Hospital General de Villalba
Comunidad de Madrid
Hospital Universitario Gregorio Marañón
salud
Hospital Universitario Miguel Servet
Cuidamos de la mujer

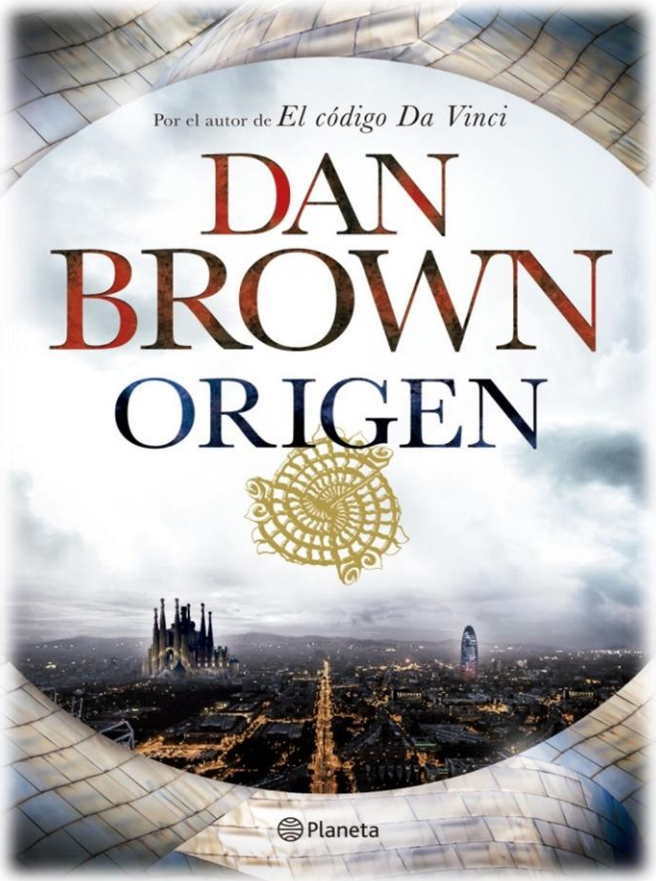
III CURSO PRACTICO DE URGENCIAS OBSTETRICAS

Actualización en hemorragia postparto

Principios generales y Protocolo de la Hemorragia Postparto

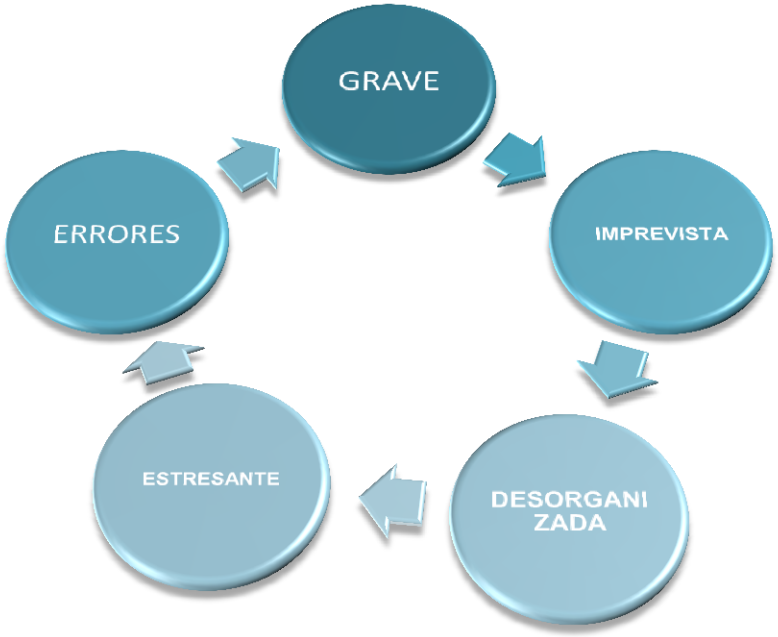
DR. CASTAN

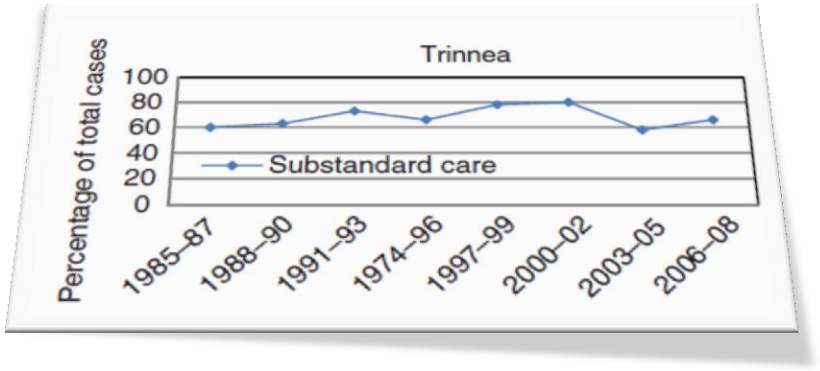
¿DE DONDE VENIMOS?

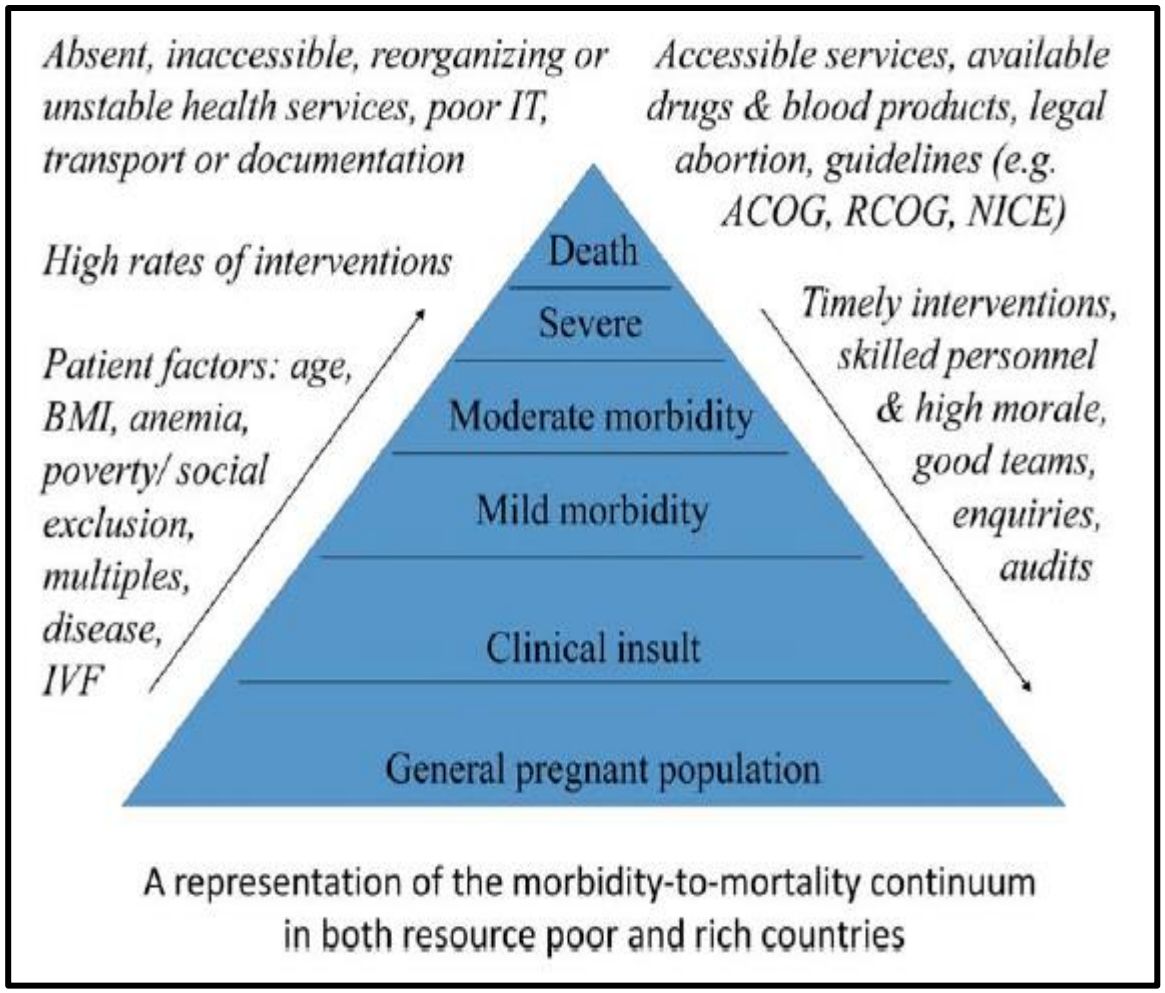


¿A DONDE VAMOS?

La hemorragia postparto
NO es un diagnóstico sino un signo clínico que lo provoca una situación que requiere diagnóstico







20-25% de muertes maternas en países desarrollados (140.000 /año)
Incidencia entre el 5-15% (Severas: 10-15%)
Gran morbilidad (Evitable en muchas ocasiones con manejo adecuado)

Sheldon WR. BJOG 2014; 121 Suppl1: 5-13

Making Pregnancy Safer

A NEWSLETTER OF WORLDWIDE ACTIVITY

Reducing the Global Burden:
Postpartum Haemorrhage

Obstetric haemorrhage is the world's leading cause of maternal mortality, responsible for an estimated 127 000 deaths annually. Postpartum haemorrhage (PPH) is the most common type of obstetric haemorrhage and accounts for the majority of the 14 million cases that occur each year.

Failure of the uterus to contract adequately after childbirth is the most common cause of postpartum haemorrhage. In the absence of timely and appropriate action, a woman could die within a few hours.

In the developed world, PPH is a largely preventable and manageable condition. In developing countries, mortality from PPH remains high and recent studies have shown that PPH causes up to 60 per cent of all maternal deaths. For example, PPH accounts for 59 per cent of maternal deaths in Burkina Faso, 53 per cent in the Philippines, and 43 per cent in Indonesia. PPH also causes considerable suffering for women and their families and places a heavy burden on national health systems.

Based on the recent proven advantages of oxytocin (more effective, fewer side effects, less expensive compared to other medicines), the panel recommended oxytocin as the drug of choice for prevention.

Maternal, Newborn and Infant Clinical Outcome Review Programme

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

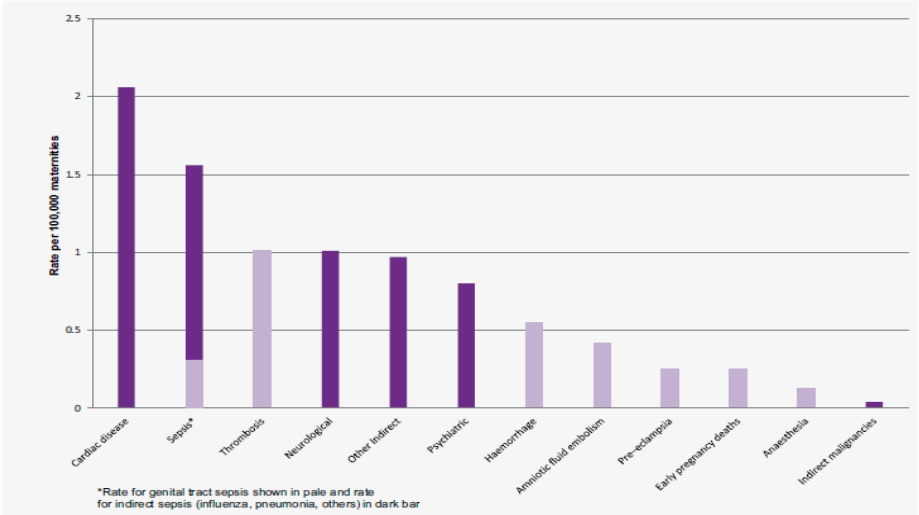
Saving Lives, Improving Mothers' Care

Surveillance of maternal deaths in the UK 2011-13 and lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009-13

December 2015

9 women per 100,000 died up to six weeks after giving birth or the end of pregnancy in 2011 - 13

Figure 2.3: Maternal mortality by cause 2011-13



FIGO
INTERNATIONAL FEDERATION OF GYNECOLOGY & OBSTETRICS

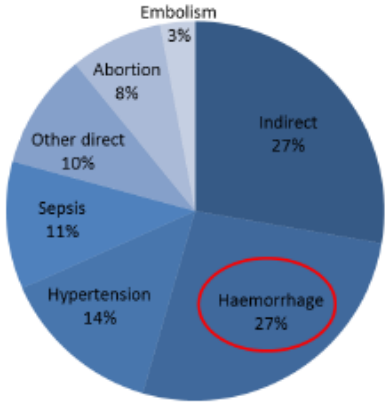
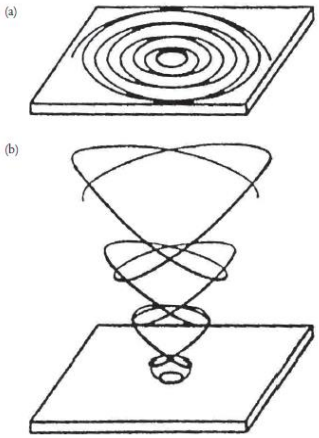
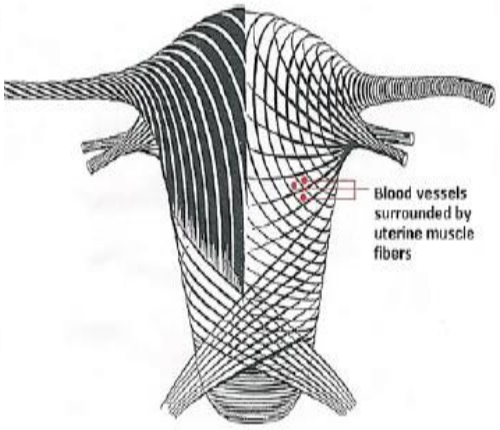
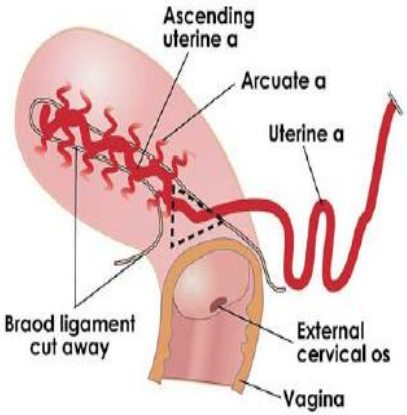


