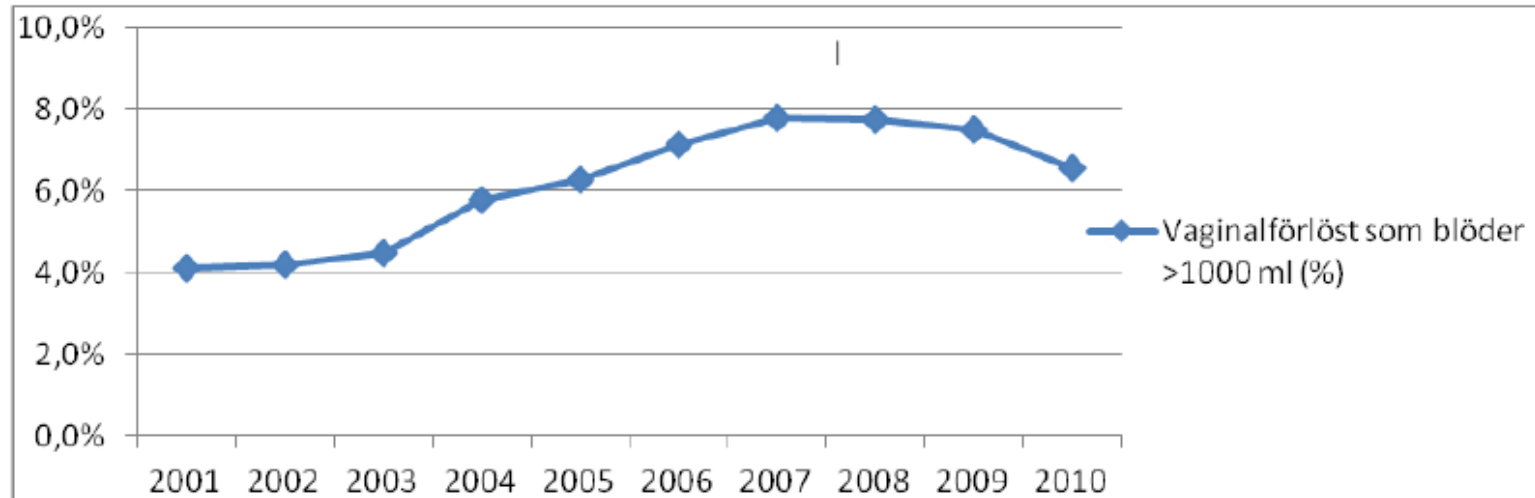




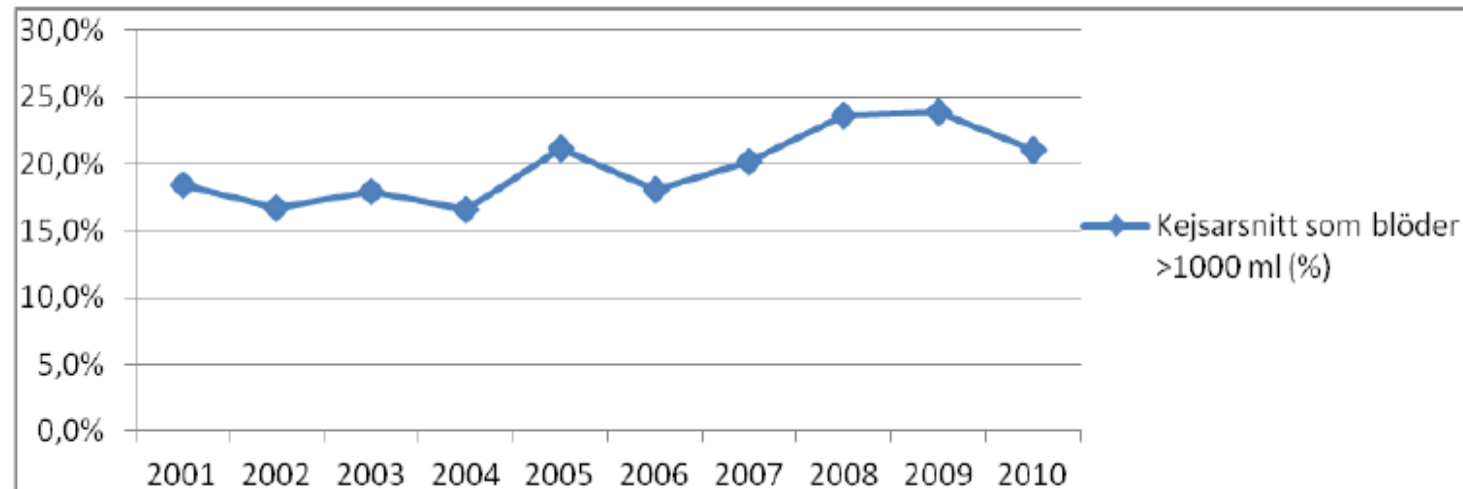
Obstetrisk blödning, teori och praktik SFAI veckan 2014

