Managing Complications of Procedural Abortion

Jennifer Kerns, MD, MPH
Assistant Professor,
Obstetrics, Gynecology and Reproductive Sciences
University of California San Francisco

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Complications After First Trimester Abortion

Defining Complication

Major

- Hemorrhage
- Unanticipated surgery
- Infection
- Perforation
- Death

Minor

- Cervical laceration
- Re-aspiration

Side effects

- Excessive bleeding
- Excessive pain

How do we measure complications?

Complication	Ways to measure
Hemorrhage	Transfusion, blood loss > 250cc/ 500cc, % drop in hemoglobin, re-aspiration
Infection	Fever, antibiotics
Perforation	Clinical versus surgical diagnosis
Unanticipated surgery	Laparoscopy, laparotomy, re-aspiration
Cervical laceration	Chemical cauterization, suture repair
DIC	Clinical versus laboratory diagnosis

Case 1: MM

- 14 year old G0 presents for an abortion
- By last menstrual period (LMP), she is 7 weeks, but on exam is 13 week size
- Seen in ER 2 days ago for abdominal pain
- She undergoes counseling and consents for a surgical abortion

- **What complications is she at risk for?**
- **What measures can you take to decrease her risk of complications?**

MM's Risk for Complications

	1st trimester medical	1st trimester surgical
Overall	---------------	0.07% (major)
Hemorrhage	0.1 – 0.4% (transfusion)	0.01%
Infection	0.9%	0.1 – 0.4%
Perforation	---------------	0.1%
Cervical laceration	---------------	---------------
Retained products	2 – 5% (~8% for 9wks)	0.3 – 2%

Peterson 1983; Hern 1984; Ben-Ami 2009; Autry 2002; Frick 2010; Paul 2009; Hakim-Elahi 1990

Assessing MM's Individual Risk

- Pertinent factors for MM
  - Patient age
  - Gestational age (discrepancy between LMP and exam)
  - Experience of the clinicians and staff
  - Symptoms of abdominal pain

Kapp et al. *Contraception* 2012; Nichols et al. *J Reprod Med* 2002; Fakih et al. *Contraception* 1986; Allen *Contraception* 2007

Levels of Evidence

Level	Definition
A	Randomized controlled trials
B	Observational studies (cohort, case-control)
C	Case series or expert opinion

Evidence for Preoperative Measures to Prevent Complications

- **Ultrasound** to confirm gestational age (**Level B** evidence)
  - Especially in training scenarios

- **Cervical preparation** (**Level C** evidence)

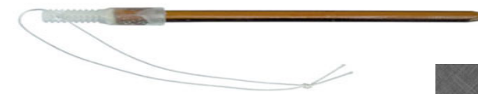
Society of Family Planning

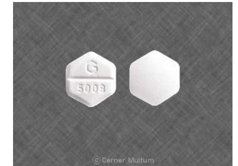
- Adolescents
- Provider inexperience
- Risk factors for complication from inadequate dilation

Kapp 2012; Allen 2007; Nichols 2002; Fakih 1986; Kapp 2010

Knowing the evidence, what are the next steps?

- Ultrasound to determine gestational age→ 10w 2d
- Cervical preparation? Maybe.
  - Same day misoprostol or overnight dilators
  - Equal efficacy and patient satisfaction at 12-15 wks





World Health Organization

- < 18 years old
- Nulliparous, >9 weeks
- All women >12 weeks

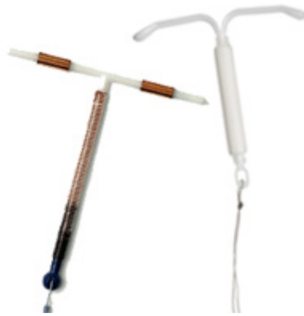
Royal College Obstetrics & Gynaecology (U.K.)

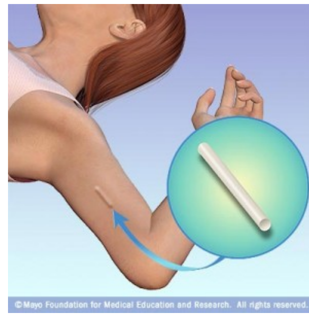
- < 18 years old
- All women >10 weeks

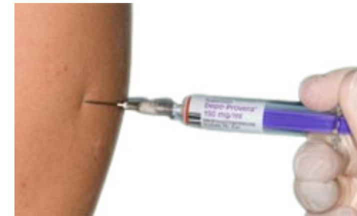
Bartz et al. *Obstetrics and Gynecology* 2013

