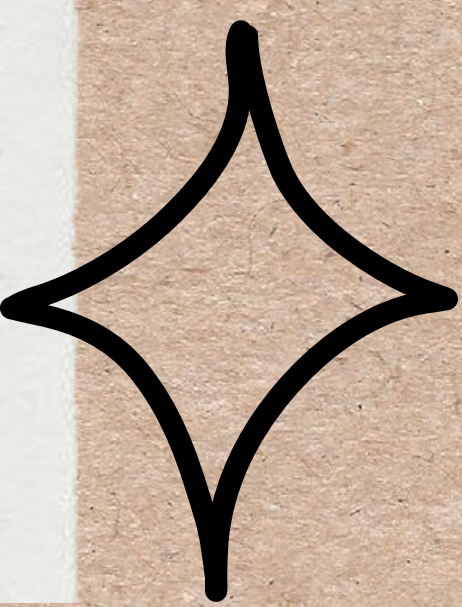





INTERDEPARTMENTAL CONFERENCE

"Postpartum hemorrhage with
massive blood transfusion"



SPEAKERS



Assoc.Prof. Patchareya Nivatpumin

- *Department of Anesthesiology*



Aj. Pattarawan Limsiri

- *Department of Obstetrics & Gynaecology*



Assoc.Prof. Parichart Permpikul

- *Department of Transfusion Medicine*



CASE

A 37 year-old, Thai female

G1P0A0 GA 39 weeks with PROM with GDMA1 with AMA

- **No history of previous surgery**
- **No drug allergy, No underlying disease**
- **BW 62 kg, Ht 159 cm**
- **NPO time 8 hours**

Set OR for Caesarean section due to failed induction






CASE



Ultrasound

- Myoma uteri size 10.6 x 11.8 cm at anterior upper part of uterus (first diagnosis at GA 13 weeks), no previa
 - placenta at anterior high position
 - EFW 2900 gm
- 



CASE



Pre-operative laboratory

- Hb 12.6 g/dL, Hct 39%, platelets 205,000 /uL



Cross match for OR: Type and screen

Anesthesia Techniques Topical GA TIVA MAC RA GA+RA N Block Airway Type Under mask LMA size ETT Nasal/Ora size No. 6-5 Depth 20 cm cuffed uncuffed DLT Lt Rt size Tracheostomy Airway Management Mask ventilation easy Y N LMA Insertion easy Y N Intubation easy Y N DL attempt Blade Gloscope LV grade Rapid sequence Cricoid pressure Confirmed by BBS CO2 FOB X-ray Monitors ECG NIBP RH SpO2 ETCO2 Temp (site) araphanyx ABP CVP PAP PNS TEE BIS Other Regional Anesthesia/Nerve Block Epidural Lumbar Thoracic Spinal CSE Caudal N block Ultrasound Paresthesia N stimulator None Site/approach L5-S1 midline Needle (Type/Ga) Quincke 27 Catheter no. at skin cm in space cm Paresthesia Y N Blood Y N Agents 0.5% bupivacaine 2.2 ml 0.2 mg 2.2 ml Anesthetic level T4 Remove catheter Y N Special Techniques Fiberoptic intubation One lung ventilation Jet ventilation Induced hypotension CPB DHCA IABP VAD Other Position Supine Prone Sitting Kidney Lithotomy Lateral Olt Ort Jackknife Trendelenberg LUD Other Eyes protected forced air-warmer Pressure points checked Line accesses eg. IV, a-line (site & size) #20 LH (ward) #18 LH (OR) #18 RH (OR) -> off #20 RH (OR)