Ove Karlsson
Sahlgrenska Universitetssjukhuset
Göteborg

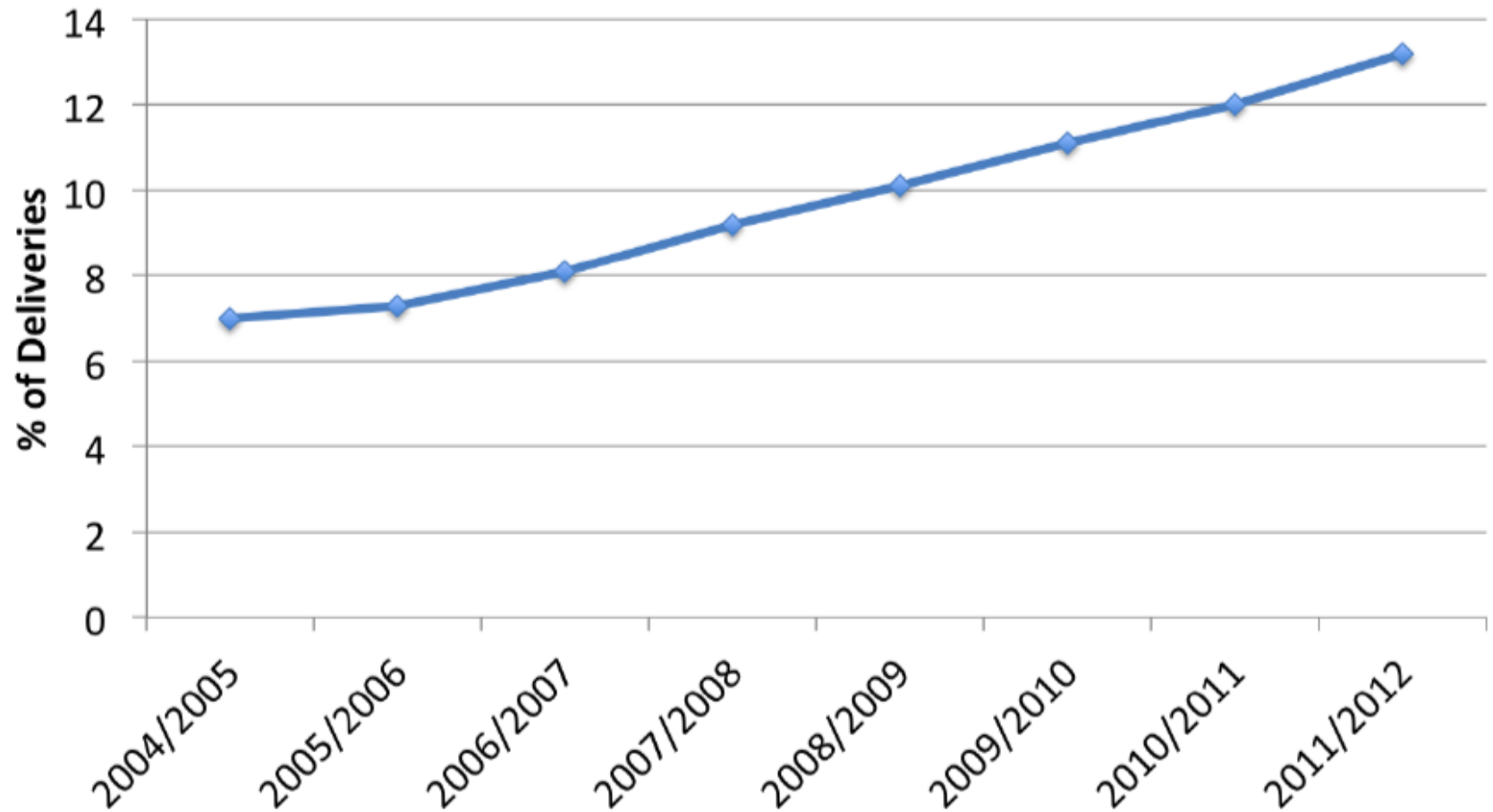
Figur 3. Vaginalförlösta med blödning >1000 ml baserat på värden i tabell 1



Figur 4. Kejsarsnittförlöst med blödning >1000 ml baserat på värden i tabell 1

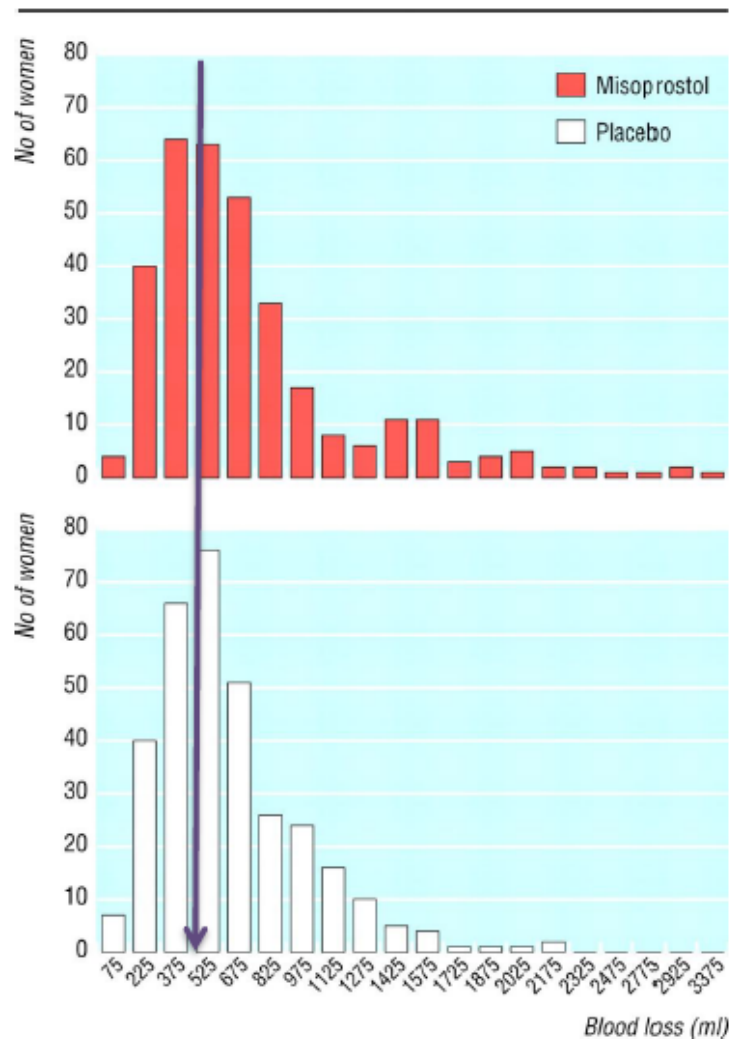


PPH in England 2004-2012



NHS Maternity Statistics, HSCIC

Distribution of postpartum blood loss in women according to treatment.



Høj L et al. BMJ 2005;331:723

“

Midwives and doctors underestimate blood loss at delivery by 30 – 50% ”

Glover P. Blood loss at delivery: how accurate is your estimation? *Aust J Midwifery* 2003;16:21-4

Cirkulation vid partus

Blodflöde uterus **700 ml /min**

Placentabädd arteriell blödning

Vid atoni tändsticksvida artärer!



