LOCAL ANAESTHESIA IN FIRST TRIMESTER SURGICAL ABORTION

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FIAPAC
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Disclosures

- none

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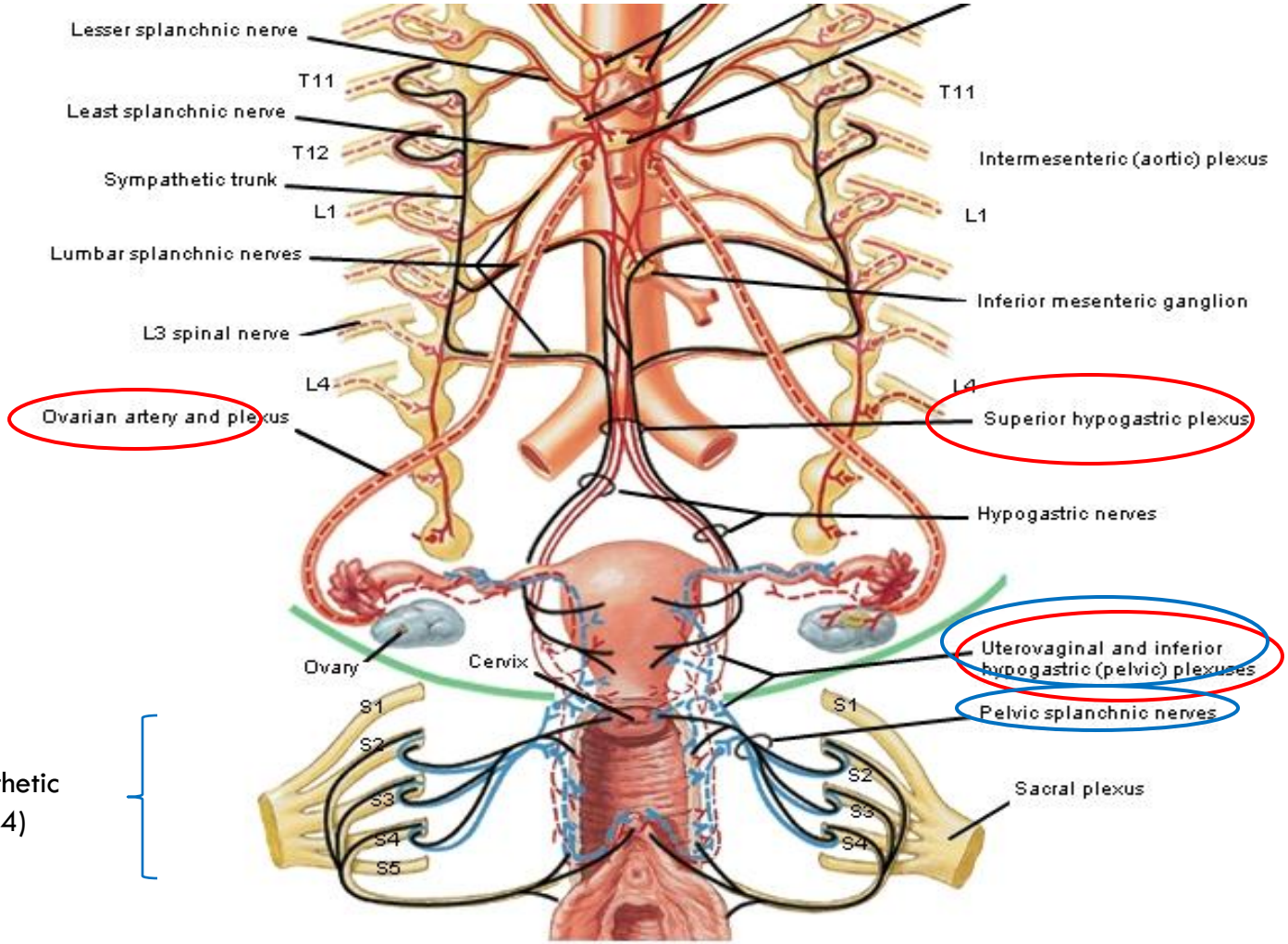
Objectives

- Provide an introduction to pain pathways
- Provide background regarding local anesthesia
- Present current research on local anesthesia options

