ABORTION

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OBSTETRICS AND GYNECOLOGY

REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY

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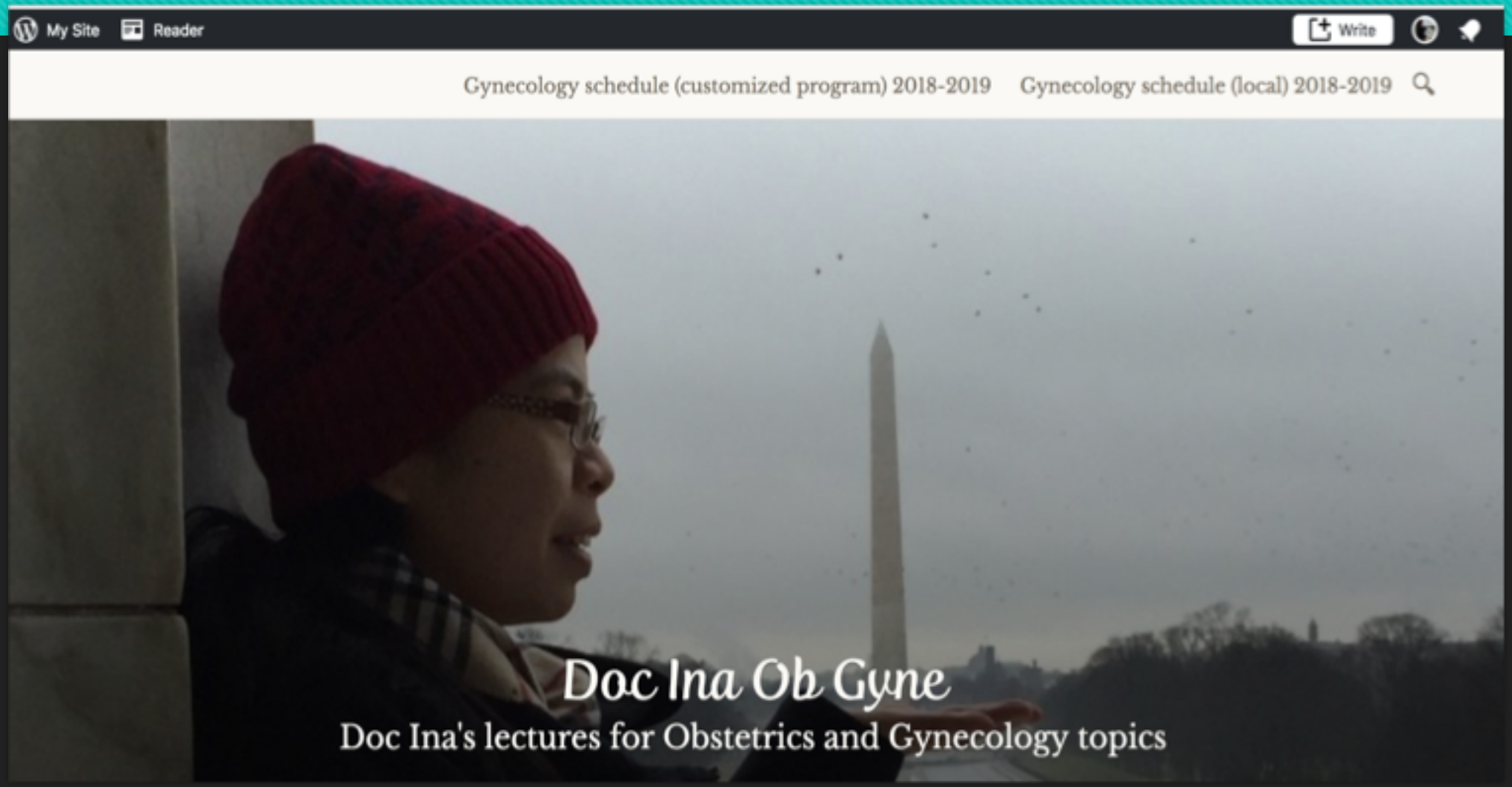


