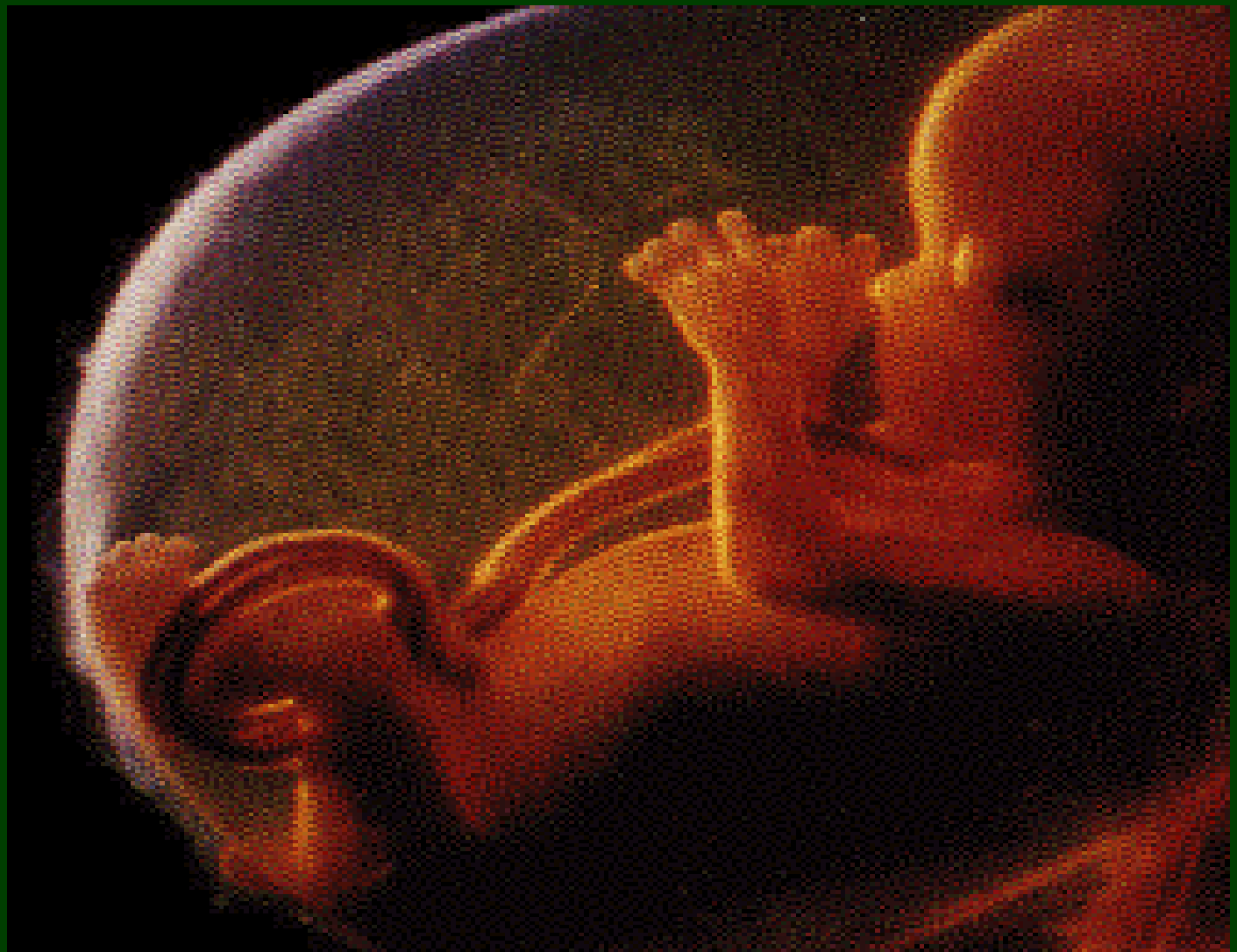
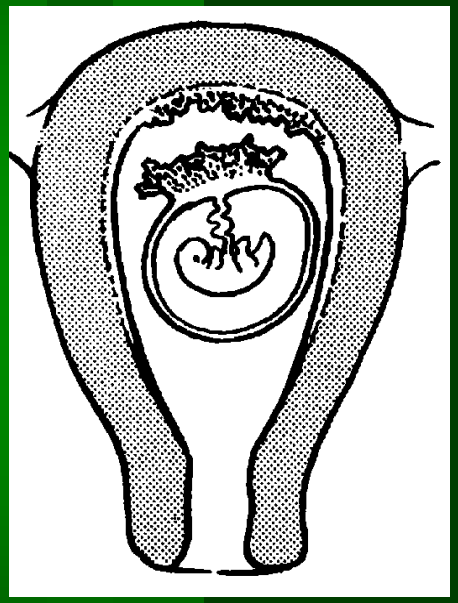

