JAN BLÁHA

Klinika anesteziologie, resuscitace a intenzivní medicíny
1. lékařská fakulta Univerzity Karlovy
Všeobecná fakultní nemocnice v Praze

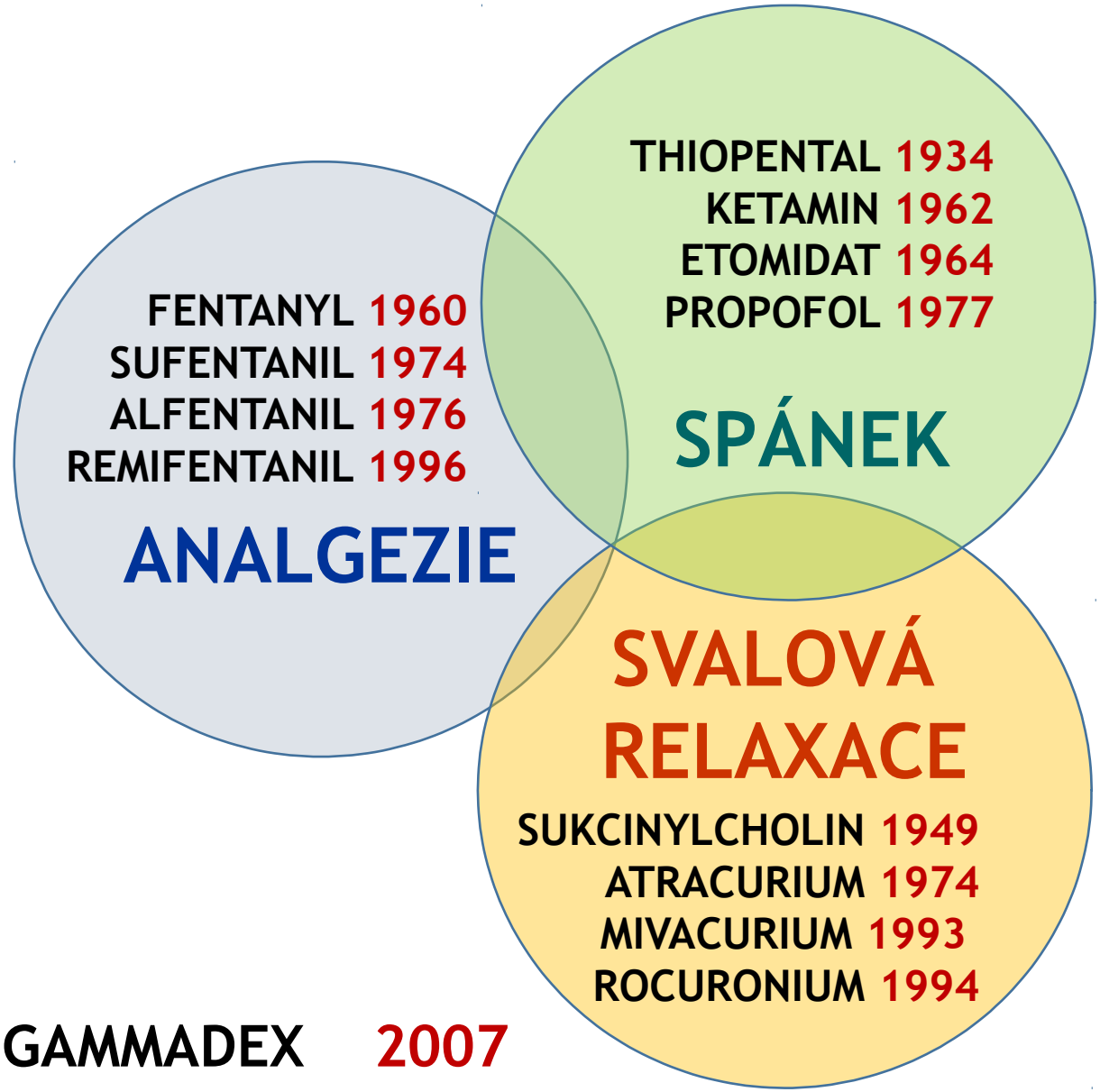
Co by měl mladý anesteziolog vědět, než…

vstoupí na porodnici

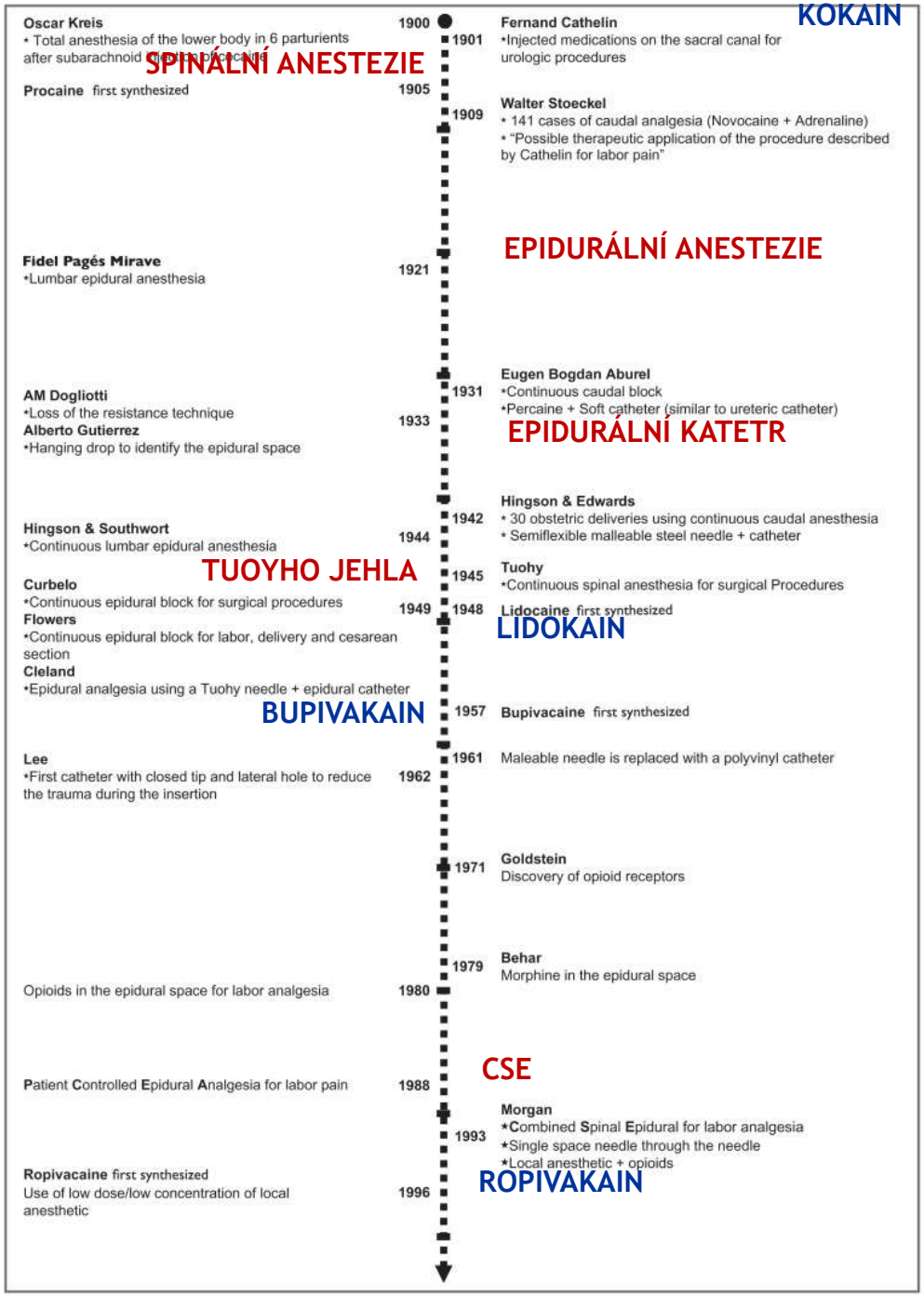
jan.blaha@vfn.cz


Rodičkám drogově
závislým, či se suspekcí
na abusus drog a
rodičkám s abusem
drog v anamnéze
nepodávejte
Spasmopan supp.
Žurnální službou
Antenatální podání kortikoidů
k indukci plicní zralosti plodu

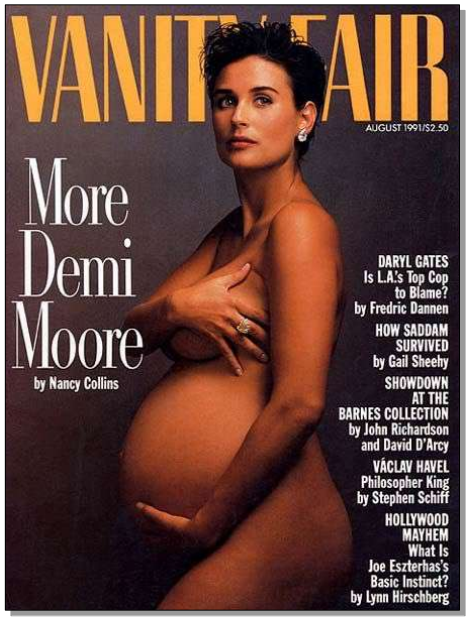

Porodní
asistentky



SUGAMMADEX 2007



Silva Mt al. Local Reg Anesth. 2010; 3: 143–153

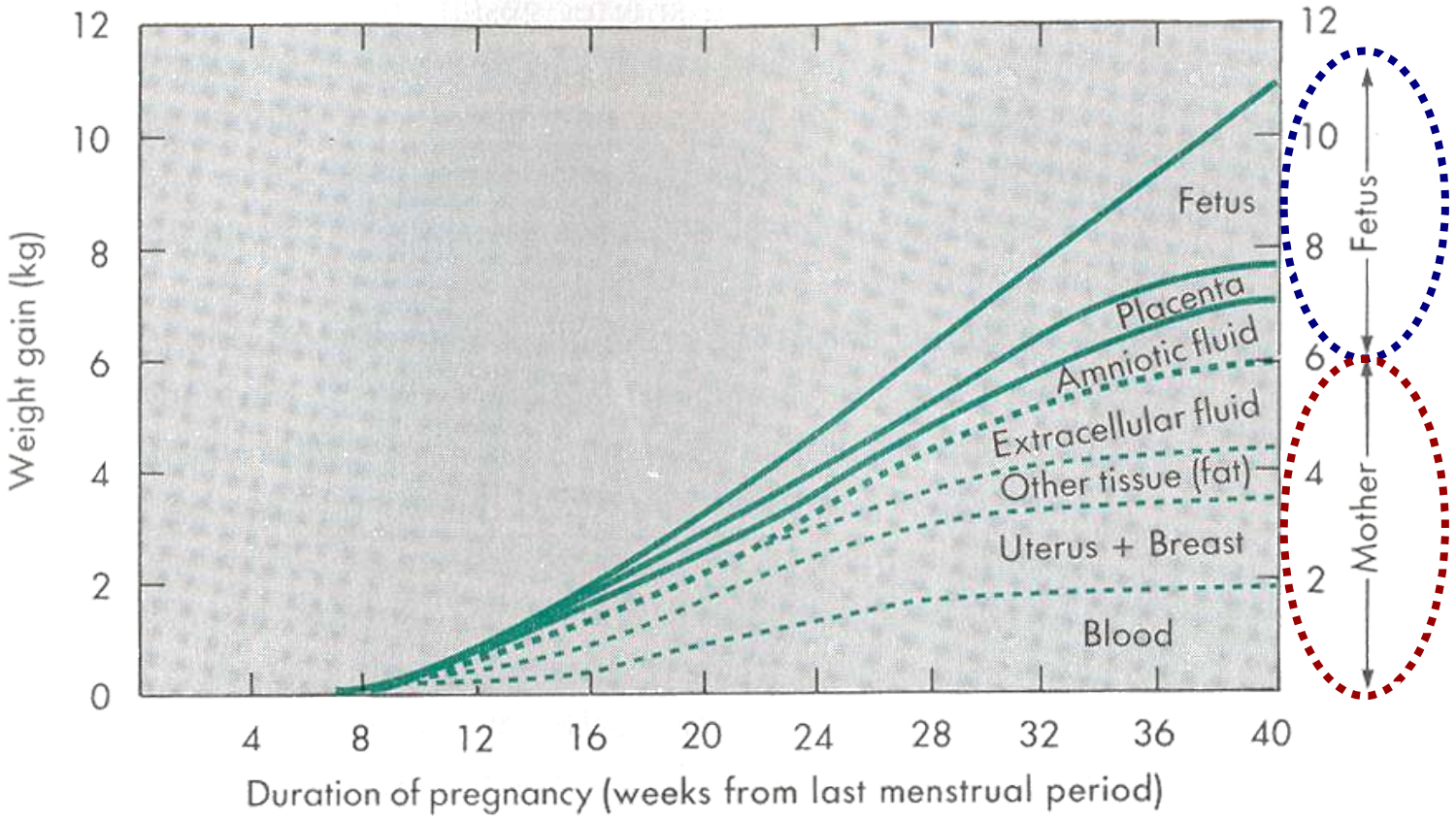

VANITY FAIR
AUGUST 1991/$2.50
More Demi Moore
by Nancy Collins
DARYL GATES
Is L.A.'s Top Cop to Blame?
by Fredric Dannen
HOW SADDAM SURVIVED
by Gail Sheehy
SHOWDOWN AT THE BARNES COLLECTION
by John Richardson and David D'Arcy
VÁCLAV HAVEL
Philosopher King
by Stephen Schiff
HOLLYWOOD MAYHEM
What Is Joe Eszterhas's Basic Instinct?
by Lynn Hirschberg


VOGUE
JAPAN
Beauty


The Murder Capital of N.Y. / Jonathan Chait on Fed-Bashing
Against Bipartisanship, by Frank Rich
The Myth of the Independent Voter
NEW YORK
REBECCA BLACK
Is She Just Too Old For This?
New parents over 50—child-rearing's final frontier.
By Lisa Miller

FYZIOLOGICKÉ ZMĚNY V TĚHOTENSTVÍ

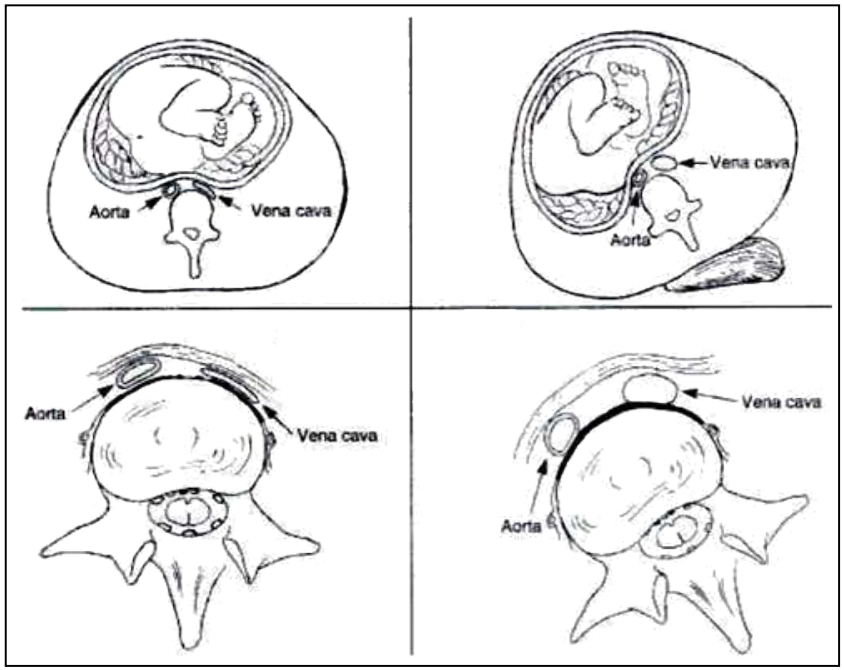
- nárůst hmotnosti matky

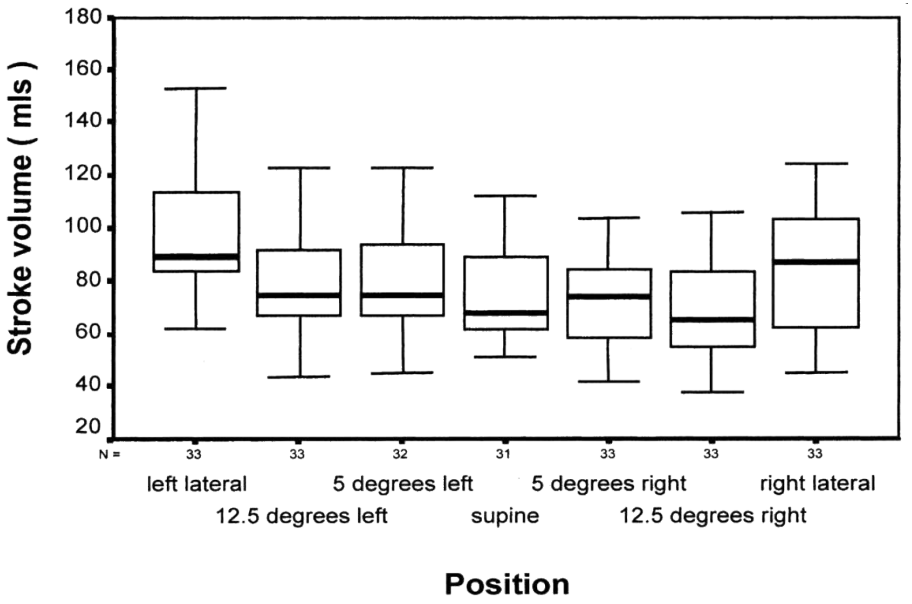


Fetus
5 kg

Matka
6 kg

FYZIOLOGICKÉ ZMĚNY V TĚHOTENSTVÍ





Bamber, J. H. et al. Anesth Analg 2003;97:256-258

SEMILATERÁLNÍ POLOHA, tj. naklonění trupu o 5-15 stupňů

= prevence aortokavální komprese

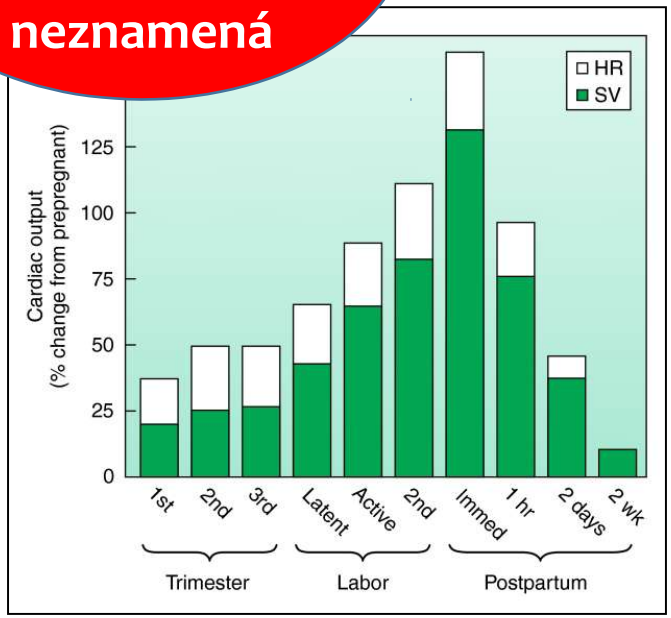
FYZIOLOGICKÉ ZMĚNY V TĚHOTENSTVÍ

- příprava na krevní ztrátu při porodu
- zajištění zvýšených nároků metabolismus matky + plodu

Krevní ztráta do 1000 ml většinou nic neznamená

	Relativní změna proti netěhotnému stavu
Celkový objem krve (+1500 ml)	+40%
Plazmatický objem	+45%
Srdeční výdej	+50%
Tepový objem	+25%
Srdeční frekvence	+25%
LVEDV	zvýšený
Ejekční frakce	zvýšená
PCWP	beze změny
Centrální žilní tlak	beze změny
Systémová vaskulární rezistence	−20%

Conklin KA. Semin Anesth 1991; 10:221-34.