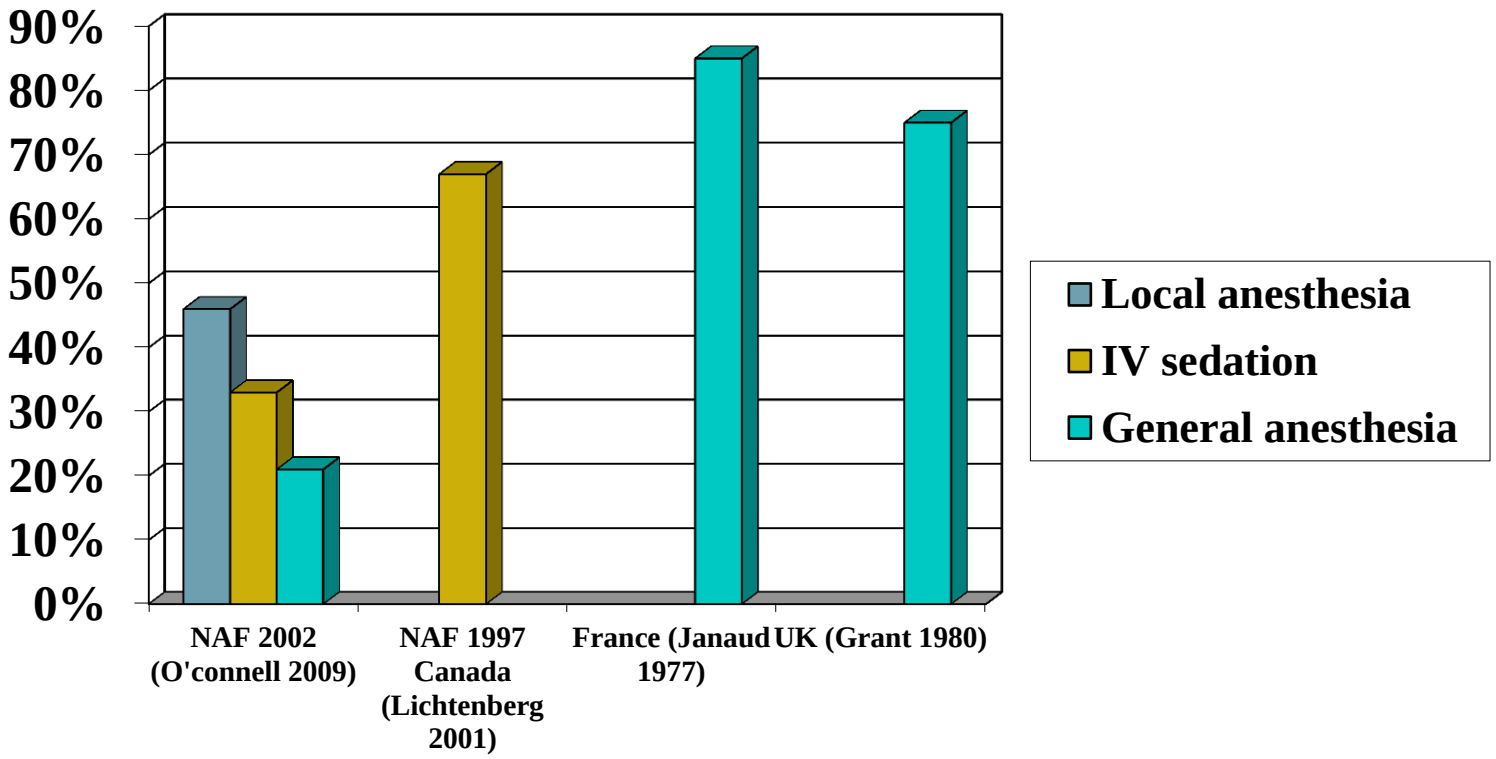
Anatomy of Nerves to Internal Pelvic Organs

Sympathetic System (T10-L1)



Parasympathetic System (S2-4)

Anesthesia types: 1st trimester surgical



[1]O'Connell *Contraception* 79(5):385-92, 2009. [2]Lichtenberg *Contraception* 64:345-52, [3]Janaud 1977; [4]Grant *Br J Anaesth 52(8):711-3*,1980.

