

Cervical insufficiency

INTRODUCTION

- **Recurrent painless cervical dilation** leading to **second-trimester pregnancy losses**
- ACOG definition: the inability of the uterine cervix to retain a pregnancy in the second trimester in the absence of clinical contractions, labor, or both

Pathogenesis

- Secondary to **prior cervical or uterine surgery** (eg, dilation and curettage, hysteroscopy) or, rarely, a congenital abnormality —> **structural cervical weakness** —> **recurrent** second-trimester losses and live births
- DDX: **Decidual inflammation/infection, bleeding** at the interface of the decidua and placenta, or **uterine overdistension** —> initiate biochemical changes in the cervix —> premature cervical shortening and often a **single** (ie, nonrecurrent) second-trimester birth/loss.

Risk factors

- **Cervical trauma** (most): result from the process of labor or birth (spontaneous, forceps- or vacuum-assisted, cesarean), rapid mechanical cervical dilation before a gynecologic procedure, or treatment of cervical intraepithelial neoplasia.
- **Congenital cervical abnormalities** (rare): genetic disorders affecting collagen (eg, Ehlers-Danlos syndrome), uterine anomalies, in utero diethylstilbestrol exposure, and biologic variation
- **History of short cervical length** (not strong risk factor)

Symptoms

asymptomatic or may present with mild symptoms, such as:

- Pelvic pressure
- Braxton-Hicks-like contractions (假性宮縮)
- Premenstrual-like cramping and/or backache
- Change in vaginal discharge: volume may increase; color may change from clear, white, or light yellow to pink, tan, or red spotting; and the consistency may become thinner

typically begin between 14 and 20 weeks of gestation and may be present for several days or weeks before the diagnosis of cervical insufficiency is made.

DIAGNOSIS

A classic past obstetric history

- ≥ 2 consecutive prior second-trimester pregnancy losses or extremely preterm births (often before 24 weeks of gestation) associated with no or minimal mild symptoms.
- Cervical dilation and effacement on physical examination inconsistent with the degree of uterine activity (no or minimal contractions)
- The presence of risk factors for structural cervical weakness supports the diagnosis.

DIAGNOSIS

Ultrasound-based diagnosis

- Asymptomatic patients with a past history of one extremely preterm birth associated (history-based diagnosis is uncertain)
- **Transvaginal soon (TVS): cervical length (CL) is ≤ 25 mm before 24 weeks**
- Labor, infection, and bleeding related to placental abruption or placenta previa should be excluded
- The presence of risk factors for structural cervical insufficiency supports the diagnosis
- TVU screening is discontinued at 24 weeks of gestation, as cerclage(子宮頸環紮術) is rarely performed after this gestational age