بنام خدا

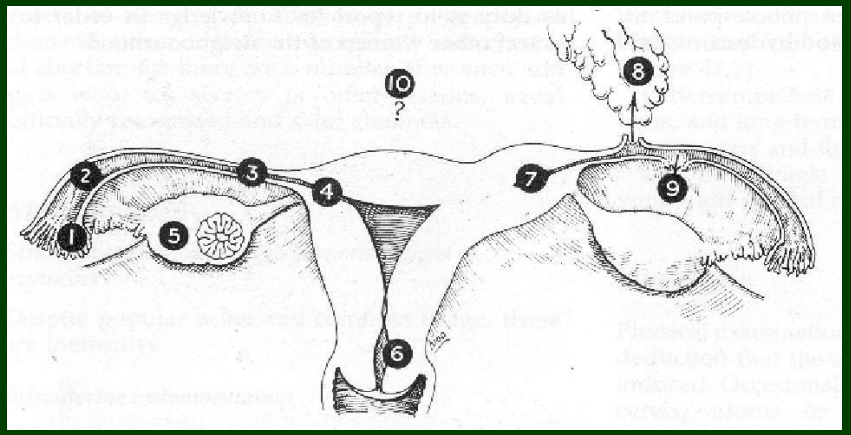
Abortion



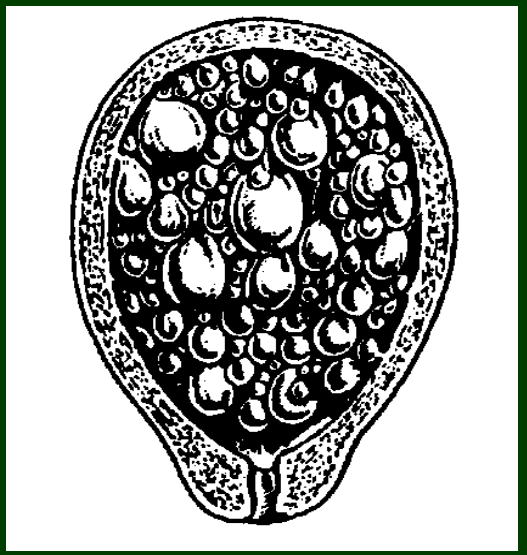
Causes of early bleeding in pregnancy



Abortion



Ectopic pregnancy



Hydatidiform mole

Abortion

- Termination of pregnancy, either spontaneously or intentionally
- Pregnancy termination prior to 20 weeks' gestation or less than 500-g birthweight
- Definition vary according to state laws for reporting abortions, fetal deaths, and neonatal deaths

Abortions

- Spontaneous abortion
- Induced (Termination of pregnancy)

Spontaneous abortion

- Abortion occurring without medical or mechanical means to empty the uterus is referred to as *spontaneous* .
- Another widely used term is *miscarriage*

Pathology

- Hemorrhage into the decidua basinalis, followed by necrosis of tissues adjacent to the bleeding
- If early, the ovum detaches, stimulating uterine contractions.
- Gestational sac is opened , fluid surrounding a small macerated fetus or alternatively no fetus is visible → *blighted ovum*

Pathology

- In later abortion, the retained fetus may undergo *maceration.*
  - The skull bones collapse, the abdomen distends with blood stained fluid, and the internal organs degenerate.
  - The skin softens and peels off in utero or at the slightest tough

Pathology

- When amnionic fluid is absorbed, the fetus may become compressed and desiccated → *fetal compressus.*
- The fetus become so dry and compressed - *a fetus papyraceous*

Etiology

- More than 80 percent of abortions occur in the first 12 weeks of pregnancy
- At least half result from chromosomal anomalies
- After the first trimester, both the abortion rate & the incidence of chromosomal anomalies decrease

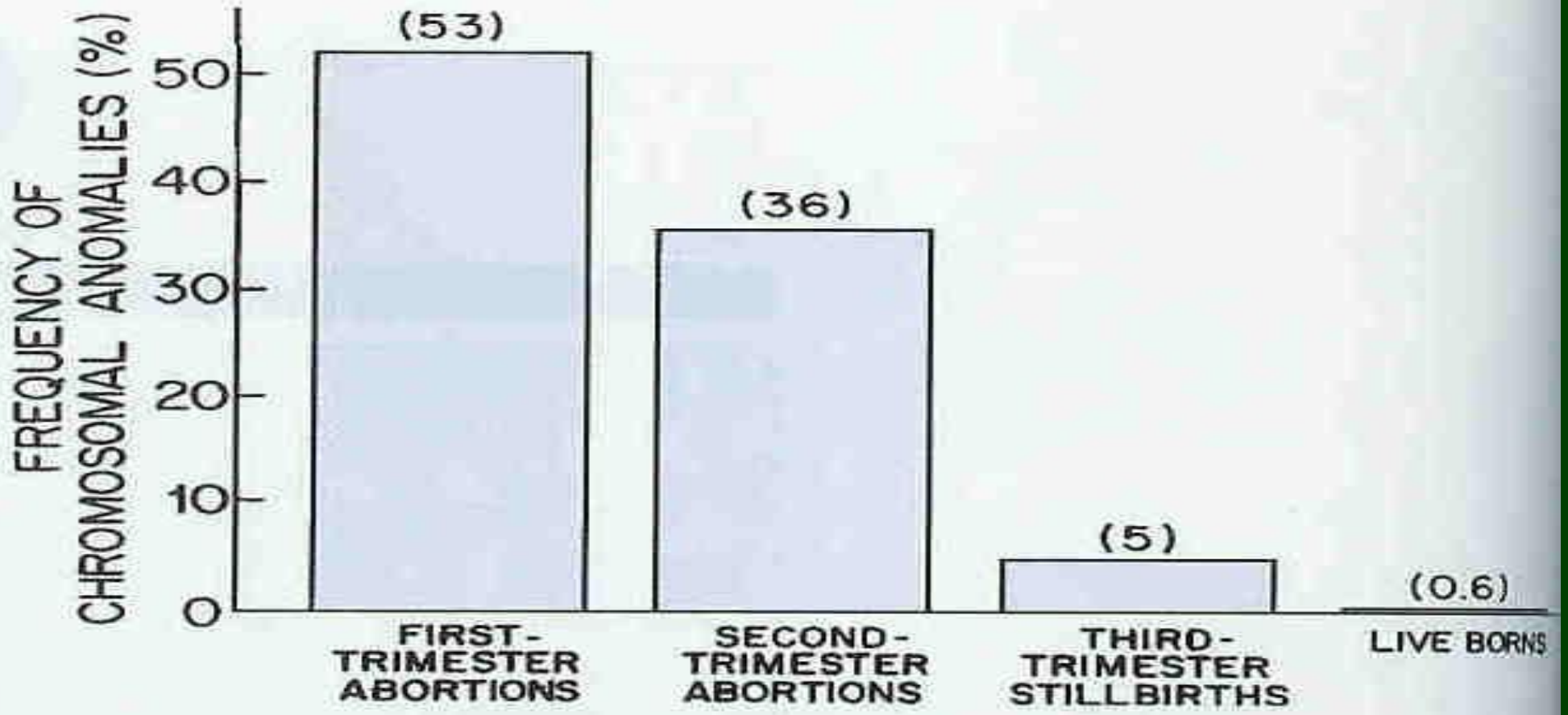


FIGURE 9–1. Frequency of chromosomal anomalies in abort and stillbirths for each trimester compared with the frequency chromosomal anomalies in liveborn infants. The percentage for group is shown in parentheses. (Data adapted from Fantel, 19 Warburton, 1980, and their associates.)

