

Interesting case

R2 Chanathip Meerod

Lt.Col.Krisana Nongnuang

Interesting case

Case : 22 years old male

**Diagnosis : Rhabdomyosarcoma
at facial and neck**

Operation : Prophylactic tracheostomy

R1 history talking

History

Present illness : 4 เดือน PTA ก่อนที่คอด้านขวาค่อยๆโตขึ้น กลืนลำบาก สำลักบางครั้ง เลือดออกจากรู
ด้านขวาบางครั้ง ก่อนลามไปที่แก้มขวา หูขวา และหลังหู ไปพบแพทย์ ENT ได้ทำการตรวจและเจาะชิ้นเนื้อ
ไปตรวจ พบว่าเป็น Rhabdomyosarcoma จึงได้ส่งตัวการรักษามายังรพ.รร.๖

1 วัน PTA ขณะมาพบแพทย์ ENT เพื่อตรวจรักษาและให้เคมีบำบัด พบว่าก่อนที่คอและใบหน้าโตมากขึ้น
มีอาการสำลักน้ำลายบ่อยขึ้น นอนราบแล้วมีเสียงครืดคราดต้องยกหัวสูง สามารถกลืนอาหารเหลวได้
แพทย์กังวลว่าผู้ป่วยจะหายใจลำบากเนื่องจากการกดเบียดของก้อนเนื้อ จึงนัดผ่าตัดเจาะคอก่อนให้เคมีบำบัด

Past history

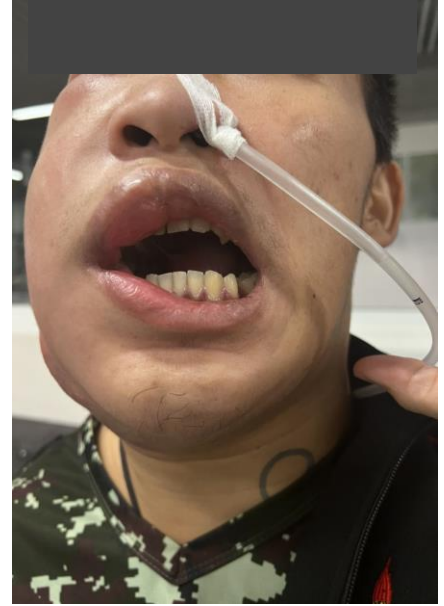
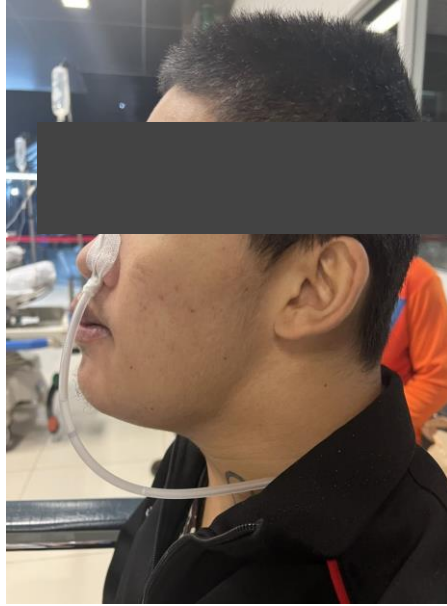
- โรคประจำตัว : Rhabdomyosarcoma plan CMT
- ปฏิเสธการดื่มสุรา social drinking และสูบบุหรี่ 2 pack years
- ปฏิเสธประวัติการแพ้ยา
- ปฏิเสธประวัติการผ่าตัดมาก่อน

R1 Physical examination and investigation

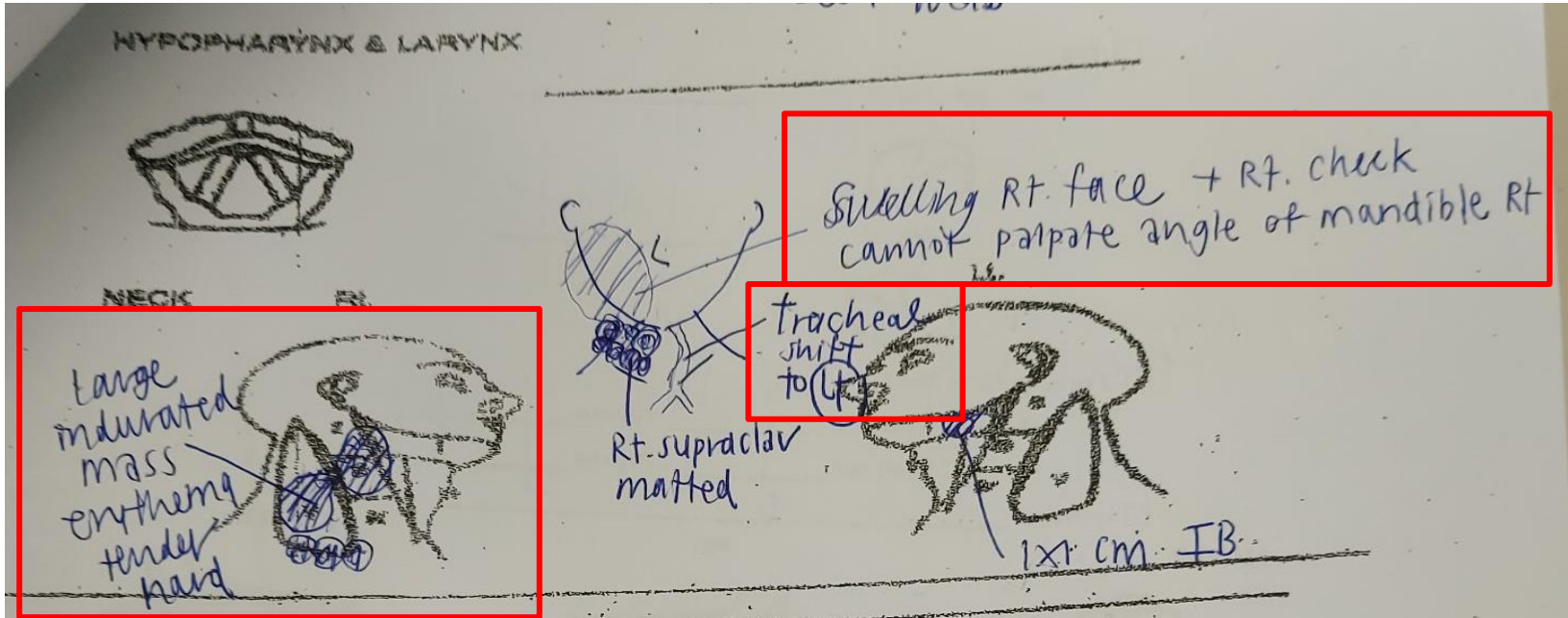
Physical examination

- **Vital sign** : BT 36 °c BP 118/60 mmHg PR 70 bpm RR 16 /min
- BW 59 kg Height 172 cm. BMI 19.94 kg/m²
- **General appearance** : A young Thai male , large right neck mass
facial deformity , salivation & trismus , good consciousness
good orientation