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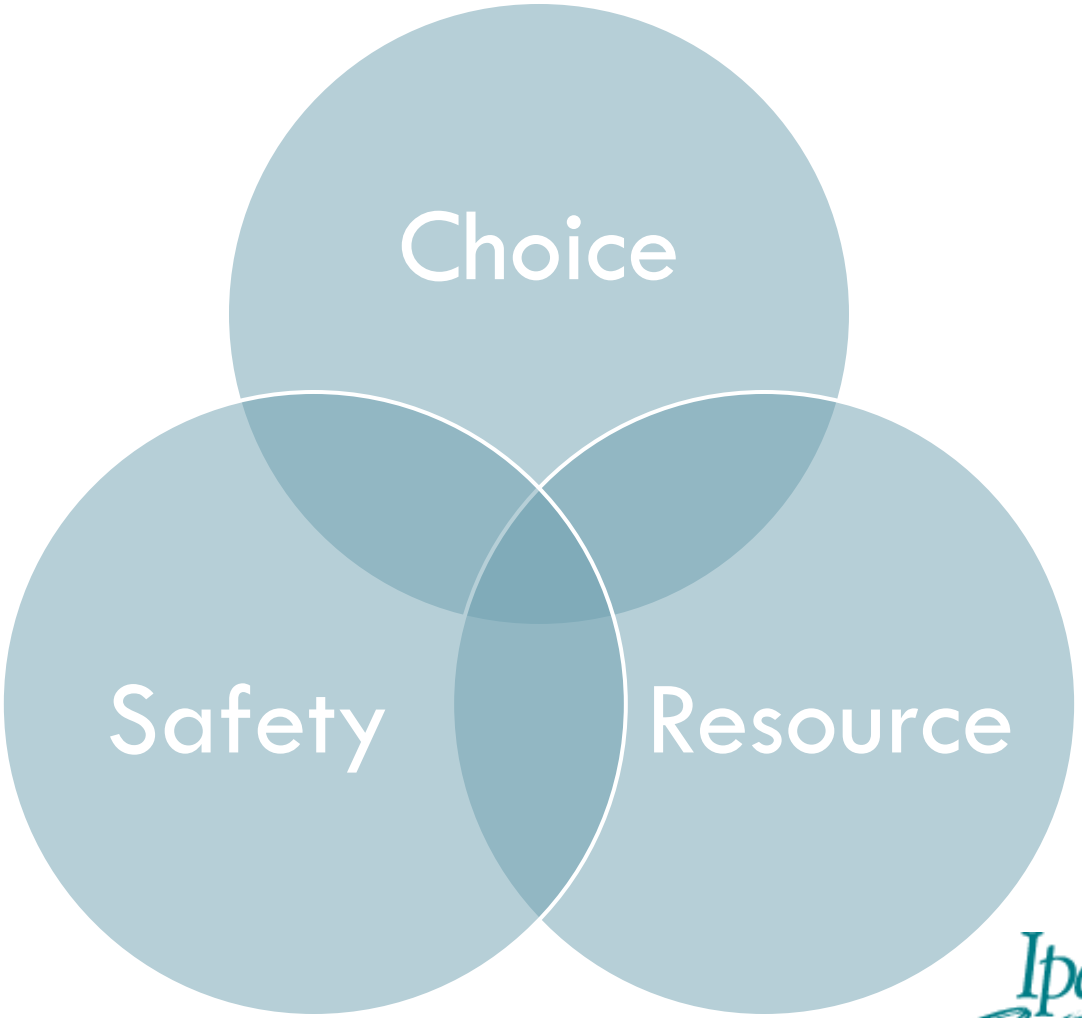

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Epidemiology

- Complications
  - Unsafe abortion responsible for 13% of maternal deaths worldwide, or 47,000 per year[1]
  - Mortality in North America 0.7/100,000[2]
  - Anesthesia-related events account for 16% of deaths[2]
  - Conflicting data regarding safety of local in comparison to general anesthesia[3-6]

[1]Guttmacher *www.guttmacher.org/pubs/fb/ IAW.pdf* 2011. [2]Bartlett *Obstet Gynecol* 103(4): 729-37, 2004. [3]Hakim-Elahi *Obstet Gynecol 76*(1): 129-35, 1990. [4]Grimes *Am J Obstet Gynecol* 135(8): 1030-5, 1979. [5]RCOG 2004. [6]WHO 2012

Morbidity and Mortality from Local

- Side effects:
  - Lightheadedness, tinnitus, circumoral tingling, and metallic taste in the mouth
  - Seizures, cardiac effects and allergic reactions are rare
- Lidocaine dose for healthy women:
  - Not to exceed 4.5mg/kg (2 mg/lb) → 300mg/150lbs
  - 200mg = 20mL 1% solution for PCB in pregnancy per drug label[1] over 90min period
  - 7mg/kg if epinephrine added
- Most morbidity and mortality related to doses exceeding 300mg[2-4]

