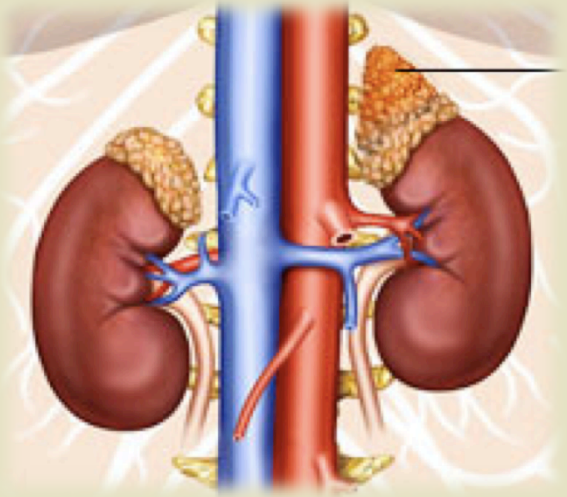
INTERESTING CASE

Pheochromocytoma



R2 เกียรติศักดิ์/อ.วิริยะ

CASE

- Case : Male 48 years old
- Diagnosis : Right malignant pheochromocytoma
- Operation : Enbloc resection
  [Rt.nephrectomy + tumor removal]

Male 48 years old

Chief complaint

ปวดศีรษะร่วมกับปวดท้อง

R1 History

History

- Present illness : - 5 month PTA มีอาการปวดหัว เวียนศีรษะ มีอาการคลื่นไส้อาเจียน ปวดท้องเป็นๆหายๆ มีอาการใจสั่นเป็นบางครั้ง รับประทานยาอาการไม่ดีขึ้น จึงมาโรงพยาบาล
- CT whole abdomen : Mass at right adrenal gland size 4.2*4.3*5.3 cm with local IVC invasion
- Dx. Malignant pheochromocytoma
- 1 wk PTA นัดมานอนโรงพยาบาลเพื่อเตรียมตัวก่อนการผ่าตัด

Past History

- No Allergic history
- No smoking
- No alcohol drinking
- No previous surgery

Past History

- Underlying disease
  - T_2DM [last HbA1C = 6.7%]
  - Hypertension
- Current medication
  - Doxazosin [2] 4-3-4-3 o pc >> 28 mg/day
  - Atenolol [100] 1 x 1 o pc
  - Amlodipine [10] 1 x 1 o pc

R1 Physical examination

Physical examination

- Vital Signs : BT 36 ^{o}c HR 68 bpm RR 16 b/min BP 133/78 mmHg

  BW 60 kg Height 165 cm BMI 22.2 kg/m^2
- Target blood pressure : Roizen criteria / recent recommend ?
- GA : A Thai male, good consciousness
- HEENT : not pale conjunctivae, anicteric sclerae
- Respiratory : lung clear and equal, no adventitious sound

Physical examination

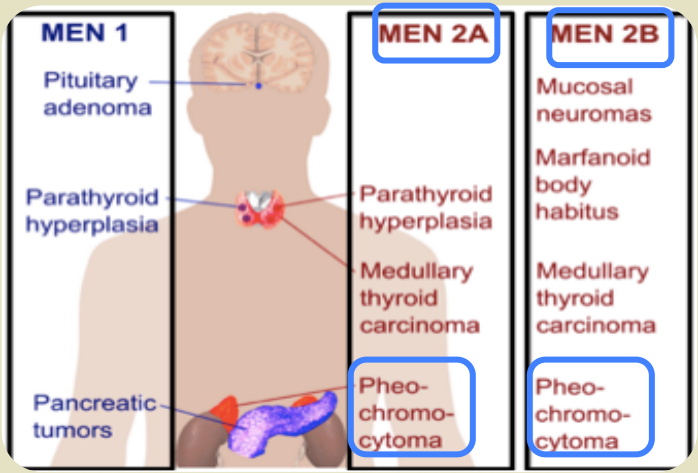
- CVS : normal S_1,S_2, no murmur, no heaving, no thrill
- Abdomen : soft, mild tender at RUQ
- Extremities : no pitting edema, no cafe-au-lait spot, no mucosal mass, no frecking
- Neuro : $E_4V_5M_6$, motor grade V all extremities, sensory intact

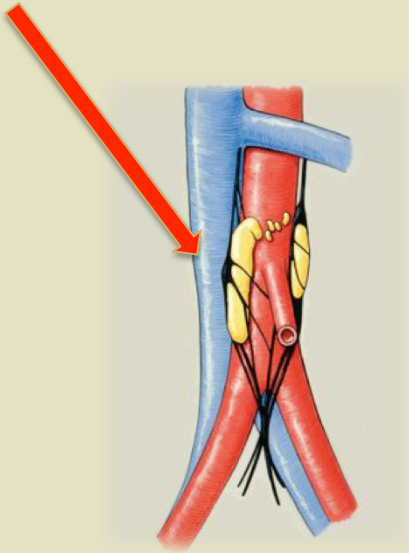
Airway examination

- Mallampati grade 2
- Thyromental distance > 6 cm.
- Mouth opening > 3 cm.
- No prominent incisor
- Upper lip bite test class I

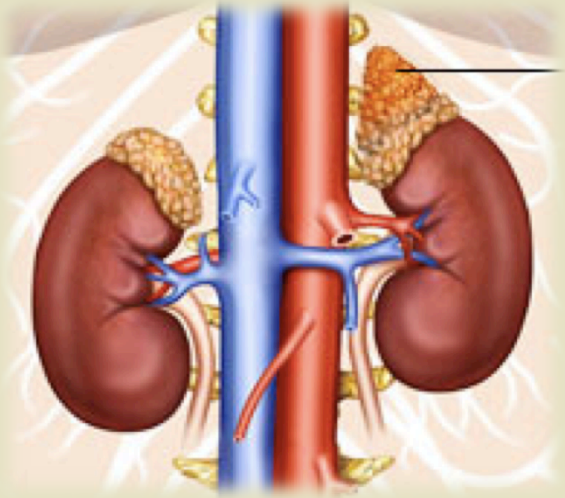
Pheochromocytoma

- Adrenal medullar secret : Epinephrine 80% and Norepinephrine 20%
- Pheochromocytoma : catecholamine-secreting tumor “rule of 10s”
  - Solitary tumor [single, usually right]
  - Isolate finding [90%], familial [10%] associate with MEN IIA or IIB
  - Location : adrenal medulla [80%], organ of Zuckerkandl, neck, thorax
  - Secrete : Epinephrine 15% and Norepinephrine 85%





Phechromocytoma



- Clinical presentation
  - Hypertension [continuous, spontaneous]
  - Triad: Headache, sweating, palpitation
  - Cardiovascular
    - Cardiomyopathy, heart failure, coronary vasoconstriction
- Hemodynamic sign depend on catecholamine secret
  - NE [85%] : alpha adrenergic predominant
    - Systolic and diastolic hypertension and reflex bradycardia
  - Epinephrine [15%] : Beta adrenergic predominant
    - Systolic hypertension, diastolic hypotension, tachycardia

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R1 investigation

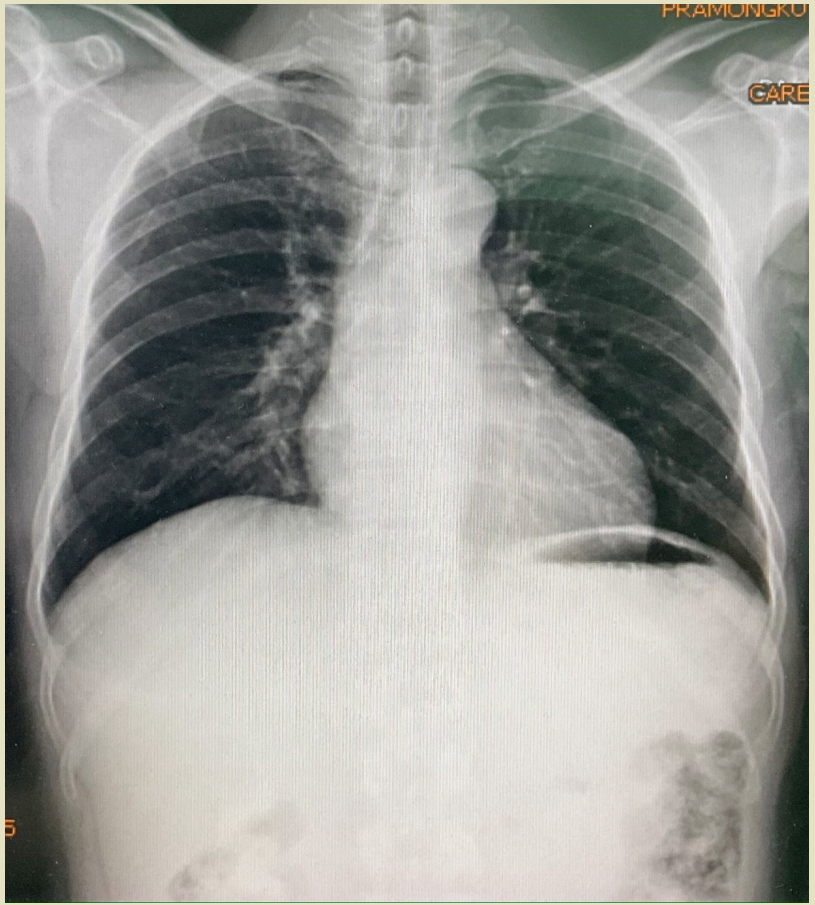
Investigation

- CBC : Hb 12.7 %, Hct 39.9 %, platelet 243,000 /mm^3
- BUN 18.9 Cr 0.88 mg/dl GFR 101.5 ml/min/1.73m^2
- Electrolytes : Na 142.7 K 4.11 Cl 105.4 HCO_3 24.6

