

Interesting case

R2 Chanathip Meerod
Lt.Col.Nattapong Phuvachoterojanaphokin

Interesting case

Case : 50 years old male

Diagnosis : OPLL with cervical spondylotic myelopathy

Operation : laminotomy C3-C6 with laminectomy C3-C6 with posterior fusion

R1 history talking

History

Present illness : 1 ปี PTA รู้สึกชาบริเวณปลายมือทั้ง 2 ข้าง กำมือได้ ไม่มีอาการอ่อนแรง

6 เดือน PTA มีอาการปวดหลังร่วมกับชาปลายเท้า 2 ข้าง ร่วมด้วย ชาขวาเป็นมากกว่าขาซ้าย
เดินได้ปกติ ไม่อ่อนแรง

1 เดือน PTA เริ่มหันคอลำบาก ชามือทั้ง 2 ข้างมากขึ้น ชาแขนขวาถึงหัวไหล่ กำแบ่มือได้
เดินตัวเซไปด้านซ้าย ไม่มีขาอ่อนแรง ปัสสาวะและอุจจาระได้ปกติ มาพบแพทย์ที่ รพ. พบว่า
กระดูกสันหลังส่วนคอกดทับเส้นประสาทร่วมกับมีหินปูนเกาะ แพทย์จึงนัดมาผ่าตัด

Past history

- โรคประจำตัว : HT – ASA (81) 1x1 o pc , Amlodipine (5) 1x1 o pc
- ปฏิเสธการดื่มสุราและสูบบุหรี่
- ปฏิเสธประวัติการแพ้ยา
- ปฏิเสธประวัติการผ่าตัดมาก่อน
- ปฏิเสธประวัติประสบอุบัติเหตุมาก่อนหน้านี้

R1 Physical examination and investigation

Physical examination

- **Vital sign** : BT 36.4 °c BP 135/87 mmHg PR 90 bpm RR 16 /min
- BW 76 kg Height 173 cm. BMI 25.39 kg/m²
- **General appearance** : A middle aged Thai male, good consciousness
good orientation
- **HEENT** : not pale conjunctivae , anicteric sclerae , no dry lip/dry tongue

Physical examination

- **CVS**: pulse full and regular, no displaced PMI , no heaving, no thrill , normal S₁ S₂, no murmur
- **RS**: 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 2+ at Lt side & 3+ at Rt side, BBK- negative, Clonus sign – negative

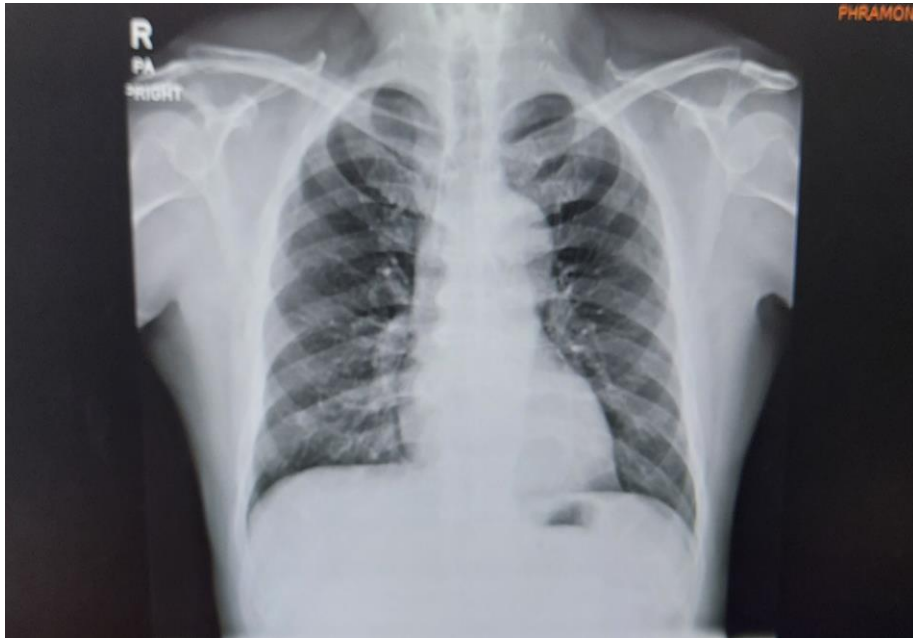
Airway assessment

- Mallampati grade 2
- Thyromental distance > 6 cm.
- Mouth opening > 3 cm.
- No prominent incisor
- Upper lip bite test class I
- limit ROM of neck (flexion) due to pain

Investigation

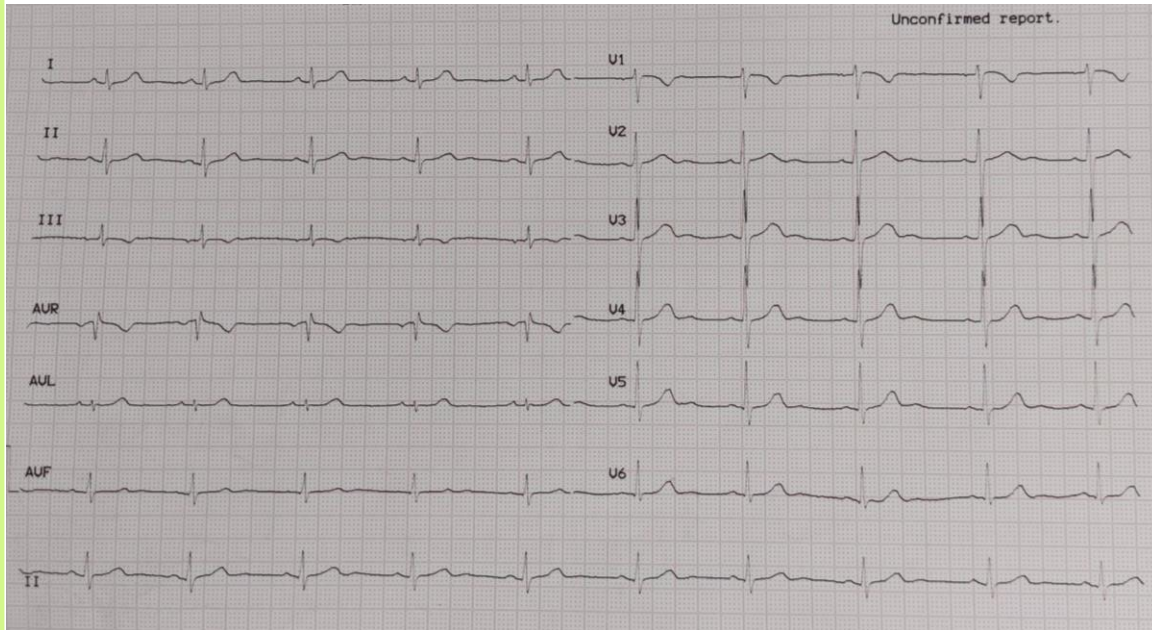
- **CBC** : Hb 14.5 g/dl Hct 42.7 % Platelet 346,000 /ul
- **Electrolyte** : Na 139 mEq/L K 4.3 mEq/L Cl 101 mEq/L HCO₃ 27.5 mEq/L
- **BUN** 5 mg/dl **Cr** 0.65 mg/dl **GFR** 110 ml/min/1.73m²
- **CBG** 102 mg%