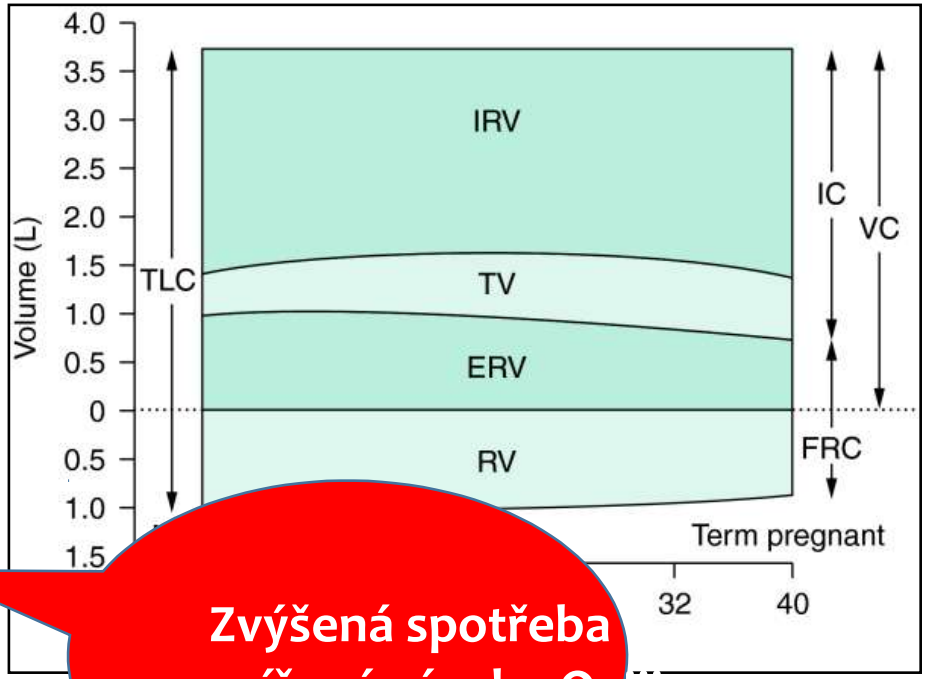
Chestnut's Obstetric Anesthesia: Principles and Practice, 4th Edition, 2009

FYZIOLOGICKÉ ZMĚNY V TĚHOTENSTVÍ

- růst dělohy = zvýšená poloha bránice
- zvýšená senzitivita k CO_2 v respiračním centru (vliv progesteronu)
- **vyšší spotřeba kyslíku** (zvýšený metabolismus matky + plod)

Relativní změna

Spotřeba O_2	**+40%**
Dechová frekvence	mírně zvýšena
Minutová ventilace	+45%
Alveolární ventilace	+45%
Difúze přes alv.-kap. membránu	-15%
Dechový objem	+45%
Vitální kapacita	beze změny
Funkční reziduální kapacita	**-20%**
Poloha bránice	o 4 cm výše



Zvýšená spotřeba a snížená zásoba O_2

Conklin KA. Semin Anesth 1991; 10:221-34.

and Practice, 4th Edition, 2009

FYZIOLOGICKÉ ZMĚ[illegible]OTENSTVÍ

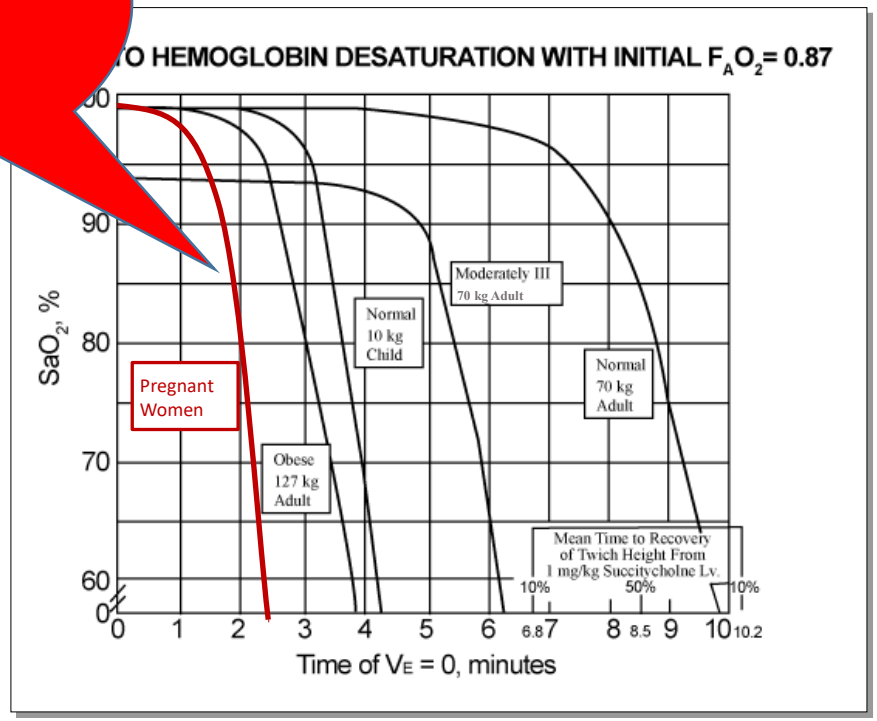
Nemáte čas váhat !!!

Table 1 Typical examples of duration of [illegible] in different patients

	FRC (mL)	O_2 [illegible] ($mL \cdot min^{-1}$)
No preoxygenation	2500	250
Normal preoxygenation	2500	250
Poor preoxygenation	2500	250
Obese	1250	350
Obese head-up	1500	350
Pregnant	1000	400
Elderly	2250	200

Examples only. Actual values may vary. FRC = functional residual capacity

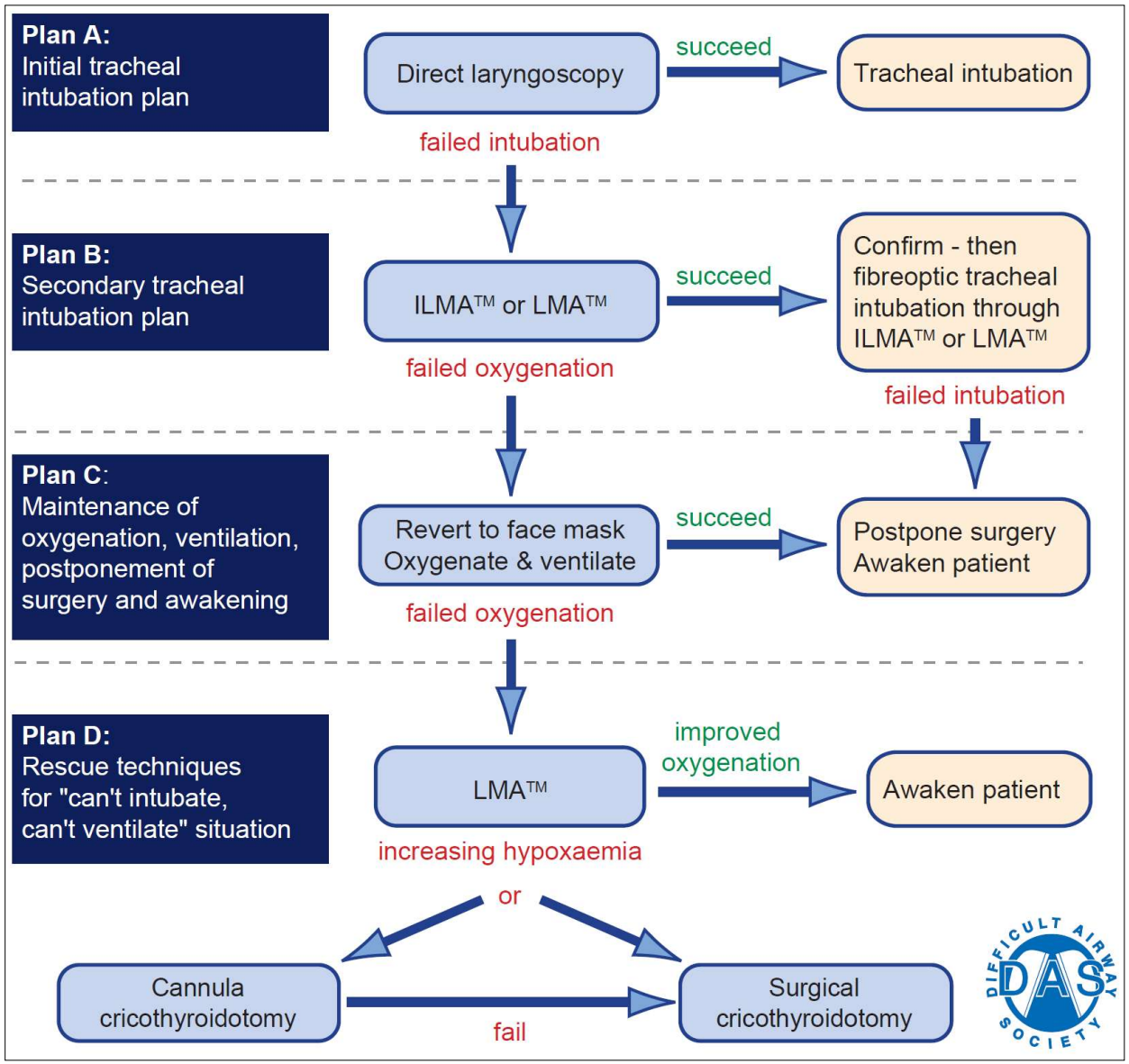
Tanoubi I. Can J Anesth/J Can Anesth (2009) 56:449–466



Benumof JL et al. Anesthesiology 1997; 87:979-82

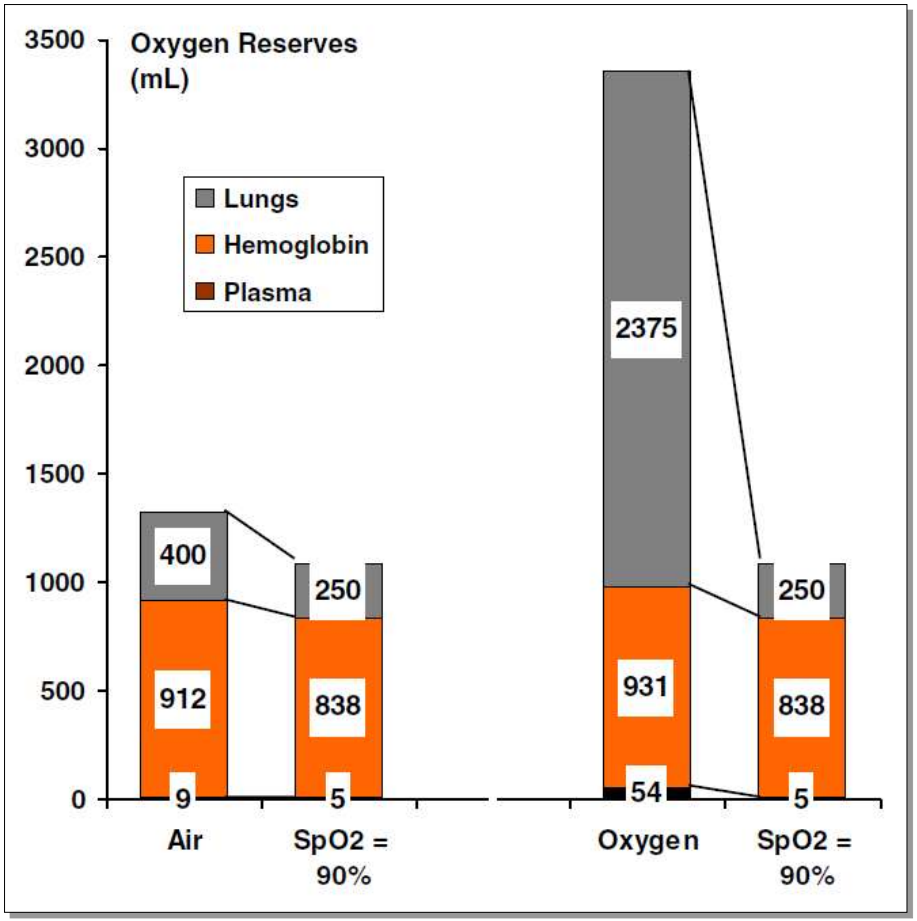
Díky zvýšenému metabolismu nastává u rodičky (i plodu !) desaturace krve a rozvoj kritické hypoxie nesrovnatelně rychleji než u netěhotných pacientek.

OBTÍŽNÁ INTUBACE V TĚHOTENSTVÍ



PREOXYGENACE !!!

PREOXYGENACE !!!



Tanoubi I. Can J Anesth/J Can Anesth (2009) 56:449–466

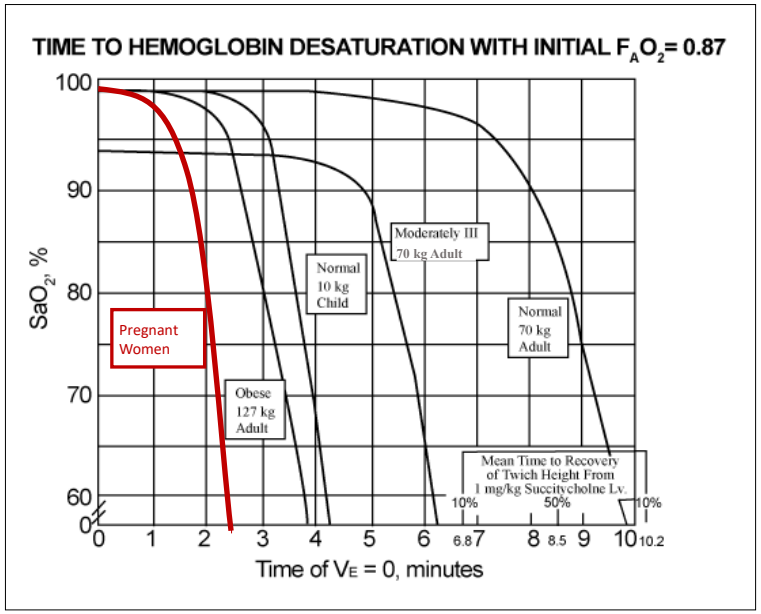
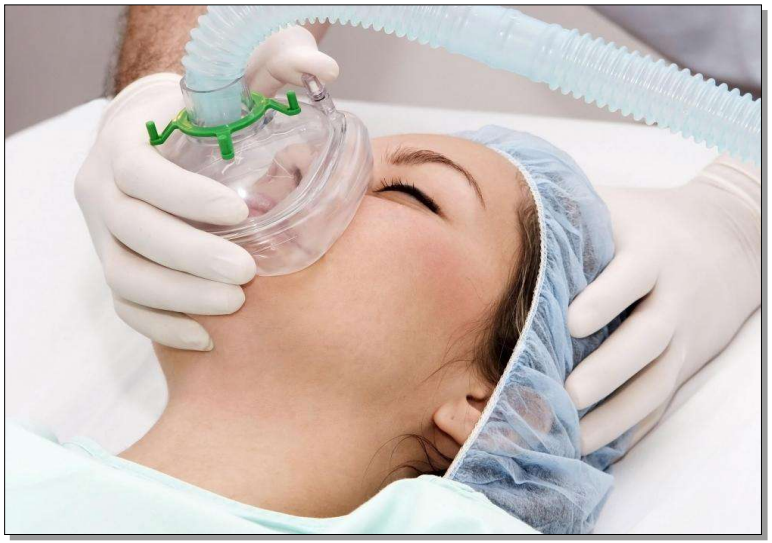


Fig. 1 Oxygen reserves in a normal healthy adult when breathing room air (left), after breathing 100% oxygen (right), at onset of apnea, and when reaching an oxygen saturation (SpO_2) of 90%. In this example, the oxygen available for consumption during the apneic period amounts to 228 mL when breathing air and 2267 mL when breathing oxygen. Calculations are based on a functional residual capacity of 2500 mL, hemoglobin concentration 140 g · L^{-1}, SpO_2 = 98% on air, SpO_2 = 100% on oxygen, and blood volume 5 L. In this example, a subject with an oxygen consumption of 250 mL · min^{-1} could sustain a period of apnea of 228/250 = 0.9 min after breathing air and 2267/250 = 9 min after breathing oxygen

PREOXYGENACE !!!



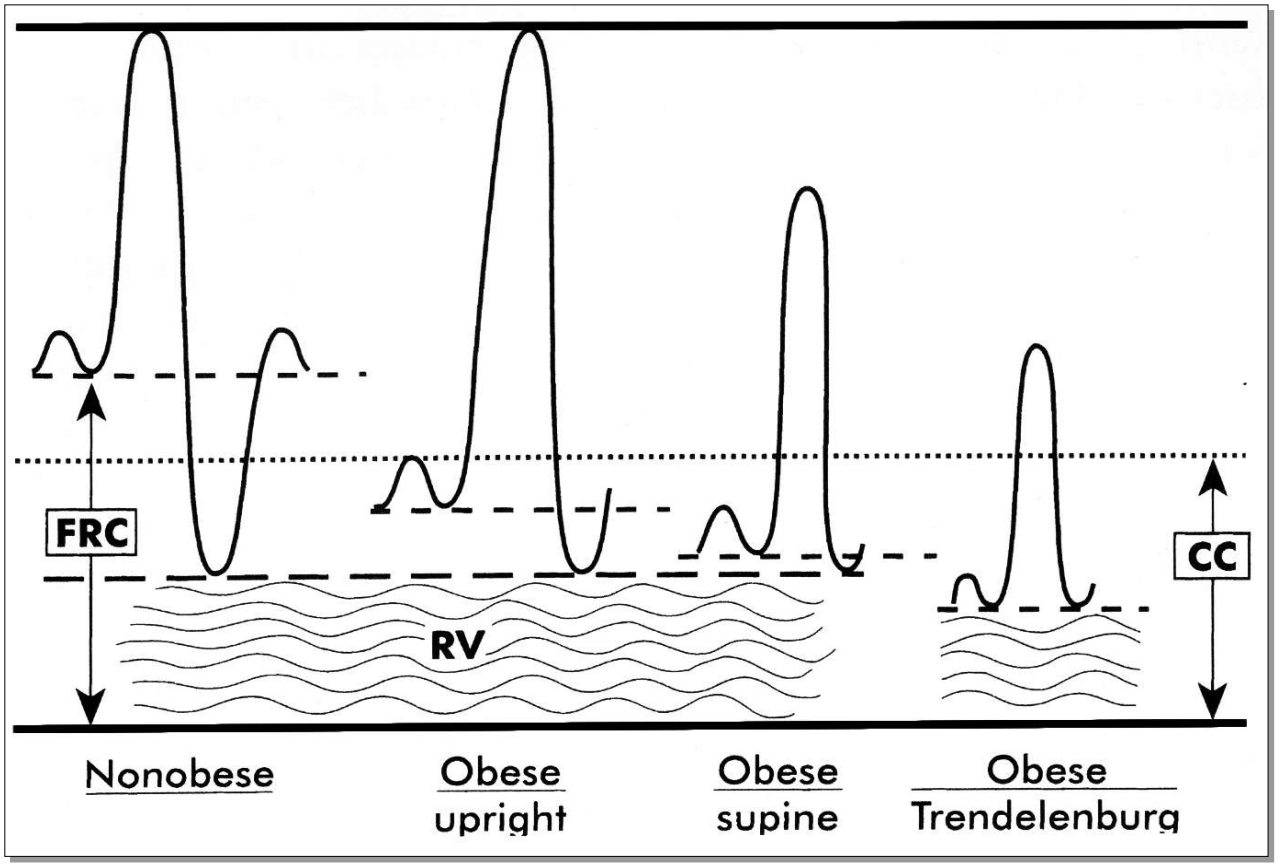
A. lehká obličejová kyslíková maska

5-8 minut dýchání (100%) O_2 normálním objemem

B. plně těsnící obličejová kyslíková maska

3-8 vdechů v objemu vitální kapacity (100% O_2)

EFFECT OF POSITION ON LUNG VOLUMES



In Brown BR, editor. *Anesthesia and the Obese Patient.* Philadelphia, FA Davis 1082:26.

