Evidence Based Miscarriage Management

Pregnancy Care ECHO
December 16, 2016
David Turok

Miscarriage Management
The Quick Version

- Make the Dx with Ultrasound
  - And hx and HCG
- Offer 3 Tx options
  - Expectant management
  - Medical Management
  - Uterine aspiration (D&C)

What Your Patient Wants

- #1) Dx - Quick and accurate
- #2) Tx - Safe resolution (+/- quickly)
  - Minimal discomfort
  - Inexpensive treatment
  - Delivered by a caring provider

#1) Diagnosis

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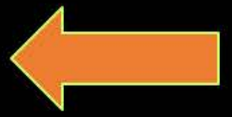
Your Diagnostic Toolbox

- Ultrasound 
- Quantitative HCG
  - HCG – Human Chorionic Gonadotropin
- Hct
- Rh status

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Assessment of 1st Trimester Bleeding

- Vitals
- Quantity of Bleeding
- The 4 H's
  - –Ultrahsound
  - –H_{CG}
  - –H_{ct}
  - – Rh status

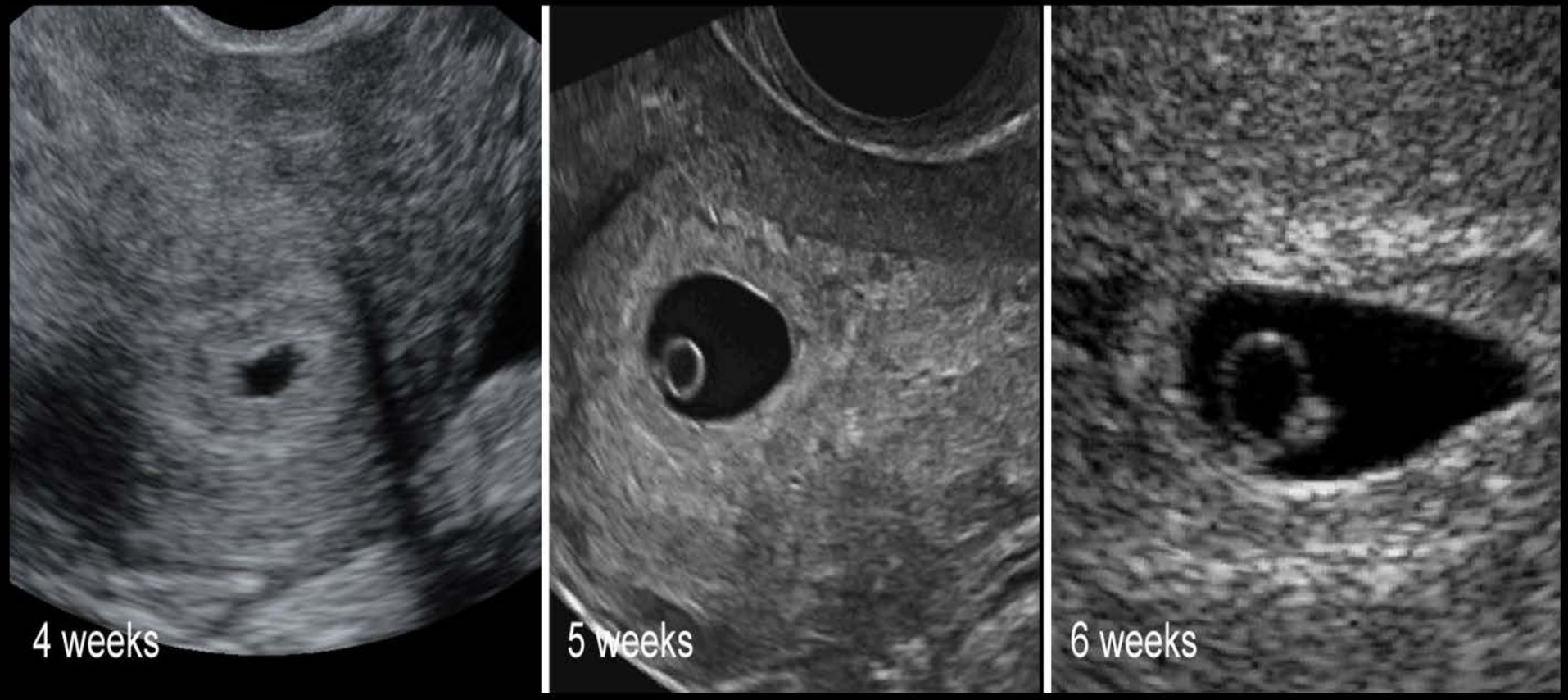
First Trimester Ultrasound

The Discriminatory Zone:

HCG >1500 – With transvaginal ultrasound you should see a gestational sac in uterus

Am J Obstet Gynecol 1988;158:608-12

Examples



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21st Century Terminology Early Pregnancy Loss

- Anembryonic Pregnancy
  - Gestational sac with MSC 25mm and no embryo
- Embryonic Demise
  - Gestational sac with 7mm embryo but no FHT
- Fetal Demise
  - Gestational sac with fetus (> 10 wks) but no FHT
- Ectopic Pregnancy
  - Pregnancy developing outside the uterine cavity

Obstet Gynecol Surv 2001

N Engl J Med 2013; 369: 1443-51

Review Article: Current Concepts

Diagnostic Criteria for Nonviable Pregnancy Early in the First Trimester

Peter M. Doubilet, M.D., Ph.D., Carol B. Benson, M.D., Tom Bourne, M.B., B.S., Ph.D., Michael Blaivas, M.D., for the Society of Radiologists in Ultrasound Multispecialty Panel on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy

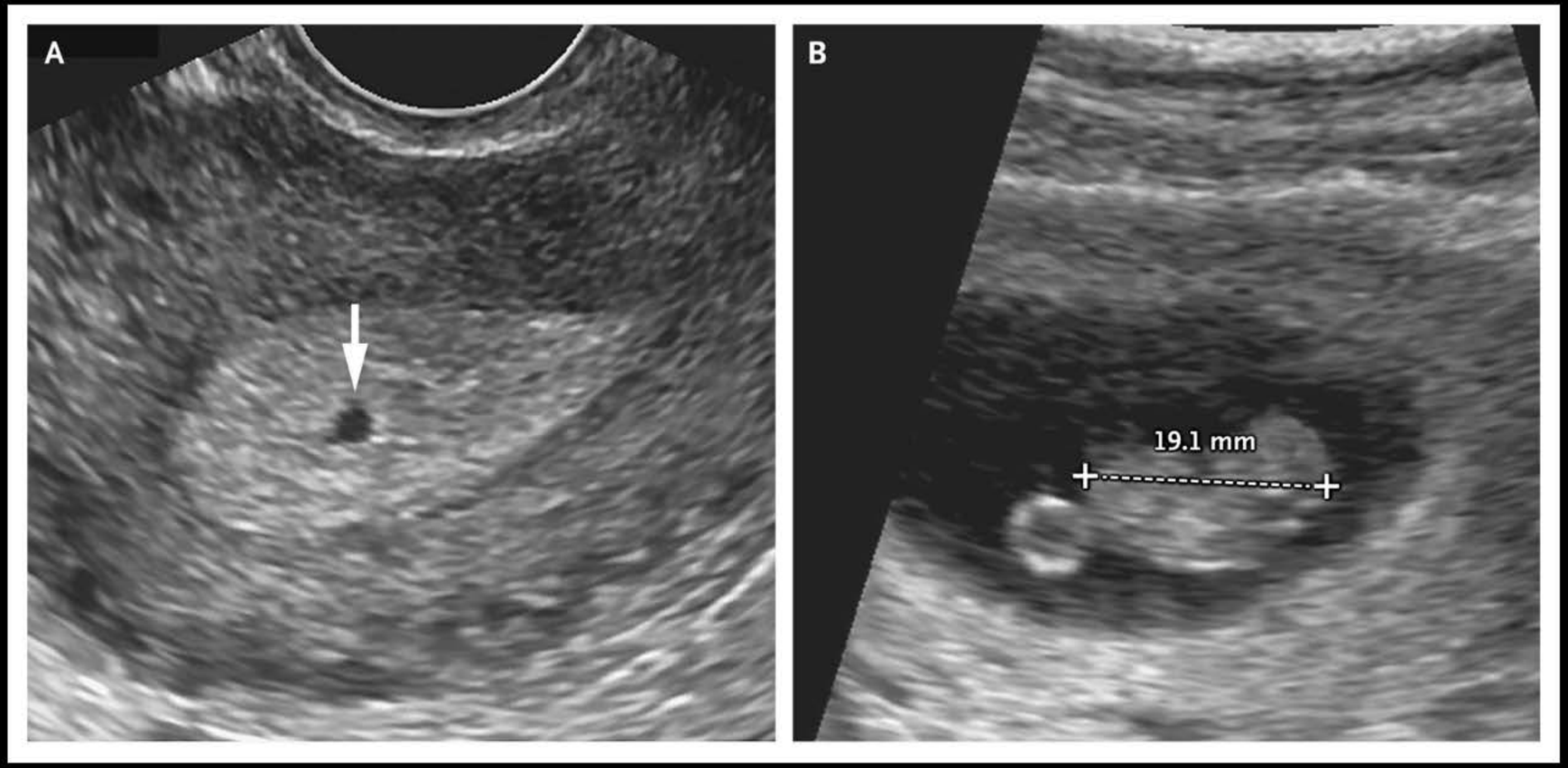
N Engl J Med
Volume 369(15):1443-1451
October 10, 2013