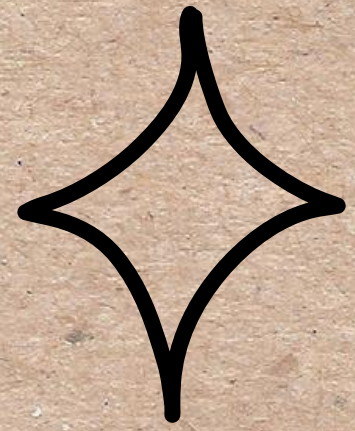
Time	23.30	00.00	01.00	02.00	03.00	Total
O2 mask & bag	10					
N2O/Air						
Sevo/Iso/Des (Et)				3.3	3.3	3.3
Thio/Prop/Eto/Ket						
MO/Peth/Fen						
Suc/Roc						
Atra/Cis/Vec/Pan						
Levophed		88.8	88	88.8	88.8	200 mg
ephedrine		6.2				25 mg
Duracoin/methergin						100 mg
Cefazolin		29				29 mg
Monitor: SpO2	97	98	99	98	100	100
EKG	SR	SR	SR	SR	SR	SR
ETCO2				32	32	32
PIP				17	17	17
spont breathing	->	->	->	->	->	->
Temp				34.7	34.8	34.9
LA agent						
Y BP						
x MAP						
Pulse						
A Start anesth						
T Intubation						
Start Op.						
Finish anesth						
Events/Symbols						
Fluids (RS (550))	550	650	1000+1000	2650	1000+1000	7,650
NSS+ATB	100					10,650
Acetar (1000)					1000+1000	3000
NSS (1000)					1000	1000
Blood LPB			268+277	545	280+263	1,088
Valium					500	500
FFP					263+267	534
Urine FIC	100	100	100	200	150	350
EBL	600	600	1400	2000	2500	4500
Remarks	1 LPB gr. 0.4 T502220723451 Vol. 268 ml 5 LPB gr. 0.4 T501221031465 Vol. 239 ml 2 LPB gr. 0.4 T502220723483 Vol. 277 ml 6 LPB gr. 0.4 T501221031311 Vol. 286 ml 1 Nalador 500 mg + NSS 250 ml 2 transamine 1 gme 3 10% calcium gluconate 1 gm IV 4 LPB gr. 0.4 T501221031395 Vol. 263 ml 5 FFP gr. 0.4 T502220721968 Vol. 263 ml 6 FFP gr. 0.4 T501221031027233 Vol. 261 ml					
Dispatch	PACU ICU HDU BP HR RR SpO2 %					
Types of Patient	Same day In Patient Surgical site identified Patient identified					
Time	Pt. In	Start anes	Anes ready	Start Op	Op finish	Anes finish
	23.40	23.40	23.55	00.03		

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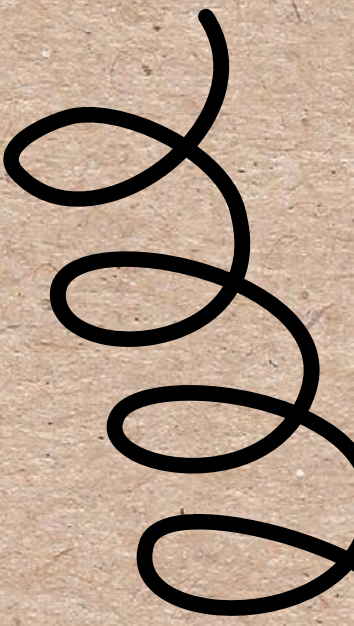
Anesthesia Techniques Topical GA TIVA MAC RA GA+RA N Block Airway Type Under mask LMA size ETT Nasal/Ora size Depth 10 cm cuffed uncuffed DLT Lt Rt size Tracheostomy Airway Management Mask ventilation easy Y N LMA Insertion easy Y N Intubation easy Y N DL attempt Blade LV grade Rapid sequence Cricoid pressure Confirmed by BBS CO2 FOB X-ray Monitors ECG NIBP SpO2 ETCO2 Temp (site) ABP CVP PAP PNS TEE BIS Other Regional Anesthesia/Nerve Block Epidural Lumbar Thoracic Spinal CSE Caudal N block Ultrasound Paresthesia N stimulator None Site/approach Needle (Type/Ga) Catheter no. at skin cm in space cm Paresthesia Y N Blood Y N Agents Anesthetic level Remove catheter Y N Special Techniques Fiberoptic intubation One lung ventilation Jet ventilation Induced hypotension CPB DHCA IABP VAD Other Position Supine Prone Sitting Kidney Lithotomy Lateral Olt Ort Jackknife Trendelenberg LUD Other Eyes protected forced air-warmer Pressure points checked Line accesses eg. IV, a-line (site & size) 1. #16 RH (OR) 2. A-line No. 20 4 radial