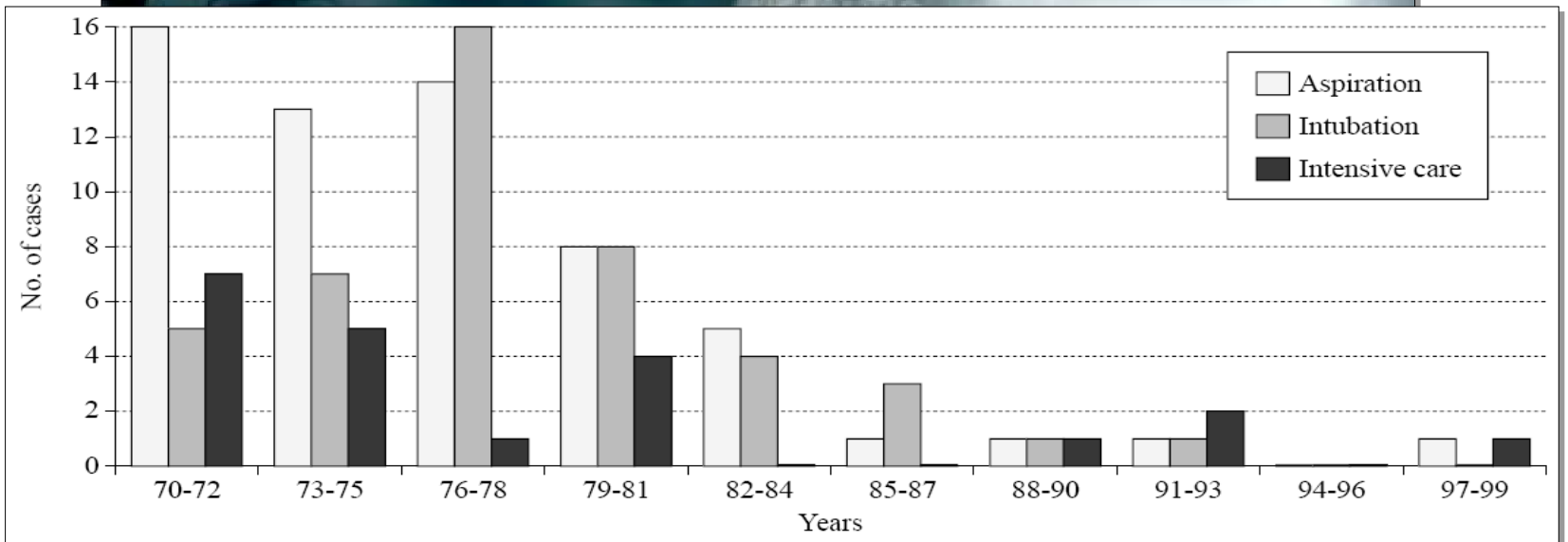


Figure 4.—Coomon cause of anesthetic deaths. Deaths from aspiration and airway problems have continued to occur despite increasing use of regional anaesthesia. Some women survive the initial event to die later in the Intensive Care Unit.[2,3]

70.-80. léta	celková anestézie má **17x** vyšší mortalitu než regionální Hawkins JL, Anesthesiology 1997;86:277-84
90. léta	již "pouze" **6x** vyšší mortalita u CA proti RA Hawkins JL, Clin Obstet Gyn 2003; 46: 679-87
21. století	není rozdíl mezi celkovou a regionální anestezií Cochrane Database of Systematic Reviews 2012

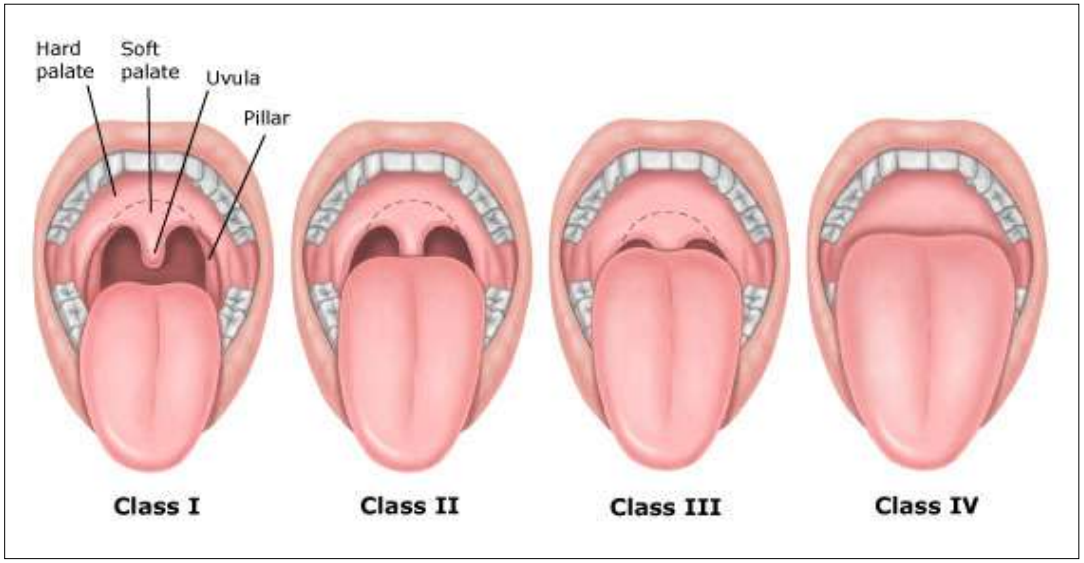
FYZIOLOGICKÉ ZMĚNY V TĚHOTENSTVÍ



10x vyšší riziko obtížné intubace u těhotných !!!

Lyons. Anaesthesia **1985**; 40:759-62	**1:300**
Barnardo. Anaesthesia **2000**; 55:685-94	**1:249**
Rahman. Anaesthesia **2005**; 60:168-71	**1:238**
McDonnell. Int J Obst Anest **2009**; 17:292-7	**1:274**


OBTÍŽNÁ INTUBACE V TĚHOTENSTVÍ



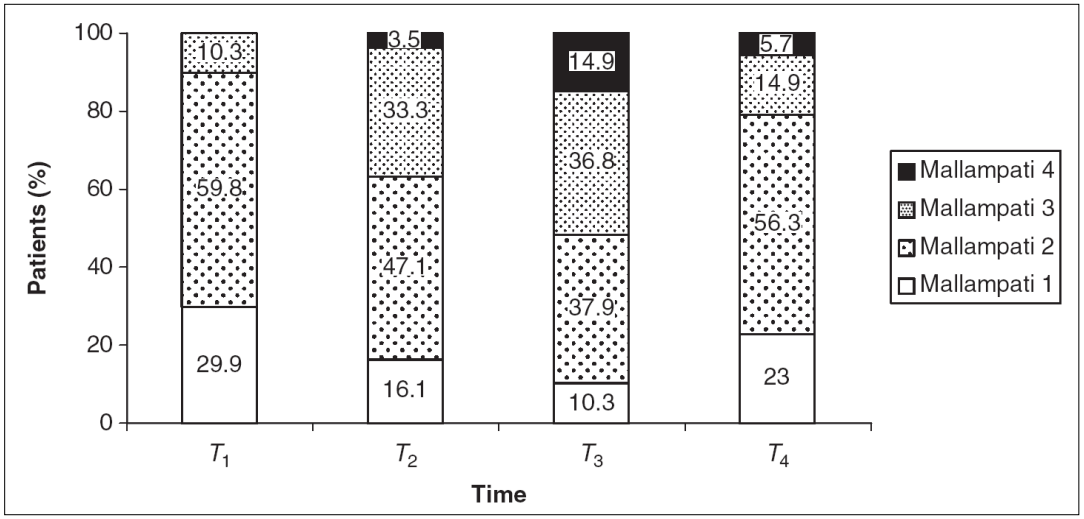


Fig 1 The Mallampati classes at different time points. T_1, 8 months of pregnancy; T_2, during labour; T_3, 20 min after delivery; T_4, 48 h after delivery. The percentages of patients with Mallampati class 3 or 4 changed significantly: T_1 *vs* T_2, P=0.0000; T_2 *vs* T_3, P=0.0005; T_3 *vs* T_4, P=0.0000; T_4 *vs* T_1, P=0.0062.

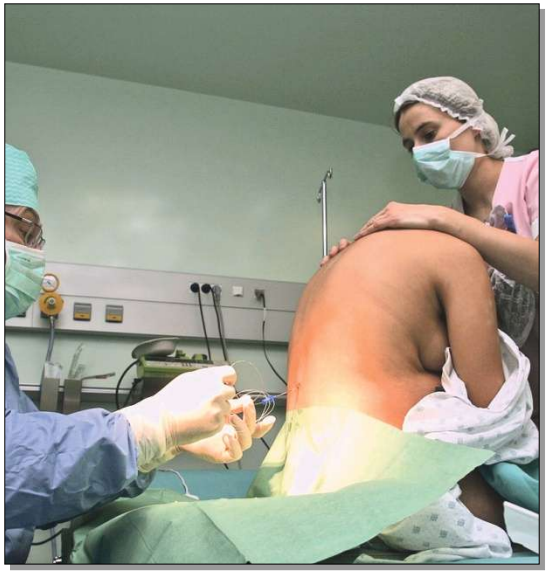
10x

vyšší riziko obtížné intubace

se v průběhu porodu ještě dále zvyšuje!

Boutonnet et al., Br J Anaesth 2010; 104:67-70

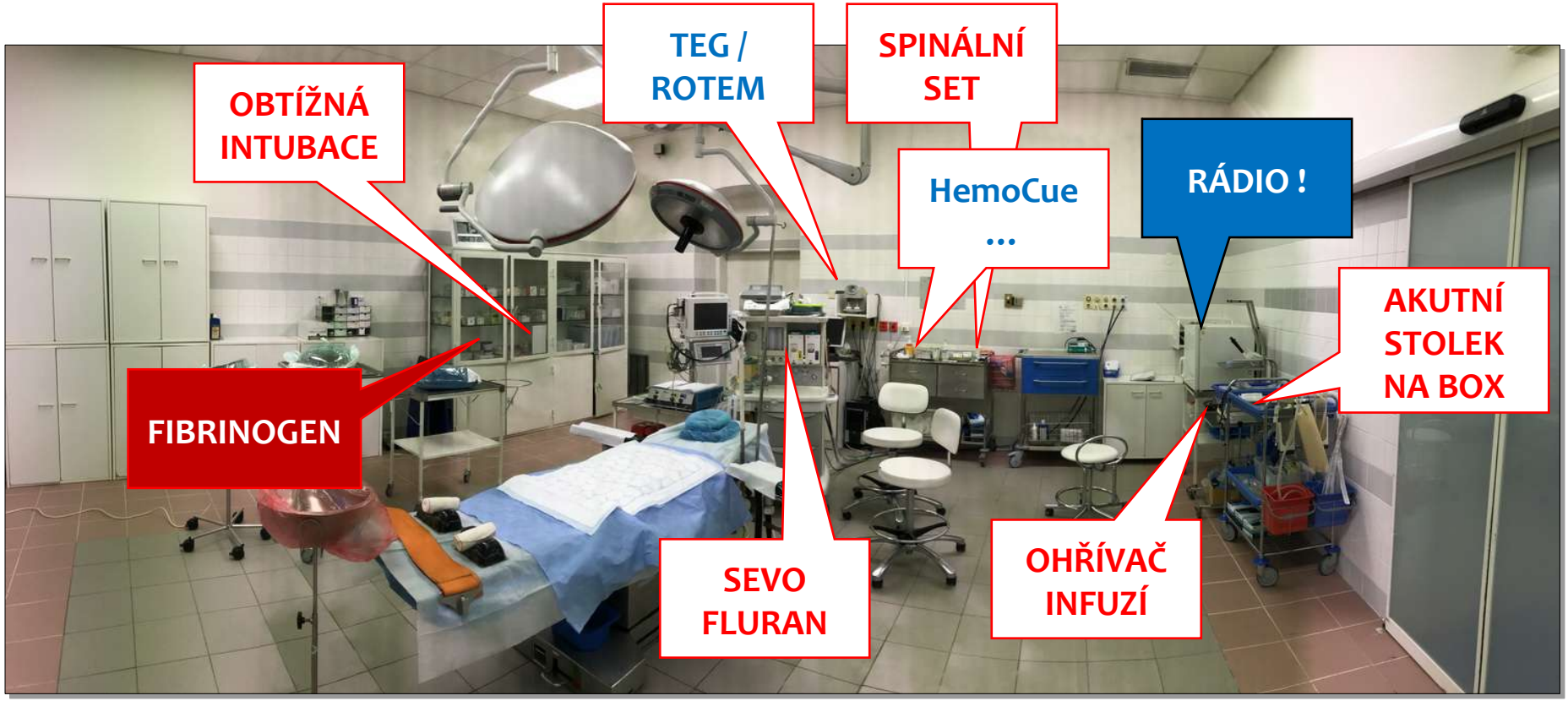
MANAGEMENT OBTÍŽNÉ INTUBACE



PROČ MÁME VĚTŠINOU PROBLÉMY?

1. Přecenění vlastních schopností.
2. Pozdě zavolaná pomoc.
3. Nezkontrolované vybavení a nenaučení se jej používat.
4. **Nedomyšlený postup bez řádného záložního plánu B**.

PAMATUJ, ŽE OXYGENACE JE DŮLEŽITĚJŠÍ NEŽ INTUBACE.


OBTÍŽNÁ INTUBACE
TEG / ROTEM
SPINÁLNÍ SET
HemoCue …
RÁDIO !
AKUTNÍ STOLEK NA BOX
FIBRINOGEN
SEVO FLURAN
OHŘÍVAČ INFUZÍ

THE ASPIRATION OF STOMACH CONTENTS INTO THE LUNGS DURING OBSTETRIC ANESTHESIA*

CURTIS L. MENDELSON, M.D., NEW YORK, N. Y.

(From the Department of Obstetrics and Gynecology, Cornell University Medical College and New York Hospital)

Am J Obstet Gynecol 1945;49:554–66.

Summary

Sixty-six cases of aspiration of stomach contents into the lungs during obstetric anesthesia are analyzed. The incidence of this complication is 0.15 per cent in 44,016 pregnancies at the [illegible]k Lying-In Hospital from 1932 to 1945.

Table 7 Reported incidence of aspiration in obstetri[illegible] general surgical populations

Study	No. of cases	Patient group characteristics	Incidence of aspiration [no. of cases]
This study	1870	Obstetric; peripartum; nonintubated	0.053% [1]
Kranz & Edwards [3]	37 282	Obstetric; vaginal delivery; nonintubated	0.013% [5]
Kranz & Edwards [3]	3076	Obstetric; Caesarean section; intubated	0.228% [7]
Olsson *et al*. [2]	2643	Obstetric; Caesarean section; intubated	0.15% [4]
Olsson *et al*. [2]	111 215	General surgery; nonintubated	0.018% [20]
Olsson *et al*. [2]	74 143	General surgery; intubated	0.085% [63]
Cohen *et al*. [5]	112 000	General surgery; intubated and nonintubated	0.064% [72]
Kallar [6]	529 150	Outpatients; intubated and nonintubated	0.017% [90]
Warner *et al*. [4]	13 427	General surgery; emergency	0.112% [15]
Warner *et al*. [4]	202 061	General surgery; elective	0.0257% [52]

Ezri et al. Anaesthesia 2000; 55:421-426

Oral sodium citrate increases nausea amongst elective Cesarean delivery patients

[Le citrate de sodium oral augmente les nausées pendant la césarienne réglée]

Klaus Kjaer MD, Michele Comerford MD, Linda Kondilis BA, Lauren DiMaria BA, Sharon Abramovitz MD, Michael Kiselev MD, Jon Samuels MD, Farida Gadalla MD, Barbara L. Leighton MD

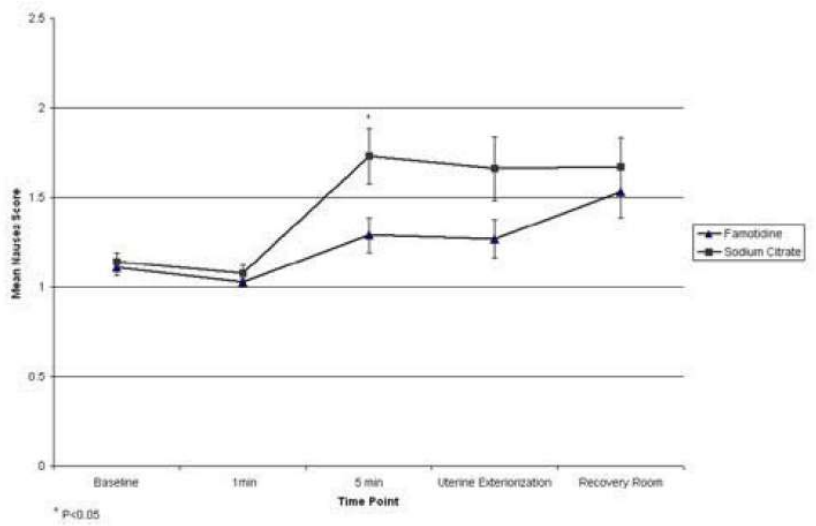


FIGURE 1 Average degree of nausea over time.

TABLE II Occurrence of nausea and hypotension

	Sodium citrate	*Control*	*P-value*
1 min after spinal			
Nausea	4/60 (7%)	2/63 (3%)	0.43
Hypotension	4/59 (7%)	4/61 (7%)	1
5 min after spinal			
Nausea	22/60 (37%)	9/63 (14%)	0.006
Hypotension	13/60 (22%)	11/63 (17%)	0.65
Uterine exteriorization			
Nausea	14/53 (26%)	7/52 (13%)	0.14
Hypotension	1/53 (2%)	2/53 (4%)	1
Recovery room			
Nausea	17/58 (29%)	15/62 (24%)	0.54
Hypotension	5/60 (8%)	9/63 (14%)	0.39

Nausea = 2–5 on a scale of 1–5, with 1 being no nausea and 5 being vomiting. Hypotension = systolic blood pressure ≤ 100. Compared with Pearson Chi-square test.

Kjaer K et al. Can J Anaesth. 2006 Aug;53(8):776-80.

RIZIKO ASPIRACE

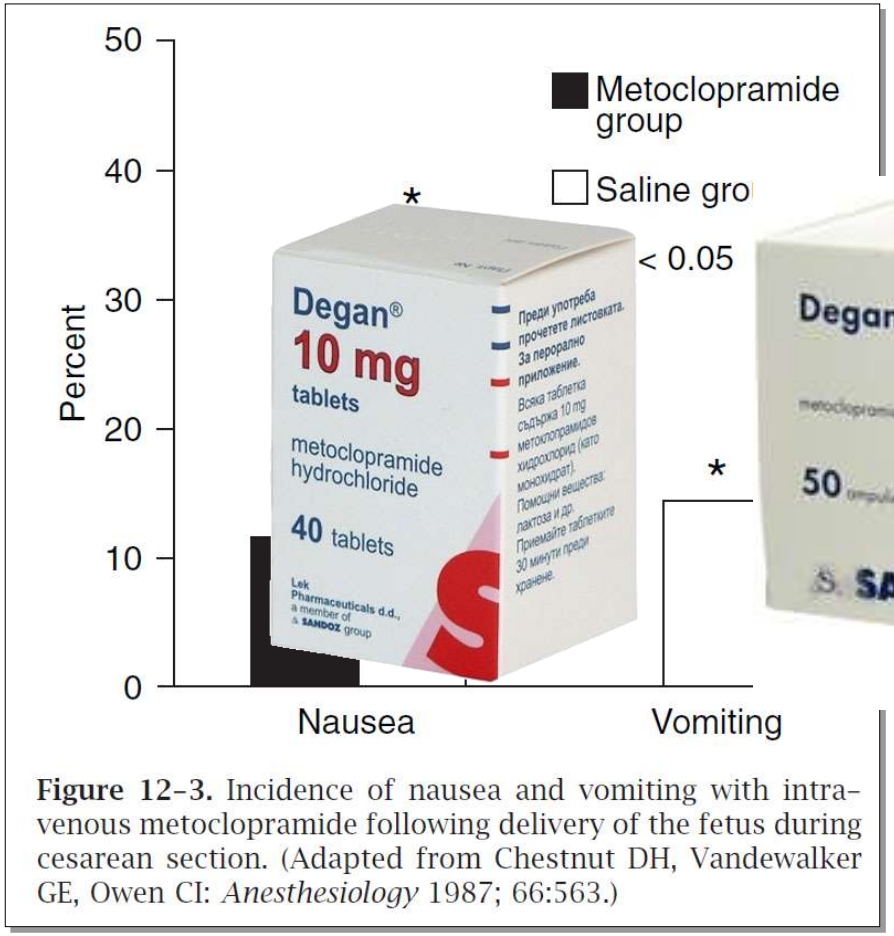


Figure 12–3. Incidence of nausea and vomiting with intravenous metoclopramide following delivery of the fetus during cesarean section. (Adapted from Chestnut DH, Vandewalker GE, Owen CI: *Anesthesiology* 1987; 66:563.)

Figure 12–2. Incidence of nausea and vomiting with intravenous droperidol following delivery of the fetus during cesarean section.

Sanjay Datta, ed. Obstetric Anesthesia Handbook, 4th Edition. New York, Springer, 2006

Table 1. Lower Esophageal Sphincter, Intragastric, and Barrier Pressures Obtained before and after Administration of 0.15 mg/kg Intravenous Metoclopramide

	Before Metoclopramide	After Metoclopramide	
	Baseline	Baseline	Cricoid Pressure Applied
Lower esophageal pressure	14.1 ± 2.9	19.6 ± 4.7†	5.0 ± 4.3*
Intragastric pressure	4.6 ± 1.4	5.7 ± 1.9	5.8 ± 2.3
Barrier pressure	9.6 ± 3.4	14.1 ± 5.5†	−0.2 ± 5.1*

Data are in mmHg ± SD.

* $P < 0.05$ *vs.* respective baseline value. † $P < 0.05$ *vs.* respective pre-metoclopramide value.