HEENT examination



HEENT examination



Physical examination

- **CVS** : pulse full and regular, no displaced PMI , no heaving, no thrill , normal S₁ S₂, no murmur
- **RS** : secretion sound, no stridor, normal chest contour and expansion , no tachypnea, no wheezing , no crepitation
- **Neuro** : E₄V₅M₆, pupil 3 mmRTLBE ,no facial pulsy, motor gr V/V all extremities, sensory intact, BBK- negative, Clonus sign – negative

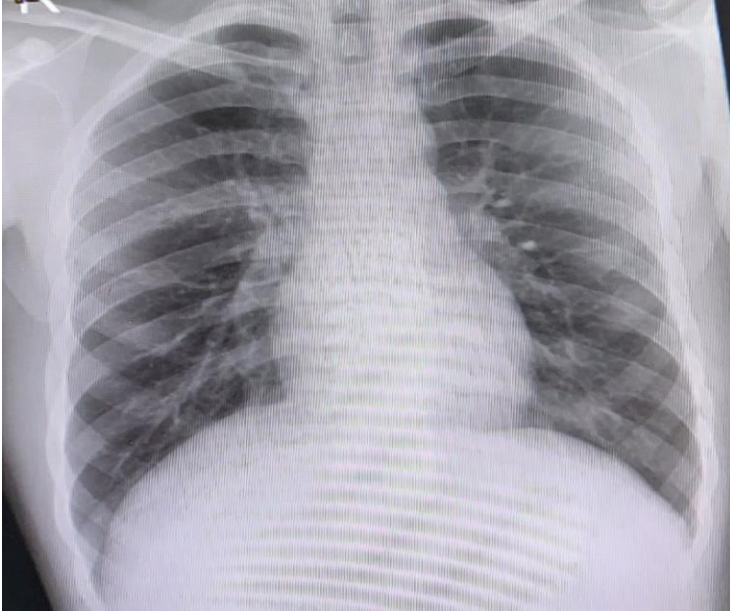
Airway assessment

- Mallampati IV due to limit mouth opening
- Thyromental distance > 6 cm.
- Mouth opening < 3 cm.
- No prominent incisor
- Upper lip bite test class III
- No limit ROM of neck

Investigation

- **CBC** : Hb 8.8 g/dl Hct 26.2 % Platelet 102,000 /ul
- **BUN** 13 mg/dl **Cr** 0.89 mg/dl **GFR** 121 ml/min/1.73m²

Chest x-ray



- No cardiomegaly
- No increased pulmonary vasculature
- No infiltration

CT neck & chest

- Matted cervical lymphadenopathy at right lower cervical region and right supraclavicular size 10 x 6.3 cm. involve Rt SCM.
- Right paratracheal nodes 1.2 cm. at cervical trachea level.
- There is no gross hilar mass.
- The trachea and main bronchi are patent.
- No definite lung mass or intrathoracic lymphadenopathy.

CT chest



Fiberoptic laryngoscope



- **FOL**: normal TVC movement
not seen mass

R1 Problem list and ASA classification

Problem list

- **Alveolar rhabdomyosarcoma**
- **Difficult airway patient**
- **Anemia**

ASA Class II

R2 Preoperative evaluation and preparation

Preoperative evaluation

1

Patient factor

2

Surgical factor

3

Anesthetic factor

Patient factor

- Severity of alveolar rhabdomyosarcoma
- Difficult airway
- Anemia

Alveolar rhabdomyosarcoma

- Alveolar rhabdomyosarcoma stage IV (T4bN1M1)
- No previous CMT or RT
- No systemic complication
- Upper airway compromise due to large tumor at face & neck area

Difficult airway

Clinical characteristic

- distort of airway anatomy
- stridor when sleep
- risk of aspiration due to secretion

Physical examination

Difficult intubation

L
E
M
O
N

Look externally

- small chin, big incisors
- facial trauma
- oral cavity anomalies

Evaluate 3-3-2 rule

- inter-incisor distance: 3+ fingers
- hyoid-to-mental distance: 3+ fingers
- thyroid-to-hyoid distance: 2+ fingers

Mallampati score

- visual evaluation of the oral cavity structures (soft palate, uvula, tonsils, pharynx) - score I - IV

Obstruction

- tumours (neck, oral cavity)
- peritonsillar abscess
- etc.

Neck mobility

- limited neck mobility

Difficult ventilation

(A) Criteria for Difficult Mask Ventilation

- Inability for one anesthesiologist to maintain oxygen saturation >92%
- Significant gas leak around facemask
- Need for ≥ 4 L/min gas flow (or use of fresh gas flow button more than twice)
- No chest movement
- Two-handed mask ventilation needed
- Change of operator required

(B) Independent Risk Factors for Difficult Mask Ventilation

| Risk Factors | Odds Ratio |
|---|------------|
| Presence of a beard | 3.18 |
| Body mass index >26 kg/m ² | 2.75 |
| Lack of teeth | 2.28 |
| Age >55 yr | 2.26 |
| History of snoring | 1.84 |

Investigation

CT neck

- Matted cervical lymphadenopathy at right lower cervical region and right supraclavicular size 10 x 6.3 cm. involve Rt SCM.
- Right paratracheal nodes 1.2 cm. at cervical trachea level.
- The trachea and main bronchi are patent.
- No definite lung mass or intrathoracic lymphadenopathy
- Narrow part of tracheal lumen approximate 0.73 cm.

