ALL THINGS EMERGENCY

Risk Factors for Uterine Rupture, Warning Signs During Labor, Management Guideline, and the Roles of Nurse-Midwives

Nareenun Chansriniyom, MD.

Maternal-Fetal Medicine Division, Department of Obstetrics and Gynecology,

Faculty of Medicine Ramathibodi Hospital, Mahidol University


28 ม.ค. 2569
BRIGHT TV
อีจัน
บันเทิง


นุ่น-หลุยส์ แถลงปมสูญเสียลูก
สาเหตุจากมดลูกแตก
WWW.KAPOOK.COM
ภาพจาก วันบันเทิง


Baby outside placenta
Scars from prior C-section
Rupture of C-section scar
Before Uterine Rupture
After Uterine Rupture
ไทยรัฐ นิวส์โชว์
ทำไมมดลูกถึงแตก?
เปิดปัจจัยเสี่ยง
วิธีสังเกตอาการก่อนสาย
ไทยรัฐนิวส์โชว์
29/01/2569

Uterine Rupture

Rare but Catastrophic Event

Associated with

- **Severe maternal hemorrhage**
- **Maternal shock**
- **Hysterectomy**
- **Fetal hypoxia**
- **Fetal death**

OUTLINE

1. Cause and Risk Factors
2. Warning Sign During labor
3. Management

Definition and Incidence

- **Primary**: previously intact or unscarred uterus, 0.6 per 10,000 birth
- **Secondary**:
  - preexisting incision, anomaly or injury of the myometrium
  - 22 per 10,000 birth

Williams Obstetrics 26th edition

Cause & Risk Factor of Uterine Rupture

Maternal and Fetal Medicine

PREEXISTING UTERINE INJURY OR UTERINE ANOMALY

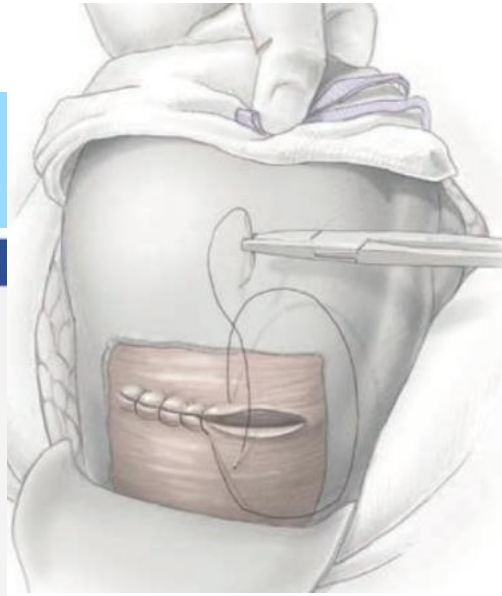
Surgery involving the myometrium

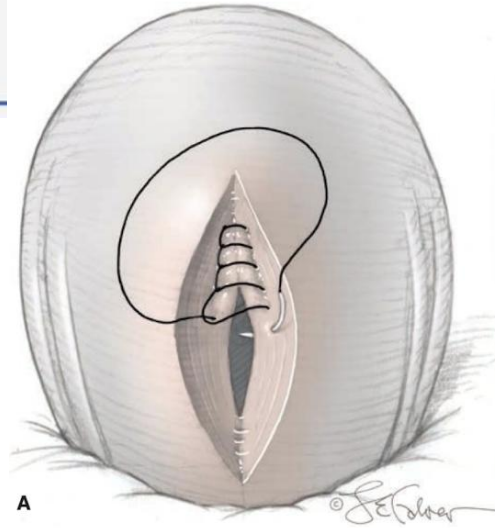
- **Cesarean delivery** or hysterotomy
- Previously repaired uterine rupture
- Operation traumatized the myometrium through/to endometrium
  - uterine curettage
  - myomectomy
  - operative hysteroscopy
  - metroplasty

Type of Prior Uterine Incision and Estimated Risks for Uterine Rupture

Prior Incision	Estimated Rupture Rate (%)
One low transverse	0.2–0.9
Multiple low transverse	0.9–1.8
Low-vertical[a]	1–7
Classical	2–9
T-shaped	4–9
Prior preterm CD	"Increased"
Prior uterine rupture	
Lower segment	2–6
Upper uterus	9–32

[a]See text for definition.
CD = cesarean delivery.
Data from the American College of Obstetricians and Gynecologists, 2017; Cahill, 2010b; Chauhan, 2002; Landon, 2006; Macones, 2005a,b; Martin, 1997; Miller, 1994; Sciscione, 2008; Society for Maternal-Fetal Medicine, 2012; Tahseen, 2010.





Williams Obstetrics 26th edition

Cause & Risk Factor of Uterine Rupture

Maternal and Fetal Medicine

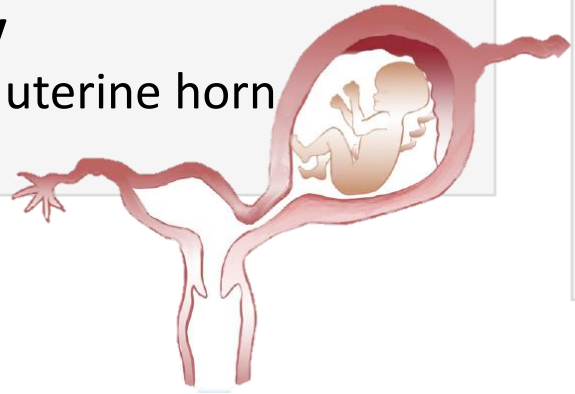
PREEXISTING UTERINE INJURY OR UTERINE ANOMALY

Surgery involving the myometrium

- **Cesarean delivery** or hysterotomy
- Previously repaired uterine rupture
- Operation traumatized the myometrium through/to endometrium
  - uterine curettage
  - myomectomy
  - operative hysteroscopy
  - metroplasty

Congenital uterine anomaly

- Pregnancy in rudimentary uterine horn



UTERINE INJURY OR ABNORMALITY INCURRED IN CURRENT PREGNANCY

Before delivery:

- Blunt abdominal trauma
- Uterine overdistention
- External version
- **Persistent intense contractions**
- **Oxytocin / prostaglandins**
- Intraamniotic instillation

During delivery:

- Vigorous uterine pressure
- Difficult forceps delivery
- Breech extraction
- Difficult manual placental removal
- Internal version of second twin

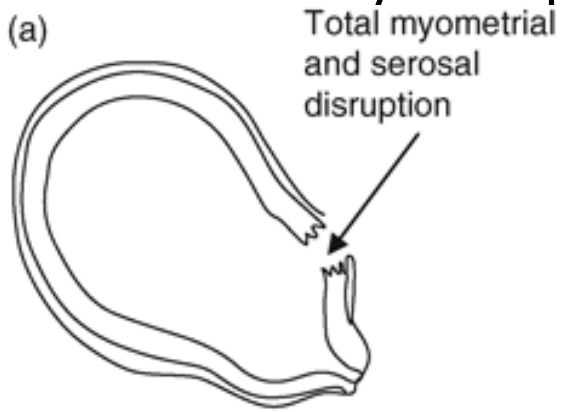
uncommon

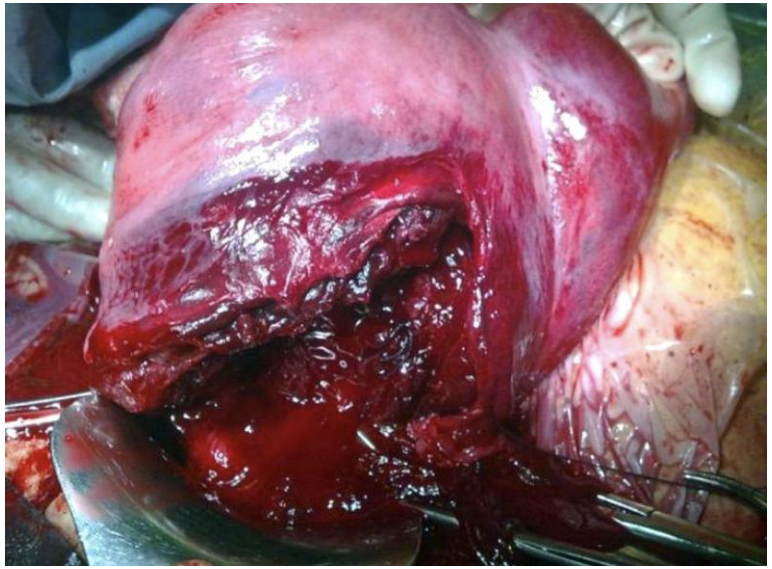
Williams Obstetrics 26th edition

Archives of Gynecology and Obstetrics (2026) 313:194

Definition

- **Complete**: all uterine wall layers separated



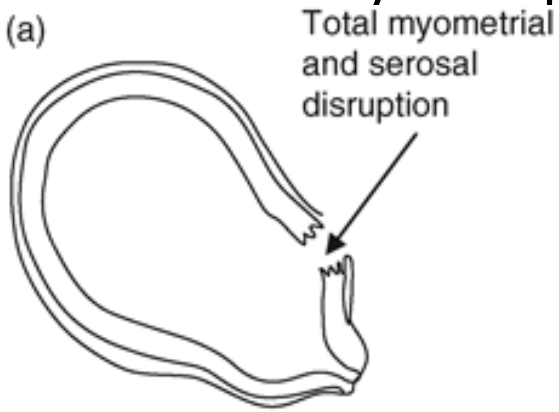


Clinical Case Reports13, no. 8 (2025): e70791

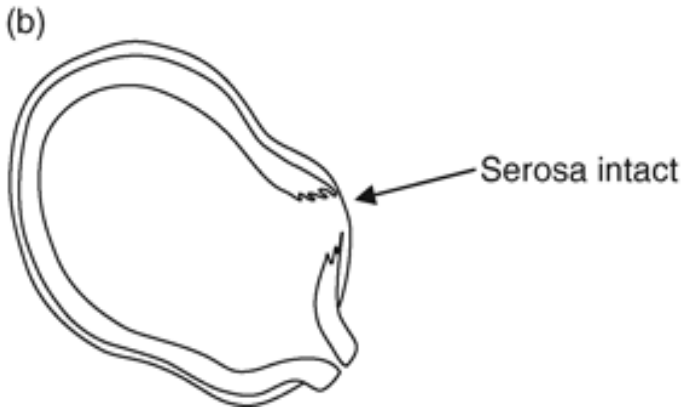
Williams Obstetrics 26th edition

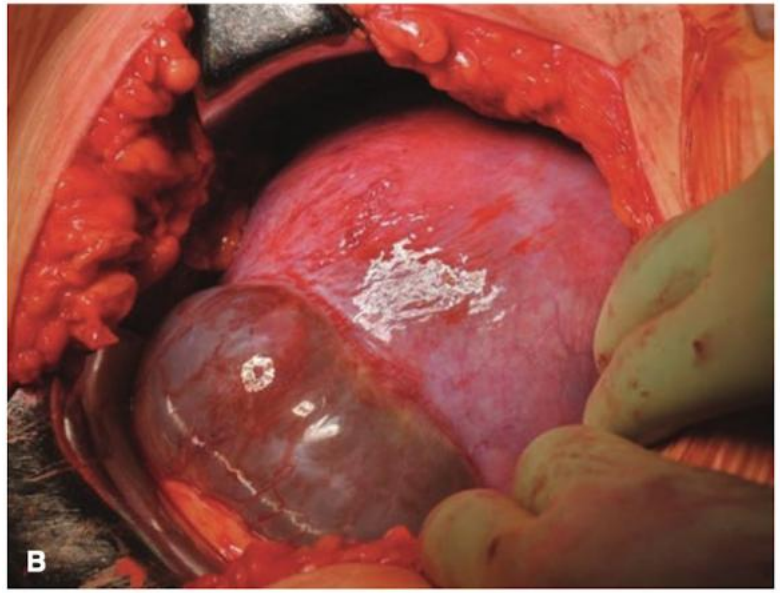
Definition

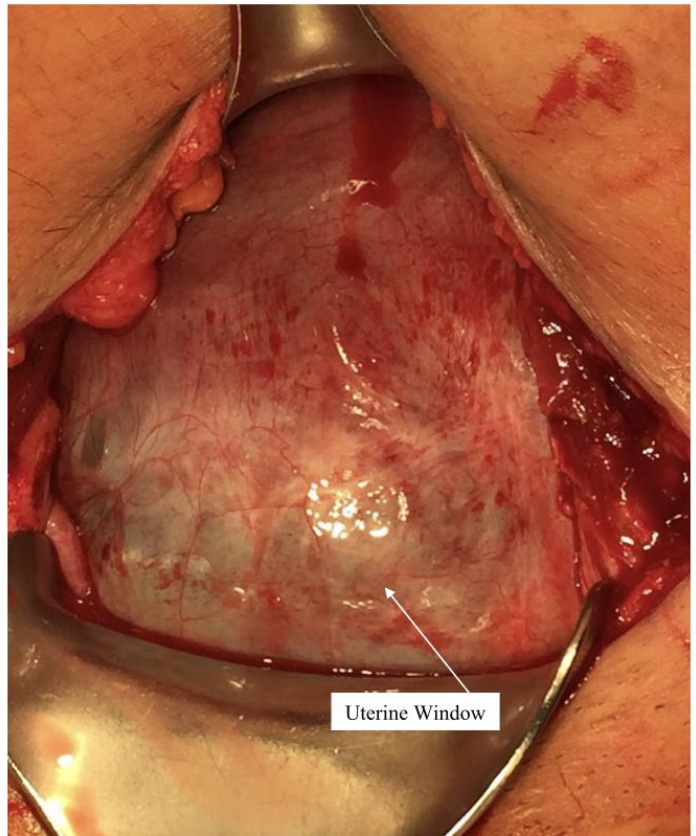
- **Complete**: all uterine wall layers separated