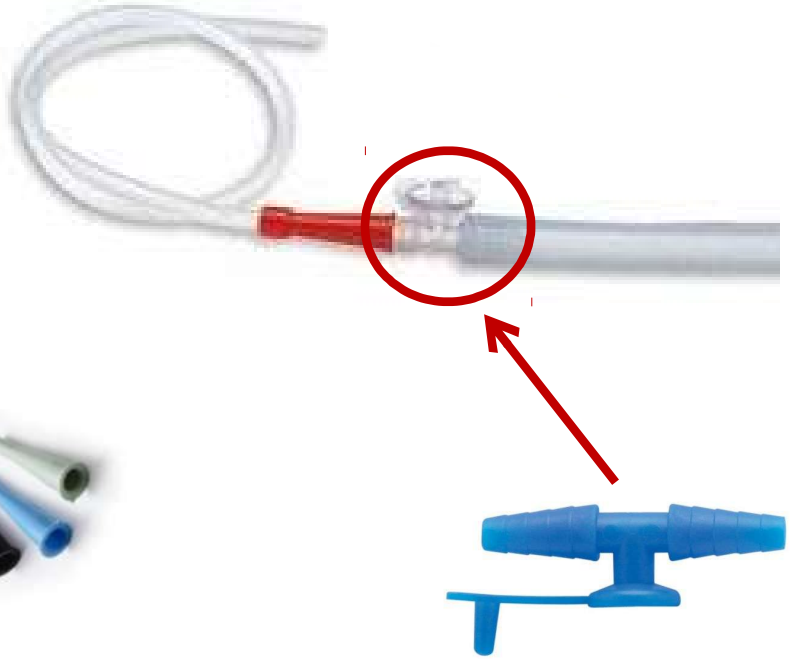
Salem et al. Anesthesiology 2008; 109:806–10

TABLE 9. *Side effects of succinylcholine.*

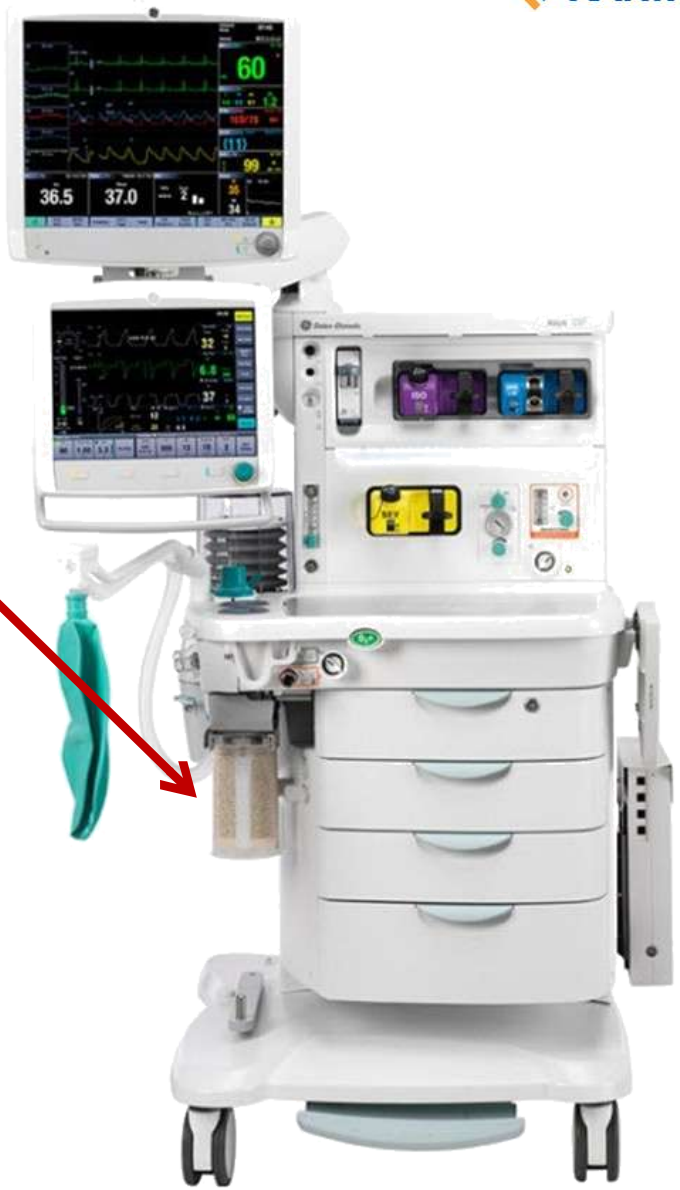
- Massive hyperkalemia in susceptible patients
- Cardiac arrhythmias
- Muscle fasciculations
- Myalgias
- Rhabdomyolysis
- Increased intracranial pressure
- Increased intragastric pressure
- Increased intraocular pressure
- Malignant hyperthermia
- Masseter muscle spasm or jaw rigidity
- Prolonged apnea (1–4 hours), if atypical plasma cholinesterase

From Bevan DR. Complications of muscle relaxants. *Semin Anesth.* 1995;14:63.

ZKONTROLOVAT ODSÁVAČKU !



ZKONTROLOVAT ODSÁVAČKU !



THE LANCET

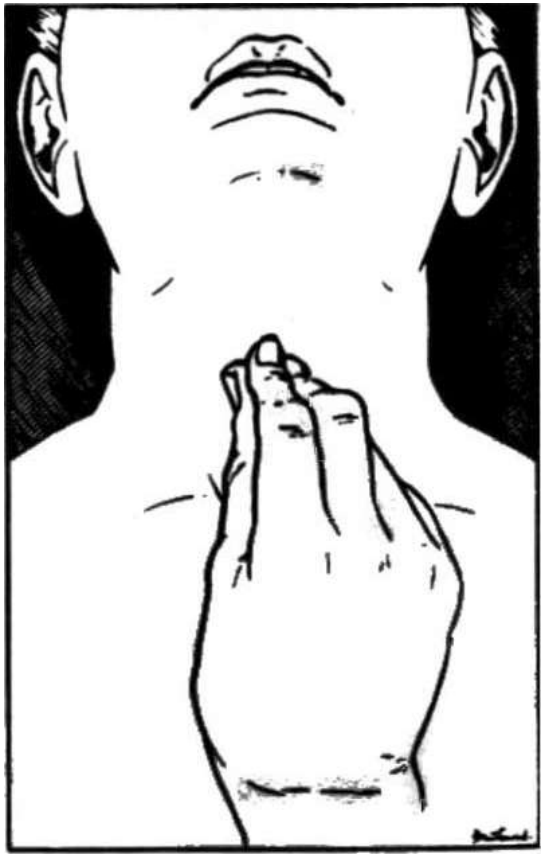
Preliminary Communications

CRICOID PRESSURE TO CONTROL REGURGITATION OF STOMACH CONTENTS DURING INDUCTION OF ANÆSTHESIA

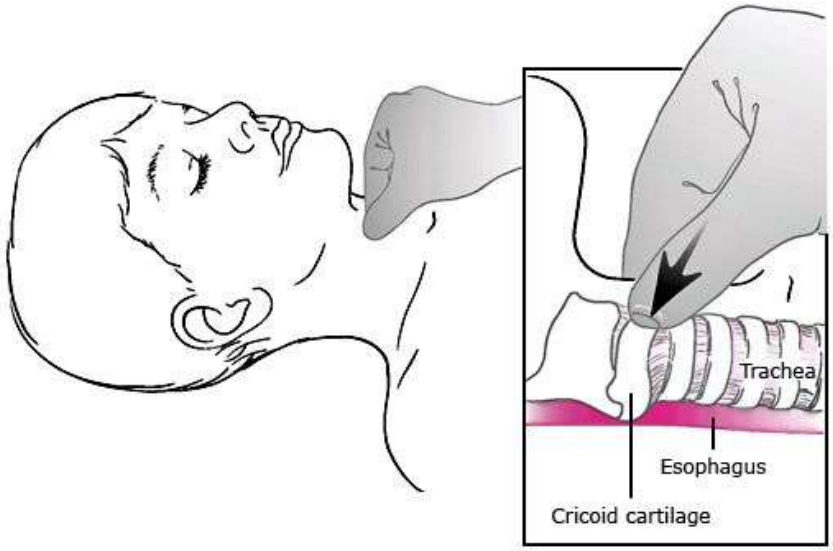
WHEN the contents of stomach or œsophagus gain access to the air-passages during anæsthesia the consequences are disastrous. In spite of modern anæsthetic techniques—or sometimes, regrettably, because of them—regurgitation is still a considerable hazard during the induction of anæsthesia, particularly for operative obstetrics and emergency general surgery.[1–8]

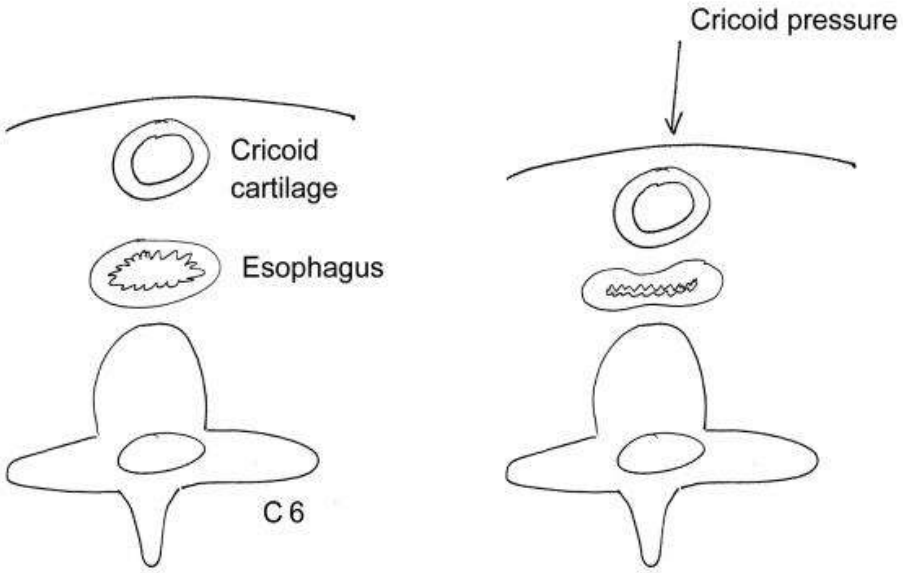
By a simple manœuvre during induction of anæsthesia, regurgitation of gastric or œsophageal contents can be controlled until intubation with a cuffed endotracheal tube is completed. The same manœuvre may also be used to prevent inflation of the stomach (a potent cause of regurgitation) resulting from positive-pressure ventilation

1. De Lee, J. B., Greenhill, J. P. Principles and Practice of Obstetrics; p. 255. Philadelphia, 1951.
2. Mendelson, C. L. *Amer. J. Obstet. Gynec.* 1946, **52**, 191.
3. Morton, H. J. V., Wylie, W. D. *Anæsthesia*, 1951, **6**, 190.
4. Coleman, D. J., Day, B. L. *Lancet*, 1956, i, 708.
5. Edwards, G., Morton, H. J. V., et al. *Anæsthesia*, 1956, ii, 194.
6. *Lancet*, 1956, i, 734.
7. *Rep. Publ. Hlth med. Subj., Lond.* no. 97, 1957.
8. Reports on Confidential Enquiries into Maternal Deaths in England and Wales, 1952-54 and 1955-57. H.M. Stationery Office



Sellick B. The Lancet 1961;2:404


Trachea
Esophagus
Cricoid cartilage


Cricoid pressure
Cricoid cartilage
Esophagus
C6

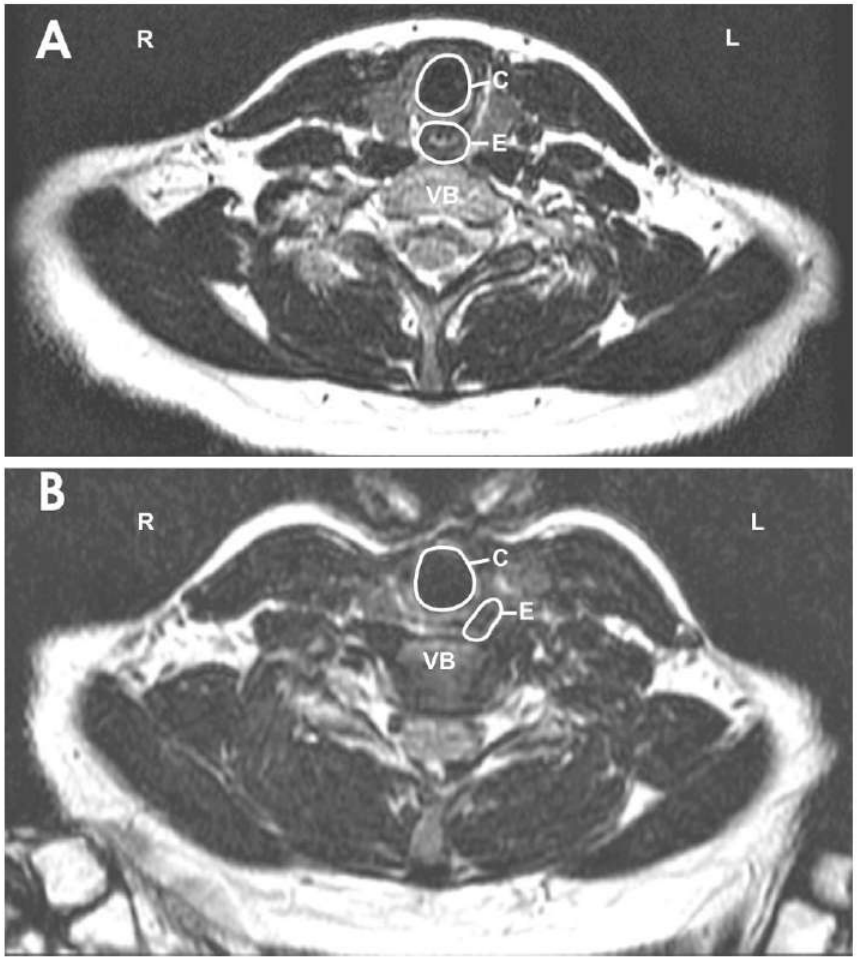


Fig. 3. (*A*) Magnetic resonance image of the neck without cricoid pressure. (*B*) Magnetic resonance image of the same subject demonstrating 12.1 mm of lateral esophageal displacement to the left with application of cricoid pressure. *C* = cricoid cartilage, *E* = esophagus, *VB* = vertebral body.

CRICOID PRESSURE DISPLACES ESOPHAGUS

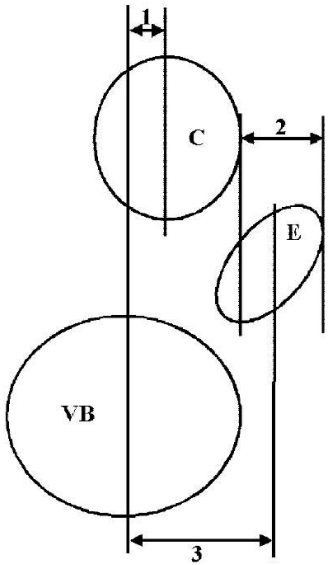


Fig. 1. Schematic diagram of the measurements made in this study. *C* = cricoid cartilage, *E* = esophagus, *VB* = vertebral body. *1* = amount of lateral displacement of C relative to the midline of VB, *2* = amount of unopposed esophagus, *3* = amount of lateral displacement of E relative to the midline of VB.

Smith KJ et al. Anesthesiology 2003; 99:60-4

Rice et al. Anesth Analg 2009;109:1546-52

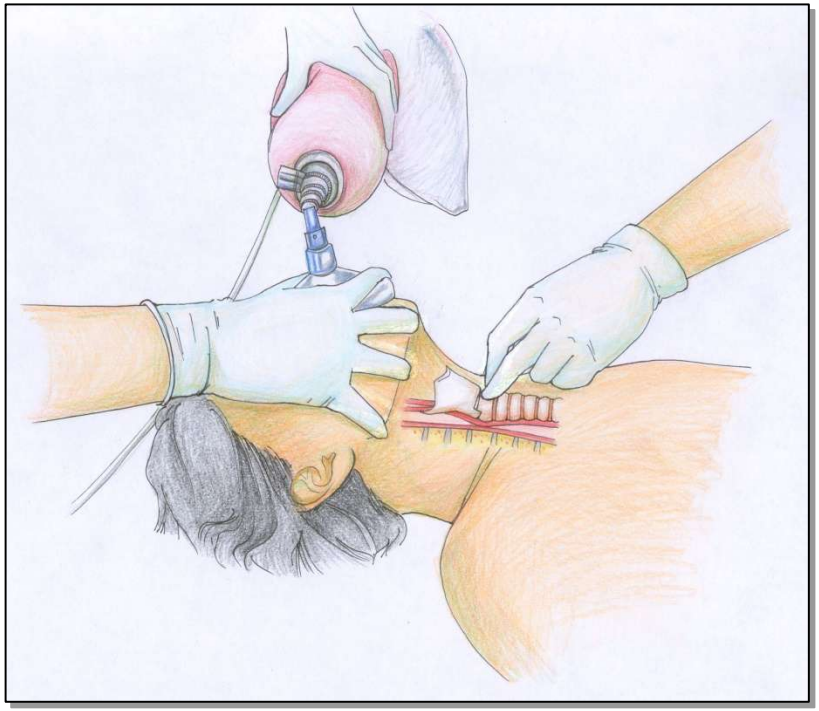
…tlak 30 N na krikoidní chrupavku může zcela ‘zrušit’ vizualizaci glotis

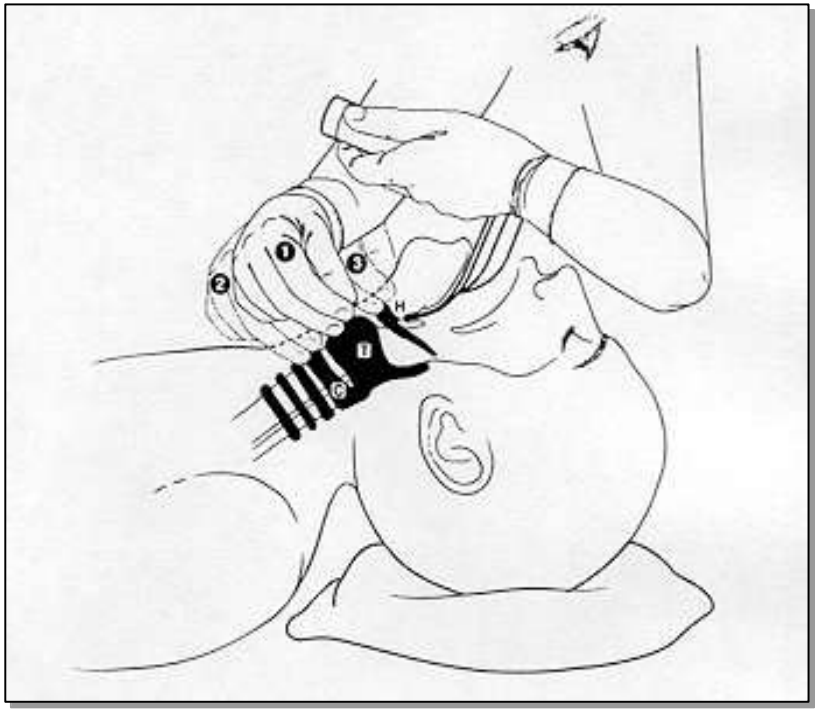
Haslam et al. *Anaesthesia* 2005; 60: 41-47

Sellick's Maneuver

"BURP"

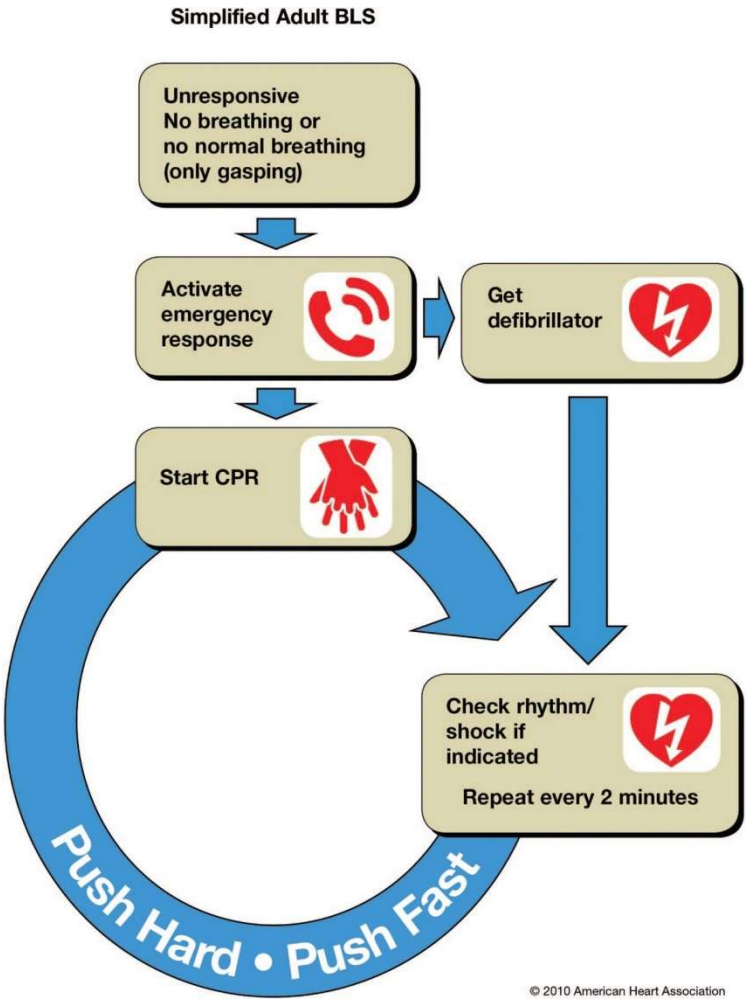
Backward, Upward, Rightward Pressure





V 90% případů získáme nejlepší "pohled" tlakem na **štítnou chrupavku**, **nikoli krikoidální!**


CPR FOR ADULTS
(AGES 9 AND OVER)
IN AN EMERGENCY CALL 9-1-1
1 Check if conscious or unconscious.
Gently shake shoulders and shout: "Are you OK?" Activate EMS by sending a bystander to call the local emergency telephone number. If positioning is necessary support head and neck and roll victim as a unit onto back.
2 Open airway. Check for breathing.
Place palm of one hand on forehead and apply firm pressure backward. Place fingers of other hand just under chin and gently lift. Do not close victim's mouth completely. Put ear close to victim's mouth and nose. LOOK for rise and fall of the chest. LISTEN and FEEL for breathing.
3 If not breathing -
Give 2 full breaths (1½ - 2 seconds each).
Keeping airway open, pinch nose using thumb and index finger. Open your mouth wide and take a deep breath. Place your mouth over victim's mouth making a tight seal. Give 2 full breaths (1½ - 2 seconds each) with a pause between to take a breath.
4 Check for pulse.
Keeping head tilted, place 2 fingers on Adam's apple. Slide fingertips into groove at the side of the neck nearest you.
PULSE FOUND
Give 1 breath every 5-6 seconds until breathing resumes
(DO NOT GO TO STEPS 5 AND 6)
NO PULSE
Landmark and begin chest compressions
(GO TO STEPS 5 AND 6)
5 Landmark for hand position.
Run fingers up lower edge of rib cage to notch where ribs meet breastbone. Place middle finger on notch, index finger next to it. Put heel of other hand next to fingers. Place hand you located notch with on top or interlace fingers. Keep fingers up off chest.
6 Chest compressions.
Place shoulders and weight directly over hands, keeping elbows straight. Pushing straight down with smooth and even movements, compress chest cavity 1½ - 2 inches at a rate of 80 - 100 compressions per minute. Give 15 compressions counting: "one and two and three and . . ." Follow 15 compressions with 2 breaths and repeat.
15 compressions
2 breaths
BRUCE ALGRA'S FIRST-AID SERIES


Simplified Adult BLS
Unresponsive
No breathing or
no normal breathing
(only gasping)
Activate
emergency
response
Get
defibrillator
Start CPR
Check rhythm/
shock if
indicated
Repeat every 2 minutes
Push Hard • Push Fast
© 2010 American Heart Association

CELKOVÁ ANESTEZIE

The salient characteristics of RSI were delineated by Stept and Safar in 1970 [3].