FOL

patent vocal cord

not seen mass

normal vocal cord movement

Anemia

- Hb 8.8 g/dl Hct 26.2% (*no CBC baseline*)
- No anemic symptom
- Plan W/U cause of anemia further
- **Tracheostomy** : no excessive blood loss procedure
- **Blood component** : not necessary

Surgical factor

- Tracheostomy
- Airway fire prevention

Airway fire

Fire prevention

- Avoid using ignition sources¹ in proximity to an oxidizer-enriched atmosphere²
- Configure surgical drapes to minimize the accumulation of oxidizers
- Allow sufficient drying time for flammable skin prepping solutions
- Moisten sponges and gauze when used in proximity to ignition sources

Airway fire

High risk procedure

- Agree upon a team plan and team roles for preventing and managing a fire
- Notify the surgeon of the presence of, or an increase in, an oxidizer-enriched atmosphere
- Use cuffed tracheal tubes for surgery in the airway; appropriately prepare laser-resistant tracheal tubes
- Consider a tracheal tube or laryngeal mask for monitored anesthesia care (MAC) with moderate to deep sedation and/or oxygen-dependent patients who undergo surgery of the head, neck, or face.
- Before an ignition source is activated:
 - *Announce* the intent to use an ignition source
 - *Reduce* the oxygen concentration to the minimum required to avoid hypoxia³
 - *Stop* the use of nitrous oxide⁴

Preoperative preparation in this patient

General preparation

- NPO
- Informed consent
- Anesthetic machine
- Intubation equipment
- Force air warmer
- IV anesthetic drugs
- Antibiotic
- Resuscitation box

Specific preparation

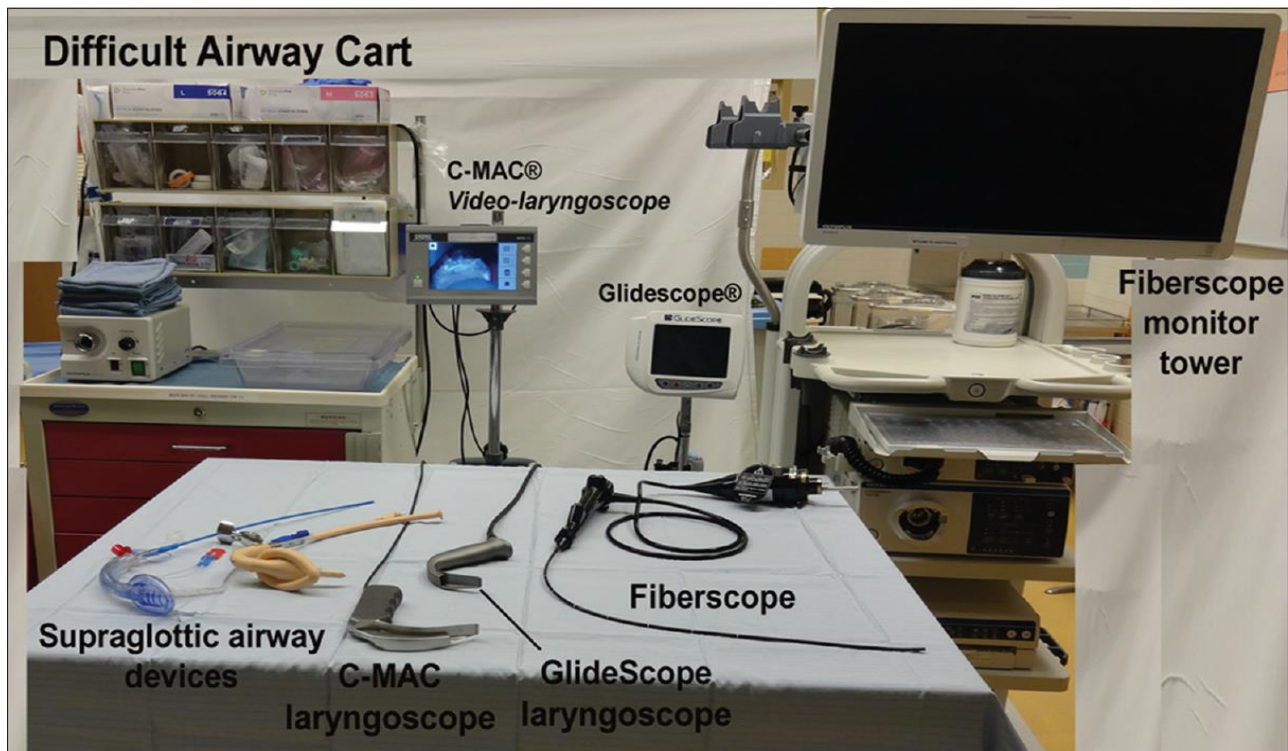
Plan A : awake fiberoptic intubation

- Fiberoptic bronchoscope
- ETT No. 6 , 6.5, 7
- Antisialagogues (atropine/glycopyrrolate)
- Sedative drug , topical anesthesia
- Difficult airway equipment

Plan B : awake tracheostomy (double set up)

