

Pain management in abortion care

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Disclosures

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- Acknowledgements:
 - Regina Renner contributed many slides

Objective:

what are the safest and most effective methods of pain control during abortion?

- Outcomes:
 - Effectiveness in relieving pain
 - Complications
 - Side-effects
 - For medical abortion: induction to abortion interval

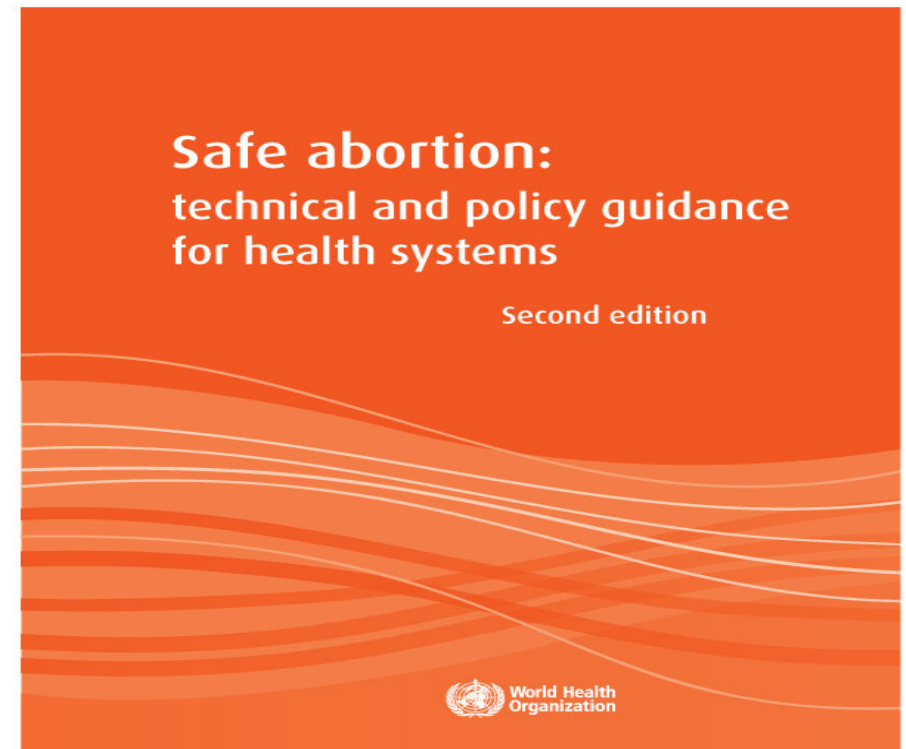
Pain management recommendations

- All women should be routinely offered pain medication
 - NSAIDs
 - Both surgical and medical
 - Includes analgesics, local anesthesia/ conscious sedation
 - Not paracetamol
 - General anesthesia shouldn't be routinely used

Since these recommendations:

new important publications

(Paracervical block, prophylactic NSAIDs)



Overview

- Epidemiology
- Predictors of pain
- Pain management for:
 - Surgical abortion
 - 1st trimester
 - 2nd trimester
 - Medical abortion
 - 1st trimester
 - 2nd trimester

Epidemiology and complications

- 42 million abortions annually worldwide
 - Most commonly in first trimester
- Almost *all* women having abortions report pain!
 - 75-97% of women
- Mortality ≈ 0.7 in 100,000, down from 4.1 in 1972.
 - Anesthesia-related events account for 16% of deaths⁴

¹Guttmacher www.guttmacher.org/pubs/fb/IAW.pdf, 2011.. ²Pazol 2011. ³Strauss 2007. ⁴Bartlett 2004