Time	03.30	04.00	05.00	06.00	Total
O2	1	1	1	1	
N2O/Air	1	1	1	1	
Sevo/Iso/Des (Et)	3.4	2.0	2.6	2.7	
Thio/Prop/Eto/Ket					
MO/Peth/Fen					
Suc/Roc					
Atra/Cis/Vec/Pan	2	2	2		16 mg
Levophed	11111111	off			3 mg
Dormicum			1		500 mg / 2 gm
Monitor: SpO2	100	100	100	100	100
EKG	SR	SR	SR	SR	SR
ETCO2	30	32	34	33	34
PIP	17	19	18	18	16
PEEP5 VTX RR	450x12				
Temp	34.9	34.8	34.8	34.7	off
LA agent					
Y BP					
x MAP					
Pulse					
A Start anesth					
T Intubation					
Start Op.					
Finish anesth					
Events/Symbols					
Fluids Acetar (1000)	1000				10,450 m
Acetar (1000)	1000				1000 m
Blood LPB	276+258	2187			2465 m
FFP	335+1301	485			485 m
Urine FIC	75	475			475 m
EBL	2000	8000			8000 m
Remarks	0.3 PH-gr. 0.4 T500622090955 Vol. 335 ml 1 PH-gr. 0.4 T501221031465 Vol. 239 ml 2 LPB gr. 0.4 T502220723558 Vol. 276 ml 3 10% calcium gluconate 2 gme 4 LPB gr. 0.4 T502220723608 Vol. 258 ml 5 10% calcium gluconate 1 gm IV 6 LPB gr. 0.4 T500622087809 Vol. 130 ml 7 LPB gr. 0.4 T501221031753 Vol. 276 ml				
Dispatch	PACU ICU HDU BP HR RR SpO2 %				
Types of Patient	Same day In Patient Surgical site identified Patient identified				
Time	Pt. In	Start anes	Anes ready	Start Op	Op finish
	23.40	23.40	23.55	00.03	04.50

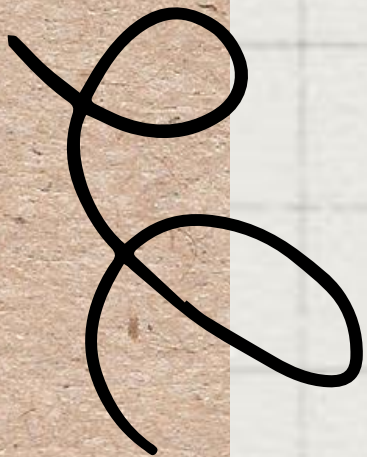
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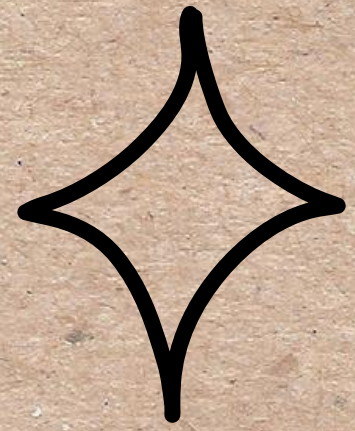


INTRAOPERATIVE EVENTS



- **EBL 8000 mL**
- **Total urine output 475 mL (50–100 mL/h)**
- **Tranexamic Acid 1 gm IV**