Etiology

- The risk of spontaneous abortion increases with parity as well as with maternal and paternal age
- The frequency of abortion increases from 12 percent in women younger than 20 years to 26 percent in those older than 40 years
- If a woman conceives within 3 months following a term birth → incidence of abortion ↑

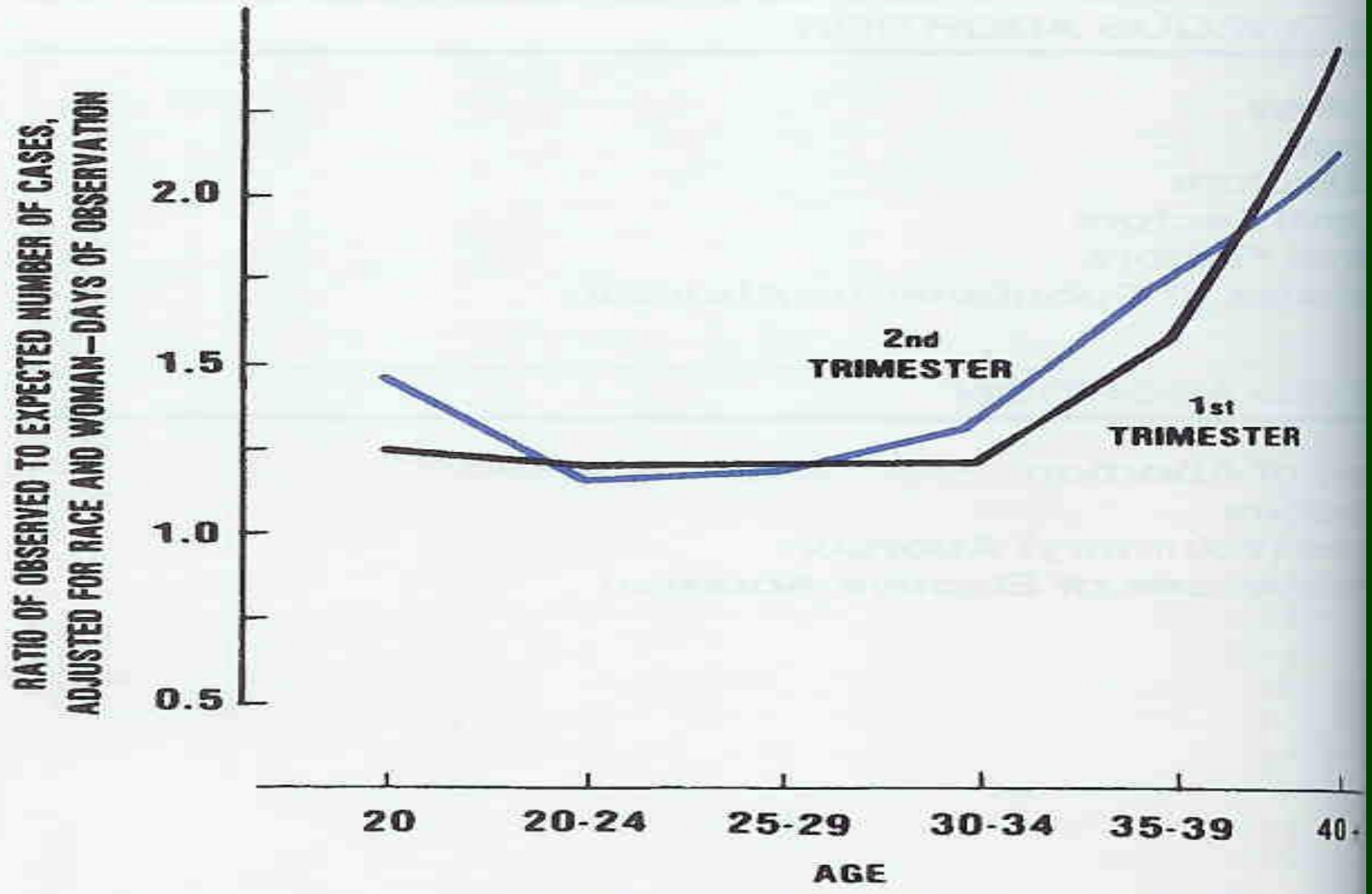


FIGURE 9–2. First- and second-trimester spontaneous abort by maternal age. (From Harlap and colleagues, 1980, with per sion.)

Causes of Abortions

- Environmental
- Maternal
- Fetal (Genetic or chromosomal)

Fetal causes of Abortion

- 50% of all abortions are chromosomally abnormal (The majority of these are abnormalities like trisomy)

Fetal causes of abortion

- Of all chromosomal abnormalities 50% are autosomal trisomies (most common trisomy is 16)
- Order of frequency 16-13-21-22
- Second most common cause of chromosomal anomolies is monosomy X (45XO) 15-20% of all spontaneous ABs

Fetal causes of abortions

- 45XO is the single most common chromosomal anomoly
- Only 1/300 will survive

Translocations as a cause of Abs

- If 1 parent carries a translocation 80% of the conceptions will end in abortion
- If a couple has 2 or more pregnancy losses they have about a 3% chance that one of them carries a translocation
- When abortions occur in chromosomally normal fetuses they tend to occur later in gestation

Environmental causes of Abs

- Infections
- Smoking
- Alcohol
- Radiation
- Toxins

Infections as cause of Abs

- Endometritis (usually mixed anaerobic)
- Toxoplasmosis
- Herpes
- Ureaplasma urealyticum in the ndometrium (? Mycoplasma hominis)
- ? Listeria monocytogenes