Predictors of pain

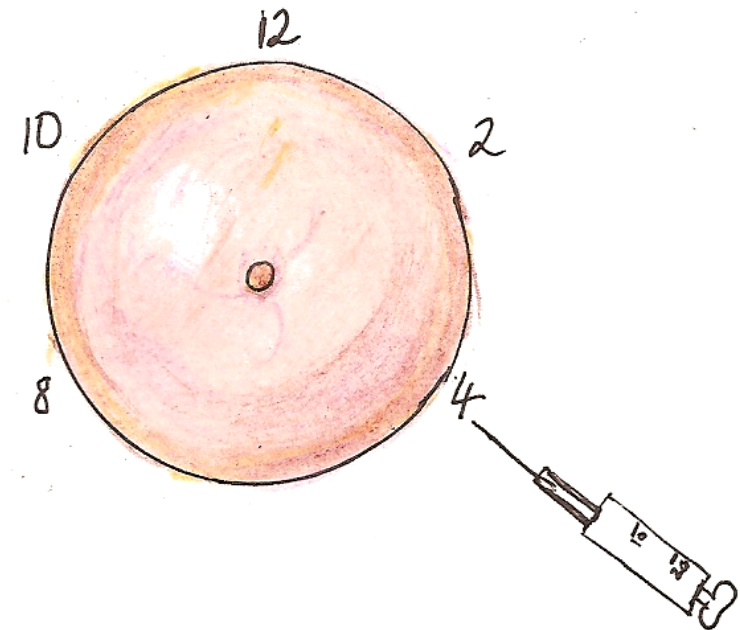


1st trimester surgical: systematic review of evidence*

- <14 weeks using suction aspiration
- 40 RCTs
 - Heterogenous studies
 - Evidenced- based methods studied:
 - Local anesthesia
 - Analgesics
 - Mild sedation: anxiolytics
 - Moderate sedation: IV sedation/conscious sedation
 - General anaesthesia

Paracervical block for suction abortion

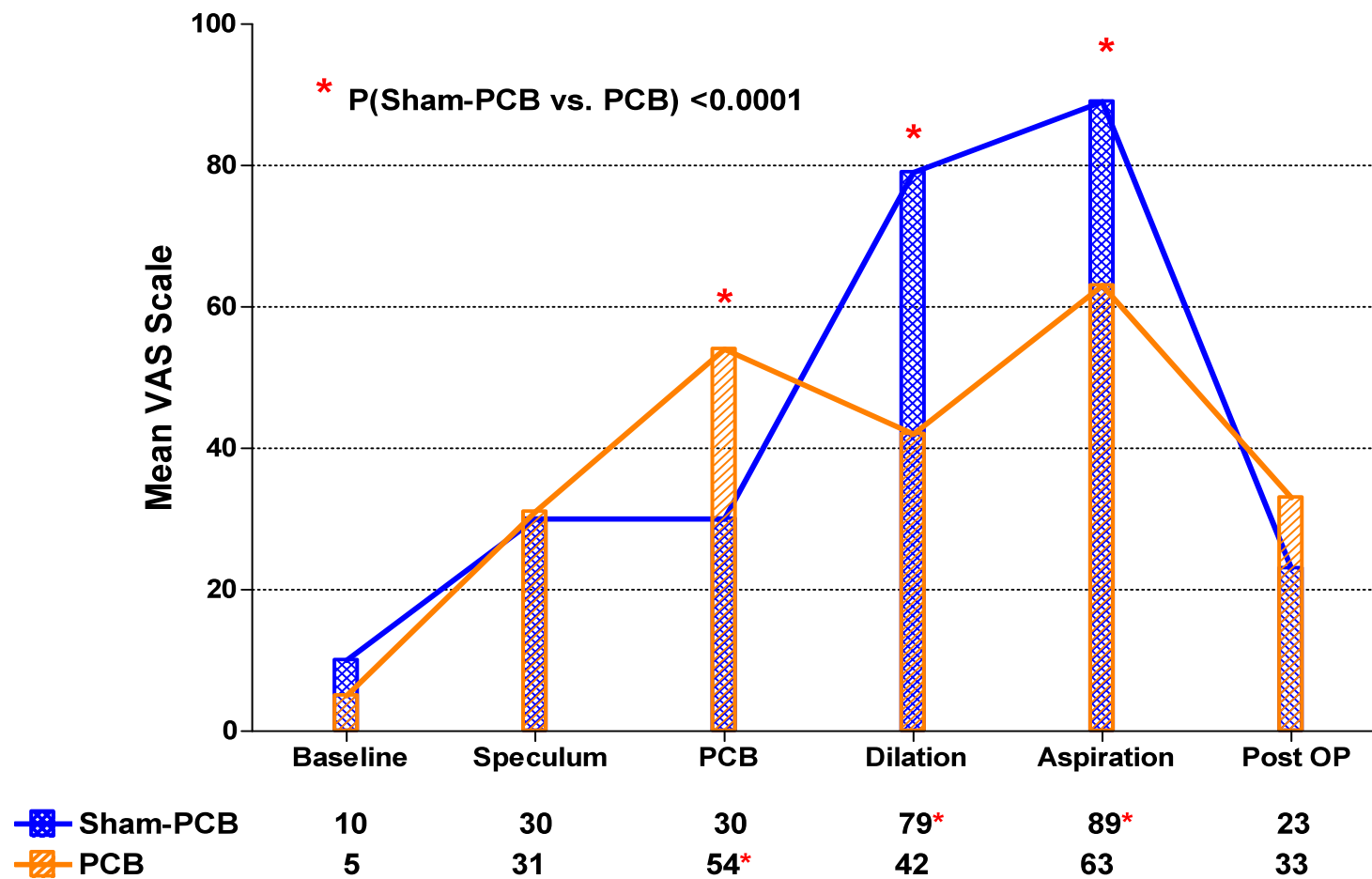
- Numerous techniques described
- Varying features:
 - Type of anesthetic
 - Sites
 - Depth
 - Waiting
 - Speed of injection