Summary

- Determining the viability of a pregnancy is a major challenge, especially with a pregnancy of unknown location.
- This review provides specific guidance, including stringent criteria for nonviability, that can reduce the risk of inadvertent harm to a potentially normal pregnancy.

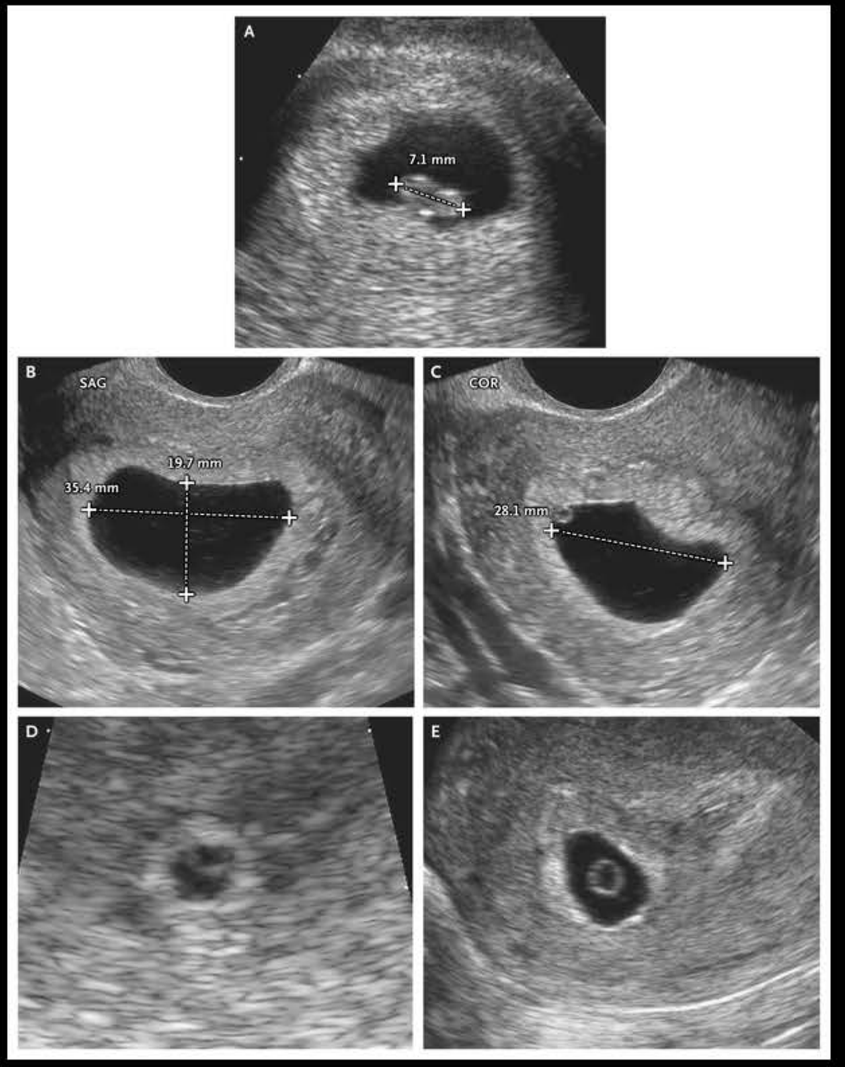
The NEW ENGLAND JOURNAL of MEDICINE

Early Intrauterine Gestational Sac.



Doubilet PM et al. N Engl J Med 2013;369:1443-1451

Definite Pregnancy Failure Diagnosed in Three Women by Means of Transvaginal Ultrasonography.



Doubilet PM et al. N Engl J Med 2013;369:1443-1451

Guidelines for Transvaginal Ultrasonographic Diagnosis of Pregnancy Failure in a Woman with an Intrauterine Pregnancy of Uncertain Viability.

Table 2. Guidelines for Transvaginal Ultrasonographic Diagnosis of Pregnancy Failure in a Woman with an Intrauterine Pregnancy of Uncertain Viability.*

Findings Diagnostic of Pregnancy Failure	Findings Suspicious for, but Not Diagnostic of, Pregnancy Failure†
Crown–rump length of ≥7 mm and no heartbeat	Crown–rump length of <7 mm and no heartbeat
Mean sac diameter of ≥25 mm and no embryo	Mean sac diameter of 16–24 mm and no embryo
Absence of embryo with heartbeat ≥2 wk after a scan that showed a gestational sac without a yolk sac	Absence of embryo with heartbeat 7–13 days after a scan that showed a gestational sac without a yolk sac
Absence of embryo with heartbeat ≥11 days after a scan that showed a gestational sac with a yolk sac	Absence of embryo with heartbeat 7–10 days after a scan that showed a gestational sac with a yolk sac
	Absence of embryo ≥6 wk after last menstrual period
	Empty amnion (amnion seen adjacent to yolk sac, with no visible embryo)
	Enlarged yolk sac (>7 mm)
	Small gestational sac in relation to the size of the embryo (<5 mm difference between mean sac diameter and crown–rump length)

* Criteria are from the Society of Radiologists in Ultrasound Multispecialty Consensus Conference on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy, October 2012.

† When there are findings suspicious for pregnancy failure, follow-up ultrasonography at 7 to 10 days to assess the pregnancy for viability is generally appropriate.

Doubilet PM et al. N Engl J Med 2013;369:1443-1451

Diagnostic and Management Guidelines Related to the Possibility of a Viable Intrauterine Pregnancy in a Woman with a Pregnancy of Unknown Location.

Table 3. Diagnostic and Management Guidelines Related to the Possibility of a Viable Intrauterine Pregnancy in a Woman with a Pregnancy of Unknown Location.*

Finding	Key Points
No intrauterine fluid collection and normal (or near-normal) adnexa on ultrasonography†	A single measurement of hCG, regardless of its value, does not reliably distinguish between ectopic and intrauterine pregnancy (viable or nonviable). If a single hCG measurement is <3000 mIU/ml, presumptive treatment for ectopic pregnancy with the use of methotrexate or other pharmacologic or surgical means should not be undertaken, in order to avoid the risk of interrupting a viable intrauterine pregnancy. If a single hCG measurement is ≥3000 mIU/ml, a viable intrauterine pregnancy is possible but unlikely. However, the most likely diagnosis is a nonviable intrauterine pregnancy, so it is generally appropriate to obtain at least one follow-up hCG measurement and follow-up ultrasonogram before undertaking treatment for ectopic pregnancy.
Ultrasonography not yet performed	The hCG levels in women with ectopic pregnancies are highly variable, often <1000 mIU/ml, and the hCG level does not predict the likelihood of ectopic pregnancy rupture. Thus, when the clinical findings are suspicious for ectopic pregnancy, transvaginal ultrasonography is indicated even when the hCG level is low.

