



PREVENTION OF OBSTETRIC HEMORRHAGE AND SURGICAL ALGORITHM

Dr. Yavuz Şimşek



TAJEV TÜRK ALMAN JİNEKOLOJİ
EĞİTİM, ARAŞTIRMA ve HİZMET VAKFI

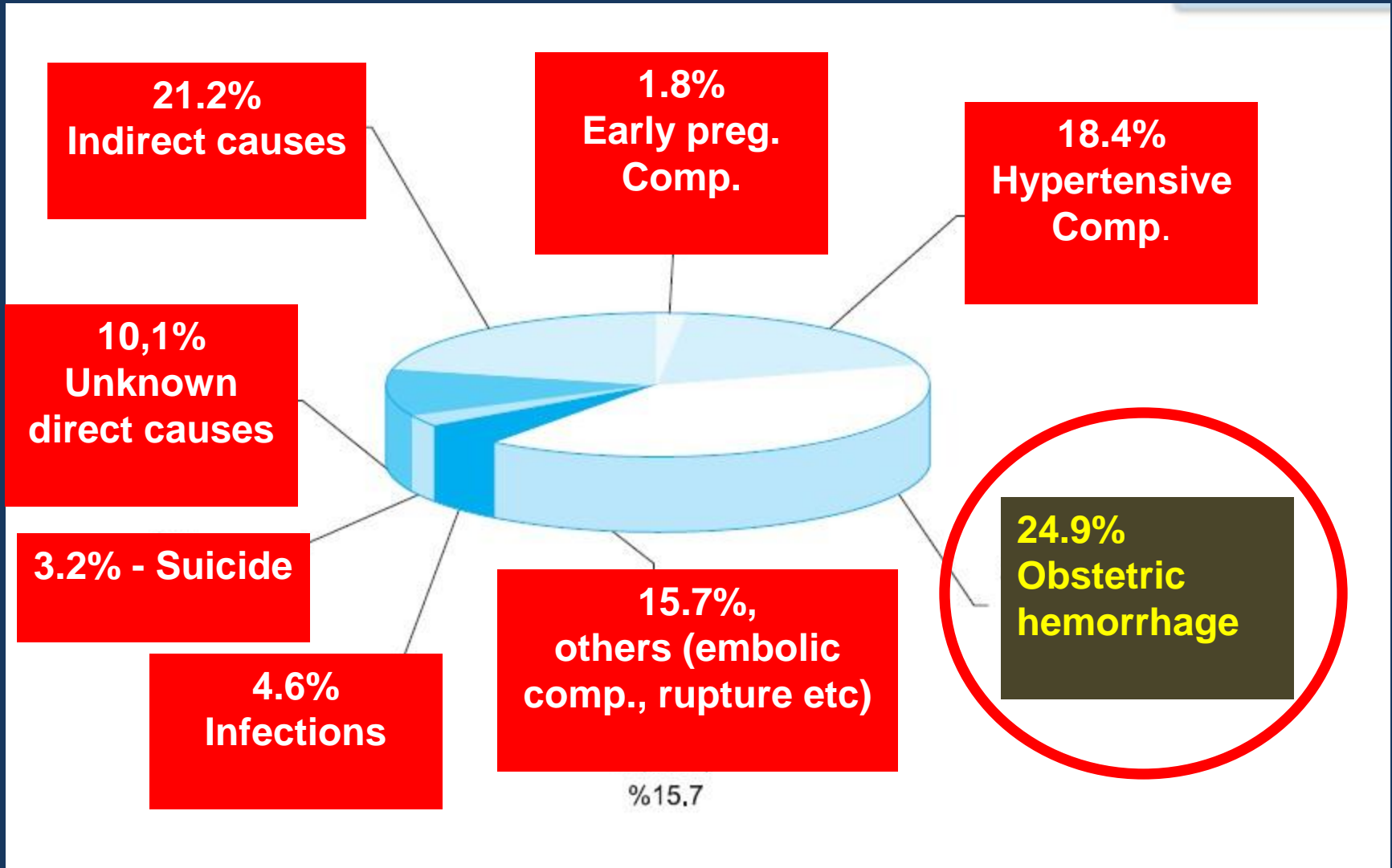
Size of the problem in global scale

TABLE 2. Etiologies of Maternal Mortality, Worldwide

	Developed Countries	Africa	Asia	Latin America and the Caribbean
Number of datasets	5	8	11	10
Number of maternal deaths	2 823	4 508	16 089	11 777
Haemorrhage	13.4%	33.9%	30.8%	20.8%
Hypertensive disorders	16.1%	9.1%	9.1%	25.7%
Sepsis/infections	2.1%	9.7%	11.6%	7.7%
Abortion	8.2%	3.9%	5.7%	12.0%
Obstructed labour	0.0%	4.1%	9.4%	13.4%
Anaemia	0.0%	3.7%	12.8%	0.1%
HIV/AIDS	0.0%	6.2%	0.0%	0.0%
Ectopic pregnancy	4.9%	0.5%	0.1%	0.5%
Embolism	14.9%	2.0%	0.4%	0.6%
Other direct causes	21.3%	4.9%	1.6%	3.8%
Other indirect causes	14.4%	16.7%	12.5%	3.9%
Unclassified deaths	4.8%	5.4%	6.1%	11.7%

Modified from *Lancet*. 2006;367:1066–1074.

Size of the problem in Turkey



Factors underlying the problem

Emergency
hemorrhage



Placenta
previa
a
invasion
ies
pture

ony
lacerations
placenta
invasion
ies
thy

Uterine rupture

Uterine atony

- **Grand Multiparity**
- **Prolonged induction**
- **Prolonged delivery**
- **Tocolytic use**
- **Partum precipitatum**
- **Manual removal of placenta**
- **Chorioamnionitis**
- **Epidural anesthesia**
- **Myoma**
- **Positive history**
- **Polyhydroamniosis, multiple pregnancy, macrosomia)**
- **Hypotension**

Labor related factors

Odds ratio of PPH for the considered risk factors.