- Awake tracheostomy set
- ENT surgeon

Items for difficult airway management



Intraoperative monitoring

- **NIBP**
- **3 lead EKG**
- **ETCO₂**
- **Pulse oximeter**

R3 Anesthetic consideration

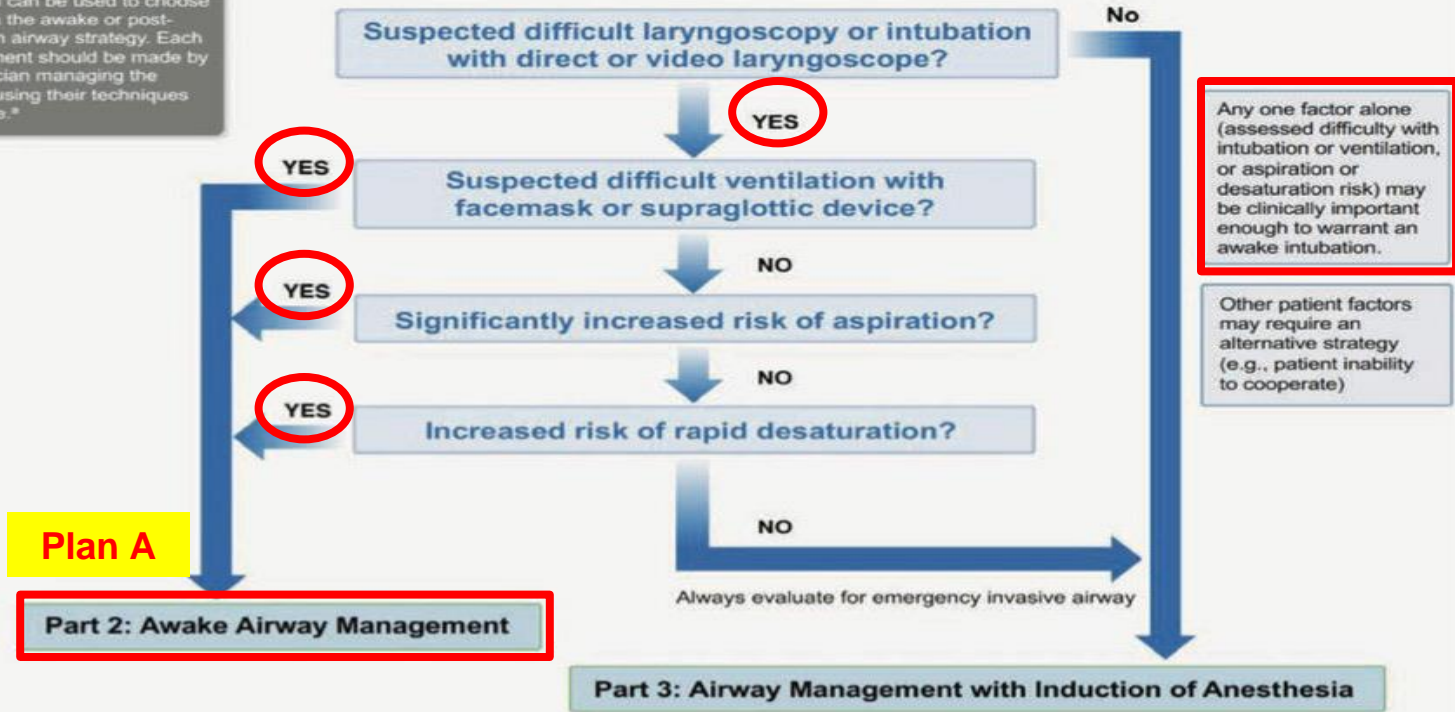
Preparation for difficult airway

- **If a difficult airway is known or suspected**
 - Skilled individual is present or immediately available to assist
 - Inform the patient of special risks and procedures pertaining
 - Properly patient's position ; (*Ramps VS sniffing position for laryngoscopic view ; $P>0.01$*) [category A3-E]
; *Sniffing with raised position improved laryngeal views* [category B2-B]
 - O₂ supplement throughout the process including extubation
- **Ensure that ASA standard monitoring is performed immediately before, during, after airway management**

DIFFICULT AIRWAY INFOGRAPHIC: ADULT PATIENTS

Part 1: Pre-Airway Management Decision Making Tool (planning)

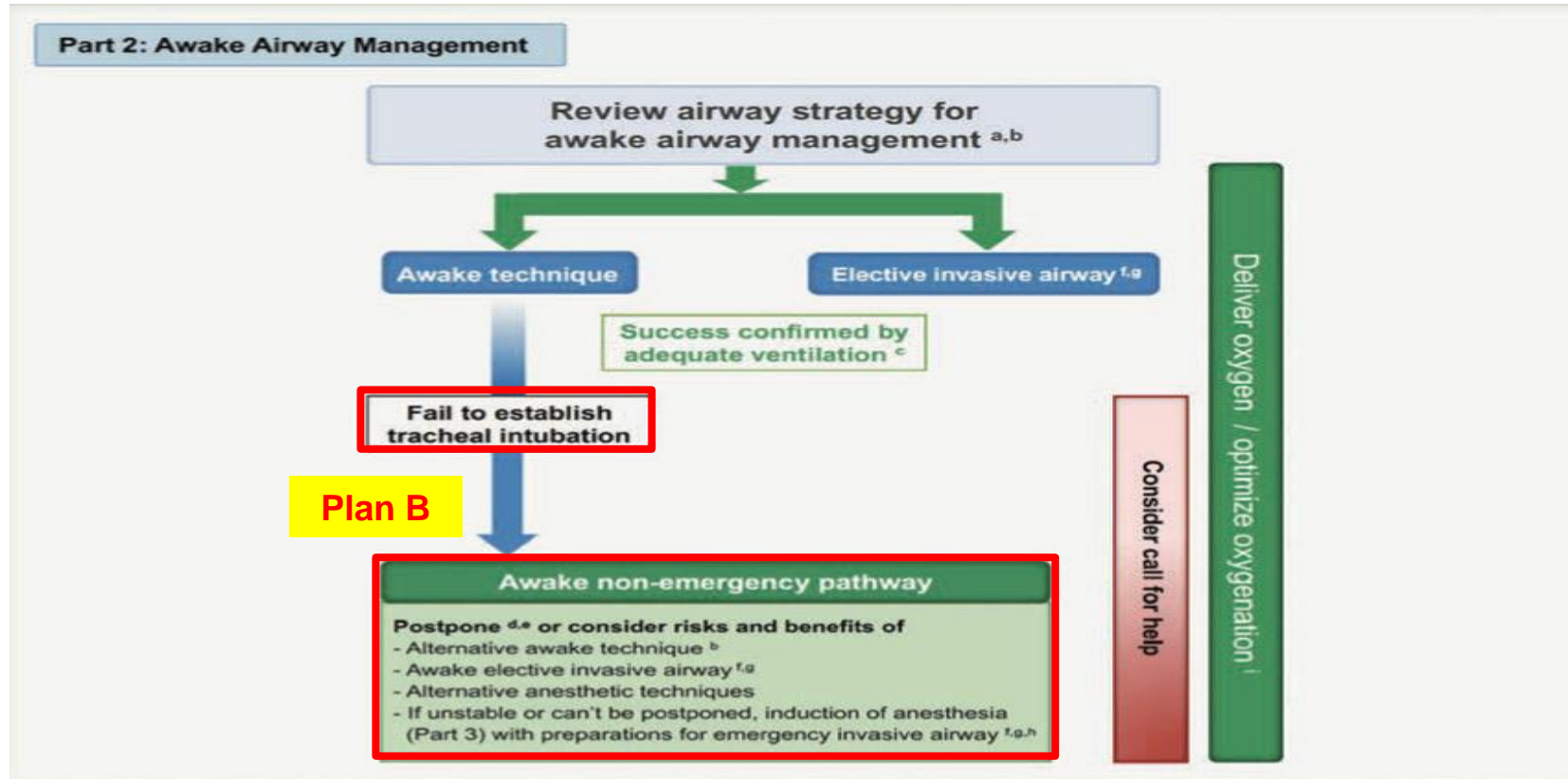
This tool can be used to choose between the awake or post-induction airway strategy. Each assessment should be made by the clinician managing the airway, using their techniques of choice.⁸