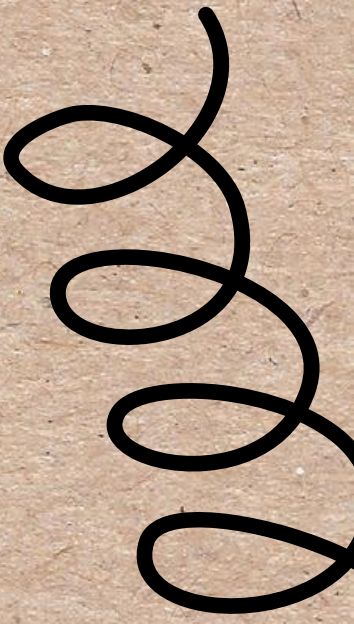


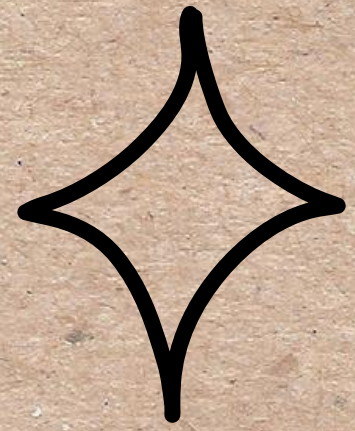


UTEROTONIC AGENTS



- Carbetocin 100 mcg IV
- Methylergometrine 0.2 mg IV slowly push
- Sulprostone 500 mcg IV drip 150 mcg/hr





INTRAOPERATIVE TRANSFUSION



- LPB 9 unit (2465 mL)
- Platelet 6 unit (335 mL)
- Cryoprecipitate 6 unit (130 mL)
- FFP 534 mL



SPEAKERS



Assoc.Prof. Patchareya Nivatpumin

- *Department of Anesthesiology*



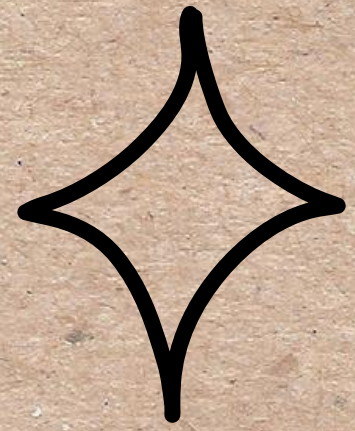
Aj. Pattarawan Limsiri

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Assoc.Prof. Parichart Permpikul