Risk factor	Odds ratio (95% CI)	P value
Mother's age (5 years increment)	1.15 (1.06 – 1.24)	0.001
Mother's weight (5 Kg increment) *	1.04 (1.01 – 1.08)	0.036
Ethnical race (non-Caucasian vs Caucasian)	1.65 (1.32 – 2.07)	<0.0001
Blood group (0 vs non-0)	0.93 (0.81 – 1.07)	0.310
Hemoglobin (1 g/dL increment) †	0.84 (0.78 – 0.90)	<0.0001
Platelets ($50 \times 10^3/\mu\text{L}$ increment) †	0.98 (0.99 – 0.99)	0.048
Placenta weight (100 g increment)	1.24 (1.13 – 1.36)	<0.0001
Induced labour (yes vs no)	1.11 (0.94 – 1.31)	0.237
Analgesia (yes vs no)	0.94 (0.81 – 1.10)	0.449
<i>Episiotomy</i>		
- no	1 (Reference)	
- midline	1.35 (1.01 – 1.81)	0.048
- midlateral	2.48 (1.95 – 3.17)	<0.0001
Use of vacuum extractor (yes vs no)	1.45 (1.13 – 1.87)	0.004
<i>Kristeller's maneuver (yes vs no)</i>		
- no	1 (Reference)	
- 1 or 2	1.38 (1.15 – 1.65)	0.001
- >2	1.34 (1.07 – 1.68)	0.012
Retained placenta (yes vs no)	9.21 (5.09 – 16.68)	<0.0001
Genital tract lacerations (yes vs no)	1.65 (1.32 – 2.07)	<0.0001



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FIGO GUIDELINES

Prevention and treatment of postpartum hemorrhage in low-resource settings[☆]

FIGO Safe

Most PPH can be prevented !

Guideline
No. 52
May 2009
and April 2011

WHO recommendations
for the prevention
and treatment of
postpartum haemorrhage



Setting standards to improve women's health

PREVENTION AND MANAGEMENT OF POSTPARTUM HAEMORRHAGE



The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

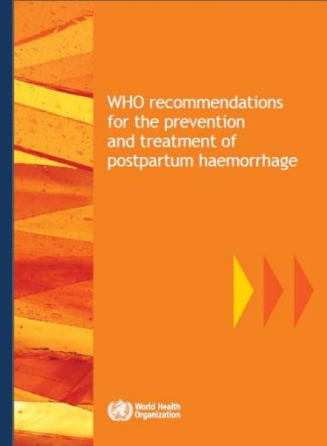


Society for
Maternal-Fetal
Medicine

OBSTETRIC CARE CONSENSUS

Prevention

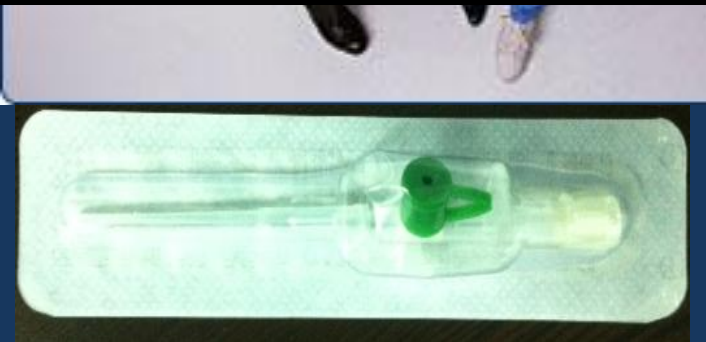
- **Community based healthcare programs**
- **Legislative and regulatory barriers that impede access to lifesaving care**
- **Coping with anemia, smoking and grand multiparity**
- **Appropriate antenatal care**
- **Optimization of indications for C/S**
- **Special attention for risky cases**
- **Provision of skilled birth attendants and improved obstetric services**



Preparation



- “The GDG also issued recommendations related to the **organization of PPH care**
- Health facilities delivering maternity services **should adopt formal protocols** for prevention and treatment of PPH and for patient referral.
- The use of PPH treatment **simulations** for pre-service and in-service training programmes was recommended.”



Obstetric risk factors and outcome of pregnancies complicated with early postpartum hemorrhage: A population-based study

MEYAL SHEINER¹, LIAT SARID², AMALIA LEVY³, DANIEL S. SEIDMAN⁴, & MORDECHAI HALLAK¹

Prevention

- **Liberal use of labor induction (OR 1.4, 95%CI 1.1–1.7)**
- **Routine episiotomy (OR 3.2, 95%CI 2.7–4.1)**
- **Kristeller maneuver (OR 4.0, 95%CI 3.5–4.7)**
- **Active management of third stage of labor (OR 3.9, 95%CI 2.7–4.2)**

Prevention

- Active management of third stage of labor



Active versus expectant management for women in the third stage of labour.

Beqley CM¹, Gyte GM, Devane D, McGuire W, Weeks A.

- 7 trial - 8247 women
- **Reduced risks of severe maternal hemorrhage** (>1000 mL: RR 0.34, 95% CI 0.14-0.87)
- **Reduced risks of postpartum maternal hemoglobin <9 g/dL** (RR 0.50, 95% CI 0.30-0.83)
- **A significant decrease in use of therapeutic uterotonics during the third stage or within the first 24 hours** (RR 0.19, 95% CI 0.15-0.23)
- **Non significant decrease in length of the third stage**



Joint Statement Management of the Third Stage of Labour to Prevent Post-partum Haemorrhage

International Confederation of Midwives (ICM)
International Federation of Gynaecologists and Obstetricians (FIGO)

ICM and FIGO are key partners in global Safe Motherhood efforts to reduce maternal death and disability in the world. Their mission statements share a common commitment in promoting the health, human rights and well-being of all women, most especially those at greatest risk for death and disability associated with childbearing. FIGO and ICM promote evidence-based, effective interventions that, when used properly with informed consent, can reduce the incidence of maternal mortality and morbidity in the world.

Severe bleeding is the single most important cause of maternal death worldwide. More than half of all maternal deaths occur within 24 hours of delivery, mostly from excessive bleeding. Every pregnant woman may face life-threatening blood loss at the time of delivery; women with anaemia are particularly vulnerable since they may not tolerate even moderate amounts of blood loss. Every woman needs to be closely observed and, if needed, stabilized during the immediate post-partum period.

Upon review of the available evidence, FIGO and ICM agree that active management of the third stage of labour is proven to reduce the incidence of post-partum haemorrhage, the quantity of blood loss, and the use of blood transfusion.