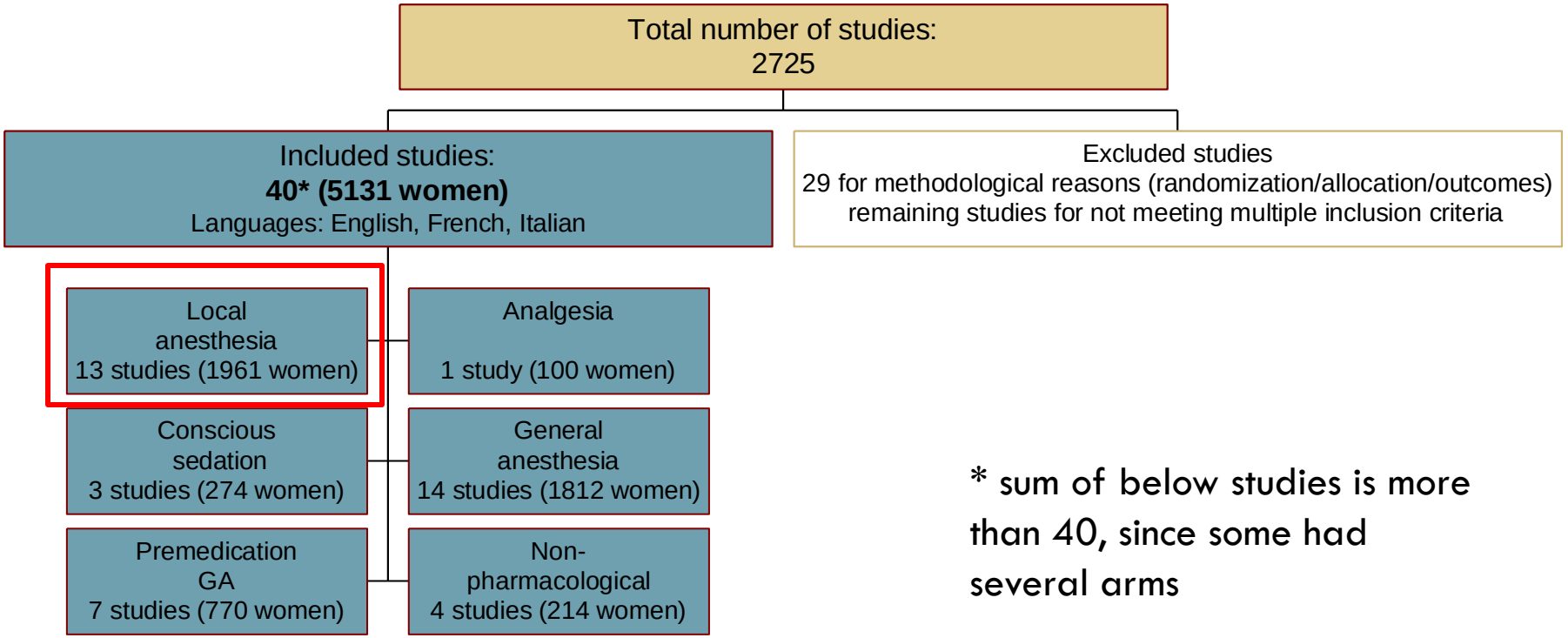
[1]*Physician Desk Reference,* 2008. [2]Hakim-Elahi *Obstet Gynecol* 76(1):129-35 ,1990, [3]Grimes *N Engl J Med* 295(25):1397-9,1976. [4]Berger *Am J Obstet Gynecol* 118(8):1142-3,1974

Approach to side effects of local

- Aspirate before injection of local anesthesia or inject while moving the needle[1]
- Side effects (tingling) usually resolve within a few minutes
- Seizure:
  - Differential: seizure dz vs. local anesthetic toxicity vs airway obstruction
  - Management: supportive, benzodiazepine (midazolam)

[1]Nichols *Management of unintended and abnormal pregnancy* chapter 8:103-6, 2009

Search results

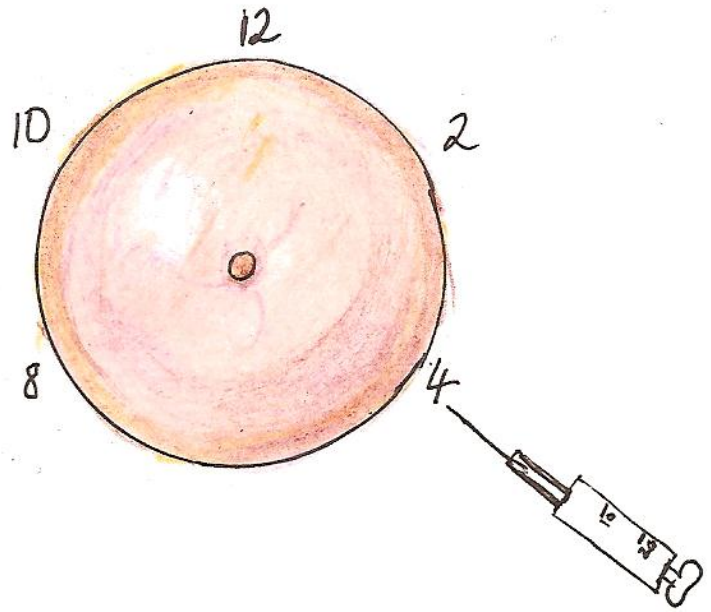


* sum of below studies is more than 40, since some had several arms

Renner *Cochrane Database of Systematic Reviews*, Issue 2, 2009

Paracervical block for aspiration abortion

- Numerous techniques described
- Varying features:
  - Sites
  - Depth
  - Type of anesthetic
  - Waiting
  - Speed of injection
  - Adjuncts