- Preoxygenation
- Predetermined doses of thiopental and S
- Cricoid force
- Avoidance of ventilation by bag and ma
- Tracheal intubation

Sharp LM, Levy DM. Current Opinion in Anaesthesiology 2009, 22:357–361

CELKOVÁ ANESTEZIE

The salient characteristics of RSI were delineated by Stept and Safar in 1970 [3].

- Preoxygenation
- Predetermined doses of thiopental and SCh
- Cricoid force
- Avoidance of ventilation by bag and mask
- Tracheal intubation

Thiopental
mg/mL

PROPOFOL
mg/mL

Sharp LM, Levy DM. Current Opinion in Anaesthesiology 2009, 22:357–361

CELKOVÁ ANESTEZIE

The salient characteristics of RSI were delineated by Stept and Safar in 1970 [3].

- Preoxygenation
- Predetermined doses of thiopental and SCh
- Cricoid force
- Avoidance of ventilation by bag and mask
- Tracheal intubation

Sharp LM, Levy DM. Current Opinion in Anaesthesiology 2009, 22:357–361

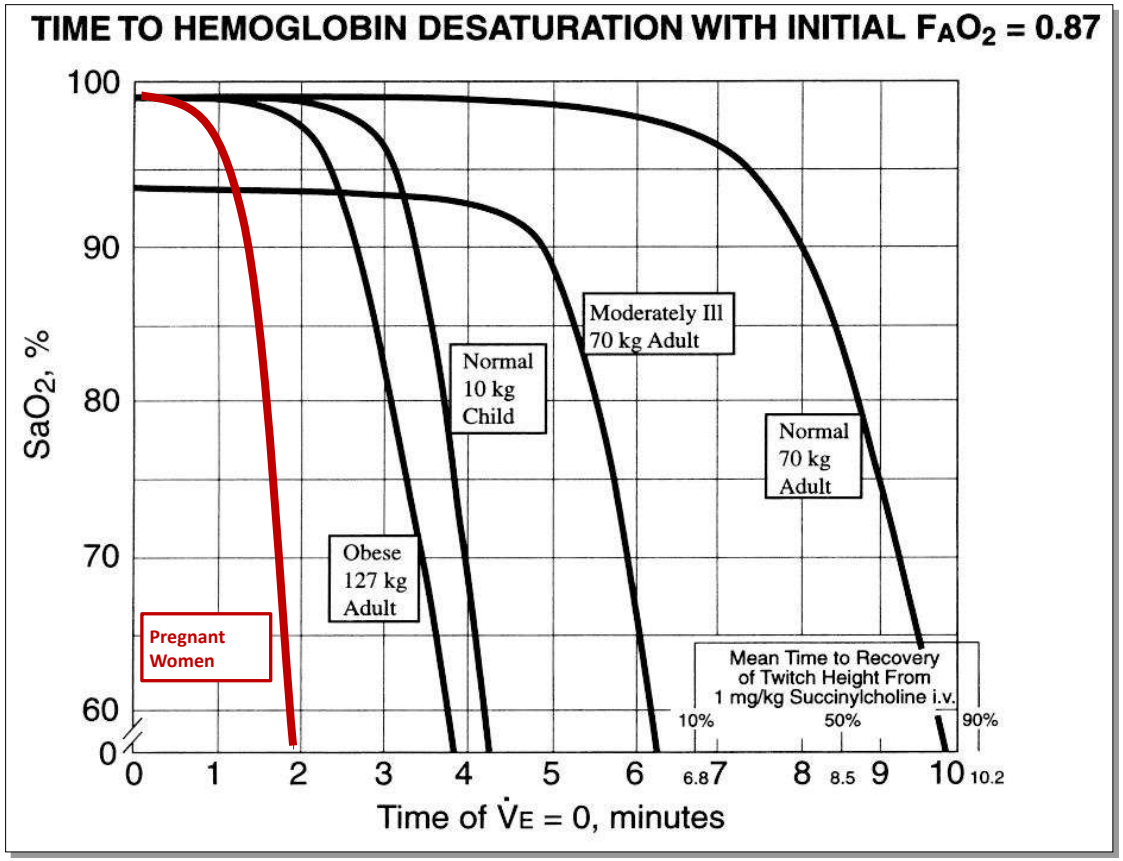
The Response of Newborns to Succinylcholine and d-Tubocurarine

Leonard F. Walts, M.D., and John B. Dillon, M.D.†*

Anesthesiology. 1969 Jul;31(1):35-8.

Results

Mean age of the 60 adult patients was 41 years. The group given succinylcholine received an average of 68 mg (range 54–83) of drug. All patients had 100 per cent depression in twitch force. Recovery times to 10, 50 and 90 per cent of control values averaged 7.0, 8.5, and 10 minutes, respectively.



Benumof JL et al. Anesthesiology 1997; 87:979-82

Acta Anaesthesiol Scand 2011; 55: 203–208
Printed in Singapore. All rights reserved

ACTA ANAESTHESIOLOGICA SCANDINAVICA
doi: 10.1111/j.1399-6576.2010.02365.x

Desaturation following rapid sequence induction using succinylcholine vs. rocuronium in overweight patients

L. TANG[1], S. LI[1], S. HUANG[1], H. MA[1] and Z. WANG[2]
Departments of [1]Anesthesiology and [2]Pain Management, Shanghai First People's Hospital, Shanghai Jiaotong University, Shanghai, China

Background: Rapid sequence induction may be associated with hypoxemia. The purpose of this study was to investigate the possible difference in desaturation during rapid sequence induction in overweight patients using either succinylcholine or rocuronium.
Methods: Sixty patients with a body mass index (BMI) between 25 and 30 kg/m^2, American Society of Anesthesiologists class I or II, undergoing general anesthesia were randomly divided into a succinylcholine group and a rocuronium group. After a 3-min preoxygenation, patients received rapid sequence induction of general anesthesia with midazolam–fentanyl–propofol and succinylcholine (1.5 mg/kg) or rocuronium (0.9 mg/kg). Ventilation was not initiated until oxygen saturation declined to 92%. We measured the times when oxygen saturation reached 98%, 96%, 94% and 92%. Safe Apnea Time was defined as the time from administration of neuromuscular blocking drugs to oxygen saturation fell to 92%. The recovery period was defined as the time from initiation of ventilation until oxygen saturation was 97%. Arterial blood gases were taken at baseline, after preoxygenation and at 92% oxygen saturation.
Results: The mean Safe Apnea Time (95% CI) was 283 (257–309) s in succinylcholine vs. 329 (303–356) s in rocuronium ($P = 0.01$). The mean recovery period (95% CI) was 43 (39–48) s in succinylcholine vs. 36 (33–38) s in rocuronium ($P = 0.002$). Blood gas analysis showed no difference between the two groups.
Conclusions: Succinylcholine was associated with a significantly more rapid desaturation and longer recovery of oxygen saturation than rocuronium during rapid sequence induction in overweight patients.

Accepted for publication 29 October 2010

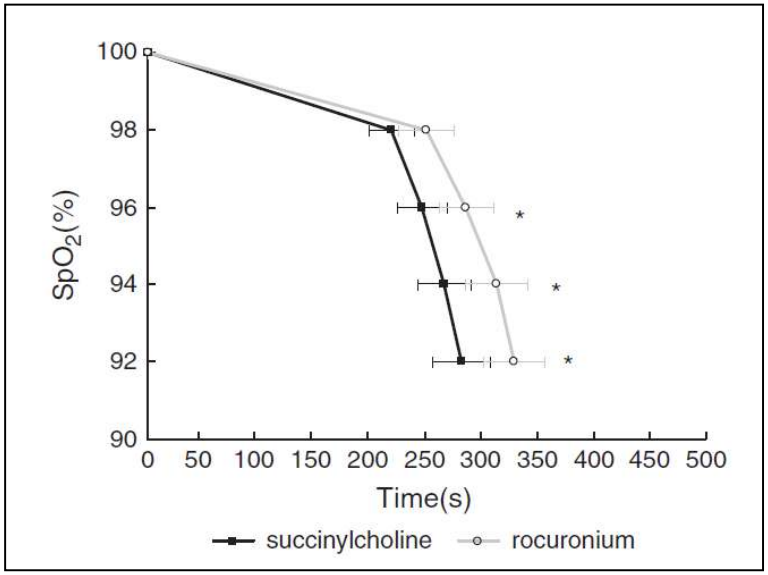


*Fig. 2. Changes in oxygen saturation (S_pO_2) with time during non-hypoxic apnea in the succinylcholine or the rocuronium group. Mean values (points) for both groups are shown. The vertical lines indicate 95% CI. The curves show smooth before S_pO_2 reach 98%, but afterward fall straightly to 92% S_pO_2. *$P < 0.05$ compared with succinylcholin.*

Anaesthesia
Journal of the Association of Anaesthetists of Great Britain and Ireland
Anaesthesia, 2010, **65**, pages 358–361 doi:10.1111/j.1365-2044.2

ORIGINAL ARTICLE

Effect of suxamethonium vs rocuronium on onset of oxygen desaturation during apnoea following rapid sequence induction

S. K. Taha,[1] M. F. El-Khatib,[2] A. S. Baraka,[3] Y. A. Haidar,[4] F. W. Abdallah,[5] R. A. Zbeidy[4] and S. M. Siddik-Sayyid[1]

1 Associate Professor, 2 Professor, 3 Emeritus Professor, 4 Chief Resident, 5 Fellow, Department of Anesthesiology, American University of Beirut, Beirut, Lebanon

Summary
This study investigates the effect of suxamethonium vs rocuronium on the onset of haemoglobin desaturation during apnoea, following rapid sequence induction of anaesthesia. Sixty patients were randomly allocated to one of three groups. Anaesthesia was induced with lidocaine 1.5 mg.kg^{-1}, fentanyl 2 μg.kg^{-1} and propofol 2 mg.kg^{-1}, followed by either rocuronium 1 mg.kg^{-1} (Group R) or suxamethonium 1.5 mg.kg^{-1} (Group S). The third group received propofol 2 mg.kg^{-1} and suxamethonium 1.5 mg.kg^{-1} only (Group SO). The median (IQR [range]) time to reach S_pO_2 of 95% was significantly shorter in Group S (358 (311–373 [215–430]) s) than in Group R (378 (370–393 [366–420]) s; $p = 0.003$), and shorter in Group SO (242 (225–258 [189–370]) s) than in both Group R ($p < 0.001$) and Group S ($p < 0.001$). When suxamethonium is administered for rapid sequence induction of anaesthesia, a faster onset of oxygen desaturation is observed during the subsequent apnoea compared with rocuronium. However, time to desaturation is prolonged whenever lidocaine and fentanyl precede suxamethonium.

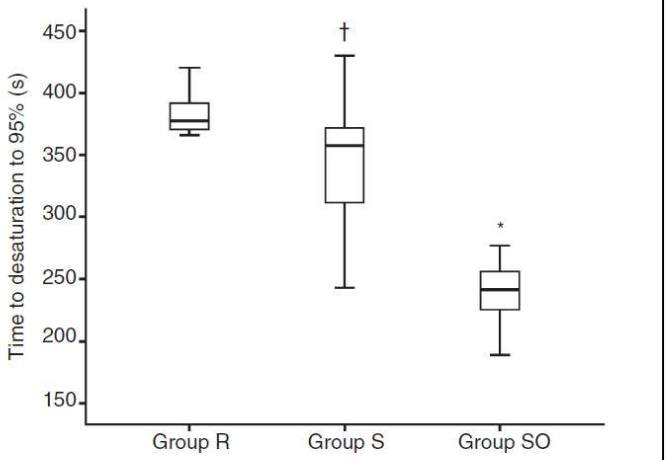


Figure 1 Time to reach S_pO_2 of 95% during apnoea following induction of anaesthesia with lidocaine/fentanyl/propofol/rocuronium (Group R), lidocaine/fentanyl/propofol/suxamethonium (Group S), or propofol/suxamethonium (Group SO).

0,6 mg/kg

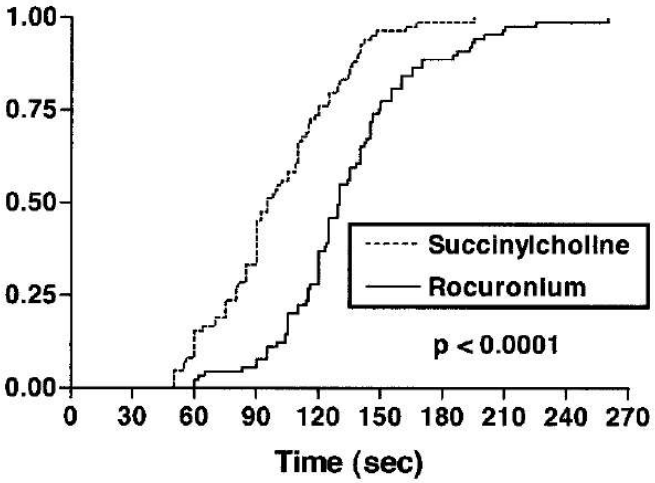


Figure 2. Kaplan-Meyer curve of the probability of the completion of the endotracheal intubation sequence including succinylcholine or rocuronium as the neuromuscular blocking drug. Time 0 denotes the beginning of the injection of the induction drug propofol. The endotracheal intubation sequence was defined to be completed upon the first appearance of end-tidal carbon dioxide after intubation. Curves differ significantly ($P < 0.0001$; logrank test).

Sluga M et al. Anesth Analg 2005;101:1356 –61

1 mg/kg

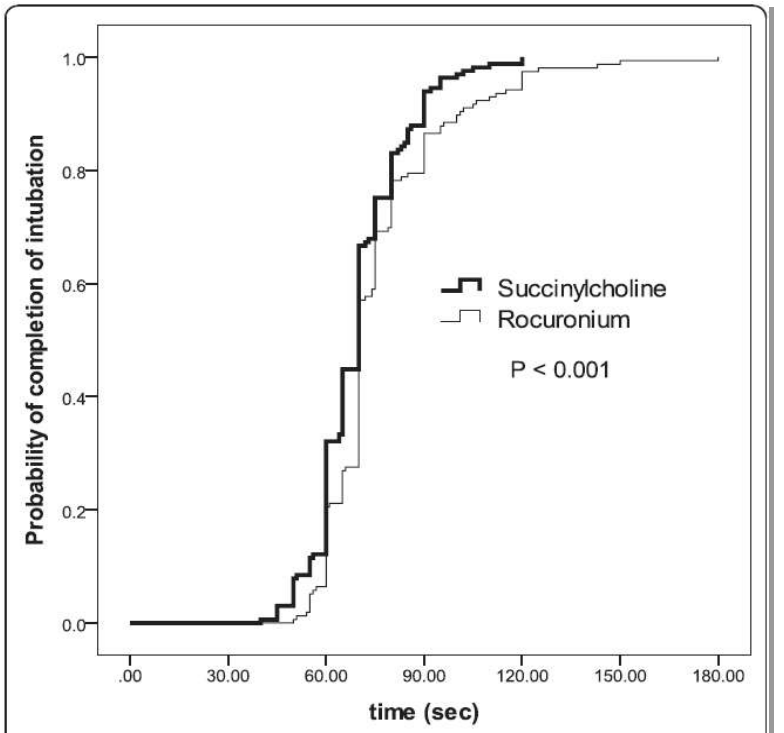
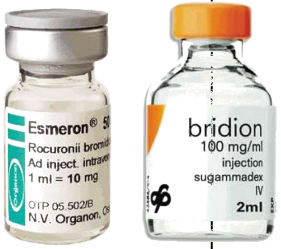


Figure 2 Intubating times. Kaplan-Meyer curve of the probability of the completion of the endotracheal intubation sequence including succinylcholine or rocuronium in patients successfully intubated in the first attempt. The x-axis denotes the time interval after the beginning of the injection of the induction drug. The intubation sequence was defined to be completed upon the first appearance of end-tidal carbon dioxide after intubation.

Stephan C Marsch, et al. Crit Care. 2011;15(4):R199-R199



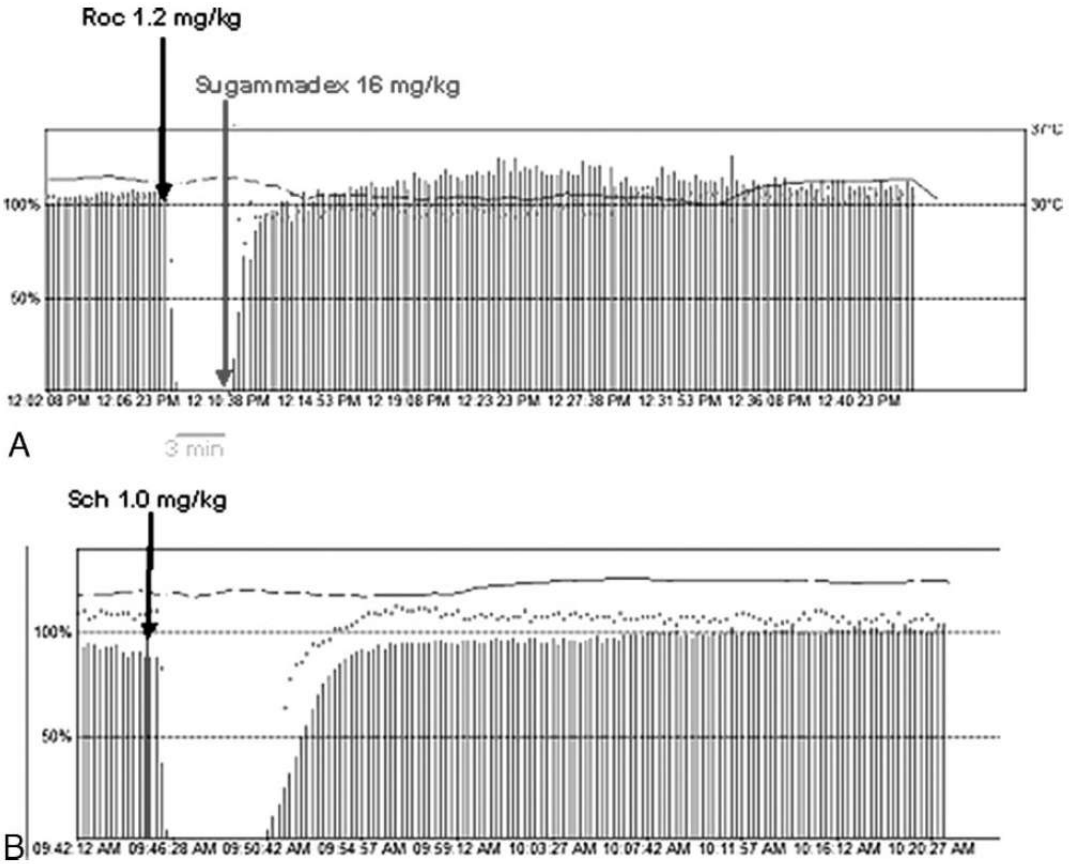


Figure 4. Panel A shows the recovery of the twitch height and train-of-four (TOF) ratio after administration of 1.2 mg/kg rocuronium followed 3 min later by 16 mg/kg sugammadex, both given IV. Recovery to a first twitch height (T1) of 90% and a TOF ratio of 0.94 occurred 110 s later. The onset-offset time with this sequence (i.e., the time from the end of the injection of rocuronium to a T1 recovery to 90%) was 4 min 47 s. Panel B shows the effects of administering 1.0 mg/kg succinylcholine (Sch) with spontaneous recovery to a T1 of 90% occurring after 9 min and 23 s.

Naguib M. Anesth Analg 2007;104:575–81

CÍSAŘSKÝ ŘEZ

- těhotná po 16. týdn… „plný žaludek“
- akutní … av (85% … argentních)
- nesta… ardn… … pro řešení komplikací
- stres… naf… …iologického i porodního týmu

= vždy riziko obtížné intubace !