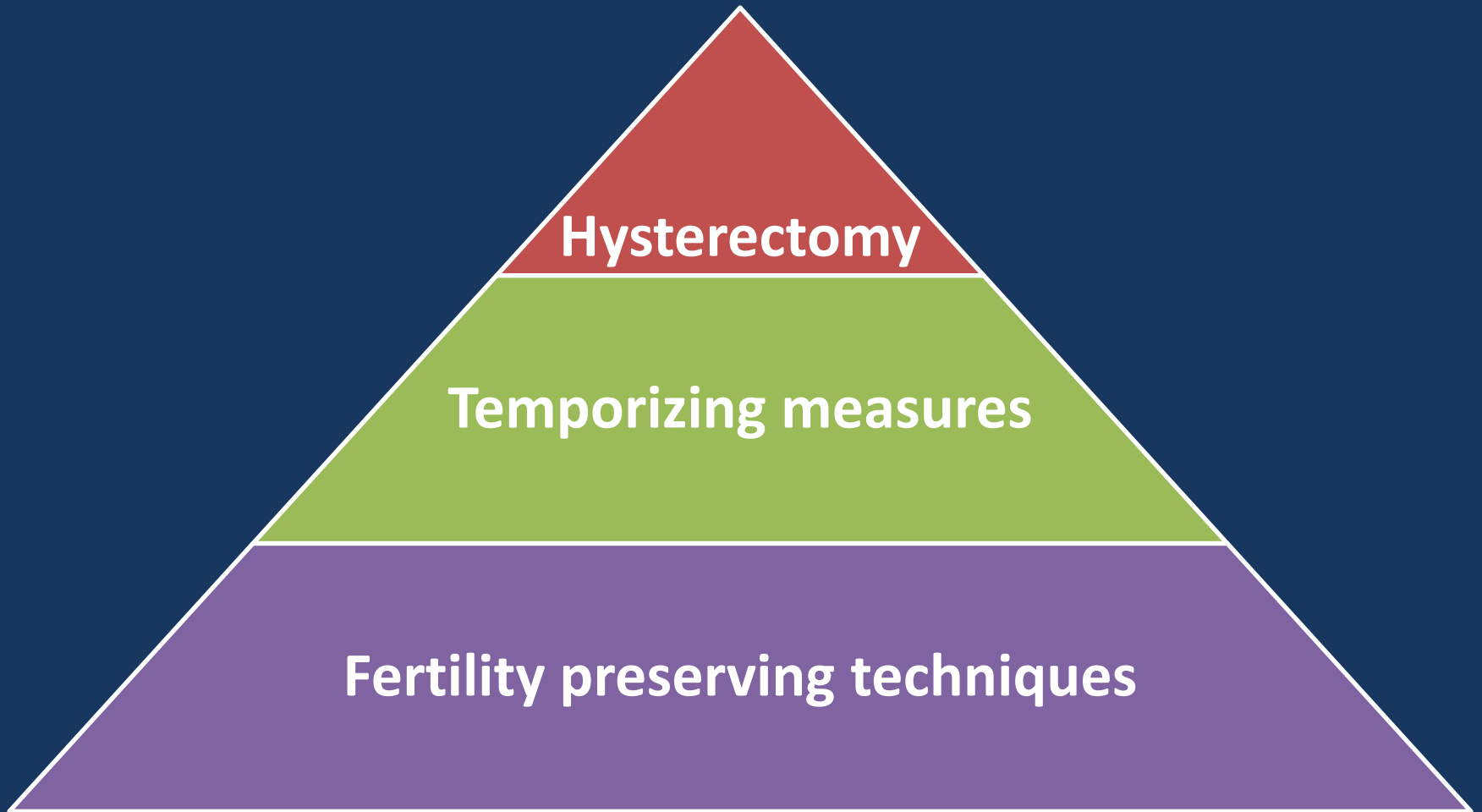
Active management of the third stage of labour should be offered to women since it reduces the incidence of post-partum haemorrhage due to uterine atony.

Active management of the third stage of labour consists of interventions designed to facilitate the delivery of the placenta by increasing uterine contractions and to prevent PPH by averting uterine atony. The usual components include:

- Administration of uterotonic agents
- Controlled cord traction
- Uterine massage after delivery of the placenta, as appropriate.

Every attendant at birth needs to have the knowledge, skills and critical judgment needed to carry out active management of the third stage of labour and access to needed supplies and equipment.

Surgical algorithm



Conservative techniques

- **Baloon tamponade**
- **Uterine artery and utero-ovarian artery ligation**
- **Internal iliac artery ligation**
- **Uterine compression sutures**

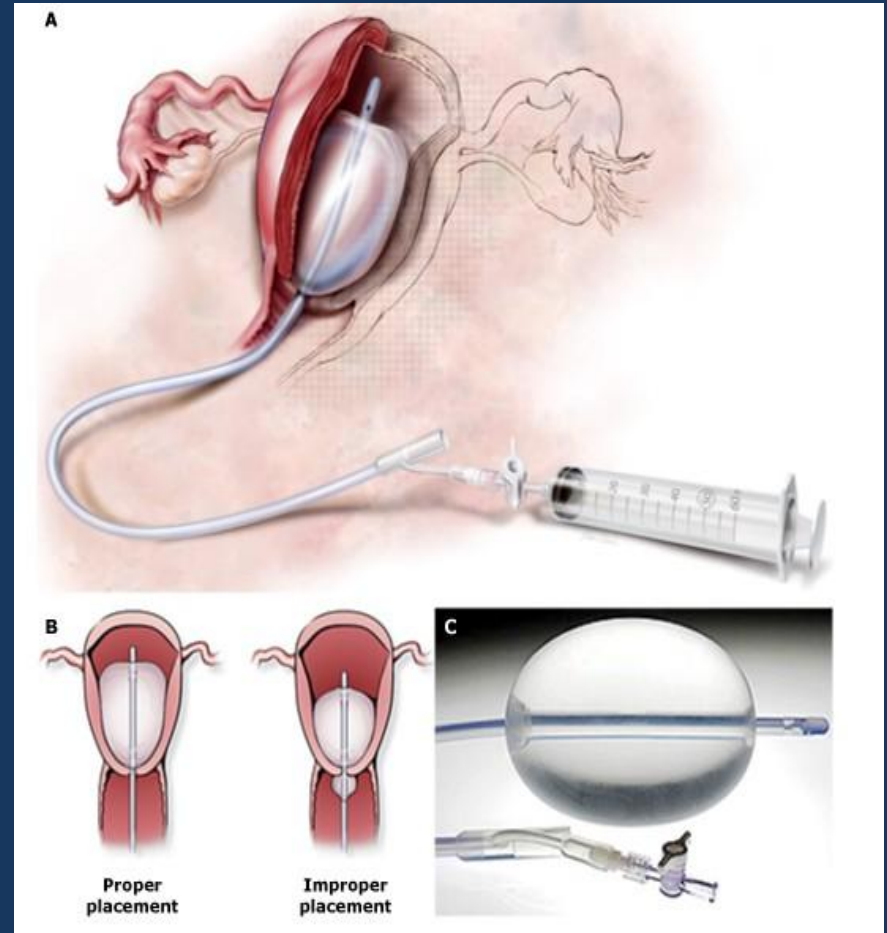


Balloon tamponade

- 57-100% success
- It may reduce bleeding and provide time to prepare for other interventions or transportation
- As balloon tamponade is the most rapid, least invasive, and least costly of other approaches, it can be considered as the **first line treatment** in cases those medical treatment fails