Plan A : awake fiberoptic intubation



Awake airway management



Plan B

Awake non-emergency pathway

Postpone ^{d,e} or consider risks and benefits of

- Alternative awake technique ^b
- Awake elective invasive airway ^{f,g}
- Alternative anesthetic techniques
- If unstable or can't be postponed, induction of anesthesia (Part 3) with preparations for emergency invasive airway ^{f,g,h}

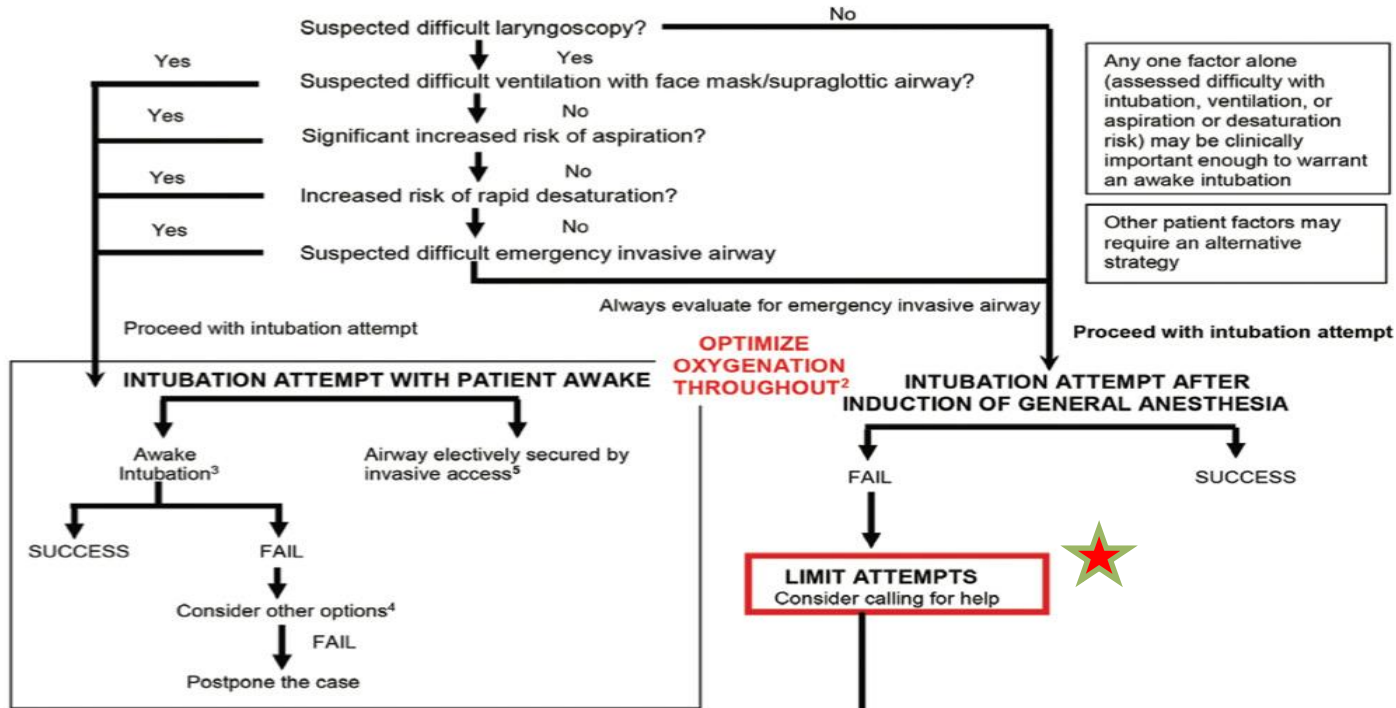
Plan B : Surgical tracheostomy

- Double set up surgical tracheostomy standby
- ENT staff
- Tracheostomy equipment