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 (2mg midazolam, 25mcg fentanyl). 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

Pain scores



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
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)			

Local technique

Local anesthesia				weighted mean difference		
	Treatment	Control	Notes, co-treatments	PCB administration	Aspiration	Post-op
Local anesthetics						
Paracervical block (PCB) v placebo– 4 site injection versus 2						
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

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 8 o'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

Conclusions: local anesthesia

- Efficacy of paracervical block (PCB) supported!
 - 20ml, 1% buffered lidocaine, 4 sites, slow and deep injection
 - Consider cervical block
 - Technique may matter
- PCB administration is painful and has side effects
- Consider 4% intrauterine lidocaine
- No major complication (i.e. death) was observed in any of the included studies.

Oral medications

- Benefits:
 - Appropriate for high or low resource settings
 - Administered by various cadres of health providers
 - No IV
 - Less risk of adverse effects
 - Excess sedation
 - Respiratory suppression
 - Less expensive
 - No need for monitoring or anesthetist
- Generally used as adjunct to paracervical block
 - Analgesics, anxiolytics, paracetamol, opioids

Oral NSAIDs for surgical abortion

Author	NSAID premed	Anesthesia	Outcome
Suprapto (1984)	Naproxen (550mg) vs placebo	PCB	Decreased postop pain
Wiebe (1995)	Diclofenac (600mg) vs placebo	PCB	Decreased aspiration and postop pain
Li (2003)	Diclofenac (50mg) + miso vs miso alone	None	Decreased aspiration pain for multiparas
Romero (2008)	Ibuprofen (800mg) vs tramadol (50mg)	Nitrous oxide	Ibuprofen better for postop pain

Oral opioids for surgical abortion

Author	Opioid premed	Anesthesia	Outcome
Heath (1989)	Dihydrocodone (60mg) vs placebo	General	No difference in postop pain
Dahl (2000)	Paracetamol with codeine (800/60mg supp) vs placebo	General	No difference in postop pain
Romero (2008)	Tramadol (50mg) vs ibuprofen (800mg)	Nitrous oxide	Ibuprofen better for postop pain
Khazin (2011)	Tramadol vs indomethacin	General	Tramadol better for postop pain
Micks (2012)	Hydrocodone-paracetamol (10/650mg) vs placebo	PCB	No difference

Benzodiazepines for surgical abortion

- Sedative/hypnotic, anxiolytic
- Not analgesics
 - Anxiety predictor of pain
- Lorazepam (intermediate acting):
 - No effect on procedural pain (Wiebe 1992,1995)
 - No effect on anxiety (Wiebe 2003)



Conclusions – oral medications

- Oral NSAIDs are beneficial
- Oral opioids not effective for procedural or postoperative pain
- Benzodiazepines do not decrease pain; may not improve anxiety prior to abortion
 - *Unclear whether decreased anxiety improves patient experience or overall satisfaction*