Smoking as a cause of Abs

- Heavy smoking more than 17 cigarettes per day had a 1.7 times higher likelihood of aborting a chromosomally normal fetus
- Light smoking does not appear to increase the risk of Abs

Alcohol as a cause of Abs

- Drinking 2 drinks per week increase the risk of abortion by 2 fold
- Daily alcohol ingestion increase risk of abortion by 3 fold

Irradiation as a cause of Abs

- Lethal dose is 5 rads and is most sensitive at the time of implantation
- Radiation of less than 5 rads is unlikely to cause any effects

Environmental toxins as a cause of Abs

- Anesthetic agents (poor evidence)
- Lead
- Arsenic
- Formaldehyde
- Benzene
- Ethylene oxide

Maternal causes of Abs

- Leiomyoma of the uterus
- Uterine anomolies
- Medical conditions
- Immunological causes
- Endocrinologic causes

Leiomyoma as cause of Abs

- Approximately 25% of women have fibroids
- Submucous fibroids appear to cause the biggest problem
- Diagnosis with U/S, HSG, or hysteroscopy
- Treatment is myomectomy or hysteroscopic resection

Uterine anomolies as a cause of Abs

- DES exposure- T shaped uterus (even if the uterus is normal at HSG they have a higher sp Ab rate)
- DES also associated with incompetent cervix
- No treatment for DES exposure except cerclage

Uterine anomolies as a cause of Abs

- Uterine adhesions- can be partial or complete Can cause menstral changes or amenorrhea.
- There is insufficient tissue to support the implanting embryo leading to Abs
- Most common cause is D&C then C/S, myomectomy, IUD, Radiation, infection,TB

Uterine anomolies

- Diagnosis of adhesions is by HSG or hysteroscopy
- Treatment is hysteroscopy D&C followed by IUD or catheter and estrogen 2.5mg BID for 60 days

Uterine Anomolies

- Malformation of the uterus- Uterus didelphys, unicornate uterus, bicornate uterus, uterine septum
- These can also be associated with incompetent cervix
- Unicornate uterus has 50% Ab rate
- Diagnosis by HSG or hysteroscopy

Uterine Anomolies

- Incompetent cervix- congenital or acquired
- cerclage at 12-14 weeks
- Cause from multiple or aggressive cervical dilation
- Painless dilation and of effacement of the cervix (20% of 2nd trimester losses)
- Cerclage decrease loss rate from 80 to 20%