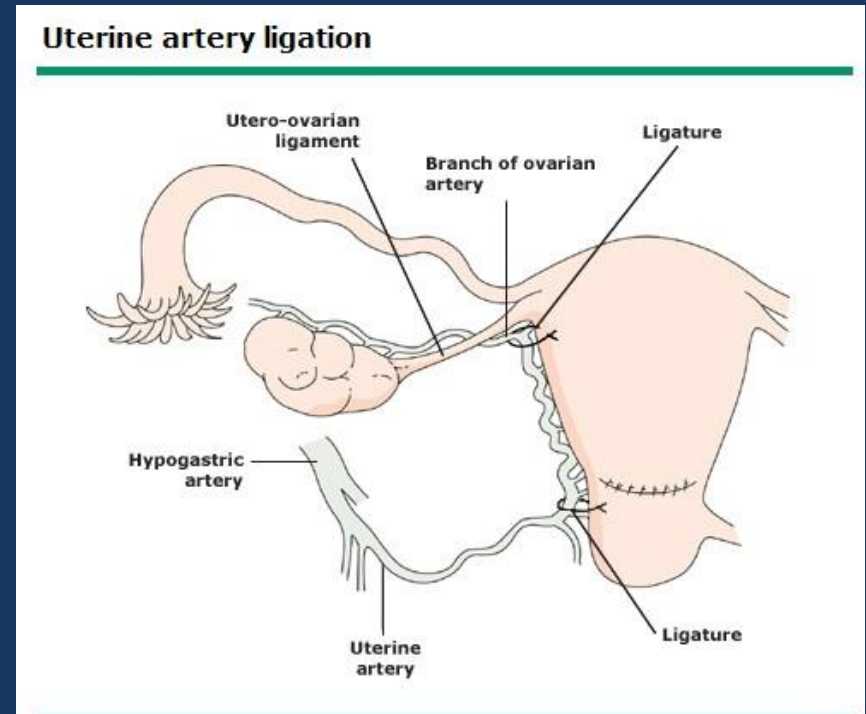
Balloon tamponade

- Improper placement may cause cervical laceration and decreases the efficacy
- ‘Tamponade test’
- Complications: Infection, and rupture

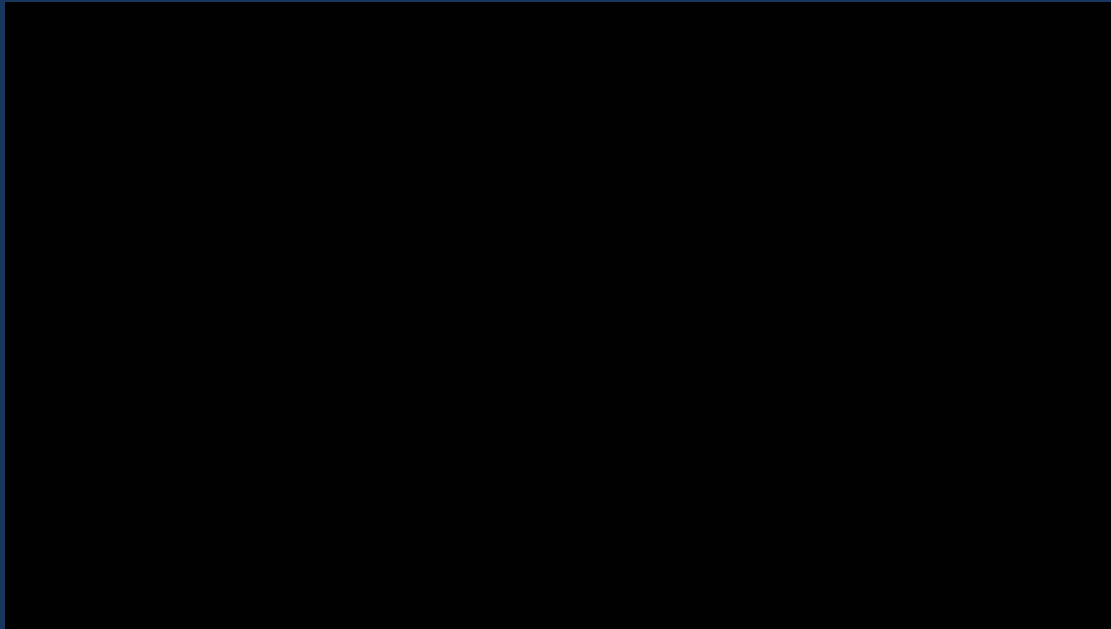


Uterine artery ligation /SWUD

- First-line surgical technique
- 85-90% success
- Uterine necrosis and placental insufficiency in a subsequent pregnancy