Chest x-ray



- No cardiomegaly
- no increase of peripheral pulmonary vessel
- No infiltration

EKG



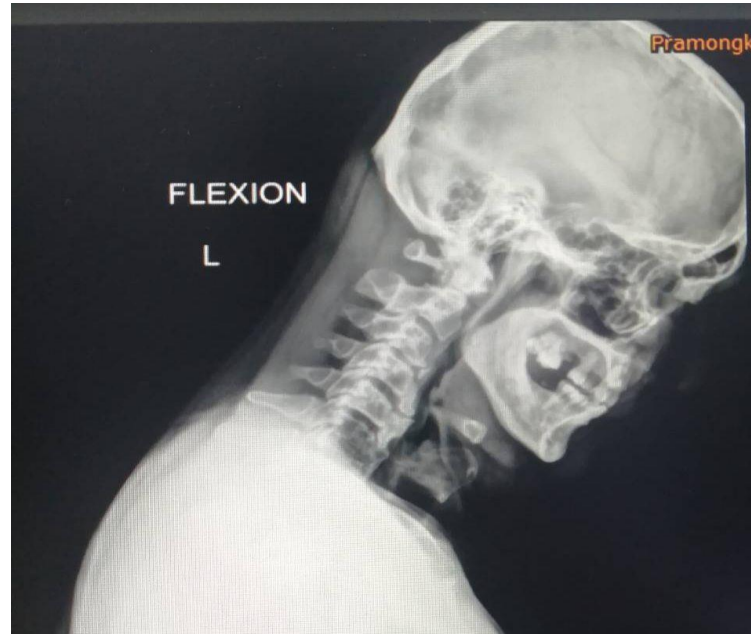
NSR rate 60-70 bpm

no ST elevation or depression

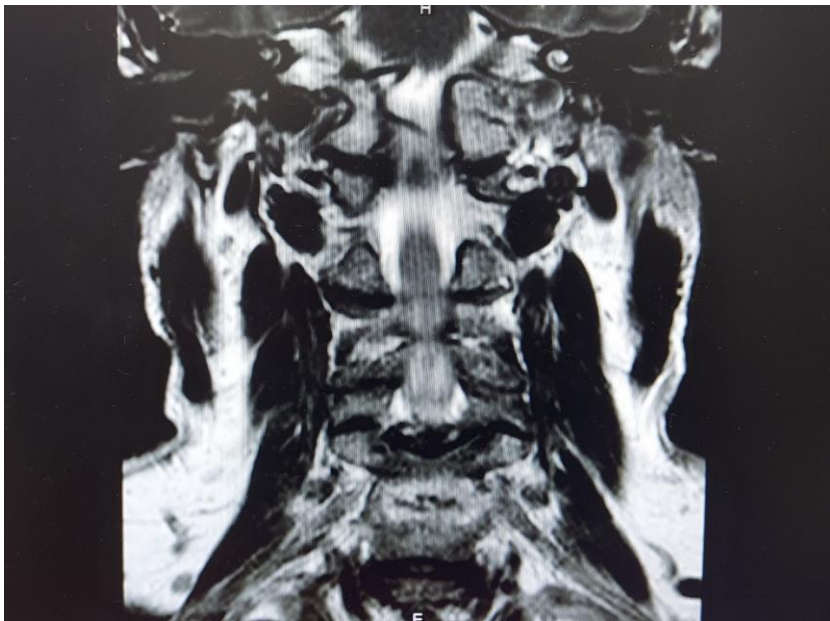
no LVH

no abnormal Q wave

Film cervical spine



MRI C-spine



Window Center: 237.19 , Width: 412.35 | Frame: 8 / 14

MRI C-spine

Degenerative disc bulging and protrusion with cervical spondylosis prominent at C3-4 to C6-7 causing spinal cord compression with cord myelopathy at C3-4 and C4-5 and nerve roots compression at bilateral C4-6 roots

R1 Problem list and ASA classification

Problem list

- **OPLL with cervical spondylotic myelopathy C3-C6**
- **Hypertension**

ASA Class II

R2 Preoperative evaluation and preparation

Preoperative evaluation

1

Patient factor

2

Surgical factor

3

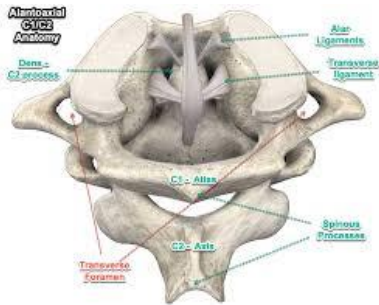
Anesthetic factor

Patient factor

- Severity of cervical spondylotic myelopathy
- Airway patency and appropriate technique for securing the airway
- Co-morbidity of patient

Determination of spinal stability

- **Spinal stability** : the vertebral structures maintain their cohesion in all physiologic positions
- **The upper cervical spine (C1-C2)** : the transverse atlantal ligament (TAL)
- **Unstable** : any body displacement beyond acceptable limits

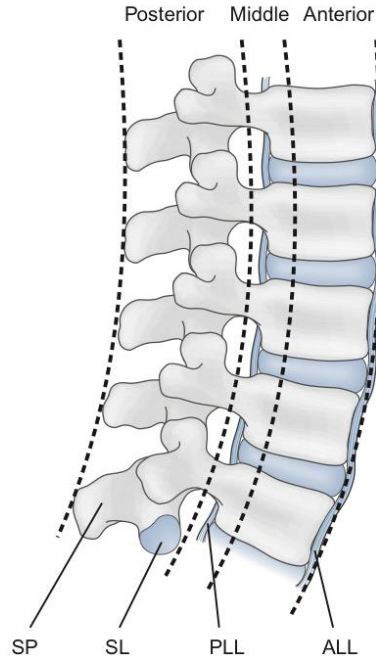


Sagittal plan distance

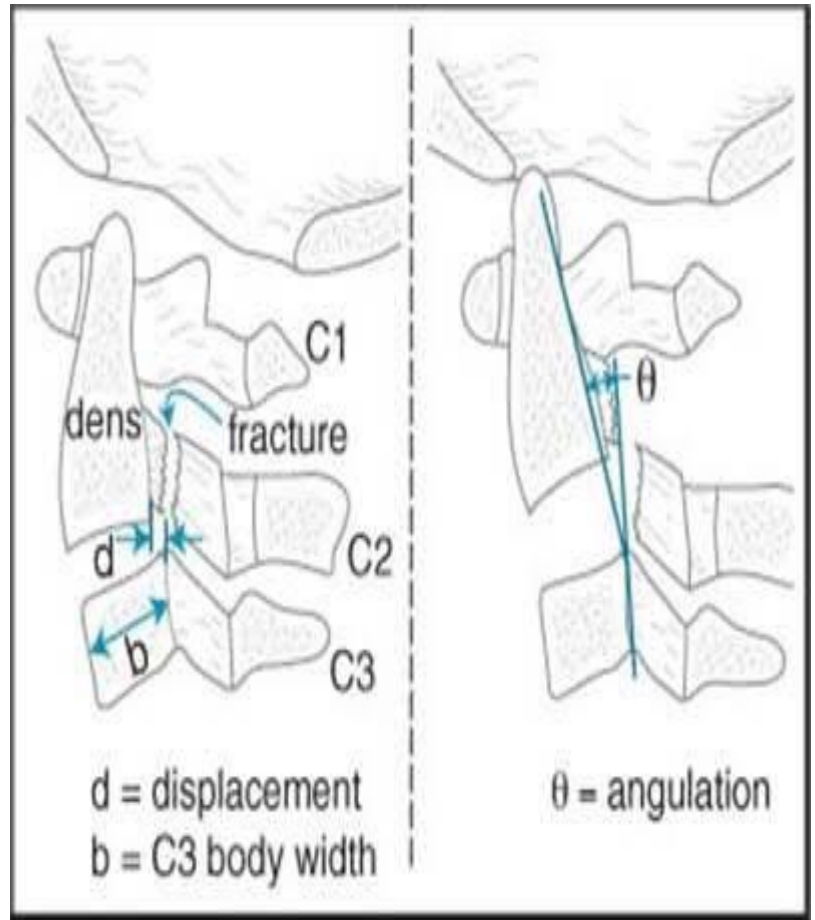
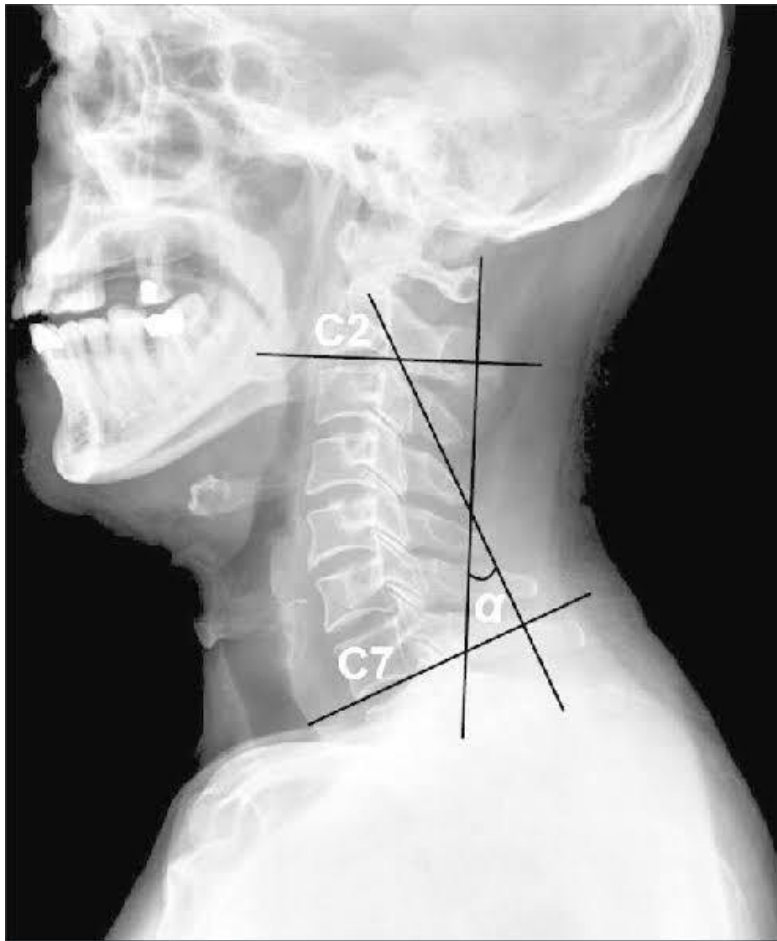
Back of anterior ring of C1-anterior portion of Dens > 3-4 mm