Incompetent cervix – Cerclage procedures

– Types of operations commonly used

- McDonald
- Modified Shirodkar
- → 85~90% success rate

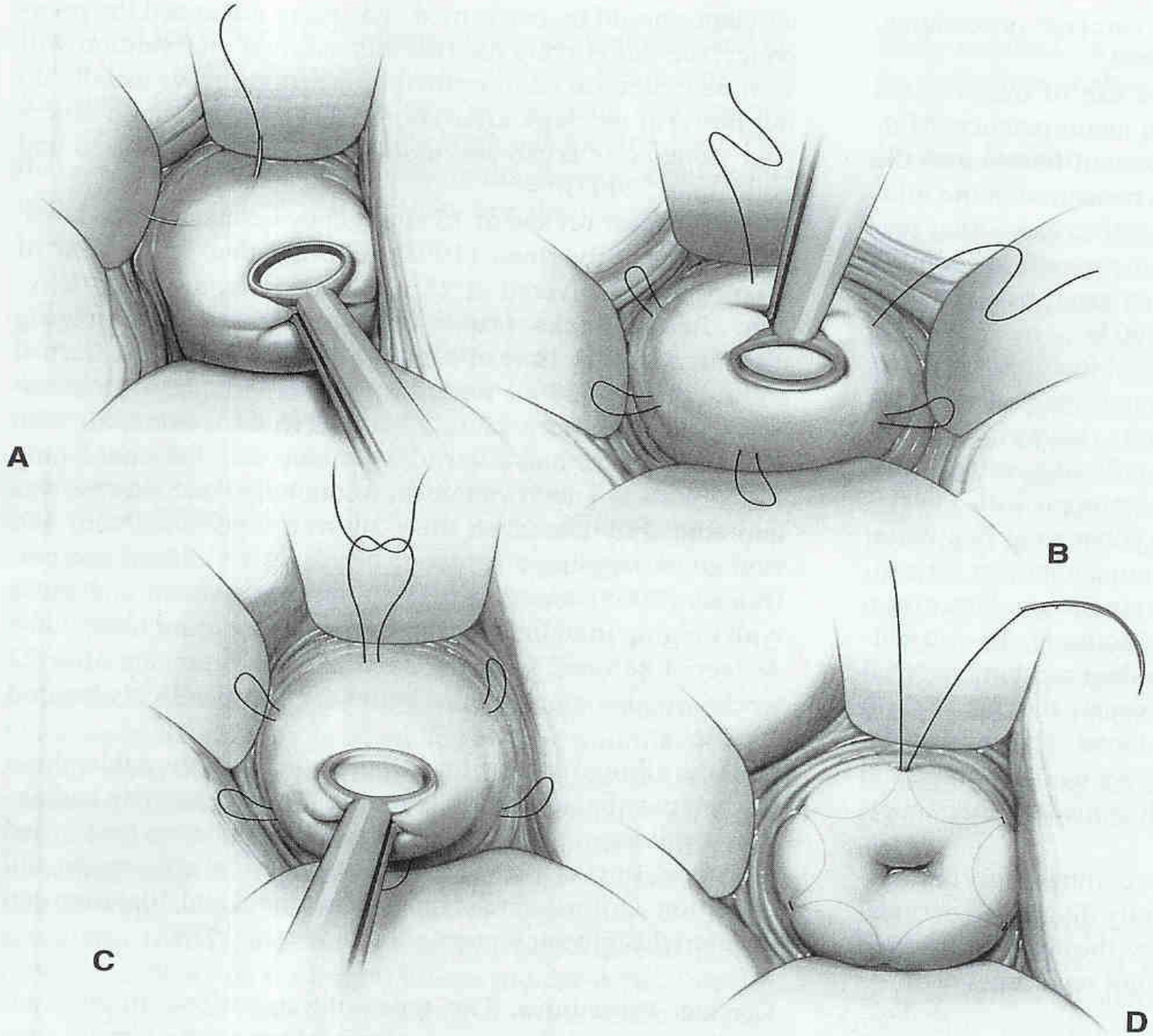


FIGURE 9–4. McDonald cercla procedure for incompetent cervix. A Start of the cerclage procedure with suture of number 2 monofilament b ing placed in the body of the cerv very near the level of the internal o **B.** Continuation of suture placeme in the body of the cervix so as to c circle the os. **C.** Completion of c circlement. **D.** The suture is tighten around the cervical canal sufficien to reduce the diameter of the canal 5 to 10 mm, and then the suture tied. The effect of the suture plac ment on the cervical canal is appa ent. Placement somewhat higher m be of value, especially if the first is n in close proximity to the internal os

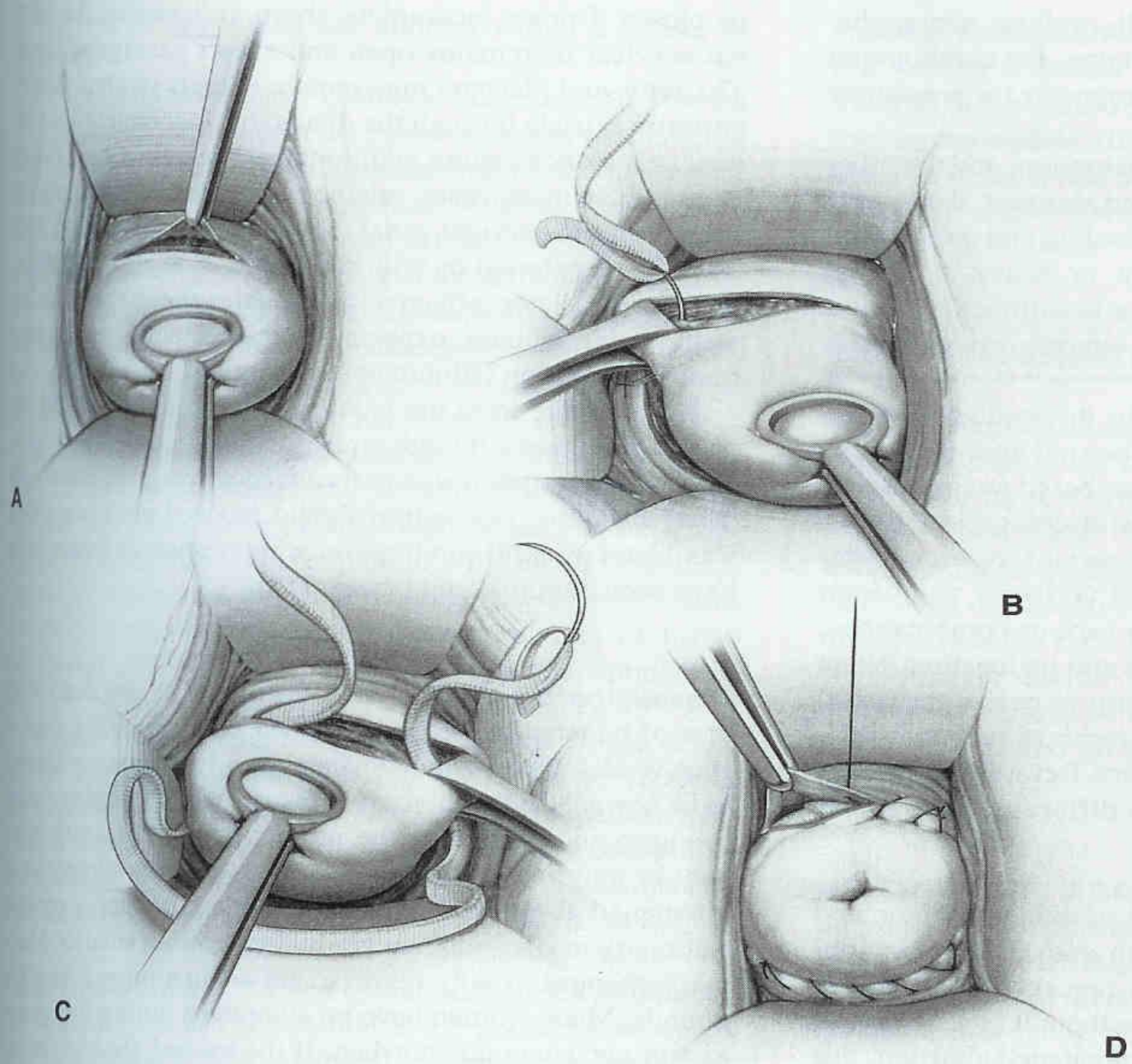


FIGURE 9–5. Modified Shirodkar cerclage for incompetent cervix. **A.** A transverse incision is made in the mucosa overlying the anterior cervix, and the bladder is pushed cephalad. **B.** A 5-mm Mersiline tape on a Mayo needle is passed anteriorly to posteriorly. **C.** The tape is then directed posteriorly to anteriorly on the other side of the cervix. Allis clamps placed so as to bunch the cervical tissue to diminish the distance the needle must travel submucosally facilitate placement of the tape. **D.** The tape is snugly tied anteriorly, after ensuring that all slack has been taken up. The cervical mucosa is then closed with a continuous chromic suture to bury the anterior Mersilene knot.