5 minuters blödning utan
uteruskontraktion



3500 ml



bxp163284 www.fotosearch.com

Orsaker till stora postpartumblödningar (4 'T' att minnas)	Komplikation	%
Tonus	Atoni Placentaavlossning	50-80
Trauma	Förlossningsskador Hematom Uterusruptur Uterusinversion	15-35
"Tissue"	Placenta retention Placenta praevia Placenta accreta Placentaavlossning	10
Trombin	Koagulationsrubbning Placentaavlossning	1

Accreta incidens

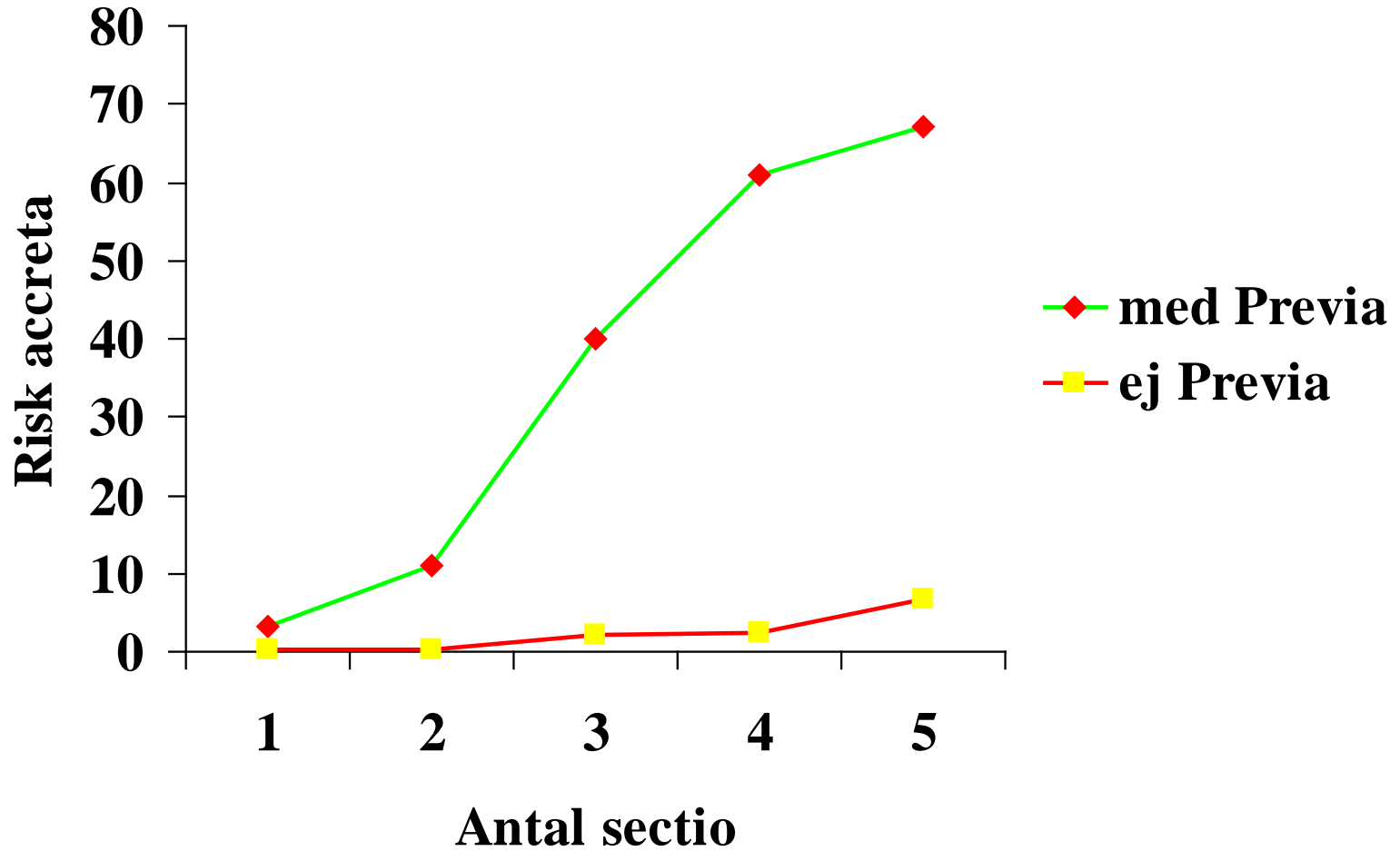


Table 4.1. Direct deaths by type of obstetric haemorrhage or genital tract trauma and mortality rate per 100 000 maternities; UK: 1985–2008

Triennium	Cause of haemorrhage						Genital tract trauma*			Overall total <i>n</i>	Overall rate
	Placental abruption <i>n</i>	Placenta praevia <i>n</i>	Postpartum haemorrhage <i>n</i>	Total			<i>n</i>	Rate	95% CI		
				<i>n</i>	Rate	95% CI					
1985–87	4	0	6	10	0.44	0.24–0.81	6	0.26	0.12–0.59	16	0.71
1985–87	6	5	11	22	0.93	0.62–1.41	3	0.13	0.04–0.39	25	1.06
1991–93	3	4	8	15	0.65	0.39–1.07	4	0.17	0.06–0.46	19	0.82
1994–96	4	3	5	12	0.55	0.31–0.95	5	0.23	0.09–0.55	17	0.77
1997–99	3	3	1	7	0.33	0.16–0.68	2	0.09	0.02–0.38	9	0.42
2000–02	3	4	10	17	0.85	0.53–1.36	1	0.05	0.01–0.36	18	0.90
2003–05	2	3	9	14	0.66	0.39–1.11	3	0.14	0.05–0.44	17	0.80
2006–08	2**	2***	5	9	0.39	0.20–0.75	0****	0.00		9	0.39

*Includes ruptured uterus. These deaths were discussed in a separate Chapter in previous reports.

