

LÉPE, NEBO JAKO VŽDYCKY ?



JAN BLÁHA

KLINIKA ANESTEZIOLOGIE, RESUSCITACE A INTENZIVNÍ MEDICÍNY



**1. LÉKAŘSKÁ
FAKULTA**
Univerzita Karlova



**VŠEOBECNÁ FAKULTNÍ
NEMOCNICE V PRAZE**

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Nemám konflikt zájmu.

Přednáška je inspirována skutečnými událostmi.



Intubace po proběhnutí fascikulací

Preoxygenace

ANO

Thiopental

ANO

NE

Sukcynylcholin

ANO

NE

Apnoická pouza

ANO

NE

Intubace

ANO

NE



Sufentanil
10 µg (á 2.5 µg)

Rocuronium
0.6 mg/kg

Prodýchání vakem
1 min

LMA

Article in Press

Obstetric anaesthesia for caesarean section in Central Europe: a prospective population-weighted binational audit (OBAAMA-COV Study)

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Table 3: GENERAL ANESTHESIA - characteristics of elective and acute caesarean sections				
 OBAAMA-COV	Czech Republic		Slovakia	
	Elective N = 154	Emergent N = 387	Elective N = 90	Emergent N = 127
Reason for administering general anaesthesia				
Urgency	0,6	69,5	5,6	86,6
Preferences of the mother	59,7	14,4	59,6	5,5
LMWH applied	2,6	1,0	1,1	1,6
Bleeding complications	0,6	1,6	2,2	1,6
Failure of neuraxial blockade	16,9	5,7	16,9	2,4
Placentation disorder	1,9	1,8	0,0	0,0
Other	17,7	6,0	14,6	2,4
Securing the airway				
RSI induction	87,8	96,5	96,6	98,4
Sellick's manoeuvre	10,6	28,1	4,9	34,0
Complications in securing the airway				
Difficult intubation	2,6	1,6	2,2	0,8
Regurgitation	0,0	0,8	0,0	0,8
Aspiration	0	0	0	0
Vomiting	0	0	0	0
Hyposaturation	3,2	0,5	0,0	0,0
Other	1,3	0,0	0,0	0,0
Induction to anaesthesia				
Thiopental	41,6	37,6	24,7	32,3
Propofol	53,9	60,8	75,3	66,1
Hypnomidate	1,3	0,3	0,0	0,0
Suxamethonium	94,2	97,4	94,4	95,3
Rocuronium	2,6	2,3	2,2	3,1

Data are given in %.

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

... jenže je rok 2026 ?!





Anesteziolog a císařovna

Alena Bauerová

SET = VNITŘNÍ NASTAVENÍ

- Organické a funkční změny v CNS
- Psychický stav - očekávání, důvěra, bezpečí
- Předchozí zkušenosti - vlastní i transgenerační
- Kult přirozeného porodu
- Generace Z jako generace komfortu
- „Informovaný“ souhlas

JemnéZrození

Prostě rodin



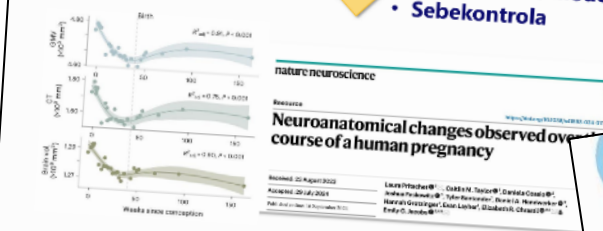
PORODNÍ PLÁN

- ☐ PORODIT DÍTĚ
- ☒ PŘEŽÍT

PERIPARTÁLNÍ MOZEK

- Intuice
- Instinktivní chování
- Emoční reaktivita

- Kognitivní kapacita
- Racionální rozhodování
- Sebekontrola



From Pregnancy to Postpartum: The Dynamic Reorganization of the Maternal Brain

Natalia Chechko^{1,2,3,4} and Susanne Nohls^{1,2,3,4}

¹Department of Psychiatry, Psychotherapy and Psychosomatics, Faculty of Medicine, University of Bonn, Bonn, Germany; ²Institute of Neuroscience and Medicine, JARA-Mind@Bonn, Bonn, Germany; ³Department of Neuroscience and Medicine, JARA-Mind@Bonn, Bonn, Germany; ⁴Research Center Jülich, Jülich, Germany

PSYCHICKÉ NÁSLEDKY

POSTPARTÁLNÍ DEPRESE (PPD)

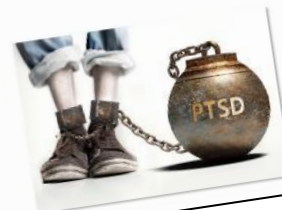
- 10 % vaginální porod/13 % SC
- CA o 49 % vyšší riziko PPD než RA

PERIPARTÁLNÍ POSTTRAUMATICKÁ STRESOVÁ PORUCHA (P-PTSD)

- 8 % vaginální porod, 15 % plánovaná SC a 25 % akutní SC

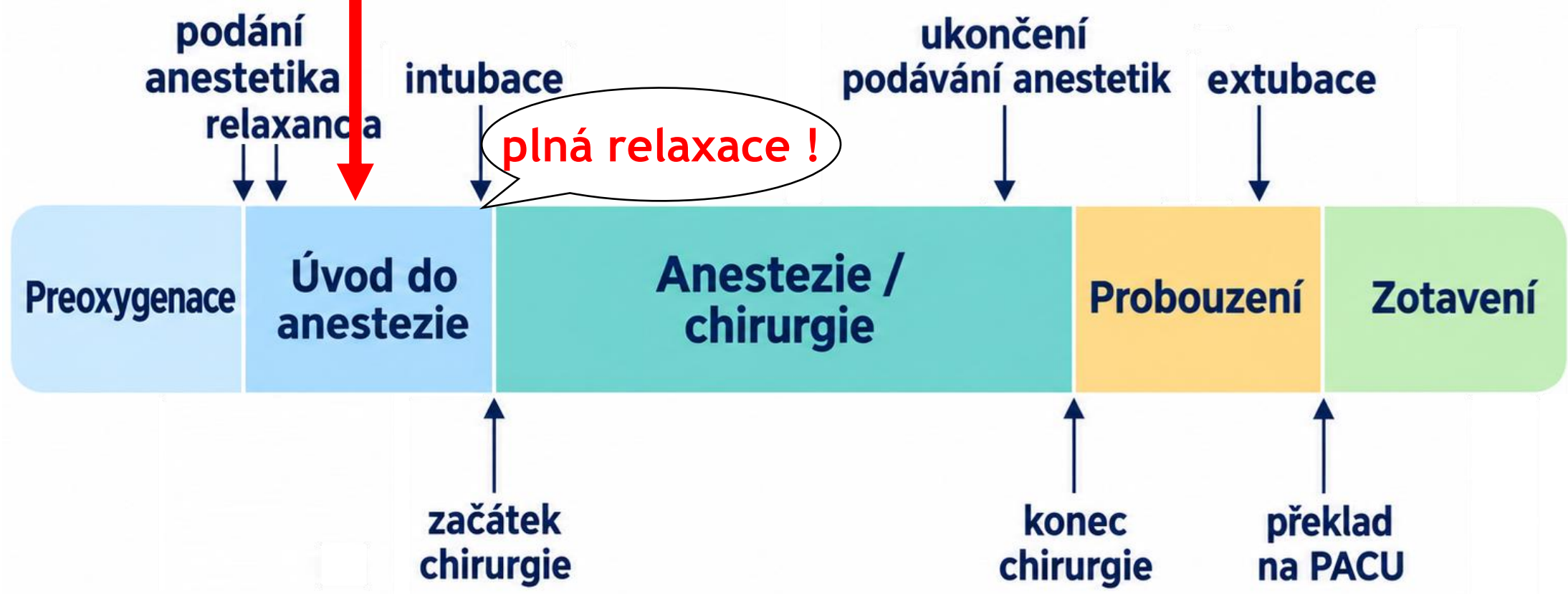


- CAN syndrom (Child abuse and neglect)
- poruchy příjmu potravy
- užívání návykových látek
- sebevražda





U těhotné je 10x vyšší riziko obtížné intubace, tak si musíme vytvořit
OPTIMÁLNÍ PODMÍNKY, a ne **NEDOSTATEČNÉ** !



Intubační čas:

ROC 60 vteřin

Low-Dose or High-Dose Rocuronium Reversed with Neostigmine or Sugammadex for Cesarean Delivery Anesthesia: A Randomized Controlled Noninferiority Trial of Time to Tracheal Intubation and Extubation

Petr Štourač, MD, PhD,* Milan Adamus, MD, PhD,† Dagmar Seidlová, MD, PhD,† Zdeněk Mrozek, MD, PhD,†
Tomas Procházka, MD, PhD,‡ Jozef Klucka, MD,* Roman Štoulík, MD,* Ivana Bartíková, MD,†
Martina Kosiňová, MD, PhD,‡ Hana Harašín, MD,† Hana Rebořková, MD,† Karel Hajdůšek, MSc,‡
Zuzana Hodička, MD, PhD,‡ Martina Kuchnerová, MD,† Jana Francisková, MD,†
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BACKGROUND: Rocuronium for cesarean delivery under general anesthesia is an alternative to succinylcholine for rapid-sequence induction of anesthesia because of the availability of sugammadex for reversal of neuromuscular blockade. However, there are no large well-controlled studies in women undergoing general anesthesia for cesarean delivery. The aim of this noninferiority trial was to determine whether rocuronium and sugammadex confer benefit in time to tracheal intubation (primary outcome) and other neuromuscular blockade outcomes compared with succinylcholine (secondary outcome) in women undergoing general anesthesia for cesarean delivery.

METHODS: We aimed to enroll all women undergoing general anesthesia for cesarean delivery in the 2 participating university hospitals (Brno, Olomouc, Czech Republic) in this single-blind, randomized, controlled study. Women were randomly assigned to the ROC group (muscle relaxation, rocuronium) and neostigmine in women undergoing general anesthesia for cesarean delivery (primary outcome) and sugammadex 2–4 mg/kg or the SUX group (succinylcholine 1 mg/kg for induction, rocuronium 0.3 mg/kg for maintenance, and neostigmine 0.03 mg/kg for reversal of the neuromuscular blockade). The interval from the end of propofol administration to tracheal intubation was the primary end point with a noninferiority margin of 20 seconds. We recorded intubating conditions (modified Vybíjenec score), and subjective margin of 20 seconds. We recorded arterial pH, anesthesia complications, and subjective

RESULTS: We enrolled 240 parturients. The mean time to tracheal intubation was 2.9 seconds longer in the ROC group (95% confidence interval, -5.3 to 11.2 seconds), noninferior compared with the SUX group. Absence of laryngoscopy resistance was greater in the ROC than in the SUX groups (ROC, 87.5%; SUX, 74.2%; $P = 0.019$), but there were no differences in vocal cord position ($P = 0.45$) or intubation response ($P = 0.31$) between groups. No statistically significant differences in incidence of anesthesia complications or in neonatal outcome were found. The incidence of postpartum myalgia was greater in the SUX group (ROC, 0%; SUX, 6.7%; $P = 0.007$). The incidence of 10-minute Apgar score <7, $P = 0.07$; umbilical artery pH, $P = 0.43$). The incidence of subjective complaints was lower in the ROC group for rapid-sequence induction is noninferior for time to tracheal intubation and is accompanied by more frequent absence of laryngoscopy resistance and lower incidence of myalgia in comparison with succinylcholine for cesarean delivery under general anesthesia. (Anesth Analg 2016;122:1536–45)