Posterior Dens – Anterior portion of posterior ring of C1 < 13 mm

Determination of lower cervical spine instability



- **Anatomical considerations**
 - The Denis three column model (failure of two or all columns)
- **Clinical considerations**
 - Presence of neurological deficit
- **Radiographic considerations**
 - Sagittal plane translation : > 11 degrees , > 3.5 mm
 - Compression of vertebral body > 50%
 - Interspinous widening
 - Loss of facet parallelism
 - Loss of cervical lordosis





No instability of cervical spine

Severity of CSM

- Lesions not effecting occipito - atlanto - axial joint
- Ability of normal physiologic loads to maintain between vertebrae
- No significant C-spine unstable or instability
- No significant subluxation or angulation from imaging
- Normal airway patency

Airway management technique

Table 21.8 Airway Management Techniques and Their Effects on the Cervical Spine

| Maneuver | Condition | Result |
|---------------------------|---|--|
| Laryngoscopy | Normal, anesthetized | <ul style="list-style-type: none"> • Extension at the occipitoatlantal and C1–C2 articulations • C2–C5 displaced only minimally • Sniffing position-flexing lower neck on the chest and extending the head on the upper neck |
| | Cadaver, C5–C6 instability | <ul style="list-style-type: none"> • 3–4 mm widening of the disk space at the level of injury |
| Straight vs. curved blade | Normal, anesthetized | <ul style="list-style-type: none"> • No difference in cervical spine movement |
| GlideScope® | Normal, anesthetized | <ul style="list-style-type: none"> • Overall spine movement reduced 50% at C2–C5 as compared to curved blade |
| Bullard laryngoscope | Normal, anesthetized, in-line stabilization | <ul style="list-style-type: none"> • Overall cervical spine movement reduced at C2–C5 • Less extension at occipitoatlantoaxial complex but similar occiput–C5 extension compared with direct laryngoscopy with Macintosh blade if no manual in-line immobilization |

Airway management technique

| | | |
|----------------------------------|---|--|
| Augustine guide | Normal, healthy | <ul style="list-style-type: none">• Less spine extension than with direct laryngoscopy |
| Rigid indirect laryngoscopy | | <ul style="list-style-type: none">• Cervical spine movements less than with direct laryngoscopy• Better visualization of the glottis than direct laryngoscopy |
| Intubating laryngeal mask airway | | <ul style="list-style-type: none">• Exerts high pressures against upper cervical vertebrae with insertion and manipulation• May produce posterior displacement of upper cervical spine• For insertion, C5 and superior spinal segments flexed $<2^\circ$; during intubation, C4 and superior segments flexed $<3^\circ$; little movement of the spine above C3 |
| Cricoid pressure | Normal, anesthetized, in-line stabilization | <ul style="list-style-type: none">• Single-handed cricoid pressure causes vertical displacement of neck ≈ 5 mm, but no spine movement |
| Blind nasotracheal | Cadaver, C5–C6 instability | <ul style="list-style-type: none">• Up to 2 mm subluxation but no increase in disk space; intubation >5 mm subluxation when neck is stabilized anteriorly by hand pressure |

Airway management technique

Airway support

| | | |
|----------------------|----------------------------|---|
| Chin lift/jaw thrust | Cadaver, C5–C6 instability | <ul style="list-style-type: none">• >5mm widening disk space at level of injury |
| Oral/nasopharyngeal | Cadaver, C5–C6 instability | <ul style="list-style-type: none">• ≈2mm widening disk space at level of injury |
| Mask ventilation | Cadaver | <ul style="list-style-type: none">• Significant anteroposterior translation displacement with maximal flexion and extension of the head |

C-spine immobilization technique

| Technique | Effect on Spine Immobilization |
|---|---|
| Cervical collar, sandbags, backboard, head tape | <ul style="list-style-type: none">• Very effective method of limiting flexion, extension, rotation, and lateral bending; recommended by the American College of Surgeons for effective C-spine immobilization; makes orotracheal intubation much more difficult if left in place at time of intubation |
| Hard and soft collar | <ul style="list-style-type: none">• Little effect on spine immobilization; allows moderate amount of head and neck extension; does not effectively eliminate movement of the neck during tracheal intubation; anterior portion of collar interferes with mouth opening; increases incidence of grade III or IV laryngoscopic view; alerts medical personnel to possibility of C-spine injury |
| Manual in-line immobilization (MILI) | <ul style="list-style-type: none">• Reduces neck movement during intubation; recommended method of reducing neck mobility during tracheal intubation; head held in neutral position without axial traction; better view of larynx when anterior aspect of collar, if present, is removed before laryngoscopy |
| Axial traction | <ul style="list-style-type: none">• Excessive axial traction may cause distraction and subluxation |
| Halo brace | <ul style="list-style-type: none">• Most rigid immobilization technique of all the spinal orthoses; highly effective for skeletal fixation and in limiting motion of the upper cervical spine; limits both flexion–extension and lateral bending movements of the cervical spine by 96% and axial rotation by 99%; utilized in the setting of an unstable cervical spine; does not allow any neck movement making direct laryngoscopy very difficult; fiberoptic intubation is recommended (awake or after induction) |

C-spine immobilization technique

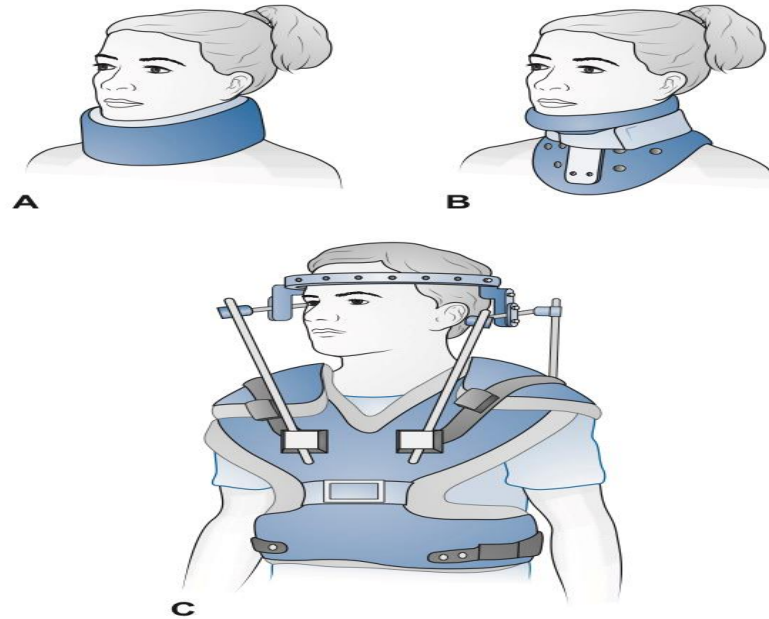


Fig. 21.32 Cervical orthoses. **A**, Soft cervical collar; **B**, Philadelphia-type reinforced cervical collar; **C**, halo brace.