**Includes one very late ectopic pregnancy in the third trimester.

***Including one woman with placenta praevia/accreta and ruptured uterus.

****Genital tract tears were implicated in two women who died of postpartum haemorrhage.

CMACE 2011 “Saving mothers’ lives” Top 10 Recommendations 2006-8

1. Pre-conception counselling
2. Interpretation services
3. Communication & referral
4. Multidisciplinary specialist care
5. BACK TO BASICS: Clinical skills and training
6. Recognising and managing sick women
7. Treat systolic HT
8. Sepsis
9. Incident reporting
10. Pathology



Specific recommendation postpartum haemorrhage

- All units should have protocol....
- Senior multidisciplinary team
- All women who have had a previous caesarean section must have their placental site determined.
- Women after caesarean section
 - Pulse and blood pressure regular
 - MEOWS for 24 hours



[MBRRACE-UK Home](#)

[Meetings Bookings](#)

[News](#)

[Programme of work](#)

[Collaboration](#)

[HQIP and the funding
bodies](#)

[Newsletters](#)

[Topic proposals](#)

[FAQs](#)



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

**THIS IS NOT THE MBRRACE-UK ONLINE REPORTING SYSTEM. IF YOU
WISH TO REPORT A CASE PLEASE GO TO: www.mbrrace.ox.ac.uk**

Announcement

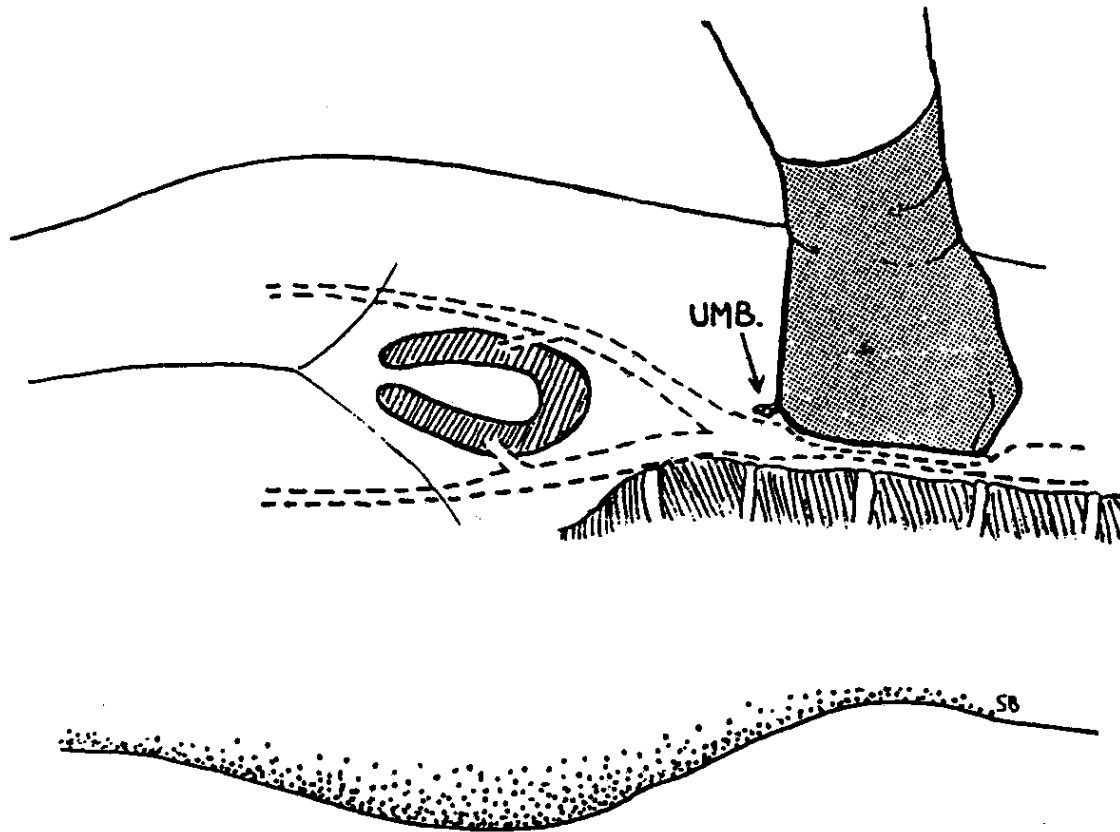
Behandling av stor postpartum blödning

1. Profylax mot stor blödning
2. Initial behandling
3. Farmakologisk behandling
4. Kirurgisk behandling
5. Hemostas
6. Anestesi
7. Övrigt