Medical conditions associated with abortions

- Diabetes
- Severe malnutrition
- Hyperthyroidism

Endocrinologic causes of Abortions

- Progesterone deficiency-progesterone stimulates the endometrium to become secretory if it does not then the embryo will not implant
- Corpus luteum produces progesterone until the placenta takes over
- Inadequate corpus luteum diagnosed with endometrial biopsy with 3 day discrepancy

Endocrine causes

- Treatment of progesterone deficiency is with progesterone supp 25mg BID or Lozenges 50mg q day or daily injection with progesterone 12.5mg
- Treatment starts 1-3 days after ovulation

Endocrine causes

- Thyroid antibodies present doubles the risk of abortions
- Hypo or Hyper thyroidism has not proven to increase the rate of abortions
- Hypothyroidism can cause anovulation

Endocrine causes

- Diabetes mellitus- If well controlled there does not appear to be an increase in abortion rate
- If poorly controlled there is and increase in abortions and it correlates with the glycosolated hemoglobin

Immune factors as a cause of Abs

- Lack of maternal blocking antibodies(not proven to be related to HLA)
- Lupus anticoagulant and Antiphospholipid antibodies-IgG and IgM
- Check activated partial thromboplastin time

Categories of spontaneous abortion

- Threatened abortion
- Inevitable abortion
- Complete or incomplete abortion
- Missed abortion
- Recurrent abortion

Threatened abortion

- Any bloody vaginal discharge or bleeding during 1st half of pregnancy Bleeding is frequently slight, but may persist for days or weeks.

- **Symptoms**
  - Usually bleeding begins first
  - Cramping abdominal pain follows a few hours to several days later
  - Presence of bleeding & pain → Poor prognosis for pregnancy continuation
- **Treatment**
  - Bed rest & acetaminophen
  - Progesterone (IM) or synthetic progestational agent (PO or IM)
  - D-negative women with threatened abortion
    - Probably should receive anti-D immunoglobulin

- **Treatment : slight bleeding persists for weeks**
  - Vaginal sonography
  - Serial serum quantitative hCG
  - Serum progesterone
- **Vaginal sonography**
  - Gestational sac(+) & hCG < 1000mIU/ml → gestation is not likely to survive→ If any doubt(+), check the serum hCG level at intervals of 48hrs → if not increase more than 65%, almost always hopeless
  - Serum progesterone value < 5 ng/ml→ dead conceptus

- **Treatment : after death of conceptus**

  – **Uterus should be emptied**

  → examination of all passed tissue whether the abortion is complete

  – Ectopic pregnancy should be considered if gestational sac or fetus are not identified

Inevitable abortion

- Gross rupture of membrane,evidenced by leaking amnionic fluid, in the presence of cervical dilatation, but no tissue passed during 1st half of pregnancy

  – Placenta (in whole or in part) is retained in the uterus → Uterine contractions begin promptly or infection develops

  – The gush of fluid is accompanied by bleeding, pain, or fever, abortion should be considered inevitable

Complete or incomplete abortion

- **Complete abortion**
  - Following complete detachment & expulsion of the conceptus
  - The internal cervical os closes
- **Incomplete abortion**
  - Expulsion of some but not all of the products of conception during 1st half of pregnancy
  - The internal cervical os remains open & allows passage of blood
  - The fetus & placenta may remain entirely in utero or may partially extrude through the dilated os → Remove retained tissue without delay

Missed abortion

- Retention of dead products of conception in utero for several weeks

  - Many women have no symptoms except persistent amenorrhea
  - Uterus remain stationary in size, but mammary changes usually regress → uterus become smaller
  - Most terminates spontaneously
  - Serious coagulation defect occasionally develop after prolonged retention of fetus

Recurrent abortion

- Definition : Three or more consecutive spontaneous abortions
- Postconceptional evaluation
  - Serial monitoring of ß–hCG from missed mens period
    - ß–hCG>1500mIU/ml → USG
  - Maternal serum α-fetoprotein assessment (GA16-18wks)
  - Amniocentesis → fetal karyotype
- Prognosis
  - Depends on potential underlying etiology & number of prior losses

Treatment

- Septic abortions -are polymicrobial infections Cefoxitin+Vibramycin or Clindamycin+Gentamycin followed by D&C
- Threatened abortion-Decrease physical activity avoid intercourse(no proof of benefit) Serial HCG and Ultrasound

Treatment

- Inevitable and Incomplete abortions- Evacuation of the uterus
- Methergine after
- Tubal Abortion- Difficult to diagnose may require laparoscopy, expectant management follow with HCG's and HSG

Treatment

- RhoGam if mother is Rh negative in all cases of bleeding and abortion prior to 8 weeks 50 micrograms IM after 8 weeks 300 micrograms IM

Induced abortion

- The medical or surgical termination of pregnancy before the time of fetal viability

- Therapeutic abortion
  - Termination of pregnancy before of fetal viability for the purpose of saving the life of the mother

Indication

- Continuation of pregnancy may threaten the life of women or seriously impair her health
  - Persistent heart disease
  - Advanced hypertensive vascular disease
  - Invasive carcinoma of the cervix
- Pregnancy resulted from rape or incest
- Continuation of pregnancy is likely to result in the birth of child with severe physical deformities or mental retardation

Surgical techniques for abortion

- **Dilatation and curettage**
  - Performed first by dilating the cervix & evacuating the product of conception
  - Before 14 weeks, D&C or vacuum aspiration should be performed
  - After 16 weeks, dilatation & evacuation (D&E) is performed