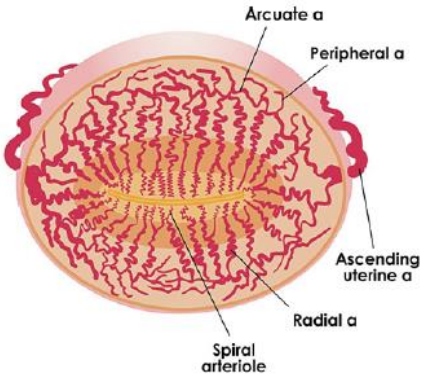
Chart showing causes of maternal death

La esposa del Shah Jahan de la India, la Emperatriz Mumtaz, tuvo 14 hijos y murió después de su último parto de una hemorragia postparto en 1630. Tan grande fue el amor del Shah Jahan para su esposa que él construyó tumba más hermosa del mundo en su memoria









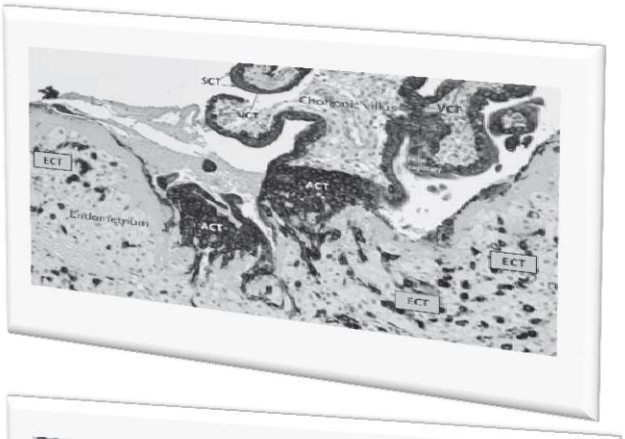
- **Evolución humana: encefalización**

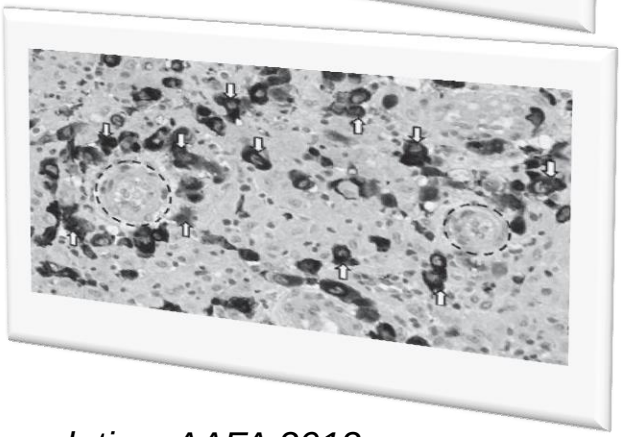
- **Fetos más grandes y desarrollados**

- **Adaptación placentaria**

- **Mayor invasión y vascularización**

- **Dificultosa separación**

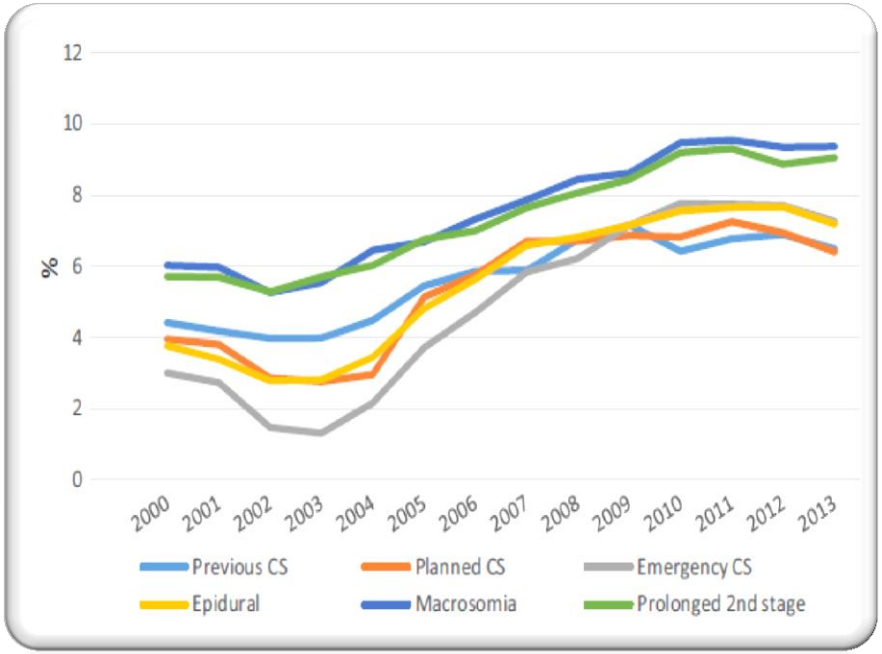


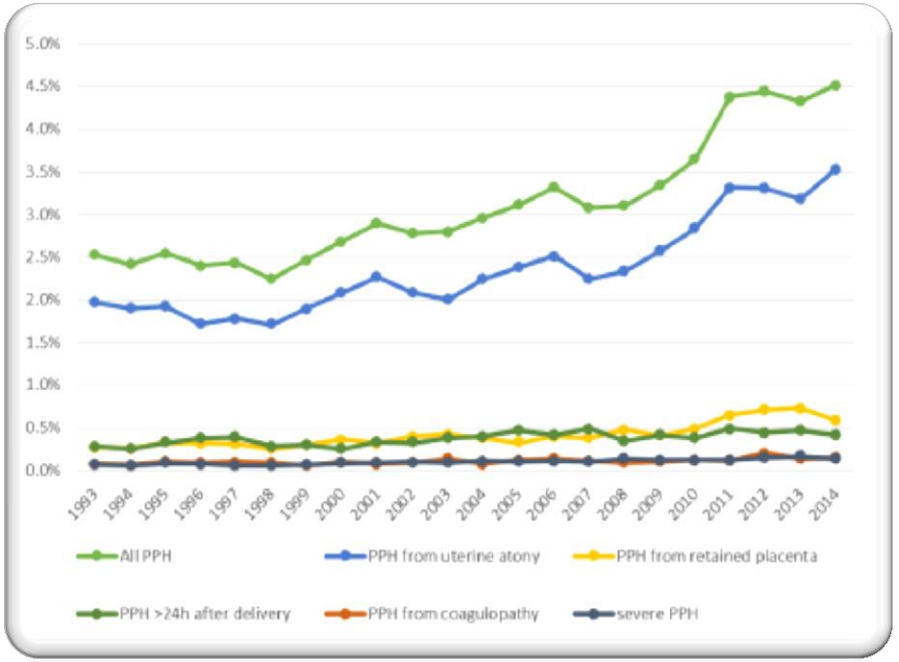


Developing the brain: a potential role for the placenta in hominin brain evolution. AAFA 2012

Increasing incidence of postpartum hemorrhage: the Dutch piece of the puzzle

Acta Obstetricia et Gynecologica Scandinavica **95** (2016) 1104–1110





Temporal trends of postpartum haemorrhage in Switzerland: a 22-year retrospective population-based cohort study

Swiss Med Wkly. 2017;147:w14551

- PPH incidence increasing (UK + abroad)
  - Rate doubled in England over 5 years:

    7% in 2007 to 13% of maternities in 2011/2012 [1]

- 0.6% of maternities had "Major Obstetric Haemorrhage"*in Scotland 2011[2]

  *blood loss ≥2500ml / blood transfusion ≥5 units red cells / treatment for coagulopathy

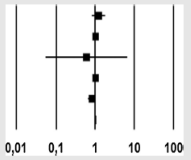
1. Health and Social Care Information Centre. (2012).
2. Scottish Confidential Audit of Severe Maternal Morbidity 9th Annual Report 2011 Healthcare Improvement Scotland

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

Relationship Between Maternal Characteristics and Postpartum Hemorrhage: A Meta-Analysis Study

Relationship Between Maternal Age (≥ 35 vs. < 35 Years) and PPH

Author, Year	Maternal Age ≥ 35 Years PPH	Maternal Age ≥ 35 Years Total	Maternal Age < 35 Years PPH	Maternal Age < 35 Years Total	Weight (%)	*OR*, M-H, Fixed [95% CI]
Bais et al., 2004	33	149	630	3,315	0.29	1.21 [0.82, 1.80]
Ford et al., 2007	1,052	21,983	6,653	142,150	10.36	1.02 [0.96, 1.09]
Nojomi et al., 2010	1	245	2	293	0.01	0.60 [0.05, 6.62]
Blomberg, 2011	9,510	206,817	41,055	907,254	88.26	1.02 [0.99, 1.04]
Driessen et al., 2011	128	700	824	3,846	1.08	0.82 [0.67, 1.01]
Total [95% CI]	10,724	229,894	49,164	1,056,858	100.0	1.02 [0.99, 1.04]



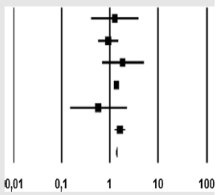
Heterogeneity: $\chi^2_p = 0.28$, $I^2 = 21.73$, $\tau^2 = .00$

Test for overall effect: $Z = 1.43$ ($p = .15$)

Favors No PPH Favors PPH

Relationship Between Maternal Parity (Primiparous vs. Multiparous) and PPH

Author, Year	Primiparous PPH	Primiparous Total	Multiparous PPH	Multiparous Total	Weight (%)	*OR*, M-H, Fixed [95% CI]
Otigbah et al., 2000	6	266	6	336	2.94	1.27 [0.41, 3.98]
Sharma et al., 2005	25	320	54	638	15.72	0.92 [0.78, 1.50]
Tixier et al., 2011	10	52	8	70	3.77	1.85 [0.67, 5.06]
Blomberg, 2011	26,241	494,162	24,324	619,909	12,042.96	1.37 [1.35, 1.40]
Puri et al., 2011	5	18	8	20	2.06	0.58 [0.15, 2.26]
Biguzzi et al., 2012	376	2,074	75	625	54.35	1.62 [1.25, 2.12]
Total [95% CI]	26,663	496,892	24,475	621,598	100.0	1.37 [1.35, 1.40]



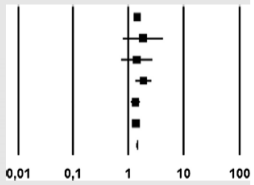
Heterogeneity: $\chi^2_p = 0.31$, $I^2 = 16.59$, $\tau^2 = .01$

Test for overall effect: $Z = 34.93$ ($p < .001$)

Favors No PPH Favors PPH

Relationship Between Maternal BMI (≥ 25.00 vs. 18.50–24.99 kg/m²) and PPH

Author, Year	BMI ≥ 25.00 kg/m² PPH	BMI ≥ 25.00 kg/m² Total	BMI = 18.50–24.99 kg/m² PPH	BMI = 18.50–24.99 kg/m² Total	Weight (%)	*OR*, M-H, Fixed [95% CI]
Sebire et al., 2001	15,761	110,290	18,365	176,923	89.61	1.44 [1.41, 1.47]
Bujold et al., 2005	80	5,916	6	802	0.07	1.82 [0.79, 4.18]
Tsukamoto et al., 2007	11	277	66	2,301	0.11	1.40 [0.73, 2.69]
Magann et al., 2011	109	2,256	52	1,966	0.41	1.87 [1.34, 2.62]
Halloran et al., 2012	171	7,912	412	25,307	1.43	1.34 [1.12, 1.60]
Nove et al., 2012	1,462	121,422	1,346	152,450	8.38	1.37 [1.27, 1.47]
Total [95% CI]	17,594	248,073	20247	359,749	100.0	1.43 [1.40, 1.47]



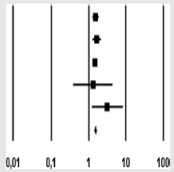
Heterogeneity: $\chi^2_p = 0.42$, $I^2 = 0.00$, $\tau^2 = .00$

Test for overall effect: $Z = 32.77$ ($p < .001$)

Favors No PPH Favors PPH

Relationship Between Maternal Hypertension (With Hypertension vs. Without Hypertension) and PPH