REFERENCE

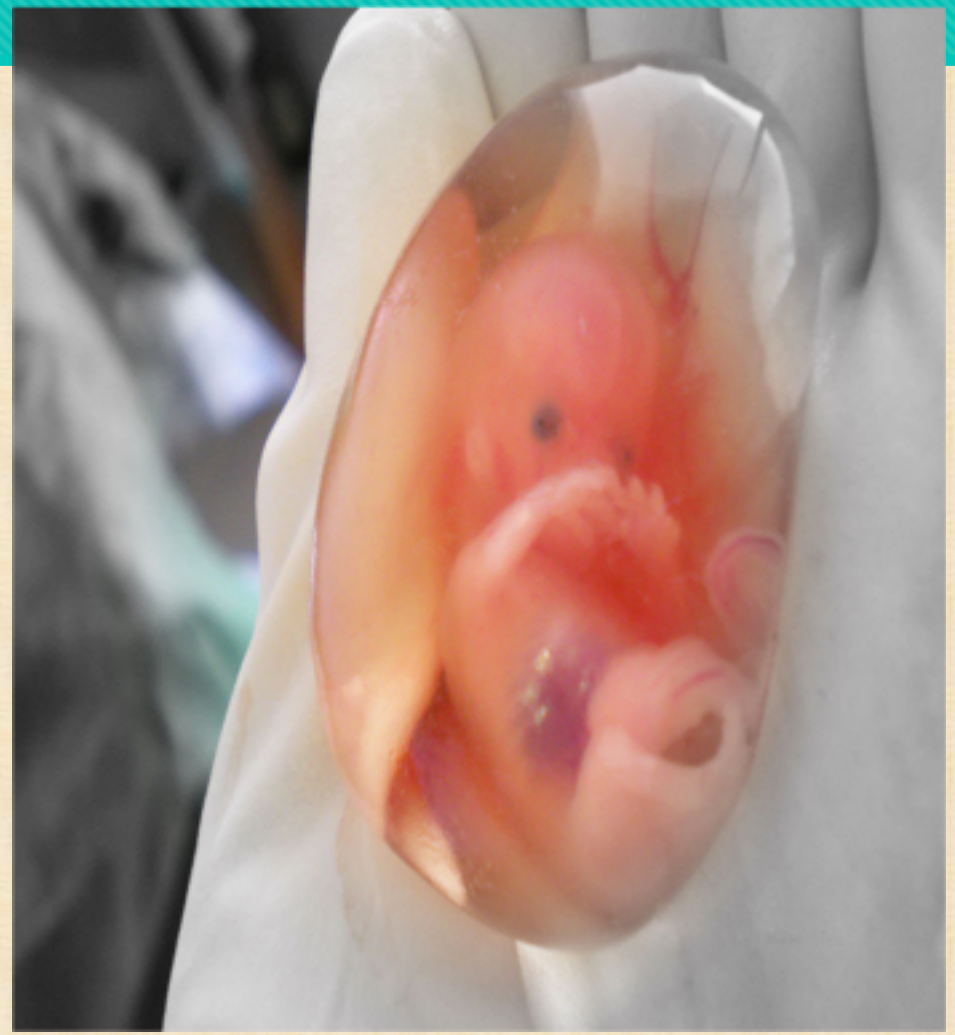
Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS (eds).William's Obstetrics 24th edition; 2014; chapter 18 ABORTION

OUTLINE

- NOMENCLATURE
- FIRST-TRIMESTER SPONTANEOUS ABORTION
- CLINICAL CLASSIFICATION OF SPONTANEOUS ABORTION
- MANAGEMENT OF SPONTANEOUS ABORTION
- MIDTRIMESTER ABORTION
- CERVICAL INSUFFICIENCY
- INMIDTRIMESTER ABORTION

DEFINITION OF ABORTION

- defined as the spontaneous or induced termination of pregnancy before fetal viability.
- miscarriage and abortion are terms used interchangeably in a medical context.
- Other terms: *early pregnancy loss, wastage, or failure.*
- pregnancy termination before 20 weeks' gestation or with a fetus born weighing < 500 g (National Center for Health Statistics, the Centers for Disease Control and Prevention, and the World Health Organization)



Other terms:

1. **Spontaneous abortion**—includes threatened, inevitable, incomplete, complete, and missed abortion.
2. **Septic abortion** is used to further classify any of these that are complicated further by infection.
3. **Recurrent abortion**—repetitive spontaneous abortions
4. **Induced abortion**—surgical or medical termination of a live fetus that has not reached viability.