- **Incomplete**:
  uterine dehiscence with uterine muscle separated but peritoneum intact



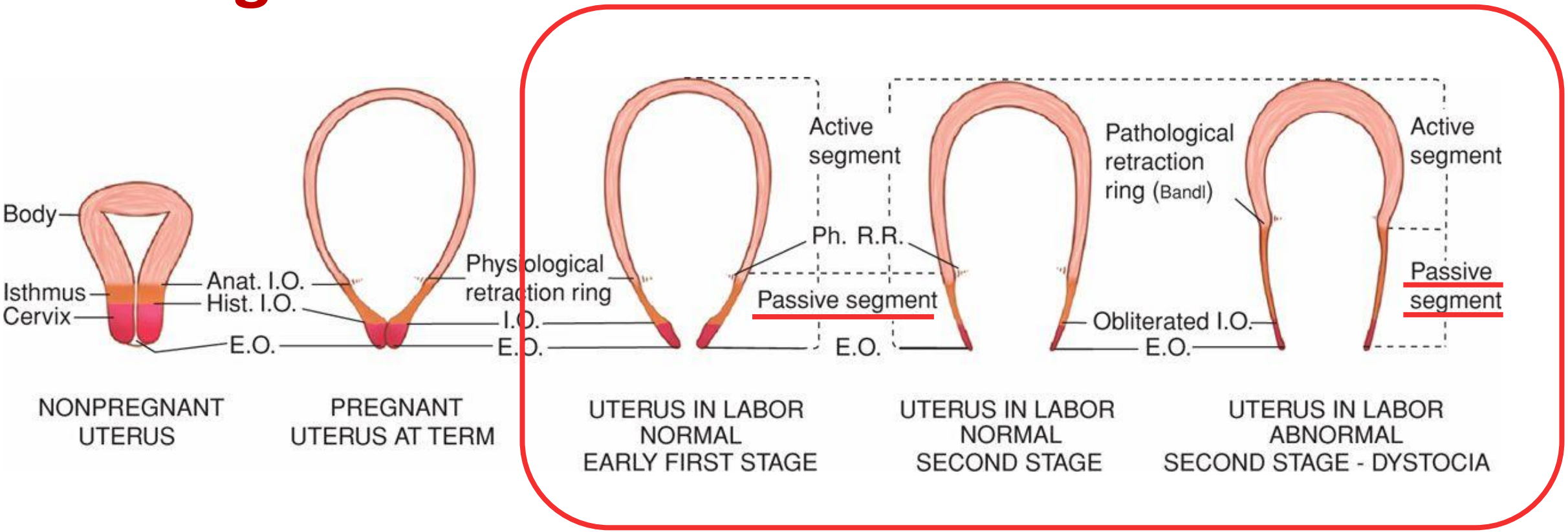




Clinical Case Reports13, no. 8 (2025): e70791

Williams Obstetrics 26th edition

Pathogenesis

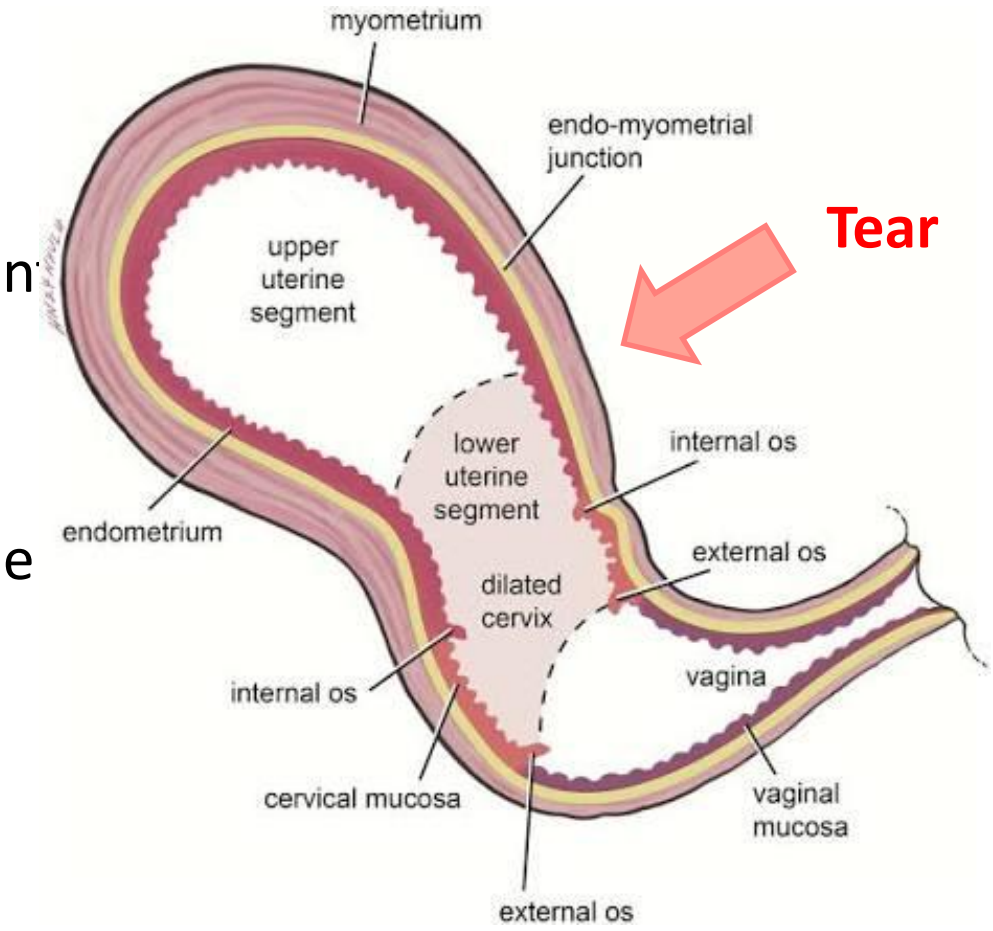


- During labor **involves thinned-out lower uterine segment**

Williams Obstetrics 26th edition

Pathogenesis

- Tears develop primarily in lower uterine segmen
- Can extend upward to active segment,
  or downward through cervix, vagina and bladde



- When ruptured, uterine content usually escape into peritoneal cavity, a portion of fetus maybe extruded from the uterus

Williams Obstetrics 26th edition

Waring Signs During Labor

Sign and Symptoms

- Abdomen: **painful and guarding, midline pain, bizarre**
- **Restlessness**: Lightheadedness, dizziness, nausea, vomiting, and anxiety
- Shoulder or chest pain

- **Vital signs change**: Hypotension, ***tachycardia***
- Decrease or absent uterine contraction amplitude
- Easily palpable fetal parts abdominally
- Bleeding per vaginal
  (but not full of blood unless the tear extends into the vagina or cervix)
- Loss of fetal station
- Anemia

Williams Obstetrics 26th edition

Sign and Symptoms

- Fetal bradycardia, reduced variability, late decelerations or absence of fetal heart sounds

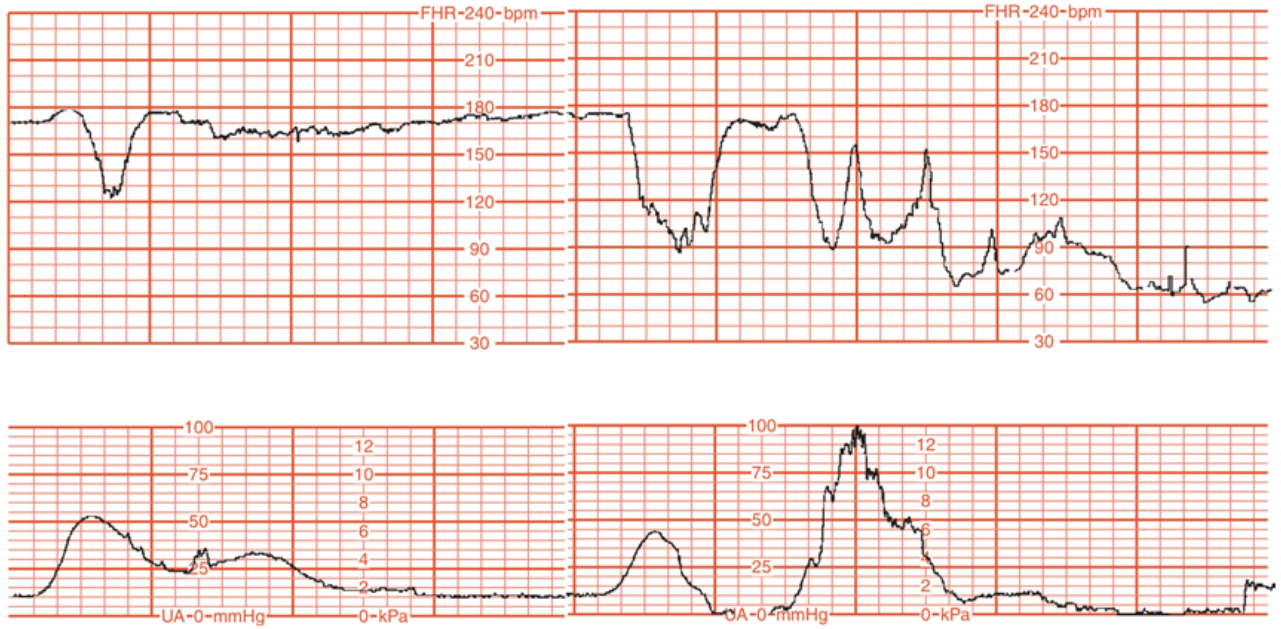


FIGURE 31-5 Fetal heart rate tracing in a woman whose uterus ruptured during labor while pushing. The rupture apparently stimulated a reflex push, after which uterine tone diminished and fetal bradycardia worsened.