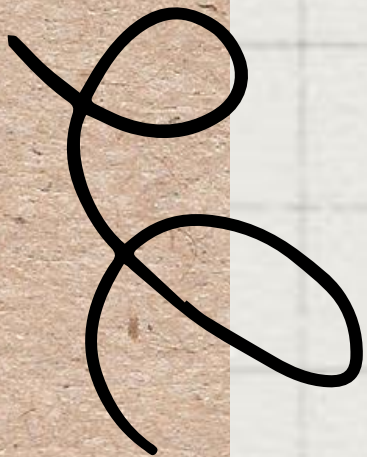
- *Department of Transfusion Medicine*



POST-OPERATION

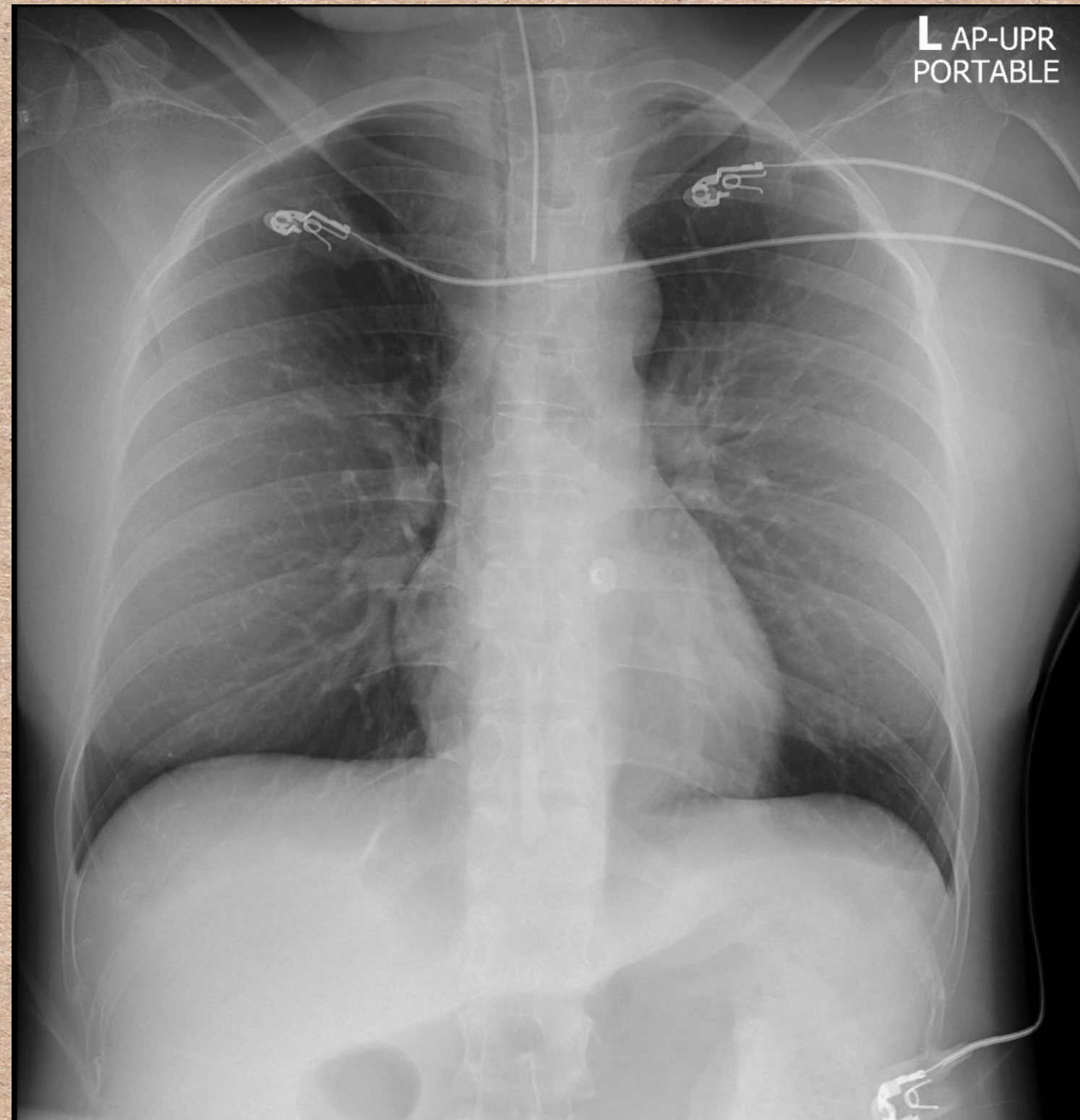


- **Post-operative ICU admission**
- **Remained intubation**



POST-OPERATIVE INVESTIGATION

CXR





POST-OPERATIVE INVESTIGATION



CBC

Hb 10.5 g/dL

Hct 32%

plt 58,000/uL

WBC 7,700 /uL

Coagulogram

APTT 30.7 s

PT 16.5 s

INR 1.44

Fibrinogen 139.2 mg/dL





POST-OPERATIVE INVESTIGATION



Blood chemistry

Na 137 mmol/L

K 3.7 mmol/L

Cl 112 mmol/L

HCO₃ 16 mmol/L

BUN 5.9

Cr 0.24

lactate 3.7

iCa 4.86

ABG

pH 7.428

pO₂ 198 mmHg

pCO₂ 27.5 mmHg

O₂ saturation 99.5%

BE -5.1

POST-OPERATIVE INVESTIGATION

HEMATOLOGY

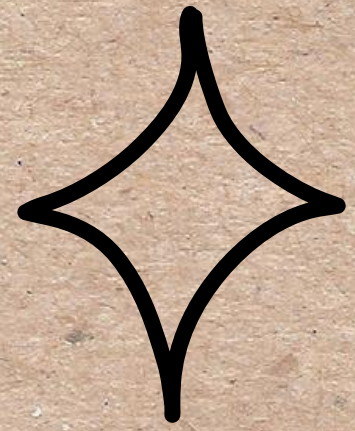
	01/10 18:15	01/10 06:00	14/08 09:30
Absolute monocyte	0.33	0.15	0.43
Absolute lymphocyte	0.91	0.30	1.21
% Basophils	0.2	1.0	0.4
% Neutrophils	80.8	71.5	75.7
MCHC	34.4	32.8	32.3
Hematocrit	25.3	32.0	39.0
NRC/ 100 WBC	0.0	0.1	0.0
Absolute neutrophils	5.33	7.02	5.28
Absolute basophil	0.01	0.08	0.03
Absolute eosinophil	0.01	0.00	0.02
% Eosinophils	0.2	-	0.3
Wbc count	6.60		6.97
Platelet count	120	58	205
MCV	83.5	85.8	95.8
Rbc count	3.03	3.73	4.07
Hemoglobin	8.7	10.5	12.6
Red cell distribution RDW	14.6	14.5	13.7
% Monocytes	5.0	2.0	6.2
% Lymphocytes	13.8	3.9	17.4
MCH	28.7	28.2	31.0

CLINICAL CHEMISTRY

	01/10 18:12	01/10 06:02