FIRST-TRIMESTER SPONTANEOUS ABORTION: Pathogenesis

- More than 80 percent of spontaneous abortions occur within the first 12 weeks of gestation.
- Closely linked to **fetal chrosomal anomalies**
- Death is usually accompanied by hemorrhage into the decidua basalis, followed by adjacent tissue necrosis that stimulates uterine contractions and expulsion.
- the key to determining the cause of early miscarriage is to ascertain the cause of fetal death.

Fetal Factors

Approximately half of miscarriages are anembryonic, that is, with no identifiable embryonic elements (**blighted ovum**)

The other 50 percent are **embryonic miscarriages**, which commonly display a developmental abnormality of the zygote, embryo, fetus, or at times, the placenta.

Of embryonic miscarriage, half of these—25 percent of all abortuses—have chromosomal anomalies and thus are **aneuploid abortions**.

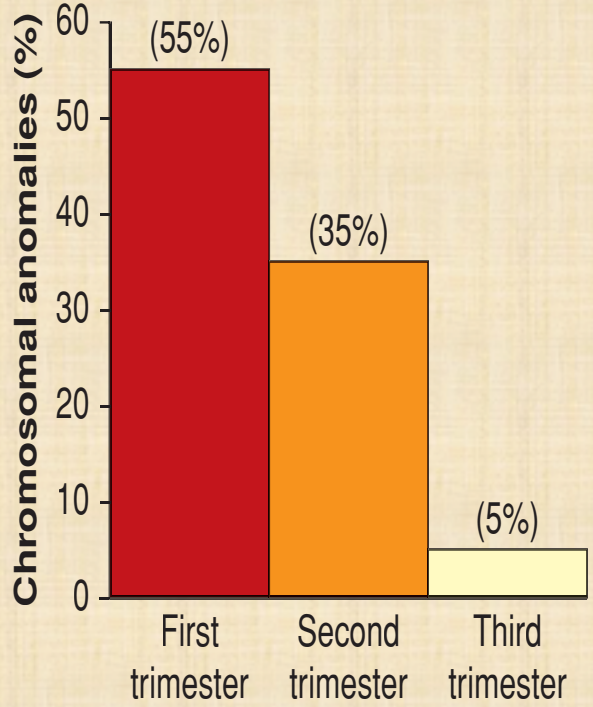


FIGURE 18-1 Frequency of chromosomal anomalies in abortuses and stillbirths during each trimester. Approximate percentages for each group are shown. (Data from Eiben, 1990; Fantel, 1980; Warburton, 1980.)

Fetal Factors

Autosomal trisomy is the most frequently identified chromosomal anomaly. (chromosomes 13, 16,18,21,22 are most common)

Monosomy X (45,X) is the single most frequent specific chromosomal abnormality. (Turner syndrome)

Autosomal monosomy is rare and incompatible with life.

Triploidy is often associated with hydropic or molar placental degeneration

Tetraploid fetuses most often abort early in gestation, and they are rarely liveborn.

Chromosomally normal fetuses abort later than those that are aneuploid (peaks at approximately **13 weeks**, incidence highest for maternal age > 35)

Maternal Factors

1. Maternal age
2. Maternal infection: *Chlamydia trachomatis see in 4% of abortuses*
3. Medical disorders: *Diabetes mellitus, thyroid disease, celiac disease, anorexia/bulimia nervosa. IBD, SLE*
4. Medications
5. Cancer: *Cancer survivors who were previously treated with abdominopelvic radiotherapy, chemotherapy*
6. nutrition: severe dietary deficiency and morbid obesity

Maternal Factors

7. Surgical procedures: surgical procedures performed during early pregnancy do not increase the risk for abortion, *except if it involves early removal of the corpus luteum or the ovary in which it resides.*

- If performed before 10 weeks' gestation, supplemental progesterone should be given.
- Between 8 and 10 weeks, a single 150-mg intramuscular injection of 17-hydroxyprogesterone caproate is given at the time of surgery.
- If between 6 to 8 weeks, then two additional 150-mg 17-hydroxyprogesterone caproate is given at the time of surgery.

Other progesterone regimens include: (1) oral micronized progesterone 200 or 300 mg orally once daily, or (2) 8-percent progesterone vaginal gel (Crinone) given intravaginally as one premeasured applicator daily plus micronized progesterone 100 or 200 mg orally once daily continued until 10 weeks' gestation.