  Ca 8.35 Mg 2.02 PO_4 3.25
- FBS : 133 mg %

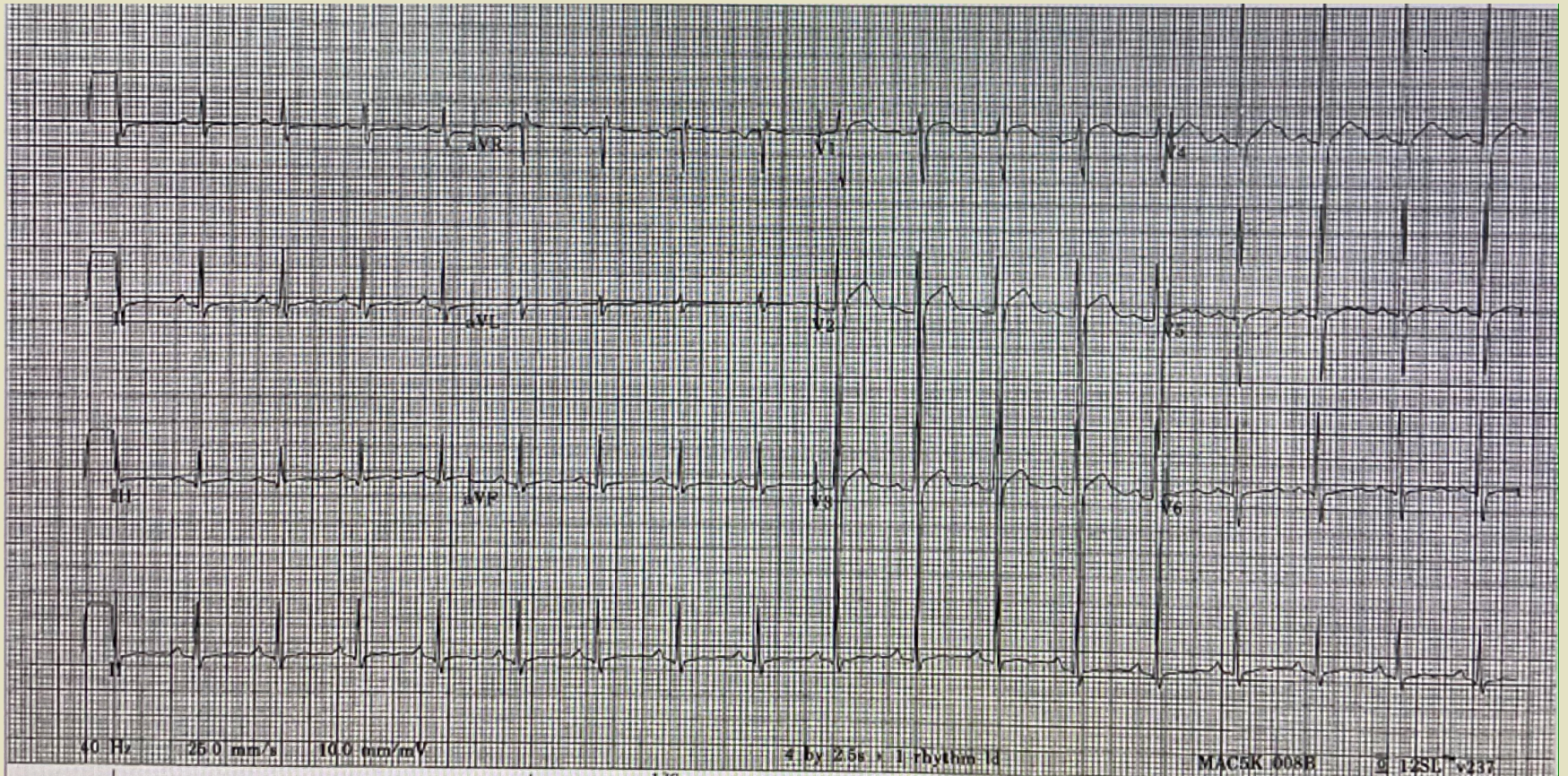
CXR

- No cardiomegaly
- No infiltration



EKG

Normal sinus rhythm rate 90 bpm, LVH by voltage criteria



Echocardiogram

- Concentric LVH
- Good overall LV systolic function
- LVEF 69% with no RWMA
- No significant valvular pathology

Pheochromocytoma

- Diagnosis
  - Urine vanillylmandelic acid
  - Urine metanephrine
  - Plasma free metanephrine
  - CT, MRI for tumor location

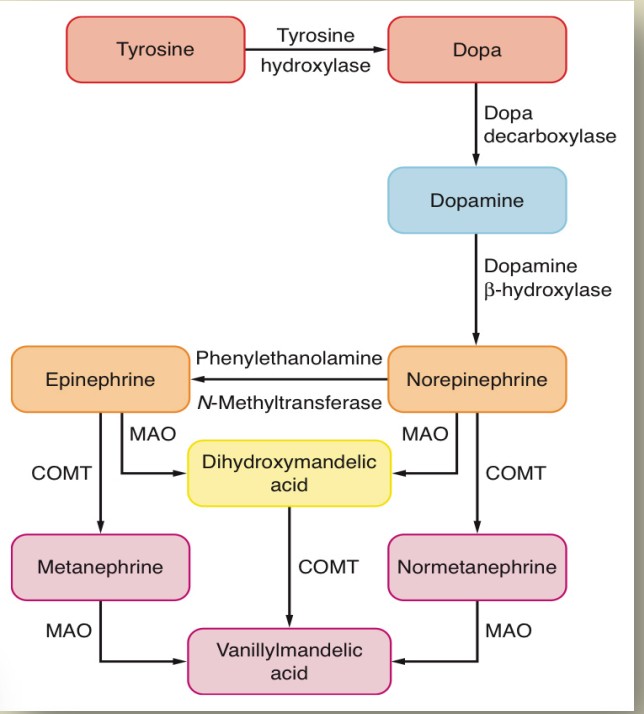


TABLE 32.4 Characteristics of Tests for Pheochromocytoma

Test/Symptoms	Sensitivity (%)	Specificity (%)	LIKELIHOOD RATIO Positive Result*	LIKELIHOOD RATIO Negative Result†
Vanillylmandelic acid excretion	81	97	27.0	0.20
Catecholamine excretion	82	95	16.4	0.19
Metanephrine excretion	83	95	16.6	0.18
Abdominal computed tomography	92	80	4.6	0.10
Concurrent paroxysmal hypertension, headache, sweating, and tachycardia‡	90	95	18.0	0.10

TABLE 23.7 Pattern of Catecholamine Production by Site of Pheochromocytoma

	Adrenal	Extraadrenal	Adrenal + Extraadrenal
Norepinephrine	61%	31%	8%
Epinephrine	100%	—	—
Norepinephrine + epinephrine	95%	—	5%

Adapted from Kaser H. Clinical and diagnostic findings in patients with chromaffin tumors: pheochromocytomas, pheochromoblastomas. *Recent Results Cancer Res*. 1990;118:97-105.

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Specific test

TABLE 32.4 Characteristics of Tests for Pheochromocytoma

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Concurrent paroxysmal hypertension, headache, sweating, and tachycardia‡	90	95	18.0	0.10

Miller 9th edition

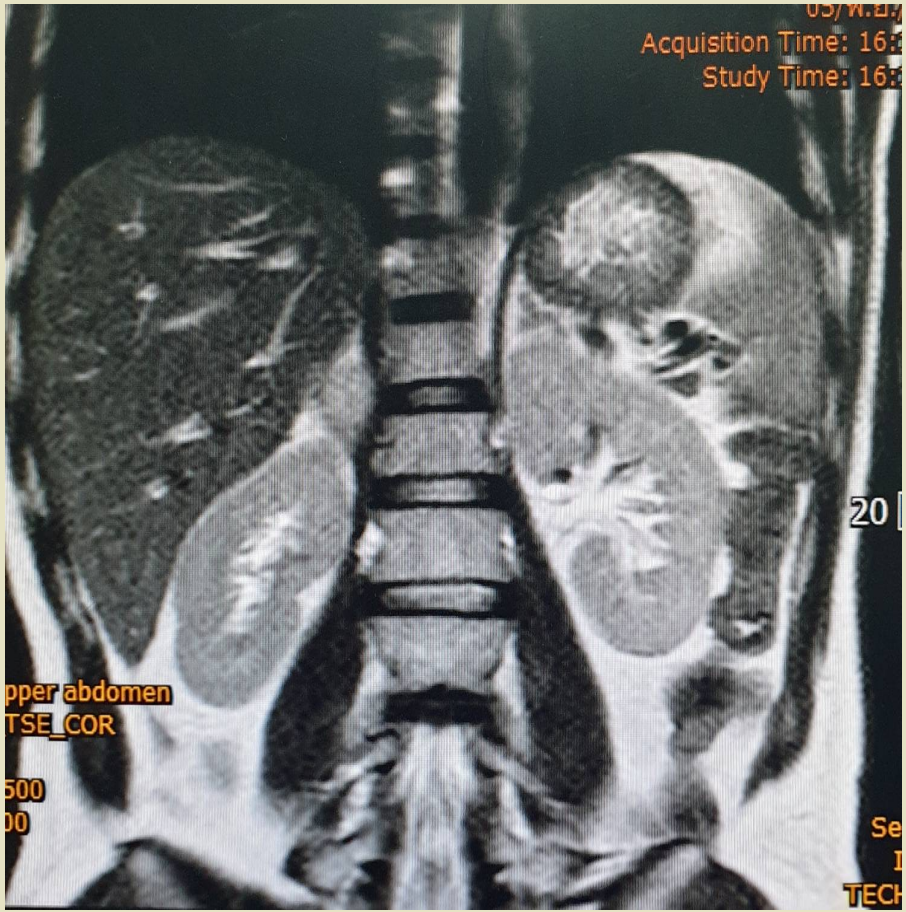
Specific test

24 hr Urine	Sample	Reference range
Volume	4800	-
Urine creatinine	19.78 mg/dl	-
Urine creatinine calculate	0.949 g/day	0.87 - 2.41
Normetanephrine	10,333.4 mcg/day	< 778.6
Metanephrine	3235.2 mcg/day	< 374.7