Intra- and Post-operative Measures to Prevent Complications

- Immediate contraception (**Level A** evidence)







- Antibiotic prophylaxis (**Level A** evidence)
- Visual inspection of Products of Conception (POC) (**Level C** evidence)

Kapp et al. 2012; Sawaya et al. 1996; Hohmann et al. 2012

Prevention Strategies for 1st Trimester Medical Abortion

- Preventing failed abortion
  - No sac on follow-up ultrasound = complete
- Preventing hemorrhage and/or transfusion
  - Pre-procedure hemoglobin
  - Screening for coagulopathy
- Preventing infection
  - Prophylactic antibiotics
  - 7 days Planned Parenthood vs. shorter regimen

Complications After Later Abortion

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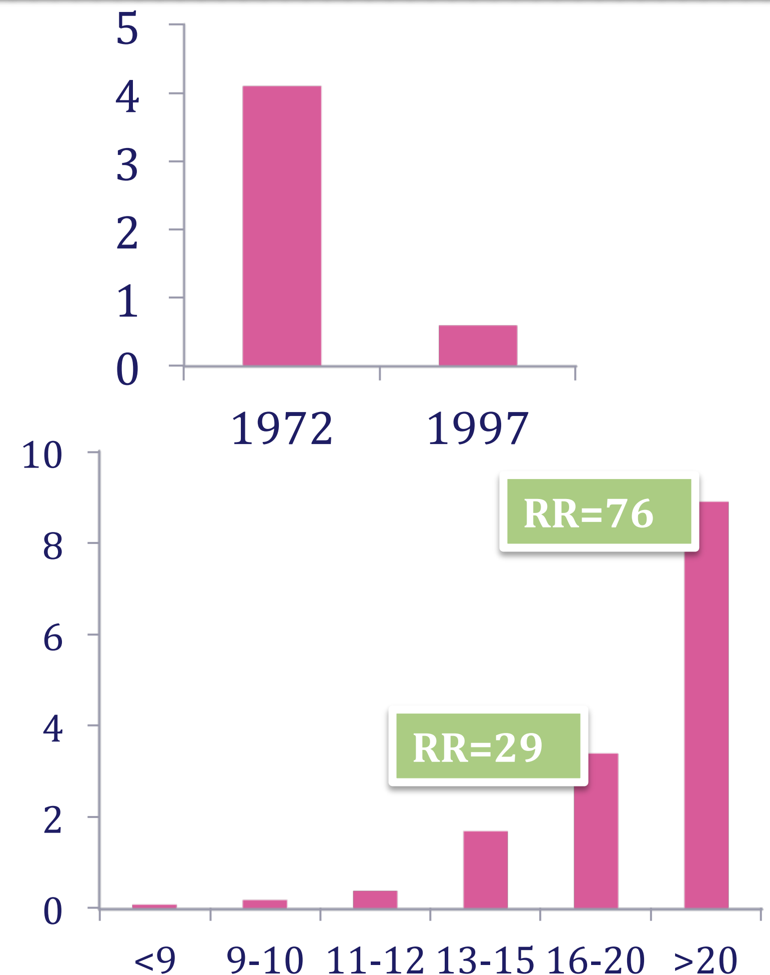
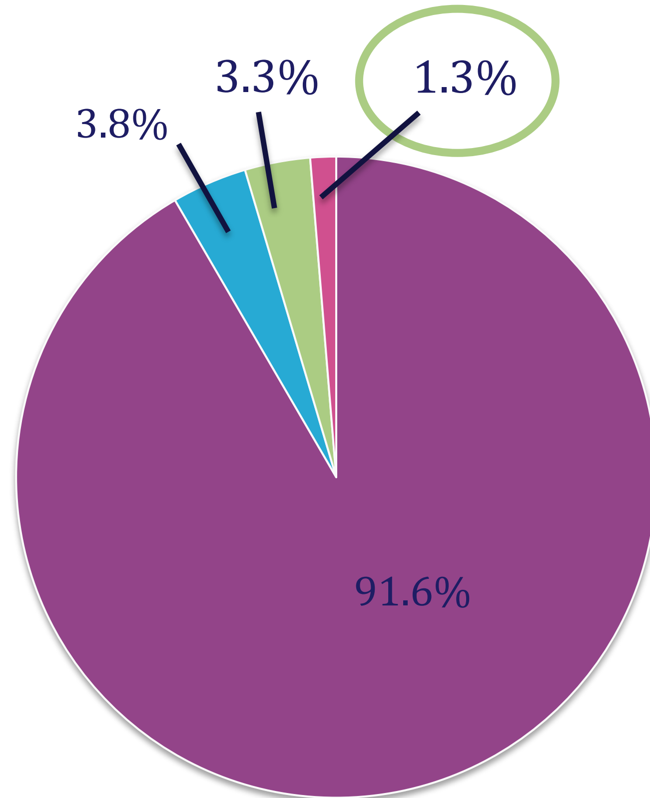
Abortion-related Mortality