Renner *Cochrane Database of Systematic Reviews*, Issue 2, 2009

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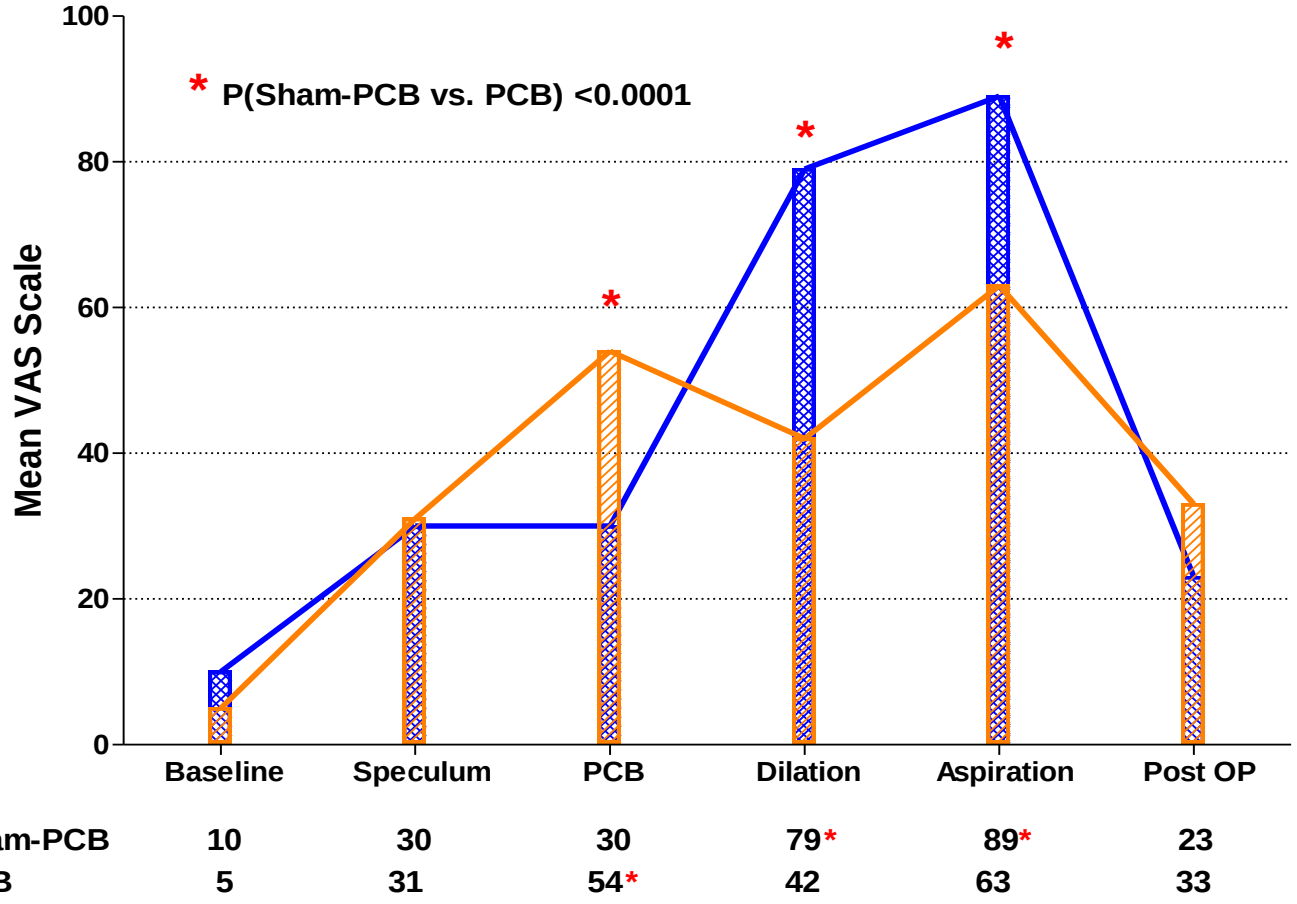
Results: Local anesthetics