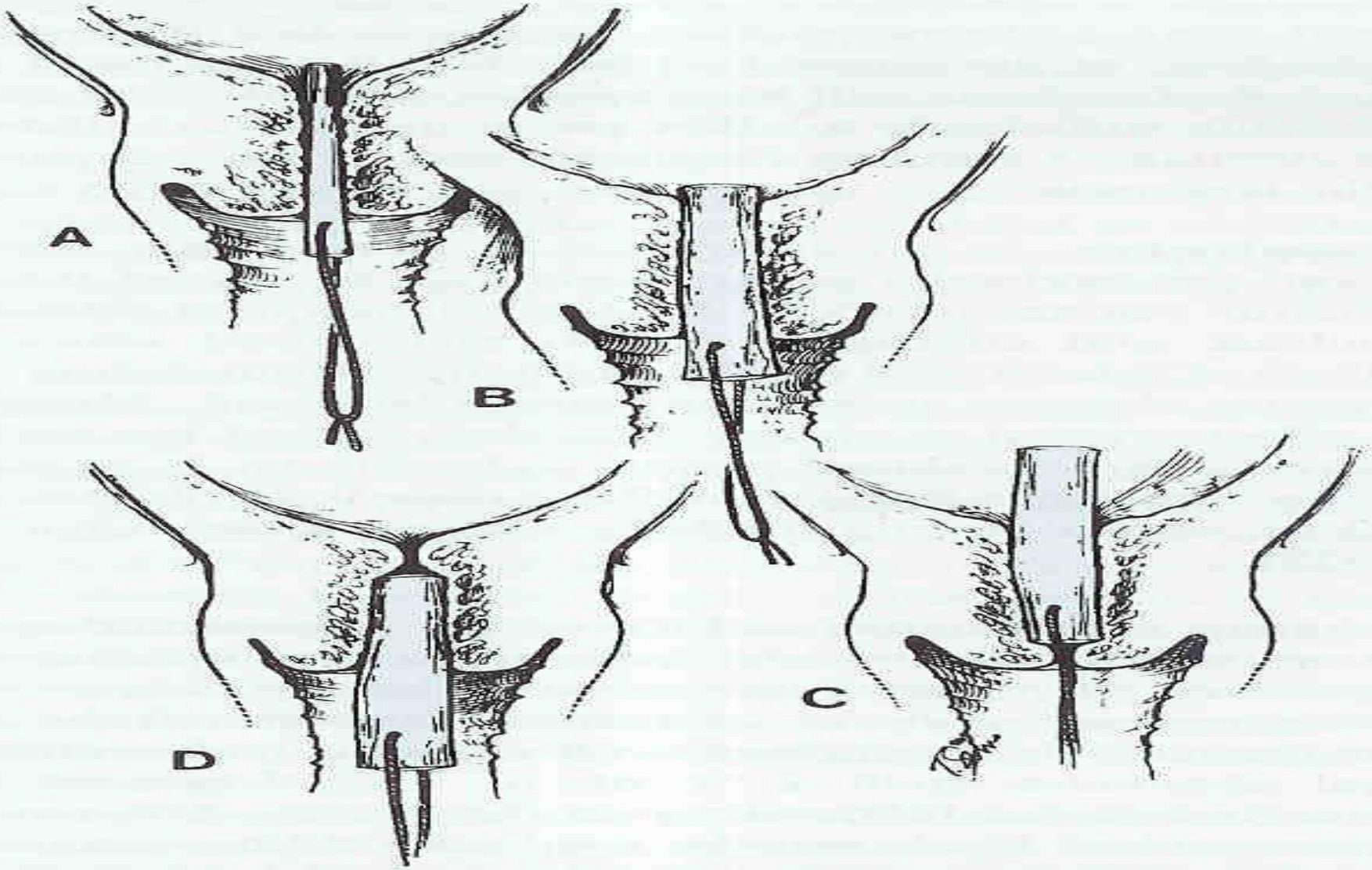


FIGURE 9–6. Insertion of laminaria prior to dilatation and curettage. **A.** Laminaria immediately after being appropriately placed with its upper end just through the internal os. **B.** Several hours later the laminaria is now swollen, and the cervix is dilated and softened. **C.** Laminaria inserted too far through the internal os; the laminaria may rupture the membranes. **D.** Laminaria not inserted far enough to dilate the internal os.