* Criteria are from the Society of Radiologists in Ultrasound Multispecialty Consensus Conference on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy, October 2012.

† Near-normal (i.e., inconsequential) adnexal findings include corpus luteum, a small amount of free pelvic fluid, and paratubal cyst.

Doubilet PM et al. N Engl J Med 2013;369:1443-1451

Ultrasound Markers Without Bleeding (n=232)

- Initial U/S after + urine pregnancy test
- Loss rates
  - Yolk sac present = 8.5%
  - Embryo ≤5mm = 7.2%
  - Embryo 6-10mm = 3.3%
  - Embryo >10mm = 0.5%
  - No pregnancies were lost between 8.5-14 weeks

Goldstein SR. Obstet Gynecol. 1994 Aug;84(2):294-7.

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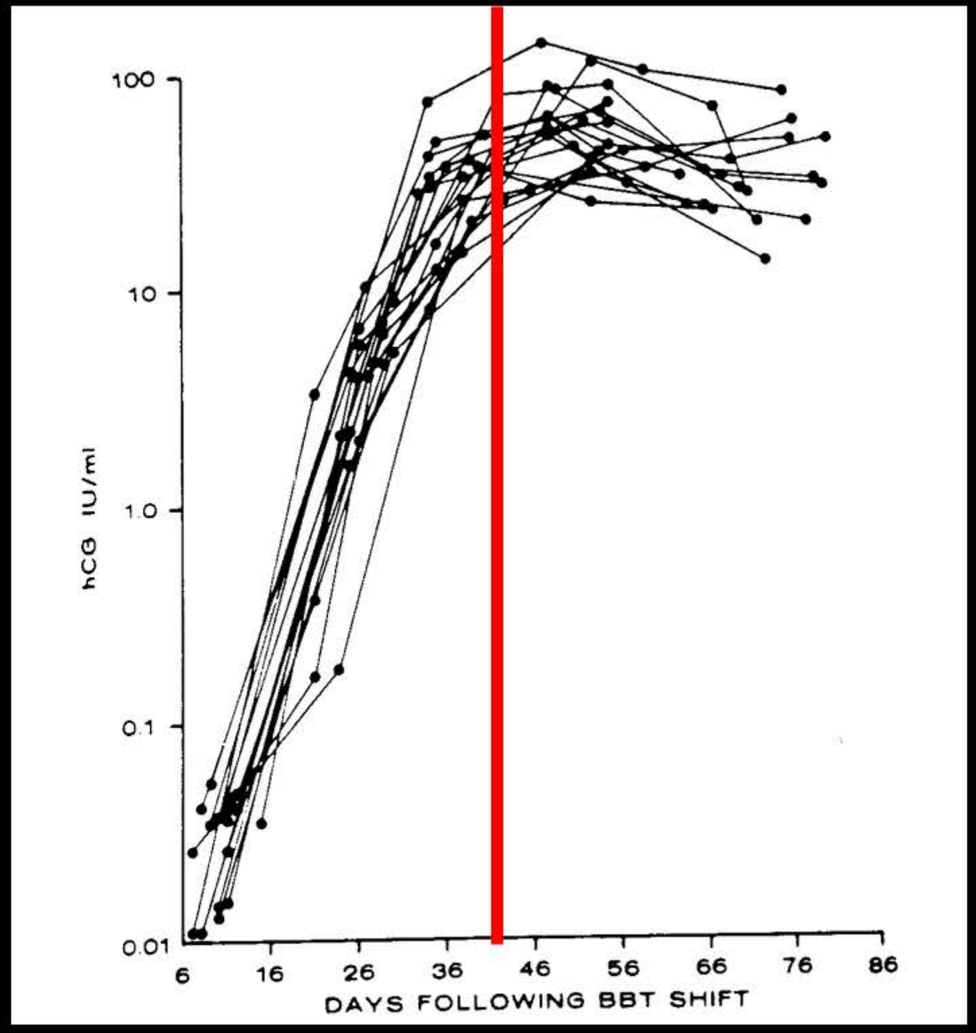
1st Trimester HCG



J Clin Endocrinol Metab 1979;49:917

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HCG in Early Pregnancy

- HCG has a slower rise in ectopics
- 85% of intrauterine gestations have a 66% rise in 48 hours
- 15% of patients with an intrauterine pregnancy have a “abnormal” rise in HCG in the first 40 days
- 17% of ectopics have a normal doubling time

Obstet Gynecol 1981;58:162

If HCG >1500 and Gestational Sac is Visible on U/S…

Then Do Not Repeat HCG

** Multiple gestations, failed intrauterine pregnancy*

#2) Treatment

Your Treatment Toolbox

- Patience
- Misoprostol
- Manual vacuum aspirator (MVA)

Do Nothing

Expectant Management

- Requirements for therapy:
  - — <13 weeks gestation
  - — Stable vital signs
  - — No evidence infection
- What to expect:
  - — Most expel within 1st 2 wks after diagnosis
  - — Prolonged follow-up may be needed
  - — Acceptable and safe to wait up to 4 wks post-diagnosis

Outcomes

Do Nothing: Expectant Management

- Overall success rate 81%
- Success rates vary by type of miscarriage
  (helpful to tailor counseling)
  — Incomplete/inevitable abortion 91%
  — Embryonic demise 76%
  — Anembryonic pregnancies 66%

Luise C, Ultrasound Obstet Gynecol 2002

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Misoprostol

- Prostoglandin E1 analogue
- FDA approved for prevention of gastric ulcers
- Used off-label for many Ob/Gyn indications:
  - Labor induction
  - Cervical ripening
  - Medical abortion *(with mifepristone)*
  - Prevention/treatment of postpartum hemorrhage
- Can be administered by oral, buccal, sublingual, vaginal and rectal routes

Chen B, Clin Obstet Gynecol 2007

Medical Management: RCT

	Misoprostol	Vacuum
n	491	161
Age	29.8	30.9
Gestational age	7.6 wks	7.6 wks
Gest sac diameter	3.8 cm	3.6 cm
Nulliparous	24%	19%

NEJM 2005;353:761-9.

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Medical Management: RCT

	Misoprostol	Vacuum
Success by D#3	71%	97%
Success by D#8	84%	97%
Embryonic Death	88%	-
Anembryonic Preg	81%	-
Incomplete Ab	93%	-

NEJM 2005;353:761-9.