Local anesthesia				weighted mean difference		
	Treatment	**Control**	**Notes, co-treatments**	**Dilation**	**Aspiration**	**Post-op**
Paracervical block (PCB) v no treatment						
Kan 2004 (n=89)	Lignocaine 1%	No treatment	10 mL, 2 sites (4, 8 o'clock), 2.5 cm deep, Co-treatment: conscious sedation. Misoprostol. Dilation was started 5 min after conscious sedation and 2 min after the PCB. Also other active arm; only medians reported.	ns	ns	ns
Renner 2012 (n=120)	Lidocaine 1%	Sham PCB	20mL, 4 sites (2,4,8,10 o'clock), 2.5cm deep. Dilation started 3min after PCB. Co-treatment: 800mg po ibuprofen, 1-2mg po lorazepam.	-3.7	-2.6	1.0
Owalabi (2005) (n=317)	1. **Cervical** block 10mL 1% lignocaine and diclofenac 75mg IM 2. **Cervical** 10mL + **PCB** 5mL 1% lignocaine and diclofenac	Diclofenac 75mg IM 30 min preop	Gestational age: **up to 16 weeks'** (average gestational age 10.7 weeks'),	Less with local anesthesia (p<0.001), group 1vs2 ns	Less with local anesthesia (p<0.001), group 1vs2 ns	

Pain scores



Renner *Obstet Gynecol* 2012 (accepted for publication)

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Results: Local anesthetics

Local anesthesia				weighted mean difference		
	Treatment	Control	Notes, co-treatments	PCB administration	Aspiration	Post-op
Local anesthetics						
Paracervical block (PCB) v placebo						
Glantz 2001 (n=38)	Chloroprocaine 1%	Bacteriostatic saline (0.9% benzyl alcohol)	14 mL, 2 sites (4, 8 o'clock). Three min wait between PCB and dilation.	-0.5 (pain with PCB) ns	-1.5 ns	-1.9
Glantz 2001 (n=41)	Chloroprocaine 1%	Bacteriostatic saline (0.9% benzyl alcohol)	14 mL, 4 sites (3, 5, 7, 9 o'clock). Three min wait between PCB and dilation.	-1.3 (pain with PCB)	-1.7	-1.3 ns

Various local anesthetics

Various local anesthetics

	Treatment	Control	Notes, co-treatments	Dilation	Aspiration	Post-op
Wiebe 1992 (n=167)	Carbonated lidocaine 2%	Plain lidocaine 2%	10 mL, with 2 mg atropin/50 mL, No delay, 3 to 6 sites (12, 3, 6 or 12, 2, 4, 6, 8, 10 o'clock) 0.5 in. deep, no waiting. All participants: premedication with 1 mg lorazepam sublingual 30 min prior to procedure per patient request.	-0.8		-0.4
Wiebe 1995 (n=124)	Carbonated lidocaine 1%	Plain lidocaine 1%	20 mL, (10 mL injected in 4 to 6 sites around the cervix and 5 mL each between 3 and 4 o'clock and between 8 and 9 o'clock. 1in deep, no waiting. All participants: premedication with lorazepam 0.5-1 mg sublingual per patient request 30 minutes prior to procedure		-0.96	-0.05 ns
Wiebe 1996 (n=209)	Lidocaine 0.5%	Lidocaine 1%	20 mL. Some patients received preoperative laminaria, lorazepam or ibuprofen.		0.2 ns	
Wiebe 1995 (n=124)	1% lidocaine	0.25% bupivacaine	20mL, as in other groups		ns	

Various local anesthetics

Various local anesthetics						
	Treatment	**Control**	**Notes, co-treatments**	**Dilation**	**Aspiration**	**Post-op**
Agostini 2008 (n=114)	Ropivacaine	Lidocaine 1 with epinephrine%	PCB 20mL, 4 sites (12, 3, 6, 9 o'clock), 4mm deep, 4 minute wait prior to dilation. Misoprostol 200mcg vag 2h preop. Acetaminophen 1gm IV intraop		-1.05	-0.71 ns
Cansino 2009 (n=50)	1% lidocaine 18mL with ketorolac 2mL (30mg)	1% lidocaine 18mL with saline 2mL	PCB 20mL, 2 sites (4 and 8 o'clock) Co-management: ibuprofen 600mg po; lorazepam 2mg sl 90min preop	-1.5	0.28	-0.42