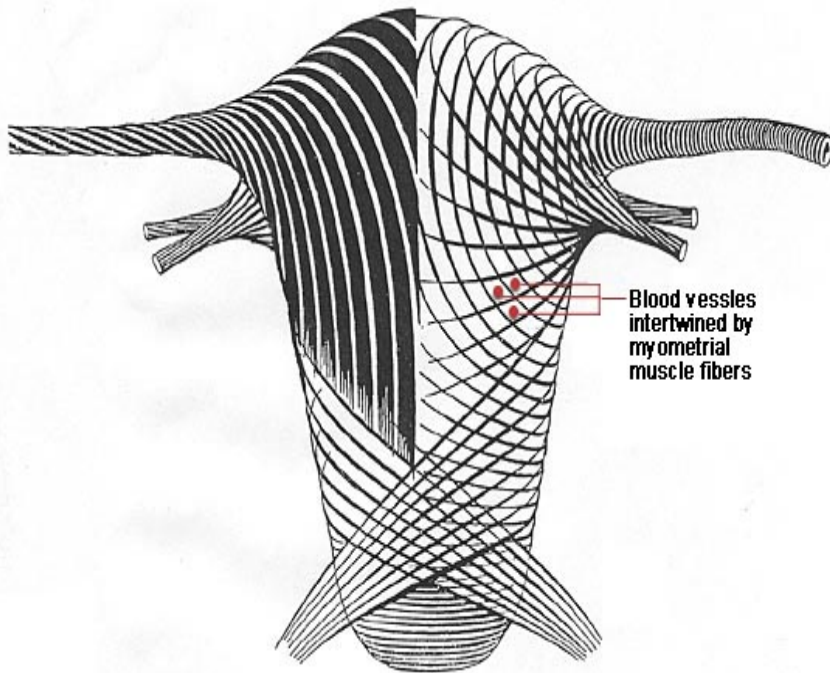
Initial behandling

- **Aortakompression**
- Alt bimanuell uterus kompression
- Tillkalla personal
- Sänk huvudända och ge syrgas 5-10 L/min
- Blodtryck och puls
- 2 grova nålar, Hb och bastest
- Varma vätskor
 - Ringeracetat (försiktighet > 2000 ml)
 - Kolloid (max 1000ml)
 - Risk spädningskoagulopati
- KAD
- Håll patient varm
- Inj Tranexamsyra (Cyklokapron®) 2 g iv



FIGUR 39 - Aortakompression sker lättast i höjd med naveln, som på bukens yta motsvarar projektionen av nedersta delen av bukaorta innan bifurkationen. Ena handen palperar först ljumskens puls. Den knutna andra handen, mjukt och försiktigt anlagd mot naveln, sänks sakta tills aortapulsationerna förnimmes. Ytterligare kompression leder till flödesminskning och -stopp i aorta genom att handen pressar ihop aorta mot kotpelarens framvägg.

Atoni

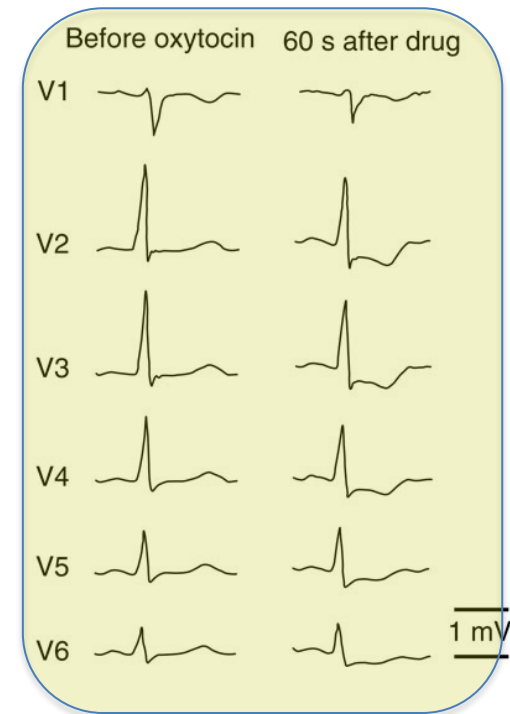
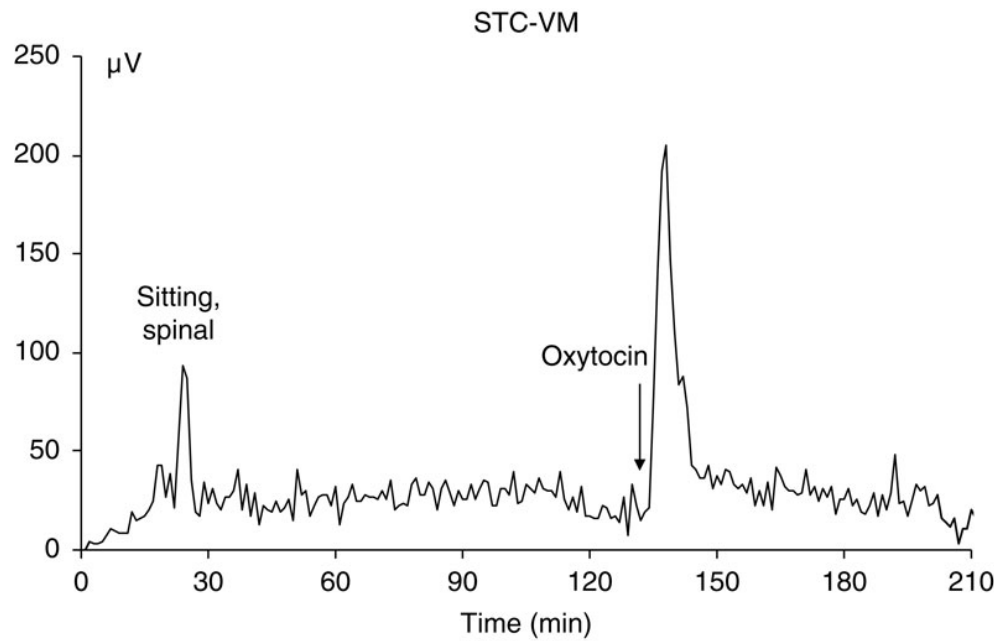


- Oxytocin (Syntocinon®)
 - Bolus
 - Infusion
- Metylergometrin (Methergin®)
 - iv alt im
 - Kan upprepas 4 ggr
- Karboprost (Prostinfenem®)
 - im
 - Kan upprepas 8 ggr
- Misoprostol (Cytotec®)
 - Rektalt

OBSTETRICS

Signs of myocardial ischaemia after injection of oxytocin: a randomized double-blind comparison of oxytocin and methylergometrine during Caesarean section

M. C. Svanström¹, B. Biber³, M. Hanes³, G. Johansson³, U. Näslund² and E. M. Bålfors^{4*}



Oxytocin Requirements at Elective Cesarean Delivery: A Dose-Finding Study

José C. A. Carvalho, MD, PhD, Mrinalini Balki, MD, John Kingdom, MD, and Rory Windrim, MD

OBJECTIVE: Oxytocin is frequently used by intravenous bolus and infusion to minimize blood loss and prevent postpartum hemorrhage at cesarean delivery. Current dosing regimens are arbitrary whereas large doses may pose a serious risk to the mother. The purpose of this study was to estimate the minimum effective intravenous bolus dose of oxytocin (ED_{90}) required for adequate uterine contraction at elective cesarean in nonlaboring women.

cental site. However, when given in large doses and as a rapid bolus, oxytocin is associated with various adverse effects, including hypotension, nausea, vomiting, chest pain, headache, flushing, and myocardial ischemia.^{1,2} For these reasons, the manufacturer's instructions do not recommend bolus administration.