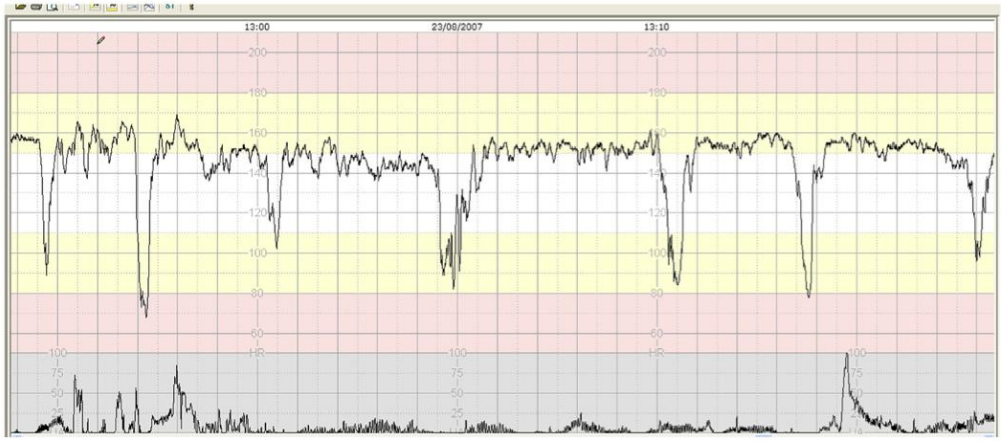
Williams Obstetrics 26th edition

a

Fetal heart rate decelerations

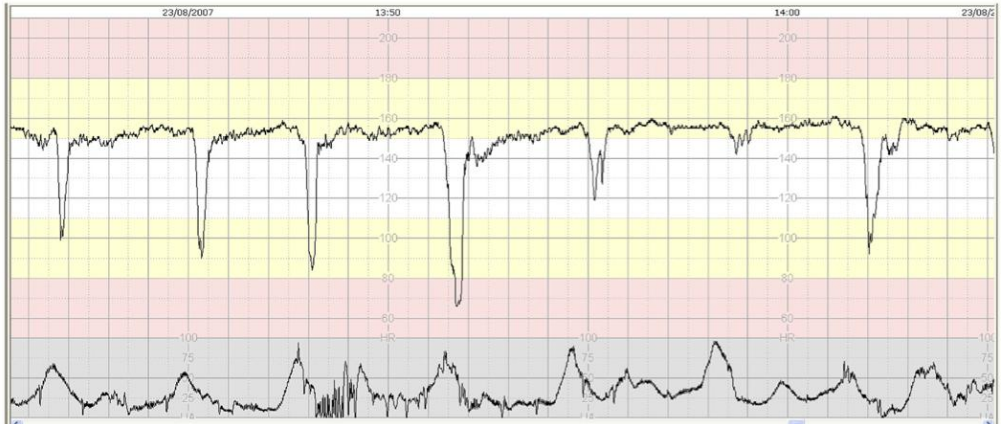
b

A rise in the baseline fetal heart rate



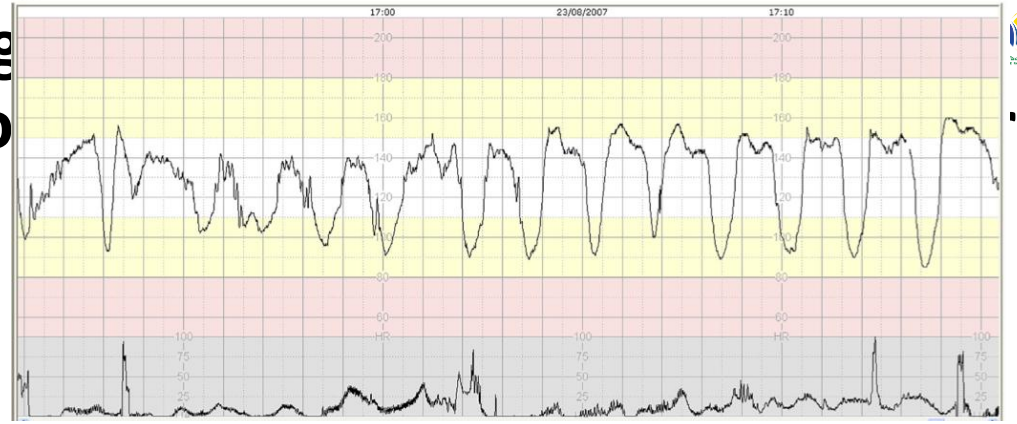
c

Then loss of variability

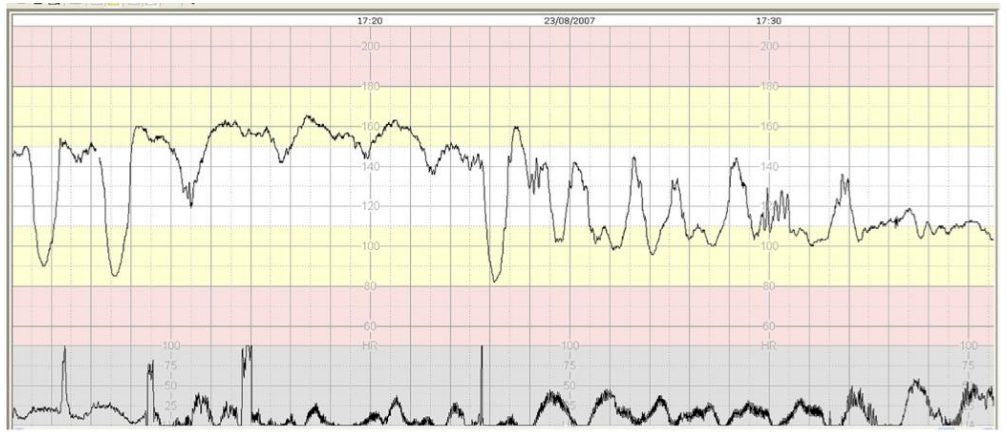


Prog thro ocess

d

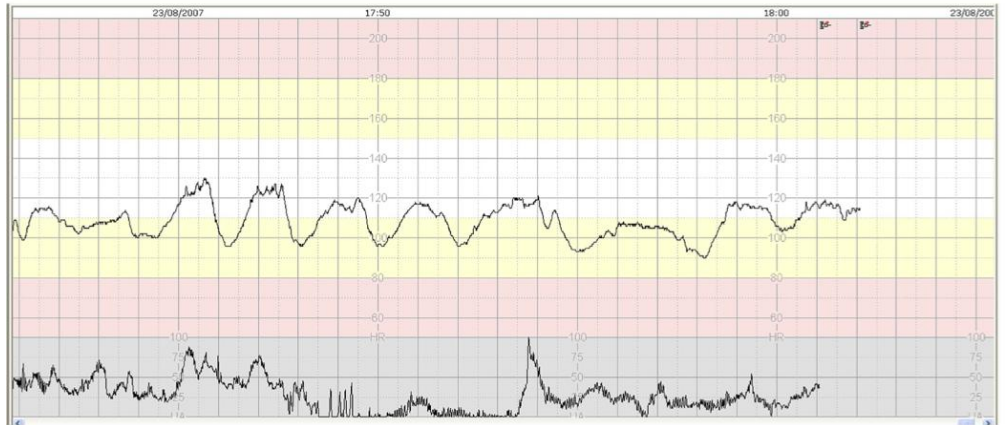


If the cause is not corrected → terminal bradycardia

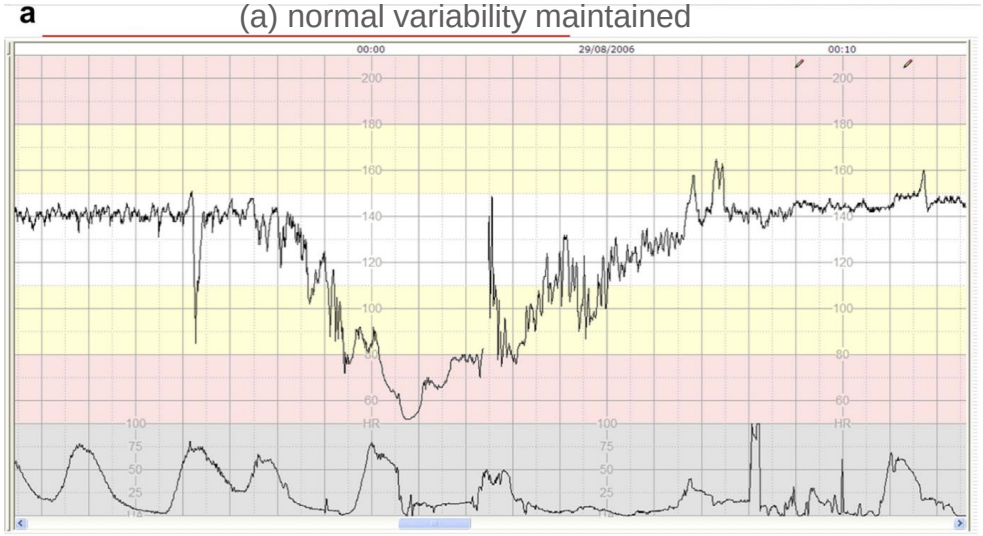


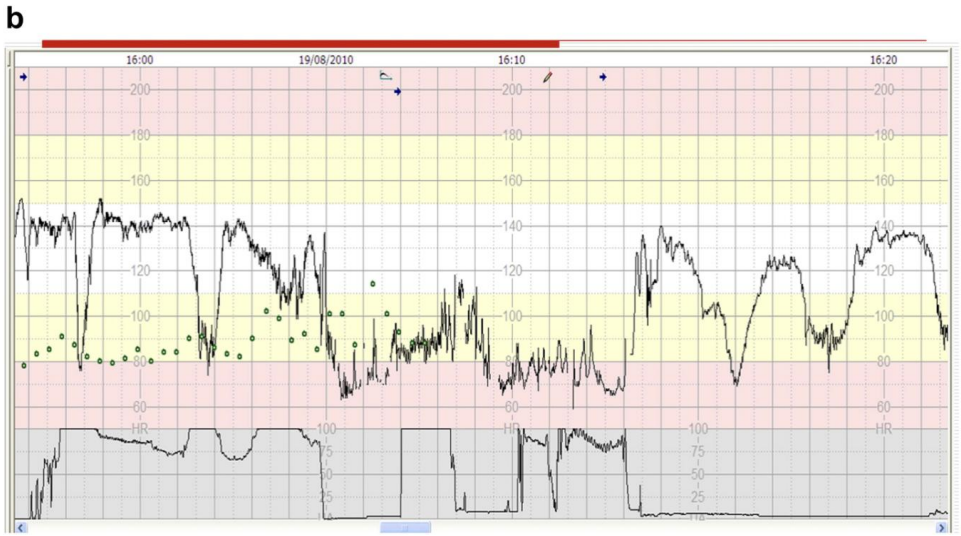
f

Step-ladder pattern to death

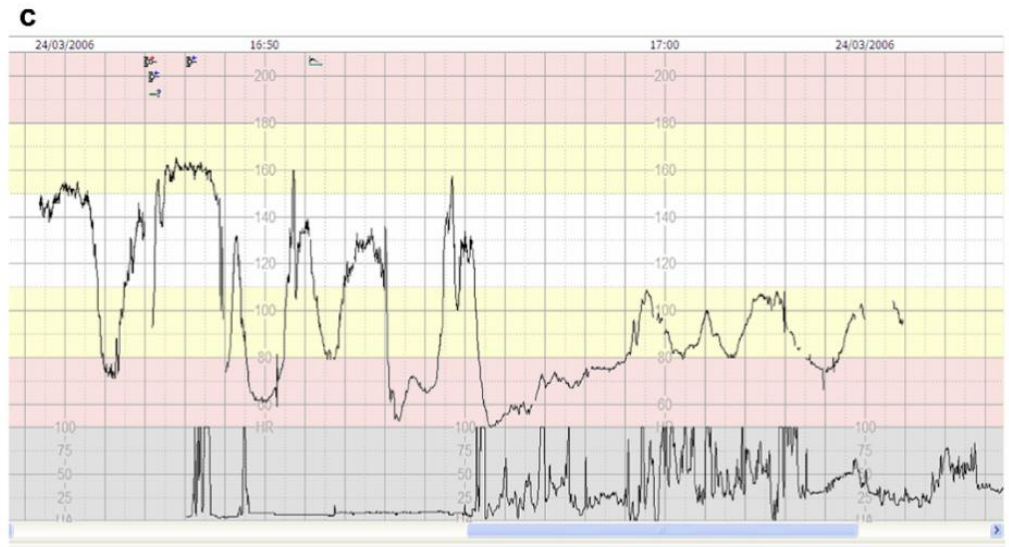


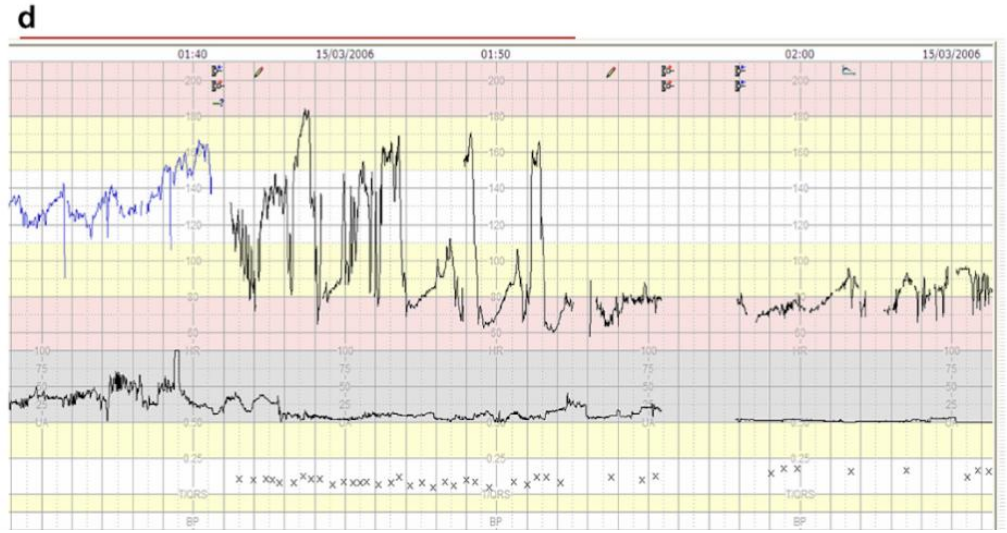
Intrapartum fetal hypoxia: ACUTE HYPOXIA