Moderate IV Sedation

- Drugs commonly used
 - Narcotic: Fentanyl 50 mcg-100 mcg
 - Benzodiazepine: Midazolam 1 mg – 2mg
- Regimens found to be effective
 - PCB + diazepam and fentanyl vs. PCB alone (Wells 1989)
 - PCB + fentanyl 50-100 mcg vs. PCB alone (Rawling 2001)
 - Increased dizziness/drowsiness
 - No difference in nausea
 - PCB + Fentanyl 100 mcg & midazolam 2 mg vs. PCB + Oxycodone 10 mg PO & lorazepam 1 mg SL, 60 minutes preop (Allen 2009)

Moderate IV Sedation

- Summary
 - Moderate IV sedation plus PCB decreases pain compared to PCB alone
 - Regimen of 100 mcg fentanyl and 2 mg midazolam is most effective

Deep IV Sedation-General Anesthesia

- 14 studies in review:
 - Regimens studied included combinations of inhalational agents and IV agents propofol, midazolam, fentanyl, alfentanil, thiopental, ketamine, methohexital
- Most common outpatient regimen
 - Propofol and fentanyl +/- midazolam (Total IV Anesthesia)
 - Propofol superior to ketamine
 - Fentanyl prevents postoperative pain

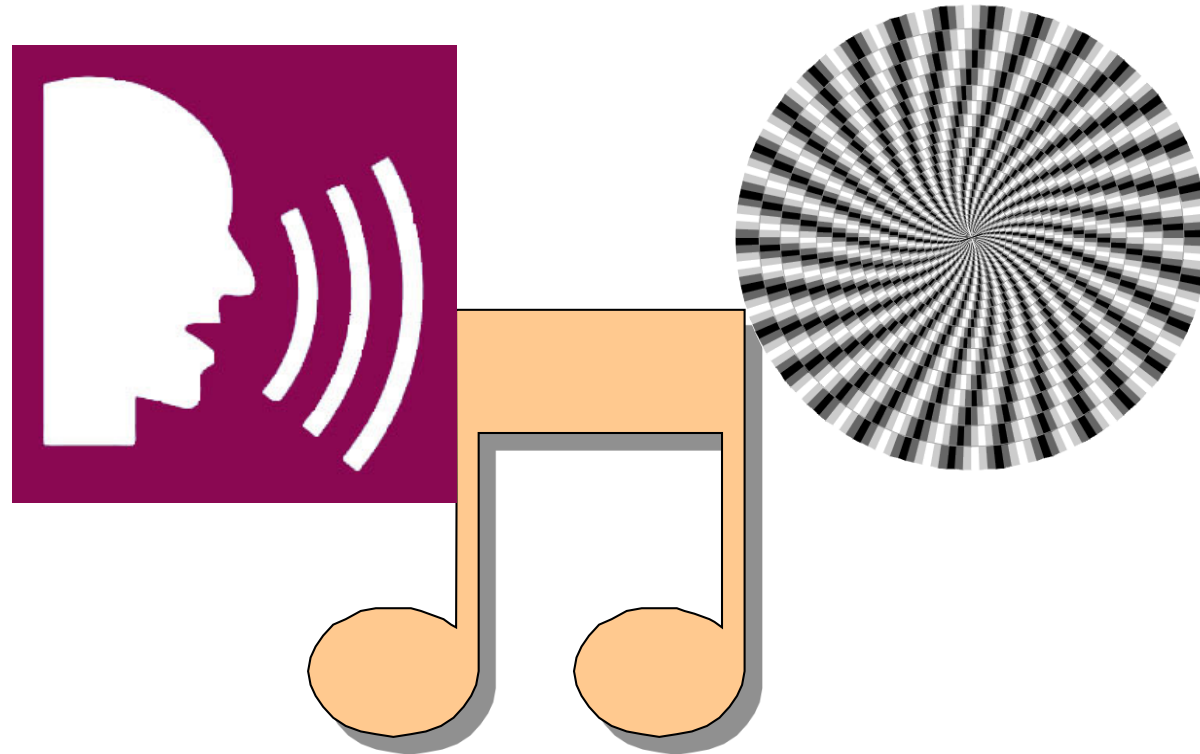
Deep IV Sedation-General Anesthesia

- GA + PCB (10mL) vs. GA alone showed no difference in postop pain scores (Lazenby 2009, Hall 1997)
- Moderate sedation & PCB vs. GA: Intraoperative pain control better with GA. Postop pain control better with moderate sedation & PCB (Raeder 1992)
- Diclofenac 75mg & Ketorolac 30mg IM both decreased postoperative pain compared to placebo when given 10-20 minutes before procedure (Jakobsson 1996)
- Ketorolac 30mg IV vs. placebo did not decrease intraop or postop pain (Roche 2012)