2011

OBAAMA-CZ

CELKOVÁ	47 %
REGIONÁLNÍ	53 %

Stourac P, Blaha J et al. *Anesth Analg.* 2015 Jun;120(6):1303-8.

2015

OBAAMA-INT

CELKOVÁ	37 %
REGIONÁLNÍ	63 %

KARIM

CELKOVÁ ANESTEZIE u SC:

Belgie 4%
USA 5%
Nizozemí 5%
Německo <10%
UK <15%
Izrael 15%

Španělsko <30%
Itálie <30%

Bucklin et al. *Anesthesiology* 2005, 103(3):645-653
Marcus et al. *Der Anaesthesist* 2011, 60(10):916-928
Betran et al. *Paediatric and perinatal epidemiology* 2007, 21(2):98-113
Wilkins et al. *Anesthesia and analgesia* 2009, 108(6):1869-1875
Tsai et al. *British journal of anaesthesia* 2011, 107(5):757-761
Van Houwe Pet al. *Acta anaesthesiologica Belgica* 2006, 57(1):29-37
Weiniger et al. *International journal of obstetric anesthesia* 2010, 19(4):410-416

KARIM

Česká společnost anesteziologie, resuscitace a intenzivní medicíny

POSTGRADUÁLNÍ VZDĚLÁVÁNÍ

PŘEHLEDOVÝ ČLÁNEK

Současné postupy v porodnické anestezii – peroperační péče u císařského řezu

Bláha Jan, Nosková Pavlína, Klozová Radka, Seidlová Dagmar, Štourač Petr, Pařízek Antonín

POSTGRADUÁLNÍ VZDĚLÁVÁNÍ

Současné postupy v porodnické anestezii II. – celková anestezie u císařského řezu

Bláha Jan, Nosková Pavlína, Klozová Radka, Seidlová Dagmar, Štourač Petr, Pařízek Antonín

POSTGRADUÁLNÍ VZDĚLÁVÁNÍ

EXPERTNÍ SKUPINA PRO PORODNICKOU ANESTEZII A ANALGEZII

Současné postupy v porodnické anestezii III. – regionální anestezie u císařského řezu

Bláha Jan, Nosková Pavlína, Klozová Radka, Seidlová Dagmar, Štourač Petr, Pařízek Antonín

POSTGRADUÁLNÍ VZDĚLÁVÁNÍ

EXPERTNÍ SKUPINA PRO PORODNICKOU ANESTEZII A ANALGEZII

Současné postupy v porodnické anestezii IV. – anesteziologické komplikace u císařského řezu

Štourač Petr, Bláha Jan, Nosková Pavlína, Klozová Radka, Seidlová Dagmar

Předseda: doc. MUDr. Jan Bláha, Ph.D. (Praha), **email:** spaa@csarim.cz

ANESTEZIOLOGIE

PŘEHLEDOVÝ ČLÁNEK

Současné postupy v porodnické anestezii V. – pooperační péče po císařském řezu

Bláha Jan, Klozová Radka, Nosková Pavlína, Seidlová Dagmar, Štourač Petr, Pařízek Antonín

ANESTEZIOLOGIE

PŘEHLEDOVÝ ČLÁNEK

Postpunkční cefalea v porodnictví

Nosková Pavlína, Bláha Jan, Klozová Radka, Seidlová Dagmar, Štourač Petr, Pařízek Antonín

EXPERTNÍ SKUPINA PORODNICKÉ ANESTEZIE A ANALGEZIE

Preeklampsie, eklampsie, HELLP syndrom z pohledu anesteziologa

Nosková Pavlína, Klozová Radka, Bláha Jan, Seidlová Dagmar, Štourač Petr

ANESTEZIOLOGIE

PŘEHLEDOVÝ ČLÁNEK

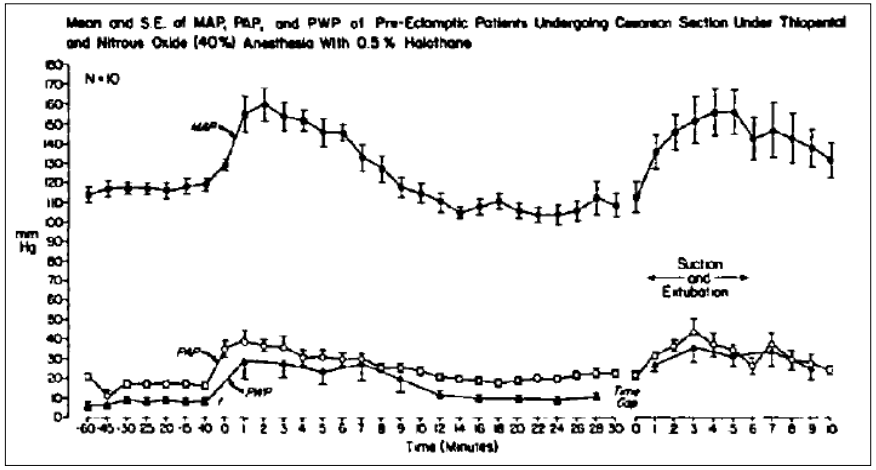
Děložní hypotonie a přístup anesteziologa

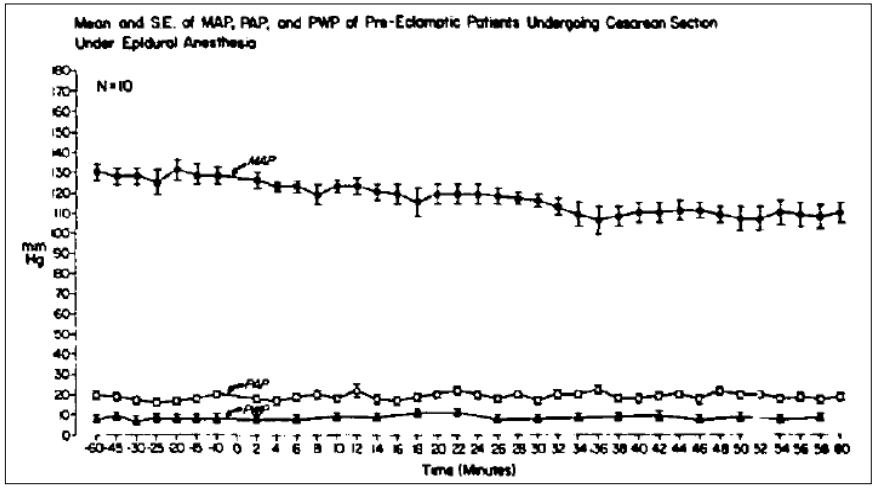
Nosková P., Bláha J., Klozová R., Seidlová D., Štourač P., Pařízek A.

PROČ VLASTNĚ NECHCEME
CELKOVOU ANESTEZII?

= vždy riziko obtížné intubace !

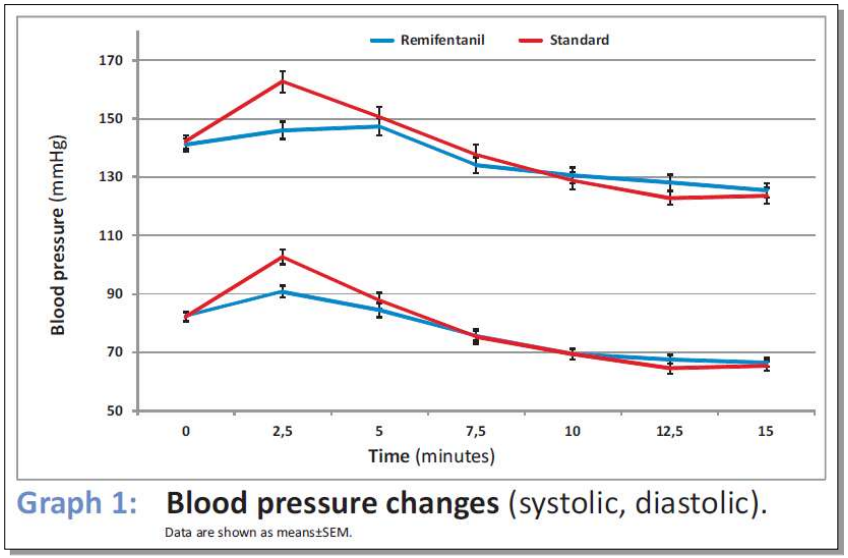
PROČ VLASTNĚ NECHCEME
CELKOVOU ANESTEZII?



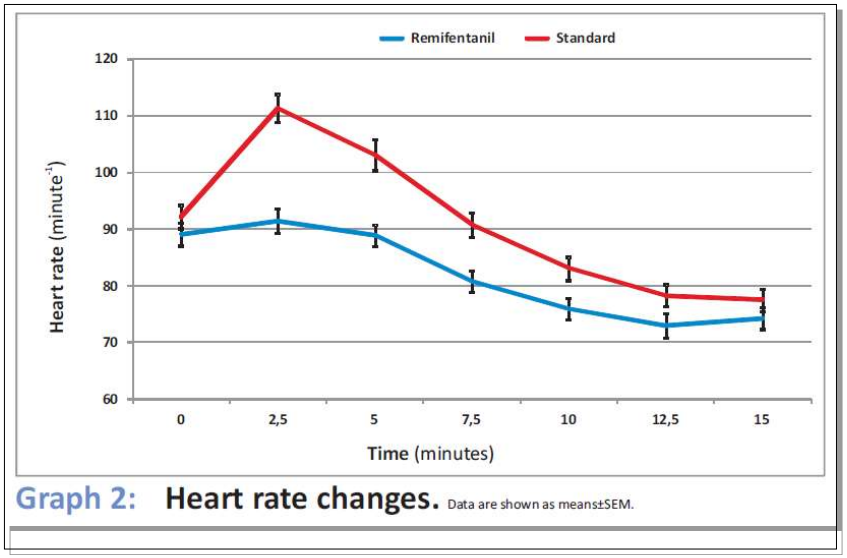


Hodgkinson et al. Can J Anesth 1980 27: 389-394

Remifentanil 1 μg/kg před úvodem do celkové anestezie

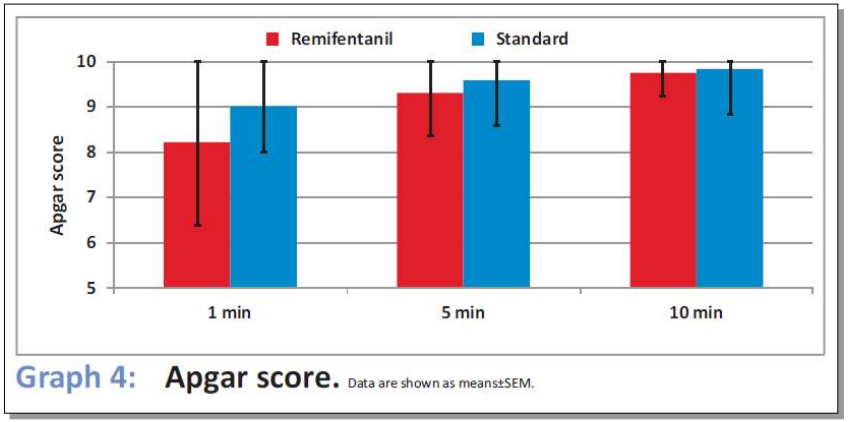


Graph 1: **Blood pressure changes** (systolic, diastolic).
Data are shown as means±SEM.



Graph 2: **Heart rate changes.** Data are shown as means±SEM.

Nosková, Bláha et al. BMC Anesthesiology 2015 (in press).



Graph 4: **Apgar score.** Data are shown as means±SEM.


5 x 4 ml
Marcaine® spinal 0,5 % heavy
(5 mg/ml)
bupivacaini hydrochloridum monohydricum
injekční roztok
AstraZeneca
EPHEDRIN

Anaesthesia, 2005, **60**, pages 636–653

Anaesthesia for Caesarean section and neonatal acid-base status: a meta-analysis*

F. Reynolds[1] and P. T. Seed[2]

1 Emeritus Professor of Obstetric Anaesthesia, Department of Anaesthesia, St Thomas' Hospital, London SE1 7EH, UK
2 Lecturer in Medical Statistics, Division of Reproductive Health, Endocrinology and Development, King's College, London SE1 7EH, UK

Table 8 Difference between umbilical artery acid-base values with type of anaesthesia for Caesarean section: results of meta-analysis.

		All studies				Randomised trials only			
	Comparison	#	Difference	95% CI	p	#	Difference	95% CI	p
pH	spinal – general	13	−0.015	−0.029 to −0.001	0.038	5	−0.027	−0.051 to −0.002	0.034
	spinal – epidural	11	−0.013	−0.024 to −0.002	0.025	7	−0.010	−0.022 to 0.01	0.074
	epidural – general	13	−0.006	−0.016 to 0.005	0.317	4	0.001	−0.023 to 0.025	0.938
Base deficit ($mEq.l^{-1}$)	spinal – general	7	1.109	0.434 to 1.784	0.001	2	1.235	−0.821 to 3.290	0.239
	spinal – epidural	7	0.910	0.222 to 1.598	0.010	4	0.834	−0.192 to 0.859	0.111
	epidural – general	8	0.137	−0.198 to 0.471	0.424	2	−0.018	−1.026 to 0.990	0.972

= number of studies.

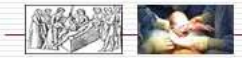
Summary

Spinal anaesthesia is generally preferred for Caesarean section, but its superiority for the baby is often assumed. Umbilical artery acid-base status provides a valid index of fetal welfare. Twenty-seven studies reporting neonatal acid-base data with different types of anaesthesia were used to compare umbilical artery or vein pH and base deficit, using random-effect meta-analysis. Cord pH was significantly lower with spinal than with both general and epidural anaesthesia. Larger doses of ephedrine contributed to the latter effect (p = 0.023). Sixteen studies reported a base deficit, which was significantly higher for spinal than for general and epidural anaesthesia.

Spinal anaesthesia cannot be considered safer than epidural or general anaesthesia for the fetus.

HYPOTENZE

- vzhledem k nedostatečnému efektu preloadu i co-loadu je ve většině případů vhodné současné podání vasopresorů (efedrin, phenylephrin)
- lékem volby je **efedrin** (bolus 5-15 mg iv.)
- nebo **phenylephrin** (bolus 0,05-0,15 mg iv.)



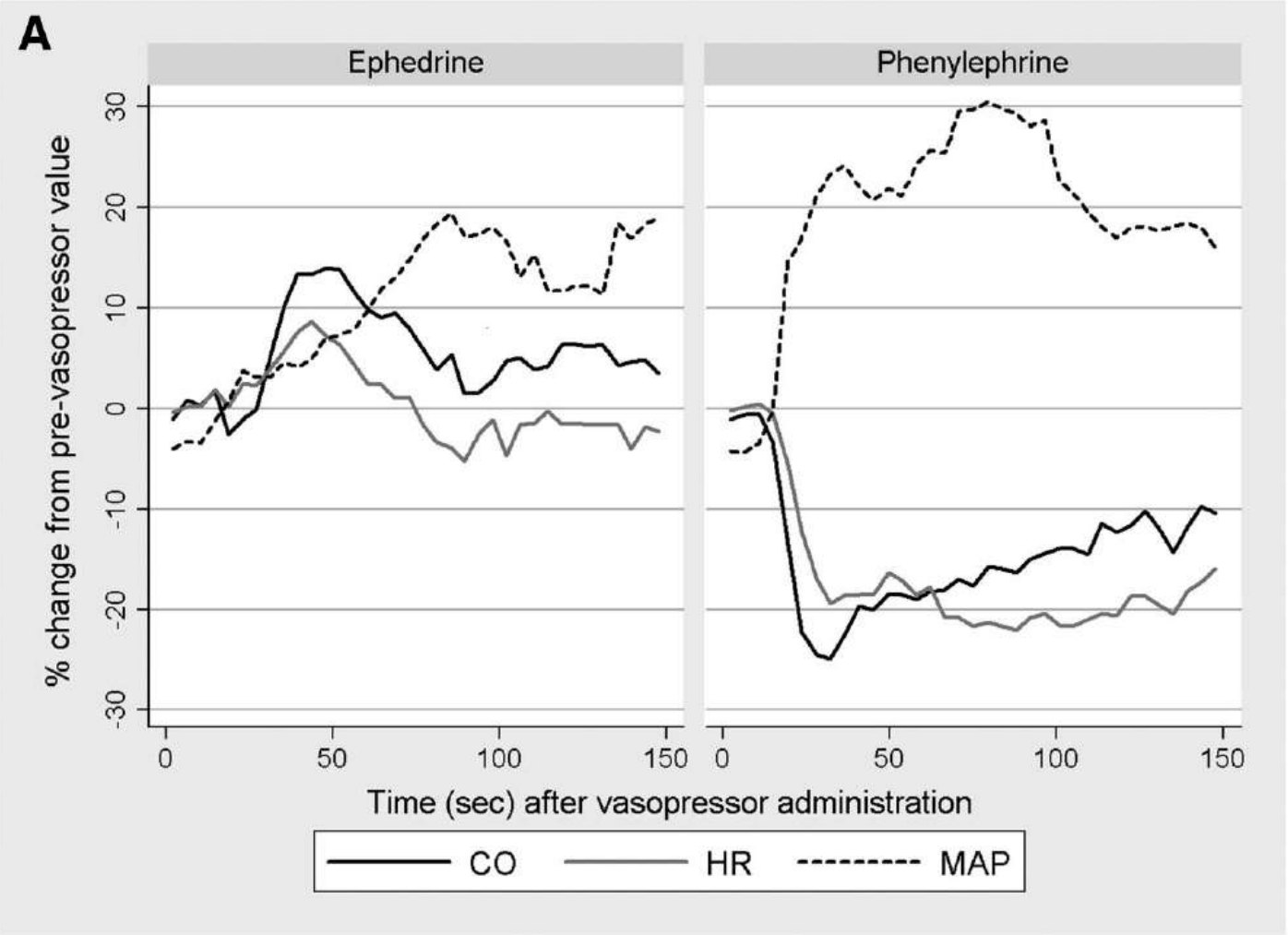

MEDIFLEKS® 500 ml
KOÇAK FARMA
ISOLYTE® M
(%5 DEKSTROZLU Multipl Elektrolit Idame Çözeltisi)


500 ml
Voluven® 6%
Infusionslösung
6% HES
130/0,4


Adrenalin Léčiva 1 mg/ml
Clindamycin Kabi 150 mg/ml
Phenylephrine 50 micrograms/ml
Solution for injection in pre-filled syringe
IV Use
x10
500 micrograms
10 ml
POM
EPHEDRIN Biotika
injekční roztok
Pro intramuskulární, subkutánní
a pomalou intravenózní aplikaci

Adrenergic Receptor Specificity

Drug	α_1	α_2	β_1	β_2	Dopaminergic
Epinephrine	↔	↔	↔	↔	
Ephedrine	↔	↔	↔	↔	
Norepinephrine	↔	↔	↔		
Phenylephrine	↔				
Isoproterenol			↔	↔	
Dopamine	↔		↔	↔	↔
Dobutamine			↔		
terbutaline				↔	

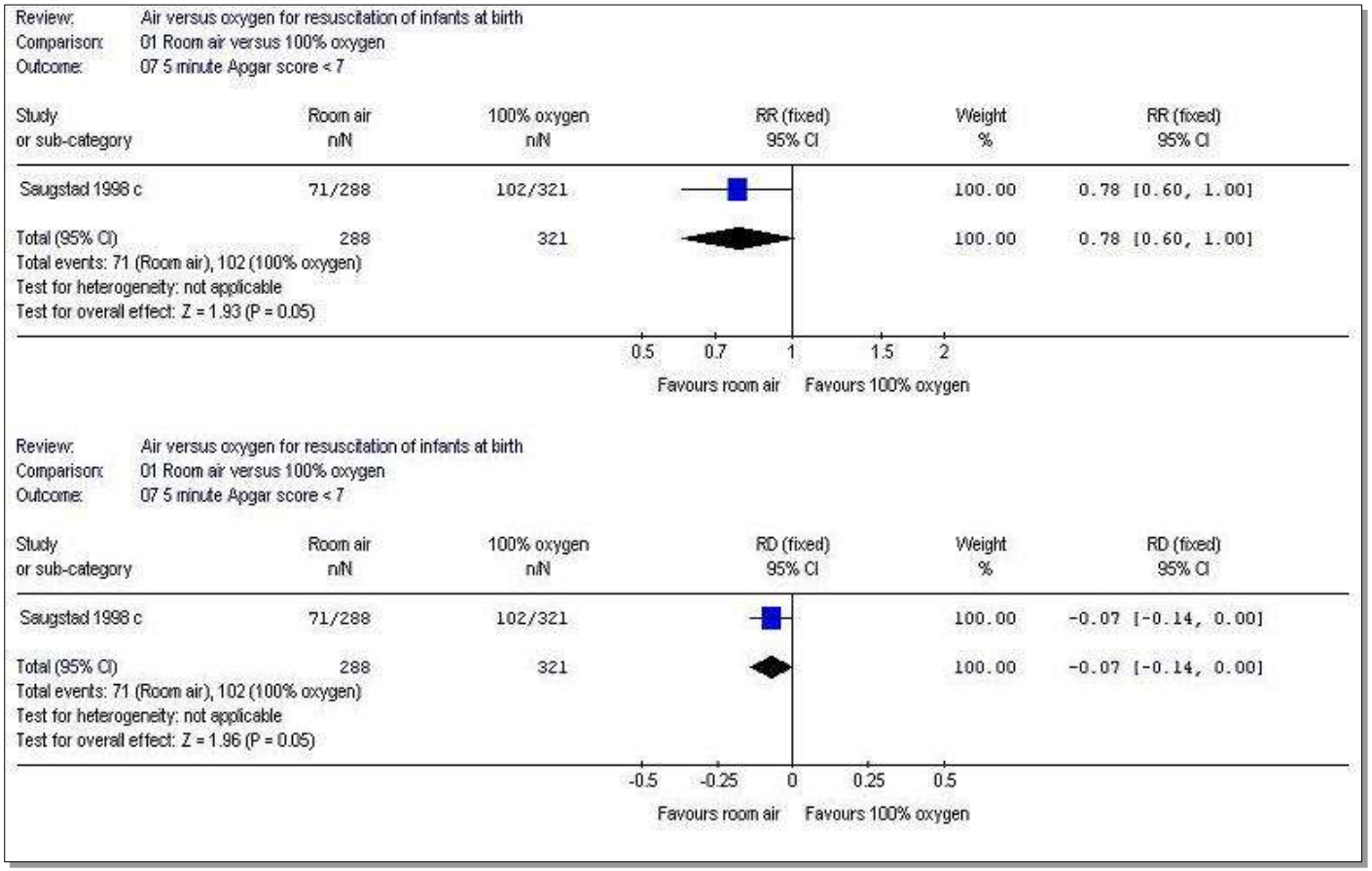


Dyer RA et al. Anesthesiology. 2009 Oct;111(4):753-65

RESUSCITACE TĚHOTNÉ ŽENY

Poloha pro KPR

RESUSCITACE NOVOROZENCE



International Journal of Obstetric Anesthesia (2013) **22**, 124–128
0959-289X/$ - see front matter
http://dx.doi.org/10.1016/j.ijoa.2012.12.005