ROC	Estimated timeline	SUX
Written Patient Informed Consent		Written Patient Informed Consent
Randomization		Randomization
TOF-Watch SX preparation		TOF-Watch SX preparation
Rapid Sequence Induction preparation		Rapid Sequence Induction preparation
Preoxygenation 100% 6 L/min O ₂ 3 min		Preoxygenation 100% 6 L/min O ₂ 3 min
Propofol 2 mg/kg IV administration	Time 0	Propofol 2 mg/kg IV administration
TOF-Watch SX calibration in mode 2 (10s)	Time 10s	TOF-Watch SX calibration in mode 2 (10s)
Rocuronium 1 mg/kg IV administration (5s)	Time 15s	Succinylcholine 1 mg/kg IV administration (5s)
Single Twitch drop under 10% or absence of visible finger movement during stimulation	Time 60s	Single Twitch drop under 10% or absence of visible finger movement during stimulation
Intubation (first visible etCO ₂ curve wave)	Time 90s	Intubation (first visible etCO ₂ curve wave)
Incision	Time 100s	Incision
Umbilical cord cut	Time 300s	Attainment of Single Twitch 20–30%
		Umbilical cord cut

Table 2. Evaluation of Times Recorded During the Procedure According to Intent

	ROC group (n = 120)	SUX group (n = 120)
	Mean (SD)	Median (min–max)
Time from induction to first wave on EtCO ₂	87 (26)	85 (34–200)
Time from induction* to ST 10% (s)	65 (25)	61 (29)

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<https://doi.org/10.1016/j.ijoa.2019.08.005>

ORIGINAL ARTICLE Surgical conditions with rocuronium versus suxamethonium in cesarean section: a randomized trial

J. Bláha,^{a,†} P. Nosková,^{a,†} K. Hlinecká,^b V. Krakovská,^c V. Fundová,^a T. Bartošová,^a
P. Michálek,^a M. Stříteský^a

Table 2 Times from induction of anesthesia to end of surgery; and induction characteristics.

	Rocuronium group		Suxamethonium group		Difference in means	P-value
	Mean	Median	mean	median		
Induction – delivery interval (s)	268.4 (72.9)	265 (223–330)	275.6 (63.4)	267 (239–400)	–7.2 (–39.5 to 19.3)	0.62
Induction – intubation interval (s)	105.8 (33.7)	108 (77–134)	67.6 (32.1)	63 (50–123)	38.2 (24.4 to 52.0)	<0.001
Incision – delivery interval (s)	146.6 (68.3)	130 (99–179)	11.7 (6.4)	201 (167–277)	–49.7 (–74.8 to –24.4)	0.0002
Length of surgery (min)	15.8 (6.9)	15 (4–43)	196.2 (50.7)	63 (50–123)	0.1 (0.4 to 7.8)	0.061
End of surgery to extubation (min)	39.3 (8.9)	39 (27–53)	39.4 (9.6)	38 (26–54)	4.1 (–5.8 to 1.4)	0.976
SRSD (points)	5.2 (4.6)	4 (0–13)	8.8 (5.8)	3 (2–4)	–3.5 (–5.8 to 1.4)	0.002
Blood loss (mL)	3.73 (0.53)	4 (3–5)	2.77 (0.55)	500 (500–650)	1.0 (–0.01 to 0.20)	<0.001
Thiopental (mg/kg)	533 (76)	4 (3–5)	4.7 (0.21)	4.7 (4.5–5.3)	–5 (–38 to 28)	0.859
Muscle relaxant dose (mL/kg)	4.7 (0.16)	500 (500–600)	0.095 (0.00)	0.94 (0.9–1.1)		0.471
Muscle relaxant dose (mg/kg)	0.092 (0.01)	4.7 (4.5–5.1)	0.095 (0.00)			0.072
	0.55 (0.05)	0.093 (0.090–0.106)	0.95 (0.04)			0.177

Data are presented as mean (SD) or median (range). Difference between the groups is expressed as median (95% confidence interval). SRSD: Surgical rating scale for delivery.

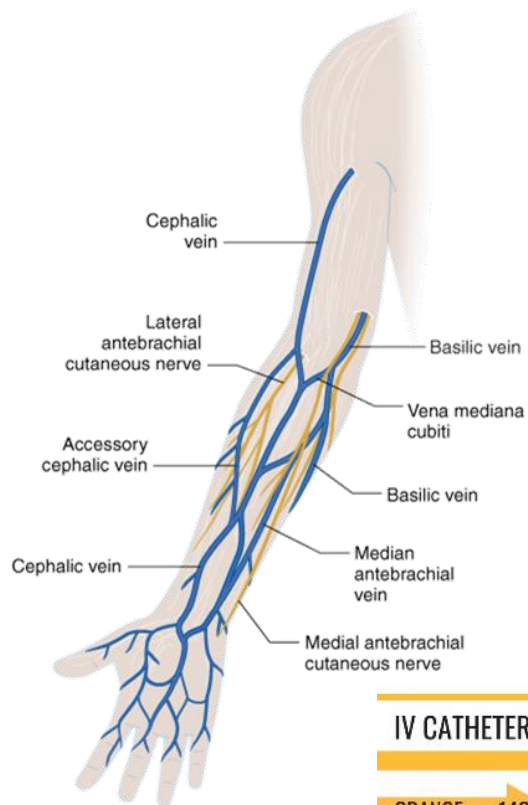
XXXI

SX 60 vteřin

fascik

XXXI

Doba nástupu účinku myorelaxancia záleží ale i na způsobu aplikace !!



IV CATHETER SIZES AND FLOW RATES

ORANGE	14G			240 ML/MIN 1 LITER ~ 4 MINUTES
GRAY	16G			180 ML/MIN 1 LITER ~ 5.5 MINUTES
GREEN	18G			90 ML/MIN 1 LITER ~ 11 MINUTES
PINK	20G			60 ML/MIN 1 LITER ~ 17 MINUTES
BLUE	22G			36 ML/MIN 1 LITER ~ 28 MINUTES
YELLOW	24G			20 ML/MIN 1 LITER ~ 50 MINUTES
VIOLET	26G			13 ML/MIN 1 LITER ~ 77 MINUTES

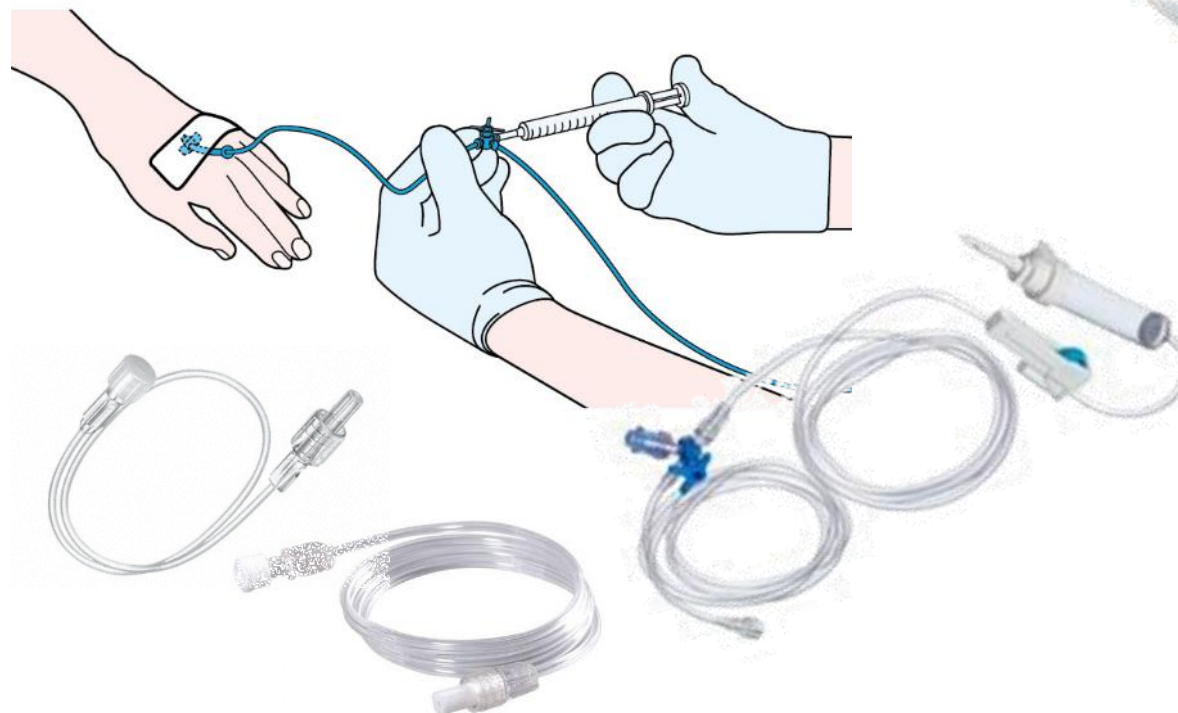


Table 3. Onset Times and Durations of Neuromuscular Block

Succinylcholine dose (mg/kg)	Onset time(s)	Duration of block (min)	<i>n</i>
0.3	72 ± 30	4.4 ± 1.4	13
0.5	68 ± 44	5.2 ± 1.8	27
1.0	53 ± 23	5.9 ± 1.9†	30
1.5	56 ± 31	7.2 ± 2*	30
2.0	52 ± 21	7.5 ± 1.7*	30

Values are means ± SD.

**P* < 0.01 versus succinylcholine 0.3, 0.5, and 1.0 mg/kg groups; †*P* < 0.05 versus succinylcholine 0.3 mg/kg group.

Doba nástupu účinku i čas do intubace jsou na dávce závislé !

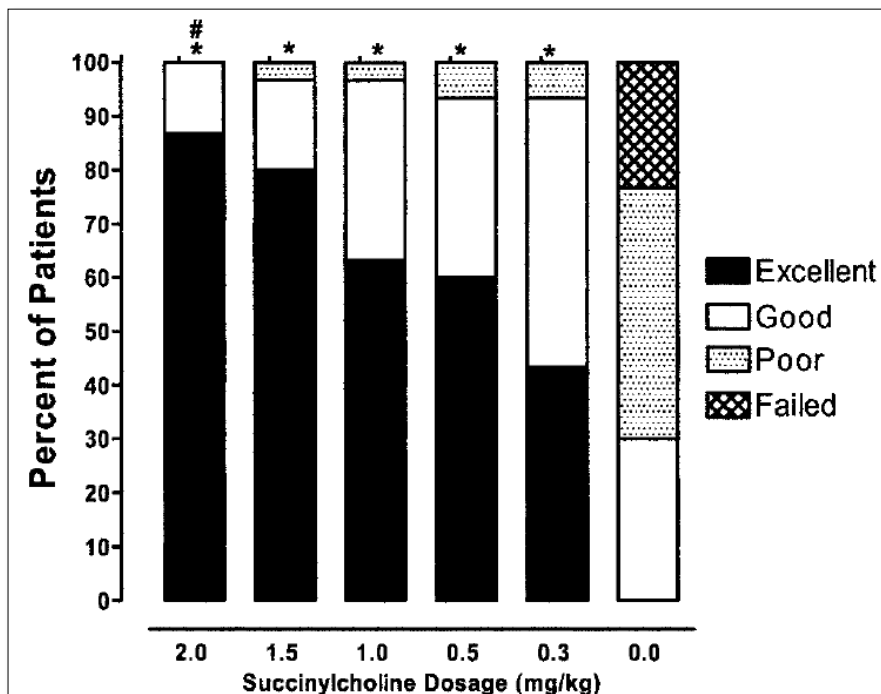


Figure 1. Intubating conditions with different doses of succinylcholine (*n* = 30 in each group). The incidence of excellent intubating conditions was significantly more frequent (**P* < 0.001) in patients receiving succinylcholine than in those of the control group and in the 2.0 mg/kg succinylcholine group (#*P* < 0.05) than in the 0.3 mg/kg succinylcholine group (Kruskal-Wallis test for multiple comparisons).