Deep IV Sedation-General Anesthesia

- Summary
 - Superior pain control compared to IV moderate sedation
 - Requires advanced personnel and equipment
 - 10mL PCB does not reduce postoperative pain, unknown effect on intraop anesthesia requirements
 - IM NSAIDs reduce postoperative pain
- No postoperative pain reduction with:
 - Paracetamol supp¹
 - Paracetamol/hydrocodon supp²
 - Diclofenac po³
 - Etoricoxib (COX 2 inhibitor) po⁴

Non pharmacologic



¹Marc 2007, Marc 2008, ²Shapiro 1975; Guerrero 2012; Wu 2012

Anesthesia for 2nd trim surgical

No systematic review available and few RCTs available

- GA not recommended for D&E
 - WHO, 2012
 - CDC, 1977
 - But still common hospital OR practice

Pain management in 2nd trim surgical abortion

Conscious sedation	Treatment	Control	Notes, co-treatments	Intraop	Immediately postop	30 min Post-op
Lazenby 2009 (n=72)	PCB with conscious sedation or general anesthesia (GA)	conscious sedation or GA	Gestational age: 5-21 weeks (mean approx. 15weeks) PCB: 10mL 0.5% marcaine, 2 sites (4 and 8 o'clock) cervical, deep (3cm). Deep sedation involved midazolam, fentanyl and propofol. GA involved paralysis and maintenance with midazolam, fentanyl, propofol and in some cases inhaled anesthetics.		ns	-0.8
Romero 2008 (n=158)	Tramadol 50mg po 1h preop	Ibuprofen 800mg po 1h preop	Gestational age: up to 20 weeks (average 8.8 weeks) Co-treatment: cervical block 10mL 1% buffered lidocaine with epi, 2 sites (4 and 8 o'clock), deep. Offered inhaled nitrous oxide	ns		0.8

- Dean 2011 (n=11039 retrospective), safety of deep sedation

Pain in medical abortion

- 75% women experience pain of severity requiring narcotics*
- Predictors similar to surgical abortion including increasing gestational age
 - Increasing pain in nulliparas
 - Increases with increasing gestational age
 - Comparatively long duration
- Systematic review identified*
 - 4 studies <8 weeks
 - 5 studies 2nd trimester
 - More diverse regimens than in first trimester
 - No study 9-12 weeks or >22 weeks
 - Data focused on 16-21 weeks

*Jackson 2011.

Controlled trials on analgesia for 1st trim medical abortion

	Treatment	Control	Notes, co-treatments	Outcomes
Weber 1990 (n=45, France)	1) Paracetamol 600mg pr 2) Alverine 80mg pr	Placebo	<49d gestation Mifepristone 600mg po, sulprostone 500mcg im 36-48hrs, Analgesia 30±10min before sulprostone	1) Max pain: ns 2) Duration of initial pain episode: Shorter with alverine (p<0.05) compared to paracetamol
Jain 2001 (n=100, USA)	Loperamide 4mg po and paracetamol 500mg po prior to each misoprostol	No medication s	<56d gestation, not randomized Misoprostol 800 mg vaginally Loperamide, paracetamol and paracetamol/codeine 500/30mg for home use	Less posttx opiate use in treatment arm (p=0.01)
Wiebe 2001 (n=281, Canada)	1) paracetamol/codeine 325/30mg po with miso 2) Ibuprofen 400mg po with miso	Placebo	<49d gestation methotrexate 50mg/m2, misoprostol 800mcg vag 3-6d later. Dimenhydramine, paracetamol/codeine and ibuprofen for home use	1) Mean pain score: ns 2) Less subsequent paracetamol/codeine after initial paracetamol / codeine (p=0.03)
Livshits 2009 (n=120, Israel)	paracetamol 500mg po at onset of pain	Ibuprofen 400mg po	<49d gestation Mifepristone 600mg po, misoprosol 400mcg po 2d later If no pain relief metamizole 1000mg po	1) Less pain 1hr after ibuprofen (p<0.001) 2) Greater reduction in pain score after ibuprofen (p<0.0001) 3) Less additional analgesic use after ibuprofen (p=0.005)