Maternal Factors

8. Social and behavioral factors: *smoking, alcohol, excessive caffeine consumption (approximately 5 cups of coffee per day—about 500 mg of caffeine)*

9. Occupational and environmental factors: *environmental toxins such as arsenic, lead, formaldehyde, benzene, and ethylene oxide; exposure to antineoplastic drugs, sterilizing agents, and x-rays*

10. Immunologic factors: *APAS*

11. Inherited thrombophilias

12. Uterine defects

Clinical Classification of Spontaneous Abortion

1. **Threatened Abortion:** bloody vaginal discharge or bleeding appears through a closed cervical os during the first 20 weeks; fetus is viable on ultrasound
2. **Inevitable Abortion:** gross rupture of the membranes along with cervical dilatation
3. **Incomplete Abortion:** bleeding that follows partial or complete placental separation and dilation of the cervical os
4. **Complete abortion:** history of heavy bleeding, cramping, and passage of tissue or a fetus

MIDTRIMESTER ABORTION

- end of the first trimester until the fetus weighs ≥ 500 g or gestational age reaches 20 weeks
- Risk factors for second-trimester abortion include race, ethnicity, prior poor obstetrical outcomes, and extremes of maternal age
- Closely linked to **recurrent miscarriages**

TABLE 18-6. Some Causes of Midtrimester Spontaneous Pregnancy Losses

Fetal anomalies
Chromosomal
Structural
Uterine defects
Congenital
Leiomyomas
Incompetent cervix
Placental causes
Abruption, previa
Defective spiral artery transformation
Chorioamnionitis
Maternal disorders
Autoimmune
Infections
Metabolic

Data from Allanson, 2010; Dukhovny, 2009; Joo, 2009; Romero, 2011; Saravelos, 2011; Stout, 2010.

Cervical Insufficiency

- Also known as **incompetent cervix**
- characterized classically by *painless cervical dilatation in the second trimester.*
- It can be followed by prolapse and ballooning of membranes into the vagina, and ultimately, expulsion of an immature fetus.
- Risk factors: previous cervical trauma such as dilatation and curettage, conization, cauterization, or amputation
- transvaginal sonography documents cervical shortening < 25 mm