Intubační podmínky SX vs ROC

Anesth Analg 2016;122:1536–45)

Low-Dose or High-Dose Rocuronium Reversed with Neostigmine or Sugammadex for Cesarean Delivery Anesthesia: A Randomized Controlled Noninferiority Trial of Time to Tracheal Intubation and Extubation

Petr Stourac, MD, PhD,* Milan Adamus, MD, PhD,† Dagmar Seidlova, MD, PhD,‡
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Lenka Obare Pyszkova, MD,† Jarmila Hlozkova, MD,† and Pavel Sevcik, MD, PhD**

Table 3. Evaluation of Intubating Conditions

	ROC group (n = 120)		SUX group (n = 120)		P ^a
	n	%	n	%	
Resistance to laryngoscopy					0.019
None	105	88	89	74	
Mild (slight)	14	12	25	21	
Severe (active)	1	1	6	5	

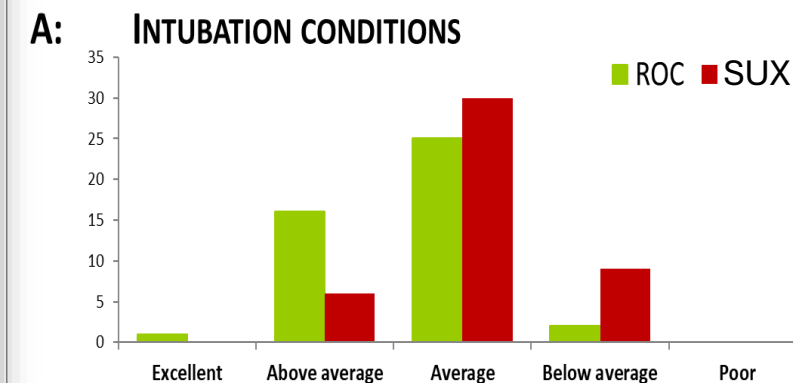


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<https://doi.org/10.1016/j.ijoa.2019.08.005>

ORIGINAL ARTICLE

Surgical conditions with rocuronium versus suxamethonium in cesarean section: a randomized trial

J. Bláha,^{a,†} P. Nosková,^{a,†} K. Hlinecká,^b V. Krakovská,^c V. Fundová,^a T. Bartošová,^a
P. Michálek,^a M. Stříteský^a



Tomáš Vymazal, Pavel Michálek, Olga Klementová a kolektiv

Anesteziologie (nejen) k atestaci

2., přepracované a doplněné vydání



75.3 Celková anestezie

Nejčastěji užívaným svalovým relaxanciem k intubaci u císařského řezu je stále sukcynylcholin v dnes doporučené dávce 1,2–1,5 mg/kg. Dávka 1 mg/kg může být pro vytvoření optimálních intubačních podmínek nedostatečná. Doporučeno je každopádně používání relaxometrie k monitorování nástupu účinku, protože proběhnutí fascikulací je nespolehlivou známkou nástupu plného efektu. Navíc v těhotenství je výskyt fascikulací nižší, nižší je ale i výskyt svalových bolestí po sukcinylcholinu. Podání prekurarizační dávky není doporučeno, protože může zpomalit nástup plného účinku sukcinylcholinu. Důvodů, proč u císařského řezu si udržel sukcinylcholin (na rozdíl od ostatní břišní chirurgie) svoje výsostné postavení, je několik. Tím prvním je nepochybně obrovská tradice jeho používání v této indikaci. A tím druhým je fakt, že při průměrné délce císařského řezu 25–40 minut je účinek alternativy, tj. rokuronium, příliš dlouhý. Přitom rokuronium je z mnoha důvodů výhodnější alternativou sukcinylcholinu. Rokuronium v dávce 1 mg/kg i u těhotných žen navozuje shodné intubační podmínky jako sukcinylcholin, a to v přijatelném čase pro apnoickou intubaci. Výhodou rokuronium ve srovnání se sukcinylcholinem je jeho příznivější farmakologický profil s méně nežádoucími účinky, ale především existence specifického antidota sugammadexu. V případě nezdařené intubace lze totiž podáním sugammadexu okamžitě a trvale antagonizovat efekt rokuronium s úplným odezněním relaxace v kratším čase, než je tomu po podání sukcinylcholinu. Víra, že spontánní odeznění účinku sukcinylcholinu v případě selhání intubace je dostatečně rychlé k včasnému obnovení spontánního dýchání, je totiž u těhotných žen s fyziologicky zvýšenou spotřebou kyslíku mylná. V této situaci se nabízí jasná otázka, zda rokuronium v dávce 1 mg/kg, které nabízí srovnatelné intubační podmínky se sukcinylcholinem, by v kombinaci se sugammadexem nemělo již sukcinylcholin i u císařského řezu nahradit.

Barbora Jindrová, Jan Kunstýř, Jan Bláha a kolektiv

Praktické postupy v anestezii

3., přepracované a doplněné vydání



Celková anestezie

Aktuální vyhodnocení rizika obtížnosti OTI, CAVE: piercing v oblasti úst!

Zkontrolovat okamžitou dostupnost vybavení pro alternativní zajištění DC, včetně funkční odsávačky.

U rodiček s těžší HT je vhodná redukce TK před úvodem do CA: pro rychlé snížení TK na OS lze použít především urapidil v dávce 10–20 mg à 5 min.

Preoxygenace/denitrogenace plic!

Úvod do CA: TP 5 mg/kg nebo propofol (2,5 mg/kg) + rokuronium 1 mg/kg (SCH 1,2–1,5 mg/kg).

Intubace za 50 sekund od podání relaxancia!

NE Sellickův manévr!

Zvaž:

- Při HT remifentanil 0,5–1 µg/kg.
- Při hypotenzi ketamin 0,5–1 mg/kg.
- Laryngoskop s flexitipem; ETK č. 7, event. se zavaděčem.
- Už po 1 nezdařilém pokusu o OTI jako první alternativu použít LM. Podstatná je oxygenace, nikoli intubace!

Anestezie do vybavení plodu: inhalace O₂ + vzduch + sevofluran 0,7% (zvaž N₂O jako analgetikum).

Relaxace: při OTI v SCH podat nedepolarizující svalové relaxans ihned po OTI (neprostupují placentou), např. atrakurium 15–25 mg.

Anestezie po vybavení plodu: sufentanil bolus 30–50 µg, sevofluran zvýšit na 1,0 MAC nebo dle potřeby. A dále standardní postup pro CA.



Změna standardu CA u císařského řezu:

- *thiopental 5 mg/kg*
- *rokuronium 0,6/1 mg.kg⁻¹*
+ sugammadex
- *zvaž remifentanil 1 µg/kg*



Prodýchání maskou u sekce... ? ... A PROČ NE?

Facemask Ventilation during Induction of Anesthesia
How “Gentle” Is “Gentle” Enough?

Shiroh Isono, M.D., Ph.D., Matthias Eikermann, M.D., Ph.D., Takeo Odaka, M.D., Ph.D.

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

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

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 New York Lying-In Hospital from 1932 to 1945.

Am J Obstet Gynecol 1945;49:554-66.

Table 7 Reported incidence of aspiration in obstetric and 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 <i>et al.</i> [2]	2643	Obstetric; Caesarean section; intubated	0.15% [4]
Olsson <i>et al.</i> [2]	111 215	General surgery; nonintubated	0.018% [20]
Olsson <i>et al.</i> [2]	74 143	General surgery; intubated	0.085% [63]
Cohen <i>et al.</i> [5]	112 000	General surgery; intubated and nonintubated	0.064% [72]
Kallar [6]	529 150	Outpatients; intubated and nonintubated	0.017% [90]
Warner <i>et al.</i> [4]	13 427	General surgery; emergency	0.112% [15]
Warner <i>et al.</i> [4]	202 061	General surgery; elective	0.0257% [52]

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

Anaesthesia, 1993, Volume 48, pages 53-57

Forum

An evaluation of gastric emptying times in pregnancy and the puerperium

E. M. Whitehead,* BSc, FFARCS, Research Registrar, M. Smith,† MB, BS, FFARCS, Y. Dean, MB, BS, FRCA, Senior Registrars, G. O'Sullivan, MD, FFARCS, Consultant Anaesthetist, St Thomas' Hospital, Lambeth Palace Road, London SE1 7EH.

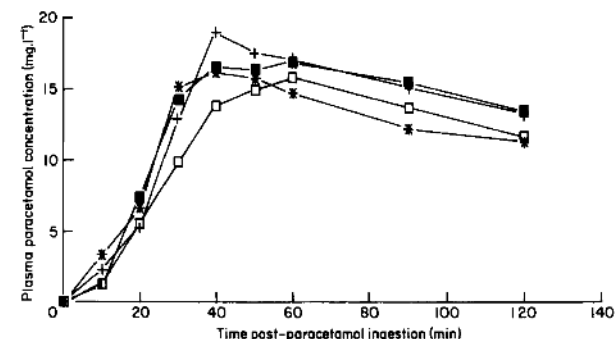


Fig. 1. Plasma paracetamol concentration vs time postparacetamol ingestion for the control (■), first (+), second (*) and third (□) trimester groups. Plasma paracetamol concentrations are expressed as median values.

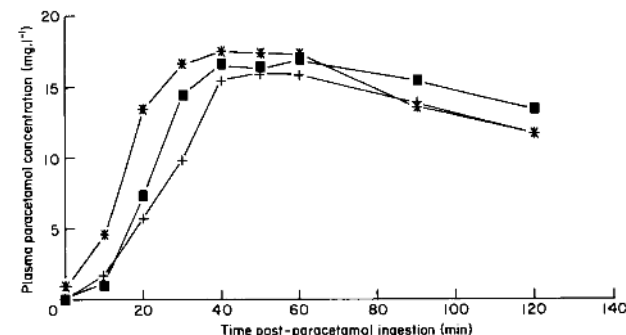


Fig. 2. Plasma paracetamol concentration vs time postparacetamol ingestion for the control group (■) and 30 females during the third trimester of pregnancy (+) and postdelivery between 18 and 48 h (*). Plasma paracetamol concentrations are expressed as median values.

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)

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 New York Lying-In Hospital from 1932 to 1945.

Am J Obstet Gynecol 1945;49:554–66.

Table 7 Reported incidence of aspiration in obstetric and 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 <i>et al.</i> [2]	2643	Obstetric; Caesarean section; intubated	0.15% [4]
Olsson <i>et al.</i> [2]	111 215	General surgery; nonintubated	0.018% [20]
Olsson <i>et al.</i> [2]	74 143	General surgery; intubated	0.085% [63]
Cohen <i>et al.</i> [5]	112 000	General surgery; intubated and nonintubated	0.064% [72]
Kallar [6]	529 150	Outpatients; intubated and nonintubated	0.017% [90]
Warner <i>et al.</i> [4]	13 427	General surgery; emergency	0.112% [15]
Warner <i>et al.</i> [4]	202 061	General surgery; elective	0.0257% [52]

Ezri *et al.* Anaesthesia 2000; 55:421–426



Table 1. Lower Esophageal Sphincter, Intra gastric, 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*
Intra gastric 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.