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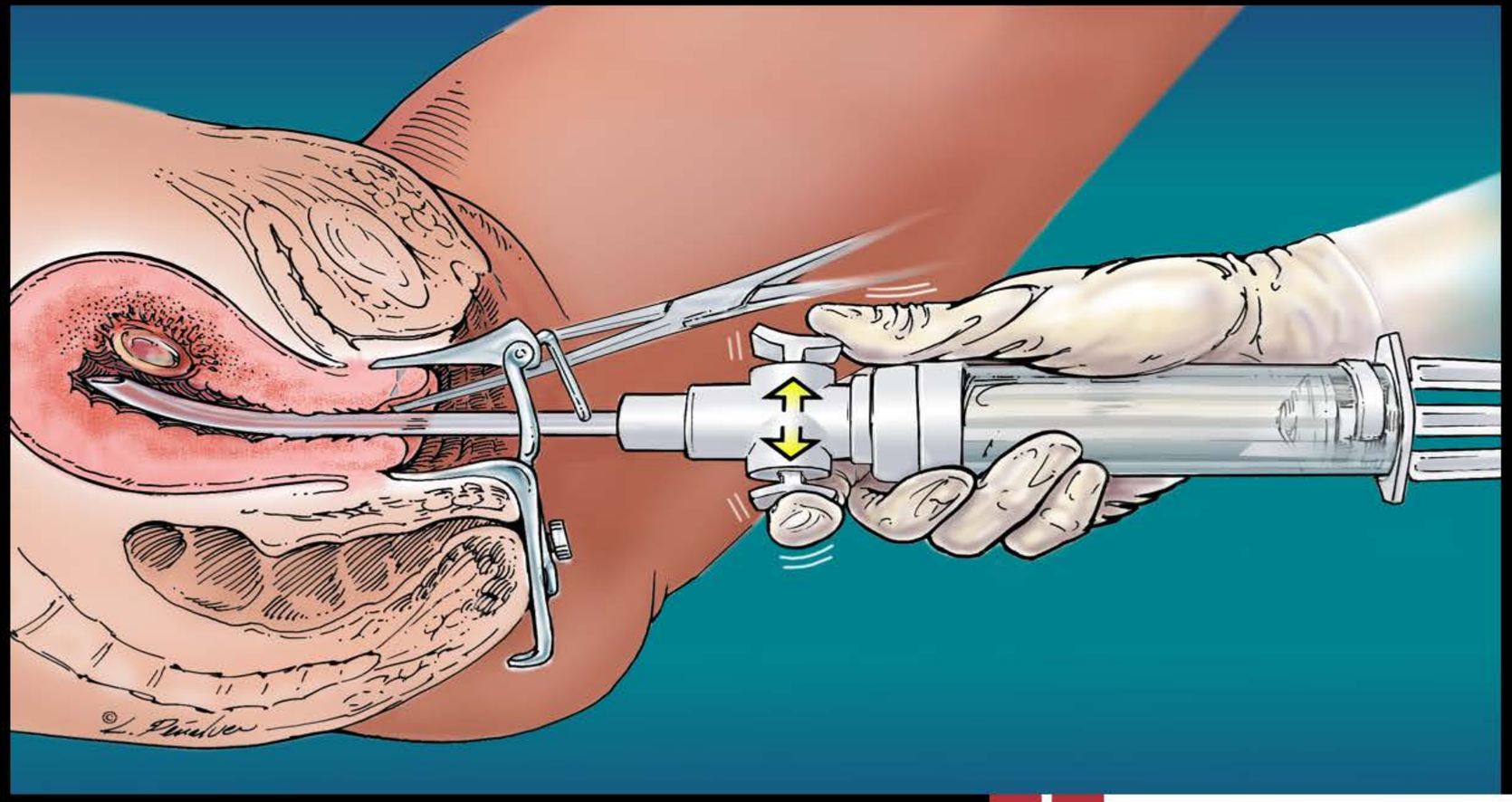
Medical Tx for Early Pregnancy Failure

- Misoprostol 200mcg tabs, 4 PV x 1
- Phenergan 25 mg po q6 prn
- Ibuprofen 800 mg po q8 prn
- Norco 7.5/500 1-2 po q4 prn

*If patient has not passed tissue by Day #1-3 then repeat misoprostol

MVA Technique: Vacuum Aspiration



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Mixing the Options: A Resonable Approach

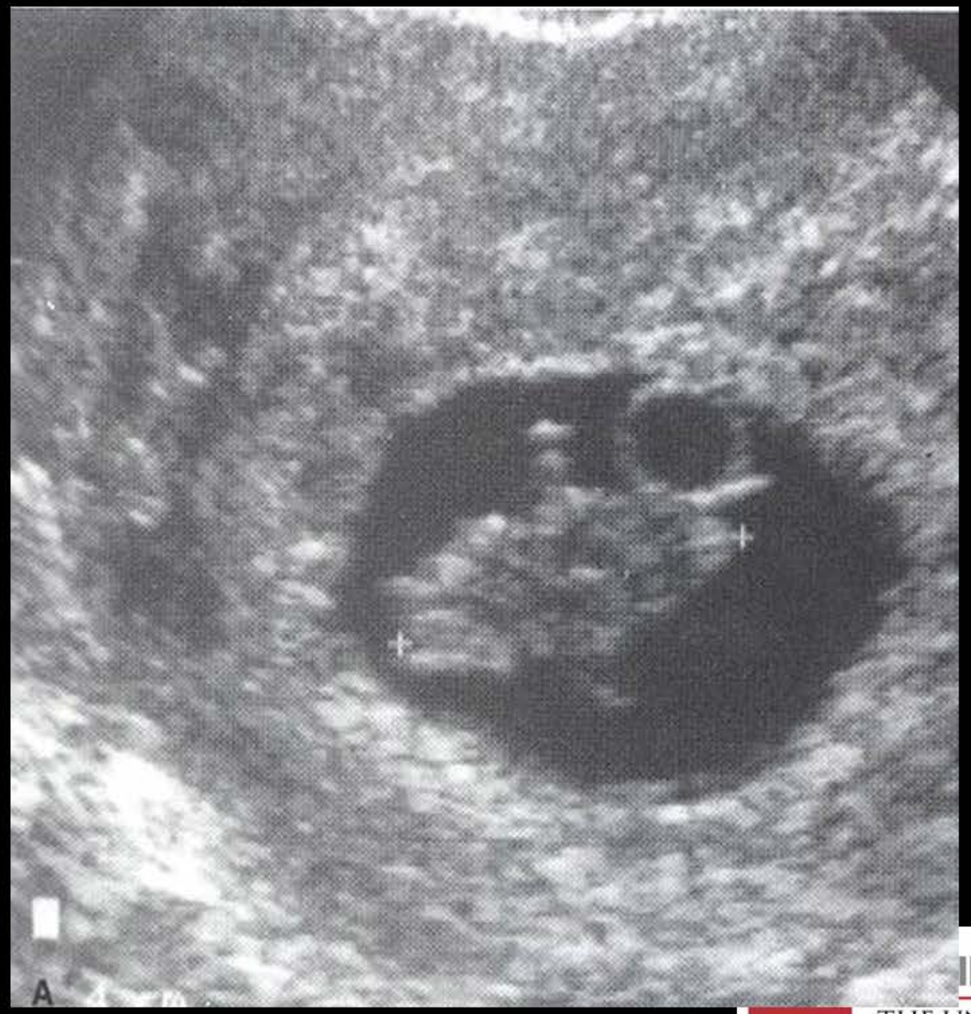
- Expectant management x 2-3 weeks
- If needed then Misoprostol 800 mcg
- Return at 2-3 weeks for f/u U/S
- or D&C

Case #1

- 28 y.o. G2 P1001 @ 8 wks by LMP
- Vaginal bleeding
- Pelvic exam
  - 10 cc of fresh blood and clot from closed os
  - 8 wk sized uterus

What's the next test?