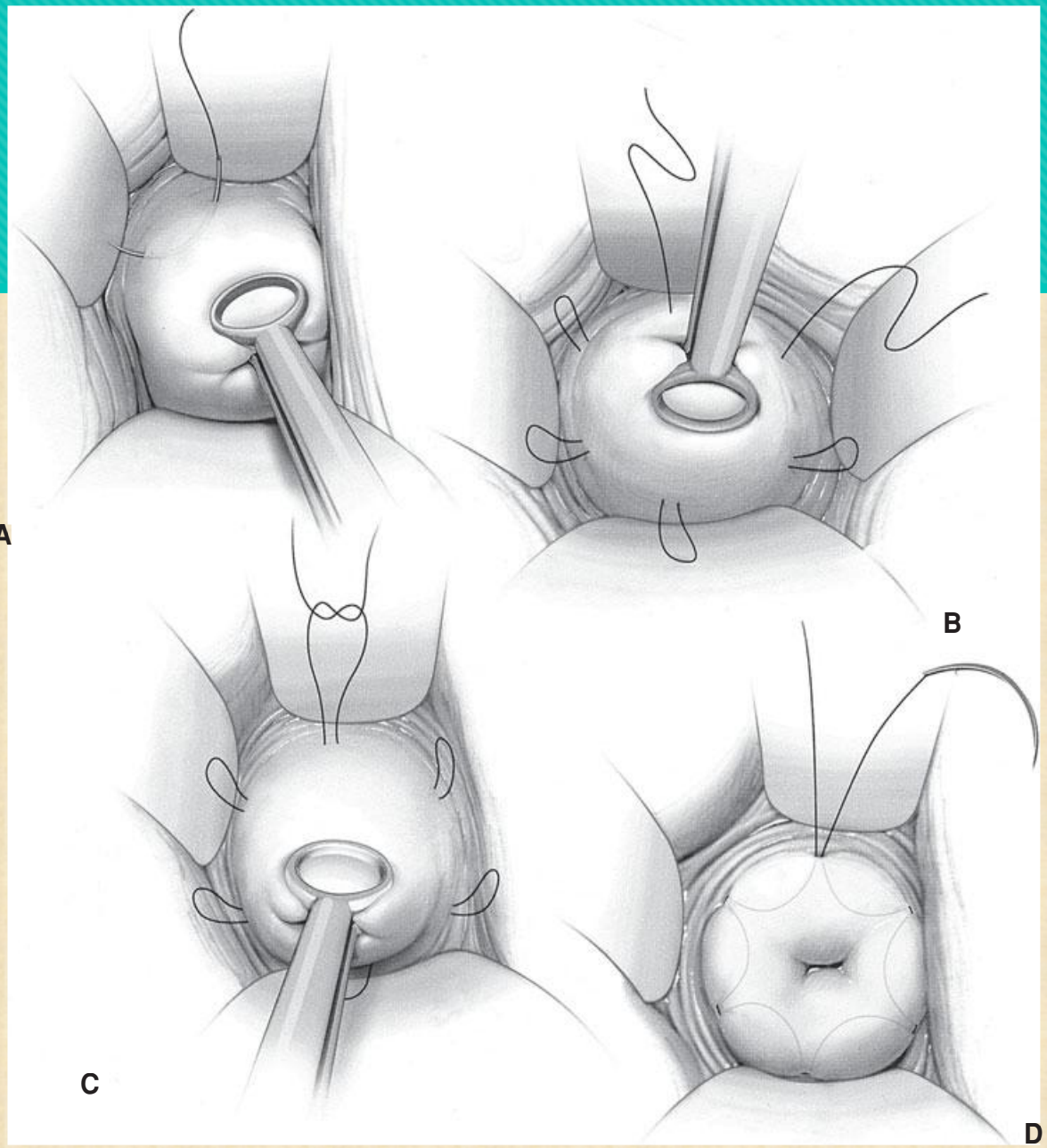
Cervical Insufficiency

- surgically with **cerclage**, which reinforces a weak cervix by a purse-string suture.
- Contraindications to cerclage usually include bleeding, uterine contractions, or ruptured membranes.
- prophylactic cerclage before dilatation is preferable, but a rescue/ "emergency" cerclage can be performed after the cervix is found to be dilated, effaced.
- timing of surgery: elective cerclage is **usually done between 12 and 14 weeks' gestation.**

Cervical Insufficiency

- Cerclage Procedures

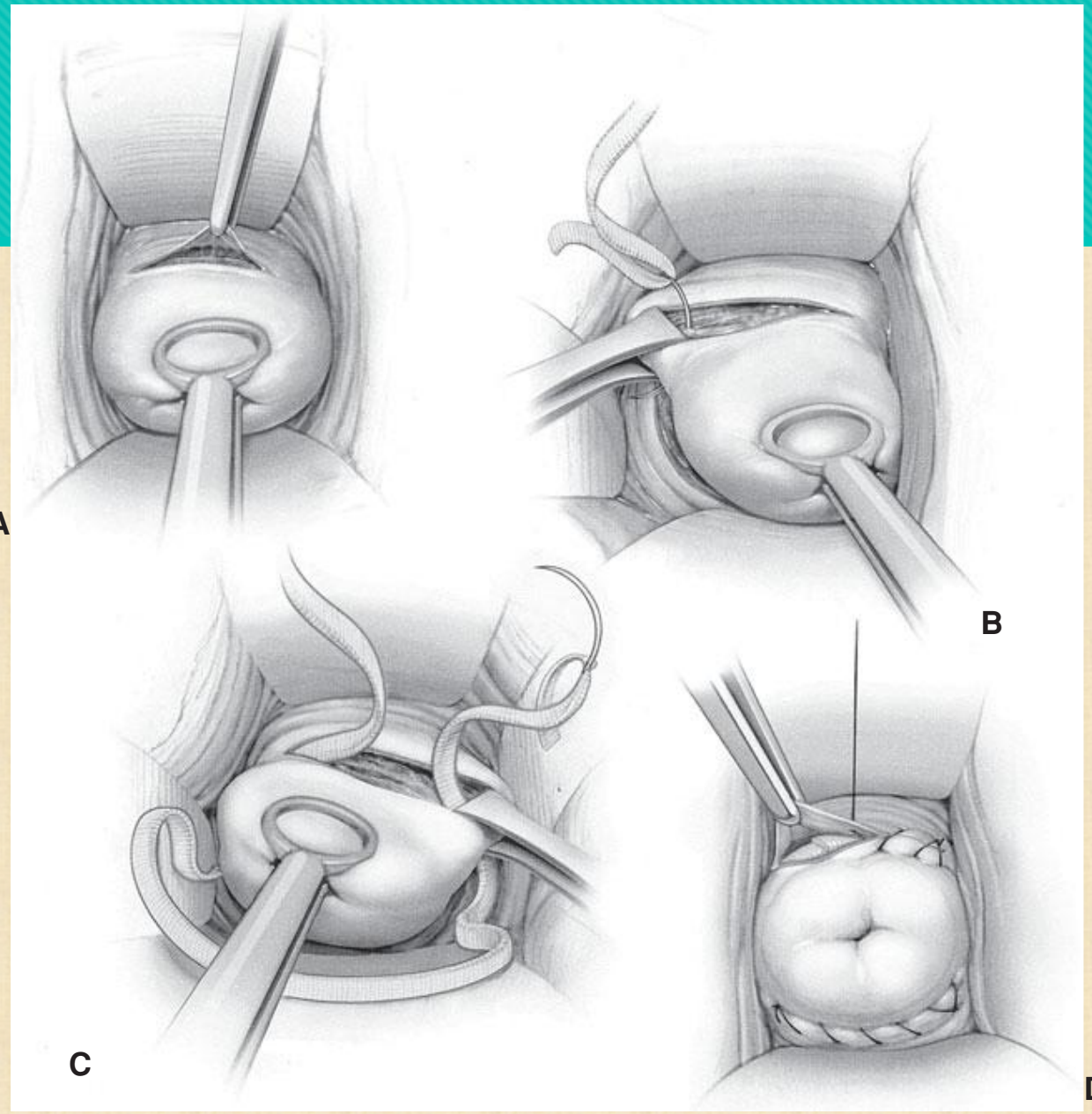
1. McDonald (1963)