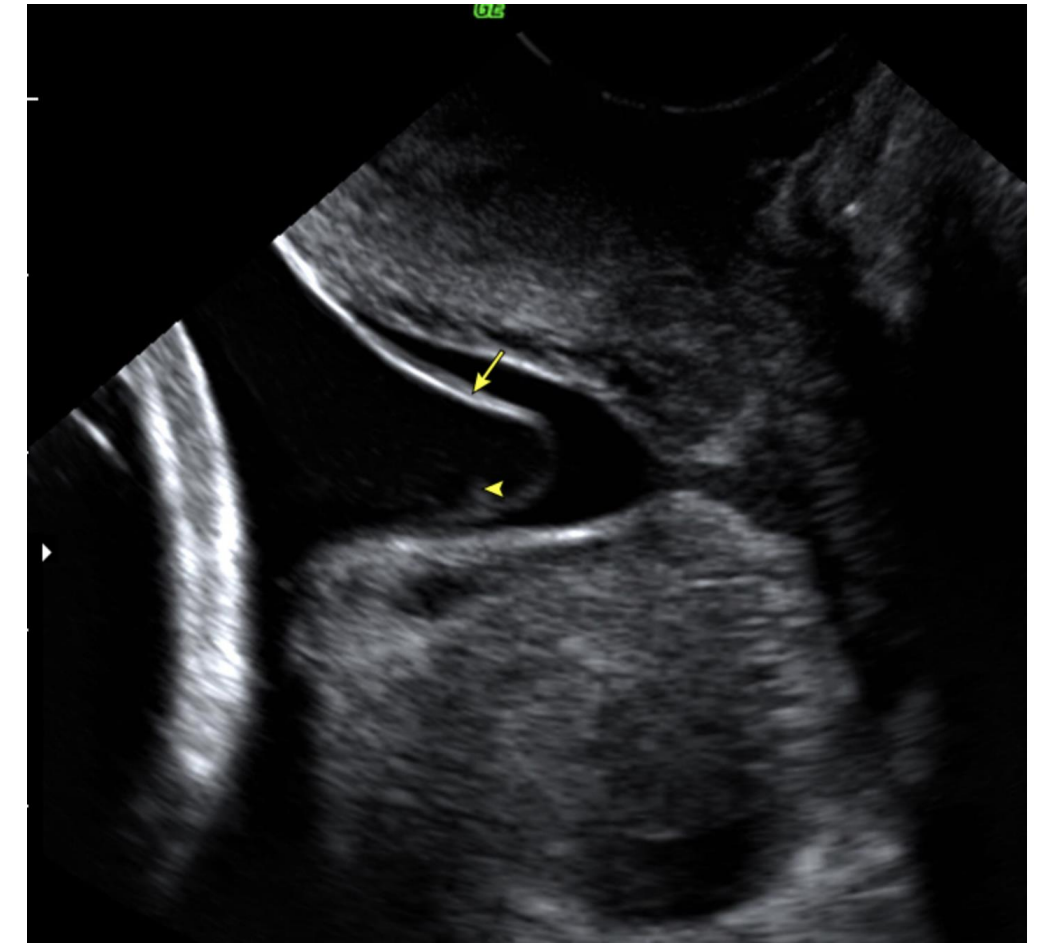
DIAGNOSIS

Physical examination-based diagnosis

- Patients at 14 to 27 weeks of gestation with a **dilated and effaced cervix** on physical examination and no contractions or weak irregular contractions that appear inadequate to explain the cervical dilation and effacement.
- The membranes may be prolapsed or ruptured.
- Labor, infection, and bleeding related to placental abruption or placenta previa should be excluded

Management

Pretreatment evaluation—Diagnoses to exclude



- Tocodynamometry —exclude labor
- Urinalysis/urine culture, possibly amniocentesis —exclude infection
 - Candidates for amniocentesis: significant cervical dilation, prolapsed membranes, or abnormal-appearing amniotic fluid
 - Ultrasound findings are consistent with inflammation (eg, debris in the amniotic fluid [sludge or biofilm])
 - Membranes are visible and exposed at the external os, but the cervix is <2 cm dilated.
- History and physical and ultrasound examination —exclude bleeding from placental abruption or placenta previa

Management

Cerclage Placement and use of progesterone supplementation

- History-indicated:
 - Cerclage: 12 to 14 weeks of gestation in patients with recurrent (more than one) second-trimester losses preceded by painless cervical dilatation.
 - Supplemental Progesterone: begins progesterone supplementation at 16 weeks (optimal) ~20 weeks of gestation with either **hydroxyprogesterone caproate weekly** or **vaginal progesterone daily** and continues progesterone until 36+6 weeks of gestation.
- Ultrasound-indicated:
 - Cerclage: in patients with one prior spontaneous preterm birth and **TVU CL ≤ 25 mm before 24 weeks** in the current pregnancy.
 - Supplemental Progesterone: 同上