(b) nadir less than 80 bpm with loss of variability but complete recovery





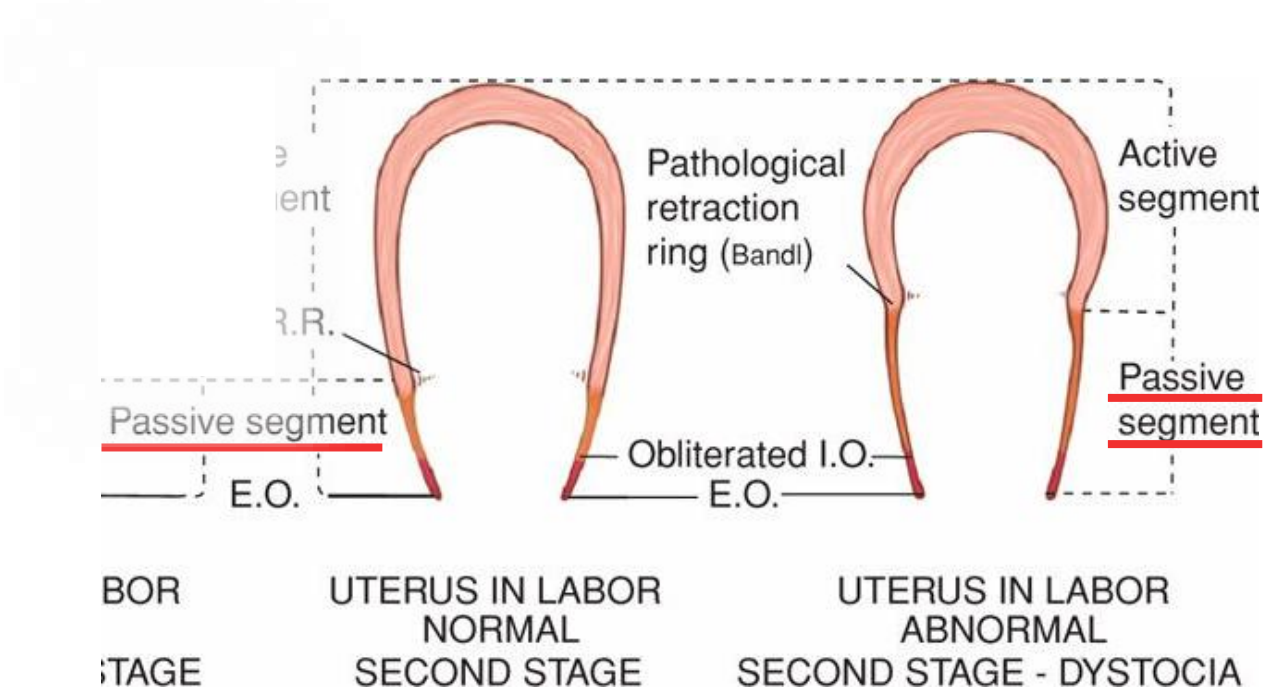
(c and d) acute fetal heart rate decelerations from antecedent pathological cardiotograph

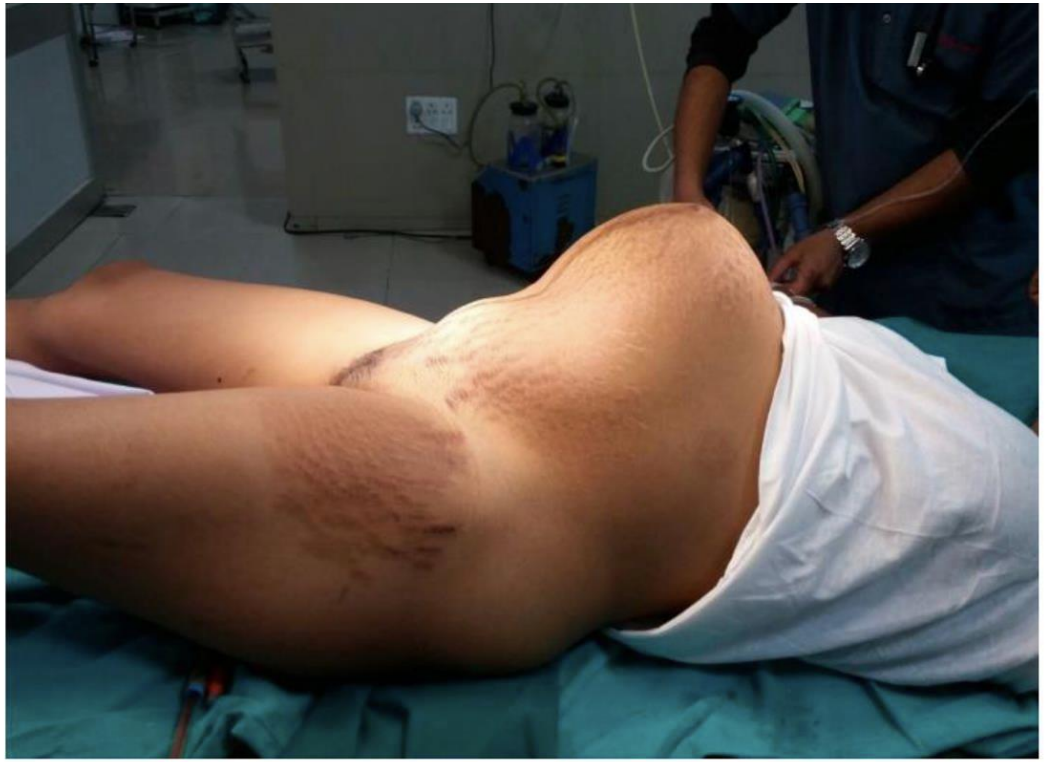
If the cause is not corrected → terminal bradycardia

Best Pract Res Clin Obstet Gynaecol. 2013 Aug;27(4):509-36.

Sign and Symptoms: Impending rupture

- Maternal agitation
- Increasingly severe abdominal pain that persists between contractions
- Abdominal guarding
- **Bandl's ring: a sign of obstructed labor**





Williams Obstetrics 26th edition

Management of Uterine Rupture

General Management

CALL FOR HELP!!

Maternal

- ❑ **Resuscitation**
  - **A**irway
  - **B**reathing: O2 mask with bag 10 LPM
  - **C**irculation:
    - 2 large-bore IV needle(16-18G)
    - warm crystalloid 2 L loading
    - hematocrit stat, CBC, LFT, BUN, Cr, PT/PTT/INR
    - group match PRC,FFP, Group O low-titer ลูก
    - on foley catheter, monitor urine output
  - **D**isability (trauma)
  - **E**xposure: keep warm
- ❑ **Notify OB-team, Anesthesiologist**

Fetal

- ❑ **Immediate delivey of fetus**
- ❑ **Monitor CTG**
- ❑ **Consult neonatologist**

Definite Management

- ❑ Exploratory laparotomy
- ❑ **Hysterctomy vs Uterine rapair Conservative surgery**

- ❑ **Conservative surgery**

  - Desire for future childbearing
  - Low transverse uterine rupture
  - No extension of the tear to the broad ligament, cervix, or paracolpos
  - Easily controllable uterine hemorrhage
  - No clinical or laboratory evidence of an evolving coagulopathy

CASE STUDY

case 1

- **Female 30 years old, no known U/D**
- **G2P1001 GA 39^{+4} weeks by ultrasound**
  - **1^{st} ANC at GA 11^{+5} weeks at** x 4 visits (at Private hospital)

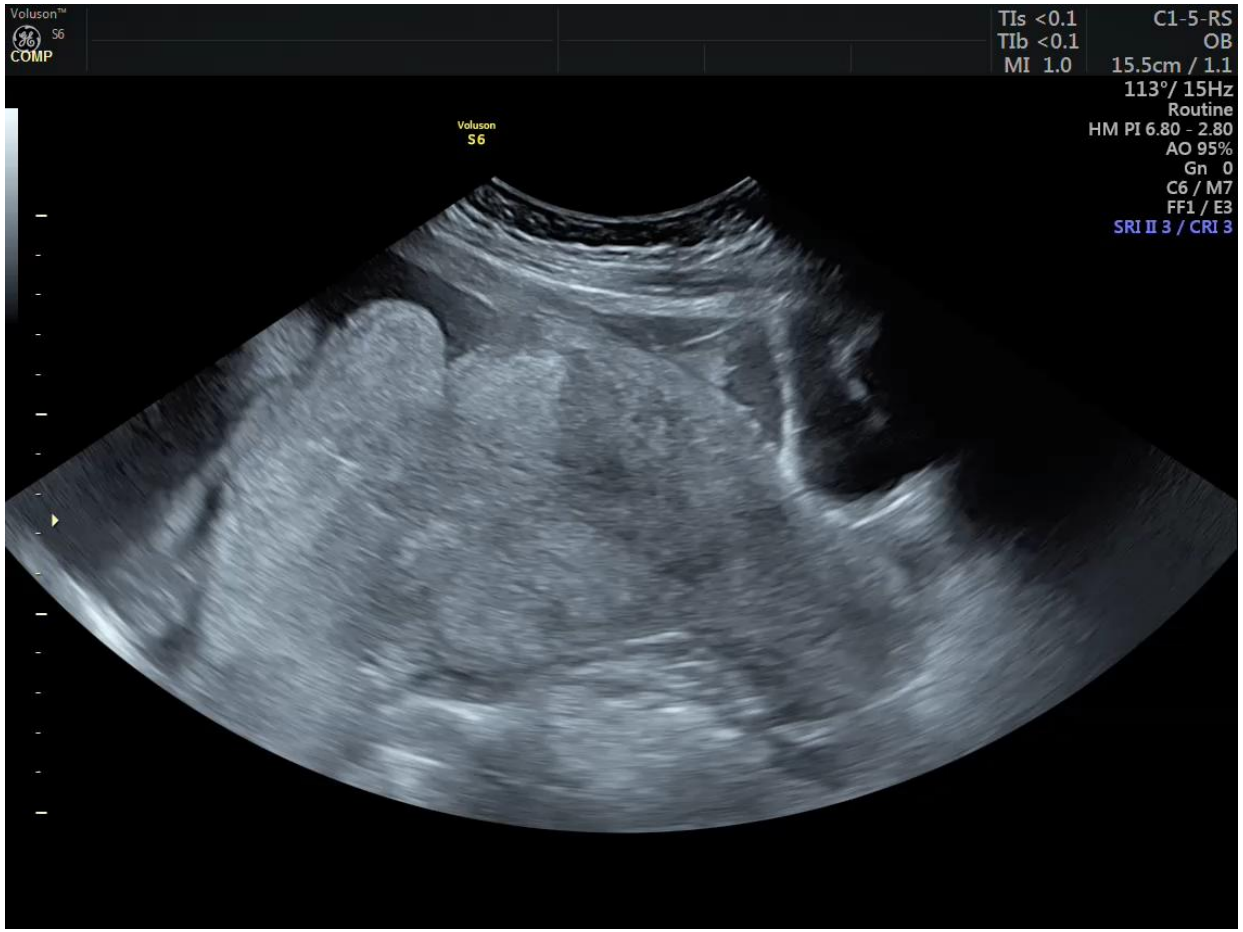
ANC risks

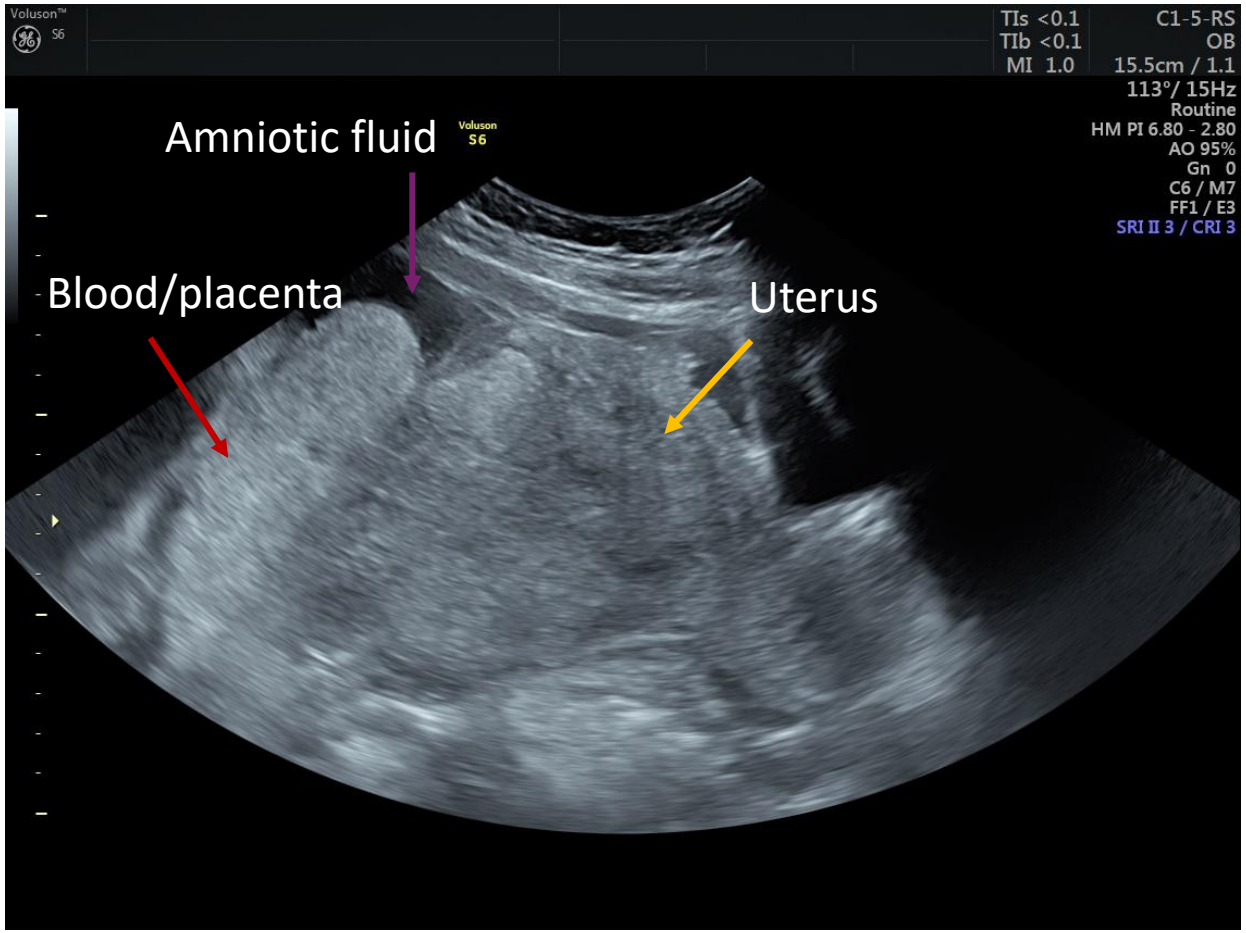
1. **Previous fractional and curettage** x II (2020,2021)
2. **History of laparoscopic submucous myomectomy** (April 2022, unknown location)