Figure 3

From left to right, The Original Glidescope® with its angulated blade to 60°, a Macintosh blade size 4, and the McGrath MAC video laryngoscope with a similar profile to the standard Macintosh blade



Co-morbidity

- **Hypertension**

- BP baseline : 130-140 / 70-90 mmHg , well compliance , no evident of end organ damage
- **target intraoperative** : control BP < 180/110 mmHg or +/- 20% of BP baseline , MAP > 65
- **Premedication** : amlodipine (5) 1 x 1 o pc เช้า

Surgical factor

- Prone position
- Neurophysiologic monitoring
- VTE risk

Prone position

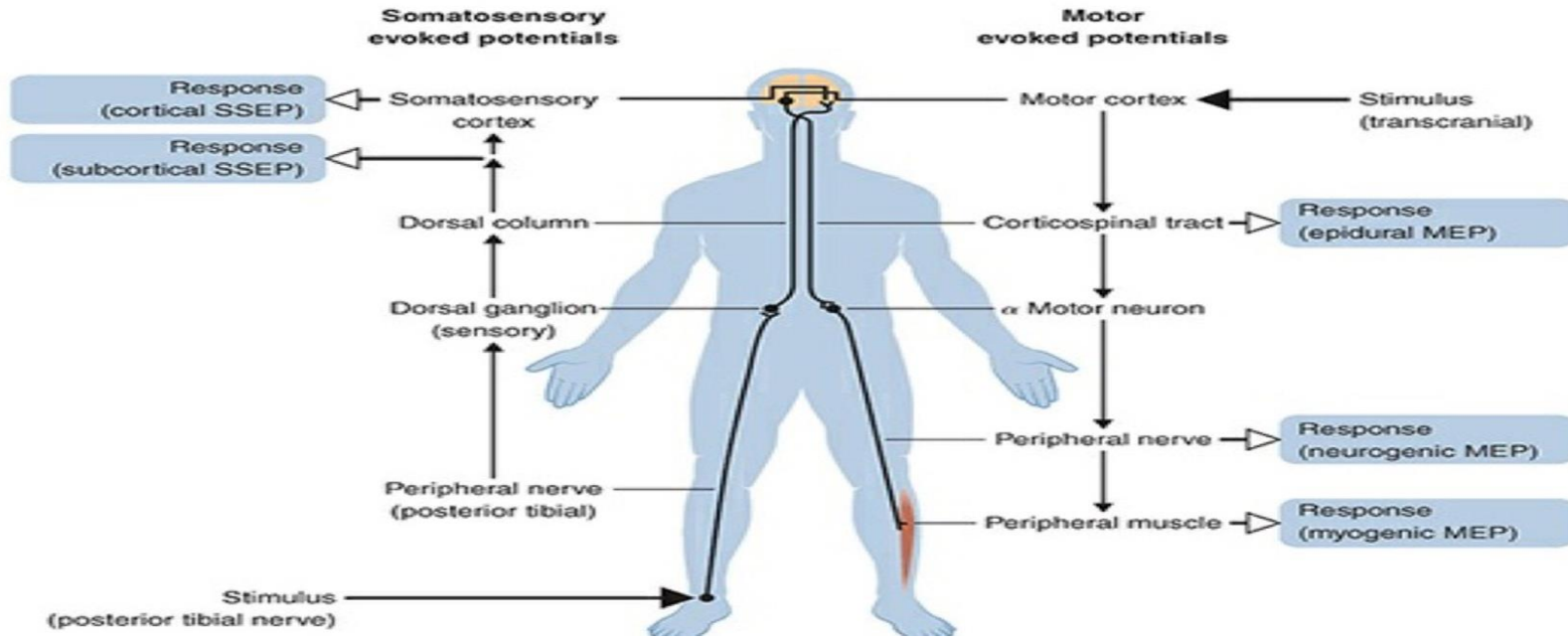


Fig. 34.15 Prone position with Wilson frame. Arms are abducted less than 90 degrees whenever possible, although greater abduction may be better tolerated while prone. Pressure points are padded, and the chest and abdomen are supported away from the bed to minimize abdominal pressure and to preserve pulmonary compliance. Soft head pillow has cutouts for eyes and nose and a slot to permit endotracheal tube exit. Eyes must be checked frequently.

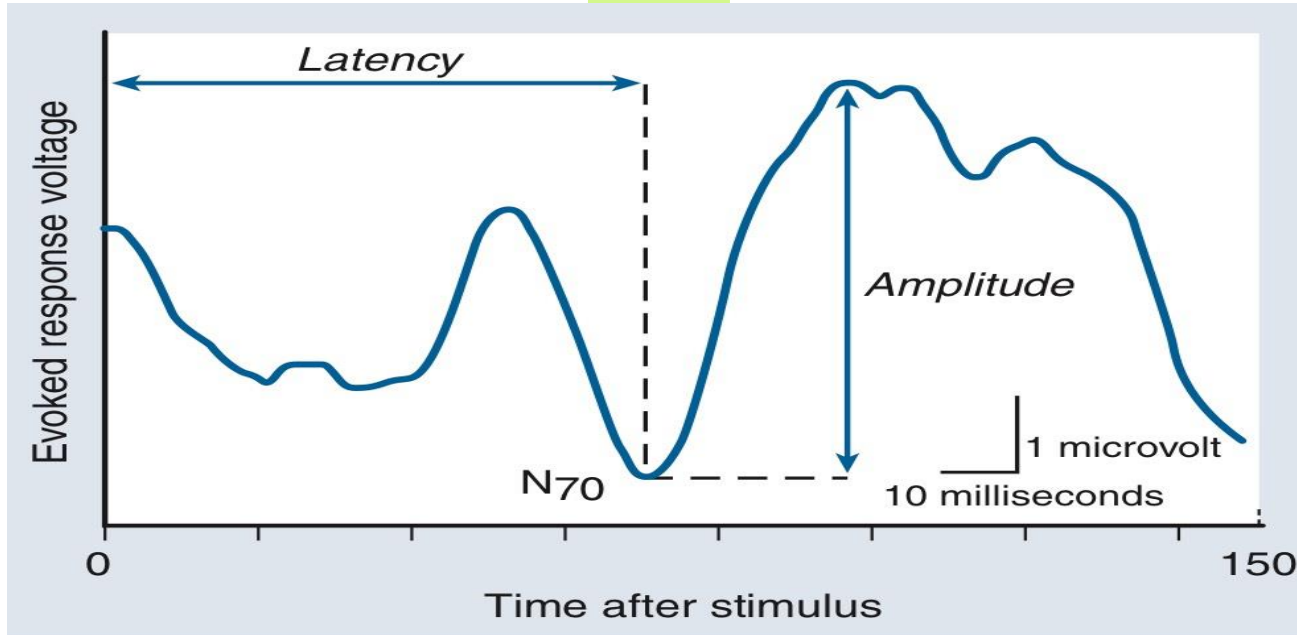
Prone position

- **Avoid abdominal compression**, allowing for free movement of abdomen and reducing vena caval compression
- **Avoid thoracic compression** to *facilitate ventilation and reduce excessive airway pressure*
- **Provide adequate support for head and face**
- **Maintain normal positioning** of the extremities to *avoid compression or stretching of peripheral nerves*
- **Provide liberal padding**, avoiding pressure sores