Plasma	Sample	Reference range
Metanephrine	396.18 pg/ml	0.00 – 96.64
Normetanephrine	> 1954 pg/ml	0.00 – 163.05

CT & MRI Abdomen

- Enhancing mass at Rt. Adrenal gland size 4.2*4.3*5.3 cm
- Invade posterior wall of IVC



I^{131} MIBG

- The scan at 24 and 48 hr after the injection of I-131 MIBG show no abnormal radio uptake at the whole body

Work up for associated anomalies

- MEN IIa/IIb
  - No evidence of parathyroid hyperplasia, normal PTH and Ca level
    no medullary thyroid cancer
- Von Hippel-Lindau syndrome (VHL)
  - No hemangioblastoma at liver and eye
- Neurofibromatosis type 1
  - No cafe-au-lait spot, no mucosal mass, no frecking

R1 Problem list and ASA classification

Problem list

1. Pheochormocytoma
2. DM type 2
3. Hypertension

ASA Class II

R2 Preoperative evaluation and preparation

Preoperative evaluation

- Patient factor
- Surgical factor
- Anesthetic factor

Patient factor

- DM type 2
  - Diet control : Last HbA1c 6.7%
  - No stiff joint syndrome, no peripheral neuropathy, normal kidney function
  - Plan f/u DTX intraoperative q 1-2 hr keep 110-180 mg %

Table 6. Variable Rate Continuous Insulin Infusion

BG mg/dl (mM)	If BG Increased from Previous Measurement	BG Decreased from Previous Measurement by Less Than 30 mg/dl	BG Decreased from Previous Measurement by Greater Than 30 mg/dl
> 241 (13.4)	Increase rate by 3 U/h	Increase rate by 3 U/h	No change in rate
211–240 (11.7–13.4)	Increase rate by 2 U/h	Increase rate by 2 U/h	No change in rate
181–210 (10–11.7)	Increase rate by 1 U/h	Increase rate by 1 U/h	No change in rate
141–180 (7.8–10)	No change in rate	No change in rate	No change in rate
110–140 (6.1–7.8)	No change in rate	Decrease rate by ½ U/h	Hold insulin infusion
100–109 (5.5–6.1)	1. Hold insulin infusion 2. Recheck BG hourly 3. Restart infusion at ½ the previous infusion rate if BG > 180 mg/dl (10 mM)		
71–99 (3.9–5.5)	1. Hold insulin infusion 2. Check BG every 30 minutes until BG > 100 mg/dl (5.5 mM) 3. Resume BG checks every hour 4. Restart infusion at ½ the previous infusion rate if BG > 180 mg/dl (10 mM)		
70 (3.9) or lower	If BG = 50–70 (2.8–3.9 mM), 1. Give 25 ml D50 2. Repeat BG checks every 30 min until BG > 100 mg/dl (5.5 mM) If BG < 50 mg/dl (2.8 mM), 1. Give 50 ml D50 2. Repeat BG every 15 min until > 70 mg/dl (3.9 mM) 3. When BG > 70 mg/dl, check BG every 30 min until > 100 mg/dl (5.5 mM). Repeat 50 ml D50 dose if BG < 50 mg/dl a second time and start D10 infusion 4. After BG > 100 mg/dl (5.5 mM), resume hourly BG check Restart infusion at ½ the previous infusion rate if BG > 180 mg/dl (10 mM)		

Perioperative target blood glucose (BG) 140 to 180 mg/dl (7.8 to 10 mM).
1. If BG > 180 mg/dl (10 mM), start insulin infusion.
2. Consider bolus dose (BG = 100/40).
3. Start rate at BG/100 = U/h.
4. Check BG hourly and correct per table.

D10 = 10% dextrose solution; D50 = 50% dextrose solution.

Perioperative hyperglycemia management : anesthesiology 2017

Preoperative evaluation

- Arterial pressure control and volume expansion
- Heart rate and arrhythmia control
- Assessment and optimize of myocardial function
- Reversal of glucose and electrolyte disturbances
- Assessment adequate optimization [Roizen criteria]

Perioperative care of pheochromocytoma, BJA Education 2016

Arterial pressure control and volume expansion

- α antogonist : beginning before surgery 10-14 days to achieve
  - Arterial pressure control
  - Revesal of chronic circulating volume depletion
  - ↓ Mortality rate 45% >> 0-3%
- Calcium channel blocker [alternative drugs]

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Heart rate and arrhythmia control

- Tachyarrhythmias may result from epinephrine/dopamine-secreting tumors or secondary to α antagonist
- β_1-Antagonist e.g. Atenolol, Metoprolol [prefer use]
- !!! Must start after α-blockade : avoid unoppose α mediated vasoconstriction

Perioperative care of pheochromocytoma, BJA Education 2016

Assessment and optimize of myocardial function

- ECG : Ventricular hypertrophy, tachyarrhythmias, myocardial ischemia
- Echocardiogram : Diastolic dysfuction, left ventricular systolic dysfunction , hypertrophic cardiomyopathy

Concentric LVH

Good overall LV systolic function

LVEF 69% with no RWMA

No significant valvular pathology

Perioperative care of pheochromocytoma, BJA Education 2016

Assessment adequate optimization [Roizen criteria]

1. No arterial blood pressure > 165/90 mmHg for 48 hr preoperative
2. Orthostatic hypotension is acceptable if BP ≥ 80/45 mmHg
3. ECG free of ST-T change
4. PVC ≤ 1 in every 5 minutes

This patient good preparation

Miller's 9th edition

Assessment adequate optimization [Up to date]

1. Preparation often take between 10-14 days before SX
2. Seated : BP ≤ 120/80 mmHg : HR 60-70 bpm
3. Standing : SBP ≥ 90 mmHg : HR 70-80 bpm

This patient good preparation

Up to date

Patient preparation

- BP baseline : 110-130/55-80 mmHg, no orthostatic hypotension
- HR baseline : 70-85 bpm
- Current medication start medication 8 wk before SX
- Admit 3 days before SX
  - Doxazosin [2] 4-3-4-3 o pc >> 28 mg/day
  - Atenolol [100] 1 x 1 o pc [control HR]
  - Amlodipine [10] 1 x 1 o pc

Anesthetic consideration
R3

Anesthetic consideration

- Preoperative phase
- Intraoperative phase
- Postoperative phase

Anesthetic consideration

- Preoperative phase
  - Arterial pressure control and volume expansion >> α antagonist
  - Heart rate and arrhythmia control >> β blocker
  - Assessment and optimize of myocardial function >> Echocardiogram
  - Reversal of glucose and electrolyte disturbances >> LAB
  - Assessment adequate optimization [Roizen criteria] >> BP & EKG

Perioperative care of pheochromocytoma, BJA Education 2016

Anesthetic consideration

- Intraoperative phase : Risk factor hemodynamic unstable
  - Large tumor size [> 4 cm] >> 4.2*4.3*5.3 cm
  - High BP after treat with α blocker [MAP > 100 mmHg]
  - Postural hypotension > 10 mmHg
  - High pre-induction plasma NE level

Plasma	Sample	Reference range
Metanephrine	396.18 pg/ml	0.00 – 96.64
Normetanephrine	> 1954 pg/ml	0.00 – 163.05

Risk factor for hemodynamic instability during surgery for pheochromocytoma, J Clin Endocrinol Metab, Feb 2010

Anesthetic consideration

- Intraoperative phase
  - Anxiolytic therapy [pre medication fentanyl , midazolam]
  - Monitoring : A-line for real time arterial pressure
    - C-line for drug infusion
  - Adequate depth of anesthesia [Target MAC,BIS]
  - Avoid drug-induced catecholamine release
  - Avoid catecholamine release induced by anesthetic or surgical maneuver

Perioperative care of pheochromocytoma, BJA Education 2016

Anesthetic consideration

- Minimize hemodynamic response to tumor handling
  - Communication with surgeon [manipulate tumor/ devascularization]
  - One step before : Antihypertensive drug, vasopressor or volume replacement
- Treat episode of hypotension, particularly after tumor devascularization

Perioperative care of pheochromocytoma, BJA Education 2016

TABLE 22.3 Suggested Drugs to Avoid in Patients with Pheochromocytoma

Droperidol	
Morphine	Fentanyl
Atracurium	Cisatracurium
Pancuronium	
Ketamine	
Ephedrine	Norepinephrine
Halothane	
Cocaine	
Metoclopramide	Ondansetron