Management

Cerclage Placement and use of progesterone supplementation

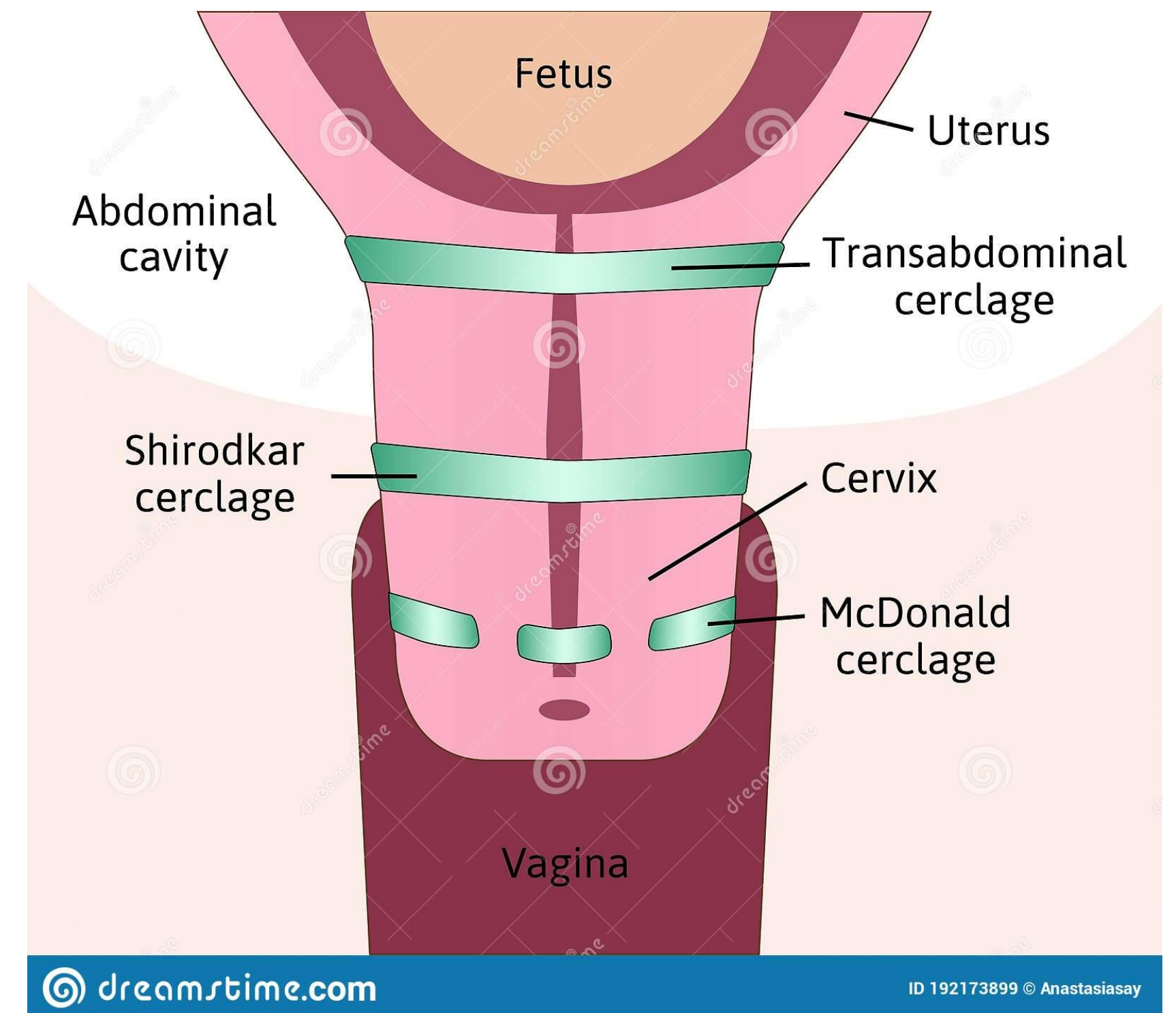