Neurophysiologic monitoring



Neurophysiologic monitoring



VTE risk

BOX 31.12 Modified Caprini Risk Assessment Model for Venous Thromboembolism

1 Point Each

Age 41–60 years

Minor surgery

BMI > 25 kg/m²

Swollen legs

Varicose veins

Pregnancy or postpartum

History of unexplained or recurrent spontaneous abortion

Oral contraceptives or hormone replacement

Sepsis (<1 month)

Serious lung disease, including pneumonia (<1 month)

Abnormal pulmonary function

Acute myocardial infarction

Heart failure (<1 month)

History of inflammatory bowel disease

Medical patient at bed rest

3 Points Each

Age ≥ 75 years

History of VTE

Family history of VTE

Factor V Leiden mutation

Prothrombin 20210A mutation

Lupus anticoagulant

Anticardiolipin antibodies

Elevated serum homocysteine

Heparin-induced thrombocytopenia

Other congenital or acquired thrombophilia

2 Points Each

Age 61–74 years

Arthroscopic surgery

Major open surgery (>45 min)

Laparoscopic surgery (>45 min)

Malignancy

Confined to bed (>72 h)

Immobilizing plaster cast

Central venous access

5 Points Each

Stroke (<1 month)

Elective arthroplasty

Hip, pelvis, or leg fracture

Acute spinal cord injury (<1 month)

Caprini score = 4 (moderate risk VTE)

Preoperative preparation in this patient

General preparation

- NPO
- Informed consent
- Anesthetic machine
- Intubation equipment
- Force air warmer
- Warm IV fluids
- Antibiotic
- IV anesthetic drugs

Specific preparation

- Large bore IV fluid (no 18)
- Blood components (PRC 2 u)
- Prone position equipment
- Pneumatic pump

Intraoperative monitoring

Non invasive

NIBP
5 lead EKG
ETCO₂
Pulse oximeter
Body temperature
Urine output

Specific

SSEPs & MEPs

BIS

R3 Anesthetic consideration

Anesthetic management of C-spine myelopathy

- Specific technique appropriate for securing the airway
- Choice of anesthetic agents , hemodynamic monitoring
- Positioning
- Anesthetic effect on MEPS & SSEP
- Maintain adequate spinal cord perfusion
- Decision to extubate the patient

Anesthetic effects on SSEPs

- Volatile anesthetics produce a dose dependent increase latency & decrease amplitude.
- Inhalation are prominent on cortical responses , with marked depression on amplitude with 0.5-1 MAC
- IV anesthetic agents have minimal effects on cortical SSEPs, *except etomidate and ketamine, which increase SSEP signal amplitude, BZD ;* ↓ AMP ↑ LAT
- Opioid cause small dose-dependent increases in latency and decreases in amplitude
- Dexmedetomidine appear to have minimal effect on SSEPs when combined with opioids successfully used with MEPs

Anesthetic effects on MEPs

- MEPs are extremely sensitive to inhibitory effects of volatile anesthetic.
- 0.25-0.5 MAC can suppress transmission
- N₂O produces amplitude reduction and latency increases in SSEP or MEPs when used alone or combined with other inhalation agent or opioid agent
- Muscle relaxants suppress EMG activity and obliterate MEPs

Intraoperative neurophysiologic monitoring

| Monitoring modality | Monitored region of the cord | Significance |
|---------------------|------------------------------|---|
| SSEP | Dorsal ascending column | Amplitude reduction > 50% or increased latency > 10% |
| tcMEP | Motor descending tracts | Amplitude reduction > 50% |

Physiologic effect on sensory evoked response

| Physiologic effect | amplitude | latency |
|---|---|-------------------------------------|
| Hypoxemia ($\text{PaO}_2 < 40 \text{ mmHg}$) | ↓ | ↑ |
| Hyperthermia | ↓ 15% from baseline at 42 °C | ↓ 5-7% from baseline at 39 °C |
| Hypothermia | ↑ at 33-34 °C | ↑ 10-20% from baseline at < 33.5 °C |
| Hypotension | ↓ MAP below autoregulation MAP < 50 mmHg | ↔ |

Physiologic effect on sensory evoked response

| Physiologic effect | amplitude | latency |
|--|-----------|---------|
| Hypocapnia (PaCO ₂ 20-25 mmHg) | ↔ | ↓ 2-4 % |
| Hypercapnia (PaCO ₂ >100 mmHg) | ↓ | ↑ |
| Hyponatremia Na < 125 mmol/L | ↓ | ↑ |

Anesthetic effects on MEPs & SSEPs

TABLE 39.4 Ability of an Individual Anesthetic Drug to Produce a Change in Sensory- and Motor-Evoked Potentials That Could Be Mistaken for a Surgically Induced Change

| Drug | SSEPS | | BAEPS | | VEPS | | TRANSCRANIAL MEPS | |
|-----------------|-------|-----|-------|-----|------|-----|-------------------|-----|
| | LAT | AMP | LAT | AMP | LAT | AMP | LAT | AMP |
| Isoflurane | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Nitrous oxide* | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Barbiturates | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Etomidate | No | No | No | No | Yes | Yes | No | No |
| Propofol | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Diazepam | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Midazolam | Yes | Yes | No | No | Yes | Yes | Yes | Yes |
| Ketamine | No | No | No | No | Yes | Yes | No | No |
| Opioids | No | No | No | No | No | No | No | No |
| Dexmedetomidine | No | No | No | No | No | ND | ND | No |