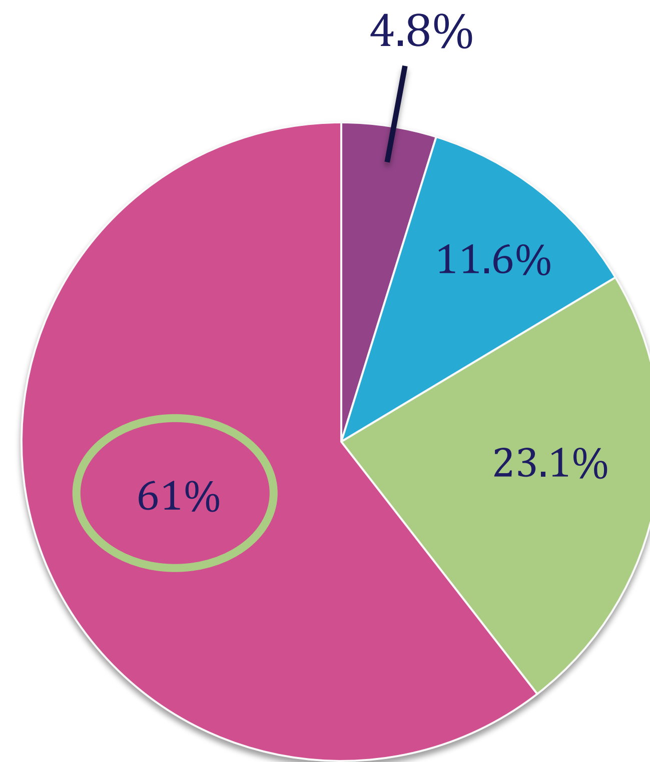
- 0.7 per 100,000 (2007)
- Decrease in overall abortion-related mortality
- For each additional week gestation… 38% increased risk of death
- African-American race = next strongest risk factor



Abortions by Gestational Age

Abortion-related Mortality by Gestational Age





Pazol et al. *MMWR Surveill Summ* 2011
Bartlett et al. *Obstet Gynecol* 2004

Case 2: BB

- 34 year old G4P2, African-American, 22w 4d by LMP
- 2 prior cesarean sections, BMI 35, fetus with trisomy 18
- Told 2-3 weeks ago that “the baby is not alive”

- **What complications is she at risk for?**
- **What measures can you take to decrease her risk of complications?**

BB's Risk for Complications

	2nd trimester medical	2nd trimester surgical
Overall	----------------	0.6%
Hemorrhage	<1%	0.8 – 2.1%
Infection	2 – 3%	0.3 – 0.6%
Perforation	----------------	0.4%
Cervical laceration	----------------	0.1 – 0.8% (2.1 – 6.3%)
Retained products	2.5 – 10%	0.4 – 2.7%

Peterson 1983; Hern 1984; Ben-Ami 2009; Autry 2002; Paul 2009; Hakim-Elahi 1990; Frick 2012.

Risk Factors for D&E Complications

Risk factor	Complication
Poor cervical dilation	Cervical laceration
Increased gestational age	Bleeding, Mortality Fever, Cervical lac, Perforation
Abnormal placentation	Bleeding, Hysterectomy
Prior cesarean delivery	Cervical laceration
Level of training	Perforation
Black race	Mortality

Peterson et al. 1983; Fox and Hayes 2007; Diedrich and Steinauer 2009; Bartlett et al. 2004

Assessing BB's Individual Risk

Pertinent factors in her history

- Prior cesarean section
- African-American race
- Gestational age
- Possible fetal demise, unknown size

What additional work-up does she need?