A variety of regimens for administration of oxytocin

Kirurgisk behandling

- Kontroll placenta
- Exploration uterus
- Kontroll cervix och vagina
- Ballongtamponad
- Kompressionssutur enligt B-Lynch
- Hysterektomi

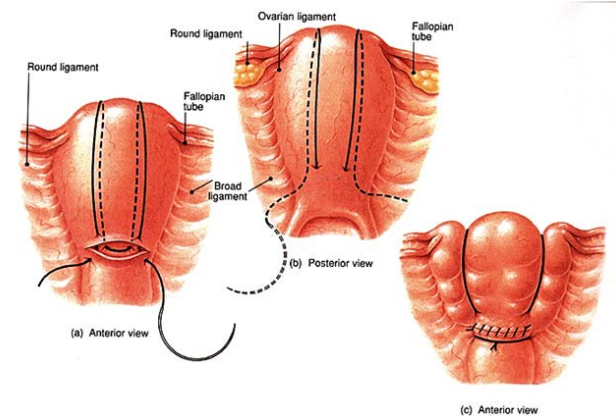
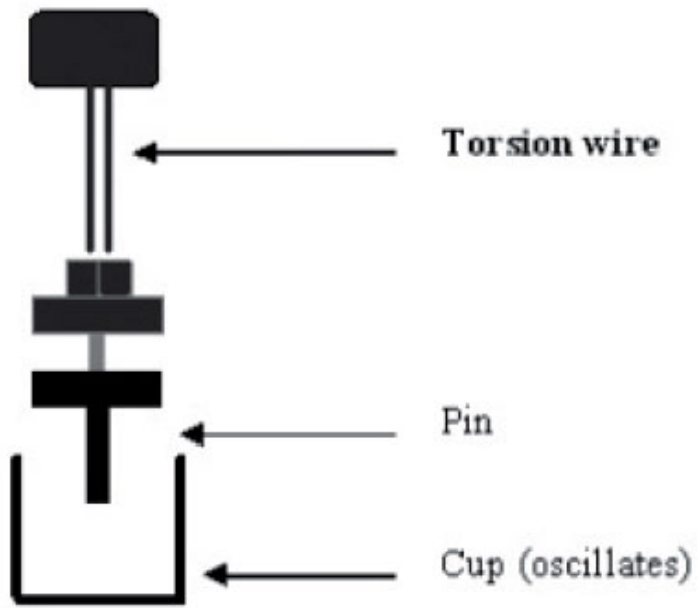
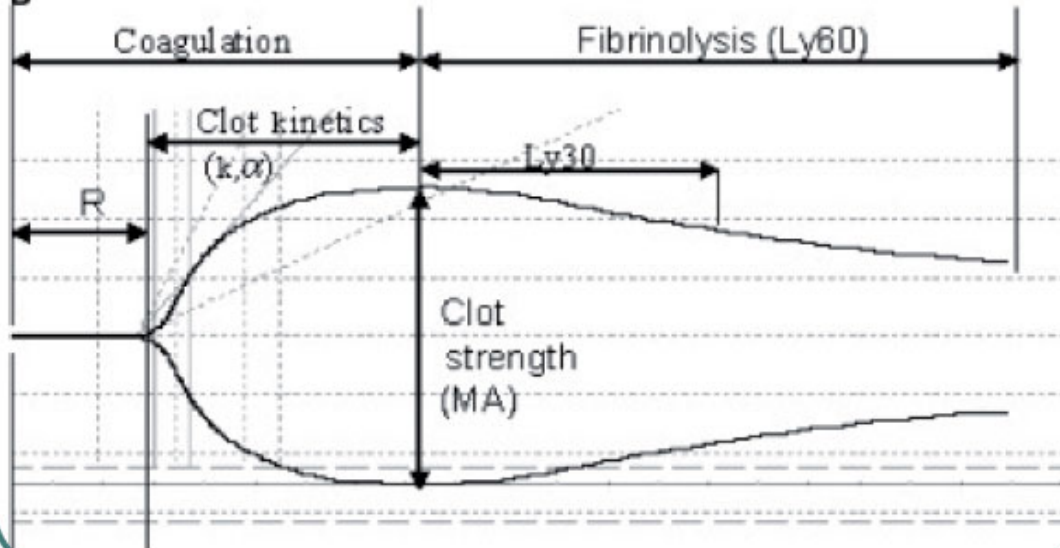


Fig. 1. Parts (a) and (b) demonstrate the anterior and posterior views of the uterus showing the application of the B-Lynch Brace suture. Part (c) shows the anatomical appearance after competent application. (Illustrations by Mr Philip Wilson FMAA, AIMI, based on the authors' video record of the operation.)

Mål för behandling under pågående blödning

- Hb > 90 g/l
- TPK > 100 x 10⁹/l
- PK < 1,5
- APTT normal
- Fibrinogen > 2,0-2,5 g/l
- Temp > 36,5 ° C
- pH > 7,2
- Jonicerat Ca >1,0
- Patient nära analysinstrument



A**B**

Blodtransfusion

Bedöm om blödning kommer att:

Blödning $< \frac{1}{2}$ blodvolym
och blödning avstannar

- Transfundera
 - Så lite som möjligt
 - Erytrocytkoncentrat
 - Kolloid

Blödning $> \frac{1}{2}$ blodvolym
och blödning pågår

- Transfundera
 - Blod/plasma/trombocyter
 - **4:4:1**

Vid fortsatt stor pågående blödning med hemostasrubbing

- Blod/Plasma/Trombocyter 4/4/1
- Tranexamsyra (Cyklokapron[®]) 2 g iv
- Fibrinogen (Riastap[®]) 4 g iv
- Allt samtidigt
- Upprepa provtagning!