The NEW ENGLAND JOURNAL of MEDICINE

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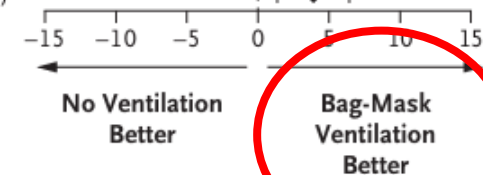
Bag-Mask Ventilation during Tracheal Intubation of Critically Ill Adults

Jonathan D. Casey, M.D., David R. Janz, M.D., Derek W. Russell, M.D., Derek J. Vonderhaar, M.D., Aaron M. Joffe, D.O., Kevin M. Dischert, M.D., Ryan M. Brown, M.D., Aline N. Zouk, M.D., Swati Gulati, M.B., B.S., Brent E. Heideman, M.D., Michael G. Lester, M.D., Alexandra H. Toporek, M.D., Itay Bentov, M.D., Ph.D., Wesley H. Self, M.D., Todd W. Rice, M.D., and Matthew W. Semler, M.D., for the PreVent Investigators and the Pragmatic Critical Care Research Group*

Table 3. Outcomes of Tracheal Intubation.

Outcome	Bag-Mask Ventilation (N=199)	No Ventilation (N=202)	Relative Risk or Mean Difference (95% CI)
Primary: median lowest oxygen saturation (IQR) — %*	96 (87–99)	93 (81–99)	3.9 (1.4 to 6.5)†
Secondary: lowest oxygen saturation of <80% — no./total no. (%)	21/193 (10.9)	45/197 (22.8)	0.48 (0.30 to 0.77)
Exploratory safety outcomes			
Operator-reported aspiration — no. (%)	5 (2.5)	8 (4.0)	0.63 (0.21 to 1.91)
New opacity on chest radiography — no./total no. (%)	31/189 (16.4)	29/196 (14.8)	1.11 (0.70 to 1.77)
New pneumothorax — no./total no. (%)	2/189 (1.1)	6/196 (3.1)	0.34 (0.07 to 1.66)
New vasopressor after induction — no./total no. (%)	39/196 (19.9)	46/199 (23.1)	0.86 (0.59 to 1.26)
New systolic blood pressure of <65 mm Hg — no./total no. (%)	8/195 (4.1)	17/197 (8.6)	0.48 (0.21 to 1.08)
Cardiac arrest within 1 hr after intubation — no. (%)	2 (1.0)	4 (2.0)	0.51 (0.09 to 2.74)

Subgroup	Bag-Mask Ventilation median lowest Spo_2 % (IQR)	No Ventilation median lowest Spo_2 % (IQR)	Mean Difference in Lowest Spo_2 (percentage points)	P Value for Interaction
Body-mass index				0.56
<30	96 (89–99)	93 (82–100)		
≥30	95 (83–99)	93 (77–97)		
Neuromuscular blockade				0.27
Nondepolarizing	95 (86–99)	93 (80–98)		
Depolarizing	98 (90–100)	93 (81–99)		
Laryngoscopy				0.70
Direct	96 (89–99)	95 (81–99)		
Video	96 (86–99)	92 (80–97)		
Indication for intubation				0.11
Hypoxemia	92 (83–98)	91 (80–97)		
Other indication	99 (95–100)	96 (82–100)		
Spo_2 at induction				0.01
<97%	89 (83–94)	82 (71–92)		
≥97%	98 (92–100)	96 (87–100)		
	96 (87–99)	93 (81–99)		



Real-time Detection of Gastric Insufflation Related to Facemask Pressure-controlled Ventilation Using Ultrasonography of the Antrum and Epigastric Auscultation in Nonparalyzed Patients

A Prospective, Randomized, Double-blind Study

Lionel Bouvet, M.D., Marie-Laure Albert, M.D., Caroline Augris, M.D., Emmanuel Boselli, M.D., Ph.D., René Ecochard, M.D., Ph.D., Muriel Rabilloud, M.D., Ph.D., Dominique Chassard, M.D., Ph.D., Bernard Allaouchiche, M.D., Ph.D.

ABSTRACT

Background: The authors sought to determine the level of inspiratory pressure minimizing the risk of gastric insufflation while providing adequate pulmonary ventilation. The primary endpoint was the increase in incidence of gastric insufflation detected by ultrasonography of the antrum while inspiratory pressure for facemask pressure-controlled ventilation increased from 10 to 25 cm H₂O.

Methods: In this prospective, randomized, double-blind study, patients were allocated to one of the four groups (P10, P15, P20, and P25) defined by the inspiratory pressure applied during controlled-pressure ventilation: 10, 15, 20, and 25 cm H₂O. Anesthesia was induced using propofol and remifentanyl; no neuromuscular-blocking agent was administered. Once loss of eyelash reflex occurred, facemask ventilation was started for a 2-min period while gastric insufflation was detected by auscultation and by real-time ultrasonography of the antrum. The cross-sectional antral area was measured using ultrasonography before and after facemask ventilation. Respiratory parameters were recorded.

Results: Sixty-seven patients were analyzed. The authors registered statistically significant increases in incidences of gastric insufflation with inspiratory pressure, from 0% (group P10) to 41% (group P25) according to auscultation, and from 19 to 59% according to ultrasonography. In groups P20 and P25, detection of gastric insufflation by ultrasonography was associated with a statistically significant increase in the antral area. Lung ventilation was insufficient for group P10.

Conclusion: Inspiratory pressure of 15 cm H₂O allowed for reduced occurrence of gastric insufflation with proper lung ventilation during induction of anesthesia with remifentanyl and propofol in nonparalyzed and nonobese patients. (ANESTHESIOLOGY 2014; 120:XX-XX)

Table 3. Probability (95% CI) of Absence of Gastric Insufflation and Probability of Acceptable Facemask Ventilation According to the Applied Peak Airway Pressure

Peak Airway Pressure (cm H ₂ O)	Probability of No Gastric Insufflation (%)		Probability of Hypoventilation (%)	Probability of Too High Tidal Volume (%)	Probability of Acceptable Ventilation (%)
	According to Auscultation	According to Real-time US			
10	100 (83–100)	81 (57–95)	75 (50–91)	7 (1–27)	19 (5–43)
15	88 (66–98)	65 (41–84)	12 (2–34)	24 (8–47)	65 (41–84)
20	59 (35–80)	47 (25–70)	6 (0–26)	59 (35–80)	35 (16–60)
25	59 (35–80)	41 (20–65)	0 (0–16)	100 (84–100)	0 (0–16)

US = ultrasonography.



Obstetric Anaesthetists' Association/Difficult Airway Society difficult and failed tracheal intubation guidelines – the way forward for the obstetric airway

M. C. Mushambi^{1,*} and S. M. Kinsella²

Box 1 Summary of important points and changes in obstetric airway management

- Gentle mask ventilation **with cricoid pressure** after administering induction agents is recommended.
- Cricoid pressure should be reduced or released if there is a poor view at laryngoscopy.
- Supraglottic airway device or facemask ventilation are valid first options after failed tracheal intubation. A second-generation supraglottic airway device is recommended.

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.¹⁻⁴ By a simple manœuvre during induction of anæsthesia, regurgitation 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. *Am. J. Obst. Gynec.* 1946, 52, 191.
3. Morton, H. J., Wylie, W. D. *Anæsthesia*, 1951, 4, 190.
4. Coleman, D. J., Davies, B. J. *Lancet*, 1956, 1, 706.
5. Coleman, D. J., Morton, H. J., Wylie, W. D. *Anæsthesia*, 1956, 11, 194.
6. Edwards, G. *Morton, H. J., Wylie, W. D. Anæsthesia*, 1956, 11, 194.
7. *Lancet*, 1946, 1, 734.
8. *Rep. Publ. Hlth Med Subj. Lond.* no. 97, 1957.
9. *Rep. Publ. Hlth Med Subj. Lond.* no. 97, 1957.
10. *Rep. 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

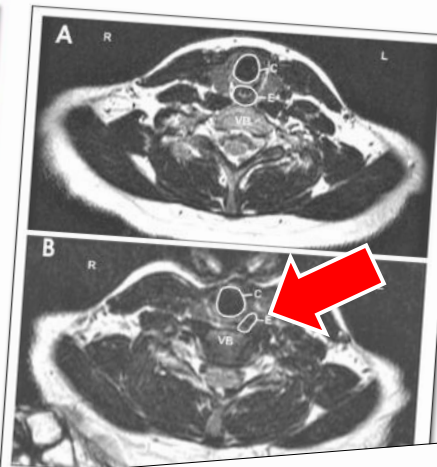
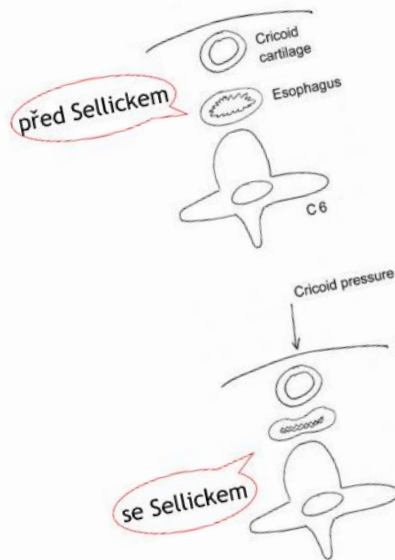
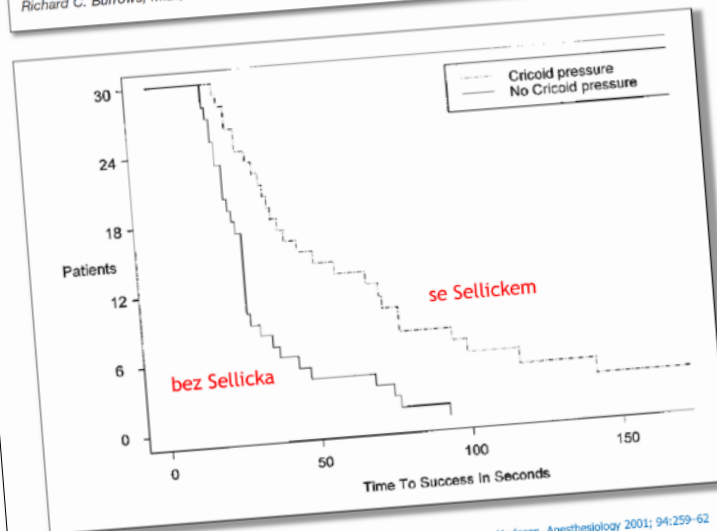


Fig. 3. Cricoid pressure demonstrated on the left side of the larynx.