Chief complaint: Abdominal pain 2 hours PTA

Ultrasound

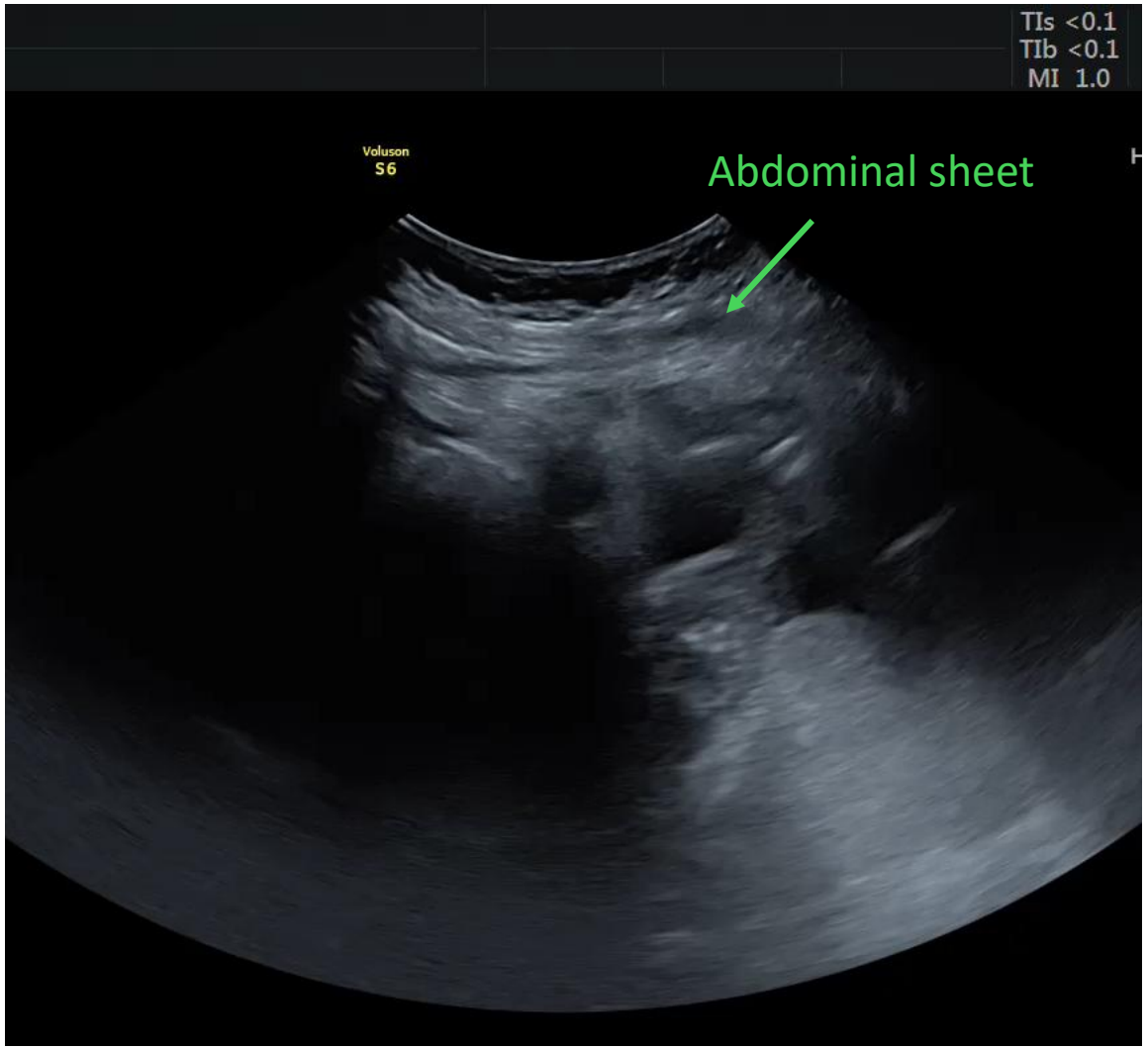
At LR 17.15 NST no FHS > TAS no FHS
17.19 Admit LR for intrauterine resuscitation
17.33 ปวดท้อง PS 8/10 v/s BP 90/50 mmHg PR 100-105 / min

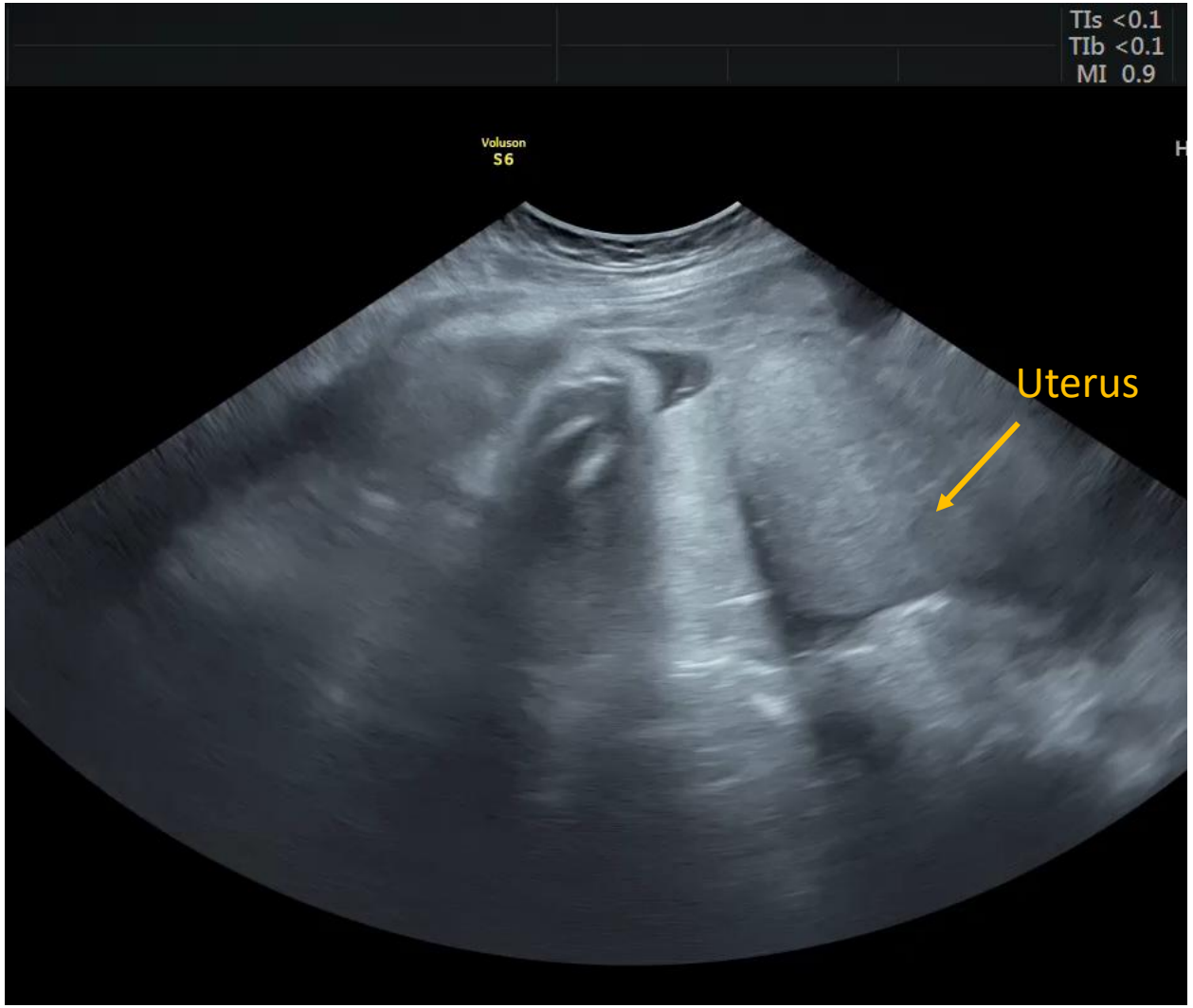




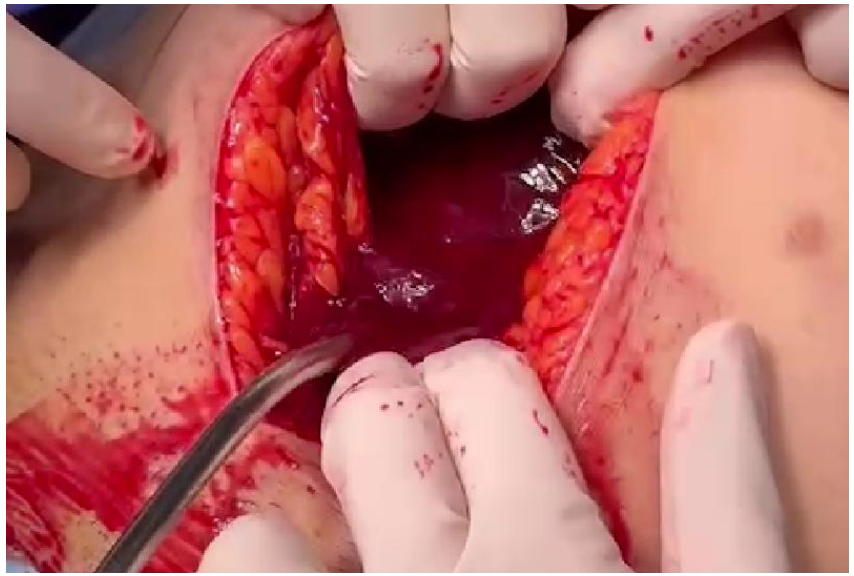
Courtesy of Asst. Prof.Wirada Dulyaphat, M.D.