Intraoperative

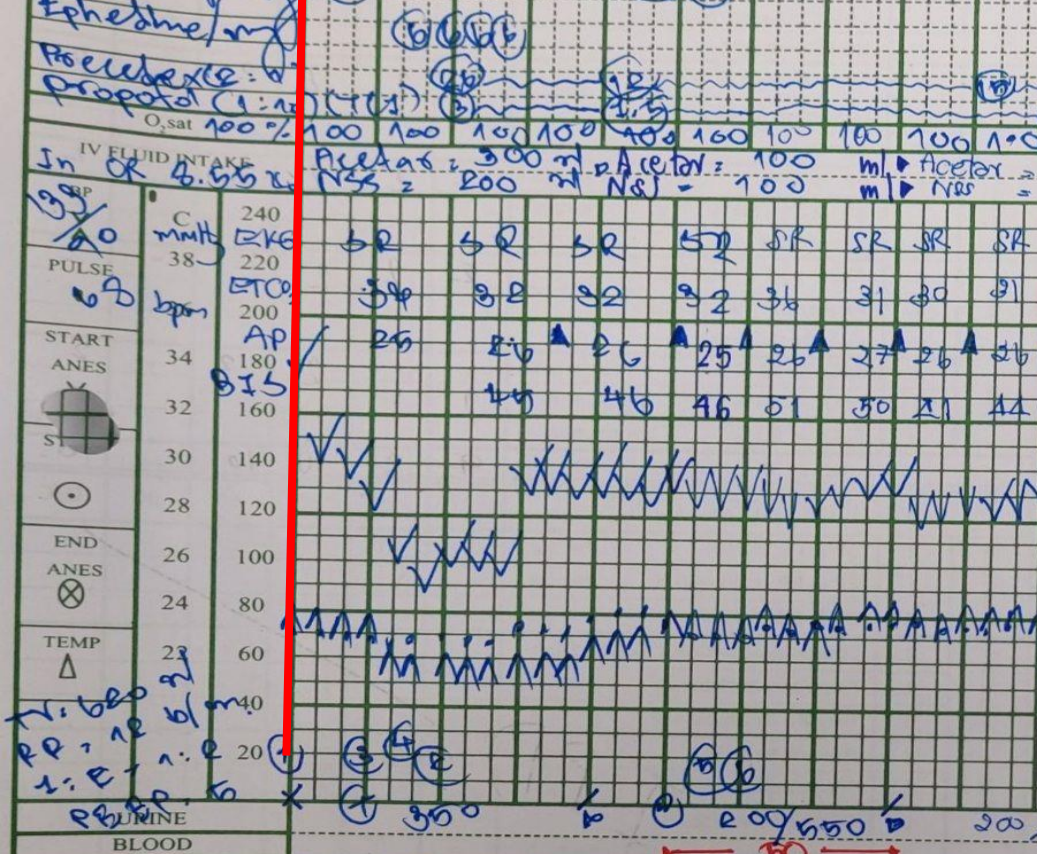
Choice of anesthesia

GA with ETT with controlled ventilation

Combined with TIVA + BIS monitoring

O₂ 4/8
 Servo 1-1
 Fentanyl/mg
 Ephedrine/mg
 Propofol (1-1) (1-1)
 O₂ sat 100%

Patient in OR At 9.00 AM
 - Monitor : NIBP, 3-lead EKG, O₂sat, EtCO₂, body temperature, urine output
 - V/S : BT 36 C° BP 133/90 mmHg
 HR 68 mmHg, O₂sat 100%



R.L. LATERAL
 L.L. LATERAL
 JACK-KNIFE
 OTHER
 LAB
 Hct.
 Blood Sugar
 Electrolyte
 ABG

FLUID 5% D/N/2 800ml e → hold
 PRECURARIZATION mg

TOTAL URINE OUTPUT 1200 ml
 IV. CATH. NO. 22, 18, 22 SITE LH, RH, U. Neg.

09.00

0₂ 100% 100 100 100 100 100 100 100 100

IV FLUID INTAKE

In of 8.55 to

| | | | | | |
|-----------------|-----|-------------------------|----|----|----|
| C | 240 | | | | |
| mmHg | 220 | 52 | 52 | 52 | 52 |
| PULSE | 38 | 38 | 38 | 38 | 38 |
| bpm | 200 | | | | |
| START ANES | 34 | 25 | 26 | 26 | 25 |
| AP | 180 | | | | |
| BIS | 32 | 46 | 46 | 46 | 46 |
| TEMP | 30 | 140 | | | |
| | 28 | 120 | | | |
| | 26 | 100 | | | |
| | 24 | 80 | | | |
| | 22 | 60 | | | |
| TV | 620 | | | | |
| PP | 12 | | | | |
| 1:2 | | | | | |
| PEEP | 5 | | | | |
| BLOOD | | | | | |
| FLUID | | 5% D/N/2 800ml e → hold | | | |
| PRECURARIZATION | | | | | |

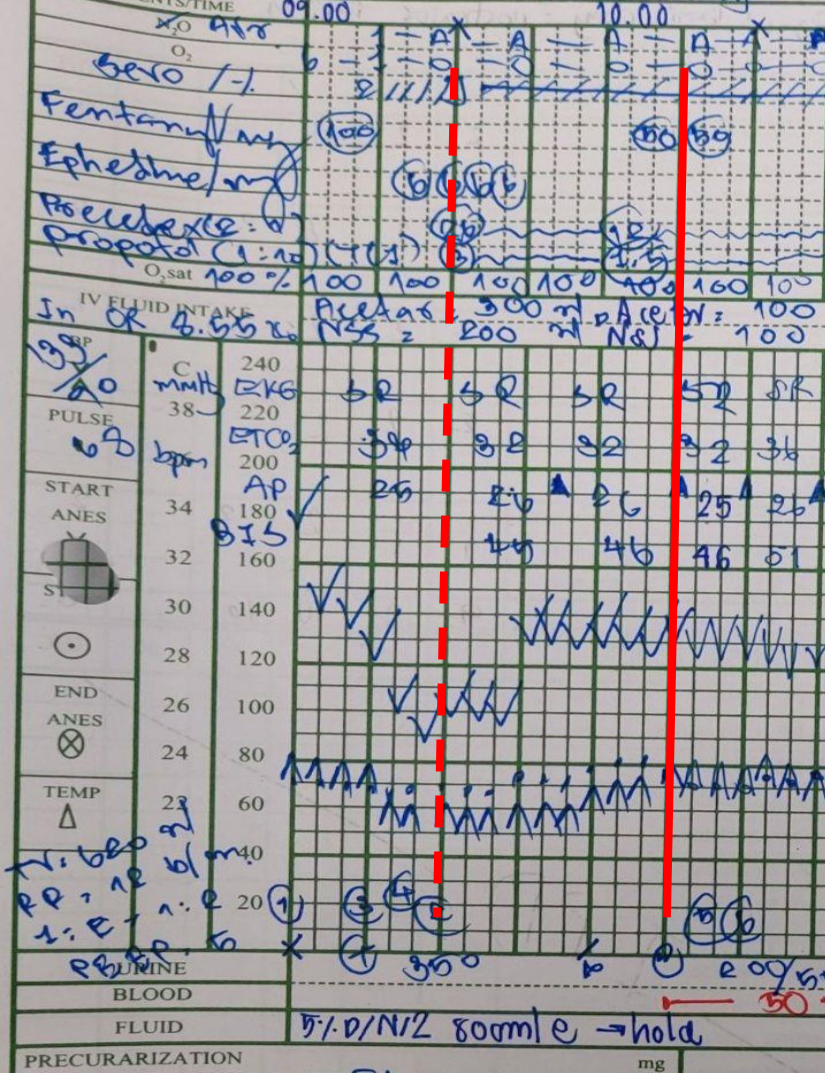
At 9.15 AM

- preoxygenation 5 min
 - Fentanyl 100 mcg
 - Induction agent : Propofol 150 mg
 - Intubation agent : succinylcholine 100 m
 - ETT no.8 depth 22 cm. (LV gr 1 by CMAC D-blade)
 - Maintenance : Air:O₂:Seveflurane,1:1:up to 2%
 - **Large bore IV no 18 at Rt hand , no 22 at Lt hand**
 - 5%DN/2 1000 ml >> Acetar IV 80 ml/hr.
 - Discontinued sevoflurane >> TIVA
 - **Propofol (10:1) TCI IV 3 mcg/ml**
 - **Dexmedetomidine (2:1) 26 ml/hr.**
 - **BIS monitoring**
 - Cefazolin 2 gm IV stat
 - Transamine 1 gm IV push
 - monitor body temperature
 - On pneumatic pump both legs
- Ventilator setting :** VCV mode TV 620 ml
PEEP 5 cmH₂O RR 12/min I:E 1:2

Maintenance anesthesia

Anesthetic technique for MEPs & SSEPs

Total intravenous anesthesia and omission of muscle relaxants



At 9.30 AM

- Prone position (7 point free, AP 26 >> 27, equal breath sound Lt=Rt)
- MEPS & SSEP
- Ephedrine 6 mg x 4 doses

At 10.15 AM : start operation

V/S BT 36 C BP 120-130 mmHg/ 70-80 mmHg PR 70-80 bpm
 ETCO₂ 32

- Fentanyl 100 mcg before incision
- Propofol TCI IV 1.5 mcg/ml
- Dexmedetomidine (2:1) 12 ml/hr.
- BIS monitoring (40-60)
- Dynastat 40 mg IV

| | |
|----------------------------|-------------|
| <input type="checkbox"/> | Electrolyte |
| <input type="checkbox"/> | ABG |
| TOTAL URINE OUTPUT 1200 ml | |