Smith KJ et al. *Anesthesiology* 2003; 99: 154-158
Rice et al. *Anesth Analg* 2009; 109: 154-158
Haslam et al. *Anaesthesia* 2005; 60: 413-418

Effect of Cricoid Pressure on the Success of Endotracheal Intubation with a Lightwand

R. Eric Hodgson, M.B., Ch.B.(Hons.), F.C.A.(S.A.)(Crit. Care),* P. Dean Gopalan, M.B., Ch.B., F.C.A.(S.A.),* Richard C. Burrows, M.B., Ch.B., F.C.A.(S.A.)(Crit. Care),† Khangelani Zuma, M.Sc.‡



Hodgson. *Anesthesiology* 2001; 94: 259-62



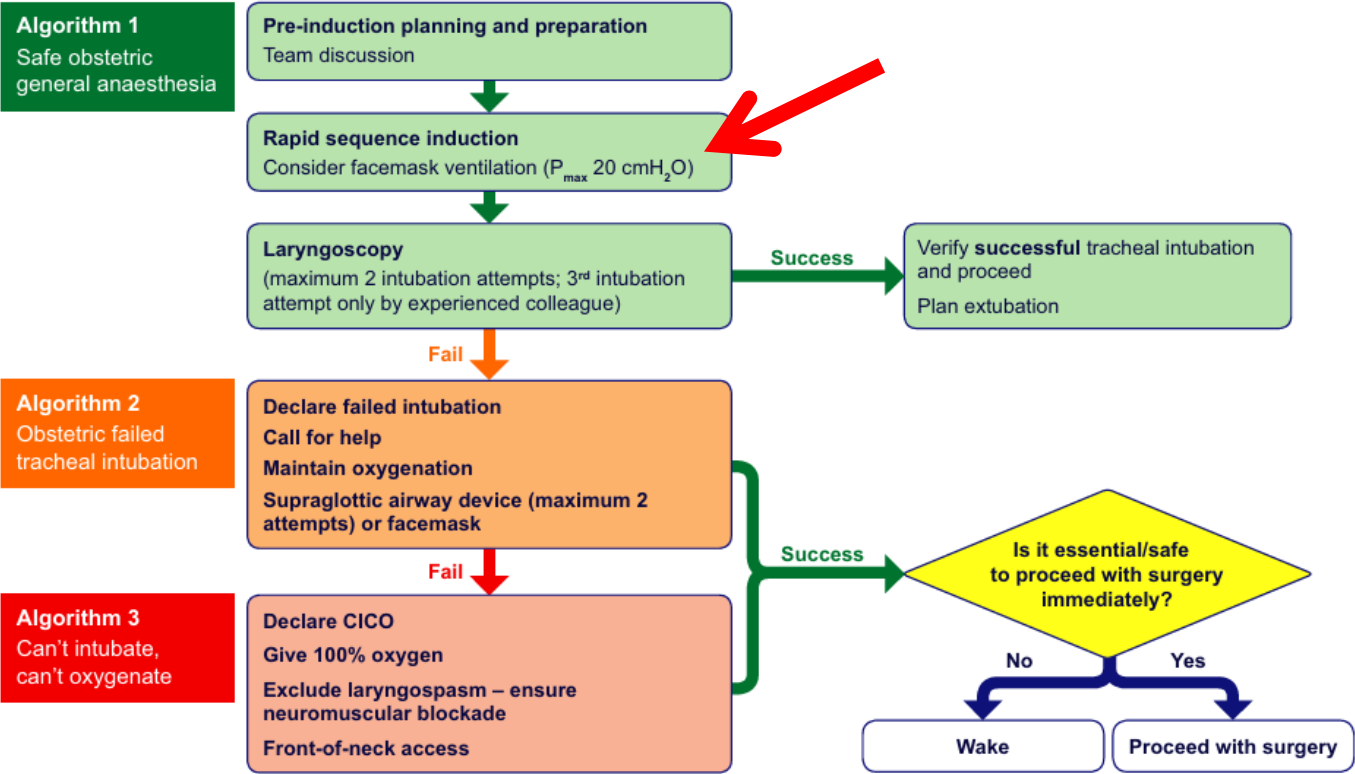
Guidelines

Obstetric Anaesthetists' Association and Difficult Airway Society guidelines for the management of difficult and failed tracheal intubation in obstetrics*

M. C. Mushambi,¹ S. M. Kinsella,² M. Popat,³ H. Swales,⁴ K. K. Ramaswamy,⁵ A. L. Winton⁶ and A. C. Quinn^{7,8}



Master algorithm – obstetric general anaesthesia and failed tracheal intubation



Consider facemask ventilation: Mask ventilation before laryngoscopy has generally been avoided during rapid sequence induction for fear of gastric insufflation and increasing the risk of regurgitation [104], but this should not occur with correctly applied cricoid pressure and using low peak ventilatory pressures [105, 106]. Currently, gentle bag/facemask ventilation (maximal inflation pressure < 20 cmH₂O) is recommended after administration of induction drugs during rapid sequence induction as it can reduce oxygen desaturation [104], and may allow an estimation of the likelihood of successful bag–facemask ventilation should it be required during prolonged or failed intubation attempts.



No a co ta larmaska... ?



Second-Generation Supraglottic Airway Devices Versus Endotracheal Intubation in Adults Undergoing Abdominopelvic Surgery: A Systematic Review and Meta-Analysis

Clístenes Crístian de Carvalho, PhD,* Ioannis Kapsokalyvas, MSc,† and Kariem El-Boghdadly, MSc ‡§

■ META-ANALYSIS

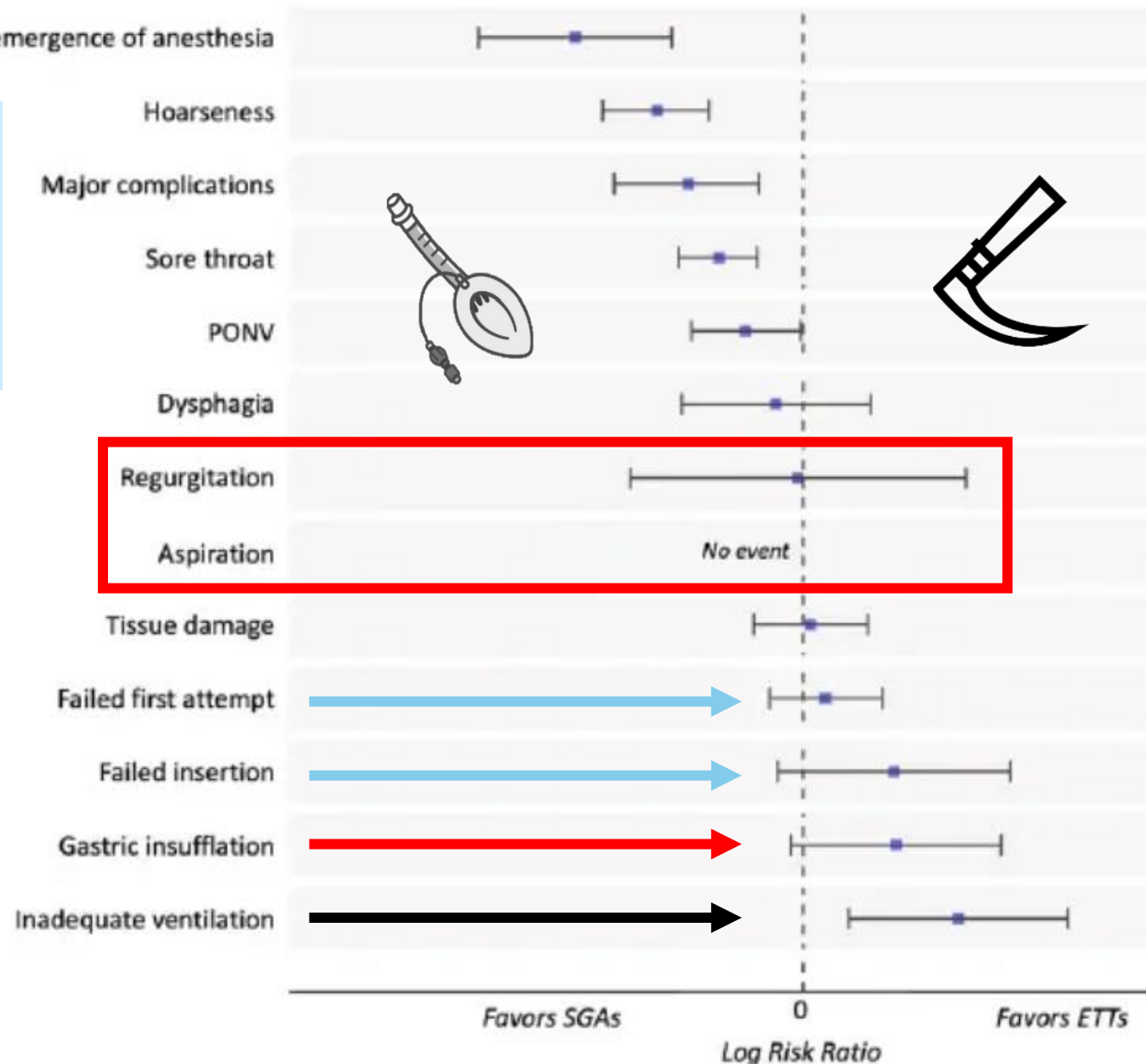
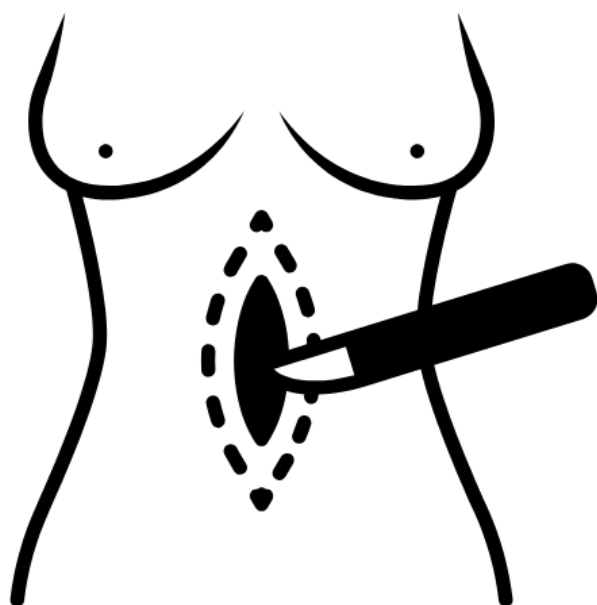


Figure 4. Forest plot with the summarized risk ratios (95% CI) from the pairwise analyses comparing second-generation supraglottic airway devices with endotracheal tubes for 9 outcomes in adults aged ≥ 16 y undergoing abdominopelvic procedures under general anesthesia. It was not possible to perform meta-analysis for pulmonary aspiration as there was no event available. CI indicates confidence interval.

Systematic Review and Meta-Analysis

Supraglottic airway devices versus endotracheal intubation for laparoscopic surgeries: An updated systematic review and meta-analysis of randomised controlled trials

Tushar Kumar, Bharati¹, Saurabh Suman¹, Sanjay Kumar², Gaurav Acharya³, Ladhu Lakra⁴

Departments of Anaesthesiology- Trauma, ¹Anaesthesiology – Superspeciality and ⁴Anaesthesiology, Rajendra Institute of Medical Sciences, Ranchi, ²Department of Anaesthesiology, All India Institute of Medical Sciences, Deoghar, Jharkhand, ³Department of Anaesthesiology, BMHRC, Bhopal, Madhya Pradesh, India