Author, Year	Hypertension: Yes PPH	Hypertension: Yes Total	Hypertension: No PPH	Hypertension: No Total	Weight (%)	*OR*, M-H, Fixed [95% CI]
Gofton et al., 2001	167	1,331	980	11,434	12.37	1.53 [1.29, 1.82]
Sheiner et al., 2005	65	9,591	601	144,720	5.74	1.64 [1.27, 2.12]
Ford et al., 2007	1,013	15,343	6,692	148,700	81.21	1.50 [1.40, 1.61]
Suzuki et al., 2007	4	14	37	157	0.26	1.30 [0.38, 4.38]
Baker & Haeri, 2012	6	65	21	665	0.42	3.12 [1.21, 8.03]
Total [95% CI]	1,255	26,344	8,331	305,676	100.0	1.52 [1.43, 1.61]



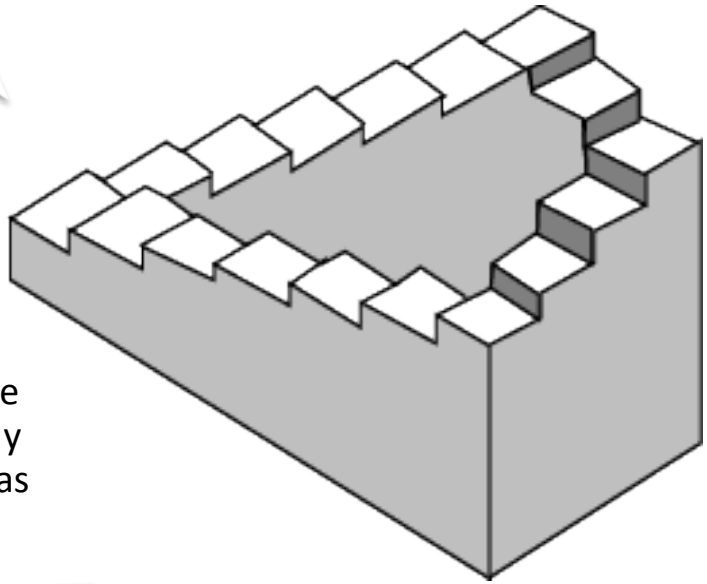
Heterogeneity: $\chi^2_p = 0.60$, $I^2 = 0.00$, $\tau^2 = .00$

Test for overall effect: $Z = 13.26$ ($p < .001$)

Favors No PPH Favors PPH

Organización y Manejo

Reconocimiento tardío de la complejidad. Desconocimiento

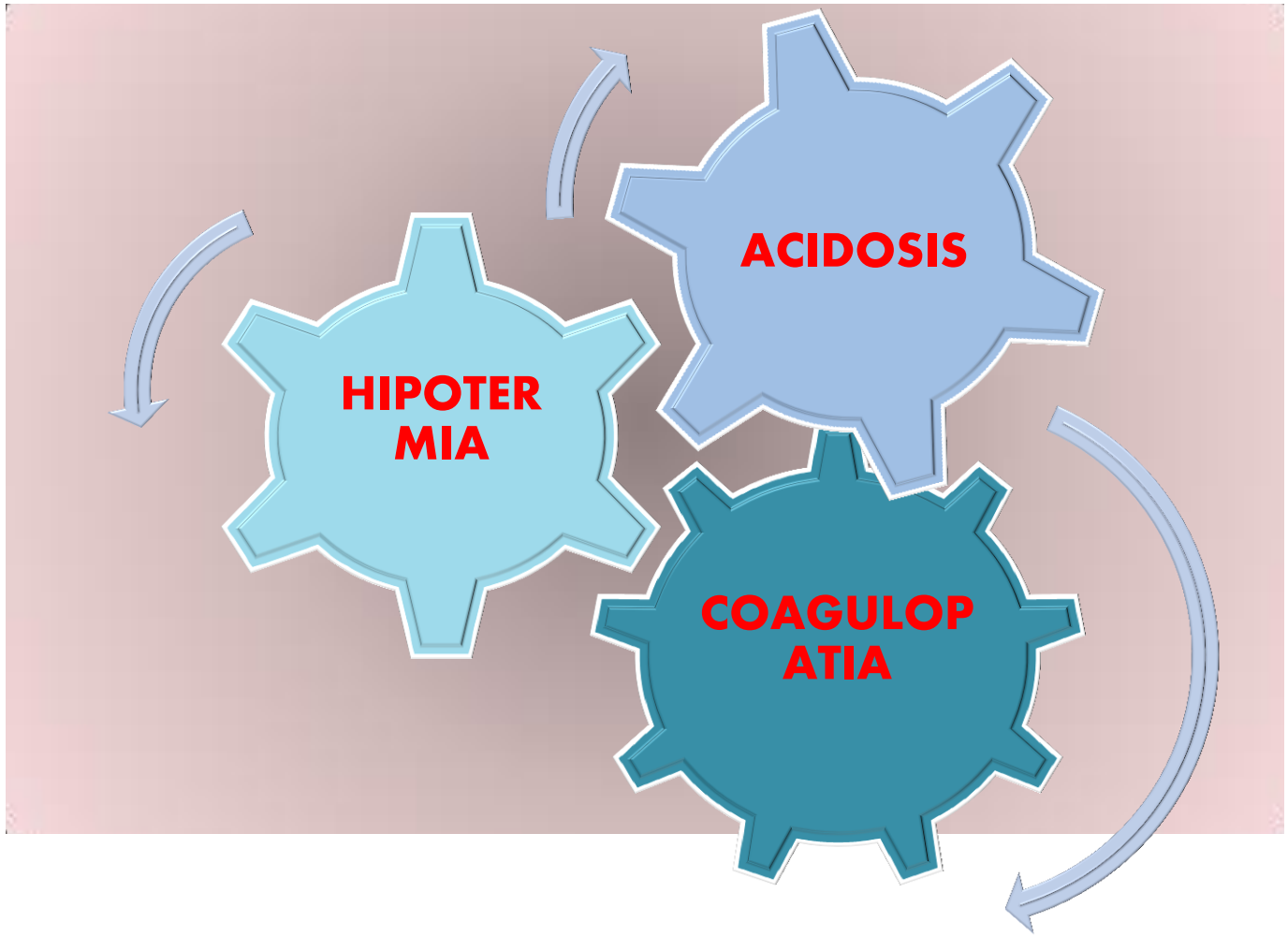


Retraso en respuesta. Falta de comunicación

Inadecuada educación y entrenamiento

Ausencia de protocolos y Guías clínicas

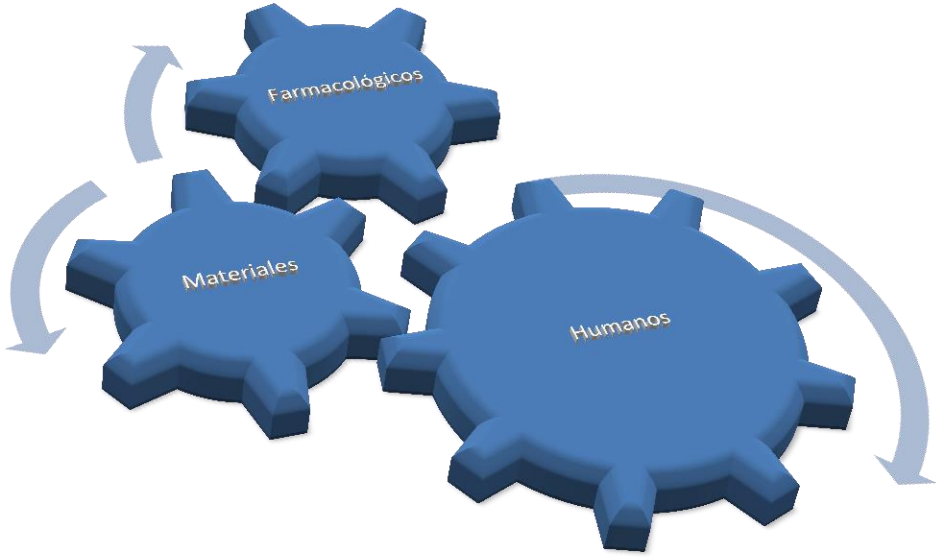
TRIADA LETAL



“La clave de la perfección es contar lo que se hace”

“Educar es compartir”

RECURSOS



OBJETIVOS

Coordinación de Servicios

Protocolizar actuación

Disponibilidad de hemoderivados

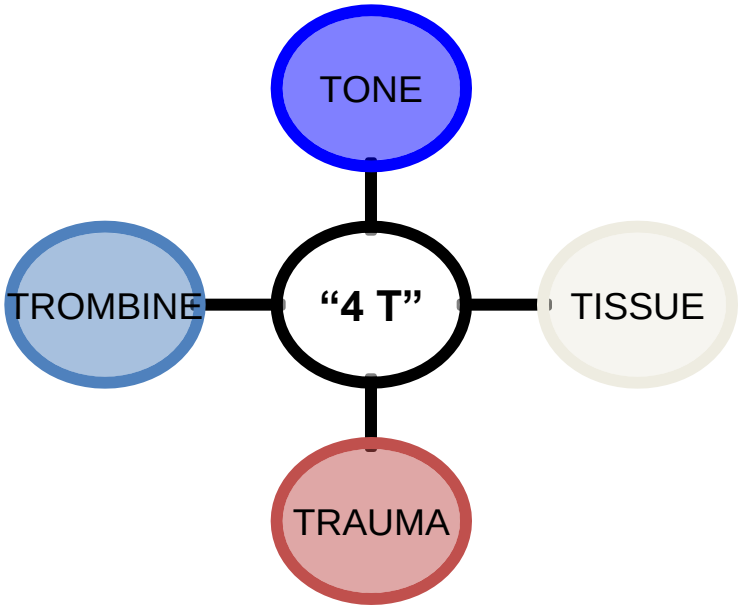
Prevención y Tratamiento adecuado

Evitar manejo subóptimo

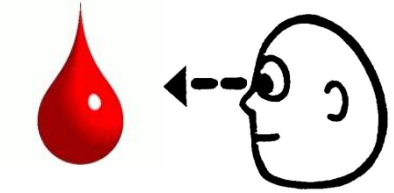
Disminuir efectos adversos

Resolver complicaciones

Evaluar impacto



- ✓ **Identificar pacientes de riesgo**
- ✓ **Reconocimiento precoz y adecuado (estimación)**
- ✓ **Prevención**
- ✓ **Uterotónicos y tratamientos asociados**
- ✓ **Reanimación. Control de Hemorragia. Coagulopatía**
- ✓ **Protocolos: elaboración , actualización y divulgación**
- ✓ **Organización y Funcionamiento**
- ✓ **Trabajo en equipo. Multidisciplinar. Comunicación**
- ✓ **Recogida de sucesos. Documentación**
- ✓ **Educación. Formación. Entrenamiento**



PÉRDIDA SANGUÍNEA:	Clase I	Clase II	Clase III HM	Clase IV Shock hemorrágico
%	< 15%	15-30%	30-40%	> 40%
Volumen (mL)	< 750mL	750-1500mL	1500-2000mL	> 2000mL
Presión arterial sistólica	Sin cambio	Elevada	Reducida	Indetectable
Presión arterial diastólica	Sin cambio	Normal	Reducida	Muy baja
Pulso (lpm)	< 100	100-120	120-140	> 140
Relleno capilar	Normal	Lento	Lento	Indetectable
Respiración	14-20	20-30	30-40	> 35
Diuresis (ml/h)	> 30	20-30	5-15	No
Extremidades	Normal	Pálidas	Pálidas	Pálidas y frías
Estado mental	Ansiedad	Muy ansioso	Ansioso y confuso	Somnoliento, Confuso o inconsciente
Respuesta a 20 mL /Kg de fluido isotónico balanceado	Normaliza TA y FC	Mejora TA y FC	Mejoría transitoria de la TA y FC, y vuelve la inestabilidad	Sin respuesta
Recomendación	Volumen ± CH	Volumen ± CH	Activar PTM*	Activar PTM*

Parameter	Relative risk of morbidity	p value
Heart rate > 100 beats.min^{-1}	7.0 (4.9–10.1)	0.0001
Diastolic BP > 90 mmHg	6.6 (4.7–9.4)	0.0001
Systolic BP > 150 mmHg	5.4 (3.8–7.8)	0.0001
Respiratory rate > 22 breaths.min^{-1}	4.8 (2.9–8.0)	0.0001
Temperature > 38 °C	3.4 (2.0–5.6)	0.0003
Systolic BP < 90 mmHg	2.4 (1.5–3.7)	0.0013
Oxygen saturation < 95%	1.3 (0.2–7.9)	0.56
Pain score 2–3	2.7 (0.8–8.4)	0.17
Responds to voice, pain or unresponsive	0.0	1.0

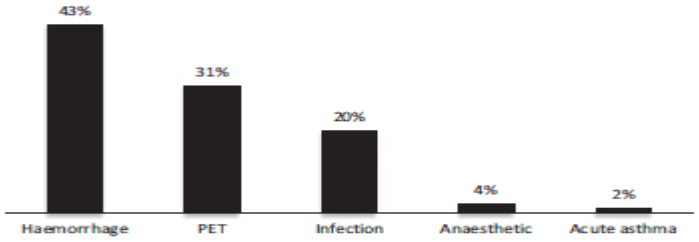


Figure 1 Distribution of maternal morbidity according to defined diagnostic criteria. Values are proportion. PET, pre-eclampsia.