Controlled trials on analgesia for 1st trim medical abortion

	Treatment	Control	Notes, co-treatments	Outcomes
Raymond 2013 (n=250; USA)	Prophylactic ibuprofen: 800mg po 1hr prior to misoprostol, then q4-6 scheduled	Therapeutic ibuprofen: 800mg po q4-6hrs prn	<63d gestation Mifepristone 200mg po, misoprosol 800mcg buccal 1-2d later	1) Prophylactic group used more ibuprofen (9vs 4 tablets) 2) Pain not different
Avraham 2012 (n=61; Israel)	Prophylactic ibuprofen: 800mg po at time of misoprostol	placebo	<63d gestation Mifepristone 600mg po, misoprosol 400mcg oral 2d later If additional analgesia needed: dipyrone	1) significantly lower need for additional analgesia: 11 of 29 (38%) vs. 25 of 32 (78%), respectively 2) No difference in treatment failure

Controlled trials on analgesia for 2nd trim medical abortion

	Treatment	Control	Notes, co-treatments	Outcomes
Fiala 2005 (n=80, Sweden)	paracetamol/codeine 500/10mg po with first misoprostol dose	Diclofenac 50mg po with first misoprostol dose	13-22weeks gestation Mifepristone 600mg po, misoprostol 800mcg vag 36-48hrs later, misoprostol 400mcg po q3h until fetal expulsion Additional paracetamol, codeine, IV opiates or PCB available	1) Amount of opiates higher in non-NSAID group (p=0.042) 2) Amount of opiates used in women >15weeks gestation higher in non-NSAID group (p=0.02) 3) Number of women requesting PCB, oral pain tx, IV opiates, amount of opiates in women at <15weeks gestation: Ns 4) Side effects: Ns
Castro 2003 (n=60, Canada)	PCA 1) Morphine 2mg q6min 2) Fentanyl 50mcg q6min 3) Fentanyl 25mcg q3min 4) Fentanyl 50mcg q3min		14-24weeks gestation Intraut inj PGF2α 40mg or misoprostol 400mcg vag q4h for max 6 doses	1) Analgesia use in 2h preceding fetal expulsion: Ns 2) Satisfaction with pain relief less in group 3 than in group 4 (p=0.0002) 3) Pain relief during delivery and labor less in group 3 than in group 2 and 4 (p=0.042, p=0.029) 4) Less vomiting in group 2 than group 1 and 3 (p=0.023) 5) More pruritus in group 1 (p=0.023) 6) Nausea, sedation and dizziness: Ns

Conclusions for medical abortion

- For first trimester:
 - Ibuprofen reduces pain compared to paracetamol
 - Therapeutic use is likely sufficient
- For second tri:
 - PCA or IV opioid
 - Addition of NSAID likely to act synergistically to better control pain
 - Use abortion methods associated with less pain:
 - Modern regimens (mifepristone and misoprostol)
 - Surgical abortion (D&E)

Summary

	1 st trimester surgical	2 nd trimester surgical	1 st trimester medical	2 nd trimester medical
Analgesia	Ibuprofen Naproxen	Ibuprofen	NSAIDs (ibuprofen) paracetamol/codeine (not paracetamol)	PCA fentanyl 50mcg/ 6min lockout; NSAID (diclofenac)
Local anesthesia	20ml 1% buffered lidocaine, 4sites, deep, slow, 3min wait until dilation. <i>? PCB as adjunct to GA</i>	<i>? PCB as adjunct to GA</i>		
Sedation	Fentanyl, midazolam; propofol	Fentanyl, midazolam, propofol		
Non-pharmacologic	Music, hypnosis			