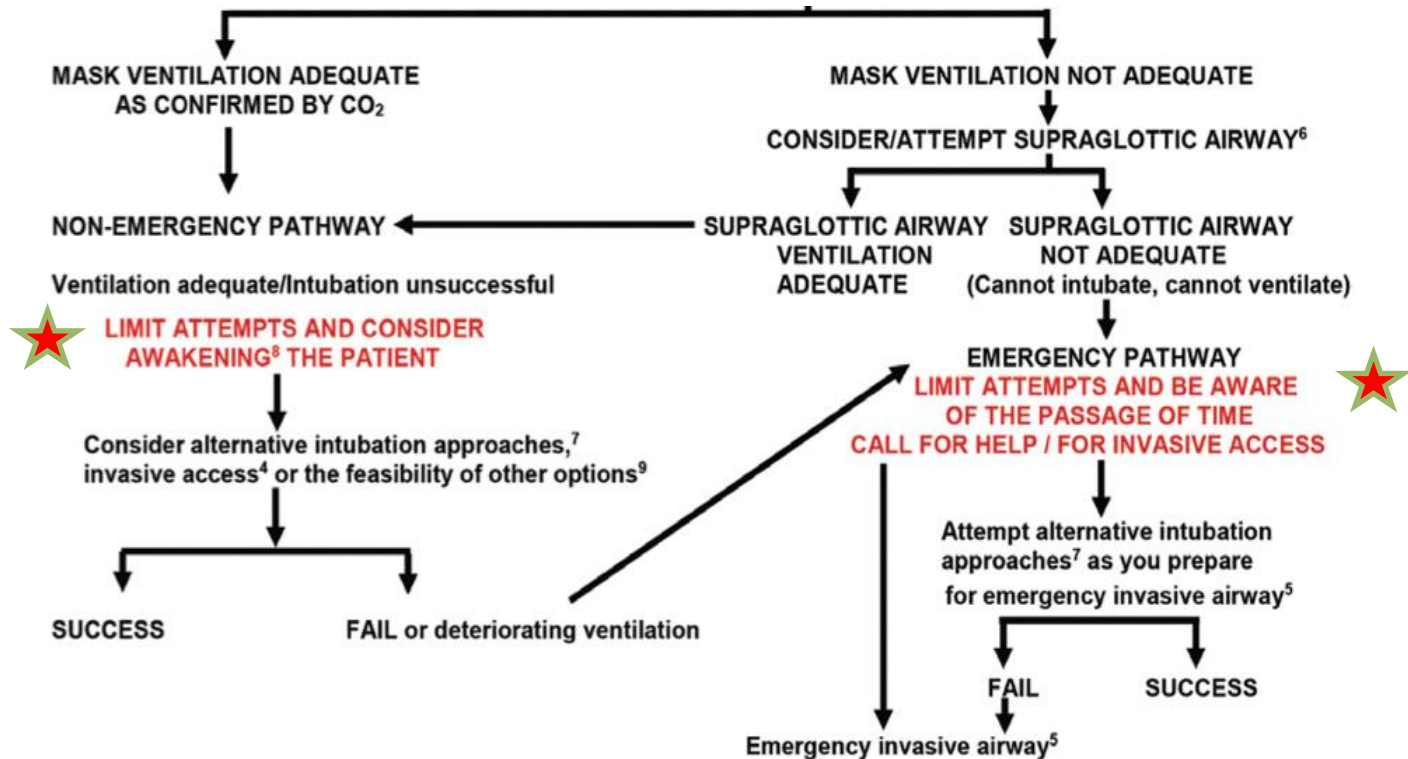


ASA difficult airway algorithm in adult patient

Pre-Intubation: Before attempting intubation, choose between either an awake or post-induction airway strategy. Choice of strategy and technique should be made by the clinician managing the airway.¹



ASA difficult airway algorithm in adult patient



Intraoperative

Choice of anesthesia

GA with ETT with controlled ventilation
(Awake fiberoptic intubation)

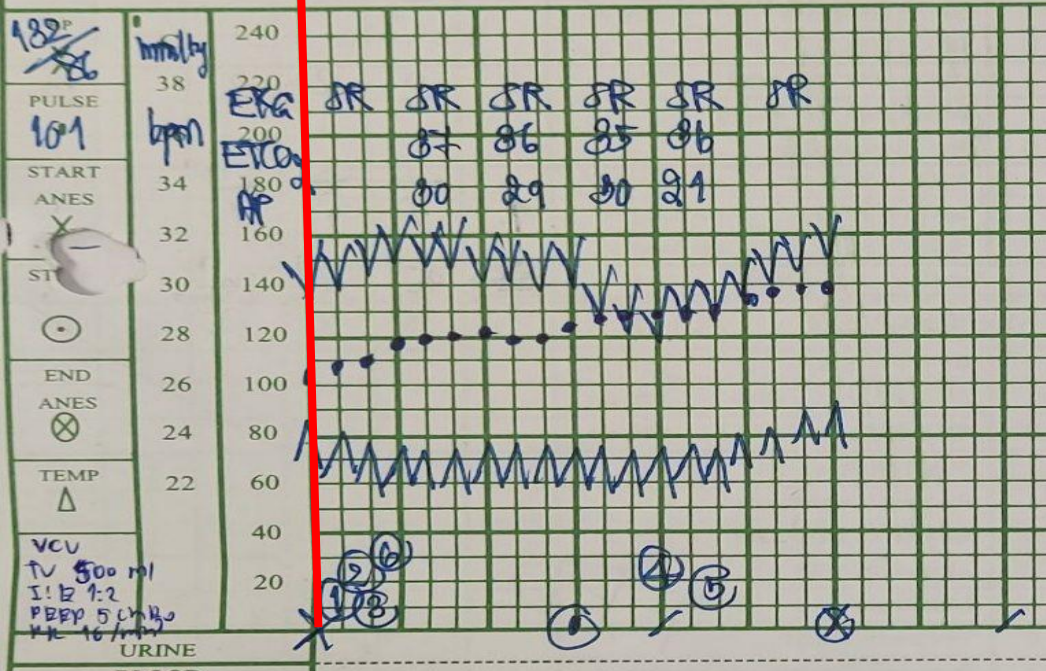
Plan A : awake fiberoptic intubation



| AGENTS/TIME | 0900 | 1000 | 1100 | 1200 | | | |
|--------------------|------|------|------|------|-------|-----|-----|
| Sevoflurane | 7- | 0 | 0 | 0 | 0 | 0 | 0 |
| Pentanyl | mg | (50) | (25) | (25) | | | |
| Nimbex | mg | | (6) | (2) | | | |
| O ₂ sat | 99% | 100 | 100 | 100 | 100 | 100 | 100 |
| IV FLUID INTAKE | 50ml | 2 | 700 | ml | Atens | ml | |