Singh S. Anaesthesia 2012; 67: 12-18

Modified Early Obstetric Warning Scores (MEOWS)

Improving estimates of blood loss

Small women have small blood volumes

9 women weighed less than 60kg

Weight (kg)	Total blood volume (mls)*	15% loss (mls)	30% loss	40% loss
50	5000	750	1500	2000
55	5500	825	1650	2200
60	6000	900	1800	2400
65	6500	975	1950	2600
70	7000	1050	2100	2800

*Based on 100mls/kg blood volume in pregnancy (RCOG 2011) but may overestimate blood volume in obese women

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Improving communication of estimated blood loss

"A woman had sustained a 2500mls blood loss in the delivery room which was not conveyed accurately to the anaesthetist in theatre, and a further 2500mls was lost during the repair of her Genital Tract Trauma but only 1 unit blood transfused"

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

Improving communication of estimated blood loss

"*A woman had sustained a 2500mls blood loss in the delivery room which was not conveyed accurately to the anaesthetist in theatre, and a further 2500mls was lost during the repair of her Genital Tract Trauma but only 1 unit blood transfused because the anaesthetist was re-assured by an acute bedside haemoglobin result*"

Don't be misled by an early single haemoglobin result which reflects the starting position not the blood loss.

No fluid resuscitation, no haemodilution

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

DOI: 10.1111/1471-0528.13098
www.bjog.org

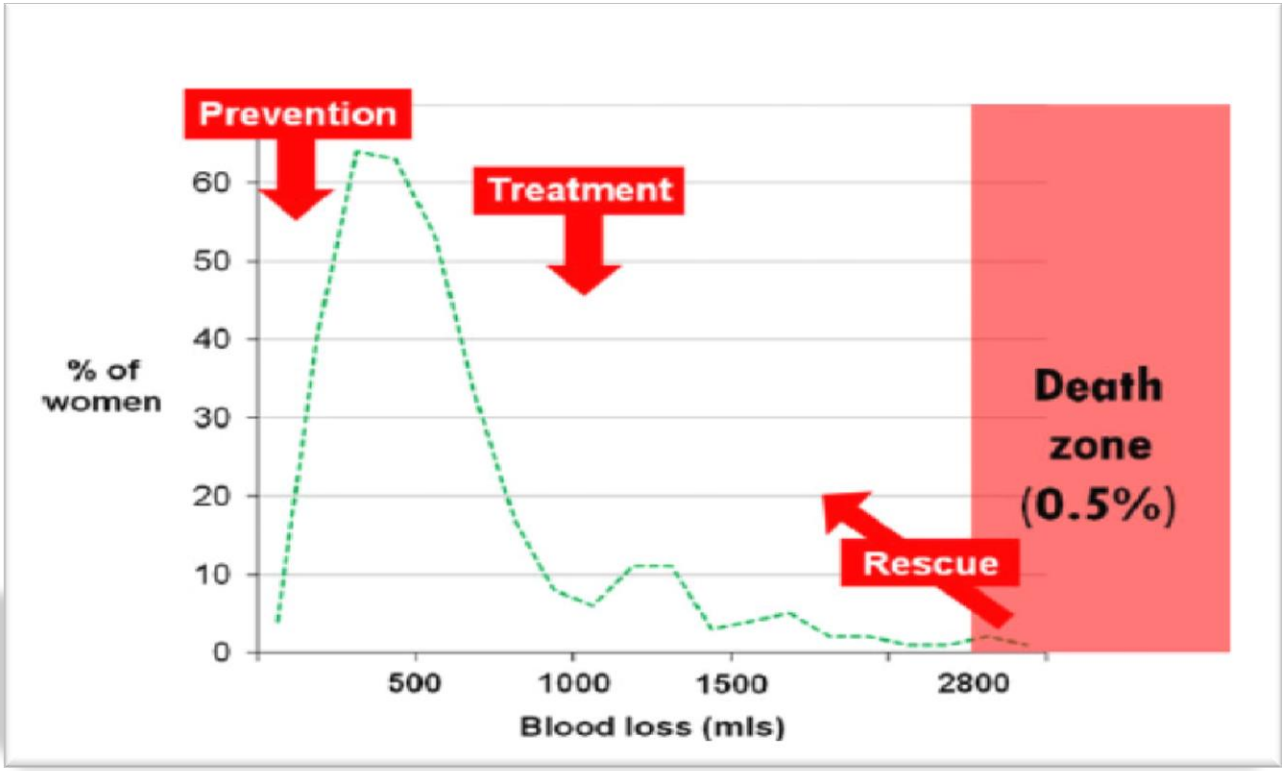
Review article

The prevention and treatment of postpartum haemorrhage: what do we know, and where do we go to next?

A Weeks

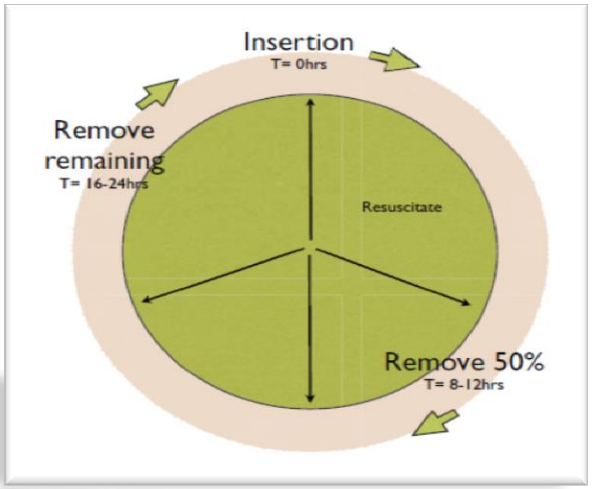
Sanyu Research Unit, Department of Women's and Children's Health, Liverpool Women's Hospital, University of Liverpool, Liverpool, UK
Correspondence: Professor A Weeks, Sanyu Research Unit, Department of Women's and Children's Health, Liverpool Women's Hospital, University of Liverpool, Crown Street, Liverpool L8 7SS, UK. Email aweeks@liv.ac.uk

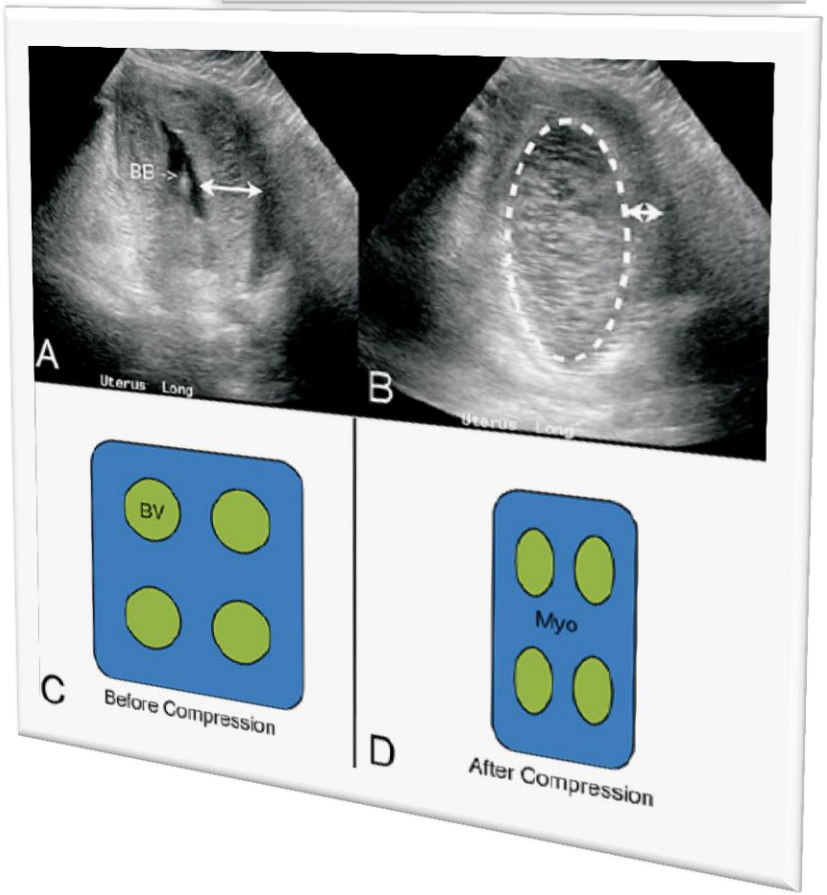
BJOG 2015 122:202–212.

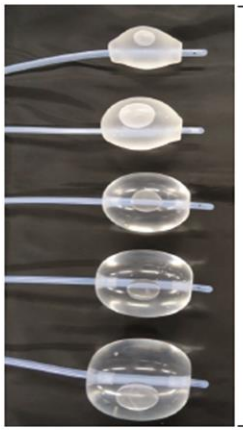


Taponamiento uterino:
tratamiento no médico de elección

Eficacia elevada (90%)







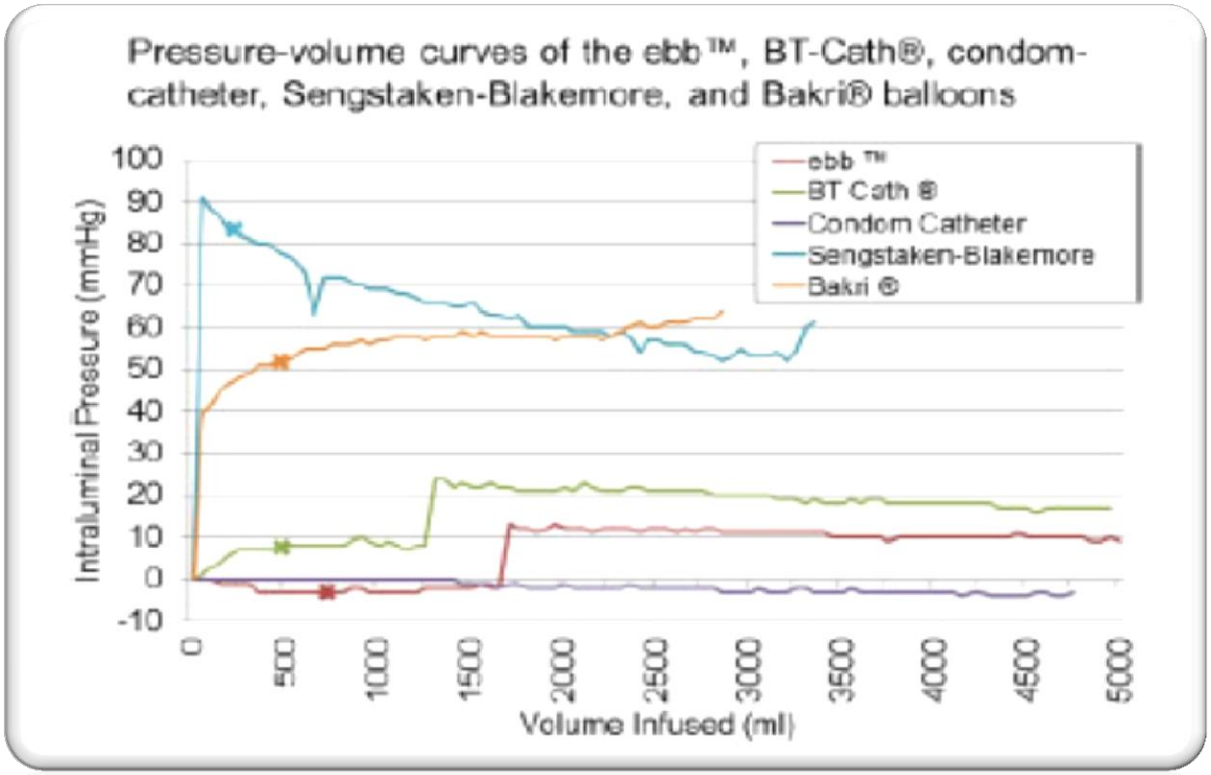
Inflation volume	Length	Width
100 mL	7.2 cm	5.0 cm
200 mL	9.2 cm	6.6 cm
300 mL	9.7 cm	7.7 cm
400 mL	10.5 cm	8.2 cm
500 mL	10.5 cm	9.5 cm

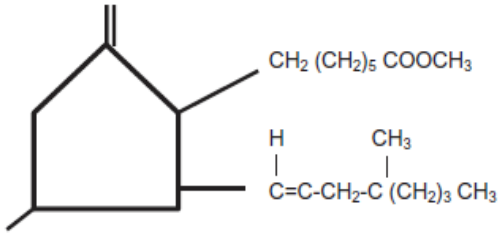
FIGURE 4: The size of each balloon (inflated to a volume of 100–500 mL).

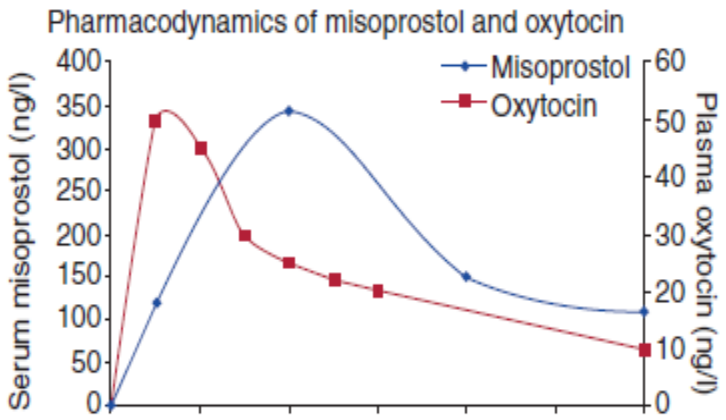
Under Pressure: Intraluminal Filling Pressures of Postpartum Hemorrhage Tamponade Balloons

Kathleen M. Antony, MD, MSCI[1,2] Diana A. Racusin, MD[1,3] Michael A. Belfort, MD, PhD[1] Gary A. Dildy III, MD[1]

Am J Perinatol Rep 2017;7:e86–e92.