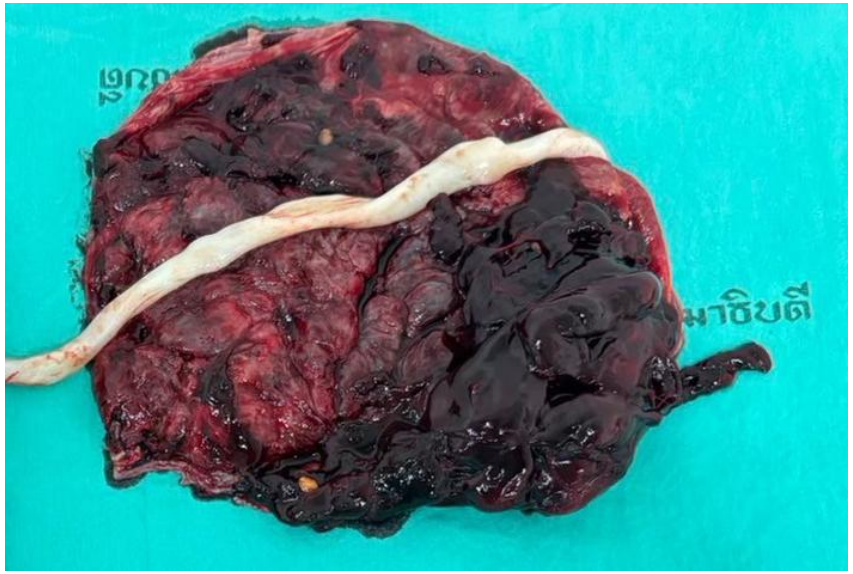
Ultrasound

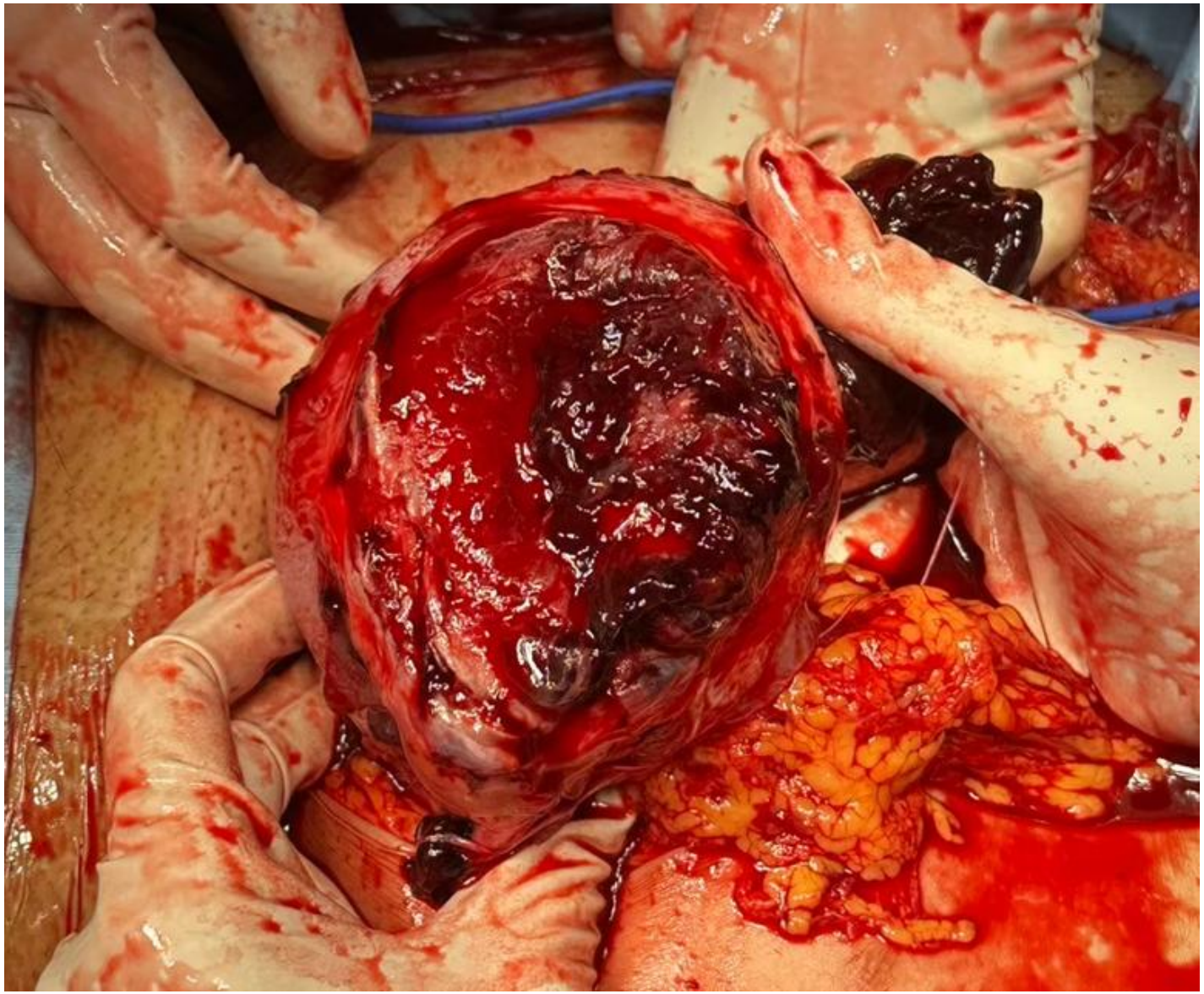




Courtesy of Asst. Prof.Wirada Dulyaphat, M.D.







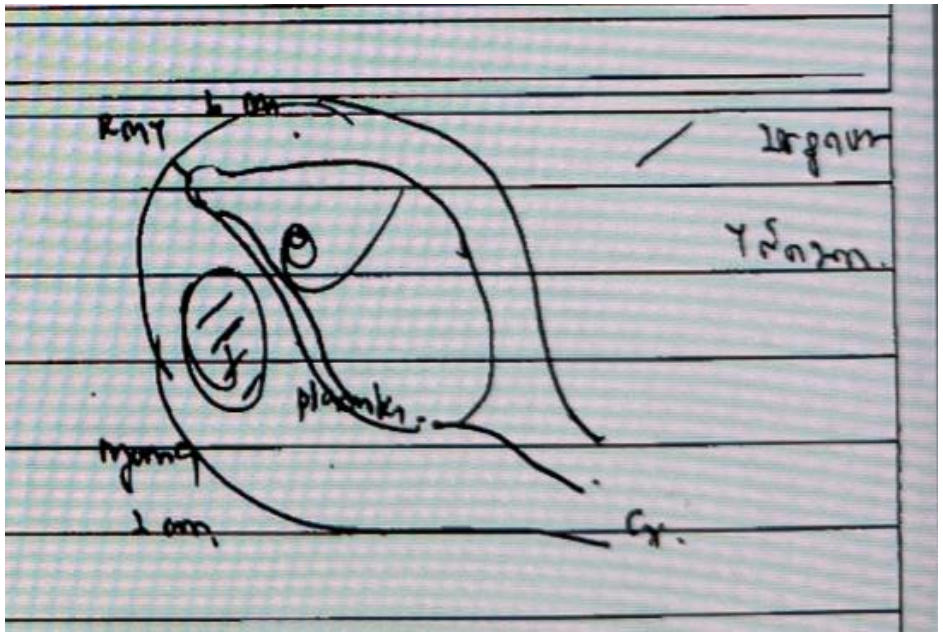
Courtesy of Asst. Prof.Wirada Dulyaphat, M.D.

case 2

- **Female 36 years old, no known U/D**
- **G1 GA 28+5 weeks by ET**
  - **1st ANC at GA 8 weeks** at x 4 visits

ANC risks

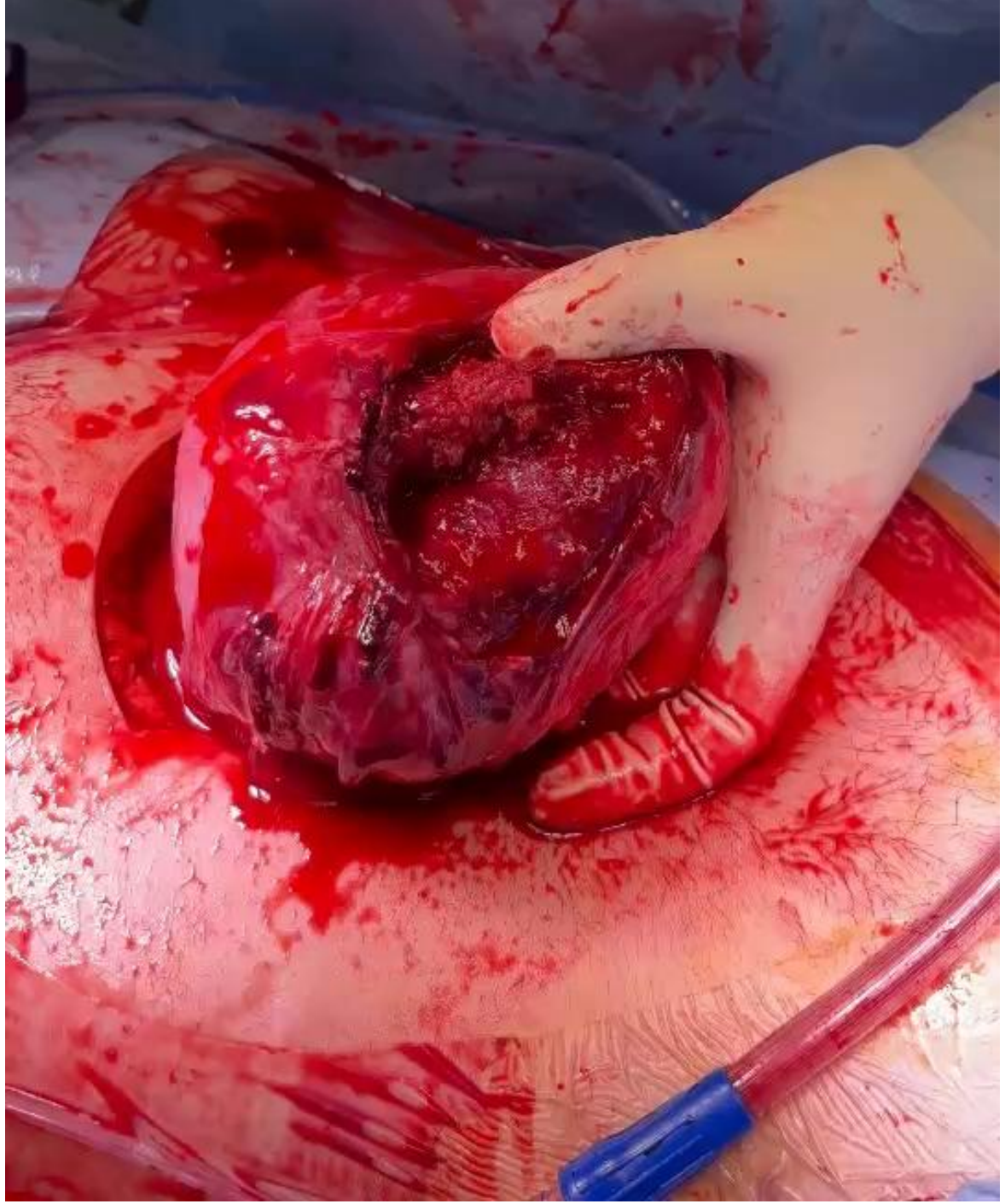
1. **Previous myomectomy x II**
2. **Pregnancy by ICSI**



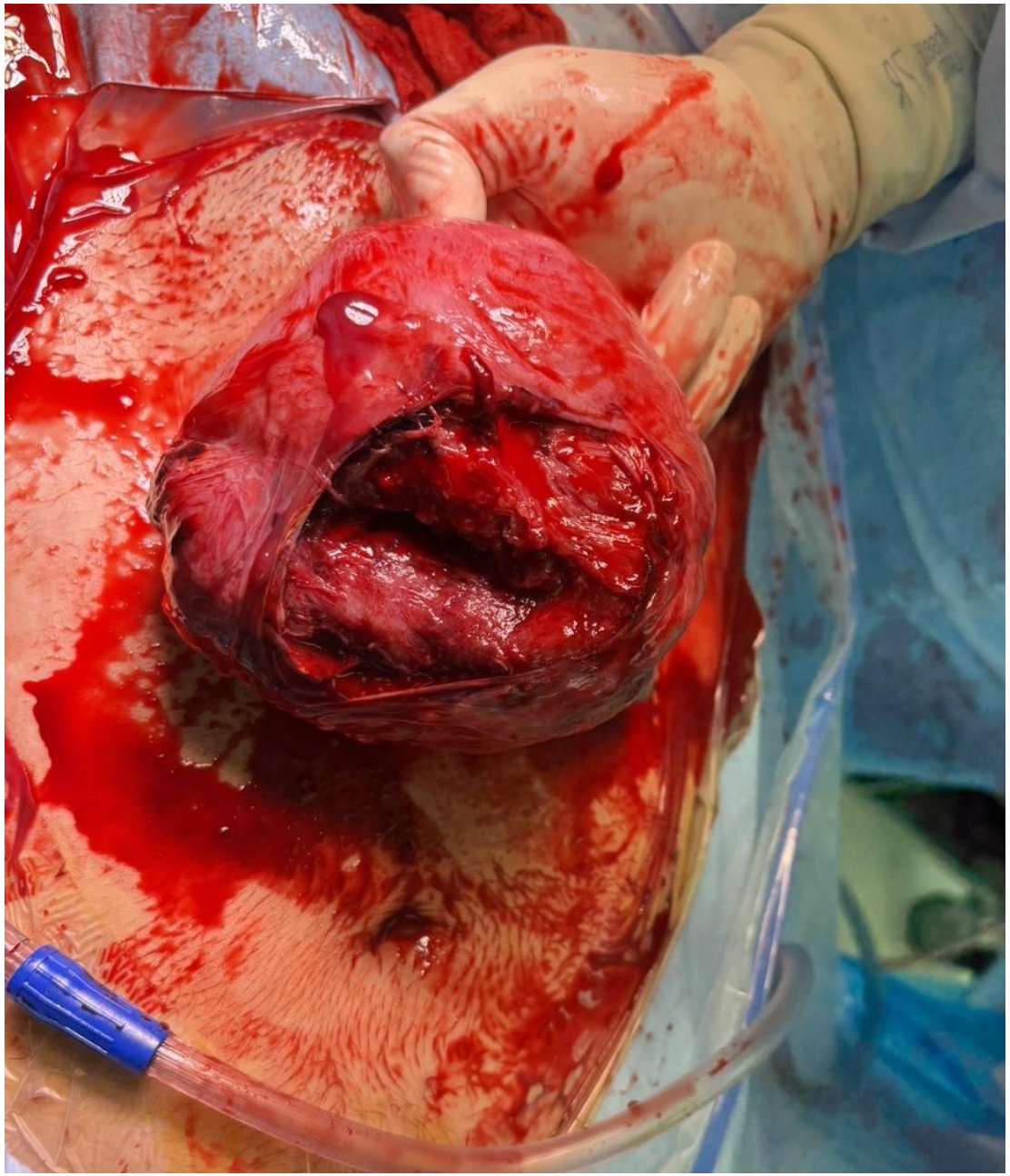
Chief complaint: Abdominal pain 1 hours PTA

-BP90/50 mmHg, PR80 bpm
-Agitation, Marked pale
-Abnormal: distension, moderate generalized tenderness with guarding positive at lower pelvic region, marked tenderness at uterus, FHS positive 80 bpm เบามาก
-Genitalia: not seen bleeding per vagina

Transabdominal US, confirm FHS bradycardia rate 80, minimal fluid in CDS



Courtesy of Sanpon Diawtipsukon M.D.