Cervical Insufficiency

- Cerclage Procedures

2. Shirodkar (1955)



Cervical Insufficiency

- Cerclage Procedures

3. Transabdominal cerclage: suture placed at the uterine isthmus AND can be used if there are severe cervical anatomical defects or if there have been prior transvaginal cerclage failure

CERCLAGE COMPLICATIONS:

- membrane rupture, preterm labor, hemorrhage, infection, or combinations thereof.
- Membrane rupture during suture placement or within the first 48 hours following surgery is an indication for cerclage removal because of the likelihood of serious fetal or maternal infection

Management: How to evacuate the products of conception?

TABLE 18-7. Some Techniques Used for First-Trimester Abortion[a]

Surgical
- Dilatation and curettage
- Vacuum aspiration
- Menstrual aspiration

Medical
- Prostaglandins E_2, $F_{2\alpha}$, E_1, and analogues
  - Vaginal insertion
  - Parenteral injection
  - Oral ingestion
  - Sublingual
- Antiprogesterones—RU-486 (mifepristone) and epostane
- Methotrexate—intramuscular and oral
- Various combinations of the above

[a]All procedures are aided by pretreatment using hygroscopic cervical dilators.

TABLE 18-8. Comparisons of Some Advantages and Drawbacks to Medical versus Surgical Abortion

Factor	Medical	Surgical
Invasive	Usually no	Yes
Pain	More	Less
Vaginal bleeding	Prolonged, unpredictable	Light, predictable
Incomplete abortion	More common	Uncommon
Failure rate	2–5%	1%
Severe bleeding	0.1%	0.1%
Infection rate	Low	Low
Anesthesia	Usually none	Yes
Time involved	Multiple visits, follow-up exam	Usually one visit, no follow-up exam

Management: How to evacuate the products of conception?