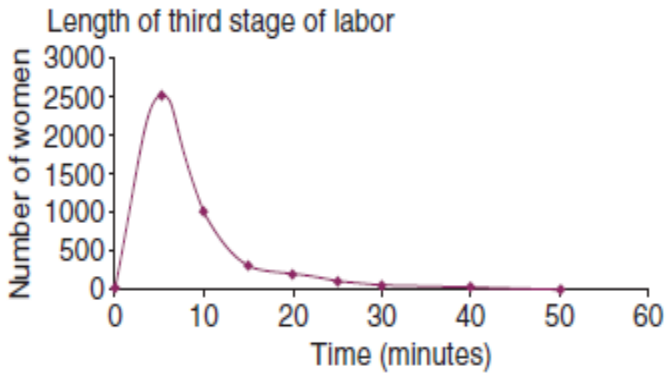


Figure 4 Comparison of concentrations of misoprostol and oxytocin in blood with duration of physiological third stage in 12,979 women[117]

TABLE 3
Misoprostol plus oxytocin compared with oxytocin

Outcome	No. of trials	No. of events/total no. or total no.		Relative risk or mean difference (95% CI)	*P* value	I^2 (%)
		Misoprostol plus oxytocin	Oxytocin			
PRIMARY OUTCOMES						
Mean intraoperative blood loss, mL						
Sublingual misoprostol	4[46,48,50,53]	454	456	−139 (−300 to 21)	.09	99
Oral misoprostol	1[43]	28	25	−29 (−159 to 101)	.66	NA
Buccal misoprostol	1[41]	173	179	24 (−16 to 64)	.24	NA
Rectal misoprostol	1[52]	200	200	−191 (−252 to −130)	< .00001	NA
Mean postoperative blood loss, mL						
Sublingual misoprostol	1[53]	179	187	−265 (−282 to −248)	< .00001	NA
Oral misoprostol	1[43]	28	25	28 (−30 to 86)	.34	NA
Rectal misoprostol	1[52]	200	200	−139 (−166 to −112)	< .00001	NA
Mean fall in hemoglobin, g/dL						
Sublingual misoprostol	3[46,48,50]	275	269	−0.2 (−0.5 to 0.1)	.13	66
Intrauterine misoprostol	1[44]	100	100	−0.6 (−0.9 to −0.3)	.0002	NA
Mean fall in hematocrit, %						
Sublingual misoprostol	3[46,48,53]	364	372	−2.1 (−3.4 to −0.8)	.0001	91
Buccal misoprostol	1[41]	173	179	−0.2 (−0.5 to 0.1)	.11	NA
Rectal misoprostol	1[52]	200	200	−3.5 (−4.2 to −2.9)	< .00001	NA
Intrauterine misoprostol	1[44]	100	100	−1.8 (−2.8 to −0.7)	.001	NA
Use of additional uterotonic agents						
Sublingual misoprostol	3[48,50,53]	35/329	102/331	0.33 (0.18–0.62)	.0005	61
Oral misoprostol	1[43]	0/28	0/25	Not estimable	NA	NA
Buccal misoprostol	1[41]	45/173	76/179	0.61 (0.45–0.83)	.002	NA
Rectal misoprostol	1[52]	14/200	36/200	0.39 (0.22–0.70)	.002	NA
Intrauterine misoprostol	1[44]	3/100	6/100	0.50 (0.13–1.94)	.32	NA

Conde-Aguelo A. Am J Obstet Gynecol 2013; 209: 40 Weeks A. Lancet 2006; 368: 2123 Fuks AM. Obstet Gynecol 2014; 123 Suppl 1

TÉCNICAS COMPRESIVAS

Acta Obstetricia et Gynecologica Scandinavica ... ogy **90** (2011) 1036–1042

Efficacy of surgical techniques to ... hemorrhage: analysis of 539 case...

JOSÉ MIGUEL PALACIOS-JARAQUEMADA[1,2]

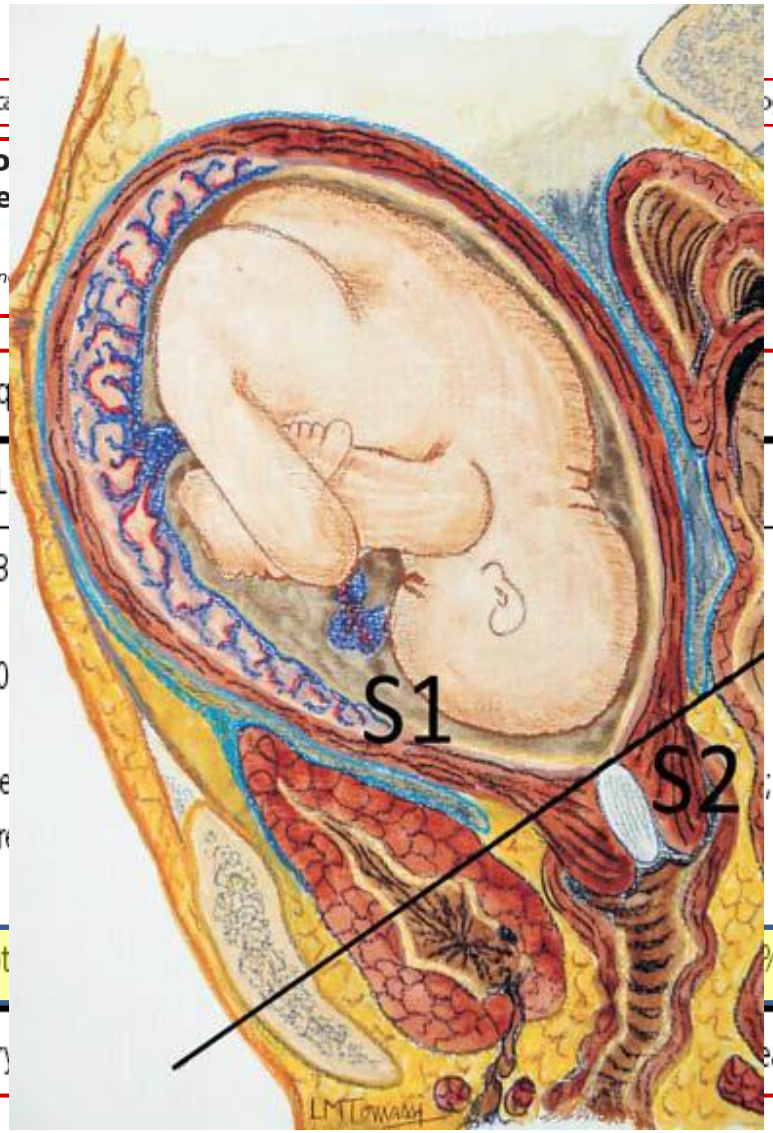
[1]*Center for Medical Education and Clinical Research (CEMIC), Buen... of Medicine, University of Buenos Aires, Argentina*

Table 1 Efficacy to stop bleeding: techniq...

Procedure	BUAL	...	Pereira	Selective pedicle ligature
S1 bleeding (uterine atony)	19/23		2/2	0
S1 bleeding (placenta accreta)	18/20		9/9	0
S2 bleeding	Placenta accre... placenta pr...		0	Placenta accreta 31/36

Tot... %.

Abbreviations: BUAL, bilateral uterine artery ... ears; S1, sector 1; S2, sector 2.



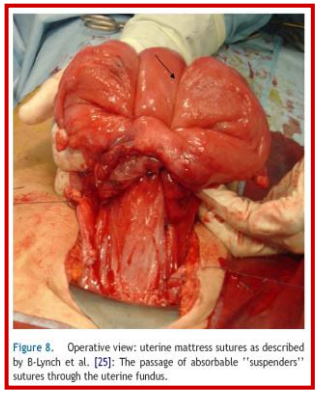


Figure 8. Operative view: uterine mattress sutures as described by B-Lynch et al. [25]: The passage of absorbable "suspenders" sutures through the uterine fundus.

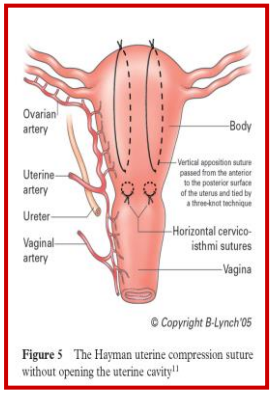


Figure 5 The Hayman uterine compression suture without opening the uterine cavity[11]

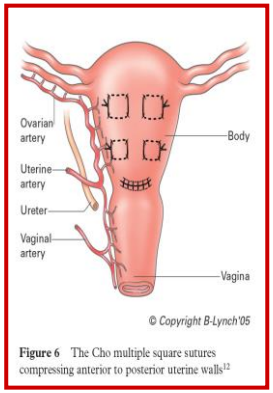
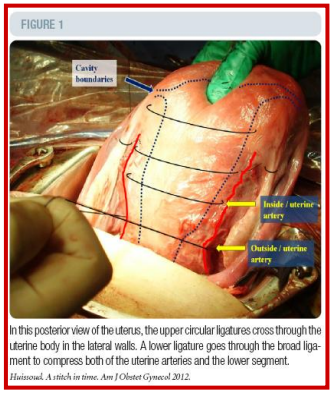


Figure 6 The Cho multiple square sutures compressing anterior to posterior uterine walls[12]

Fig. 6. Final aspect of the uterus with all sutures applied. *Pereira. Compressive Uterine Sutures. Obstet Gynecol 2005.*



In this posterior view of the uterus, the upper circular ligatures cross through the uterine body in the lateral walls. A lower ligature goes through the broad ligament to compress both of the uterine arteries and the lower segment.
Huissoud. A stitch in time. Am J Obstet Gynecol 2012.

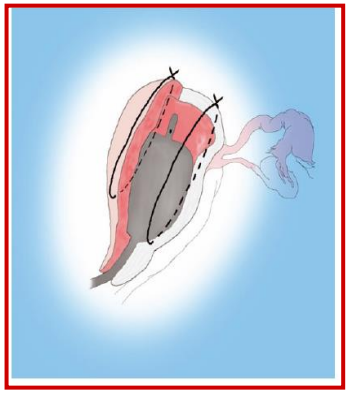


Table 2. Main features of surgical hemostatic techniques.

Procedure	S1 efficacy (atony)	S1 efficacy (placenta accreta)	S2 efficacy	Time to perform the hemostatic technique (minutes)	Additional maneuvers	Technical difficulty	Specific material
BUAL	Excellent	Good	Poor or ineffective	5–10	Peritoneal vesico-uterine fold opening	Low	No
B-Lynch	Excellent	Good	Poor or ineffective	2–5	No	Mid	Needle and suture
Cho	Good	Excellent	Excellent	5–10	Peritoneal vesico-uterine fold opening in S2	Low in S1; mid in S2	Needle
Hayman	Excellent	Good	Poor or ineffective	2–7	No	Low	Needle
Pereira	Excellent	Excellent	Poor or ineffective	5–10	No	Low to mid	No
SLVL	Not applicable	Not applicable	Excellent	5–15	Peritoneal vesico-uterine fold opening	Mid to high	No

Abbreviations: BUAL, bilateral uterine artery ligature; S1, sector 1; S2, sector 2; SLVL, selective lower vascular ligature.