Courtesy of Sanpon Diawtipsukon M.D.

case 3

- Female 42 years old, no known U/D
- G2P1001 GA 39^{+4} weeks by ultrasound
  - 1^{st} ANC at GA 11 weeks at Ramathibodi Hospital

ANC risks

1. Polyhydramnios
2. Advanced maternal age

Admitted for IOL due to polyhydramnios

26/7/65
11.40 am

os closed, no eff, post, medium, MI
BISHOP 2

Cytotec(200mcg) ¼ tab Vg suppo
(dose 1)

17.00 pm

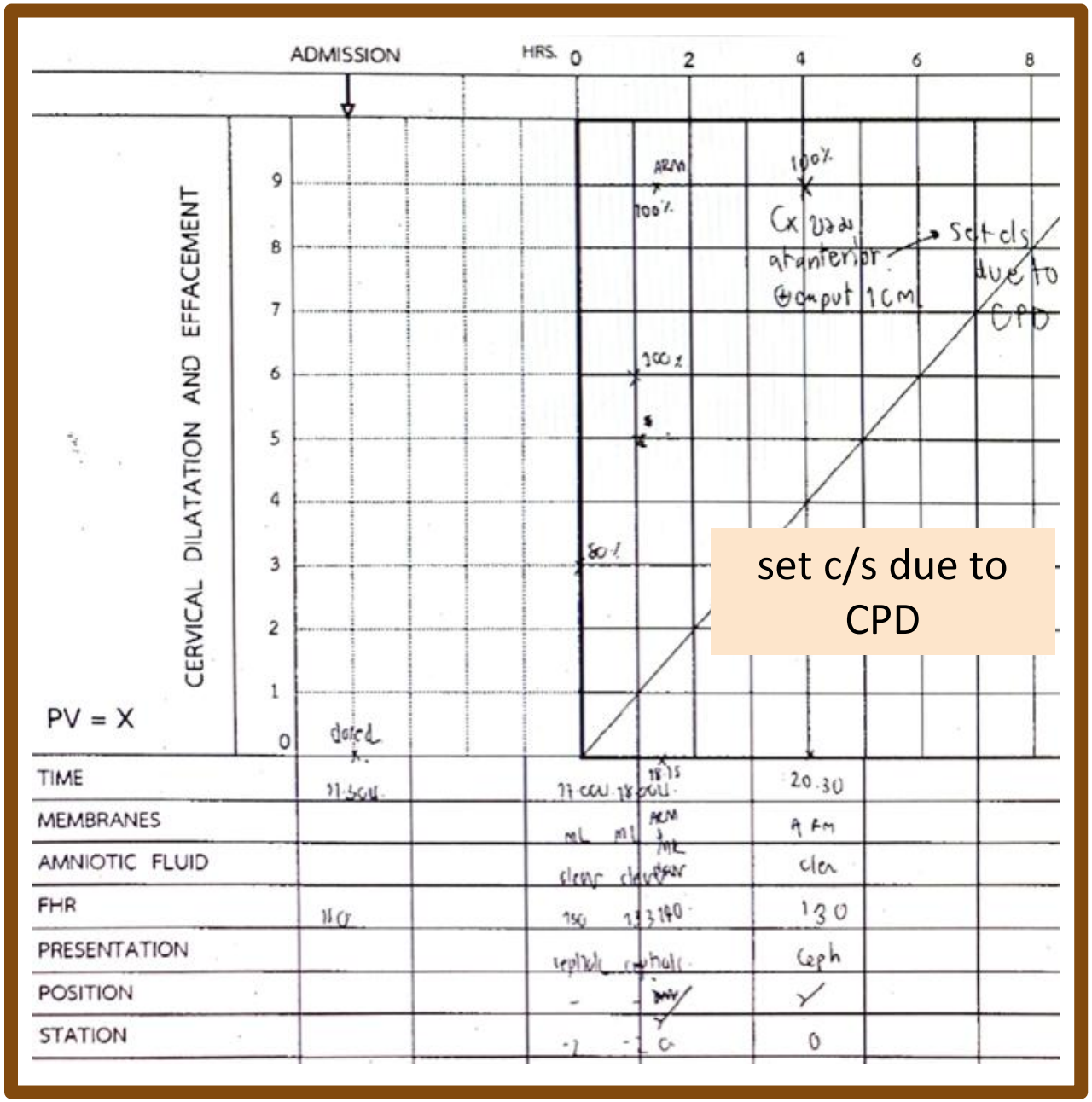
3 cm, 80%, -2, mid, soft, ML
BISHOP 9

Transfer to LR

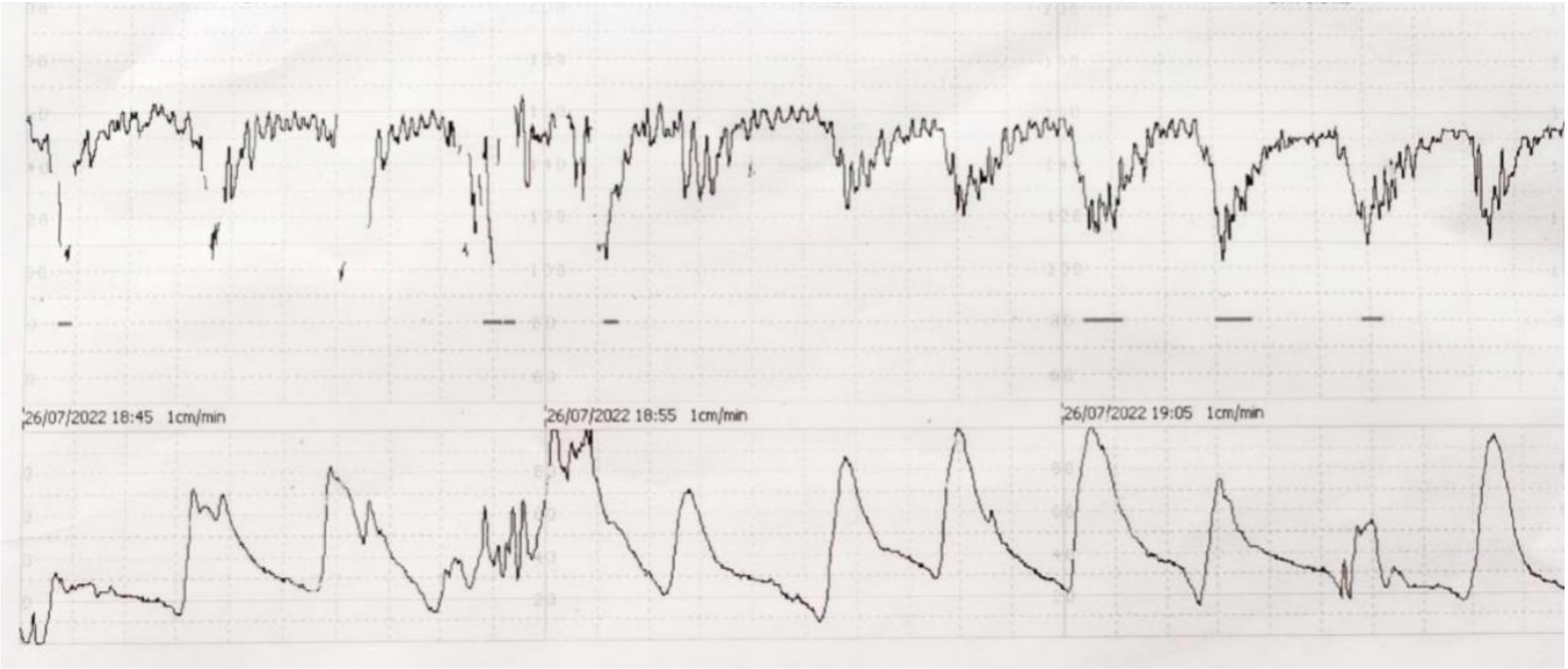
18.15 pm

9 cm, 100%, ML(prominent AF), mid, soft
UC: I 2 min, D 40 sec, mod intensity

ARM: clear AF, ROP position,
no cord detection, station 0

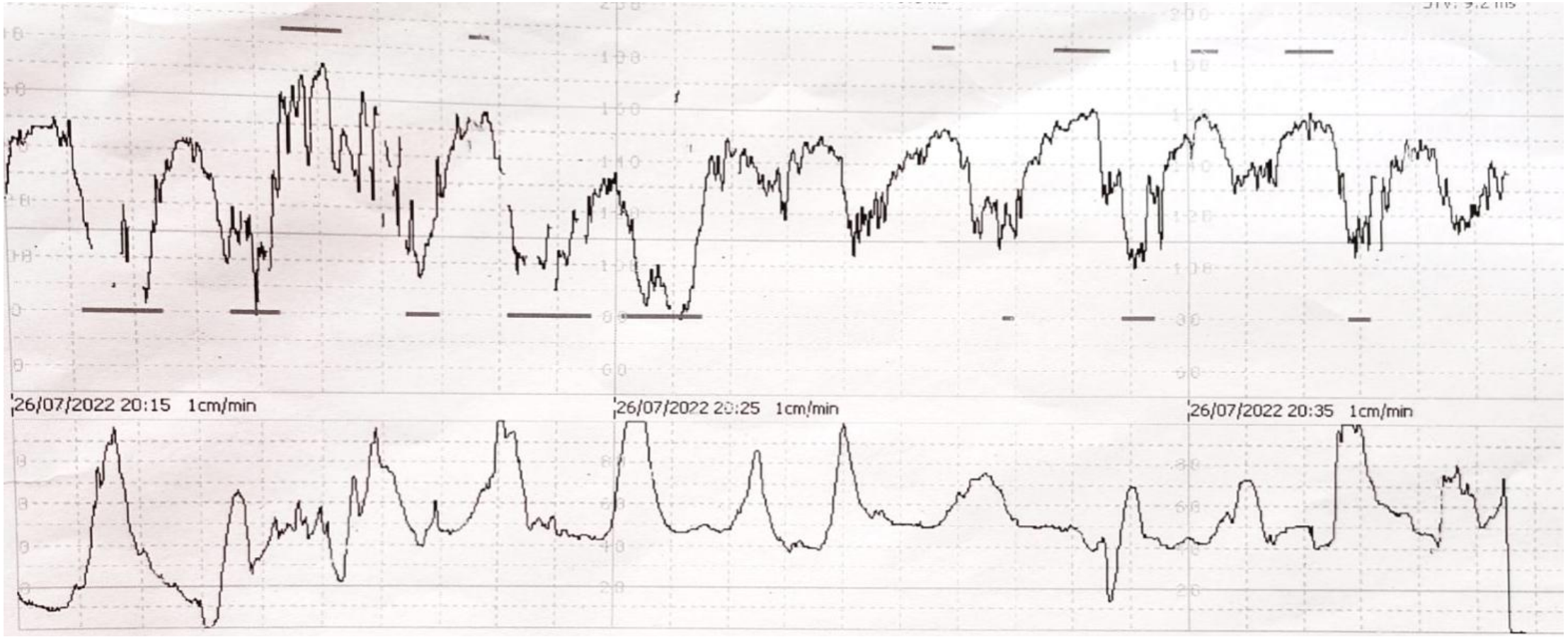


set c/s due to CPD



(18.55) > UC : I 2 min, D 40 sec, moderate intensity

> CTG : category II, FHR 140 bpm, recurrent variable deceleration



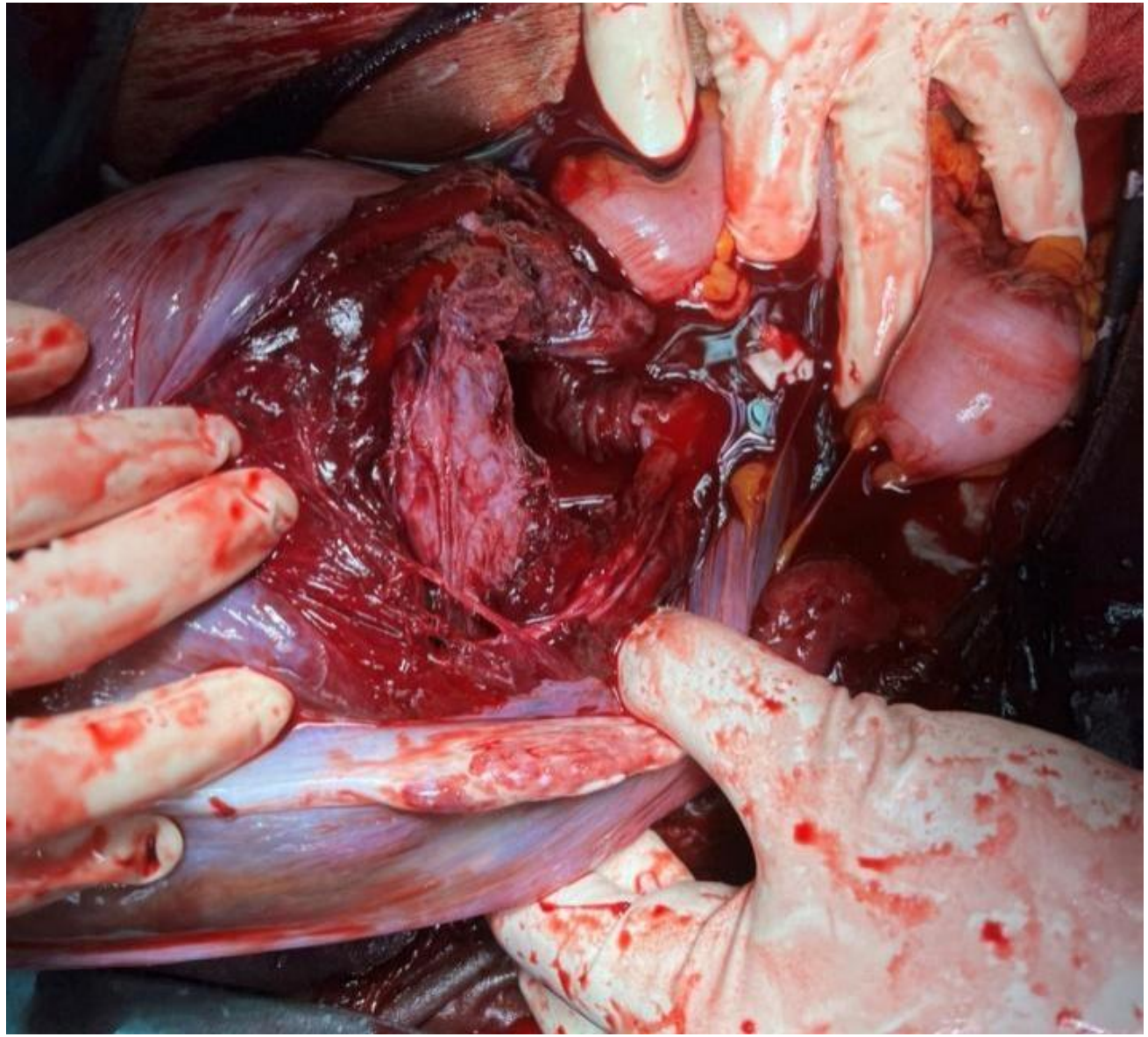
(20.30) ปวดท้อง PS 7/10 , V/S stable

> PV : 9cm ,eff 100% ,ROP position ,station 0 ,mid ,soft, anterior cervix swelling + caput 1 cm

> UC : I 2 min, D 40 sec, moderate intensity ,

> CTG : early DC , FHR 100-136 bpm

>> Set OR for C/S due to CPD at 20.45น. (26/7/65) <<

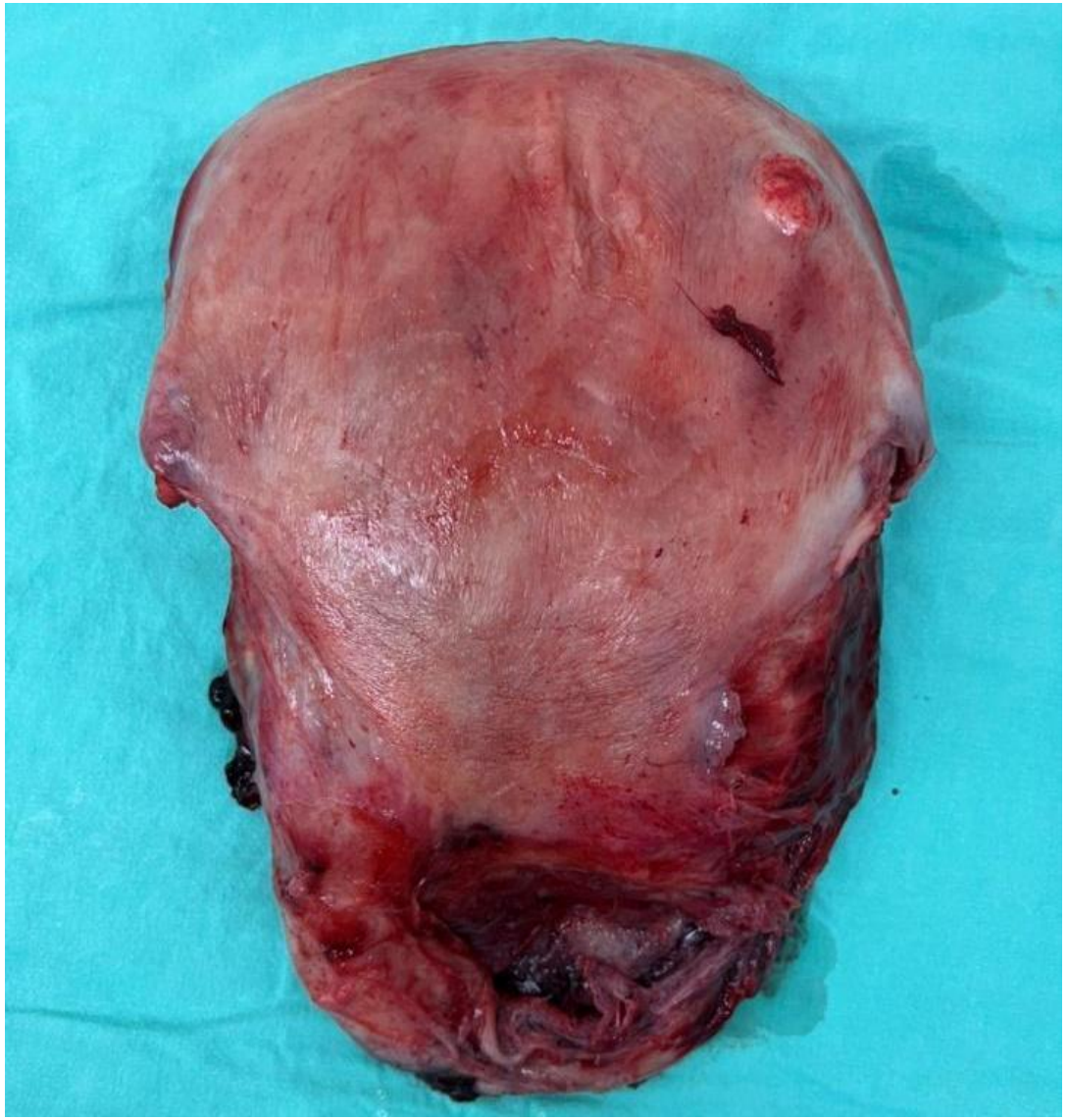