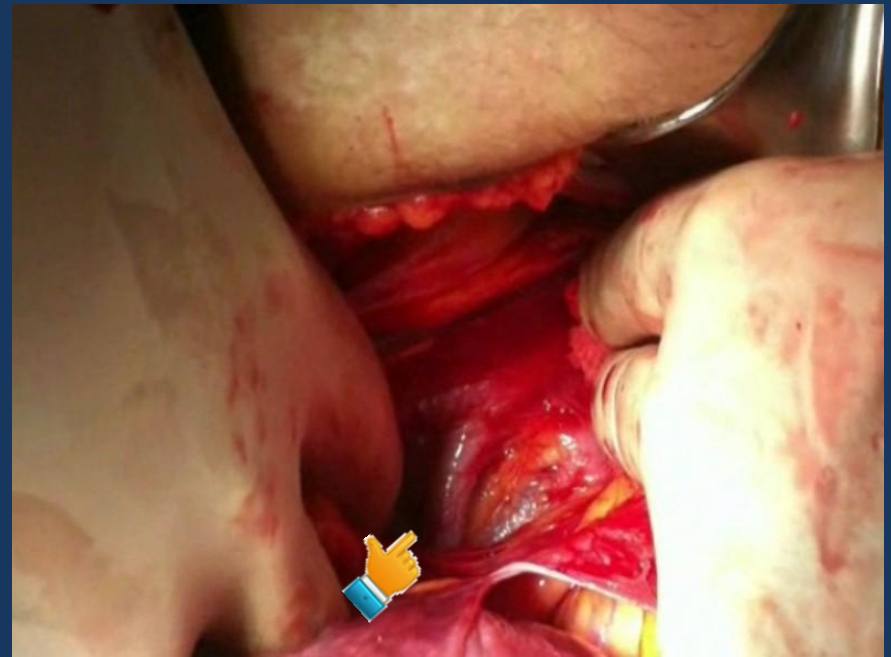


BLIIA



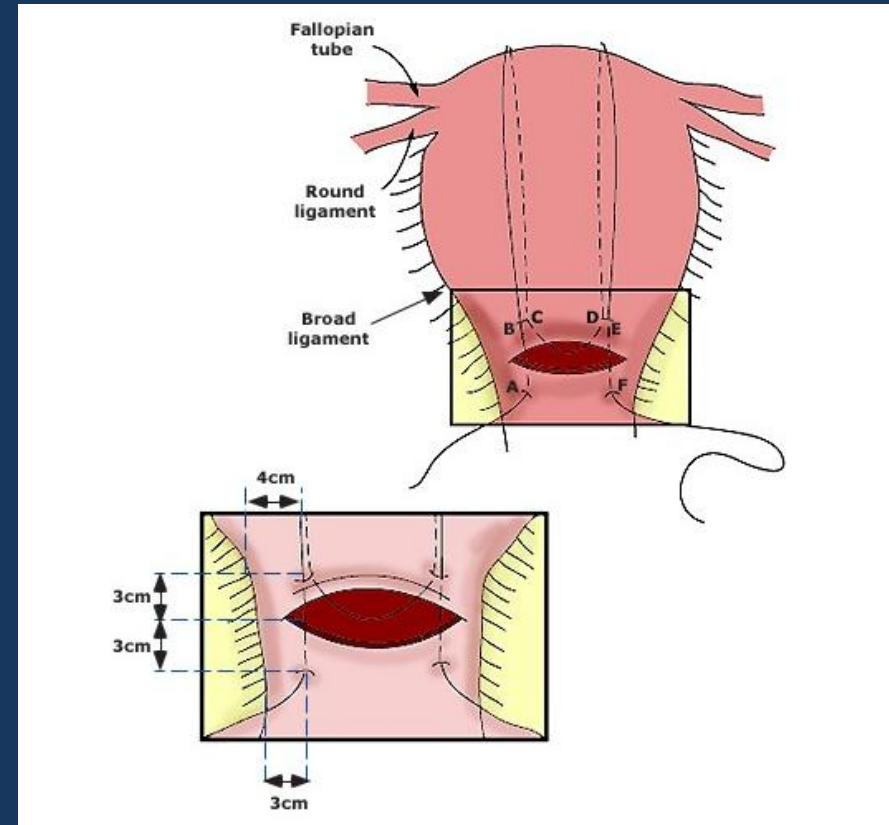
BLIIA

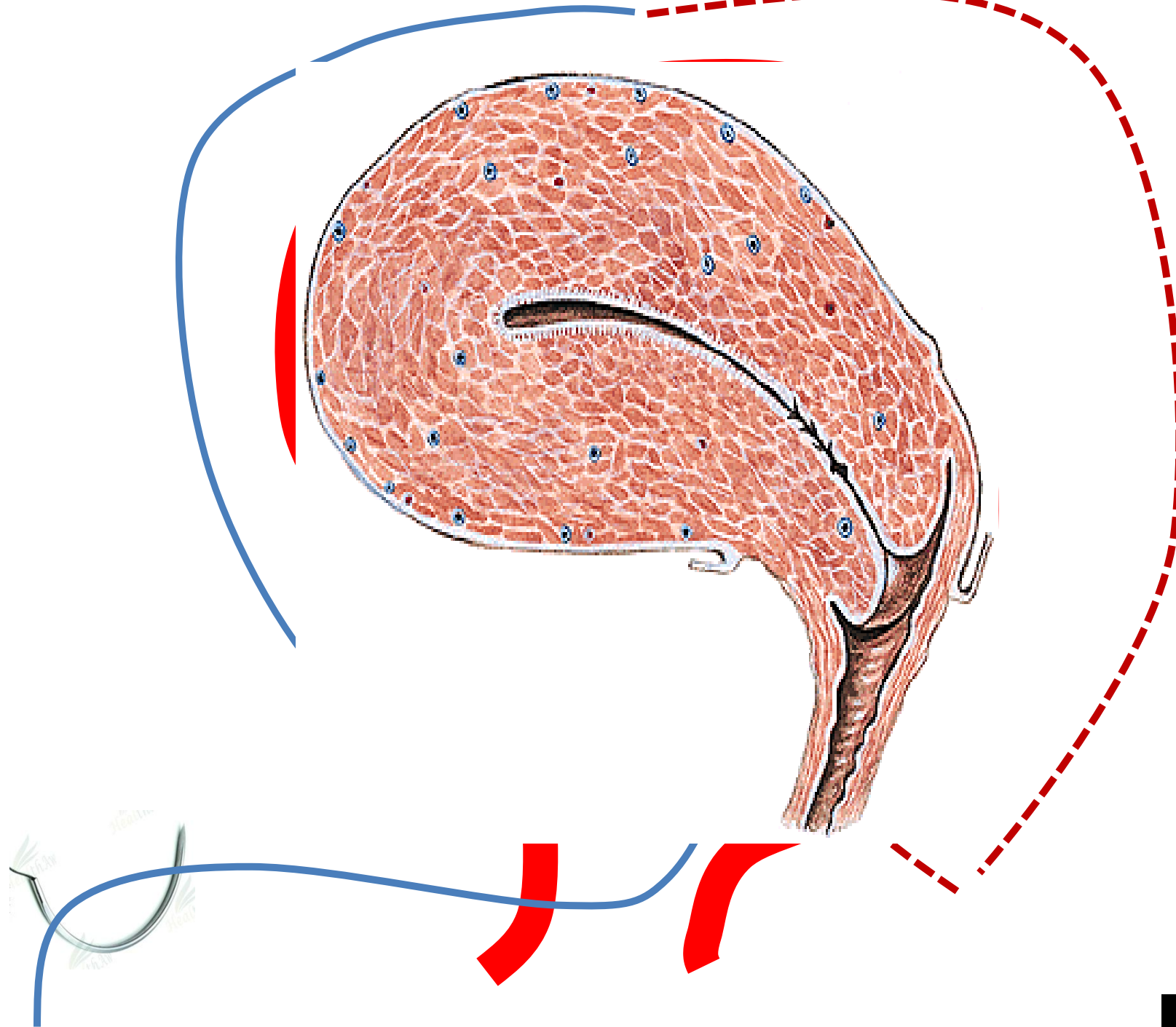
- 80-92% success
- 85% decrease in pelvic vascularization
- Technically difficult
- Injury to underlying vein
- Ureteric injury
- Inadvertent ligation of external iliac artery
- Gluteal or bladder necrosis
- Future fertility