Case #1

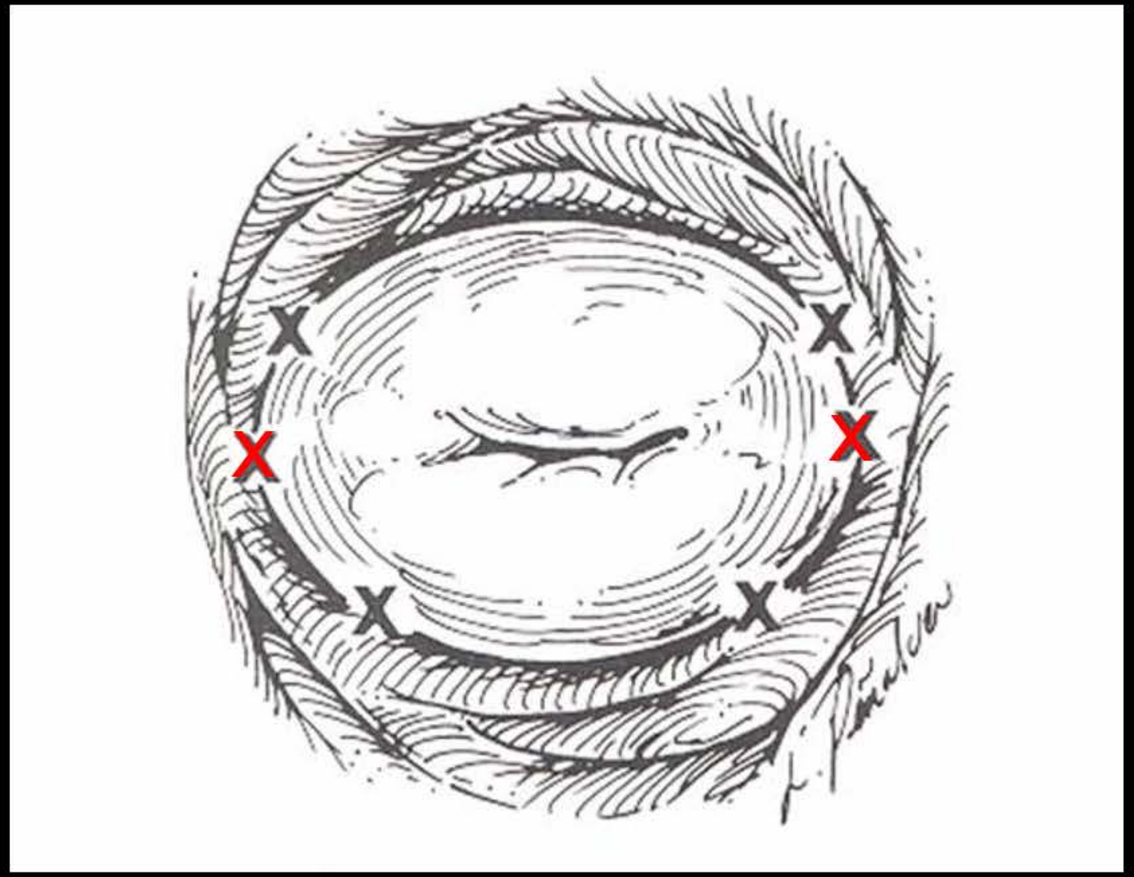


No cardiac activity

Management Options

Simple Guide to D&C

- Number of weeks = Canula size (mm)
- Dilate cervix to the same mms as gestational age in weeks
  - Example: 10 wks gestation, dilate to 10 mm, and use 10 mm canula
- Good up to 14 wks
  - MVA generally used up to 10 wks gestation



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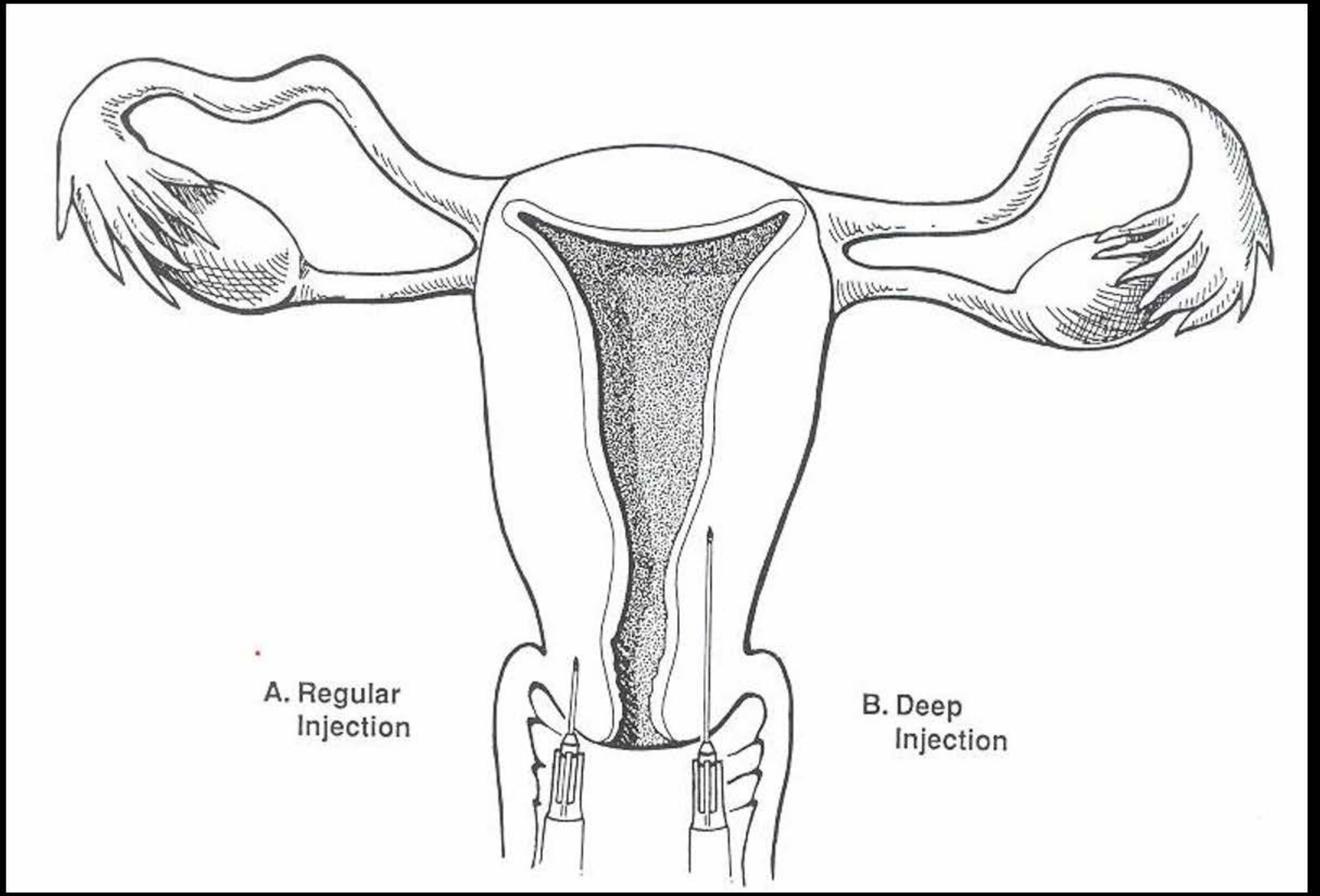
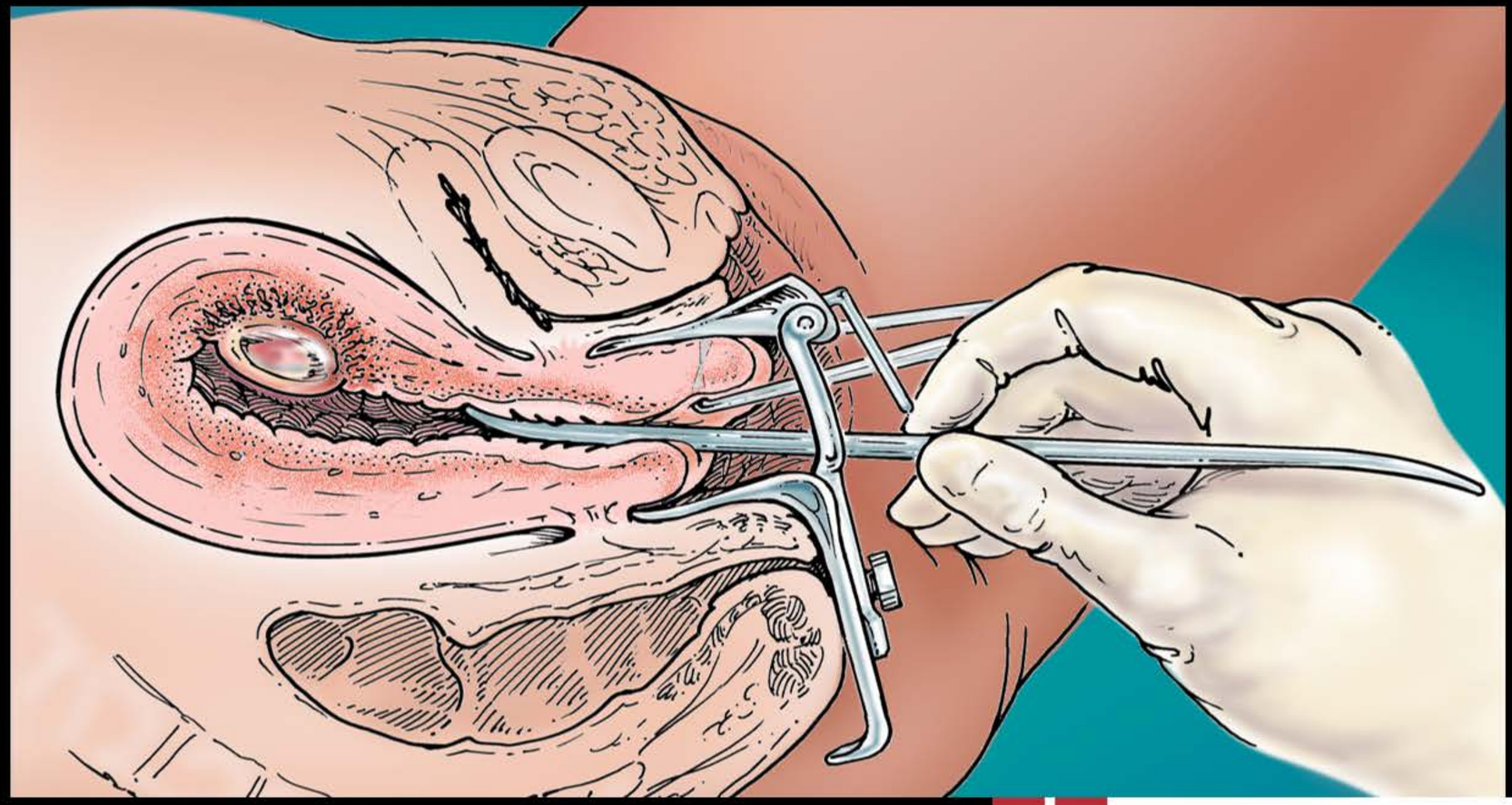