Cervical preparation to dilate the cervix

LAMINARIA

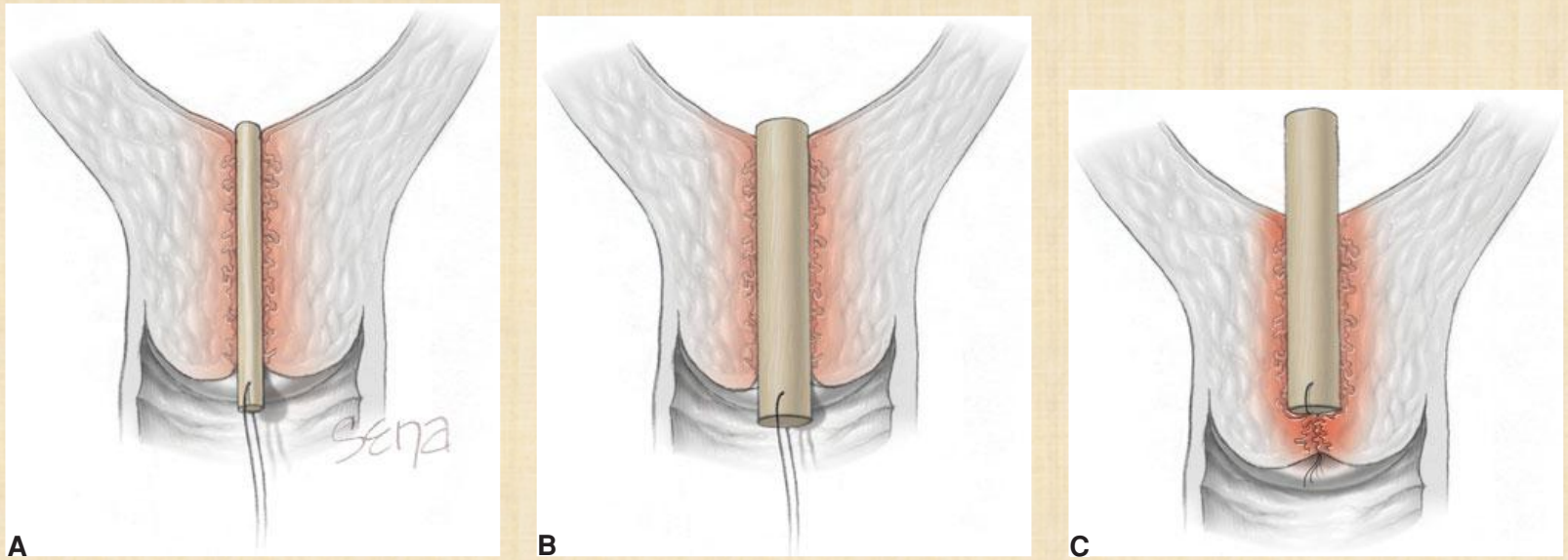
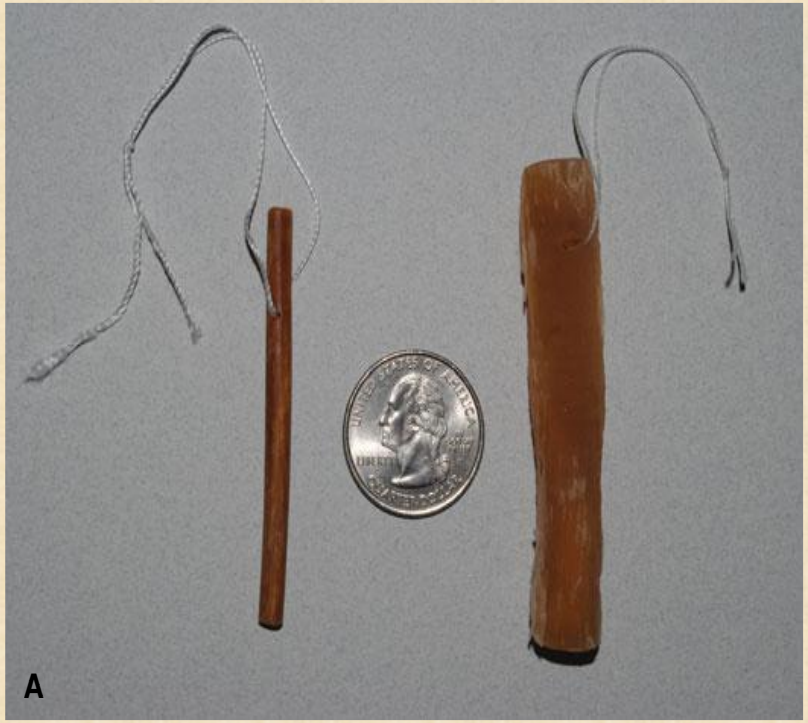
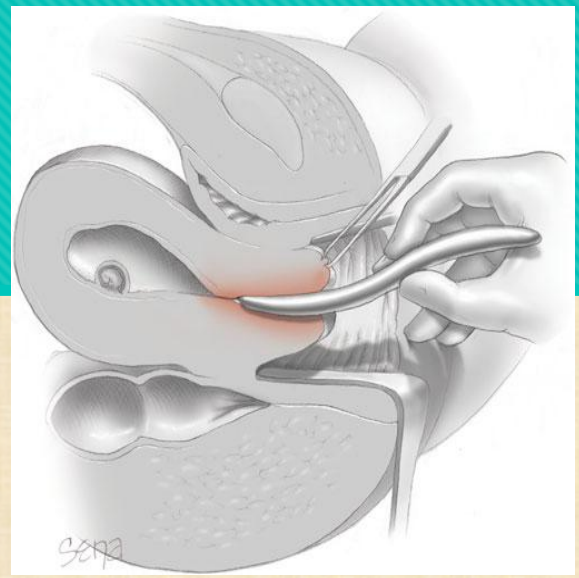
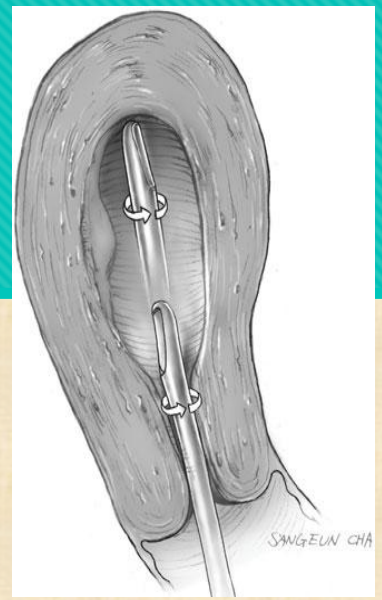