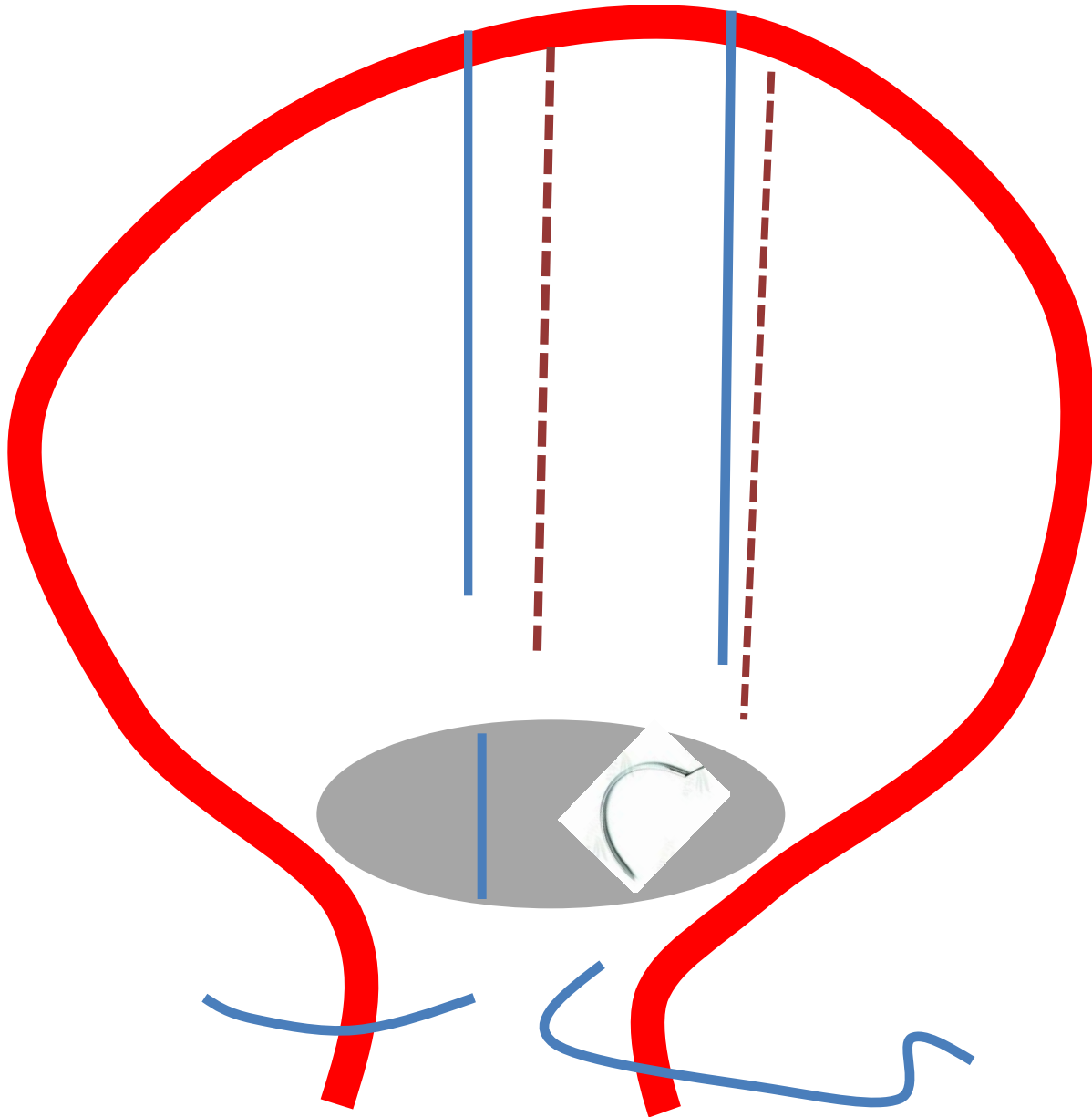


Uterine compression sutures

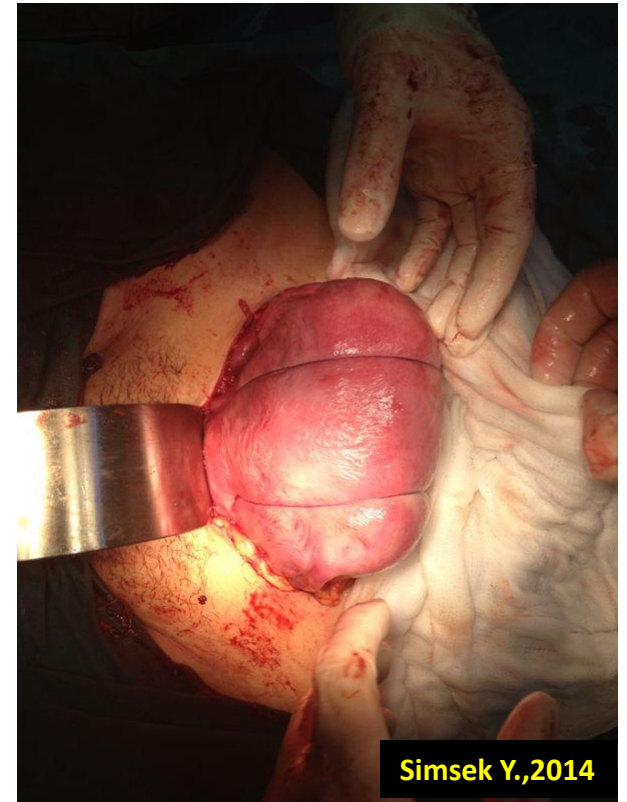
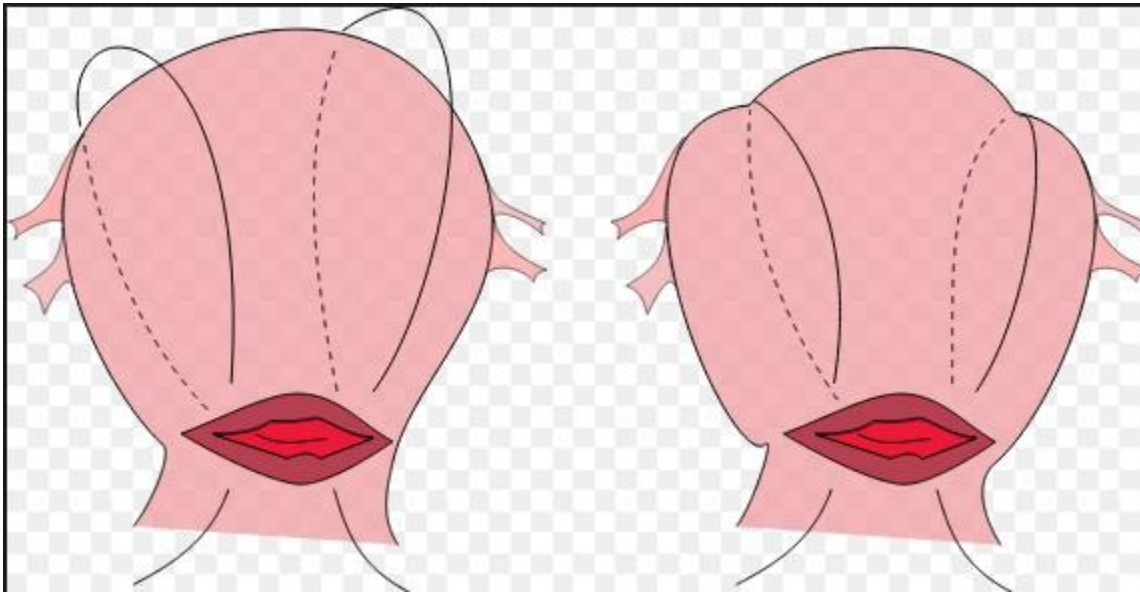
- Only used for uterine atony
- 75-89 % success
- Uterine sandwich (balloon+ B-lynch)