- Ultrasound for
  - Gestational age
  - Determination of fetal demise
  - Placental location

Hemorrhage Risk

Hemorrhage risk group
Low risk • No prior cesarean sections • Fewer than two prior cesarean sections and no previa or accreta • No bleeding disorder • No history of obstetrical hemorrhage
Moderate risk • ≥2 cesarean sections • Prior cesarean section and previa • Bleeding disorder • History of obstetrical hemorrhage not requiring transfusion • Increasing maternal age • Gestational age >20 weeks • Fibroids* • Obesity
High risk • Accreta diagnosis or concern • History obstetrical hemorrhage requiring transfusion • Any of the "moderate risk" categories may be considered "high risk," per discretion of the clinician

Moderate risk

- ≥2 cesarean sections
- Prior cesarean section and previa
- Bleeding disorder
- History of obstetrical hemorrhage not requiring transfusion
- Increasing maternal age
- Gestational age >20 weeks
- Fibroids*
- Obesity

Preoperative Measures to Decrease BB's Risk

- Ultrasound (**Level B** evidence)
  - Gestational age: 21w 6d by BPD
  - Placental location: Fundal
  - Fetal viability: Demised

- Cervical preparation (**Level B** evidence)
  - Dilators, +/- misoprostol

Ben-Ami et al. *Acta Obstet Gynecol Scand* 2012; Newmann et al. *Contraception* 2008; Edlow et al. *Obstet Gynecol* 2011

Intra-operative Measures to Reduce BB's Risk

Evidence-based

- Training
- Vasopressin in paracervical block
- No halogenated anesthetic gases
- Intraoperative ultrasound (**Level C**)
  - In training institutions

Not evidence-based

- Prophylactic uterine massage
- Prophylactic uterotonics

Pridmore et al. *Aust N Z J Obstet Gynaecol* 1999; Peterson et al. *Obstet Gynecol* 1983; Kapp et al. *Contraception* 2012

Post-operative Measures to Reduce BB's Risk

- Prophylactic antibiotics
  (**Level A** evidence)

- Prophylactic uterotonic medication
  (**Level C** evidence)

Sawaya et al. *Obstet Gynecol* 1996
Lichtenberg et al. Unpublished data – survey of abortion providers, 2014

Cervical Preparation

- For < 20 week procedure, misoprostol alone is acceptable

- For 14-16 weeks…
  - Mifepristone 24 hours prior—SAME AS 1 day of dilators
  - Less discomfort with mifepristone

(But can complete safely as same-day procedure)

Borgatta et al. *Contraception* 2013

Prevention Strategies for 2nd Trimester Medical (Induction)

Shortening the time to delivery

- Mifepristone/ Misoprostol
- Mife 200mg→ 800mcg miso vaginal→ then 400mcg q4h vaginal or sublingual(SL) (faster delivery than oral)

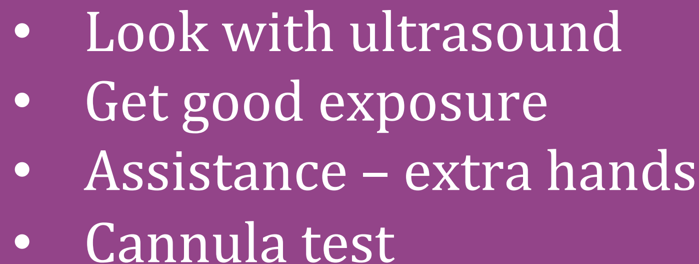
Delivering the placenta

- RCT : 10mU IM oxytocin
- Cochrane: SL nitroglycerin after oxytocin fails – decreases manual removal and blood loss