ELSEVIER

www.obstetanesesthesia.com

ORIGINAL ARTICLE

Major obstetric haemorrhage: monitoring with thromboelastography, laboratory analyses or both?

O. Karlsson,^a A. Jeppsson,^b M. Hellgren^c

^a *Department of Anaesthesiology, Sahlgrenska University Hospital, Gothenburg, Sweden*

^b *Department of Cardiovascular Surgery and Anaesthesia, Sahlgrenska University Hospital and Department of Molecular and Clinical Medicine, University of Gothenburg, Gothenburg, Sweden*

^c *Department of Obstetrics, Sahlgrenska University Hospital, Gothenburg and Department of Prenatal Care, Primary Care, South Bohuslän, Sweden*

Trombocyter

Fibrinogen



Antitrombin

The decrease of fibrinogen is an early predictor of the severity of postpartum hemorrhage

Charbit B, Mandelbrot L, Samain E, Baron G, Haddaoui B, Keita H, Sibony O, Mahieu-Caputo D, Hurtaud-Roux MF, Huisse MG, Denninger MH, de Prost D, for the PPH Study Group. *J Thromb Haemost* 2007; 5: 266–73.

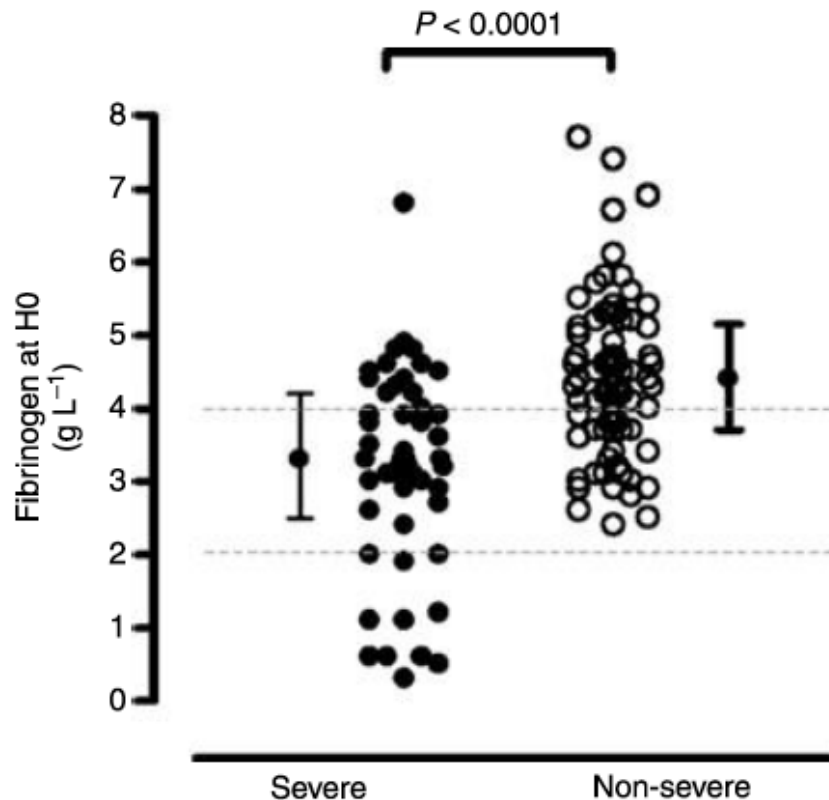


Fig. 2. Individual fibrinogen plasma concentrations at H0 in women with severe (●) or non-severe (○) postpartum hemorrhage. Mean \pm SD values are reported for both groups.

At H0, the risk for severe PPH was 2.63-fold higher for each 1 g/L decrease of fibrinogen.

The negative predictive value of a fibrinogen concentration >4 g/L was 79% and the positive predictive value of a concentration <2 g/L was 100%.

Conclusion: These findings indicate that a simple fibrinogen measurement can anticipate the risk of severe bleeding in PPH.

REVIEW

CME Fibrinogen as a therapeutic target for bleeding: a review of critical levels and replacement therapy

Jerrold H. Levy,¹ Ian Welsby,¹ and Lawrence T. Goodnough²

Fibrinogen plays a critical role in achieving and maintaining hemostasis and is fundamental to effective clot formation. There is increasing awareness of the important role of fibrinogen as a key target for the treatment and prevention of acquired bleeding. Fibrinogen is the first coagulation factor to fall to critically low levels (<1.0 g/L) during major hemorrhage (normal plasma fibrinogen levels range from 2.0 to 4.5 g/L), and current guidelines recommend maintaining the plasma fibrinogen level above 1.5 g/L. Fibrinogen supplementation

Fibrinogen is an essential protein for hemostasis and circulates at the highest concentration of all the coagulation proteins.¹ After hemostatic activation, thrombin cleaves fibrinogen and catalyzes fibrin polymerization to form a structural network critical for effective clot formation. After acute blood loss and volume resuscitation, dilutional coagulopathy can occur causing fibrinogen, a critical substrate for clot formation, to fall to low levels.² There is increasing awareness regarding the important role of fibrinogen during acute bleeding and as a target for the treatment and prevention of

Och lite mer

Vid behov

- Inj Calcium

Man kan fundera på

- (Rekombinant faktor VIIa (Novoseven[®]))
- Inj Desmopressin (Octostim[®])