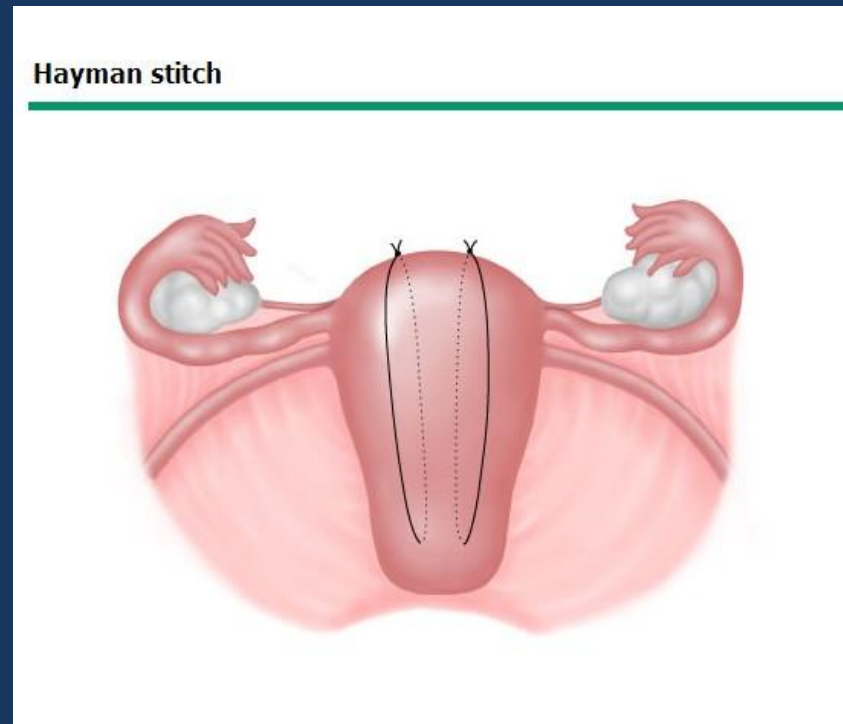
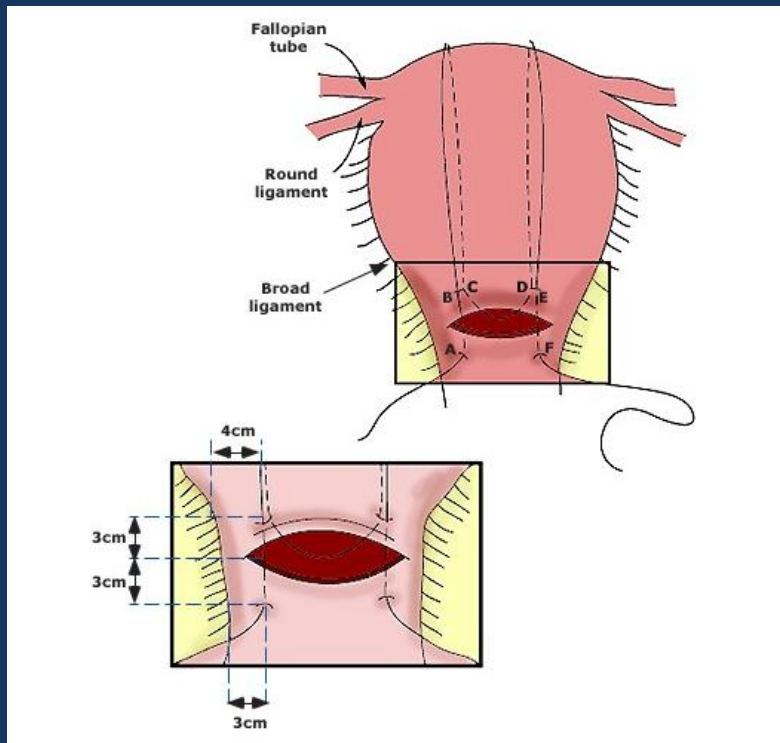




Uterine compression sutures

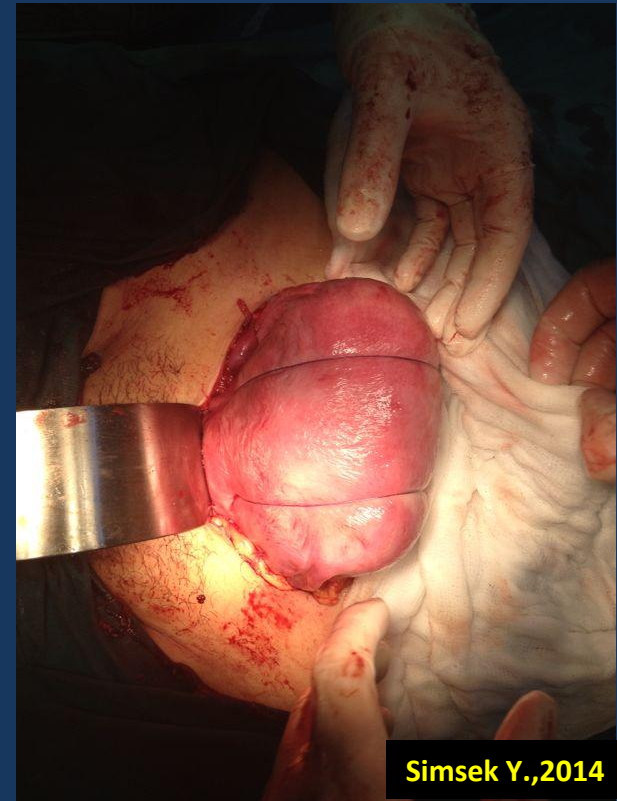


Hayman Stich (Modified B-lynch)



Uterine compression sutures

- Relatively simple to learn
- Appears safe
- Preserves future reproductive potential
- Uterine necrosis, pyometra, synechia formation



- Fuglsang J. Later reproductive health after B-Lynch sutures: a follow-up study after 10 years' clinical use of the B-Lynch suture. Fertil Steril 2014; 101:1194.