FIGURE 18-7 Insertion of laminaria before dilatation and curettage. **A.** Laminaria immediately after being appropriately placed with its upper end just through the internal os. **B.** Several hours later the laminaria is now swollen, and the cervix is dilated and softened. **C.** Laminaria inserted too far through the internal os; the laminaria may rupture the membranes.



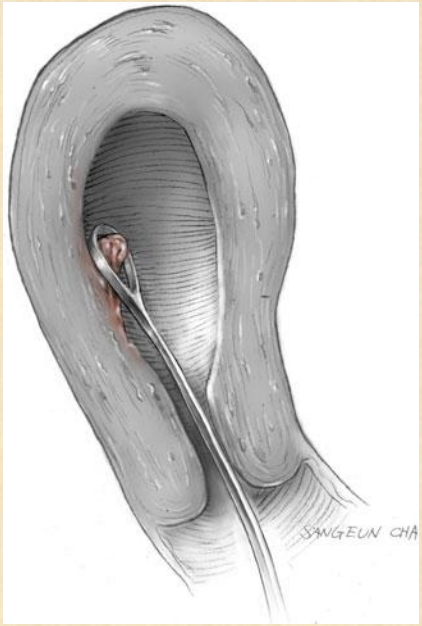
Management: How to evacuate the products of conception?





Dilatation and Curettage (D&C)

- dilating the cervix and then evacuating the pregnancy by mechanically scraping out the contents—sharp curettage, by suctioning out the contents—suction curettage, or both.



Midtrimester abortion

How to evacuate products of conception?

TABLE 18-10. Some Techniques Used for Midtrimester Abortion[a]

Surgical

- Dilatation and curettage (D&C)
- Dilatation and evacuation (D&E)
- Dilatation and extraction (D&X)
- Laparotomy
- Hysterotomy
- Hysterectomy

Medical

- Intravenous oxytocin
- Intraamnionic hyperosmotic fluid
  - 20-percent saline
  - 30-percent urea
- Prostaglandins E_2, $F_{2\alpha}$, E_1
  - Intraamnionic injection
  - Extraovular injection
  - Vaginal insertion
  - Parenteral injection
  - Oral ingestion

[a]All procedures are aided by pretreatment using hygroscopic cervical dilators.

Abortion

CONTRACEPTION FOLLOWING MISCARRIAGE OR ABORTION

- unless another pregnancy is desired right away, effective *contraception can be initiated very soon after abortion.*
- an intrauterine device can be inserted after the procedure is completed
- any of the various forms of hormonal contraception can be initiated at this time
- For women who desire another pregnancy, sooner may be preferable to later.

Thank you!

youtube channel: Ina Irabon

www.wordpress.com: Doc Ina OB Gyne