Technique	Number of subjects (n)	% Success (# hysterectomies)
B-Lynch et al.[60]	5	100% successful, (0)
B-Lynch et al.[66]	1600	98.8% successful, (19)
Cho et al.[62]	23	100% successful, (0)
Hayman et al.[61]	3	100% successful, (0)
Ouahba et al.[63]	21	95% successful, (1)
Marasinghe et al.[65]	17	75% successful, (4)
Zheng et al.[64]	9	100% successful, (0)

Kathleen M. Seminars in Perinatology 37 (2013) 246-56

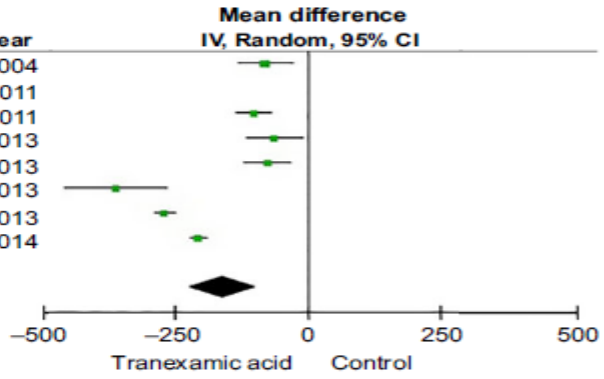
Tranexamic acid for preventing postpartum blood loss after cesarean delivery: a systematic review and meta-analysis of randomized controlled trials

Acta Obstetricia et Gynecologica Scandinavica **95** (2016) 28–37

Study or subgroup	Tranexamic acid Mean	SD	Total	Control Mean	SD	Total	Weight	Mean difference IV, Random, 95% CI	Year
Gai 2004	359	152	91	439	191	89	14.2%	−80.00 [−130.50, −29.50]	2004
Movafegh 2011	329	0	50	545	0	50		Not estimable	2011
Gungorduk 2011	500	206	330	600	215	330	15.0%	−100.00 [−132.13, −67.87]	2011
Xu 2013	379	160	88	441	189	86	14.1%	−62.00 [−114.09, −9.91]	2013
Senturk 2013	272	143	101	346	189	122	14.5%	−74.00 [−117.62, −30.38]	2013
Shahid 2013	392	166	38	753	244	36	11.6%	−361.00 [−456.60, −265.40]	2013
Abedel-Aleem 2013	241	126	373	510	144	367	15.3%	−269.00 [−288.51, −249.49]	2013
Ahmed 2014	391	48	62	596	38	62	15.4%	−205.00 [−220.24, −189.76]	2014
Total (95% CI)			**1133**			**1142**	**100.0%**	**−160.27 [−224.63, −95.92]**	

Heterogeneity: $\tau^2 = 6941.36$; $\chi^2 = 176.62$, df = 6 ($p < 0.00001$); $I^2 = 97\%$

Test for overall effect: $Z = 4.88$ ($p < 0.00001$)



Incidence of postpartum blood loss

Effect of early tranexamic acid administration on mortality, hysterectomy, and other morbidities in women with post-partum haemorrhage (WOMAN): an international, randomised, double-blind, placebo-controlled trial

www.thelancet.com **Published online April 26, 2017 http://dx.doi.org/10.1016/S0140-6736(17)30638-4**

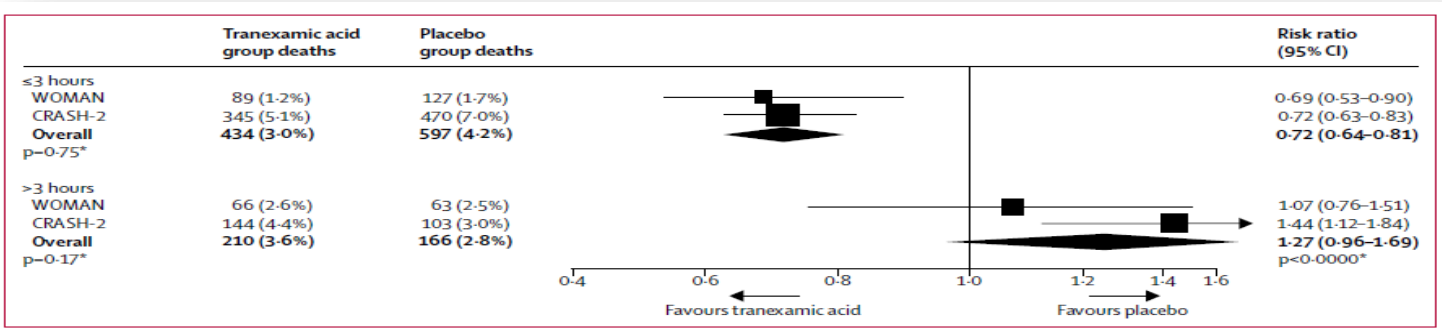


Figure 5: **Time to treatment**
*Heterogeneity p value.

Interpretation Tranexamic acid reduces death due to bleeding in women with post-partum haemorrhage with no adverse effects. When used as a treatment for postpartum haemorrhage, tranexamic acid should be given as soon as possible after bleeding onset.

Mantener entrega tisular de Oxígeno: perfusión y oxigenación

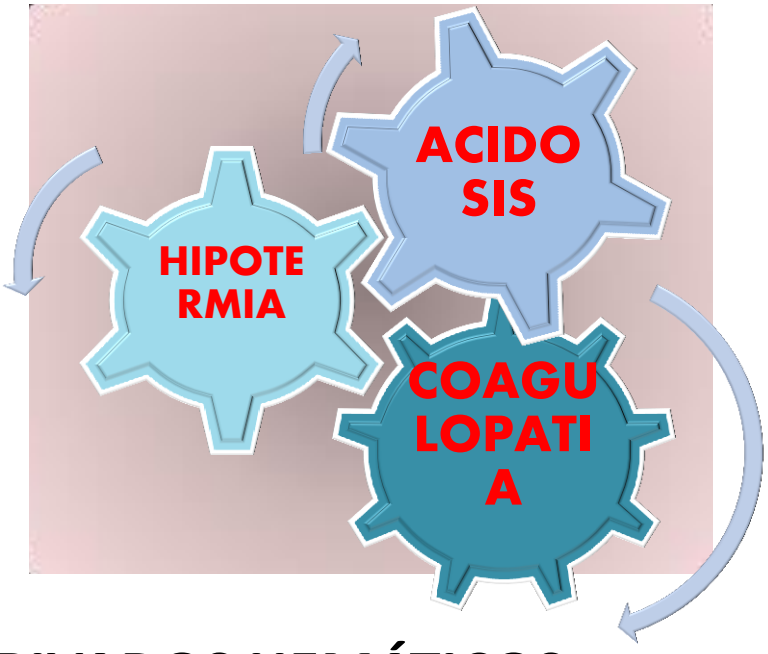
Hto y Hb NO deben de guiar la transfusión (falsamente elevados)

Transfusión sin demora: CH O negativo (isogrupo: 3-5 m; cruzadas: 45 m)

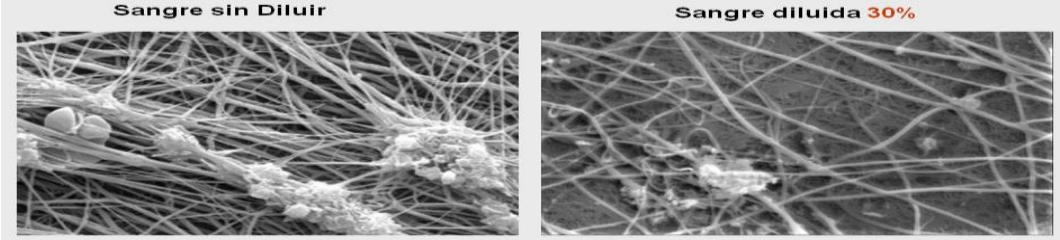
FLUIDOTERAPIA

RESUCITACIÓN HEMOSTÁTICA

USO DERIVADOS HEMÁTICOS



Steele HB. Am J Obstet Gynecol 2014 Feb 25

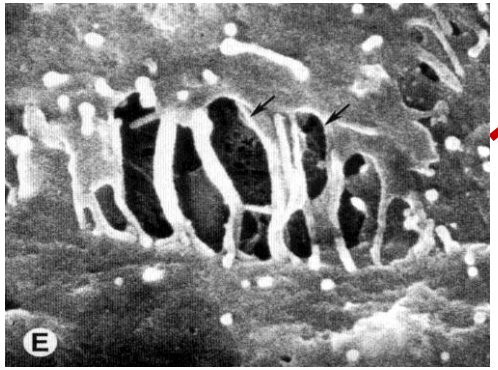


S. de permeabilidad global aumentada

(GIPS: GLOBAL INCREASED PERMEABILITY SYNDROME) Fluid management in critically ill patients: the role of extravascular lung water, abdominal hypertension, capillary leak, and fluid balance Cordemans et al. Annals of Intensive Care 2012, 2(Suppl 1):S1

EDEMA **PERIFÉRICO**

S. Compartimental



EDEMA **CEREBRAL**

Muerte

EDEMA **PULMONAR**

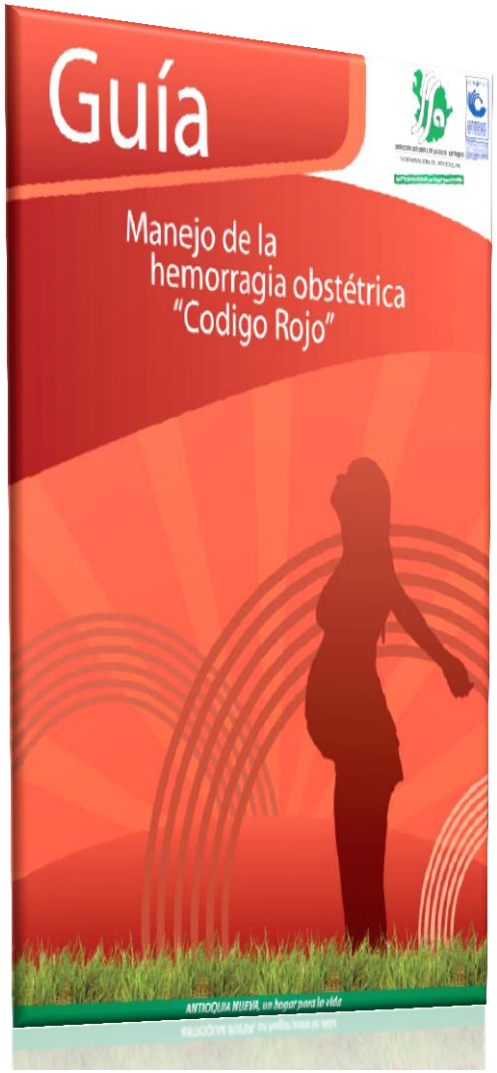
SDRA

EDEMA **INTESTINAL**

S. C. Abdominal

EDEMA **RENAL**

IRA: NTA



FIGO Recommendations
Prevention and Treatment of Post-Partum Hemorrhage (PPH)

Prevention
Active Management of the Third Stage of Labor
- Administration of uterotonic agents (Oxytocin 10 iu IM or Misoprostol 600 µg po if Oxytocin is neither available nor feasible)
- Controlled cord traction
- Uterine massage after delivery of the placenta, as appropriate

Postpartum Hemorrhage
Vaginal Delivery >500 cc blood loss
Cesarean section >1000 cc blood loss
Any volume of blood loss with unstable woman

Control Bleeding
Aortic Compression
Uterine tamponade for atony
Secure IV access

If ongoing bleeding:
Monitor Maternal Status
Airway, **B**reathing and **C**irculation
IV access
Fluid bolus (aim to keep BP >100/50)
Syntocinon 20 U/L to 40 U/L to IV solution infusion
Give **blood products** if available

Uterine Massage
Empty Bladder
Examination to determine cause of bleeding
(there may be multiple causes)

Uterine Atony	Retained Placenta	Uterine Inversion	Lacerations
Uterotonics **Oxytoxin**: 5 u IV or 10 u IM or 20 to 40 u/L IV fluid infusion *or* **Ergometrine or Methylergometrine:** 0.2 mg IM, repeat q 2 to 4 h if required for a max of 1 gram per 24 h *or* **Misoprostol**: 800 µg sublingually (4 x 200 µg tablets) *or* **Carboprost:** 0.25 mg IM or IMM q15 minutes (max 2 mg)	Attempt to **manually remove** placenta. Intra umbilical cord injection or misoprostol (800 µg) can be considered as an alternative before a manual removal is attempted. Give **uterotonic** agents. If unsuccessful, arrange to **transfer** woman to centre with ability for D&C.	**Attempt to replace uterus**: do **not** give uterotonics or attempt to remove placenta until uterus is replaced. If unsuccessful, arrange to **transfer** woman to centre with surgical capability.	**Repair all lacerations** Cervix and vagina should be carefully examined, especially if prolonged labour or forceps delivery If unable to repair, **transfer** woman to appropriate center

If unsuccessful, arrange to transfer woman to next level of care
If available:
Intrauterine tamponade
Shock trousers
Uterine artery embolization
Laparotomy (hypogastric artery ligation, B-Lynch sutures and/or hysterectomy)

These **women** are **at risk** for **anemia**.
It is important to give **iron supplements** for least **3 months.**

Addendum A: European Consensus on Prevention and Management of Postpartum Hemorrhage

*The EUPHRATES group (**EU**ropean **P**roject on obstetric **H**aemorrhage **R**eduction: **A**ttitudes, **T**rial, and **E**arly warning **S**ystem), European Union 5th Framework*

Outcome of the management of massive postpartum hemorrhage using the algorithm "HEMOSTASIS"

Lavanya Varatharajan [a,*], Edwin Chandraharan [b], Julian Sutton [b], Virginia Lowe [b], Sabaratnam Arulkumaran [b]

St George's University, London, UK
Department of Obstetrics and Gynecology, St George's Healthcare NHS Trust, London, UK

L. Varatharajan et al. / International Journal of Gynecology and Obstetrics 113 (2011) 152–154

Box 2. Management algorithm for atonic postpartum haemorrhage: HAEMOSTASIS6

H: *Ask for HELP and Hands on the uterus (uterine massage)*
A: *Assess and resuscitate (vital signs, IV fluids, blood and blood products)*
E: *Establish aetiology, ensure availability of blood and ecbolics (oxytocin)*
M: *Massage uterus*
O: *Oxytocics – Oxytocin infusion/prostaglandins– IV/per rectal/IM/intramyometrial*
S: *Shift to theatre – bimanual compression/anti-shock garment*
T: *Tissue and Trauma (exclude/manage)/proceed to Tamponade balloon/uterine packing*
A: *Apply compression sutures – B-Lynch/modified compression sutures (2–5)*
S: *Systematic pelvic devascularization – uterine/ovarian/quadruple/internal iliac*
I: *Interventional radiology (and if appropriate, uterine artery embolization)*
S: *Subtotal/total abdominal hysterectomy*

OBSTETRICS

Prevention and management of postpartum hemorrhage: a comparison of 4 national guidelines

Joshua D. Dahlke, MD; Hector Mendez-Figueroa, MD; Lindsay Maggio, MD; Alisse K. Hauspurg, MD; Jeffrey D. Sperling, MD; Suneet P. Chauhan, MD; Dwight J. Rouse, MD

Am J Obstet Gynecol 2015;213:76.e1-10.