Temporazing measures

- Uterine artery embolization
- Aortic compression
- Intraoperative selective pelvic arterial embolization
- Intraaortic balloon catheter placement
- Intraoperative cell salvage

Which method should be the first?

Obstet Gynecol Surv. 2007 Aug;62(8):540-7.

Systematic review of conservative management of postpartum hemorrhage: what to do when medical treatment fails.

Doumouchtsis SK¹, Papageorghiou AT, Arulkumaran S.

- No rct

Method	Success rate (%)	P
Baloon tamponade	84.0 (95% CI, 77.5%-88.8%)	
Arterial embolization	90.7 (95% CI:87.5-94)	0.06
Uterine compression sutures	91.7% (95% CI, 84.9%-95.5%)	
BLIIA	84.6% (95% CI: 81.2%-87.5%)	

Which method should be the first?

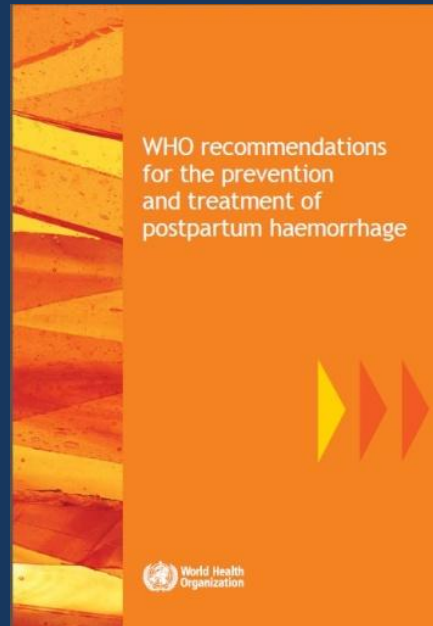
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Systematic review of conservative management of postpartum hemorrhage: what to do when medical treatment fails.

Doumouchtsis SK¹, Papaqeorghiou AT, Arulkumaran S.

- No rct

”there was **no high quality evidence** that any one method of management of severe postpartum hemorrhage was better than another”

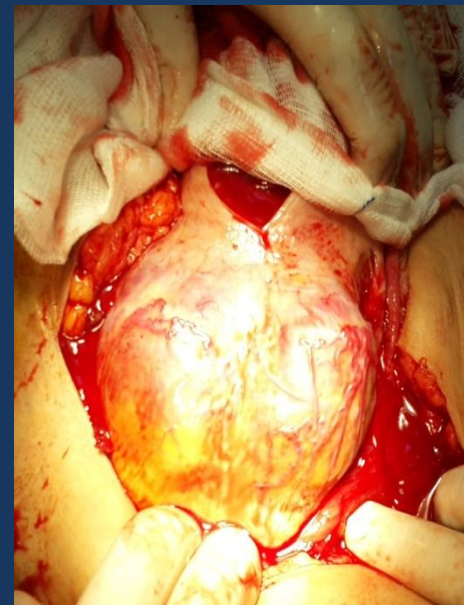


The GDG noted that conservative surgical approaches should be tried first. If these do not work, they should be followed by more invasive procedures. Compression sutures, for example, may be attempted as a first intervention, and if these fail, then uterine, utero-ovarian and hypogastric vessel ligation may be tried. If life-threatening bleeding continues even after ligation, then a subtotal (otherwise known as supracervical) or total hysterectomy should be performed.

Peripartum hysterectomy

Planned

- Placental invasion abnormalities
- Stage 1a2, 1b cervical cancer
- Severe puerperal infection



Simsek Y.,2014

Peripartum hysterectomy

Emergent

- Uterine atony
- Uterine rupture
- Leiomyoma excision
- Laceration of uterine vessels



Peripartum hysterectomy

Subtotal

- Decreased blood loss
- Decreased operating time
- Fast recovery
- Higher rates of re-operation
- Higher perioperative death

Total

- More ureteric injury
- More bladder injury
- More vascular injury
- Better outcome in cases cervical injury or placenta accreta

Complications

4967 peripartum hysterectomy:

- **Transfusion (46-64 %)**
- Febrile morbidity (11 to 34 %)
- Cystotomy (6 to 29 %)
- Ureteral injury (2 to 7 %)
- Reoperation (4 to 33 %)
- Oophorectomy (6 %)
- Venous thromboembolism (1 to 4 %)
- Intestinal or vascular injury (≤ 1 %)
- Death (0 to 4.2 %)



FETAL KALP TARAMA KURSU

11 Mayıs 2014

TIP FAKÜLTESİ KONGRE SALONU

Kayıt ve iletişim
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0532 711 99 11

1. OTURUM

OTURUM BAŞKANLARI: Doç. Dr. Nuri Danışman - Yrd. Doç. Dr. Zeynep Özcan Dağ- Yrd. Doç. Dr. Özlem Tulmaç

	KONU	KONUŞMACI
0:20-10:40	Konjenital kalp hastalıklarında prenatal tanının önemi	Prof. Dr. Feride Söylemez
0:40-11:00	Temel kalp taraması	Prof. Dr. Acar Koç
1:00-11:20	Genişletilmiş fetal kalp taraması	Prof. Dr. Atıl Yüksel
1:20-11:40	Situs ve pozisyon anomalileri	Doç. Dr. Gökhan Yıldırım
1:40-12:00	TARTIŞMA	
2:00 -13:00	ÖĞLE YEMEĞİ	

2. OTURUM

OTURUM BAŞKANLARI: Prof. Dr. Feride Söylemez – Prof. Dr. Nev'in Sağsöz

	KONU	KONUŞMACI
3:00-13:20	ASD, VSD, AVSD	Doç. Dr. Nuri Danışman
3:20-13:40	Büyük damar çıkış anomalileri	Doç. Dr. Halil Aslan
3:40-14:00	Kardiyomegali ve kalp tümörleri	Doç. Dr. Şevki Çelen
4:00-14:20	Kardiyak ritim bozuklukları	Doç. Dr. Yavuz Şimşek
4:20-14:40	TARTIŞMA	
5:00-16:30	HASTA BAŞI PRATİK UYGULAMA	

Programa katılım için kurs sekreterine e-mail ya da telefonla ulaşarak kayıt yaptırılması gerekmektedir.

Türkiye Maternal Fetal Tıp ve Perinatoloji Derneği -KIRIKKALE ÜNİVERSİTESİ TIP FAKÜLTESİ
Kadın Hastalıkları ve Doğum A.B.D