Yao & Artusio's anesthesiology 9th edition

TABLE 22.4 Intravenous Drugs to Control Intraoperative Hypertension

Drug	Dose
Nicardipine	Infusion of 5–15 mg/hr. Increase by 2.5 mg/hr every 15 min to effect.
Phentolamine	1-mg IV boluses every 5–10 min. Start infusion 0.1–2 mg/min and titrate to effect.
Nitroglycerin	20–40 μg boluses every 5–10 min to effect. Infusion 5–20 μg/min initial (maximum dose 400 μg/min)
Nitroprusside	Infuse initially with 0.5–1.5 μg/kg/min to maximum of 8 μg/kg/min over 1–3 hr.
Propranolol	1-mg boluses to total 10 mg
Esmolol	Load with 5–10-mg boluses and infuse at 0.25–0.5 μg/kg/min.
Labetalol	5–10-mg boluses every 20–30 min to maximum dose 150 mg

Yao & Artusio's anesthesiology 9th edition

Anesthetic consideration

- Postoperative phase
  - Monitoring : A-line for real time arterial pressure at least 24 hr
  - Hypertension [differential cause]
    - Pain, coexisting hypertension, urinary retension, fluid overload
    - Ligation renal artery >> hyper-reninism
    - Incomplete tumor resection

Perioperative care of pheochromocytoma, BJA Education 2016

Anesthetic consideration

- Postoperative phase
  - Adequate pain control
  - Stable hemodynamic
  - Control hypoglycemia : rebound hyper-insulinism

Perioperative care of pheochromocytoma, BJA Education 2016

Preoperative preparation

General preparation

- Informed consent
- NPO AMN
- Antibiotic : cefazolin 2 gm IV
- Large bore IV [No.16*1]
- Warm IV fluids
- G/M PRC 2 unit
- Standard monitoring
- IV anesthetic drugs
- Anesthetic machine
- Intubation equipment

  [video laryngoscope]
- Force air warmer

Specific preparation

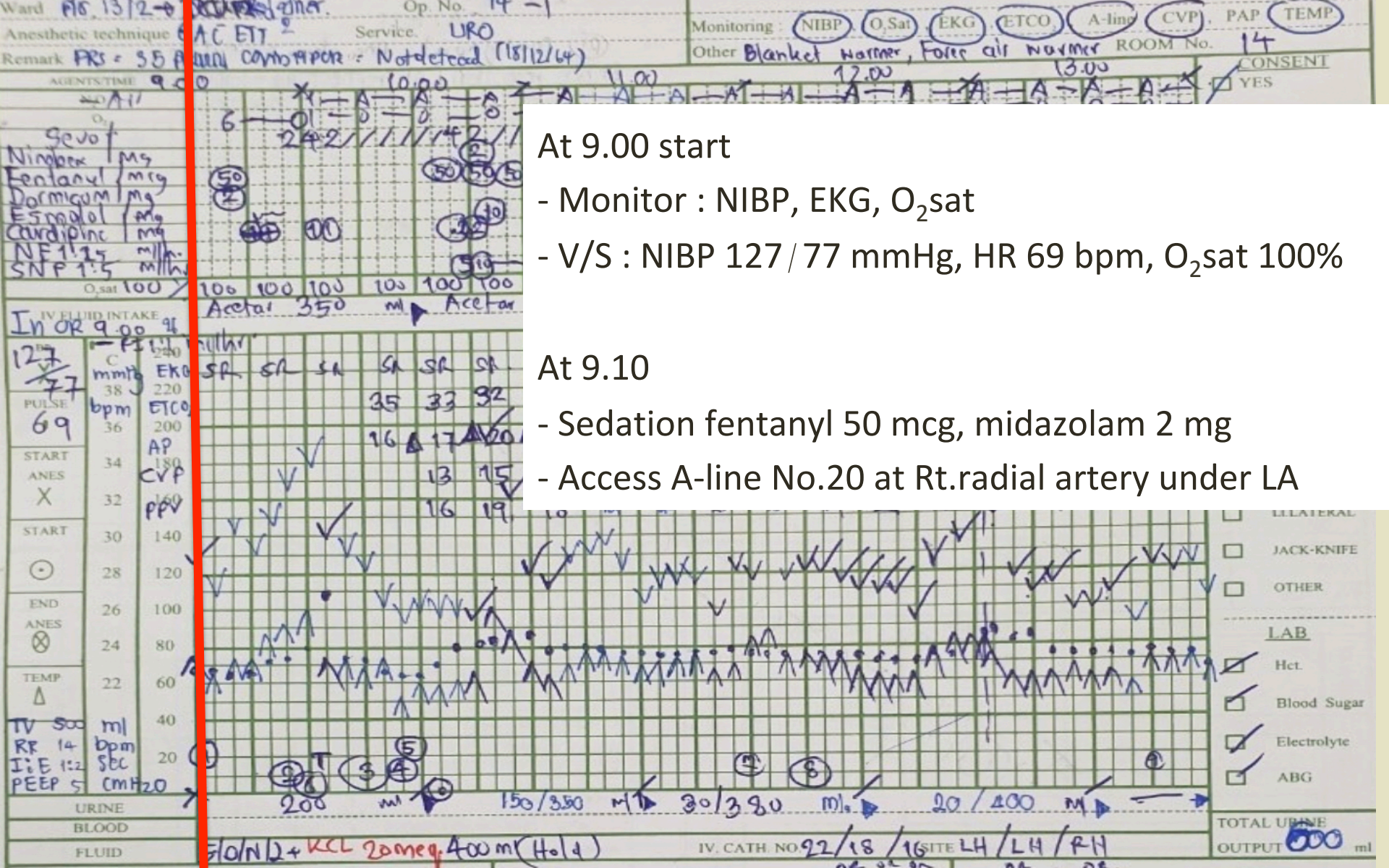
- Invasive monitoring : A-line [No.20] , C-line [8.5 fr. 4 lumens]
- Antihypertensive drugs : SNP, Nicardipine, NTG, Esmolol
- Vasopressor : Norepinephrine
- Post operative ICU

Sodium Nitroprusside [SNP]

- ขนาดและวิธีการใช้
  - ละลาย 50 mg SNP 5% D/W
  - เจือจางโดยผสม 5%D/W [250, 500, 1000 ml] >> Conc ไม่เกิน 50 mcg/ml
  - ป้องกันแสงโดยใช้ กระดาษ ผ้า หรือ aluminum foil หุ้มไว้

    [สียาจะเข้มขึ้น, ส้มน้ำตาลเข้ม, น้ำเงิน] ห้ามใช้เนื่องจาก >> Cyanide
- Toxicity : Cyanide, Thiocyanate, Methemoglobinemia