Patient in OR At 9.00 AM

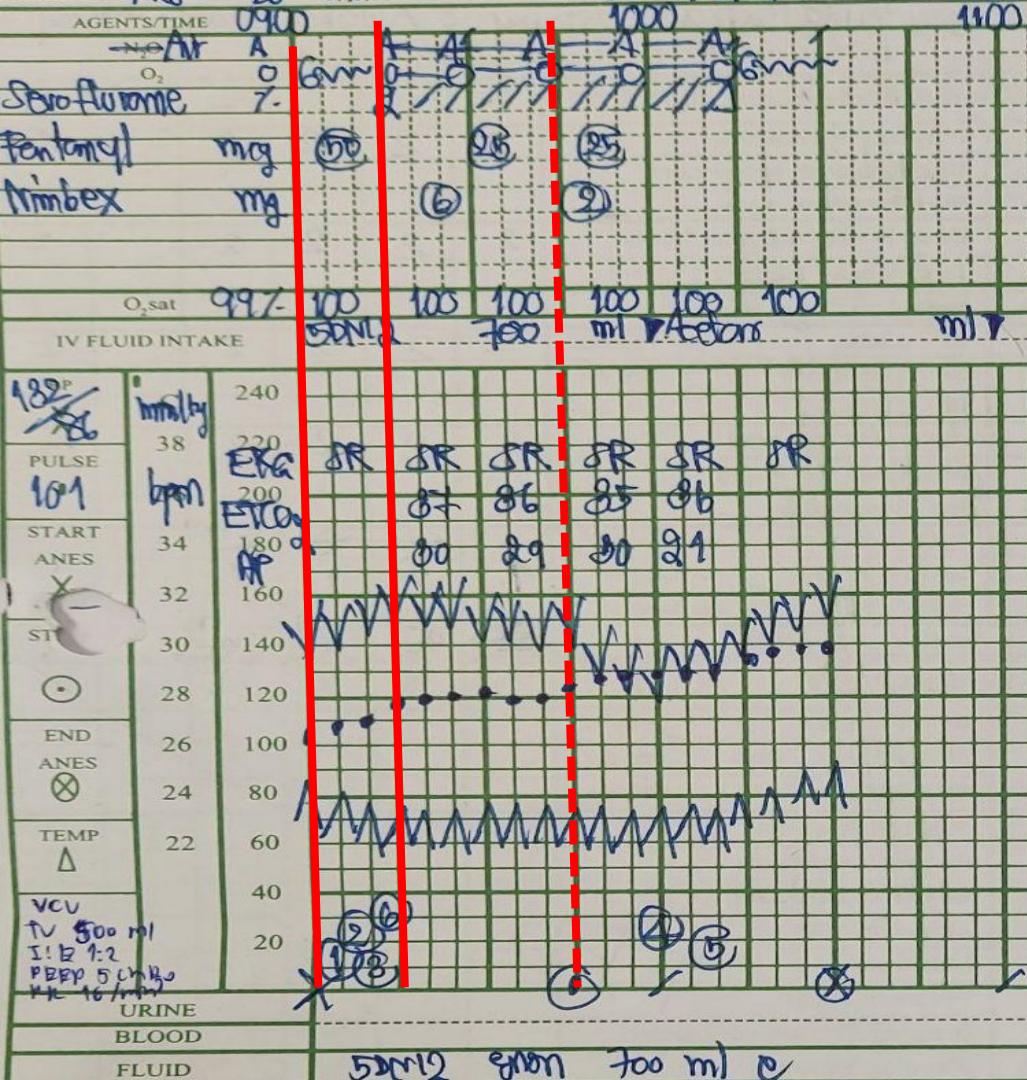
- Monitor : NIBP, 3-lead EKG, O₂sat, EtCO₂,
- V/S : BT 36 C° BP 132/86 mmHg
HR 101 mmHg, O₂sat 100%



| URINE | BLOOD | FLUID |
|-------|-------|-----------------|
| | | 50ml 2 700 ml e |

IV. CATH. NO. 20 SITE LH





Patient in OR At 9.00-9.15 AM

- 10% xylocaine spray 6 puff
- Ephedrine nasal drop
- 4% xylocaine nasal packing
- Atropine 0.6 mg IV
- นอนยกหัวสูง 30-45°
- Preoxygenation 100%O₂ 6 LPM

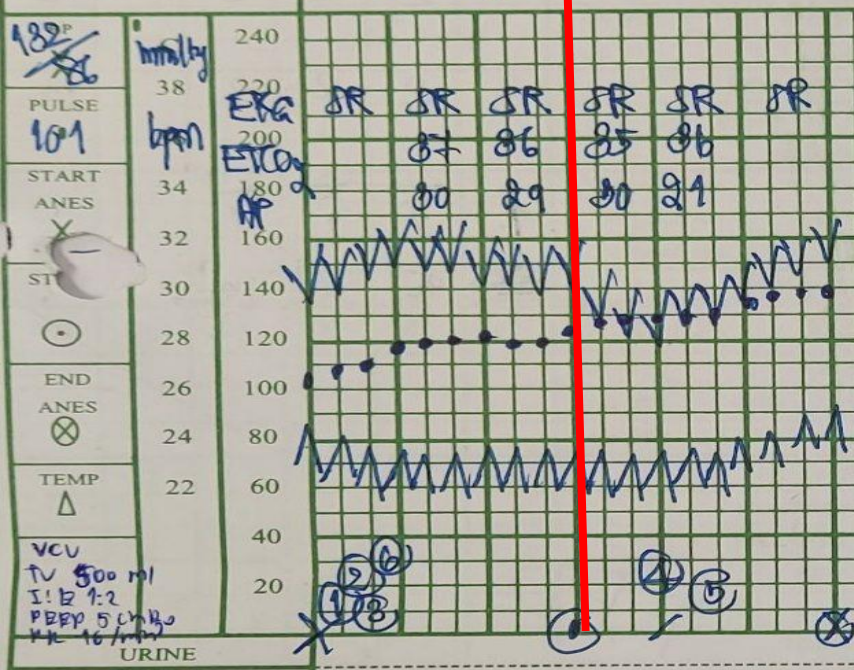
At 9.05-9.15 AM

- Fentanyl 50 mcg
- ETT no.6.5 with FOB was applied





| AGENTS/TIME | 0900 | 1000 | 1100 | 1200 |
|--------------------|------|------|------|------|
| Sevo-flurane | 0.6m | 0.6m | 0.6m | 0.6m |
| Pentanyl | mg | 25 | 25 | 25 |
| Nimbex | mg | 6 | 2 | |
| O ₂ sat | 99% | 100 | 100 | 100 |
| IV FLUID INTAKE | 50ml | 700 | ml | |