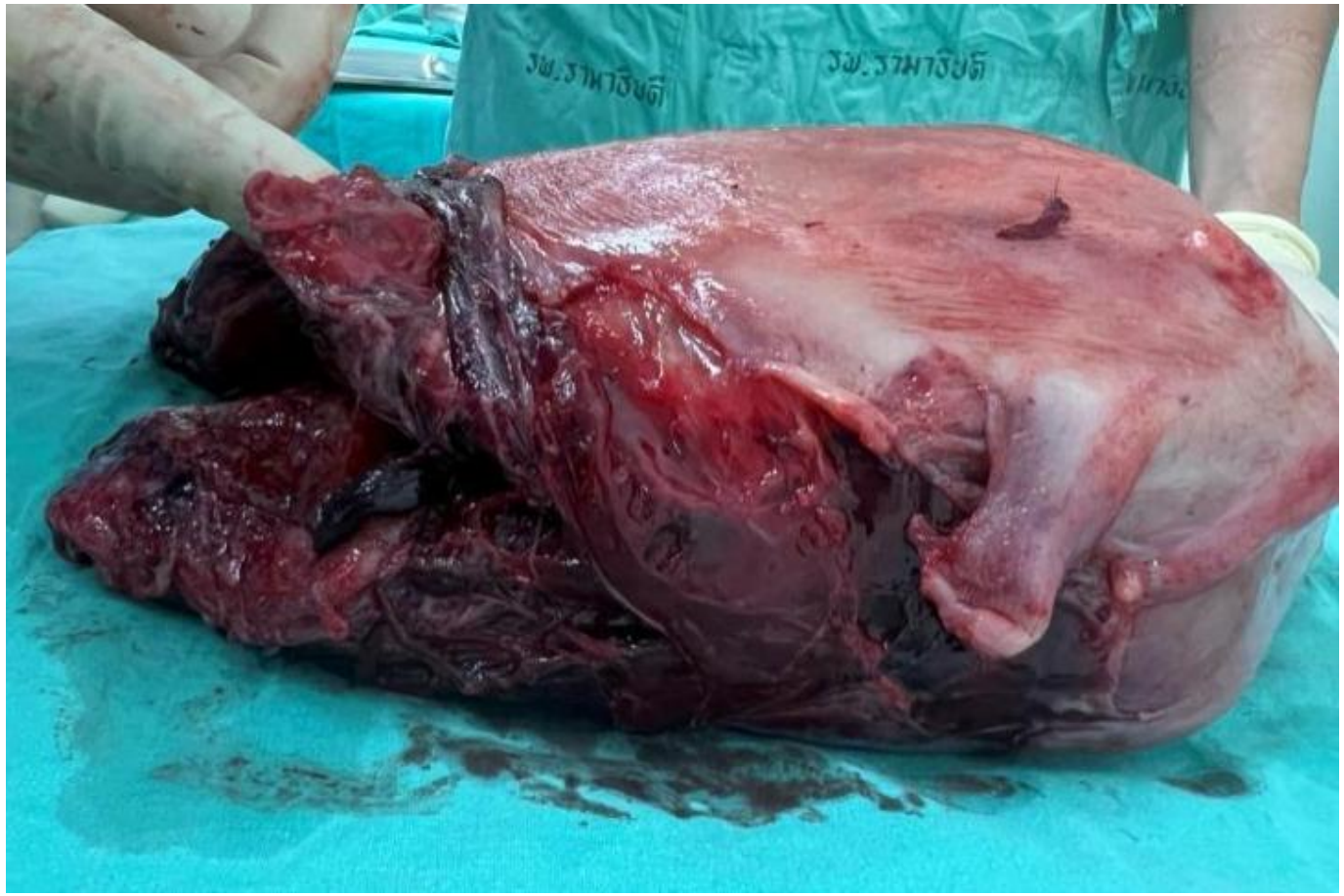
- หลัง spinal block มี Vaginal bleeding 100ml
  PV : 9cm, ไม่พบส่วนนำของทารก
- Female NB, BBW 4030 g
  Apgar 0,4,4 -> on ETT, NICU

Intraop: Uterine rupture at Lt. posterior uterus size 8cm extending to cervix

- SubTAH, EBL 2,000 ml
- intraop POC-Hb 5.6

Blood component: PRC 2u, FFP 2u, LPPC 4u




รพ.รามาธิบดี
รพ.รามาธิบดี

Management of Uterine Rupture

Nursing Recognition and Emergency Actions

Suspect uterine rupture if

- ❑ Previous uterine scar
- ❑ Sudden abdominal pain
- ❑ Maternal instability
- ❑ Vaginal bleeding
- ❑ Failure of labor progress
- ❑ Abnormal CTG
- ❑ Loss of fetal station

❑ **Call for Help Immediately**

Activate

- Obstetrician
- Anesthesiologist
- Neonatal team
- Operating room staff

Simultaneously

- Stop oxytocin
- Maternal assessment
- Continuous CTG

TAKE HOME MESSAGE

- Previous cesarean scar is the major risk factor
- Sign and symptom of impending rupture

  → Maternal agitation

  → Increasingly severe abdominal pain that persists between contractions
- Persistent fetal bradycardia is the most common early sign
- Initiate emergency nursing management
- Rapid multidisciplinary response saves lives