OPERATION

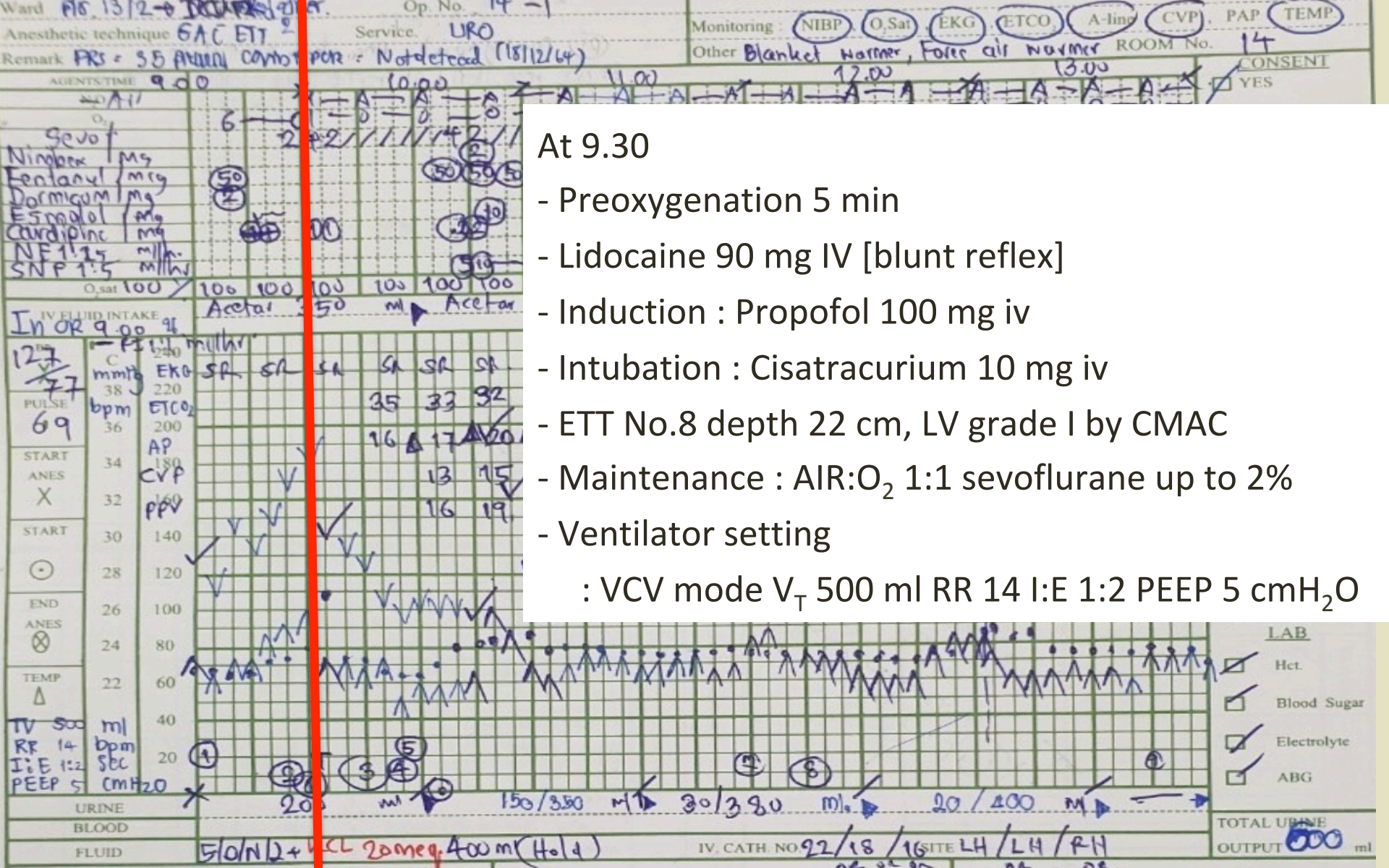


At 9.00 start

- Monitor : NIBP, EKG, O_2sat
- V/S : NIBP 127 / 77 mmHg, HR 69 bpm, O_2sat 100%

At 9.10

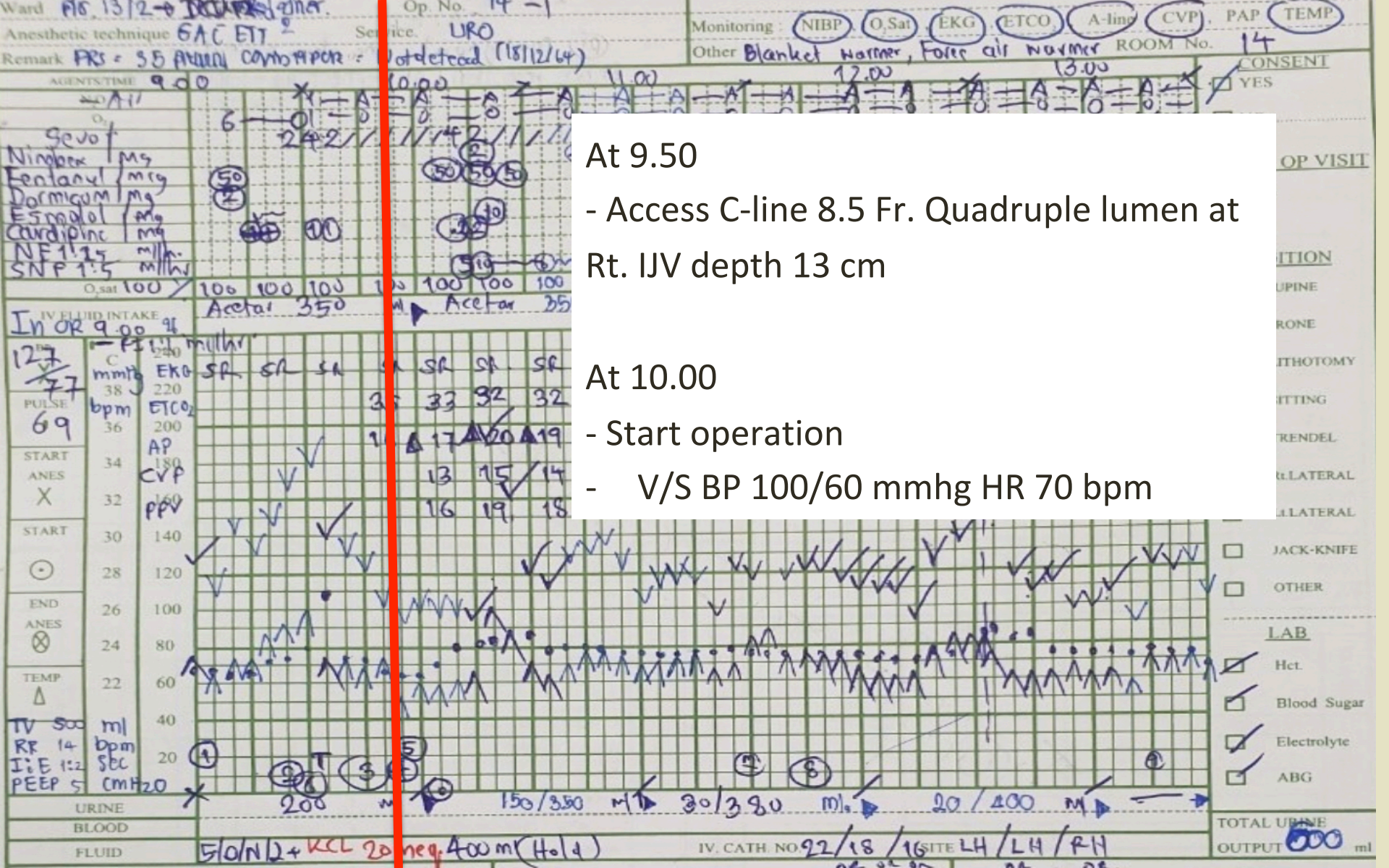
- Sedation fentanyl 50 mcg, midazolam 2 mg
- Access A-line No.20 at Rt.radial artery under LA



At 9.30

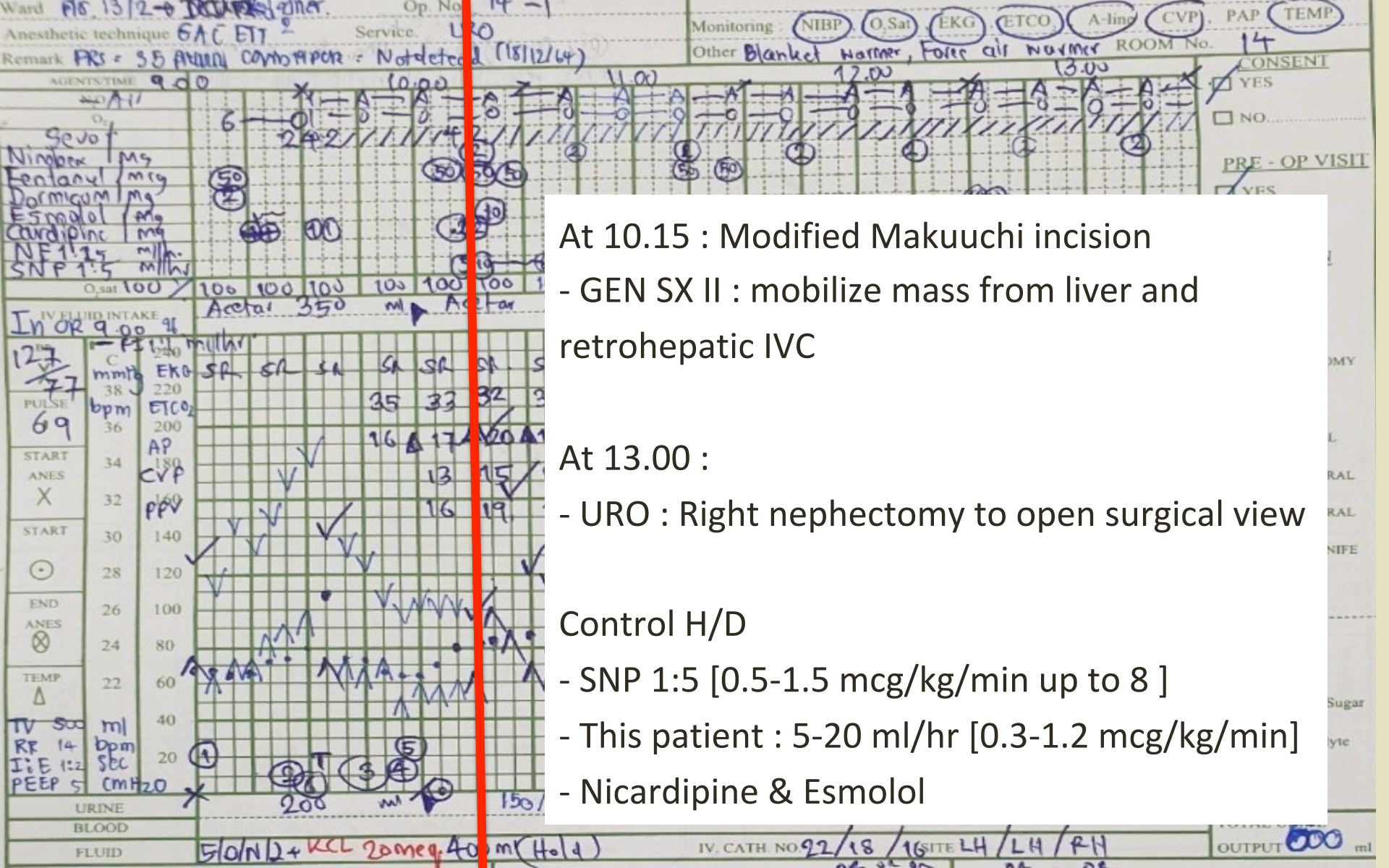
- Preoxygenation 5 min
- Lidocaine 90 mg IV [blunt reflex]
- Induction : Propofol 100 mg iv
- Intubation : Cisatracurium 10 mg iv
- ETT No.8 depth 22 cm, LV grade I by CMAC
- Maintenance : AIR:O_2 1:1 sevoflurane up to 2%
- Ventilator setting

  : VCV mode V_T 500 ml RR 14 I:E 1:2 PEEP 5 cmH_2O


At 9.50
- Access C-line 8.5 Fr. Quadruple lumen at Rt. IJV depth 13 cm
At 10.00
- Start operation
- V/S BP 100/60 mmhg HR 70 bpm