Forest Plot showing various airway complications

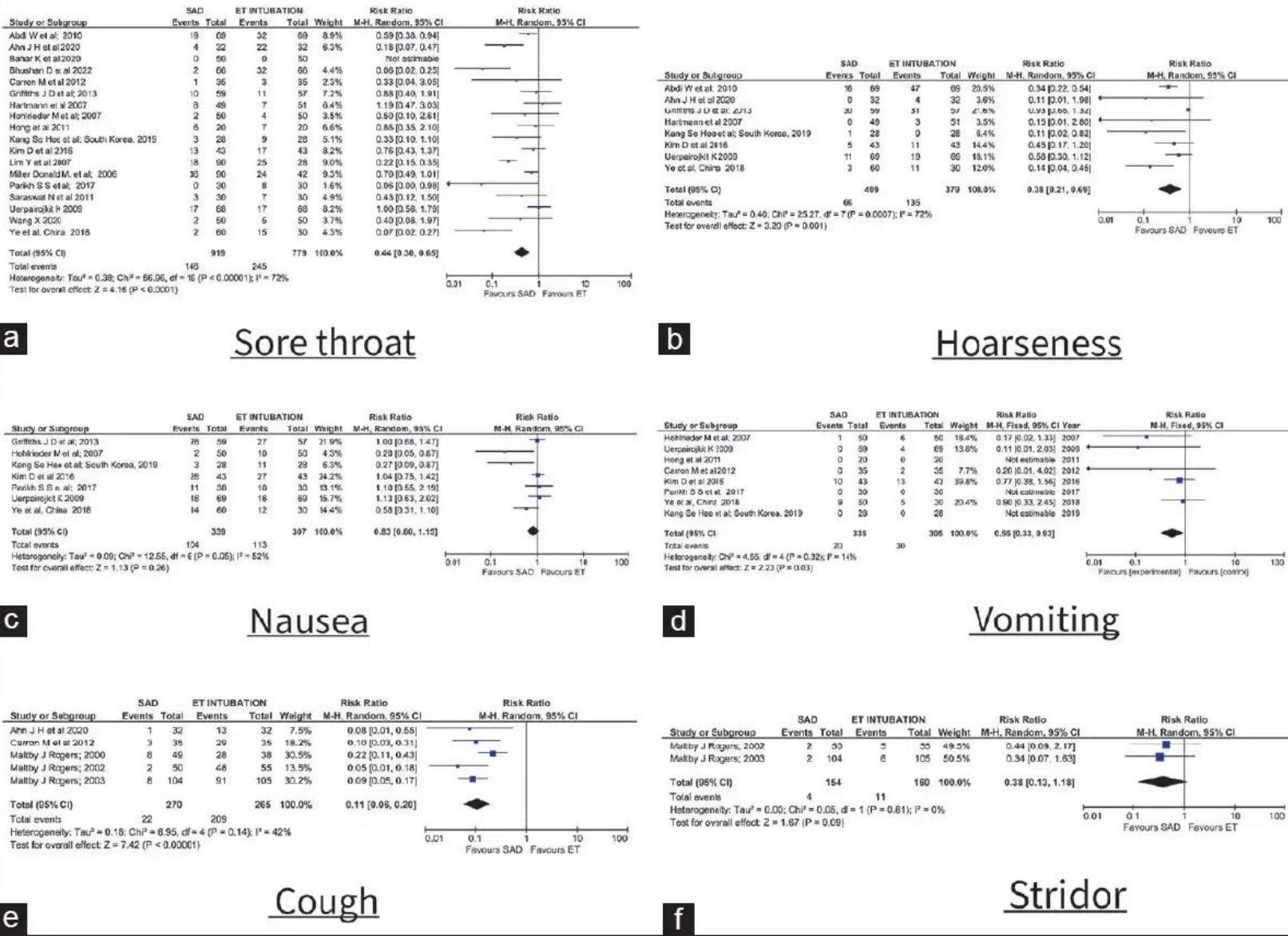


Figure 3: Forest plot for various airway related complications with supraglottic airway devices and endotracheal intubation

Comparison between supraglottic airway devices and endotracheal tubes in patients undergoing laparoscopic surgery

A systematic review and meta-analysis

Sun Kyung Park, MD, PhD^a, Geum Ko, MD^b, Geun Joo Choi, MD, PhD^c, Eun Jin Ahn, MD, PhD^d, Hyun Kang, MD, PhD, MPH^{e,*}

Abstract

Results: In total, 1433 patients from 17 studies were included in the final analysis. SGAs and ETTs showed no difference in insertion success rate on the first attempt (relative risk [RR] 1.01, 95% confidence interval [CI] 0.99–1.03), insertion time (standardized mean difference 1.57, 95% CI –3.74 to 0.61), and oropharyngeal leak pressure (OLP) (mean difference –2.54, 95% CI –7.59 to 2.50). The incidence of desaturation (RR 3.65, 95% CI 1.39–9.62), gastric insufflations (RR 0.90, 95% CI 0.48–1.71), regurgitation (RR 0.98, 95% CI 0.02–49.13), and aspiration (RR 0.99, 95% CI 0.01–78.4) also showed no intergroup differences. However, the incidence of laryngospasm (RR 3.12, 95% CI 1.29–7.52), cough at removal (RR 6.68, 95% CI 4.70–9.48), dysphagia (RR 1.47, 95% CI 1.12–1.95) or dysphonia (RR 4.41, 95% CI 1.25–15.55), sore throat (RR 1.60, 95% CI 1.33–1.93), and hoarseness (RR 1.53, 95% CI 1.29–1.81) was higher in the ETT group than in the SGA group.

Conclusions: The incidence of laryngospasm, cough at removal, dysphagia or dysphonia, sore throat, and hoarseness were higher in the ETT group than in the SGA group. However, the groups showed no differences in the rate of insertion success on the first attempt, insertion time, OLP, and other complications. Therefore, SGAs might be clinically more useful as effective airways in laparoscopic surgery.

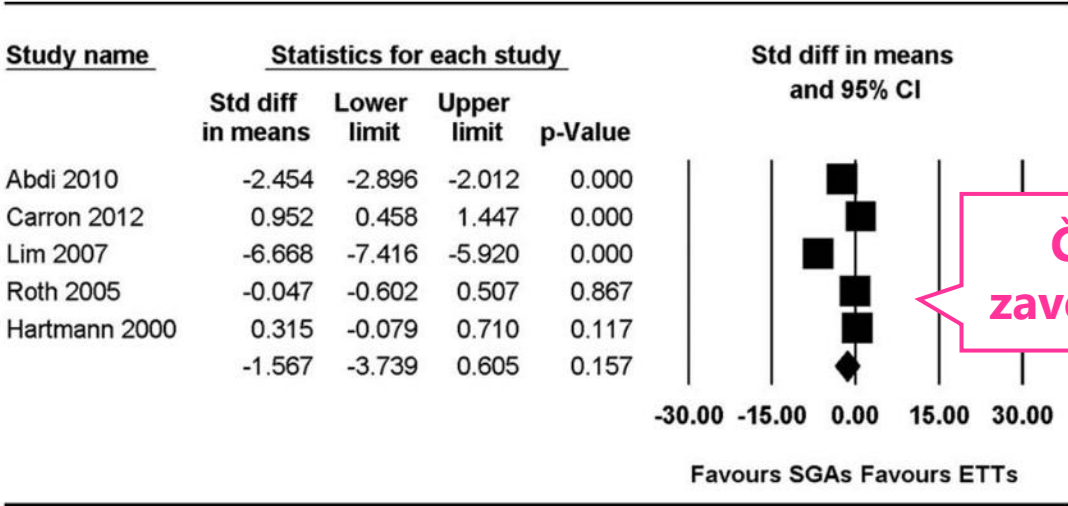


Figure 2. Forest plot showing the device insertion time.

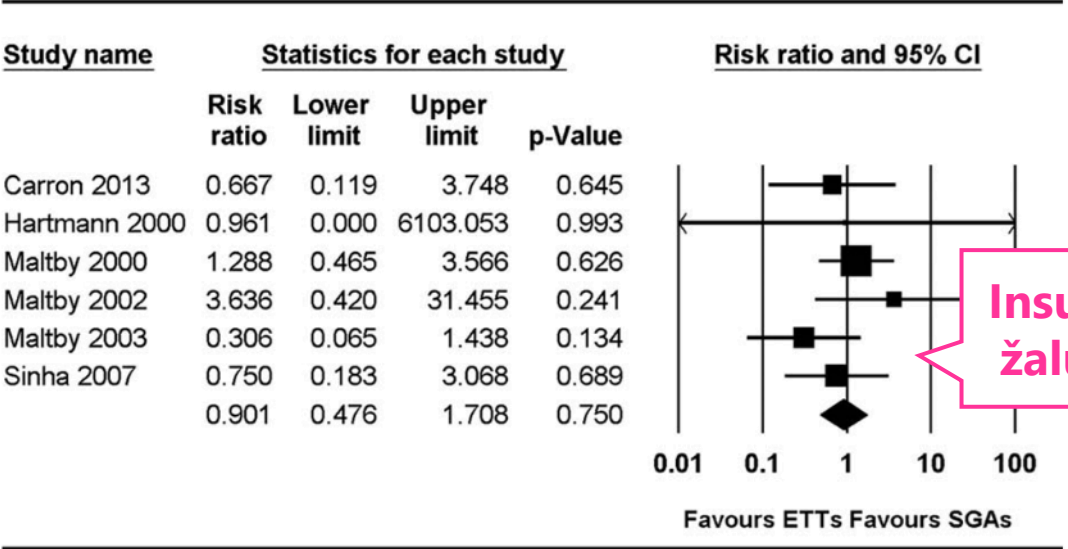


Figure 5. Forest plot showing gastric insufflation.

ORIGINAL ARTICLE

The role of supraglottic airway devices for caesarean section under general anaesthesia. A scoping literature review with a proposed algorithm for the appropriate use of supraglottic airway devices for caesarean sections

Urvi Sanganeer*, Karen Jansen*, Nuala Lucas and Marc Van de Velde



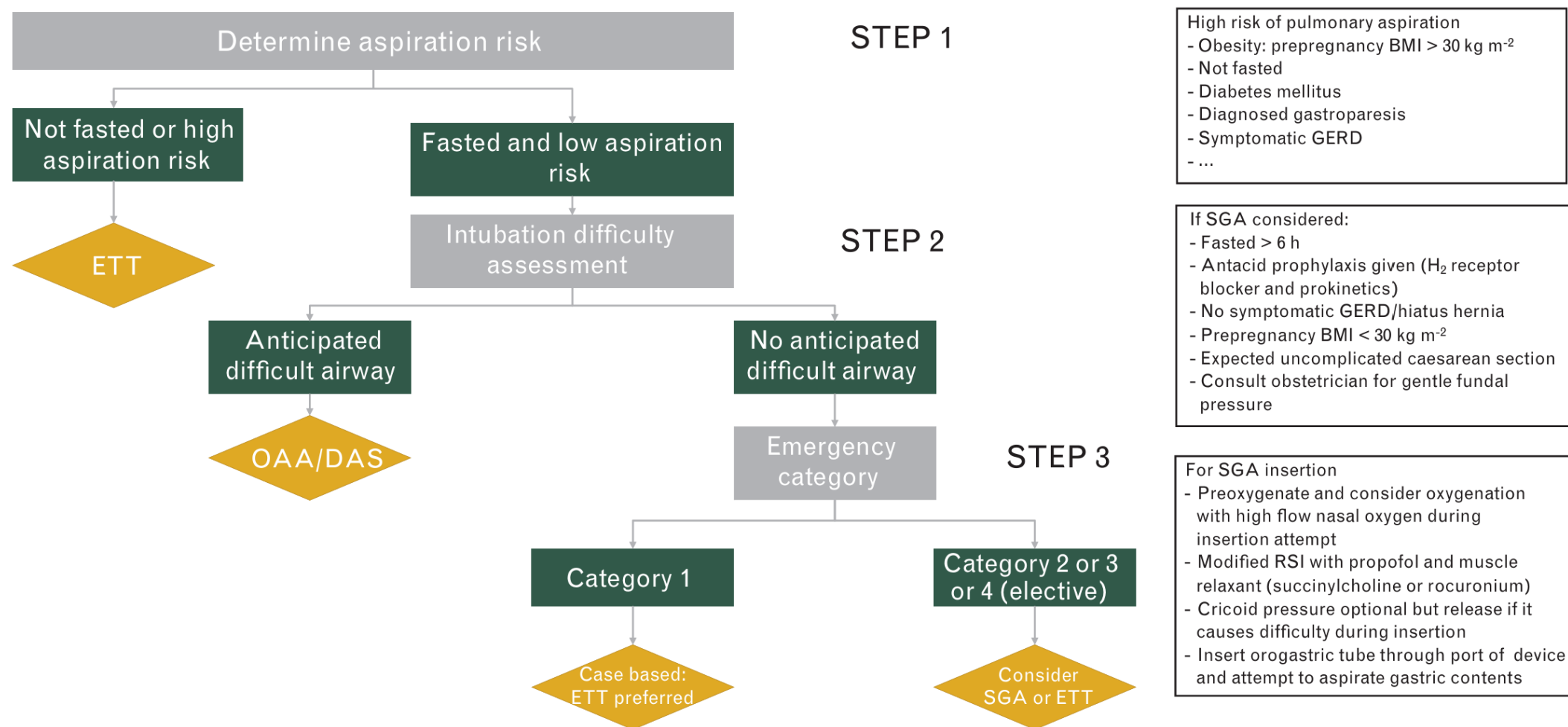
KEY POINTS

- In selected low-risk patients, second-generation supraglottic airway devices seem to be well tolerated
- Growing evidence suggests that a second-generation supraglottic airway device can be used in selected patients as the primary method for securing the airway for caesarean sections requiring general anaesthesia.

