2nd Trimester Abortion: Surgical Methods

- Dilatation and evacuation
  - Most common method in United States
  - Additional resources/issues include specialized forceps, stronger anesthesia, cervical preparation, and clinician training & experience
- Dilatation and Extraction
  - Decompression of the fetal calvarium
- Combination Procedure
  - Laminaria--> Misoprostol--> D&E(X)
- Induction abortion
  - Most common method for 2nd trimester abortion outside of the United States
  - Often involves Curettage

The New England Journal of Medicine

Volume 296:1141-1145 May 19, 1977

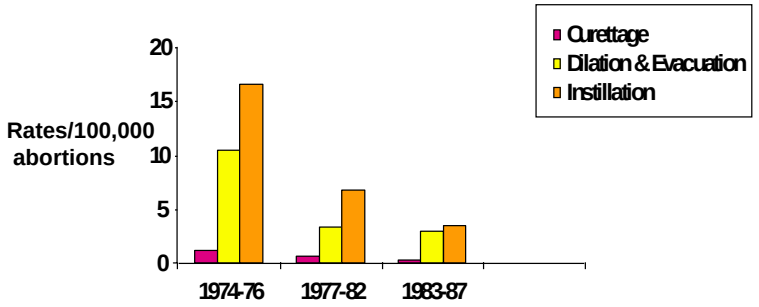
Mid-trimester abortion by dilatation and evacuation: a safe and practical alternative

DA Grimes, KF Schulz, W Cates, and CW Tyler

Prerequisites for Performing D&E Abortions

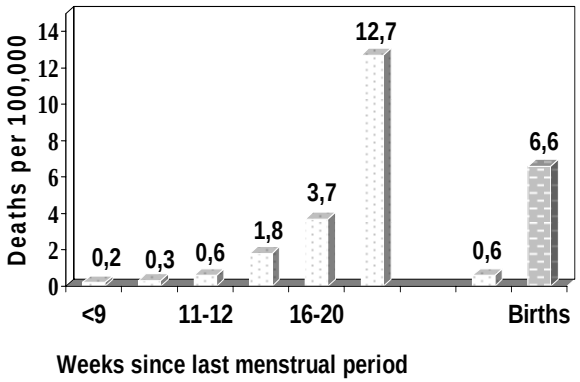
- **An open mind**
- **An open cervix**
- Hemostasis
- Pain Control
- Appropriate tools
- Training in D&E
- Training in vaginal surgery

Mortality from Legal Abortion by method and year



Lawson, AJOG 171:5;1365

Deaths per 100,000 Abortions or Births



Source: Gold 1990
(1981–1985 data)

Serious Complication Rates for Legal Abortion by Method, U.S., 1975-1978

Method	Rate (per cent)
Suction curettage	0.2
D&E	0.7
Saline instillation	2.1
Prostaglandin instillation	2.5
Urea/prostaglandin instillation	1.3

Abortion Risks in Perspective

Risk from terminating pregnancy:	Chance of death per year:
Before 9 weeks	**1 in 500,000**
Between 9 and 10 weeks	**1 in 300,000**
Between 13 and 15 weeks	**1 in 60,000**
After 20 weeks	**1 in 8,000**
Risk to persons who participate in:	
Motorcycling	**1 in 1,000**
Automobile driving	**1 in 5,900**
Power- boating	**1 in 5,900**
Playing football	**1 in 25,000**
Risk to women aged 15–44 from:	
Having sexual intercourse (PID)	**1 in 50,000**
Using tampons	**1 in 350,000**

Source: Gold, 1990; Hatcher, 1998

Complications: Medical vs Surgical

Complication	Medical N=158	Surgical N=139	P value
Any	45 ± 28.5	5 ± 3.6	.001
Failed initial Method*	11 ± 7.0	0 ± 0	<.01
Hemorrhage with transfusion*	1 ± 0.6	1 ± 0.7	NS
Intravenous antibiotics*	2 ± 1.3	0 ± 0	NS
Retained POC†	33 ± 20.9	1 ± 0.7	<.001
Repair of cervical laceration	2 ± 1.3	3 ± 2.2	NS
Organ damage*	2 ± 1.3	0 ± 0	NS
Hospital readmission* NS	1 ± 0.6	1 ± 0.7	NS