ABG : intra operative

เวลา	°C	Hb/Hct	pH	pCO_2	pO_2	O_2Sat	HCO_3	BE	Na	K	Ca	ACT	DTX	Treatment
10.10	37°C	10.7/32	7.46	33	266	100%	23.4	0.1	140	3.9	1.15	–	123	
11.30		10.7/32	7.44	33	271	100	21.8	-1.9	139	3.1	1.07	–	154	RI 5 U IV
13.00		11.5/34	7.46	32	320	100	22.7	-0.5	143	3.2	1.17	–	73	
14.00		11.5/35	7.45	35	309	100	24.1	0.1	142	3.3	1.15	–	49	50% Glucose 2amp
14.30													109	
15.30		11.5/34	7.42	37	302	100	23.6	-0.6	140	3.5	1.12	–	128	
16.45		9.9/30	7.43	35	263	100	22.5	-1.5	137	3.7	1.09	–	129	10% calcium Gluconate



At 10.15 : Modified Makuuchi incision

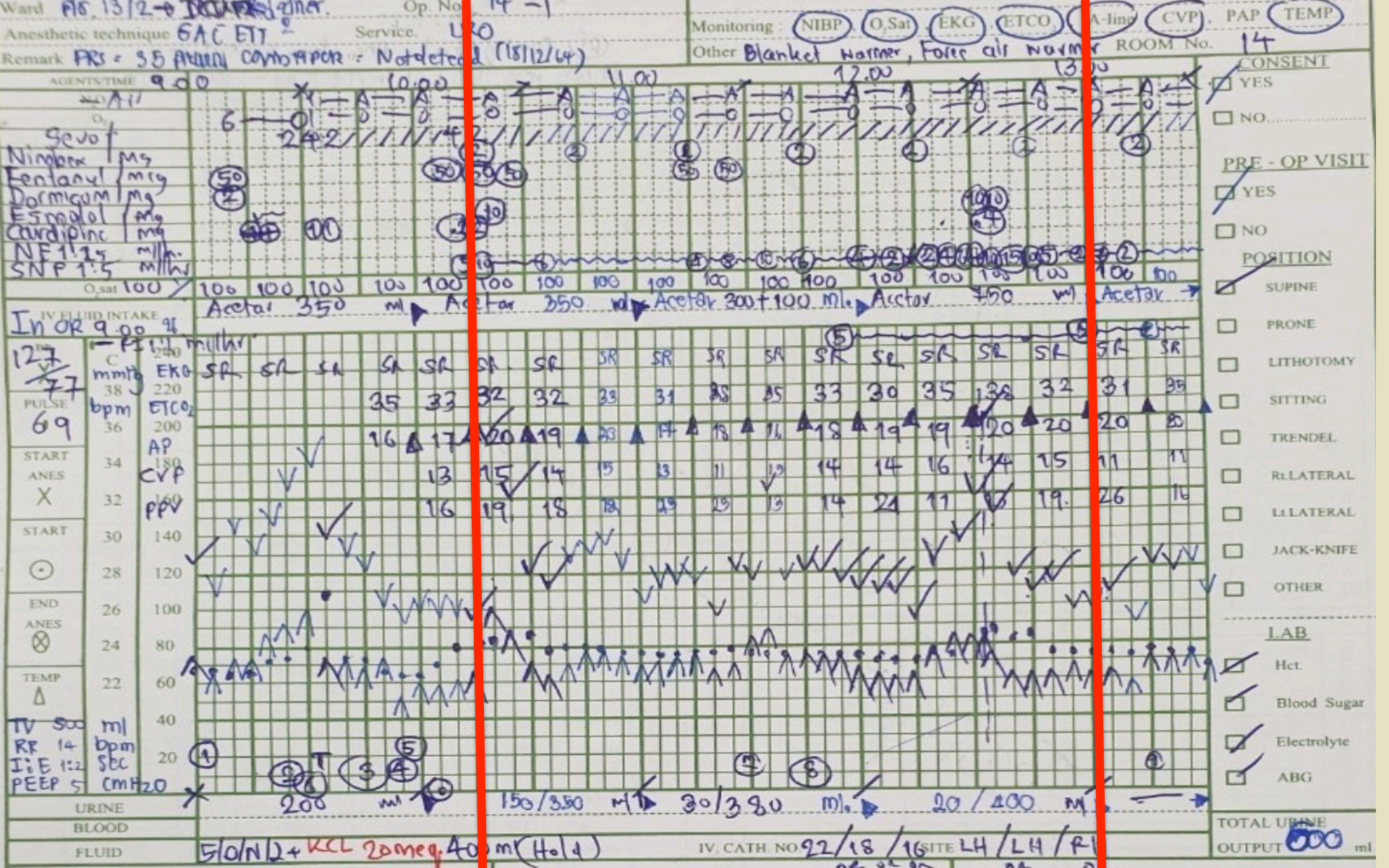
- GEN SX II : mobilize mass from liver and retrohepatic IVC

At 13.00 :

- URO : Right nephectomy to open surgical view

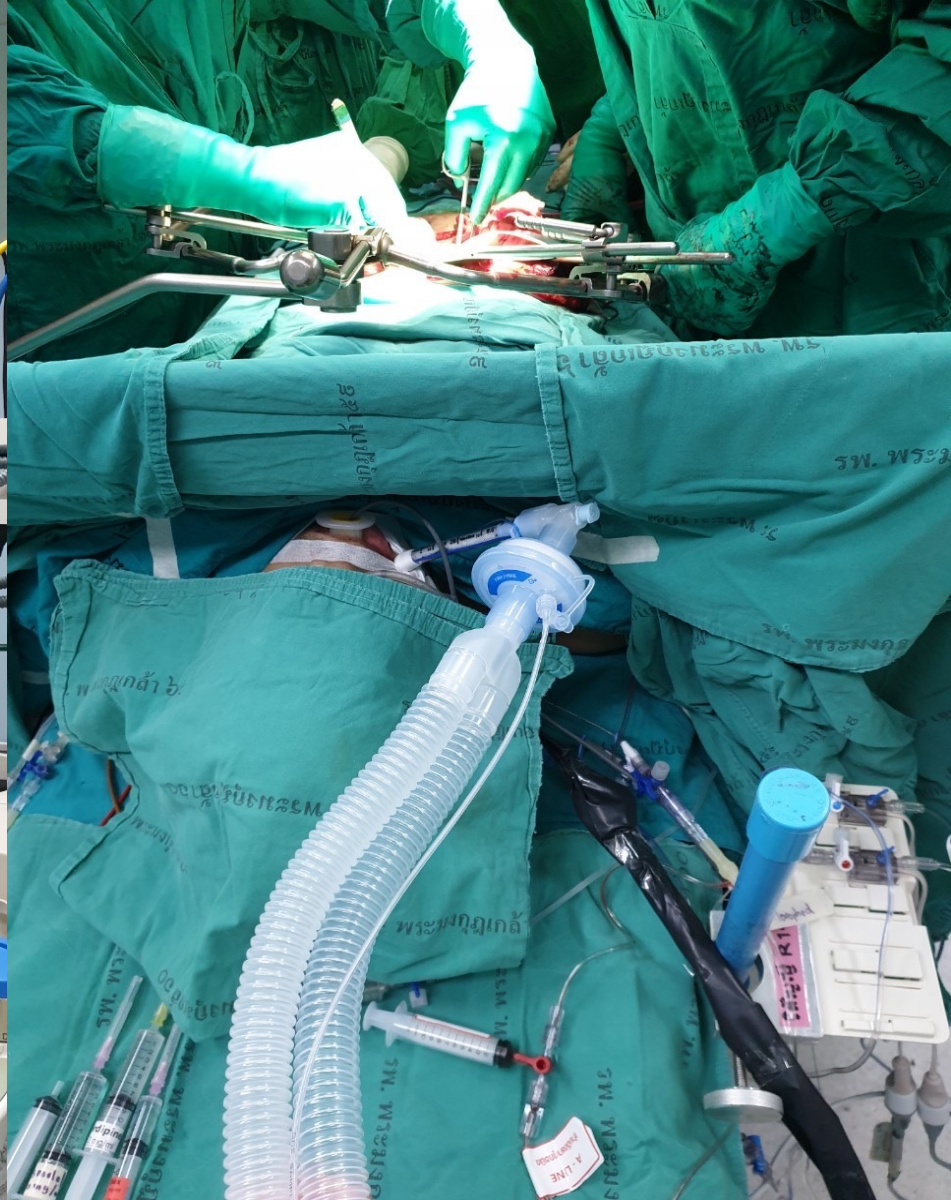
Control H/D

- SNP 1:5 [0.5-1.5 mcg/kg/min up to 8]
- This patient : 5-20 ml/hr [0.3-1.2 mcg/kg/min]
- Nicardipine & Esmolol