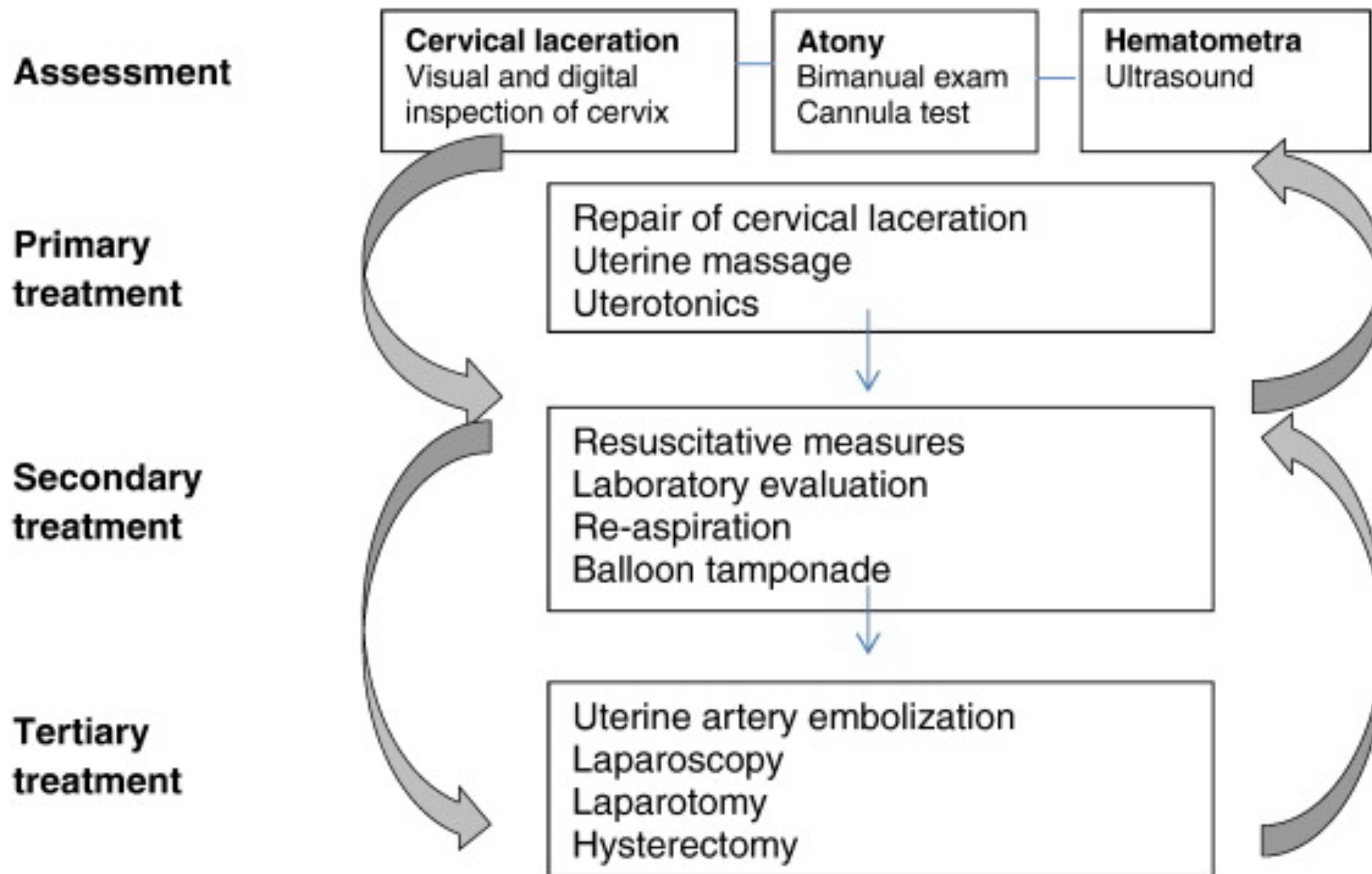
Dickinson and Doherty 2009; Abdel-Aleem et al. 2011; Dickinson et al. January 2014

When Things *Still* Go Wrong

- Keep your differential broad & be humble
- Enlist support/ help
  - Talk to the RN, call in another attending
- Think through future steps
  - E.g., if this doesn't work, then I'll…



Management of Hemorrhage



Hemorrhage Management

- Cannula test
  - 8 cannula to fundus, slowly withdraw to localize bleeding
- Uterotonic medications
  - Vasopressin
  - Methergine
  - Misoprostol
  - Hemabate
  - Oxytocin
- Balloon tamponade
  - 30cc Foley, filled to 60cc
  - Bakri, max 500cc – typically < 350cc in abortion setting

Management of Cervical Laceration

- Low cervical tears
  - Expectant management (compression)
  - Silver nitrate
  - Ferric subsulfate solution (Monsel's solution)
  - Suturing
- High cervical tears
  - Compression with ring forceps
  - Monsel's
  - Balloon tamponade
  - Angiographic embolization

UCSF

Kerns and Steinauer *Contraception* 2013
Steinauer et al. *Obstet Gynecol* 2008

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Management of Perforation

- Identifying the perforation
- Evaluation of the patient… stable or unstable?
  - Serial CBCs
  - Serial exams
  - Initial/serial imaging
- Surgical management
  - Laparoscopy – appropriate if small
  - Laparotomy – unstable patient, large injury, ability to run the bowel

Management of the Team

- **Call a colleague** in the moment
- **Call a colleague** after the moment
- **Debrief** with the team
  - What happened?
  - What went well?
  - What could have gone differently?
  - Be a leader with the clinical team
- **Expect** complications and be prepared

Conclusion

- Complications after 2nd trimester abortion are rare
- Individualized preparation is important
- Unanswered questions
  - Effect of prophylactic uterotonics
  - Optimal cervical preparation