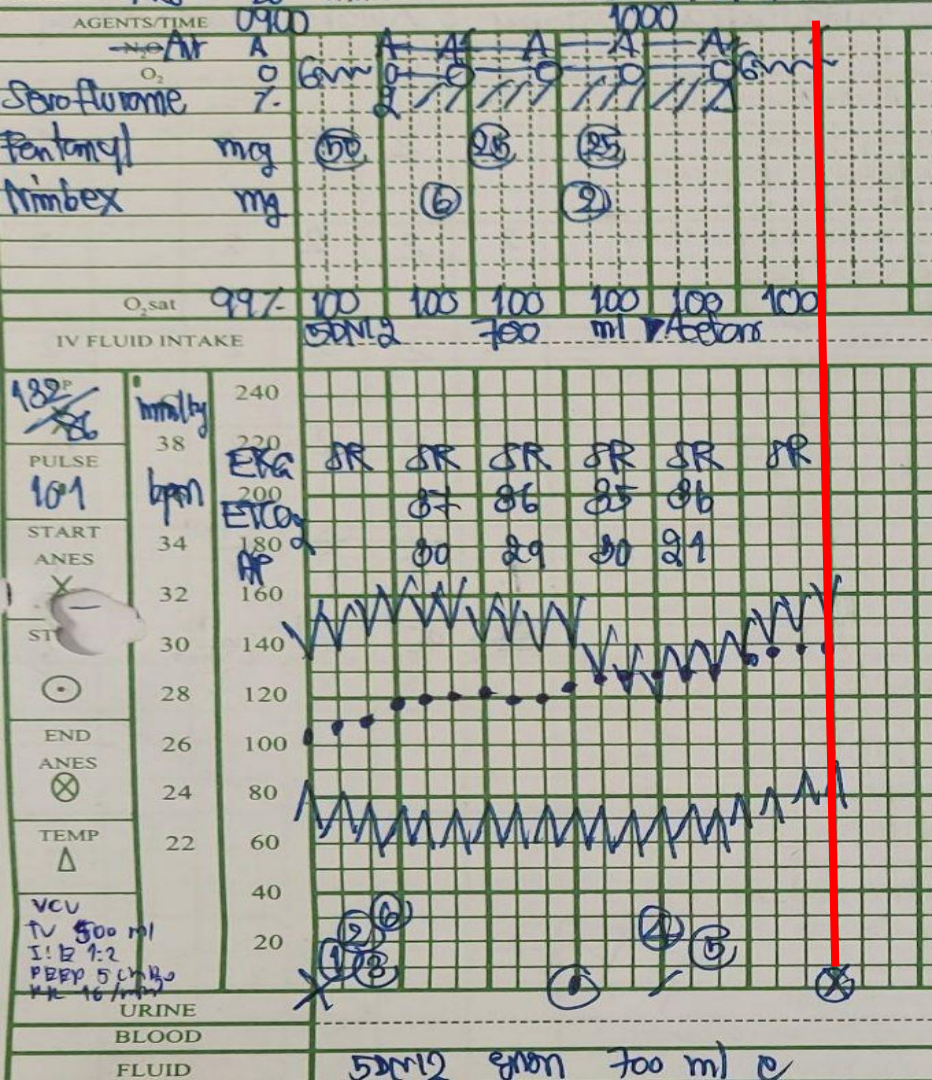
At 9.20 AM (intubation success)

- Air: O 1:1 + sevoflurane up to 2%
- Propofol 150 mg
- Cisatracurium 6 mg
- Fentanyl 25 mcg

Ventilator setting : VCV mode TV 500 ml
PEEP 5 cmH₂O RR 16/min I:E 1:2

At 9.45 AM (start operation)

- Tracheostomy



At 10.30 AM (operation was done)

- Ondansetron 8 mg.
- On tracheostomy (Portex no.8)
- 2% xylocaine with ADR 6 ml LA at surgical site
- Narcotic drug : fentanyl 100 mcg
- Propofol 150 ml
- Fluid summary 800 ml (5%DN/2 700 ml, ATB 100 ml)
- **Bleeding 50 ml**
- Operation time 1.30 hr.

Postoperative

Post operative consideration

- Complication of post tracheostomy
- Postoperative airway patency
- Postoperative pain

Post operative day1 (at ward)

- **S** : ผู้ป่วยตื่นดี มีไข้ 1 peak ปวดแผล ps 3/10 at rest ps 6/10 at movement
ไม่มีเสียงแหบ หายใจได้ปกติ ไม่เลือดออกผิดปกติที่แผล
- **O** : V/S BT 38.6 °c BP 100/70 mmHg PR 90 bpm RR 18 /min
HEENT : large Rt neck mass, no active bleeding, no hematoma, no serum oozing
RS : clear, no adventitious sound
- **A+P** : **Alveolar rhabdomyosarcoma S/P prophylaxis tracheostomy PO day 1**
 - observe fever
 - BD (1:1) 300 ml x 4 feeds via NG , 5% DN/2 IV 80 ml/hr.
 - tramadol 50 mg lv prn q 8 hr., paracetamol (500) 1 tab o prn q 4-6 hr.
 - Augmentin (1gm) 1x2 o pc
 - dressing wound OD
 - consult GI med for PEG

Post operative day1 (at ward)

- **S** : ผู้ป่วยตื่นดี มีไข้ ปวดแผล ps 5/10 at rest ps 6-7/10 at movement
ไม่มีเสียงแหบ หายใจได้ปกติ ไม่เลือดออกผิดปกติที่แผล
- **O** : V/S BT 38.6 °c BP 120/70 mmHg PR 100 bpm RR 18 /min
HEENT : large Rt neck mass ,no contact bleeding at mass
minimal bleeding at surgical site
RS : clear, no adventitious sound
- **A+P** : **Alveolar rhabdomyosarcoma S/P prophylaxis tracheostomy PO day 2**
 - Dressing wound OD
 - post operative fever : consult MED > W/U & observe clinical
 - post operative pain : consult pain clinic for proper management
 - plan palliative CMT หลัง off stay day 7

Take home message

- **Identified strategy of airway management**
- **Proper preoperative evaluation and preparation of the airway**
- **Communication & Multidisciplinary team working**
- **Back up plans**
- **Ensure that airway management equipment is ready to used**
- **Good skills individual of clinician or immediately available to assist**
- **Following the adult difficult airway algorithm**
- **Limited attempts / optimize oxygenation / aware passage of time**

Thank you