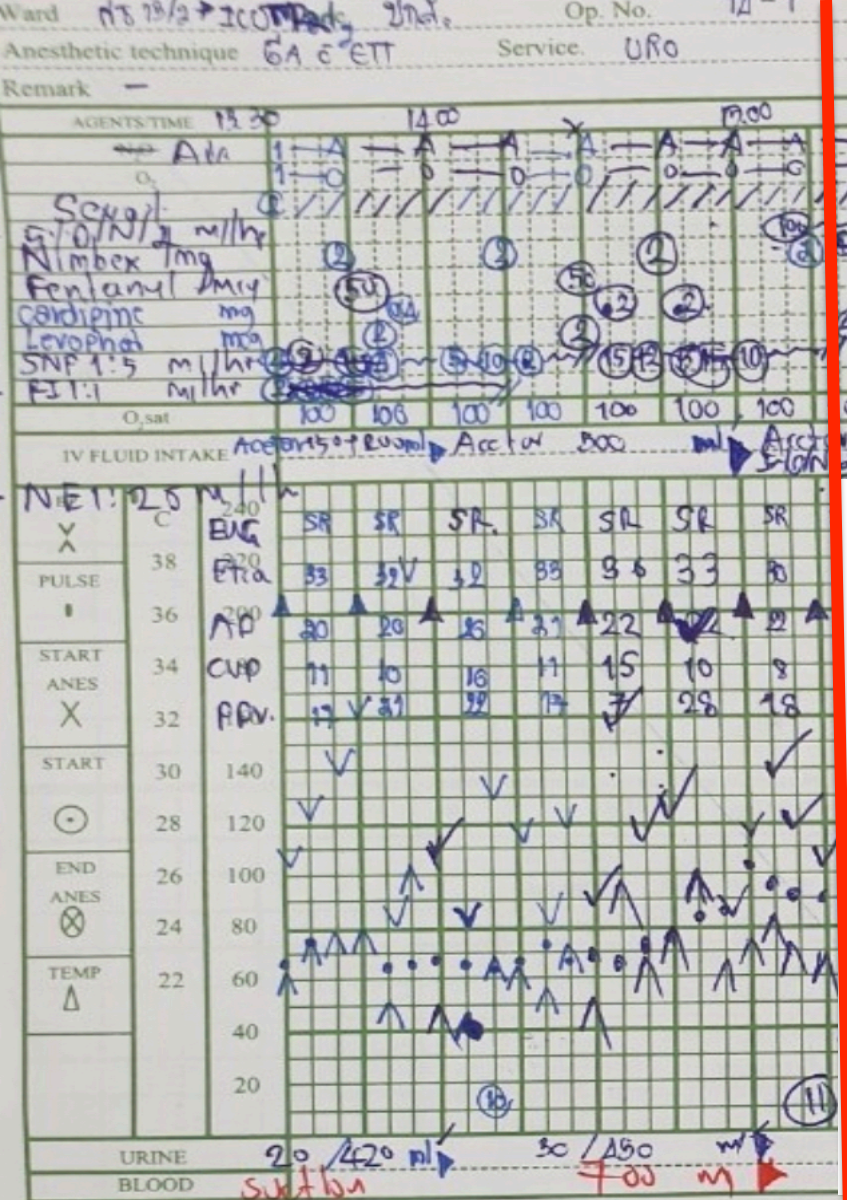

Ward
Anesthetic technique GAC ETT
Service
Remark PRS = 35
Monitoring NIBP O2Sat EKG ETCO2 A-line CVP PAP TEMP
Other Blanket Warmer, Forec air Warmer
ROOM No. 14
CONSENT
YES
NO
PRE - OP VISIT
YES
NO
POSITION
SUPINE
PRONE
LITHOTOMY
SITTING
TRENDEL
Rt.LATERAL
Lt.LATERAL
JACK-KNIFE
OTHER
LAB
Hct.
Blood Sugar
Electrolyte
ABG
AGENTS/TIME
Sevo
Nimbex
Fentanyl
Dormicum
Esmolol
Cordipine
NF 1:1
SNP 1:5
O2sat
IV FLUID INTAKE
In OR 9.00
PULSE
START ANES
END ANES
START
TEMP
TV
RR
I:E
PEEP
EKG
ETCO2
AP
CVP
PPV
URINE
BLOOD
FLUID
TOTAL URINE OUTPUT
IV. CATH. NO
SITE

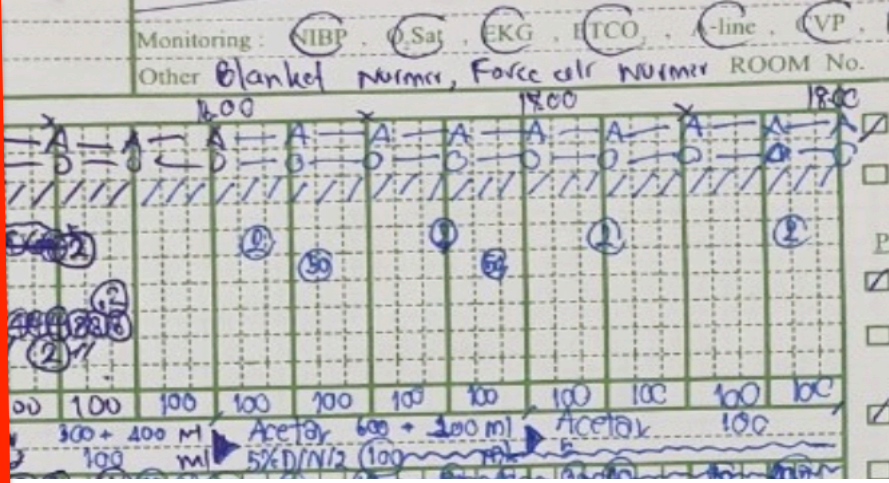
ABG : intra operative

เวลา	°C	Hb/Hct	pH	pCO_2	pO_2	O_2Sat	HCO_3	BE	Na	K	Ca	ACT	DTX	Treatment
10.10	37°C	10.7/32	7.46	33	266	100%	23.4	0.1	140	3.9	1.15	–	123	
11.30		10.7/32	7.44	33	271	100	21.8	-1.9	139	3.1	1.07	–	254	RI 5 U IV
13.00		11.5/34	7.46	32	320	100	22.7	-0.5	143	3.2	1.17	–	73	
14.00		11.5/35	7.45	35	309	100	24.1	0.1	142	3.3	1.15	–	49	50% Glucose 2 amp
14.30		———										———	109	
15.30		11.5/34	7.42	37	302	100	23.6	-0.6	140	3.5	1.12	–	128	
16.45		9.9/30	7.43	35	263	100	22.5	-1.5	137	3.7	1.09	–	129	10% calcium Gluconate


74
126/74 (91)
(15)
100
PHILIPS
Desflurane



4-0
PROLENE



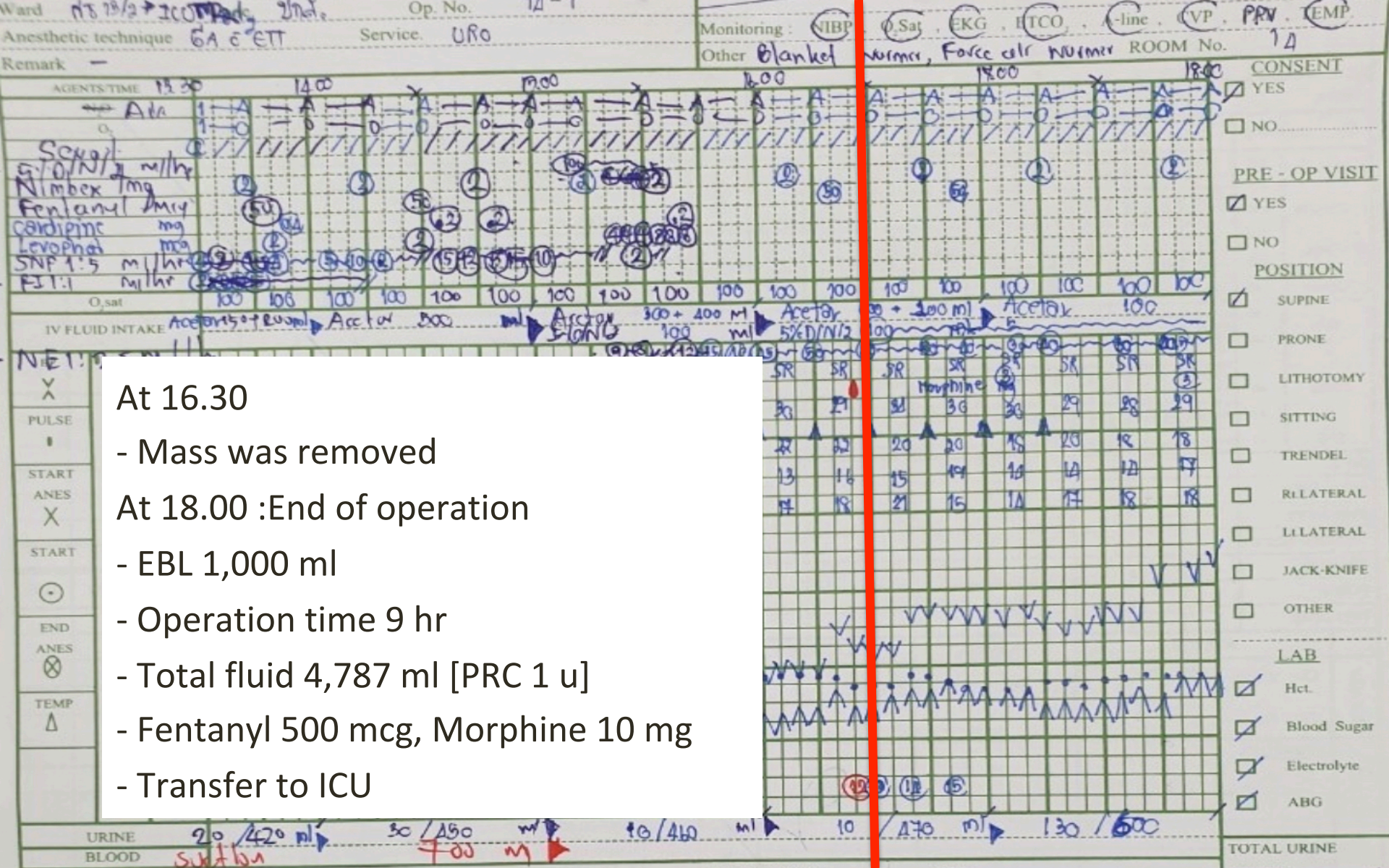


At 15.15 :