Autry et al, AJOG, 2002:187;393-397

Programmatic perspectives in Surgical 2nd Trimester Abortion

- D&E shifts the emotional burden of abortion from the patient to the staff
- Nowhere is it written that an abortion must be completed in one sitting
- Good housekeeping counts
  - Keep it neat
  - Be discreet

A Proven Approach to Obtaining Adequate Homeostasis

- Vasopressin 4 units (0.2 cc) mixed in with paracervical anesthetic
- Savings in blood loss compared with placebo:

≤ 14 weeks:	9cc
15-16 weeks:	81cc
17-18 weeks:	147cc
≥19 weeks:	221cc

Lancet 1985:2:353-356

Cervical Preparation: One Approach to the Use of Osmotic Dilators

- 14-16 weeks from last menstrual period (BPD ≤ 33mm)
  Same day insertion of dilators t least 4 hours
  (~ Dilapan does twice the work of Laminaria in half the time)
- >17 weeks from last menstrual period (BPD >33mm)
  Overnight insertion for 1-2 nights
- Paracervical anesthesia with 0.25% bupivacaine and NSAIDs can assist with pain relief in some patients

Tools for D&E

- Moore modification of Graves speculum (one inch shorter blades)
- Atraumatic or single-tooth tenaculum
- 14-16 mm canula
- Bierer or Sopher or other “serious” forceps
- Flexible 8 -12mm canula to confirm completion

Intra-operative Ultrasound and D&E

Uterine Perforations Without US (n=353 1.4%
Uterine Perforations With US (n=457) .2% P < .001

Darney P and Sweet RL J Ultrasnd Med 19871989 Feb;8(2):71-5.

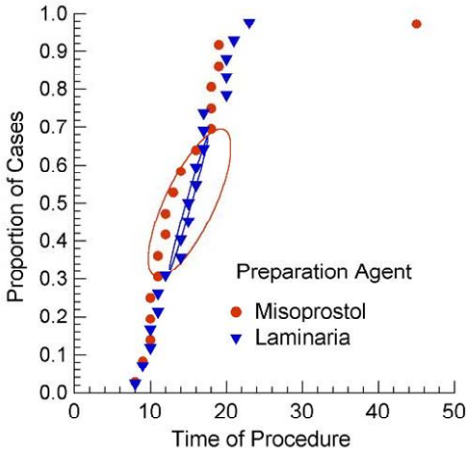
Cervical Preparation

	Adequate? (%)	More Dilation? (%)	
		12-17 Weeks	17-23 Weeks
Laminaria alone	97.8	17.4	12.3
Buccal Miso Alone (400)	82.6	57.7	31.3
Buccal Miso with Lam (400)	99.2	11.8	2.0*

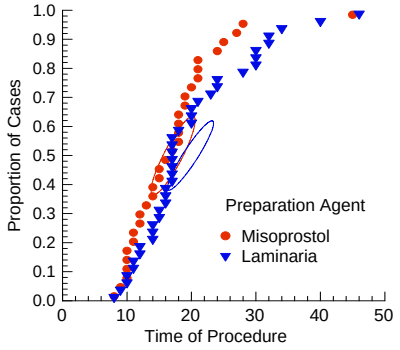
Patel et al Contraception 2006 73:420-30

Procedure Time by Cervical Preparation

Most Experienced Provider



Procedure Time by Cervical Preparation All Providers



Issues for Low-Resource Settings

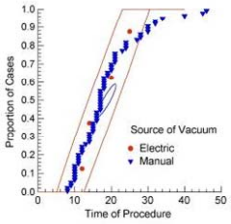
- Availability of
  - Reliable electric vacuum source
  - Adequate sized tubing
  - Laminaria
- Trained Personnel
- Values Clarification

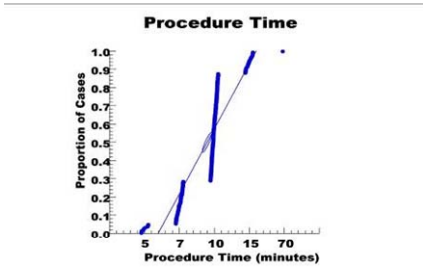
Adaptations for Low Resource Settings

- Manual Vacuum Source
- Adapters for large canulae
- Misoprostol for cervical preparation
- No sharp curettage

Procedure Time by Method

MVA vs EVA in 2nd Trimester





Cost-Effectiveness of D&E vs. Induction of Labor for Second Trimester Pregnancy Termination

Cowett et al AJOG, 2006; 194: 768-73.