Evidence ukazuje, že u vybraných rodiček může být LMA 2. generace použita jako primární volba

Kdo je v tomto případě „selected“ rodička?

Fig. 2 Algorithm to guide the use of a supraglottic airway device in parturients.



ETT, endotracheal tube; GERD, gastro-oesophageal reflux disease; OAA/DAS, Obstetric Anaesthesia Association/Difficult Airway Society; SGA, Supraglottic airway.

Comparison of Supraglottic Airway Devices With Endotracheal Intubation in Low-Risk Patients for Cesarean Delivery: Systematic Review and Meta-analysis

Leigh D. White, MBBS,*† Christopher Thang, MD, BE,*† Anthony Hodsdon, MBBS,‡§
Thomas M. Melhuish, MBBS,||¶ Fiona A. Barron, MBChB, FANZCA,†
M. Guy Godsall, MBBS, BChemEng, BSc, FANZCA, MclinTres,† and Ruan Vlok, MBBS#**

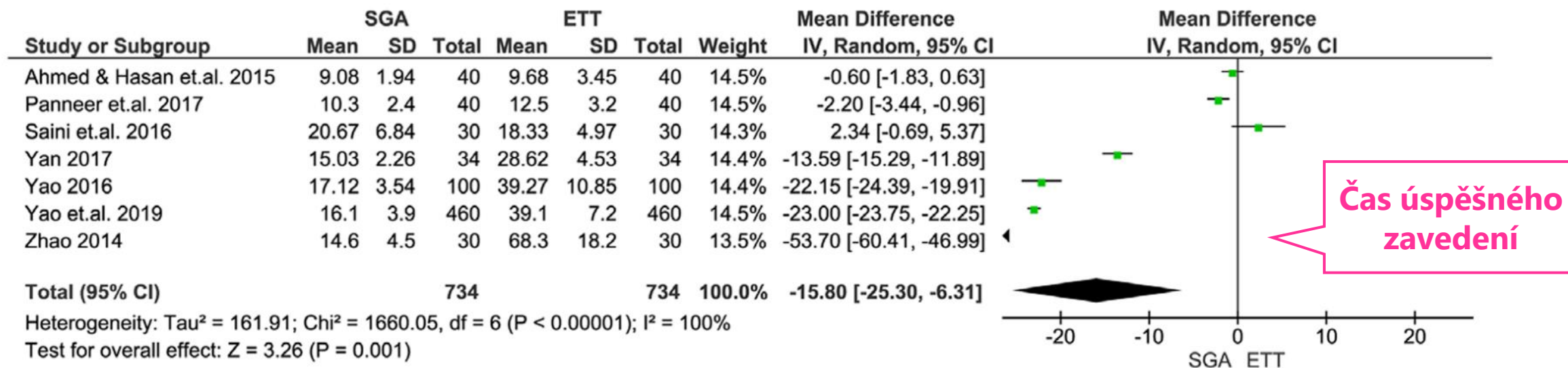


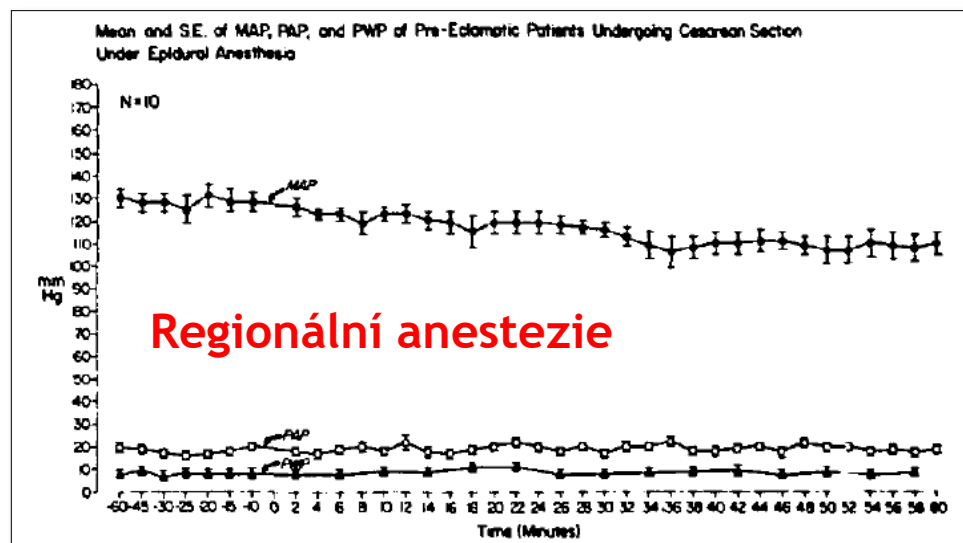
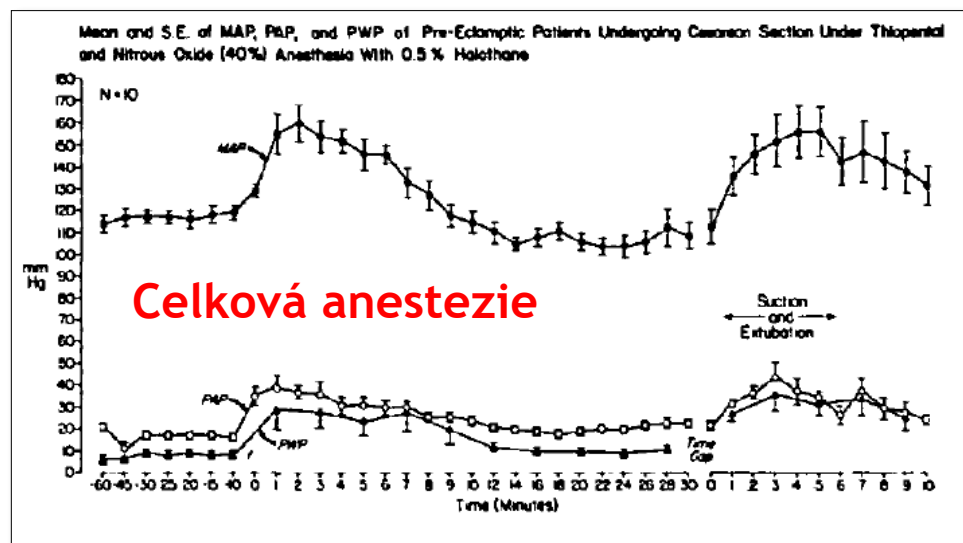
Figure 4. Time to successful insertion with SGA versus endotracheal tube intubation. CI indicates confidence interval; ETT, endotracheal intubation; IV, inverse variance; SD, standard deviation; SGA, supraglottic airway.

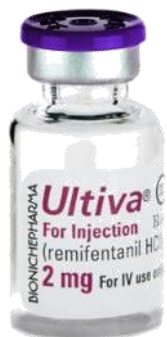


COŽE ???

Sufenta před vybavením plodu...?







remifentaniol 1 µg/kg před úvodem do celkové anestezie

Noskova et al. *BMC Anesthesiology* (2015) 15:38
DOI 10.1186/s12871-015-0020-1



RESEARCH ARTICLE

Open Access

Neonatal effect of remifentanyl in general anaesthesia for caesarean section: a randomized trial

Pavlina Noskova^{1†}, Jan Blaha^{1†}, Hana Bakhouch², Jana Kubatova¹, Jitka Ulrichova¹, Patricia Marusicova¹, Jan Smisek³, Antonin Parizek⁴, Ondrej Slana² and Pavel Michalek¹

Abstract

Background: Remifentanyl has been suggested for its short duration of action to replace standard opioids for induction of general anaesthesia in caesarean section. While the stabilizing effect of remifentanyl on maternal circulation has been confirmed, its effect on postnatal adaptation remains unclear, as currently published studies are not powered sufficiently to detect any clinical effect of remifentanyl on the newborn.

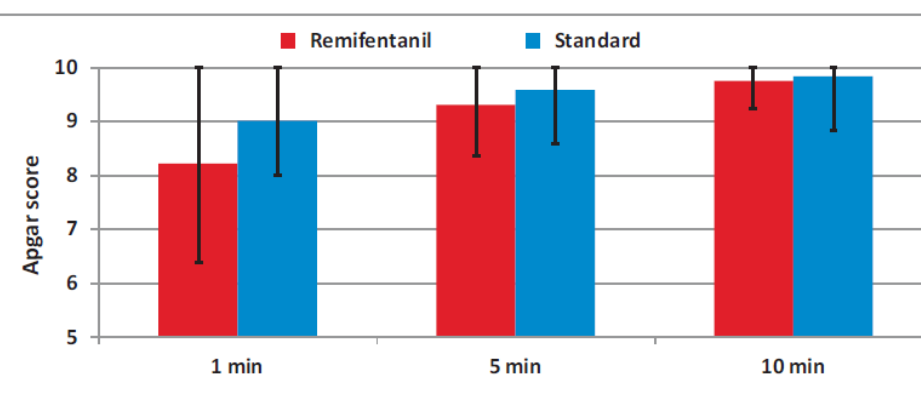
Methods: Using a double-blinded randomized design, a total of 151 parturients undergoing caesarean delivery under general anaesthesia were randomized into two groups – 76 patients received a bolus of remifentanyl prior to induction, while 75 patients were assigned to the control group. Remifentanyl 1 µg/kg was administered 30 seconds before the standard induction of general anaesthesia. The primary outcome measure was an assessment of neonatal adaptation using the Apgar score, while secondary outcomes included the need for respiratory support after delivery and differences in umbilical blood gas analysis (Astrup).

Results: The incidence of lower Apgar scores between 0 and 7 was significantly higher in the remifentanyl group at one minute (25% vs. 9.3% of newborns, $p = 0.017$); whilst at five minutes and later no Apgar score differences were observed. There was no difference in the need for moderate (nasal CPAP) or intensive (intubation) respiratory support, but significantly more neonates in the remifentanyl group required tactile stimulation for breathing support (21% vs. 7% of newborns, $p = 0.017$). There was no difference in the parameters from umbilical cord blood gas analysis between the groups.

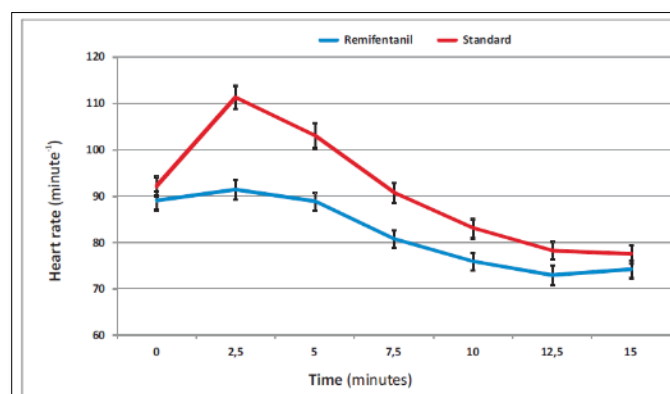
Conclusion: At a dose of 1 µg/kg, remifentanyl prior to induction of general anaesthesia increases the risk of neonatal respiratory depression during first minutes after caesarean delivery but duration of clinical symptoms is short.