Local anesthesia technique

Local anesthesia				weighted mean difference	
	Treatment	**Control**	**Notes, co-treatments**	**Dilation**	**Aspiration**
Local anesthesia technique					
Depth of paracervical block					
Cetin 1997 (n=66)	Deep injection (1 mL superficially and 3 mL 3 cm deep at 4, 6, 8, and 10 o'clock position; total of 16 mL)	Regular injection (1.5 cm deep at same 4 positions)	16 mL 1% lidocaine. All participants: 5 mg oral diazepam 60 min prior to procedure if preprocedural anxiety of 6 or more (rated by physician not performing procedure). After 2-min wait, cervical dilation. Vacuum aspiration followed by sharp curette.	-0.8	-0.9
Wiebe 1992 (n=163)	Superficially to blanch the mucous membrane: 1 mL injected at 6 sites (12, 2, 4, 6, 8 and 10 o'clock). Then 3-4 mL injected 1 to 1.5 in deep at 4 sites (4, 6, 8, and 10 o'clock). Total of 20 mL 1% plain lidocaine with 1 mg atropin/50 mL.	0.5 in deep at the reflection of the vagina off the cervix. 3 to 6 sites (12, 3, 6 or 12, 2, 4, 6, 8, 10 o'clock). 10 mL 2% plain lidocaine with 2 mg atropin/50 mL.	No delay All participants: premedication with 1 mg lorazepam sublingual 30 min prior to procedure per patient request.	-2.4	-1.0

Local anesthesia technique

Local anesthesia				weighted mean difference			
	Treatment	**Control**	**Notes, co-treatments**	**Dilation**	**Aspiration**	**Post-op**	**Satisfaction**
Paracervical block 4 sites v 2 sites							
Glantz 2001 (n=41)	4 sites bacteriostatic saline (3, 5, 7, 9 o'clock)	2 sites bacteriostatic saline (4, 8 o'clock)	14 mL, also chloroprocaine in 2 groups. Three min wait between PCB and dilation.	0.8 (pain with PCB) ns	0.1 ns	-0.5 ns	
Glantz 2001 (n=38)	4 sites 1% chloroprocaine (3, 5, 7, 9 o'clock)	2 sites 1% chloroprocaine (4, 8 o'clock)	14 mL, also saline placebo in 2 groups. Three min wait between PCB and dilation.	0 (pain with PCB) ns	-0.1 ns	0.1 ns	
Waiting versus no waiting paracervical block							
Phair 2002 (n=194)	Waiting 3-5 min	No waiting	12 mL 1% buffered lidocaine at 12 (superficially, cervix), 4 and 8 o'clock (1-2 cm deep, paracervical). Co-treatment: fentanyl IV and or diazepam per patient request.	-0.7	-0.2 ns	-0.1 ns	1.58 ns
Slow versus fast injection paracervical block							
Wiebe 1995 (n=87)	Fast 30 s	Slow 60 s	Lidocaine 1%, 20 mL, no waiting. Factorial design. Outcome: pain with injection.	0.62 (pain with PCB)			

Intrauterine lidocaine

Local anesthesia				weighted mean difference			
	Treatment	**Control**	**Notes, co-treatments**	**Dilation**	**Aspiration**	**Post-op**	**Satisfaction**
Intrauterine infusion							
Edelman 2004 (n=80)	Lidocaine 10 mL, 1%	Saline placebo 10 mL	All participants: premedication with 800 mg ibuprofen, and if requested, 5 mg diazepam. Paracervical block with 10 mL of 1% lidocaine (1 mL 1% non-buffered lidocaine on the anterior and posterior lip of the cervix and then 4.5 mL of 1% lidocaine paracervical at the 4 and 8o'clock positions). Three min wait between intrauterine lidocaine and dilation. 100-mm VAS.	-0.3 ns	-0.4 ns	0.7 ns	-0.1 ns
Edelman 2006 (n=80)	Lidocaine 5 mL, 4%	Saline placebo 5 mL	Co treatment: ibuprofen 800 mg, cervical lidocaine 1% 10 mL, 4 sites, diazepam mg if requested. Three min wait between intrauterine lidocaine and dilation. 100 mm VAS.	-2	-2.8	-0.5 ns	0.5 ns

Cervical anesthesia

Local anesthesia				weighted mean difference		
	Treatment	Control	**Notes, co-treatments**	**Dilation**	Aspiration	**Post-op**
Li 2006 (n=131)	**Topical:** Lignocaine jelly 2% 3 mL applied to cervix, to dilator and speculum	Placebo gel	Co-treatment: All subjects: cervical priming with 400 mcg misoprostol prior to the procedure (1-2 h in multiparous, 3-5 h in nulliparous subjects). Premedication with 5 mg diazepam po and 1 mg/kg pethidine IM 15-30 min prior to the procedure. Rescue pain medication with pethidine repeat dose IM. One min wait between topical lignocaine and dilation.	-0.42 ns	-0.87	-0.51 marginal significance
Kan 2004 (n=89)	**Cervical**, 2 sites (4, 8 o'clock), 2.5 cm deep, Lignocaine 1%, 10 mL	No treatment	Co-treatment: All patients: 400 mcg misoprostol vaginally for cervical priming 3-6 h prior to the procedure. Conscious sedation with 2 mg midazolam and 25 mcg fentanyl IV. Dilation was started 5 min after conscious sedation and 2 min after the PCB. Pethidine IM as needed for additional analgesia. Small trial. Also other active arm. Only medians reported.	ns	ns	ns
Kan 2004 (n=90)	**Cervical** 2.5 cm deep	**Paracervical**, 2.5 cm deep	Lidocaine 1%, 10 mL , 2 sites (4, 8 o'clock) Co-treatment: conscious sedation (details see other arm). Small trial. Also no treatment arm. Only medians reported.	ns	ns	ns
Mankowski 2009 (n=120)	**Cervical** 4 sites (12,3,6,9 o'clock), 1inch deep	**Paracervical** 4 sites (3,5,7 and 9 o'clock), 5/8 inch deep	20mL 1% buffered lidocaine with vasopressin Co-treatment: ibuprofen 800mg po, conscious sedation	ns	ns	