Results

Strategy	Cost ($)	Effectiveness (QALY)	Marginal C/E ($/QALY)
D&E	3,529	25.6981	Dominant
IOL	6,608	25.6964	

One-way sensitivity analyses

Decrease the probability of death/IOL to 0%

Strategy	Cost ($)	Effectiveness (QALY)	Marginal C/E ($/QALY)
D&E	3,529	25.6981	
IOL	6,608	25.6990	3,480,259

Conclusion

- D&E more cost-effective than IOL with misoprostol across a wide range of probability and cost estimates
- Implications
  - Accessibility
  - Training
  - Hospital and practice administration

Conclusions: Cowett

"Although IOL may be more easily incorporated into medical education, physician practice, and patient care provision in a setting that already cares for laboring patients, accessibility of D&E should be made a priority. Medical students and residents planning careers in Obstetrics and Gynecology and Family Practice should have the option of D&E training."

Conclusions

- At gestations less than 20 weeks there are likely to be fewer complications from D&E than Induction abortion, assuming an experienced provider.
- Adequate cervical preparation is a critical component for reducing the likelihood of uterine-related complications in any 2nd Trimester abortion
- Provider Training is probably the best predictor of procedural success.
- The patient with a previous Cesarean Delivery must have adequate cervical preparation and oxytocics must be used even more judiciously than in those with no scar.

Probabilities

Complication	D&E Base case (%)	D&E Range (%)	IOL Base case (%)	IOL Range (%)
All comps	4	2.9-4.3	22	22-65
Laparotomy	0.1		1.6	
Hysterectomy	0.013	0.013-0.04	0.02	0.02-0.15
Suction curettage	0.4	0.4-1.4	20	8.2-54.4
Cervical repair	2.2		1.6	
Hospital admission	1.3	0.7-5.7	0.8	
Failed IOL	NA		5.6	1.9-29.4
Death	0.004		0.001	0.001-0.003

Costs ($)

Procedure	Base case	Range
D&E	3423	1712-5135
IOL	5997	2999-8996
Laparotomy	10,235	5123-15,488
Hysterectomy	11,136	5568-16,704
D&C	1864	932-2796
Cervical repair	1864	932-2796
Hospital admission	3405	1703-5108
Death	0	0-100,000

One-way sensitivity analyses

Increase the probability of D&E/hysterectomy to 0.04%

Strategy	Cost ($)	Effectiveness (QALY)	Marginal C/E ($/QALY)
D&E	3,530	25.6962	
IOL	6,608	25.6963	29,906,453

One-way sensitivity analyses

Increase the cost of D&E to $6652

Strategy	Cost ($)	Effectiveness (QALY)	Marginal C/E ($/QALY)
D&E	6,757	25.6981	548
IOL	6,758	25.6964	

Multi-way sensitivity analysis

- Monte Carlo simulation using 1,000 trials
- Setting a cost-effectiveness threshold of $50,000/QALY results in 97.9% of trials favoring D&E
- Increasing the threshold to $75,000/QALY lowers result to 97.6%
- Conclusion: a robust model

Reasons for Abortions After 16 Weeks from Last Menstrual Period

Woman did not realize she was pregnant	71%
Difficulty making arrangements for abortion	48%
Afraid to tell parents or partner	33%
Needed time to make decision	24%
Hoped relationship would change	8%
Pressure not to have abortion	8%
Something changed during pregnancy	6%
Didn't know timing was important	6%
Didn't know she could get an abortion	5%
Fetal abnormality diagnosed late	2%
Other	11%
Average number of reasons given	2.2

Source: Torres and Forrest, 1988 (1987 data)