- Vascular surgeon : mobilize mass from posterior wall of IVC

Control H/D and communicate with SX

- SNP 1:5 [0.5-1.5 mcg/kg/min up to 8]
- This patient : 5-20 ml/hr [0.3-1.2 mcg/kg/min]
- Levophed bolus &infusion 1:25 up to 40 ml/hr
- Up to 0.4 mcg/kg/min



At 16.30

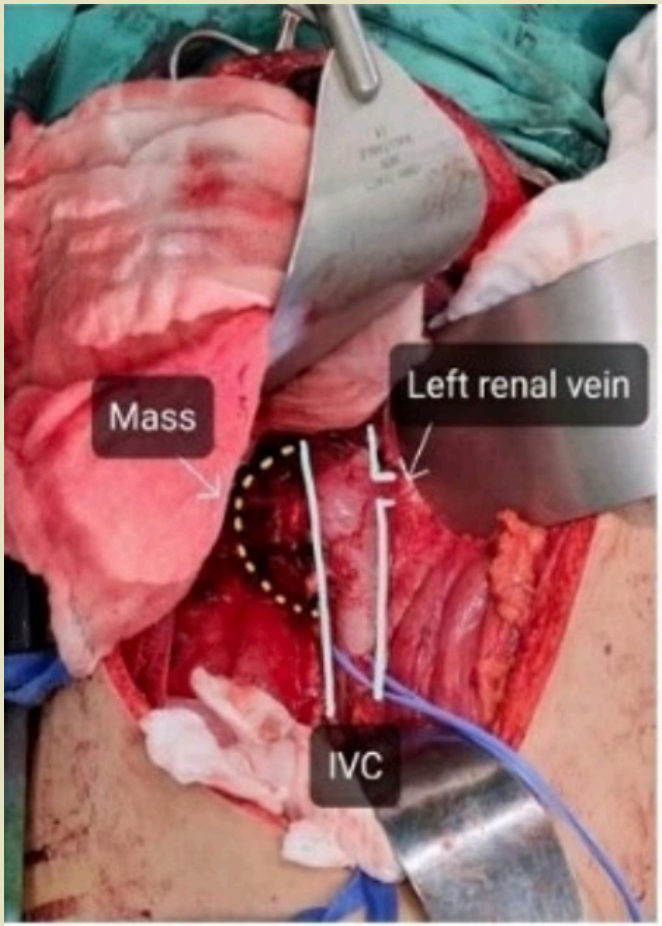
- Mass was removed

At 18.00 :End of operation

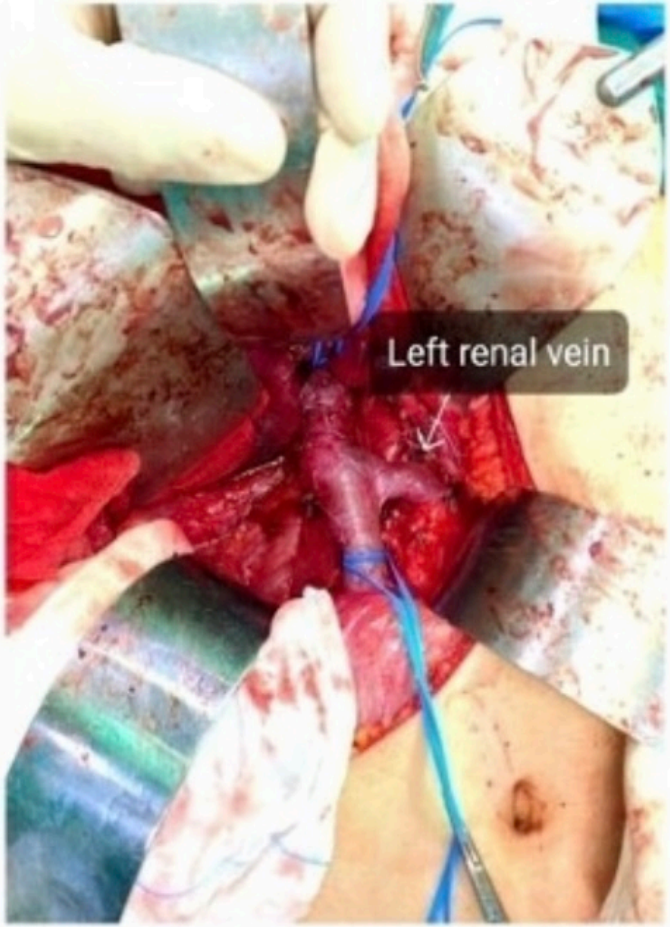
- EBL 1,000 ml
- Operation time 9 hr
- Total fluid 4,787 ml [PRC 1 u]
- Fentanyl 500 mcg, Morphine 10 mg
- Transfer to ICU

ABG : intra operative

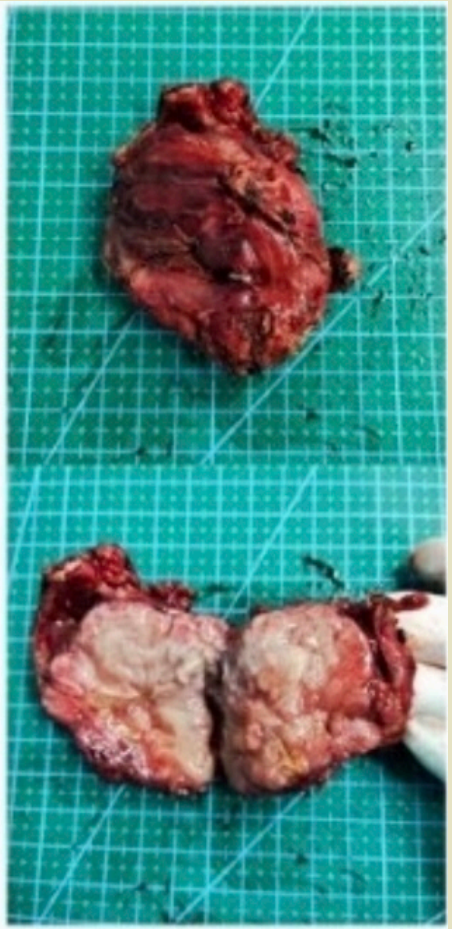
เวลา	°C	Hb/Hct	pH	pCO_2	pO_2	O_2Sat	HCO_3	BE	Na	K	Ca	ACT	DTX	Treatment
10.10	37°C	10.7/32	7.46	33	266	100 %	23.4	0.1	140	3.9	1.15	–	123	
11.30		10.7/32	7.44	33	271	100	21.8	-1.9	139	3.1	1.07	–	154	RI 5 U IV
13.00		11.5/34	7.46	32	320	100	22.7	-0.5	143	3.2	1.17	–	73	
14.00		11.5/35	7.45	35	309	100	24.4	0.1	142	3.3	1.15	–	49	50% Glucose 2 amp
14.30		----------										----------	109	
15.30		15/44	7.42	37	302	100	23.6	-0.6	140	3.5	1.12	–	128	
16.45		9.9/30	7.43	35	263	100	22.5	-1.5	137	3.7	1.09	–	129	10% calcium Gluconate



Tumor abut IVC



After tumor removal



Specimen

Postoperative day 0 [at ICU]

S : ตื่นดี หายใจได้ดี ทำตามสั่งได้ ปวดแผลปานกลาง [PS 5-6/10]

O : V/S BT 36.9 ^{o}C BP 113/53 mmHg HR 70 bpm RR 14 b/m $E_4V_TM_6$

Respiratory : PSV mode PS 12 RR 14 PEEP 5 Fio_2 0.3

Abdomen : mild distention , moderate tender

A+P : Pheochromocytoma S/P debulking tumor post op day 0

-Fentanyl [10:1] 4 ml/hr , Fentanyl 25 mcg iv prn q 2 hr for severe pain

-Acupan 80 mg + NSS 500 ml iv in 24 hr

-NE [1:12.5] rate 15 and tritrate off keep MAP > 65, BP >90/60 mmHg

-CBG q 4 hr keep 100-180 mg%

Postoperative day 1 [at Ward]

S : ตื่นดี หายใจได้ดี ทำตามสั่งได้ ปวดแผลเล็กน้อย PS at rest 3/10 movement 6/10

O : V/S BT 36.5 ^{o}C BP 115/63 mmHg HR 80 bpm RR 16 b/m

Respiratory : clear and equal breath sound both lung

Abdomen : mild distention , moderate tender

A+P : Pheochromocytoma S/P debulking tumor post op day 1

- off ETT
- MO 4 mg iv prn q 4 hr
- NE [1:12.5] rate 10 and tritrate off keep MAP > 65, BP >90/60 mmHg
- Incentive spirometry

Postoperative day 3 [at Ward]

S : ตื่นดี หายใจได้ดี ทำตามสั่งได้ ปวดแผลเล็กน้อย PS at rest 0/10 movement 1-2/10

O : V/S BT 36.5 ^{o}C BP 115/63 mmHg HR 80 bpm RR 16 b/m

Respiratory : clear and equal breath sound both lung

Abdomen : mild distention , mild tender

A+P : Pheochromocytoma S/P debulking tumor post op day 3

- Doxazosin [2] 1*2 opc
- Tramadol [50] 1 tab o prn q 8 hr
- F/U URO, Endocrine 1 wk

Thank you