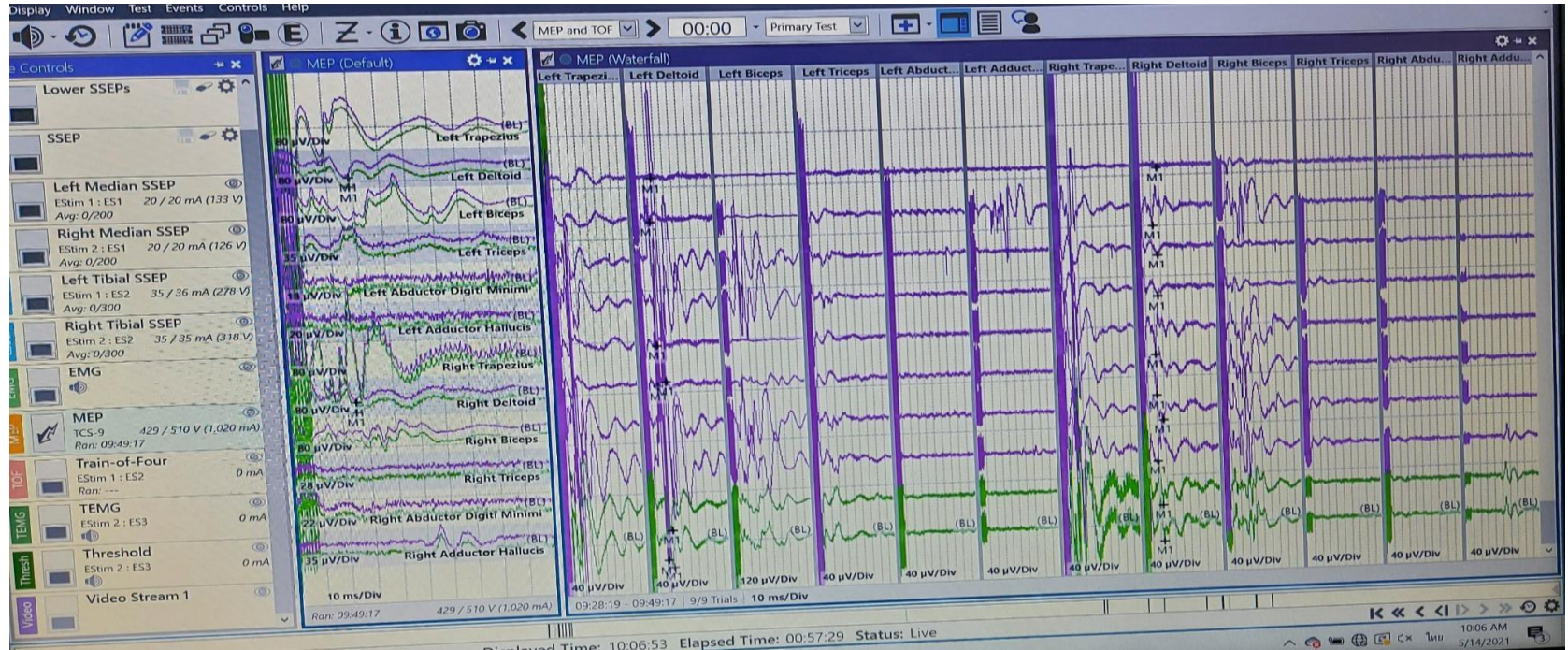
IV. CATH. NO. 22, 18, 22 SITE LH, RH, U. Neg.



MEPS & SSEP

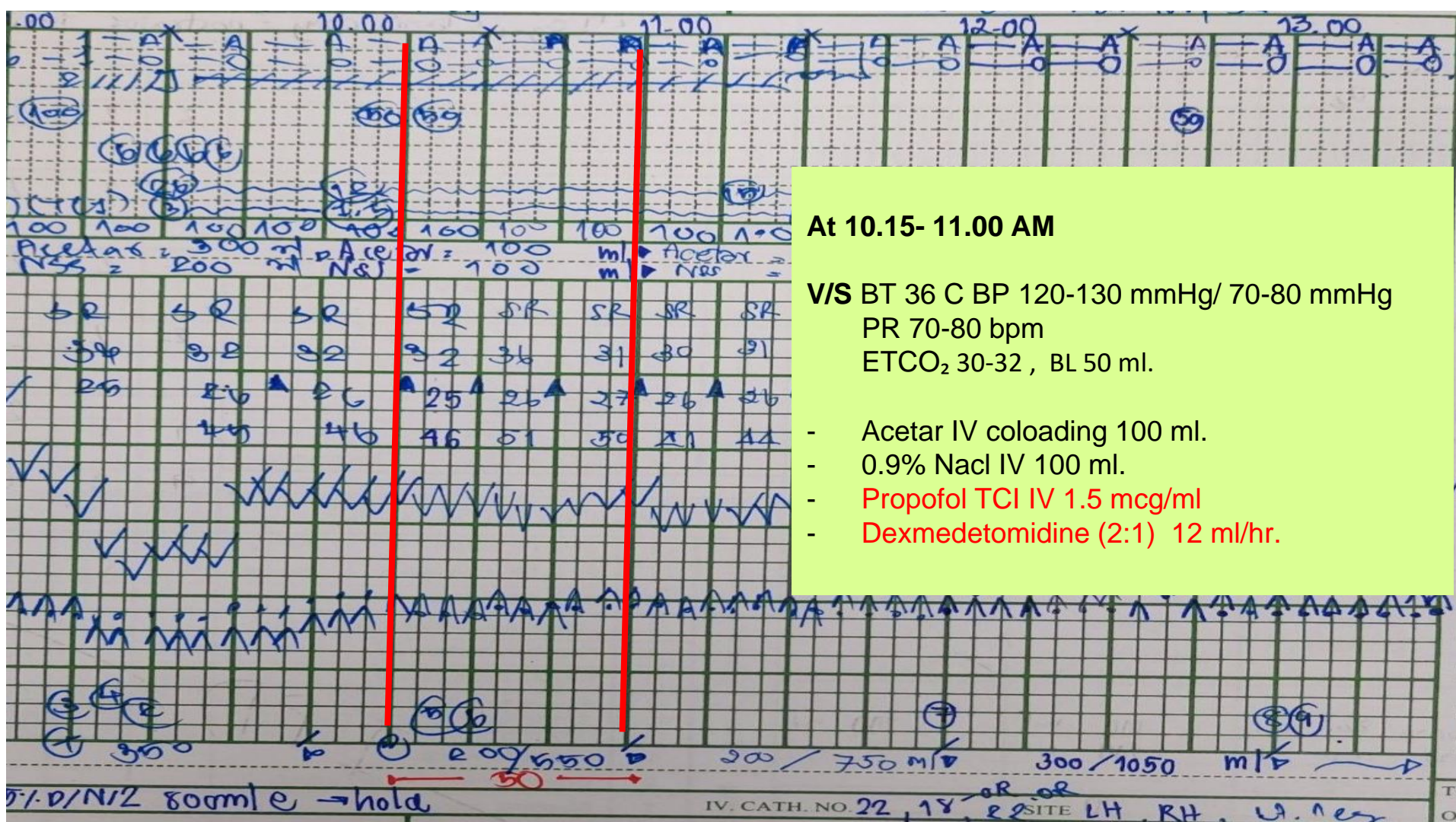


MEPS & SSEP



Management of acute evoked potential signal change

- Rule out surgical and equipment-related factor; communicate with surgeon and neuromonitoring team
- Reposition the patient (maintain neutral alignment of spinal column)
- Correct hypotension, metabolic abnormality, severe anemia, hypo-hyperthermia
- Turn off inhalation agent and switch to TIVA



At 10.15- 11.00 AM

V/S BT 36 C BP 120-130 mmHg/ 70-80 mmHg
 PR 70-80 bpm
 ETCO₂ 30-32 , BL 50 ml.

- Acetar IV coloding 100 ml.
- 0.9% Nacl IV 100 ml.
- Propofol TCI IV 1.5 mcg/ml
- Dexmedetomidine (2:1) 12 ml/hr.