CrossMark

ELSEVIER
www.obstetanesthesia.com

ORIGINAL ARTICLE

A comparison of the haemodynamic effects of lateral and sitting positions during induction of spinal anaesthesia for caesarean section

B.I. Obasuyi, S. Fyneface-Ogan, C.N. Mato
Department of [illegible]esia, University of Port Harcourt Teaching Hospital, Port Har[illegible]

ABSTRAC
Background: [illegible]n during spinal anaesthesia occurs commonly in parturients. [illegible]ocal anaesthetic, maternal [illegible]e speed of onset of sensory block and thus the haemody[illegible] this study was to dete[illegible]hesia for caesarean section using plain bupiva[illegible]ould result in [illegible]osition.
[illegible] Anesthesiologists physical status I and [illegible]e caesarean [illegible] the lateral position (Grou[illegible]p S). Using the L3[illegible]cal plain bupivacaine, 10 mg o[illegible]heig[illegible] which they were pl[illegible]ith left uterine displacem[illegible]s me[illegible]very minute for 10 [illegible]reafter. Hyp[illegible]stolic bl[illegible]ressure >20%
[illegible]o difference in the [illegible]olic blood pr[illegible].2 ± 8.9 mm[illegible]d with [illegible]owest recorded mean [illegible]ressure was g[illegible]p L [illegible] than in Group S (68.2 [illegible]; $P = 0.025$). The incid[illegible]otension was [illegible]p L [illegible]of hypotension wa[illegible]ups.
[illegible]sthesia for c[illegible]ivacaine was [illegible]duced with [illegible]or the low[illegible]al pressure we[illegible] greater but va[illegible]similar for p[illegible]on group.

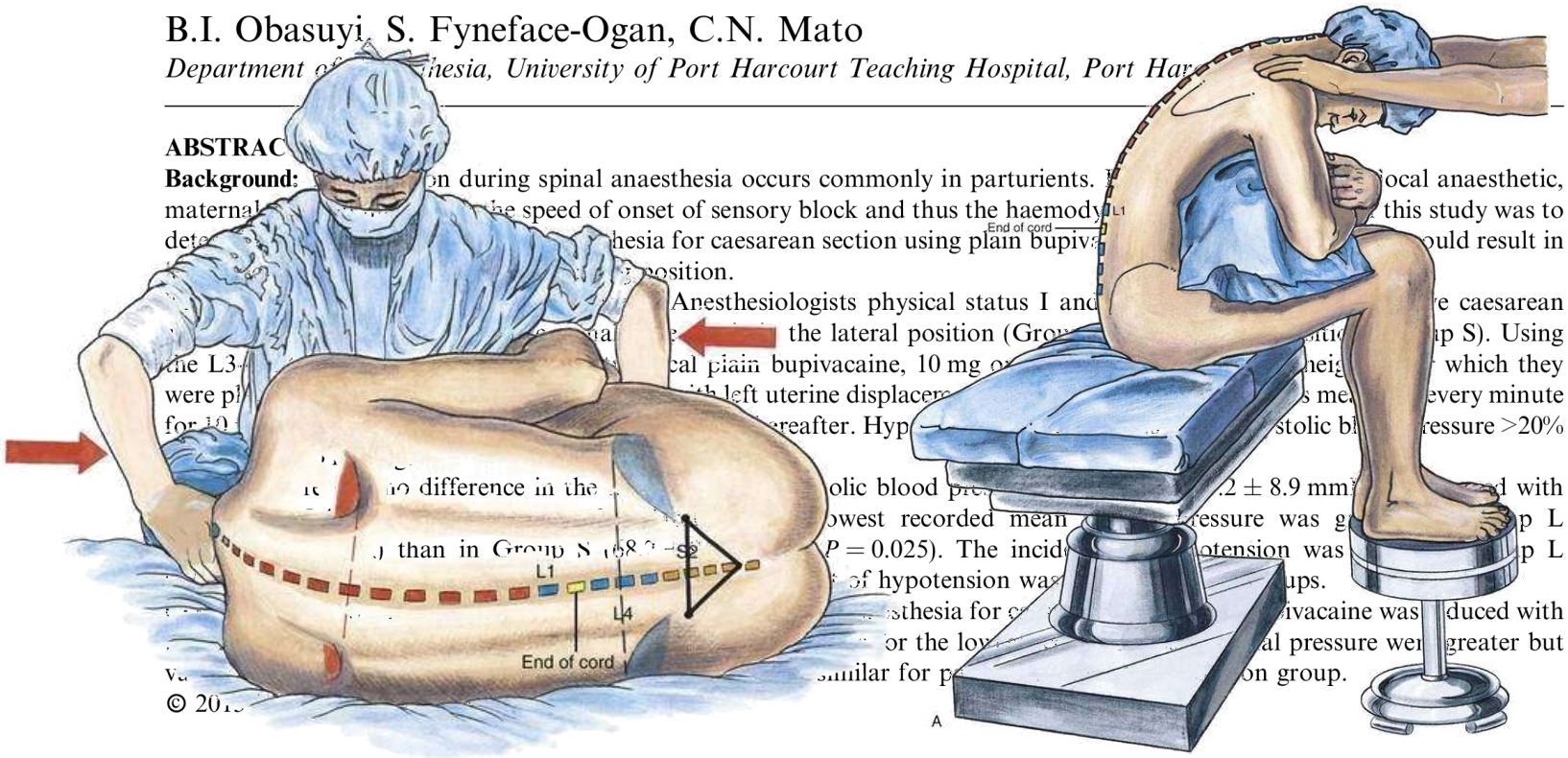


Table 3 Haemodynamic data, ephedrine use and intraoperative blood loss

	Group L (n = 50)	Group S (n = 50)	*P* value
Baseline SBP (mmHg)	122.4 ± 8.6	124.2 ± 9.9	0.3
Baseline MAP (mmHg)	93.0 ± 7.8	91.8 ± 8.9	0.4
Baseline heart rate (beats/min)	91.4 ± 8.5	92.3 ± 11.4	0.6
Incidence of hypotension	17 (34%)	28 (56%)	0.027
Time from IT injection to first hypotension (min)	11.8 ± 10.7	9.8 ± 8.2	0.5
Lowest SBP within 30 min of IT injection (mmHg)	99.2 ± 8.9	95.4 ± 12.3	0.08
Lowest MAP within 30 min of IT injection (mmHg)	72.9 ± 11.2	68.2 ± 9.6	0.02
Lowest heart rate within 30 min from IT injection (beats/min)	83 ± 11	79 ± 10	0.05
Incidence of ephedrine use	3 (6%)	5 (10%)	0.4
Total dose of ephedrine (mg)	5 ± 0	5 ± 0	1
SBP <90 mmHg	7 (14%)	14 (28%)	0.08
Blood loss (mL)	631 ± 171	697 ± 241	0.1

Data are mean ± SD or as number (%). SBP: systolic blood pressure; MAP: mean arterial pressure; IT: intrathecal.

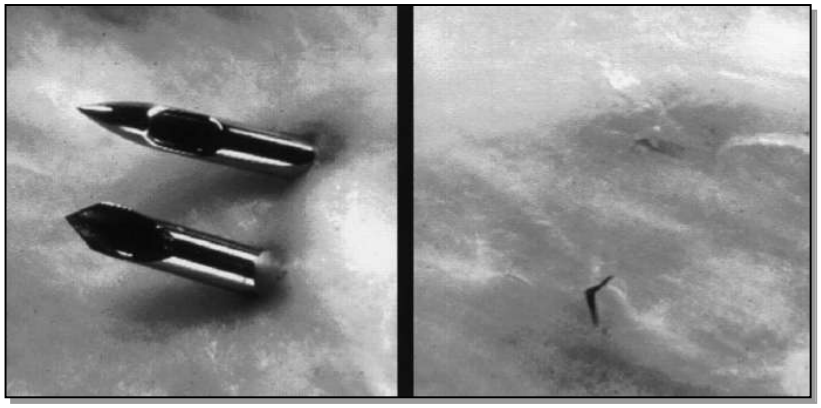
Table 5 Incidence of complications

	Group L (n = 50)	Group S (n = 50)	*P* value
Nausea	2 (4%)	4 (8%)	0.4
Vomiting	0 (0%)	1 (2%)	0.3
Shivering	7 (14%)	11 (22%)	0.2
Dizziness/sleepiness	3 (6%)	5 (10%)	0.4
Respiratory distress	2 (4%)	7 (14%)	0.08

Data are number (%).

Spinál aplikovaný v sedě má vyšší výskyt hypotenze než na boku

FIGURE 1. Dural puncture holes made by cutting and noncutting needles (Reproduced with permission from Strupp, et al. *Neurology*. 2001; 57:2310–2312).



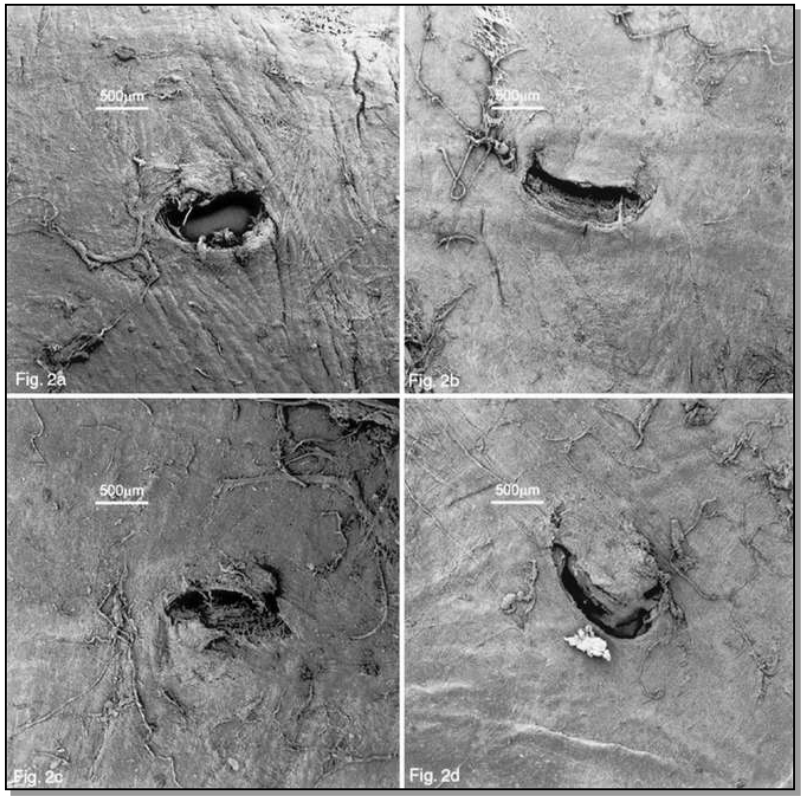
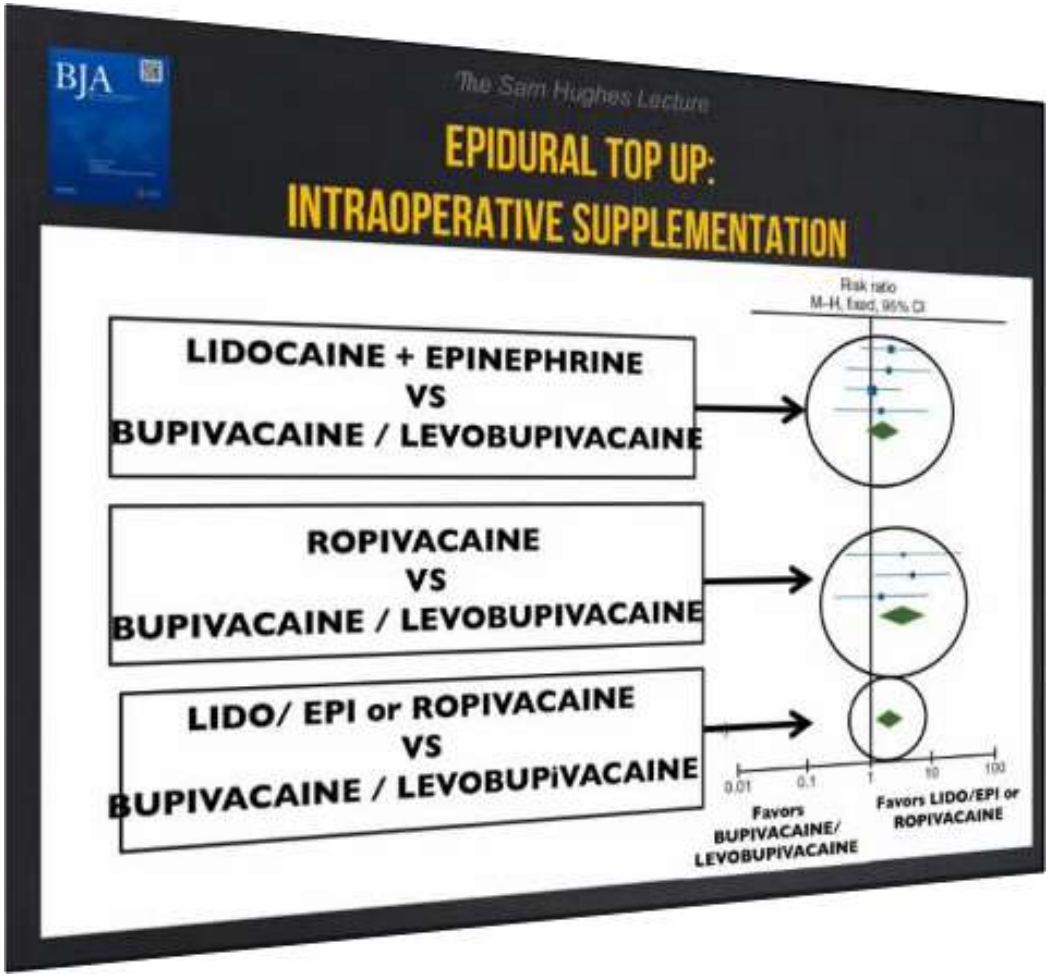


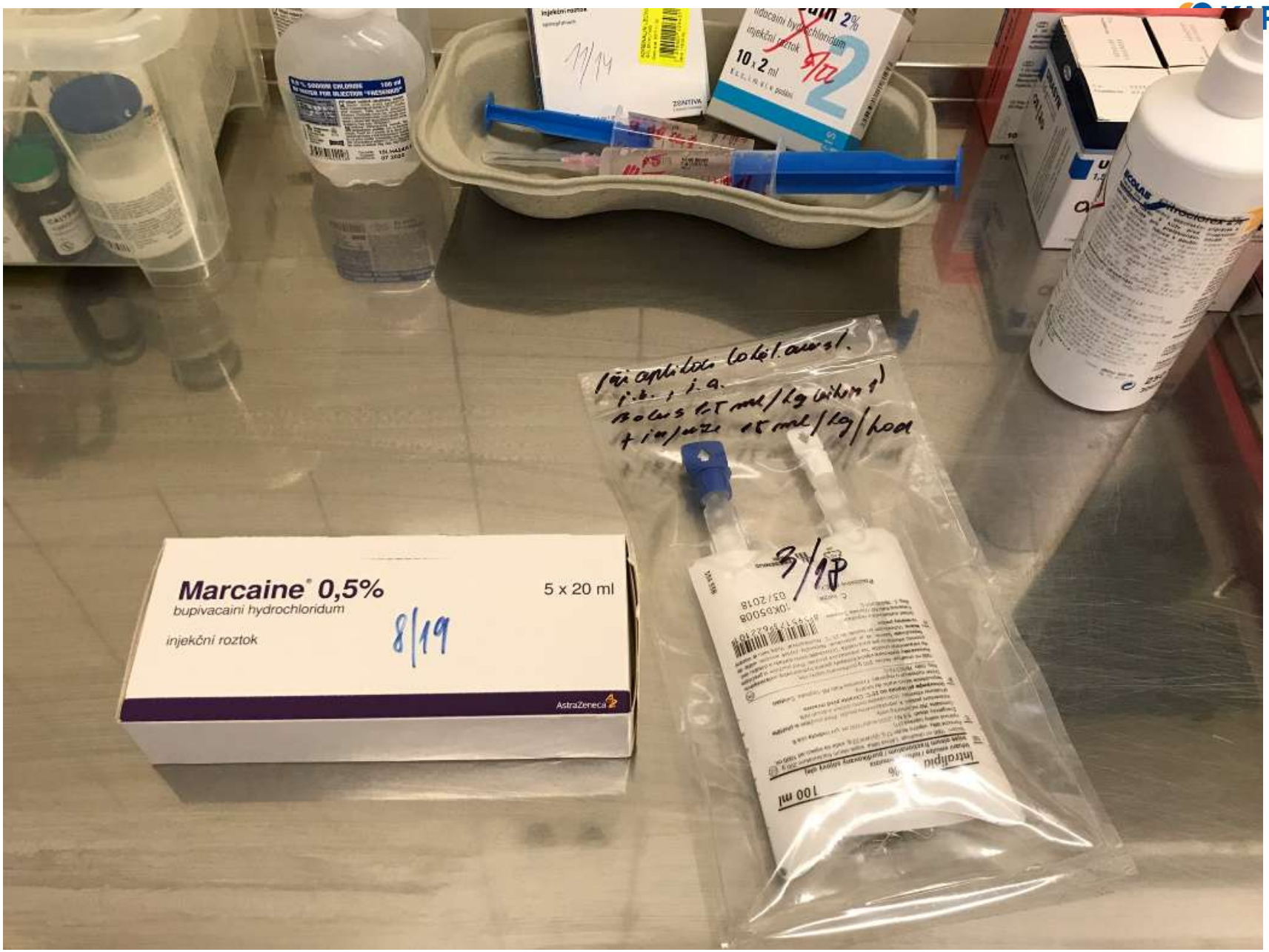
Fig. 2. Scanning electron microscopic images of (*a*) a 17-gauge Hustead epidural needle puncture (bevel parallel, 90° angle), (*b*) a 17-gauge Tuohy epidural needle puncture (bevel parallel, 90° angle), (*c*) an 18-gauge Special Sprotte® epidural needle puncture (90° angle), and (*d*) an 18-gauge Crawford epidural needle puncture (bevel parallel, 90° angle).