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

ACOG PRACTICE BULLETIN

Clinical Management Guidelines for Obstetrician–Gynecologists

NUMBER 183, OCTOBER 2017 *(Replaces Practice Bulletin Number 76, October 2006)*

Committee on Practice Bulletins—Obstetrics. This Practice Bulletin was developed by the American College of Obstetricians and Gynecologists' Committee on Practice Bulletins–Obstetrics in collaboration with Laurence E. Shields, MD; Dena Goffman, MD; and Aaron B. Caughey, MD, PhD.

Postpartum Hemorrhage

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

Management of Postpartum Haemorrhage (PPH)

First endorsed by RANZCOG: March 2011
Current: March 2014, Amended in May 2015
Review due: March 2017

Royal College of Obstetricians & Gynaecologists

Prevention and Management of Postpartum Haemorrhage

Green-top Guideline No. 52
December 2016

NICE accredited
www.nice.org.uk/accreditation

proSEGO
www.prosego.com

Medicina perinatal

Hemorragia posparto precoz

Guía práctica de asistencia actualizada en 2006

Rev Esp Anestesiol Reanim. 2016;63(1):e1–e22

Revista Española de Anestesiología y Reanimación

www.elsevier.es/redar

DOCUMENTO DE CONSENSO

Documento multidisciplinar de consenso sobre el manejo de la hemorragia masiva (documento HEMOMAS)☆,☆☆

Tabla 1 (*continuación*)

N.º	Recomendación	NE/GR
37	Se recomienda el método de determinación de fibrinógeno por el método de Clauss o mediante FIBTEM en el ROTEM® o el *Functional Fibrinogen* en el TEG para finalidades diagnósticas o cuando se deban tomar decisiones del manejo clínico de pacientes en el contexto de una hemorragia masiva	1C
38	Dado que la adecuada firmeza del coágulo solo parece lograrse a partir de una concentración de fibrinógeno plasmático superior a 2 g/l, se recomienda administrarlo cuando no se alcance dicho umbral umbral por el método de Clauss, la FIBTEM-MFC en el ROTEM® sea inferior a 7 mm o, por equivalencia, la amplitud máxima del FLEV sea inferior a 10 mm	1C
39	Se sugiere una dosis inicial de 25-50 mg/kg de concentrado de fibrinógeno cuando no se alcance el umbral plasmático recomendado del mismo	2C
40	No se recomienda el factor VIIa como medida rutinaria de primer nivel en el tratamiento de la hemorragia masiva	1B
41	Se recomienda la administración precoz (en las 3 primeras horas) de ácido tranexámico en pacientes con hemorragia masiva secundaria a trauma. La dosis inicial recomendada es de 1 g en 10 min seguida de una infusión intravenosa de 1 g en 8 h. La administración más tardía (más de 3 h después del traumatismo) no se recomienda por el incremento de mortalidad asociado con hemorragia	1A
42	Se recomienda la valoración de medidas sin transfusión como la angioembolización o la utilización de procedimientos endovasculares en el tratamiento de la hemorragia masiva en pacientes seleccionados siempre que estén disponibles	1B
43	Se recomienda valorar la administración de desmopresina (0,3 μg/kg) en pacientes sangrantes con enfermedad de Von Willebrand	1C
44	Se sugiere valorar la administración de desmopresina (0,3 μg/kg) en pacientes sangrantes urémicos o tomadores de aspirina	2C
45	Se recomienda monitorizar los niveles plasmáticos de calcio en el paciente sangrante	1C
46	Se sugiere mantener los niveles plasmáticos de calcio en el rango de la normalidad, administrando calcio en caso de hipocalcemia (Ca < 0,9 mmol/l)	2B
47	Se recomienda considerar el manejo específico del sangrado en pacientes bajo el efecto de fármacos antiagregantes o anticoagulantes, en función del mecanismo de acción de cada uno de ellos	1B

NE/GR: nivel de evidencia/grado de recomendación.

Rev Esp Anestesiol Reanim. 2016;63(5):289–296

Revista Española de Anestesiología y Reanimación

www.elsevier.es/redar

FORMACIÓN CONTINUADA

Tratamiento de la coagulopatía en la hemorragia del paciente politraumatizado☆

Tabla 1 Novedades en el manejo de la hemorragia masiva en el politraumatizado

Intervención	Manejo tradicional	Novedades
Infusión inicial cristaloides	> 2 l	Titular bolus 250 ml cristaloides si hipotensión muy marcada
Ácido tranexámico	No uso	1 g iv dentro de las 3 primeras horas
CH	Sin otros derivados hemáticos	Ratios PFC/CH elevadas
PFC	Según analítica: TP o APTT R > 1,5	Uso empírico desde el inicio
C. plaquetas	Según analítica: si n.º < 50.000/μl	Uso empírico precoz Después según analítica si n.º < 100.000/μl
Fibrinógeno	Según analítica: si < 1 g/l	Uso empírico precoz Después según analítica si < 1,5-2 g/l

CLINICAL ARTICLE
Obstetrics

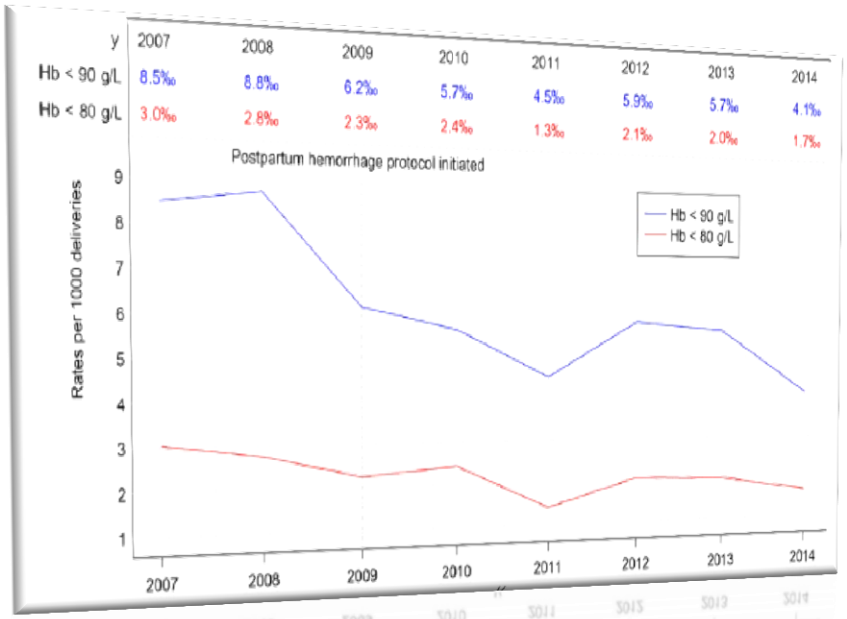
2017 International Federation of Gynecology and Obstetrics

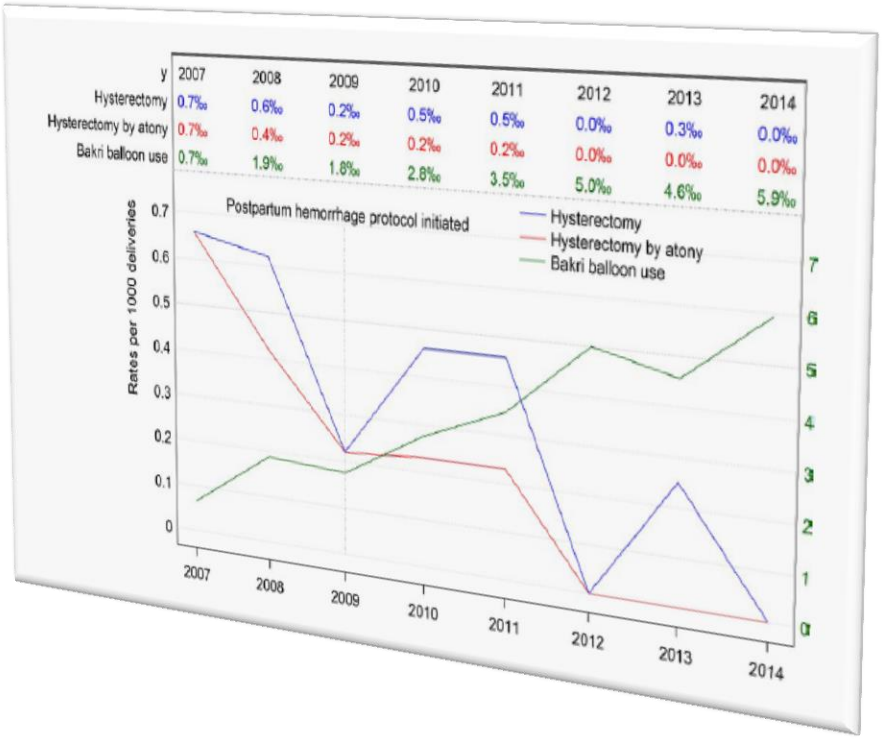
WILEY GYNECOLOGY OBSTETRICS

Maternal morbidity after implementation of a postpartum hemorrhage protocol including use of misoprostol

Ricardo Savirón-Cornudella[1,*] | Luis M. Esteban[2] | Ramiro Laborda-Gotor[3] | Belén Rodríguez-Solanilla[3] | Bremen De Mucio[4] | Gerardo Sanz[5] | Sergio Castán-Mateo[3]

Int J Gynecol Obstet 2018; 140: 198–204





Conclusion: Implementation of the PPH protocol decreased rates of postpartum anemia and postpartum hysterectomy owing to uterine atony.

Improvement in Outcomes of Major Obstetric Hemorrhage Through Systematic Change

770 VOL. 130, NO. 4, OCTOBER 2017
OBSTETRICS & GYNECOLOGY

Table 3. Outcomes of Cases of Major Obstetric Hemorrhage After Removal of Planned Cesarean Hysterectomies

Measure	Period 1,* 2000–2001	Period 2,* 2002–2005	Period 3,* 2005–2014	P†
Multiparity	10/12 (83.3)	38/43 (88.4)	97/174 (55.7)	<.001
Prior cesarean delivery	6/12 (50)	27/43 (62.8)	40/174 (23)	<.001
Maternal death	2/12 (16.6)	0/43 (0)	0/174 (0)	.003
Lowest pH	7.23 (7.14–7.34) (n=12)	7.34 (7.30–7.38) (n=33)	7.36 (7.31–7.40) (n=62)	.001
pH less than 7.32	8/12 (66.7)	14/43 (42.4)	17/174 (27.4)	.02
Lowest temperature	35.2 (35.0–35.4) (n=12)	36.1 (35.8–36.5) (n=43)	36.4 (36.0–36.6) (n=174)	<.001
Coagulopathy	7/12 (58.3)	13/43 (30.2)	22/174 (12.6)	<.001
Hysterectomy	6/12 (50)	12/43 (27.9)	33/174 (19)	.03
PRBC transfusion volume	750 (500–2,375)	500 (500–1,500)	500 (500–1,000)	.3

Period 1

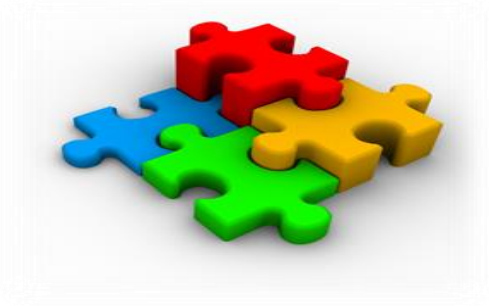
- Didactic sessions about physiology, diagnosis, and initial and subsequent management were few and far between
- Daily sign-out between care teams and attending physicians not closely monitored by department leaders
- Staff escalation to senior leaders not encouraged
- No rapid response team

