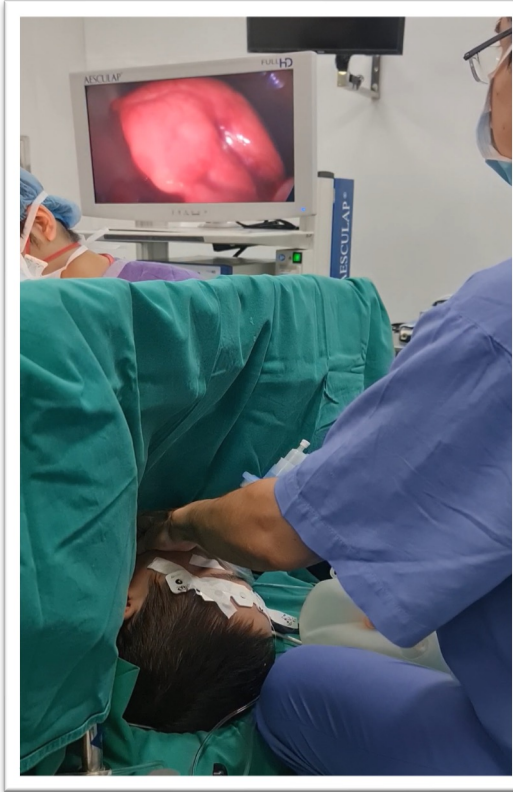


Intraoperative airway management

- ✓ Airway management: state of patients, surgical, and surgeon experience.
- ✓ Face mask: short duration and minor surgery ± lobectomy
- ✓ Oropharyngeal cannula: Using an oropharyngeal cannula in the obstructive upper airway
- ✓ LMA: permitting positive pressure ventilation, tracheal intubation to obtain an ETT if conversion is indicated.
- ✓ HFNC: Flow from 20 to 70 l/m effectively increases the oxygen reserve, carbon dioxide elimination.



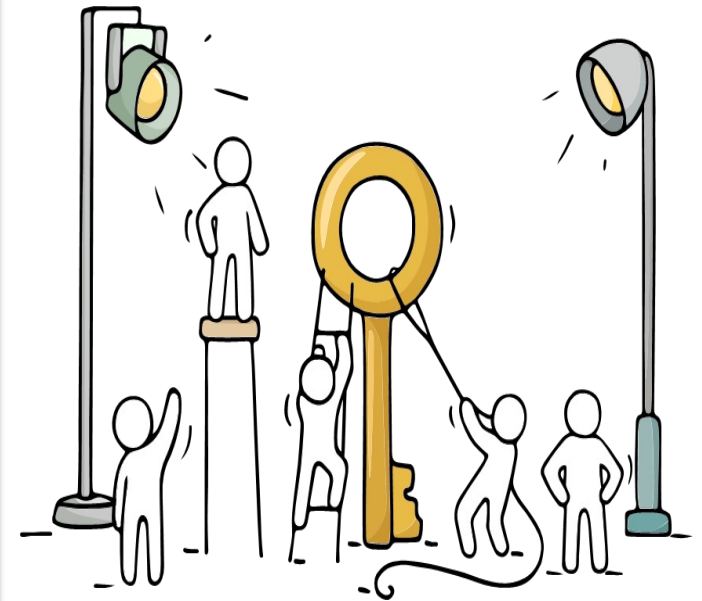
Lung re-expansion



1. Positive pressure can via a facemask or through LMA, while the patient breaths spontaneously
2. Awake patient: breath deeply and cough to re-expand the lung.

Conclusion

- ✓ Using NITS helps avoidance of Endotracheal intubation and positive pressure ventilation.
- ✓ NITS is possible, simple and safe in Vietnam
- ✓ To perform this technique requires a professional team, including anesthesiologists and surgeons, standardization of patient selection, preoperative planning, surgical strategies, and monitoring and follow-up to guarantee patient safety.





Thank you for your attention