MVA Technique: Dilation



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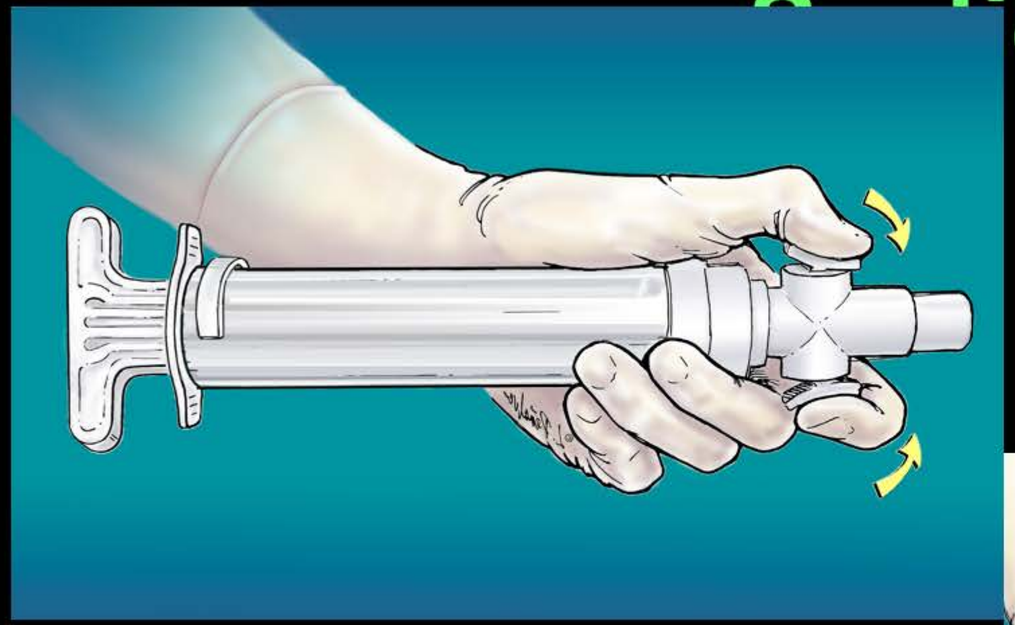
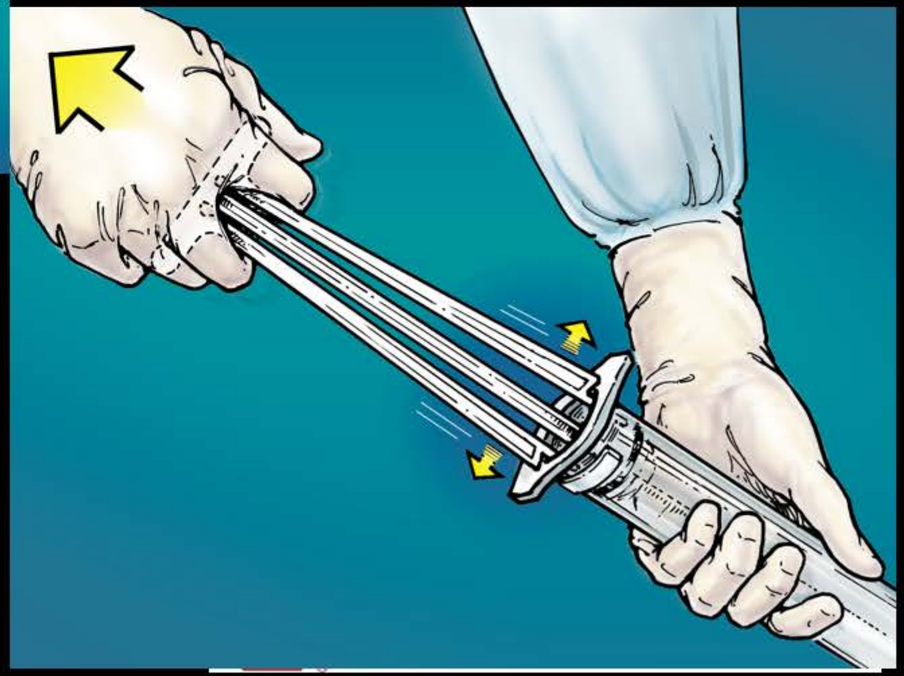
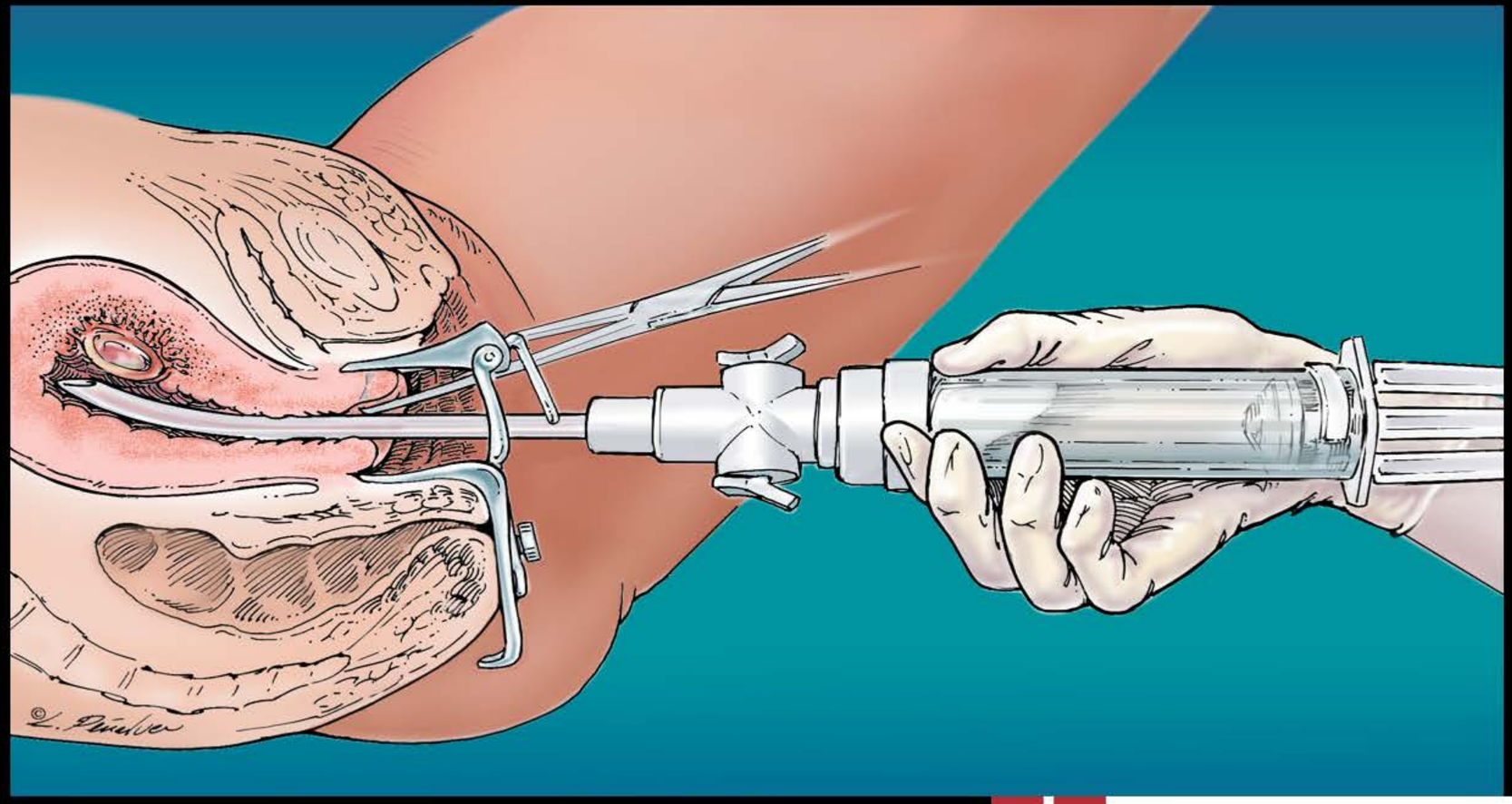
MVA Technique: Create Suction