Period 2

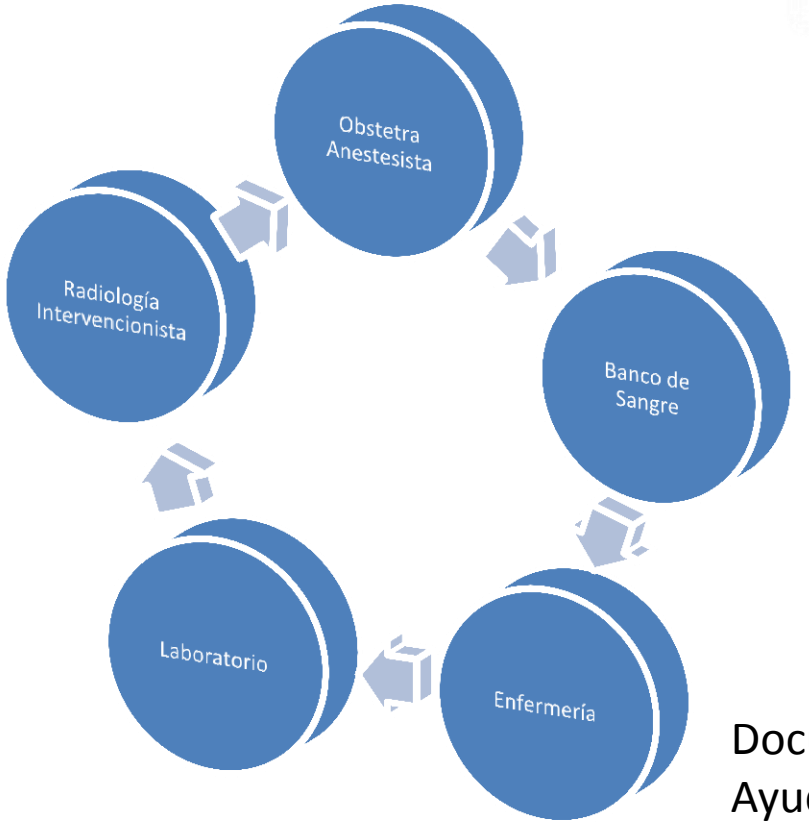
- Intensive didactic training for all health care providers with monthly sessions devoted to obstetric hemorrhage†
- Team training for all health care providers (nurses, residents, physician assistants, physicians)
- Daily sign-out run by senior leaders (two maternal-fetal medicine physicians)†
- Escalation encouraged, although encouragement was infrequent
- Development of an obstetric rapid response team‡
- Quarterly drills for obstetric emergencies including massive hemorrhage†
- Weekly or monthly discussions among leaders about methods for improving our responses to massive hemorrhage

Period 3

- Daily education about physiology, diagnosis, and initial and subsequent management (clinical pearls)
- Daily emphasis on staff escalation to senior leaders when uncomfortable
- TeamSTEPPS training
- Massive transfusion protocol initiated
- Uterine balloon tamponade encouraged
- Oxytocin policy developed with required electronic documentation and standard order sets
- Daily discussions among senior leaders about methods for improving our responses to massive hemorrhage
- Huddles immediately after events with all staff involved were initiated, including written documentation of perceived problems and solutions
- Quality assurance–continuous quality improvement committee processes revised and expedited§



Apoyo. Técnicas manuales



Solicitud de presencia

- Tfns
- Peticiones correctas e identificadas
- Suministro hemoderivados

Documentación
Ayuda
Recepción hemoderivados

Priorizar analíticas
Obviar deficiencias tolerables

y además: **<u>DOCUMENTACIÓN Y REGISTRO DE SUCESOS</u>**

Deering S. Semin Perinatol 2011; 35: 89-96

Key Haemorrhage Messages

1. **Anticipate / avoid**: Treat antenatal anaemia
   Judicious use of uterotonics
2. **Early recognition**: Accurate EBL
   Timely MEOWS observations
   Trigger responses if MEOWS score is abnormal
   High index of clinical suspicion
3. **Prompt effective resuscitation** :
   Consider all factors and likely clinical course
   Small women have small blood volumes
   Don't be misled by a single Hb result
   Use ***serial*** measurements of Hb, lactate and bicarb
4. **Control bleeding quickly**:
   Conservative measures are not always appropriate and if not working resort to definitive surgery
5. **Human factors:** Improve communication, ownership, leadership and teamwork

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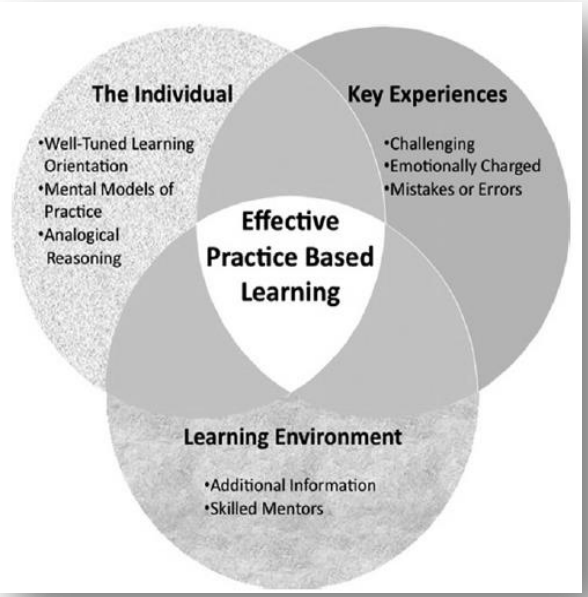
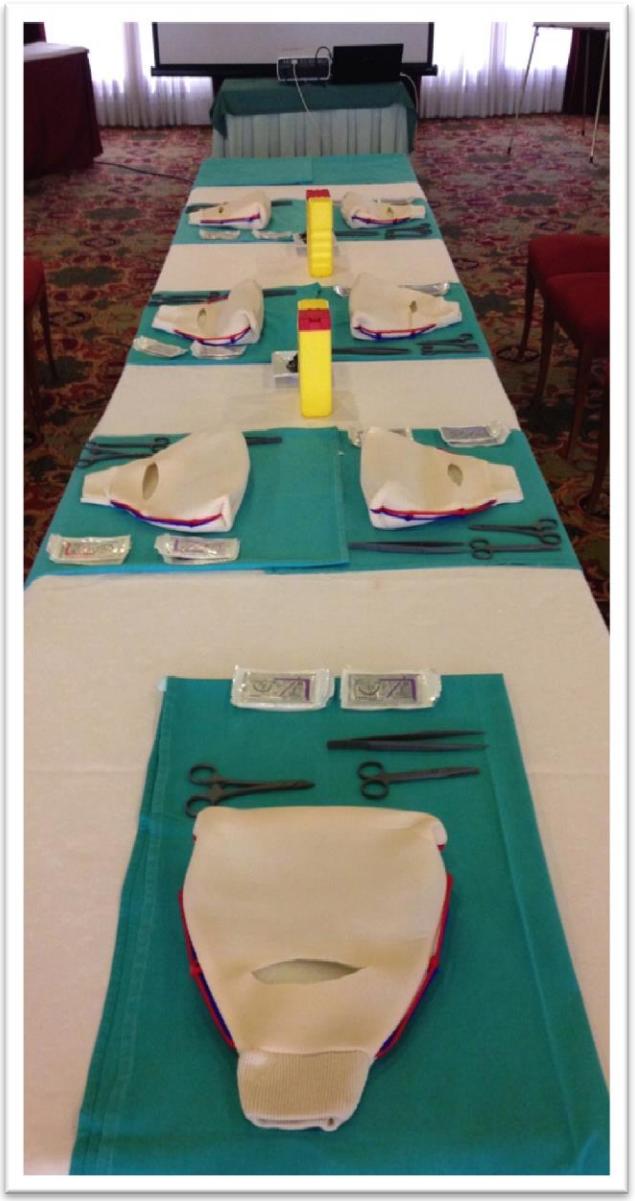
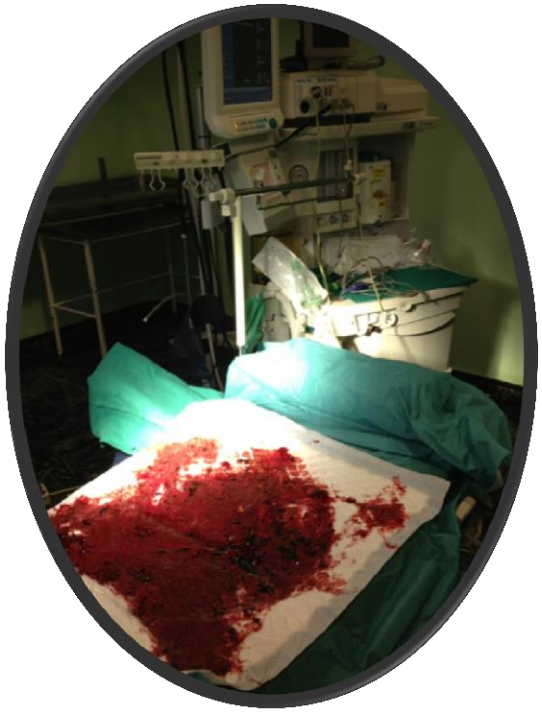
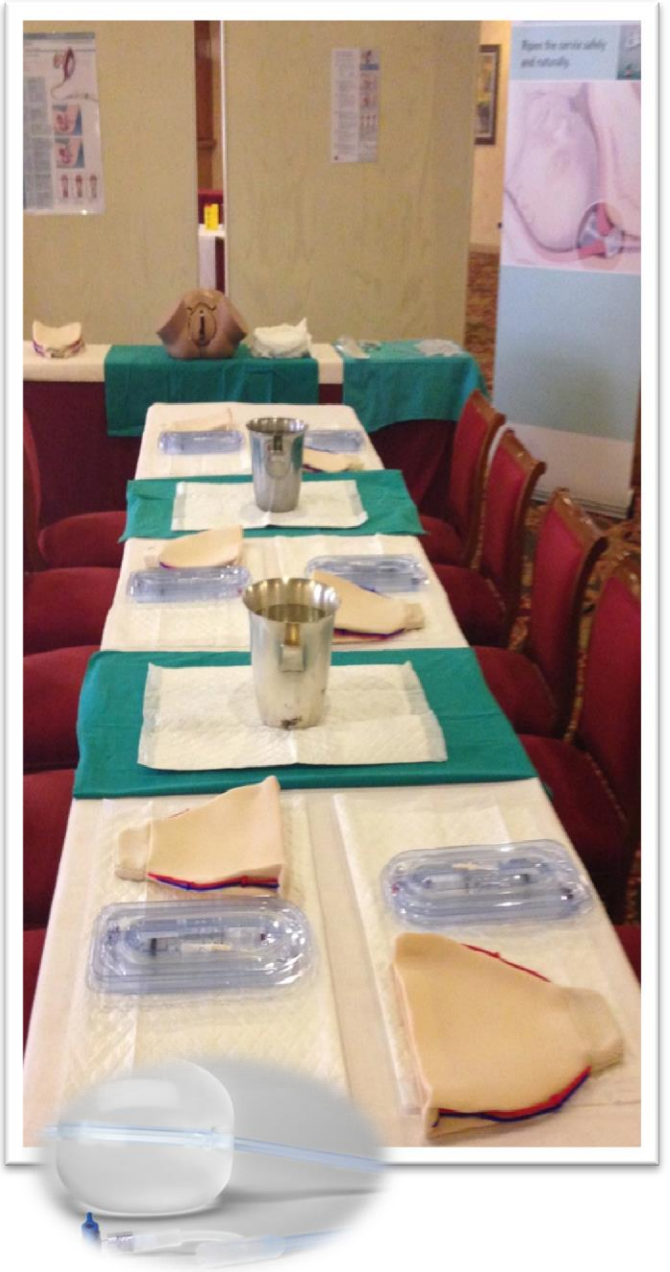
MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK



Nilsson C. Acta Obstet Gynecol Scand 2014; 93 (5): 517-20



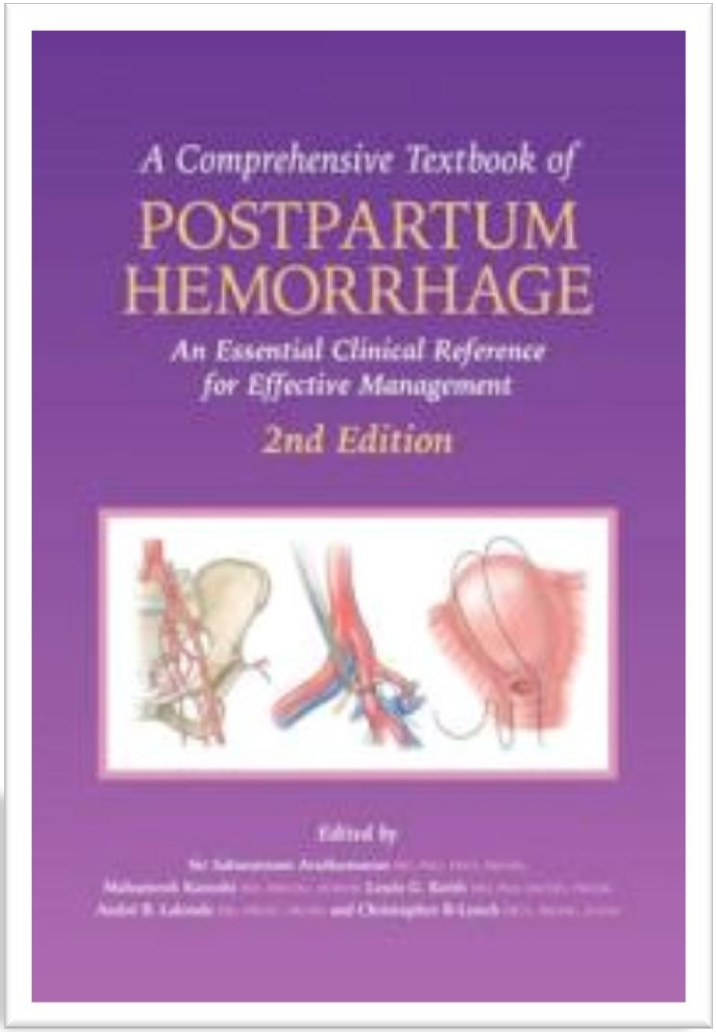




BÁLSAMO DE FIERABRÁS

“es un bálsamo, con el cual no hay que tener temor a la muerte, ni hay pensar morir de ferida alguna”

Dr. B-Lynch



Dr. L Keith

http://www.glowm.com/?p=glowm.cml/safer_motherhood_contents

MUCHAS GRACIAS