Corrected Ca++(pH7.4)	4.46	4.76
Measured Ca++	4.40	4.69
Lactate	2.1	3.7
Bicarbonate(HCO3-)	20	16
Potassium (K+)	3.7	3.7
**Anion gap	8.0	9.0
Measured pH	7.427	7.428
Chloride (Cl-)	108	112
Sodium (Na+)	136	137
pO2		198.00
pCO2		27.50
Phosphorus		3.1
AST (SGOT)		17
Alkaline (ALP)		30
O2 saturation		99.5
pH		7.428
Total Bilirubin		0.30
ALT (SGPT)		5
**eGFR(CKD-EPI equation)		157.92
Base Excess (BE)		-5.1
HCO3		17.8
Globulin		1.2
Total protein		2.4
Magnesium		1.0
Direct Bilirubin		0.19
Creatinine		0.24
Albumin		1.2
BUN		5.9

COAGULATION

	01/10 18:15	01/10 05:59
Fibrinogen	204.7	139.2
INR	1.07	1.44
APTT	24.0	30.7
PT	12.5	16.5

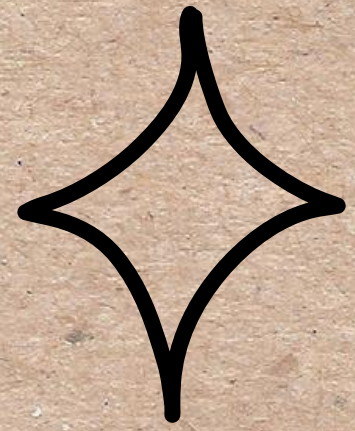


PROGRESSION



- Platelets 6 units, FFP 500 mL, LPB 1 unit were transfused at ICU → coagulation returned to normal
- Extubation 12 hours after the operation was finished
- Hemodynamic status was stable and the patient was transferred to postpartum ward the next day



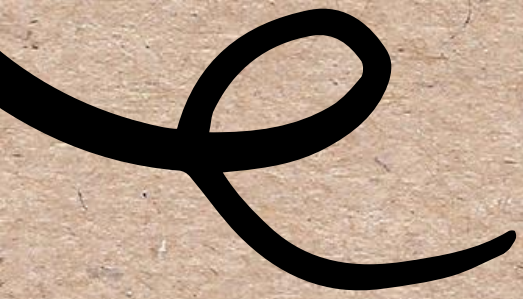


TAKE HOME MESSAGE



- **Pregnancy with myoma uteri should be concerned as high risk case for postpartum hemorrhage**
- **Treatment for PPH is a combination of medical, surgical and blood transfusion management**
- **Massive transfusion protocol should be considered and promptly activated in PPH situation**
- **Multidisciplinary team communication is important**





Q & A