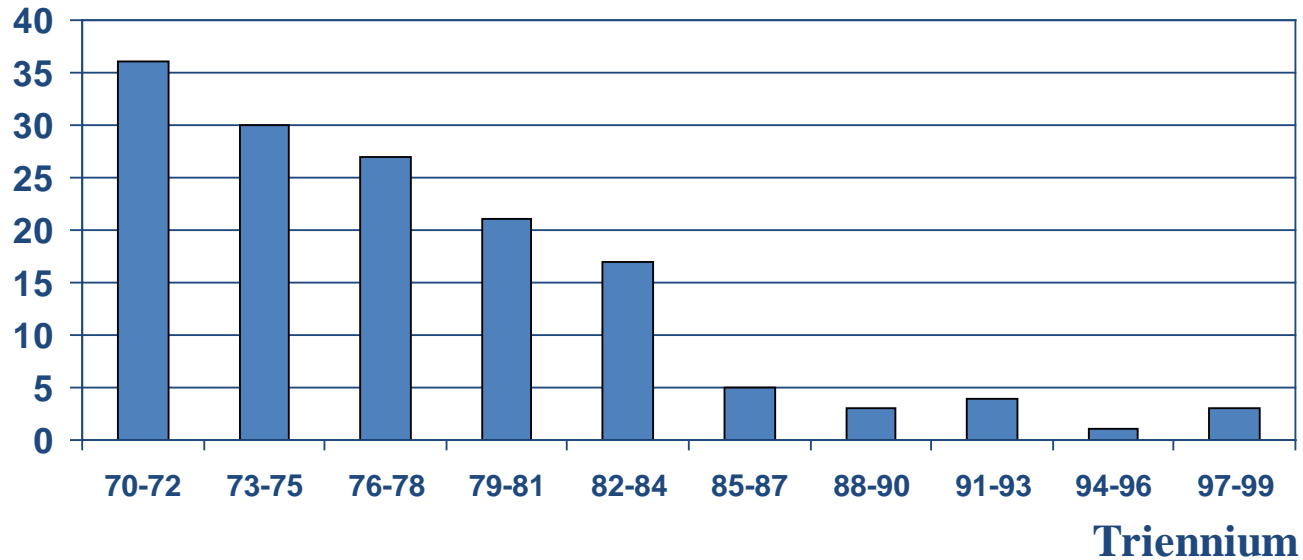
Efter blödning avstannat

- Antitrombinkoncentrat
- Trombosprofylax



Anestesirelaterad maternell mortalitet

Deaths



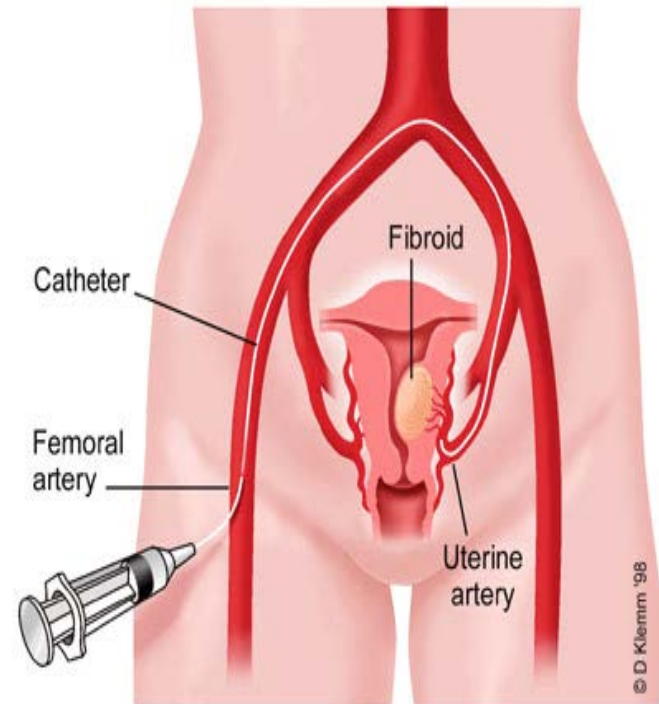
- Regional Anaesthesia
- Improved Training
- More Senior Interest
- Better Co-operation

Och lite annat...

- Cellsaver



- Radiologisk intervention



Management of bleeding and coagulopathy following major trauma: an updated European guideline

Donat R Spahn¹, Bertil Bouillon², Vladimir Cerny^{3,4}, Timothy J Coats⁵, Jacques Duranteau⁶, Enrique Fernández-Mondéjar⁷, Daniela Filipescu⁸, Beverley J Hunt⁹, Radko Komadina¹⁰, Giuseppe Nardi¹¹, Edmund Neugebauer¹², Yves Ozier¹³, Louis Riddez¹⁴, Arthur Schultz¹⁵, Jean-Louis Vincent¹⁶ and Rolf Rossaint^{17*}

EJA

Eur J Anaesthesiol 2013; **30**:270–382

GUIDELINES

Management of severe perioperative bleeding

Guidelines from the European Society of Anaesthesiology

Sibylle A. Kozek-Langenecker, Arash Afshari, Pierre Albaladejo, Cesar Aldecoa Alvarez Santullano, Edoardo De Robertis, Daniela C. Filipescu, Dietmar Fries, Klaus Görlinger, Thorsten Haas, Georgina Imberger, Matthias Jacob, Marcus Lancé, Juan Llau, Sue Mallett, Jens Meier, Niels Rahe-Meyer, Charles Marc Samama, Andrew Smith, Cristina Solomon, Philippe Van der Linden, Anne Juul Wikkelsø, Patrick Wouters and Piet Wyffels

Behandling av stor postpartum blödning

Provtagning

TEG, HB, TPK, APTT, PK
Fibrinogen, D-dimer, antitrombin

Blodgaser inkl joniserat Ca
Temperatur.

Bimanuell uteruskompression/ Aortakompression

- Sänk huvudändan, ge syrgas!
- BT och puls
- 2 grova perifera nålar
- Hb, bastest

Anestesi

- Överväg att avbryta inhalationsanestesi
- Överväg propofolinfusion alternativt ketalarinfusion
 - Optimera N2O/O2+Fentanyl

Vätskor

- Ringer-acetat 1000 ml (försiktighet > 2 L)
- Voluven 500 ml, maxdos 1000 ml
- 0 neg blod

Läkemedel

- Syntocinon
- Methergin
- Prostifenem
- Cytotec
- Cyklokapron
- Antibiotika

Blodprodukter

- E-koncentrat/plasma/trombocyt konc 4:4:1
- Fibrinogen initialt 4 g
- Novoseven
- Antitrombin om < 0.5 KIE/ml

Kirurgi

- Explorera uterus
- Cervix/vagina inspektion
- Ballongtamponad
- Kompressionssuturer
- Hysterektomi