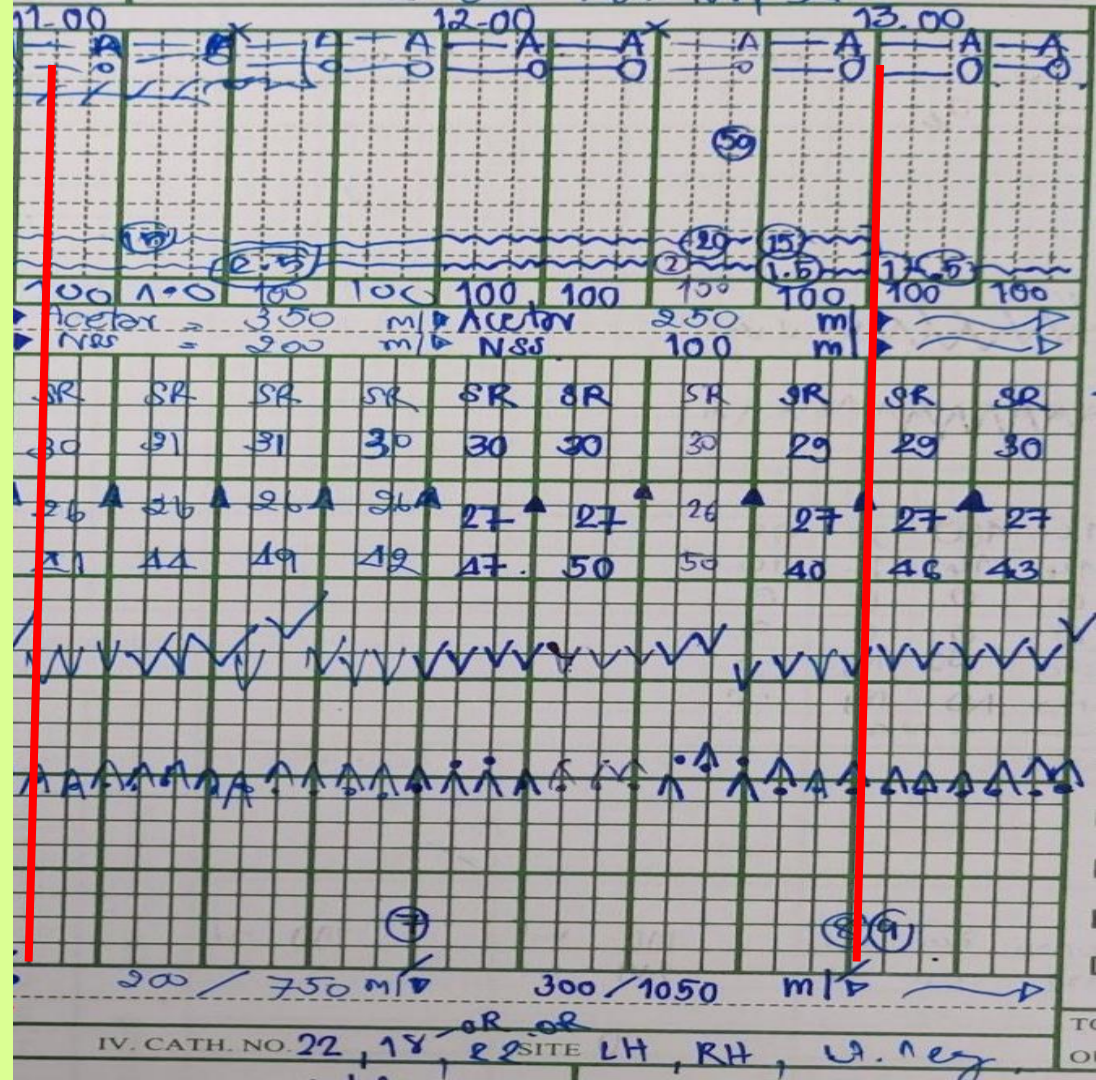
At 10.15 AM - 13.00 PM

V/S BT 36 C BP 120-130 mmHg/ 70-80 mmHg
 PR 70-80 bpm , BIS 41-50
 ETCO₂ 30-32

- Propofol TCI IV 1.5-2.5 mcg/ml
- Dexmedetomidine (2:1) 12 ml/hr.
- Paracetamol 1000 mg IV drip in 30 min
- Fentanyl 50 mcg
- Dexamethasone 4 mg IV by surgeon

At 13.00 – 13.15 PM (operation was done)

- MEPS & SSEP ending
- Discontinued dexmedetomidine (13.00 PM)
- Discontinued propofol TCI (13.30 PM)
- Ondansetron 8 mg IV



Decision to extubate

- Absence of airway edema
- Absence of neck hematoma
- No depressed mental status

| AGENTS/TIME | | 13.30 | 14.00 | |
|--------------------|-------|-------------------|---------------|-----|
| N ₂ O | Air=A | 1-A | | |
| O ₂ | =0 | 1-6 | 0 | 0 |
| Fentanyl | | mg | 0.3 | |
| O ₂ sat | | % | 100 | 100 |
| IV FLUID INTAKE | | | Acetor 200 ml | |
| | | | NSF 200 ml | |
| BP | C | 240 | 240 | 240 |
| V | | EKG | SR | SR |
| A | | | | SE |
| PULSE | 38 | 220 | 37 | 32 |
| | | ETCO ₂ | | |
| | 36 | 200 | | |
| START | | AP | 25 | 22 |
| ANES | 34 | 180 | | |
| Y | | BJS | 74 | 64 |
| | 32 | 160 | | |
| START | | 140 | | |
| | 30 | 120 | | |
| | 28 | 100 | | |
| END | | 80 | | |
| ANES | 26 | | | |
| | 24 | | | |
| TEMP | 22 | | | |
| | | | | |
| | | | | |
| URINE FC | | 150/1200ml | | |
| BLOOD | | | | |
| FLUID | | | | |

At 14.15 PM (operation was done)

- Off ETT
- Narcotic drug : fentanyl 300 µg
- Propofol TCI 2350 mg
- Dexmedetomidine 30 mcg
- Ephedrine 24 mg
- Fluid summary 2100 ml
(Crystalloid 2000 ml, ATB 100 ml)
- **Bleeding 100 ml**
- Urine output 1200 ml
- Operation time 5.15 hr.

Postoperative

Post operative consideration

- Neurological deterioration after surgery
- Postoperative airway obstruction
- Postoperative visual loss
- Multimodal analgesia

Post operative day1 (at ward)

- **S** : ผู้ป่วยตื่นดี ไม่มีไข้ การมองเห็นปกติ ปวดแผล ps 3/10 at rest ps 5/10 at movement
ไม่มีเสียงแหบ หายใจได้ปกติ อาการชาบริเวณแขนพอๆเดิม
- **O** : V/S BT 36.8 °c BP 110/80 mmHg PR 78 bpm RR 16 /min
Heart : normal S₁ S₂, no murmur
RS : clear, no adventitious sound
Neuro : E4V5M6, pupil 3 mmRTLBE, *motor gr V/V, decrease sensory C6-T1*
I/O : 200ml/4 hr. , RD : 120 ml, Hct 37%
- **A+P** : **OPLL with CSM S/P LM with laminectomy C3-6 PO day 1**
 - NPO
 - 5% DN/2 1000 ml iv 80 ml/hr.
 - morphine 3 mg IV q 6 hr.
 - Acupan 60 mg + NSS 500 ml IV drip in 24 hr. , ketolac 30 mg IV q 8 hr.

Post operative day 2

- **S** : ผู้ป่วยตื่นดี ไม่มีไข้ ไม่ปวดแผล ps 0-1/10 at rest ps 3/10 at movement ไม่มีอาการอ่อนแรง ชาพอๆเดิม
- **O** : V/S BT 36.3 °c BP 106/75 mmHg PR 79 bpm RR 16 /min
Neuro : E4V5M6, pupil 3 mmRTLBE, motor gr V/V, sensory intact all
decrease sensory C6-T1
- **A+P** : **OPLL with CSM S/P LM with laminectomy C3-6 PO day 2**
 - Step diet
 - off IV & foley catheter
 - กระตุ้น ambulation
 - Morphine 3 mg IV prn for pain q 6 hr. , Acupan 60 mg+ NSS 500 ml IV drip in 24 hr.

Thank you