Paracervical block with premedication

Local anesthesia				weighted mean difference		
	Treatment	**Control**	**Number of participants, notes, co-treatments**	**Dilation**	**Aspiration**	**Post-op**
Wiebe 1995 (n=193)	Ibuprofen 600mg po	Placebo	600 mg ibuprofen 30 min prior to procedure Co-treatment: PCB with 20 mL 1% lidocaine (10 mL injected in 4 to 6 sites around the cervix. All participants: premedication with lorazepam 0.5-1 mg sublingual per patient request 30 min prior to procedure.		-0.78	-0.93
Wiebe 2003 (n=104)	**Lorazepam** 1 mg po	Placebo	All participants received PCB.		ns	
Suprapto 1975 (n=92)	Naproxen 550 mg po	Placebo	Naproxen or placebo 1-2 h preoperatively. All participants received PCB. Only the graphs with mean pain scores were presented in the article.		*p<=0.001	*p<=0.0001
Micks 2012	Acetaminophen/codeine	placebo	Co-treatment: PCB with 20mL 1% lidocaine, 4sites, deep, 3min wait prior to dilation	ns	ns	ns

* Unable to obtain data to calculate weighted mean difference. P values extracted from the study

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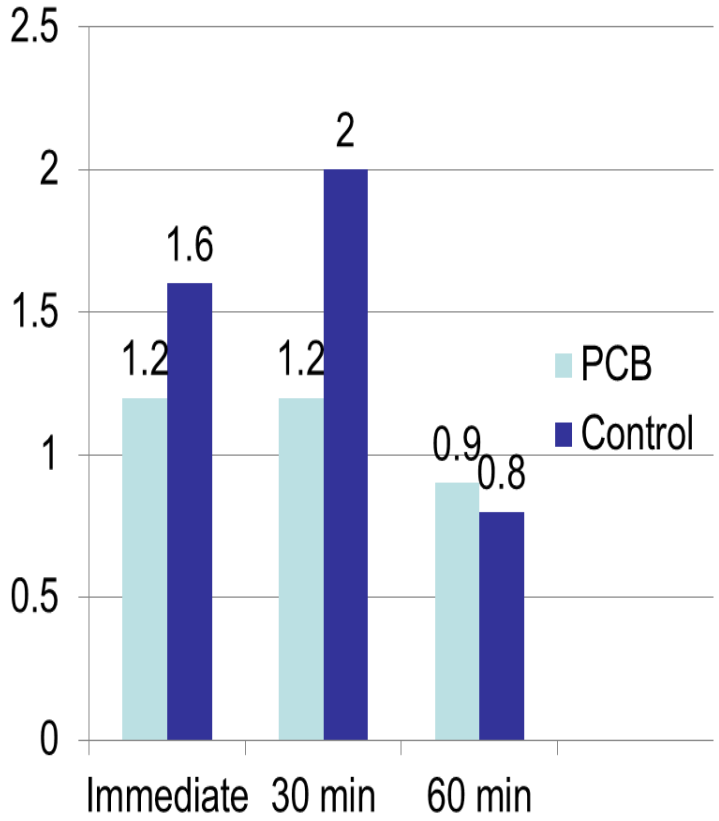
Deep IV Sedation: General Anesthesia +/- PCB

- GA + PCB vs. GA alone (n=72)
  - GA at discretion of anesthesia
  - PCB 10 mL bupivacaine
  - Powered to detect 2 point difference
  - No difference in postop pain scores
  - Similar to Hall et al. 1997



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Lazenby et al. Contraception 2009.

Conclusions: local anesthesia

- Efficacy of paracervical block (PCB) supported
  - 20ml, 1% buffered lidocaine, 4 sites, slow and deep injection, 3 minute wait until dilation
- PCB administration is painful and has side effects
- Consider 4% intrauterine lidocaine
- Premedicate with: ibuprofen or naproxen.
  - Paracetamol does not work
- No major complication (i.e. death) was observed in any of the included studies.