MVA Technique: Insert Cannula



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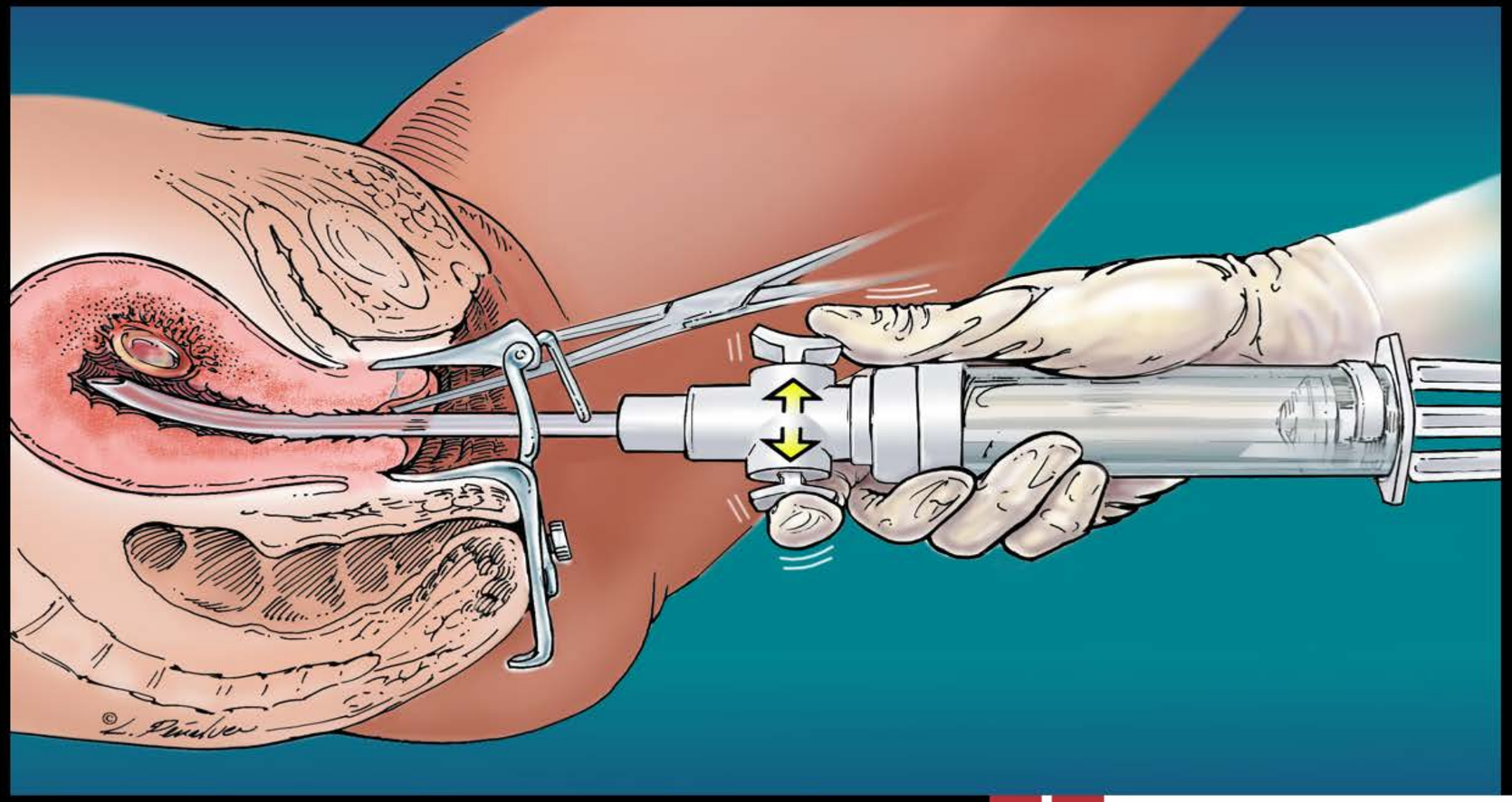
MVA Technique: Vacuum Aspiration



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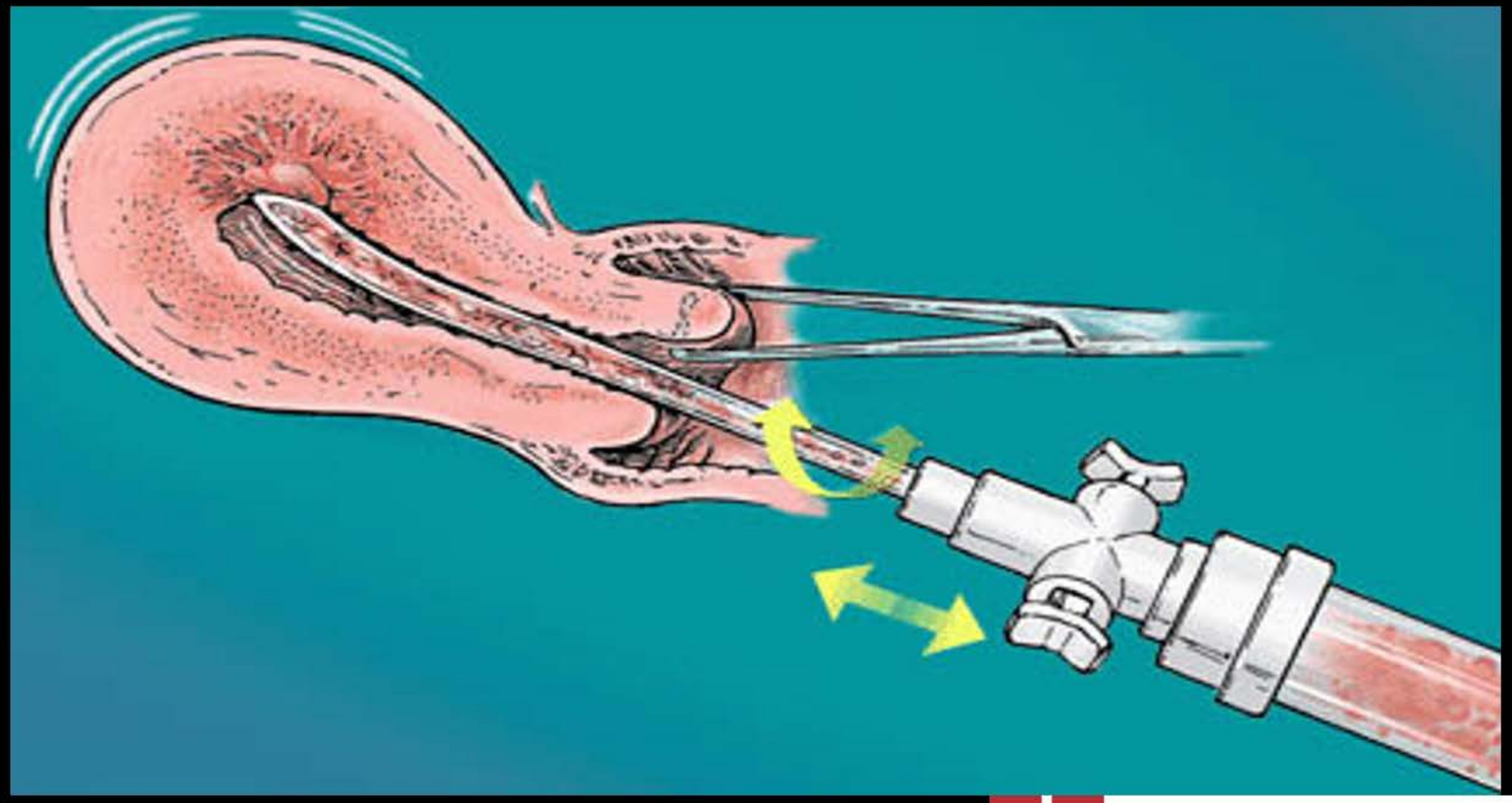