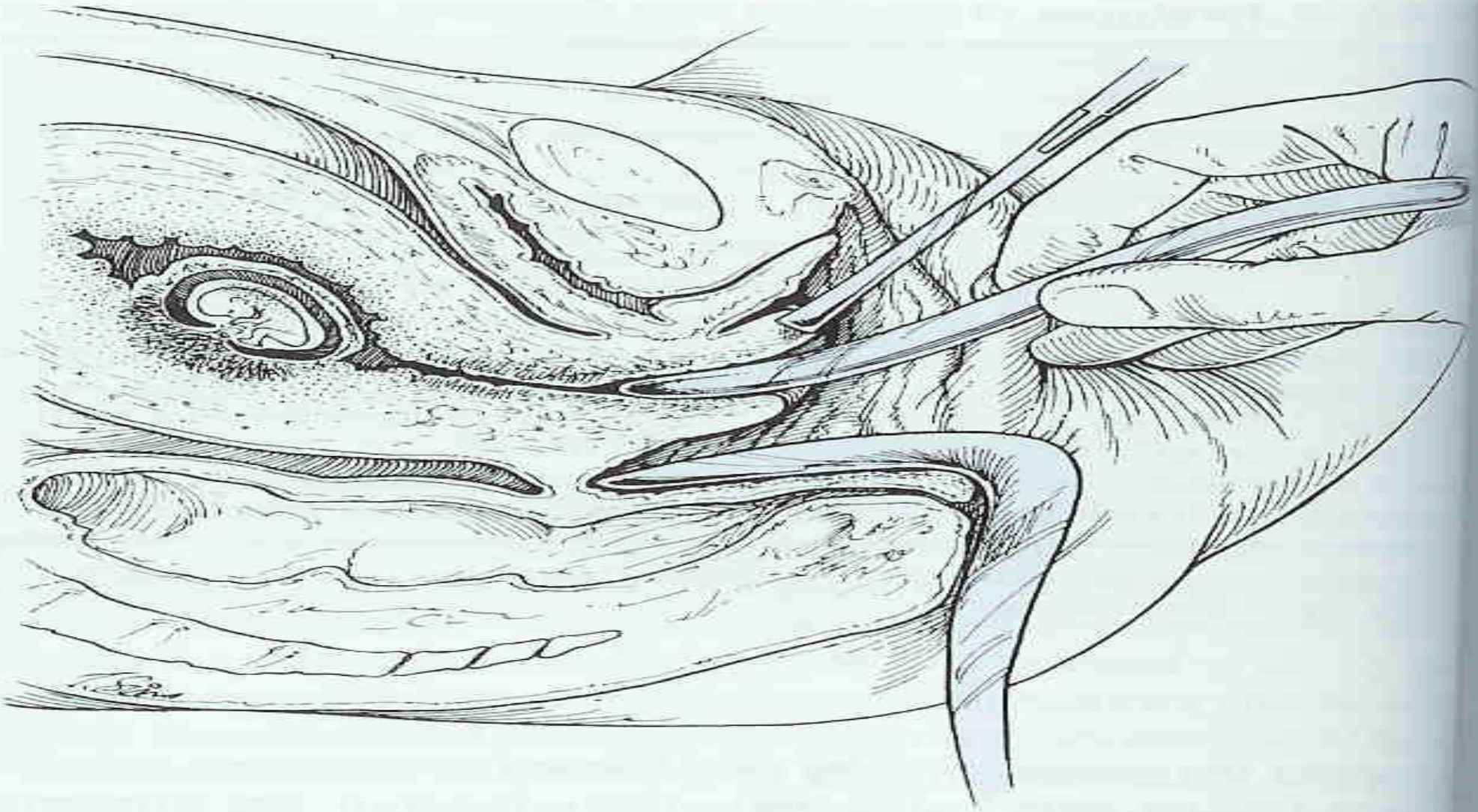


FIGURE 9–7. Dilatation of cervix with a Hegar dilator. Note th the fourth and fifth fingers rest against the perineum and buttock lateral to the vagina. This maneuver is a most important safety me sure because if the cervix relaxes abruptly, these fingers prevent sudden and uncontrolled thrust of the dilator, a common cause uterine perforation.

Menstrual aspiration

- Aspiration of endometrial cavity using a flexible cannula and syringe within 1-3 weeks after failure to menstruate.
- Several points at early stage of gestation
  - Woman not being pregnant
  - Implanted zygote may be missed by the curette
  - Failure to recognize an ectopic pregnancy
  - Infrequently, a uterus can be perforated

Medical induction of abortion

- Early abortion
  - Outpatient medical abortion is an acceptable alternative to surgical abortion in women with pregnancies of less than 49 days' gestation
  - Three medications for early medical abortion
    - Antiprogestin *mifeprostone*
    - Antimetabolite *methotrexate*
    - Prostaglandin *misoprostol*

TABLE 9–4 Regimens for Medical Termination of Early Pregnancy

Mifepristone plus Misoprostol
Mifepristone, 100–600 mg orally, followed by:
Misoprostol, 400 μg orally or 800 μg vaginally in 6–72 hr
Methotrexate plus Misoprostol
Methotrexate, 50 mg/m^2 intramuscularly or orally, followed by:
Misoprostol, 800 μg vaginally in 3–7 days; repeated if needed 1 wk after methotrexate initially given

Data from the American College of Obstetricians and Gynecologists, 2001b; Borgatta, 2001; Creinin, 2001, 2004; Pymar, 2001; Schaff, 2000; von Hertzen, 2003; Wiebe, 1999, 2002, and their many colleagues.

Oxytocin

- Successful induction of 2nd trimester abortion is possible with high doses of oxytocin administered in small volumes of IV fluids
- Satisfactory alternatives to PG E2 for midtrimester abortion
- Laminaria tents inserted the night before
  - Chance of successful induction is greatly enhanced

Prostaglandins

- Used extensively to terminate pregnancies, especially in the 2nd T
  - PG E1, E2, F2α
- Technique : Can act effectively on the cervix & uterus (86~95% effectiveness)
  - Vaginal prostaglandin E2 suppository & prostaglandin E1 (misoprostol)
  - As a gel through a catheter into the cervical canal & lowermost uterus
  - Injection into the amnionic sac by amniocentesis
  - Parenteral injection
  - Oral ingestion

Intra-amnionic hyperosmotic solutions

- 20-25% saline or 30-40% urea injected into amnionic sac → stimulate uterine contraction & cervical dilatation
- Complications of hypertonic saline
  - Death
  - Hyperosmolar crisis (early into maternal circulation)
  - Cardiac failure
  - Septic shock
  - Peritonitis
  - Hemorrhage
  - DIC
  - Water intoxication
    - Hyperosmotic urea : less likely to be toxic

Antiprogesterone RU 486

- Oral agent used alone in combination with oral PG to effect abortions in early gestation
- High receptor affinity for progesterone binding site
  → Block progesterone action
- Abortion rate
  - Single 600mg dose prior 6 weeks → 85%
  - Addition of oral, vaginal or injected PG → over 95%
- If given within 72 hours
  - Also highly effective as emergency postcoital contraception
  - Progressively less effective after 72 hours
- Side effects
  - Nausea, vomiting, & gastrointestinal cramping
  - Major risk → hemorrhage is a risk if abortion is incomplete

Epostane

- 3ß-hydroxysteroid dehydrogenase inhibitor
  → blocks the synthesis of endogenous progesterone

- Frequent side effect – nausea

- Hemorrhage is a risk if abortion is incomplete

Consequences of elective abortion

- Impact on future pregnancies

  – Dilatations & curettage for a first pregnancy

  : Increased risks for

  - Ectopic pregnancy
  - 2nd trimester spontaneous abortions
  - LBW infants

  – Multiple elective abortion :

  - Not increased the incidence of preterm delivery & LBW infants
  - Placenta previa → increased following multiple sharp curettage abortion procedures

- Septic abortion
  - Most often associated with criminal abortion
  - Metritis is usual outcome, but parametritis, peritonitis, endocarditis, and septicemia may all occur
  - Management
    - Prompt evacuation of products of conception
    - Broad-spectrum IV antimicrobials

Resumption of ovulation after abortion

- Ovulation may resume as early 2 weeks after an abortion

- Therefore, if pregnancy is to be prevented, effective contraception should be initiated soon after abortion


Thanks For Your Attention