Trial registration: ClinicalTrials.gov: NCT01550640.

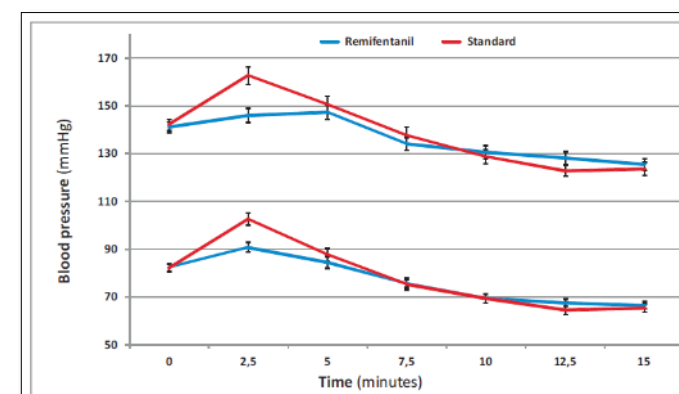
Keywords: Remifentanyl, Neonatal effect, General anaesthesia, Caesarean delivery



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



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



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

@ruthi_landau

Statement on the Use of Adjuvant Medications and Management of Intraoperative Pain During Cesarean Delivery



American Society of
Anesthesiologists

IV adjuvant medication (analgesics & anxiolytics)

- 1st line for pain during cesarean delivery: short-acting opioids
- remifentanyl (20mcg boluses or 0.05 - 0.1 mcg/kg/min infusion)
 - alfentanil (250-500mcg boluses, max dose < 10 mcg/kg before delivery)
 - fentanyl (25-50mcg boluses, max dose < 1.5 mcg/kg before delivery)



- 2nd line for pain during cesarean delivery:
- ketamine (10mg boluses, max dose < 1 mg/kg)
 - dexmedetomidine (10mcg boluses, 0.5 mcg/kg loading dose over 10 min $\pm$ 0.5 – 1 mcg/kg/h infusion) - provides both maternal analgesia and anxiolysis

For anxiety during cesarean delivery:

- midazolam (0.01 – 0.02 mg/kg)
- dexmedetomidine (10mcg boluses, 0.5 mcg/kg loading dose over 10 min $\pm$ 0.5 – 1 mcg/kg/h infusion) -
- propofol infusion (25-50 mcg/kg/min) may provide anxiolysis; respiratory monitoring (EtCO₂) required.

Patients should be able to converse, thus avoiding deep sedation.



2024-12-06 12:2

Neuraxial anesthesia and pain management for cesarean delivery

Ruth Landau, MD; Pervez Sultan, MBChB, FRCA, MD (Res)

Supplemental intravenous medication

For pain

- 1st line – opioids
- 2nd line- ketamine, dexmedetomidine

For anxiety

- Midazolam, dexmedetomidine

Supplemental inhalational medication

- Nitrous oxide (not particularly effective)
- Sevoflurane is **usually restricted to patients with a secured airway**

Failed spinal anesthesia for cesarean delivery: prevention, identification and management

Thierry Girard^a and Georges L. Savoldelli^b

Table 3. Management of intraoperative pain

If the patient says she is in pain, believe her

Repeat boluses of fast acting opioids might relieve the pain

Hypnotic agents should be used cautiously and in conjunction with fast acting opioids

first line treatment should consist of repeated intravenous boluses of fast acting opioids, such as remifentanyl (20 µg), alfentanil (250–500 µg) or **fentanyl (25–50 µg)** since they alleviate intraoperative pain.

Statement on the Use of Adjuvant Medications and Management of Intraoperative Pain During Cesarean Delivery

Developed by: Committee on Obstetric Anesthesia

Original Approval: October 23, 2024



American Society of
Anesthesiologists®

- Manage pain with analgesic medications.
 - Short-acting opioids are recommended for the first-line management of pain during cesarean delivery.²⁸ The efficacy of systemic opioid analgesia and incidence of maternal side effects (sedation, nausea, pruritis, and respiratory depression) are largely dose-, rather than drug-dependent. All opioids cross the placenta and are associated with a risk of neonatal respiratory depression and neurobehavioral changes.²⁹ The most appropriate opioids for analgesia during cesarean delivery have a quick onset and short duration of action.
 - Remifentanyl (20 mcg boluses or 0.05 - 0.1 mcg/kg/min infusion)²⁹⁻³¹
 - Alfentanil (250 to 500 mcg boluses, maximum cumulative dose < 10 mcg/kg prior to delivery of the fetus)²⁹
 - Fentanyl (25 to 50 mcg boluses, maximum cumulative dose < 1.5 mcg/kg prior to delivery of the fetus)^{29,33}

Best
Practices

Review Article

Best practice in obstetric general anaesthesia: an umbrella review of pharmacological strategies for induction of general anaesthesia

Robert Craig,  Amelia Carnachan, Kay A. Mak, Olivia Beesley, Lauren Borg Xuereb, James E. O’Carroll,  Sohail Bampoe,  Nuala Lucas  and Peter M. Odor 

Table 1 Summary of findings for induction opioid medications. Effect sizes are mean difference or odds ratio.

Induction opioid	Type of evidence	Number of studies	Number of patients		Effect (95%CI)	Certainty of evidence
			Opioid	Control		
Remifentanil vs. control						
Mean 1 min Apgar	Meta-analysis	2 (5 RCTs)[8, 9];	218	217	MD -0.27 (-0.74 to 0.19)	⊕⊕⊕○ Moderate ^{C,D}
			178	177	MD -0.84 (-1.52 to -0.15)	
Mean 5 min Apgar	Systematic review	1 [10]	-	-		
	Meta-analysis	2 (5 RCTs)[8]; (5 RCTs)[9]	218	217	MD -0.19 (-0.40 to 0.02)	⊕⊕⊕○ Moderate ^{C,D}
			178	177	MD -0.30 (-0.570 to -0.021)	
1 min Apgar score < 7	Systematic review	1 [10]	-	-		
	Meta-analysis	1 (3 RCTs)[10]	61	61	OR 1.51 (0.75–3.02)	⊕○○○ Very Low ^{A,D}
5 min Apgar score < 7	Meta-analysis	1 (3 RCTs)[10]	61	61	OR 1.52 (0.43–5.32)	⊕○○○ Very Low ^{A,D}
	RCT	1 [11]	27	25	OR 0.66 (0.20–2.18)	
Fentanyl vs. control						
Mean 1 min Apgar score	Meta-analysis	1 (3 RCTs)[8]	105	105	MD -0.02 (-0.30–0.26)	⊕⊕○○ Low ^{A,D}
Mean 5 min Apgar score	Meta-analysis	1 (3 RCTs)[8]	105	105	MD -0.20 (-0.33 to -0.08)	⊕⊕○○ Low ^{A,D}

RCT, randomised controlled trial; MD, mean difference; OR, odds ratio.
A, downgraded for number of patients; B, downgraded for risk of bias (study quality); C, downgraded for heterogeneity; D, downgraded for risk of bias (review quality).

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Spinální anestezie a hypotenze rodičky: základní patofyziologie a stanovisko mezioborové pracovní skupiny k jejímu řešení

Bláha J.¹, Heřman H.², Kacerovský M.³, Koucký M.⁴, Lukšová M.⁴, Nosková P.¹, Nguyenová Q. G.¹, Pařízek A.^{4,5}, Seidlová D.⁵, Straňák Z.², Štourač P.^{6,7}

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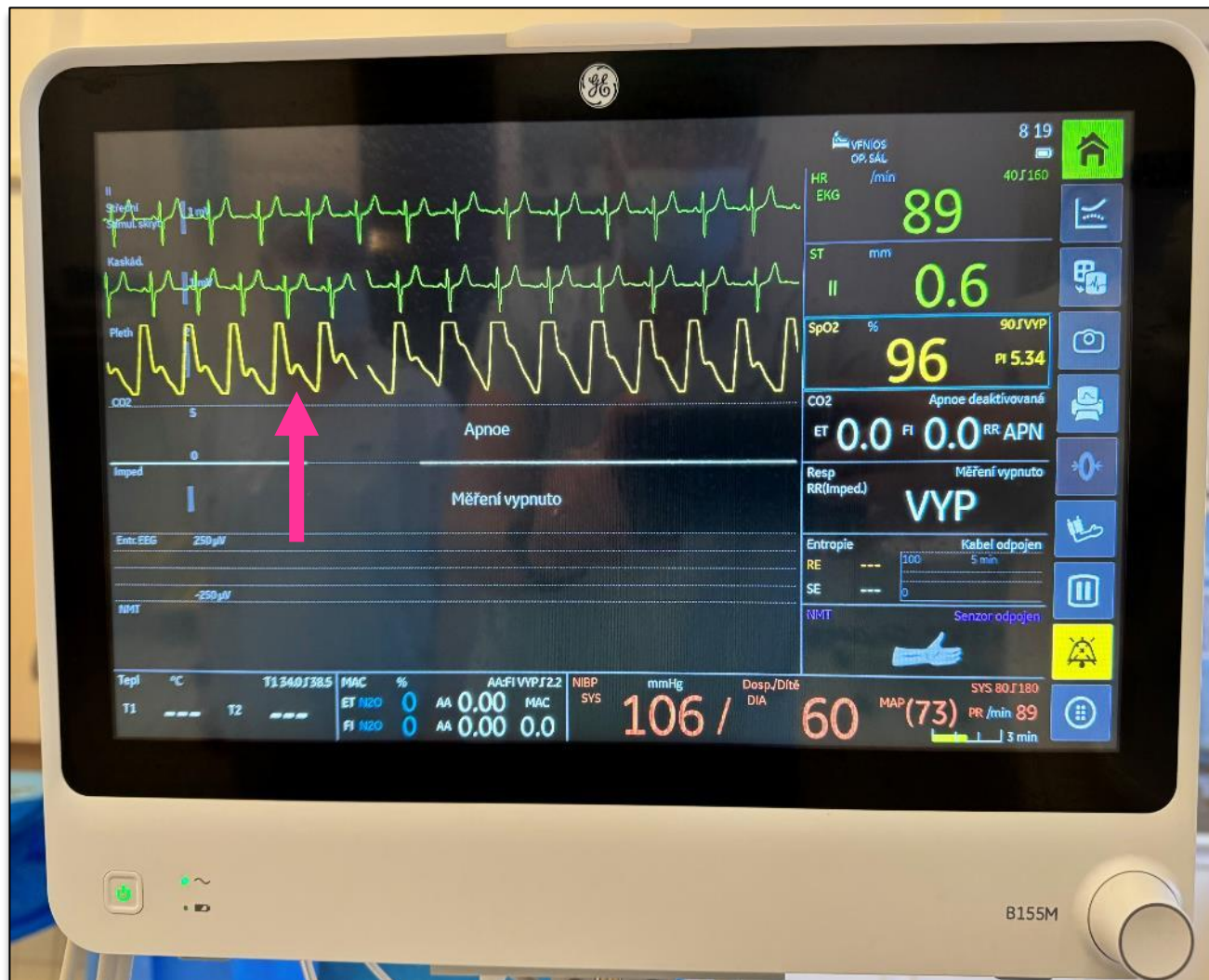
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KROMĚ MĚ ...

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Everybody lies.

HOUSE MD