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Tissue: 5 Weeks

MVA

EVC

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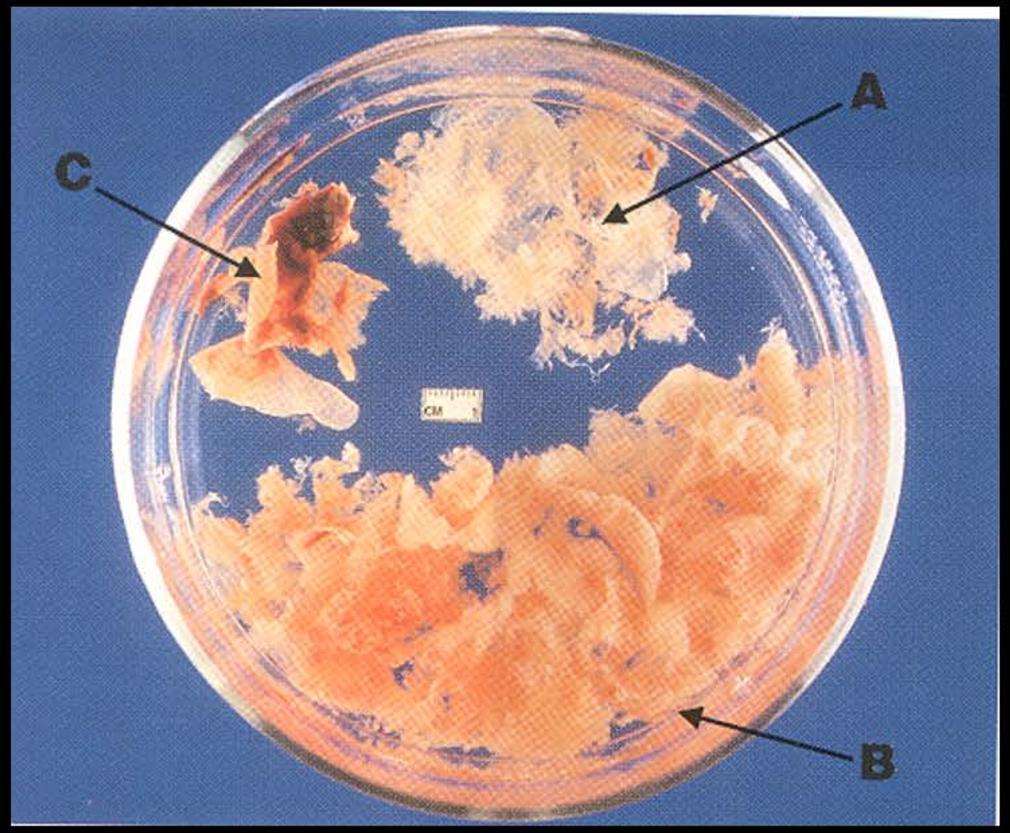
Tissue: 8 Weeks



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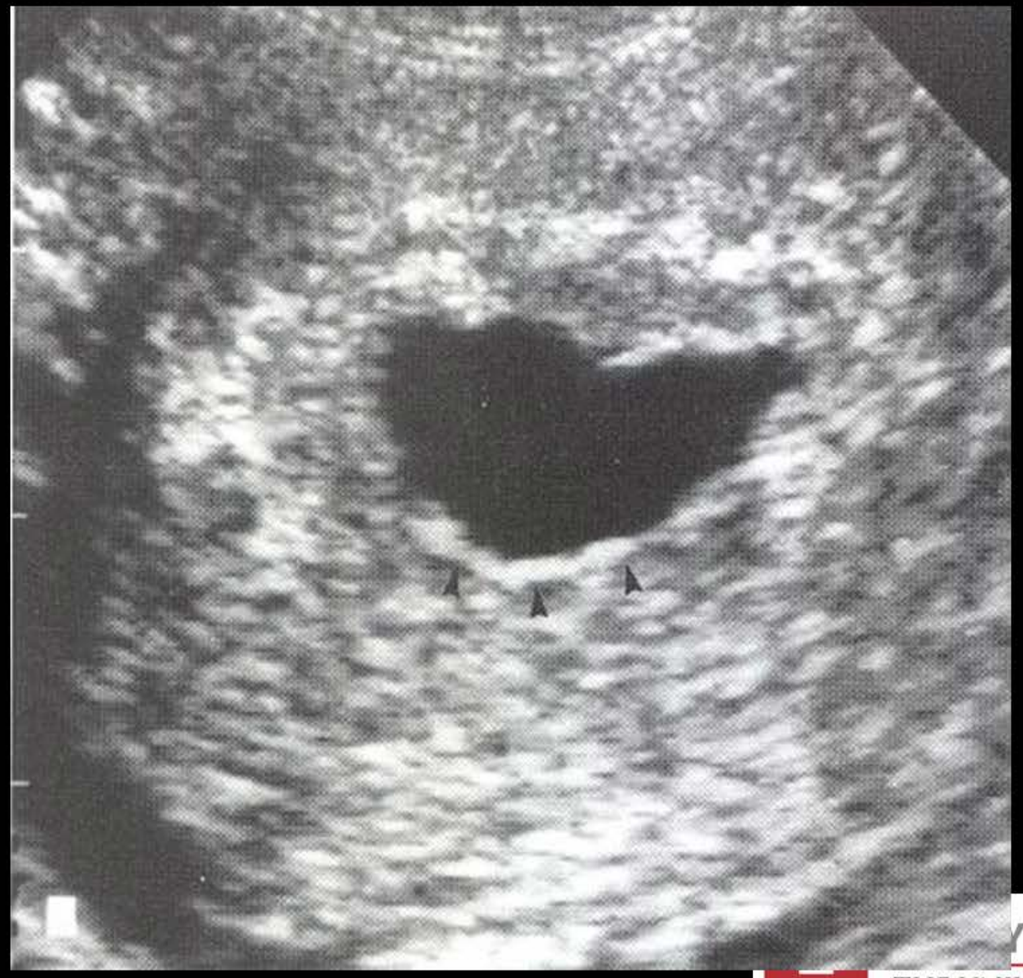
Case #2

- 35 y.o. G3 P2002 @ 10 wks by LMP
- No fetal heart tones in clinic

Case #2



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Thank You

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