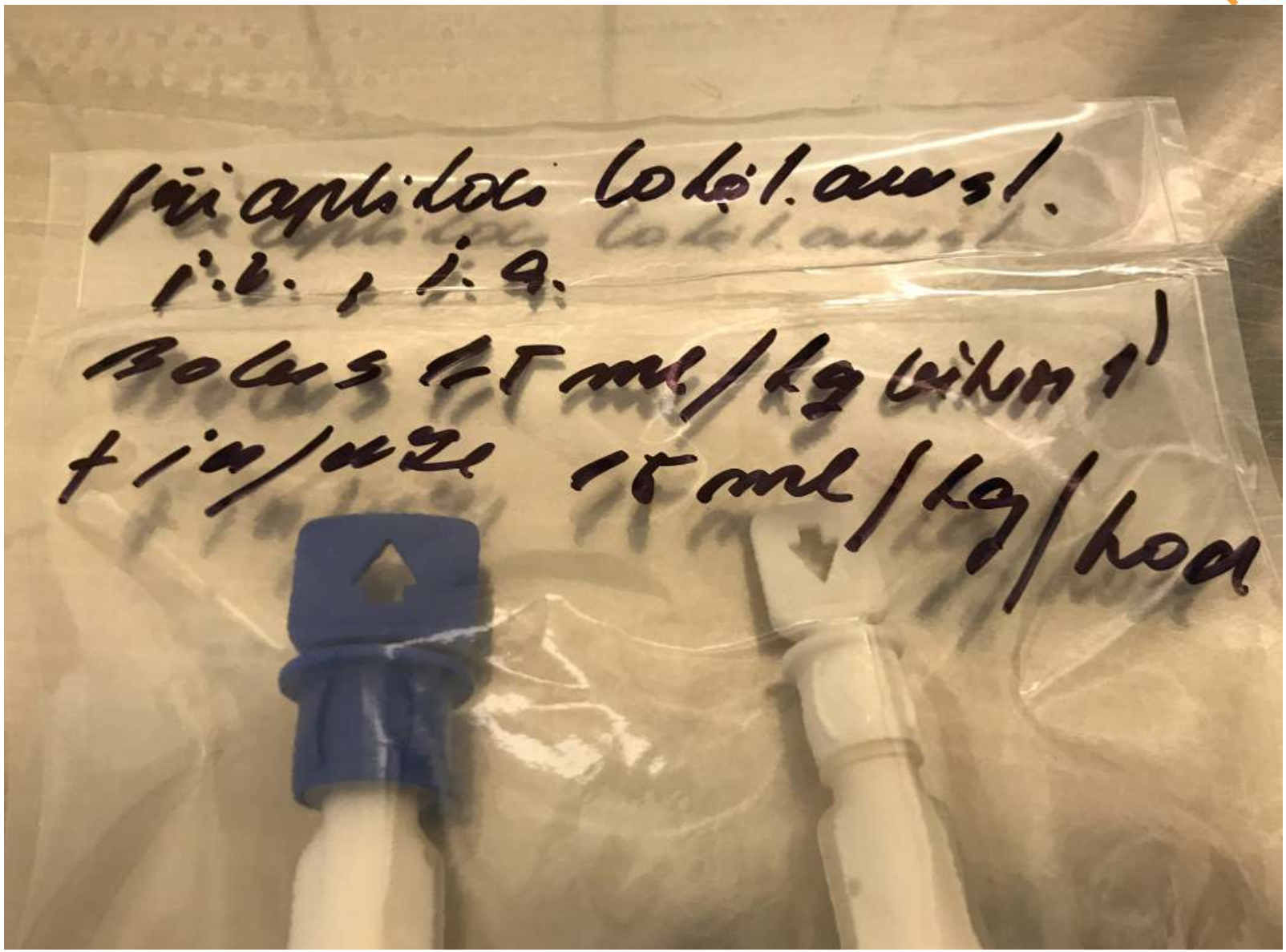
Pamela J. Angle et al. Anesthesiology. 2003;99(6):1376-1382


Lidocain 2%
lidocaini hydrochloridum
injekční roztok
10 x 2 ml
Sufentanil Torrex
Adrenalin Léčiva
1 mg/ml
ZENTIVA
Lidocain 2%
5/22
ECOLAB



epidurální směs: lidocain 2% 18 ml + sufentanyl 10 µg/2 ml + adrenalin 0,1 ml


Marcaine® 0,5%
bupivacaini hydrochloridum
injekční roztok
5 x 20 ml
8/19
AstraZeneca
3/18
100 ml



VOLBA ANESTEZIE

Čas do incize (min.)	**Volba dle času, který má anesteziolog k dispozici…**
elektivně	**EPID**, **SAB**, **CSE**
15-20	**EPID** s rychle nasedající epidurální směsí (2% lidocain), **SAB**, **CSE**
10-15	**SAB**, (**CSE**)
5-10	**SAB** (zkušený anesteziolog + dobré anatomické podmínky, jinak spíše CA)
0-5	**CELKOVÁ ANESTEZIE**
	Poznámka: je nutno vzít v úvahu i čas nutný k zpolohování rodičky, natažení směsi a punkci epidurálního/subarachnoidálního prostoru, nikoli pouze čas nasednutí účinku lokálního anestetika. Současně je nutno odhadnout čas svolání a umytí operačního týmu, desinfekci a zarouškování rodičky, …

epidurální směs:
lidocain 2% 18 ml + sufentanyl 10 µg/2 ml + adrenalin 0,1 ml

International Journal of Obstetric Anesthesia (2014) 23, 157–160
0959-289X/$ - see front matter
http://dx.doi.org/10.1016/j.ijoa.2013.11.006

www.obstetanesthesia.com

ORIGINAL ARTICLE

Enhanced recovery from obstetric surgery: a UK survey of practice

S. Aluri, I.J. Wrench
Department of Anaesthetics, Royal Hallamshire Hospital, Sheffield, UK

- **mobilisace rodičky do 12 hod po operaci**

International Journal of Obstetric Anesthesia (2014) 23, 157–160
0959-289X/$ - see front matter
http://dx.doi.org/10.1016/j.ijoa.2013.11.006

www.obstetanesthesia.com

ORIGINAL ARTICLE

Enhanced recovery from obstetric surgery: a UK survey of practice

S. Aluri, I.J. Wrench
Department of Anaesthetics, Royal Hallamshire Hospital, Sheffield, UK

- **p.o. příjem tekutin** před výkonem – povoleno do 2 hod (78% pracovišť)

  po výkonu – zahájen v průběhu 1 hod (70%)

- **jídlo po výkonu** - v průběhu 6 hod (71%)

KARIM

	Všeobecná fakultní nemocnice v Praze U Nemocnice 499/2, 128 08 Praha 2; IČ 00064165, tel.: 224 961 111 **POOPERAČNÍ ORDINACE**	F-VFN-139_GPK3 Strana 1 z 1 Verze číslo: 2

Jméno pacienta

Datum:

1. ANALGEZIE ZÁKLADNÍ po příjezdu z operačního sálu:

☐ **Almiral** inj. 75 mg/100 ml F1/1 kape 20 min. i.v., dále á 12 hod.
Kontraindikace diklofenaku = alergie, těžké astma, velká krevní ztráta

Pije ☒ ihned ☐ za 1/2 hod ☐ ..... hod; ☒ lehká strava za 4 hod

ošetřujícího lékaře

☐ Kontrola hybnosti a citlivosti končetin po regionální blokádě
☐ Hodinová diuréza ☐ P + V á ..... hod.
☐ .....

OXYGENOTERAPIE:

☐ O_2 maskou 5 l/min. ..... min., dále jen při SpO_2 <92%

MEDIKACE:

☐ **Fraxiparine**/☐ ..... inj ..... ml s.c. v ..... hod

Při nauzee/zvracení:

☐ **Ondansetron** inj. ☐ 4 mg ☐ 8 mg pomalu i.v., lze á 8 hod.,
☐ **$MgSO_4$** 20% inj. perfusorem 12 / ..... hod. rychlostí 5 ml/hod
☐ .....
☐ .....
☐ .....
☐ **Oxytocin** inj. 2 j./F 1/1 100ml kape 2 hod., opakovat dle porodníka

KONTROLNÍ LABORATOŘ: v (čas):

☐ KO ☐ ionty (+ Ca^{2+}) ☐ INR, APTT ☐ VHV
☐ CB, albumin ☐ ..... ☐ .....

INFUSE i.v.: od příjezdu z operačního sálu
Linka A: v uvedeném pořadí kape rychlostí ..... ml/hod.:

☐ Z operačního sálu: .....
☐ R 1/1 1000 ml + KCl 7,45% inj ..... ml + $CaCl_2$ inj ..... ml
☐ .....

Linka B: kape rychlostí ..... ml/hod.:

☐ .....

NA NOC: (jednorázově při neklidu či nespavosti pacientky)

☐ **Dormicum** ..... mg ..... tbl p.o.
☐ .....

OSTATNÍ:

☐ .....

☐ Při pokračující bolesti **Paracetamol Kabi** 1 g lag. (100 ml) i.v. kape 15 min.; opakovat lze nejdříve za 4 hod., max. 4 g/24 hod.
☐ Při trvající bolesti **Dipidolor** inj. 15 mg s.c.; opakovat nejdříve za 6 hod.

Po spinální anestezii:

☐ **Paracetamol Kabi** 1 g lag. (100 ml) i.v. při nástupu bolesti, kape 15 min; opakovat lze nejdříve za 4 hod.; max. 4 g/24 hod.
☐ Při trvající bolesti **Dipidolor** inj. 15 mg s.c.; opakovat nejdříve za 6 hod.

Po celkové anestezii:

☐ **Dipidolor** inj. 15 mg s.c. aplikován na operačním sále v ..... hod., dále při bolesti nejdříve za 6 hod.
☐ **Paracetamol Kabi** 1 g lag. (100 ml) i.v. při bolesti, kape 15 min; opakovat lze nejdříve za 4 hod.; max. 4 g/24 hod.

3. ANALGEZIE DOPLŇUJÍCÍ:

☐ **Novalgin** inj. 1 g / F 1/1 100 ml i.v. v ..... hod., kape 15 min.; při bolesti lze opakovat nejdříve za 4-6 hod., max. 5 g /24 hod.
☐ **Nalbuphin** inj. 20 mg s.c. v ..... hod.; lze opakovat za 3-6 hod.
☐ **Morfin** 1% inj. 10 mg s.c. v ..... hod., lze opakovat za 4 hod.
☐ **Sufentanil Torrex**/☐ **Sufenta Forte** inj. 50 µg /F 1/1 50 ml od ..... hod perfusorem i.v. dle NRS <3; startovací rychlost 5 ml/hod, max. 10 ml/hod
☐ Epidurálně směs SPRINGFUSOREM rychlost 4 ml/hod. od ..... hod.:
Marcain 0,5% inj 2 ml + ☐ **Sufentanil Torrex**/☐ **Sufenta** inj. 10 µg/2 ml + F 1/1 6 ml
☐ .....

POZOR: Při váze pac. < 50 kg je max. dávka Paracetamolu 500 mg á 3 g/24 hod.

Podpis anesteziologa:

JINÁ DOPORUČENÍ:

Čas a podpis lékaře:

CHRONICKÁ MEDIKACE:

ZÁZNAM PORODNÍKA:

Ordinace ☐ POTVRZENY ☐ UKONČENY ošetřujícím lékařem v ..... hod.

Čas a podpis ošetřujícího lékaře:

DIAGNOSTIKA A LÉČBA PERIPARTÁLNÍHO ŽIVOT OHROŽUJÍCÍHO KRVÁCENÍ

ČESKO-SLOVENSKÝ MEZIOBOROVÝ DOPORUČENÝ POSTUP

Pařízek A.[1], Binder T.[2], Bláha J.[3], Blatný J.[4], Buršík M.[5], Feyereisl J.[6], Janků P.[7], Kokrdová Z.[1], Křepelka P.[6], Kvasnička J.[8], Ľubuský M.[9], Seidlová D.[10], Šimetka O.[11], Štourač P.[12], Černý V.[13, 14, 15, 16]

1) Gynekologicko-porodnická klinika 1. lékařské fakulty UK a VFN v Praze, Česká republika
2) Gynekologicko - porodnická klinika, Univerzita J. E. Purkyně v Ústí nad Labem, Masarykova nemocnice v Ústí nad Labem, Česká republika
3) Klinika anesteziologie, resuscitace a intenzivní medicíny 1. LF UK a VFN v Praze, Česká republika
4) Oddělení dětské hematologie, Centrum pro trombózu a hemostázu, FN Brno, LF MU Brno, Česká republika
5) Klinika anesteziológie a intenzívnej medicíny, Univerzitná nemocnica Bratislava - Ruž[illegible], Slovenská republika
6) Ústav péče o matku a dítě, Praha, Česká republika
7) Gynekologicko-porodnická klinika, Fakultní nemocnice Brno, Léka[illegible]kulta Masary[illegible] univerzity, Brno, Česká republika
8) Trombotické centrum, Ústav lékařské biochemie a laborato[illegible]diag[illegible]stik[illegible]FN v Praze
9) Porodnicko-gynekologická klinika, Univerzita Pa[illegible]ho O[illegible]ouc, Lé[illegible]a, Fakultní nemocnice Olomouc, Česká republika
10) II. ARO, Klinika anesteziologie, resu[illegible]nte[illegible]di[illegible]ultní nemocnice Brno, Lékařská fakulta Masarykovy u[illegible]zity, B[illegible], Če[illegible]á
11) Gynekologicko - porod[illegible]á klini[illegible]Léka[illegible]e faku[illegible]Univerzity Ostrava a FN Ostrava, Česká republika
12) Klinika dětské [illegible]ziolo[illegible]a resus[illegible]ultní nemocnice Brno, Lékařská fakulta Masaryk[illegible]v un[illegible]Br[illegible]Čes[illegible]ublika
13) [illegible]ka a[illegible]ezi[illegible]o[illegible]ic[illegible], a intenzivní medicíny, Univerzita J. E. Purkyně v Ústí nad [illegible], Ma[illegible]yk[illegible]e[illegible]ce v Ústí nad Labem, Institut postgraduálního vzdělávání ve zdr[illegible]nictv[illegible]a, Česká republika
14) Centr[illegible]výzkum a vývoj, Fakultní nemocnice Hradec Králové, Česká republika
15) [illegible]klinika[illegible]esteziologie, resuscitace a intenzivní medicíny, Univerzita Karlova v Praze, Lékařská fakulta v Hradci Králové, Česká republika
16) Dept. of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, Halifax, Canada

1. Úvod

V předloženém dokumentu jsou formulována doporučení pro diagnostický a léčebný postup u pacientek s rozvojem život ohrožujícího krvácení v souvislosti s těhotenstvím a/nebo porodem se zaměřením na tzv. peripartální život ohrožující krvácení. Jednotlivá doporučení vycházejí z dostupných publikovaných odborných zdrojů k dané problematice a názorů členů pracovní skupiny, včetně externích oponentů. Implementace v textu formulovaných doporučení musí být vždy zvažována v aktuálním klinickém kontextu a z pohledu poměru přínosu a rizika jednotlivých konkrétních postupů. Dokument nenahrazuje základní odborné zdroje dané problematiky a neuvádí povinnosti zdravotnických pracovníků určené zákonnými normami.


PLASMA
A


PLASMA
A
Rh POSITIVE
VOLUNTEER DONOR

35 minut

=

8 minut

National audit of the use of fibrinogen concentrate to correct hypofibrinogenaemia

N. D. Gollop,[1] J. Chilcott,[2] A. Benton,[3] R. Rayment,[2] J. Jones[4] & P. W. Collins[2]

[1]The School of Medicine, [2]Department of Haematology, University Hospital of Wales and School of Medicine, Cardiff University Cardiff, [3]Department of Haematology, Singleton Hospital, Swansea University Swansea, and [4]Welsh Blood Service Cardiff UK

Table 2. Effect of fibrinogen infusion on fibrinogen levels

	Fibrinogen ($g\,L^{-1}$) before infusion	Fibrinogen ($g\,L^{-1}$) after infusion	Absolute increment in fibrinogen ($g\,L^{-1}$)	Adjusted increment in fibrinogen ($g\,L^{-1}$ increase per $mg\,kg^{-1}$ infused)
Bleeding patients ($n = 46$)	1·0 (0·7–1·3) 0·4–3·4	2 (1·4–2·4) 0·5–4·3	0·9 (0·5–1·3) −0·6 to 2·6	0·02 (0·01–0·03) −0·01 to 0·1
Non-bleeding patients ($n = 17$)	0·9 (0·5–1·2) 0·3–1·7	1·7 (1·3–2·5) 0·9–3·7	0·8 (0·6–1·5) 0·1–3·2	0·02 (0·01–0·03) 0–0·08

Fibrinogen levels and observed increment are shown. Data are median, (IQR) and range.

pro zvýšení o 1 g/l
je nutná dávka
60 mg/kg

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

Published Online
April 26, 2017
http://dx.doi.org/10.1016/
S0140-6736(17)30638-4

*WOMAN Trial Collaborators**

Summary

Background Post-partum haemorrhage is the leading cause of maternal death worldwide. Early administration of tranexamic acid reduces deaths due to bleeding in trauma patients. We aimed to assess the effects of early administration of tranexamic acid on death, hysterectomy, and other relevant outcomes in women with post-partum haemorrhage.

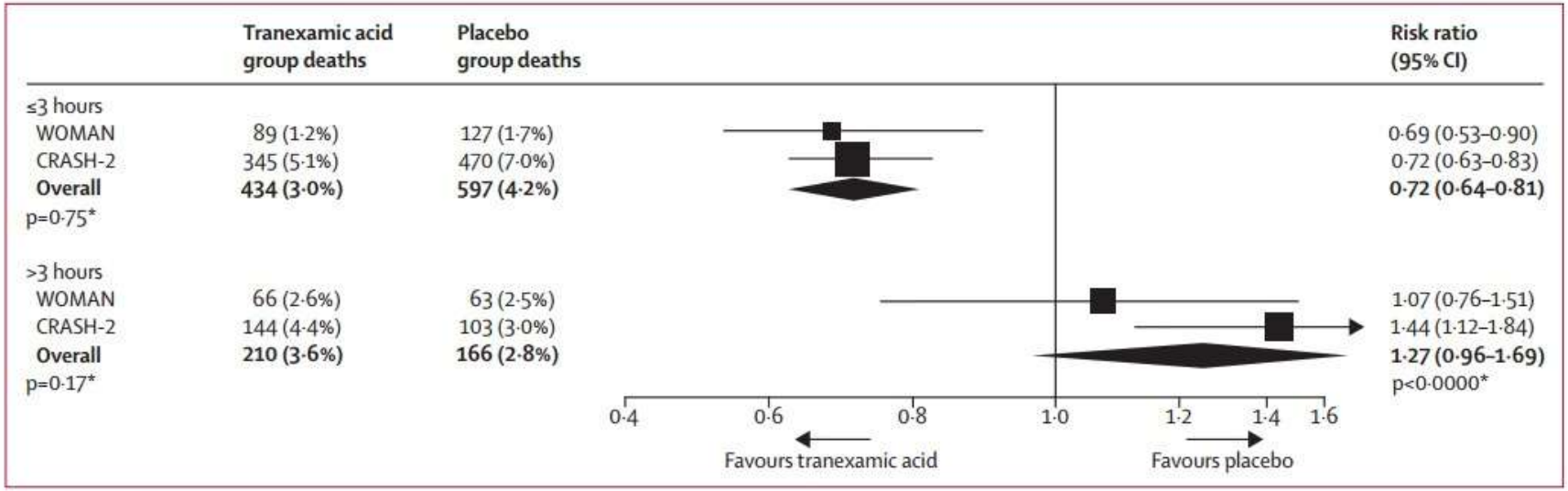
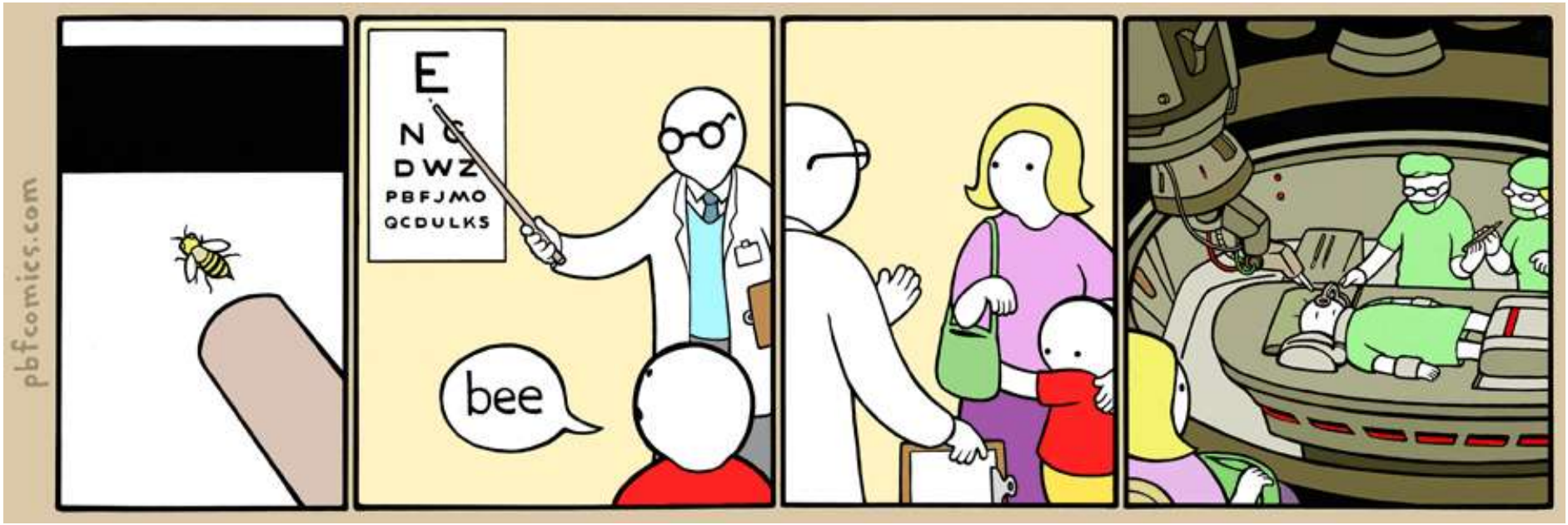


Figure 5: **Time to treatment**
*Heterogeneity p value.



jan.blaha@vfn.cz