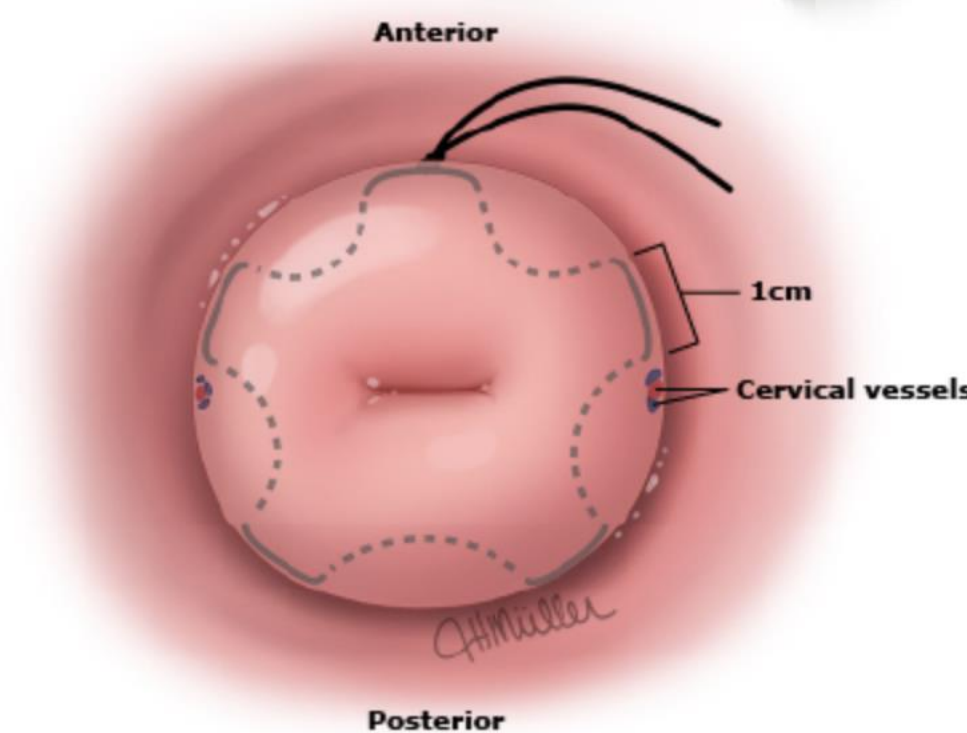
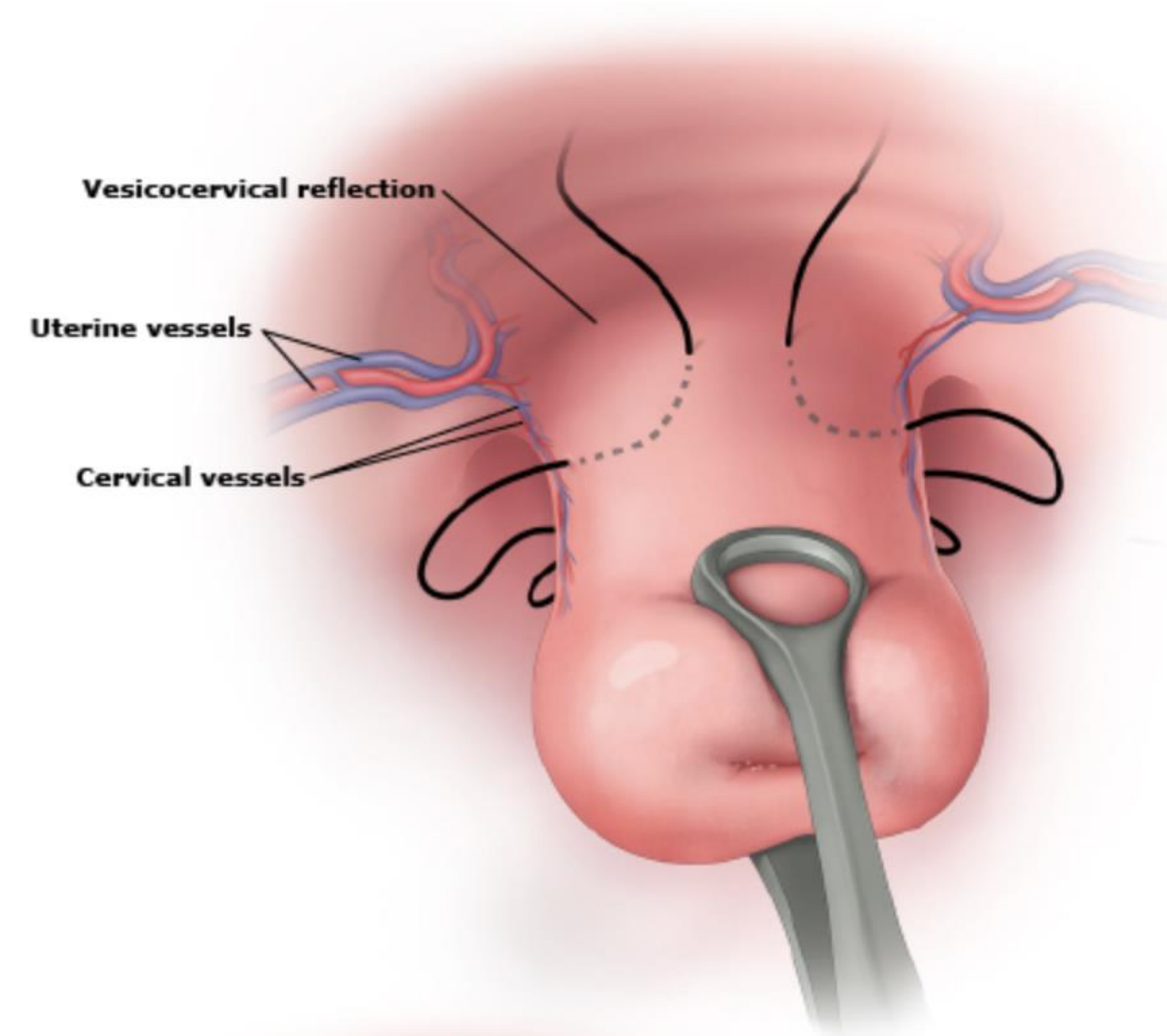
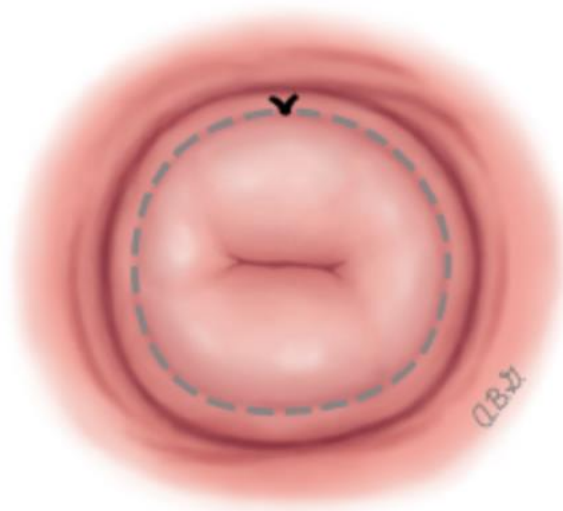
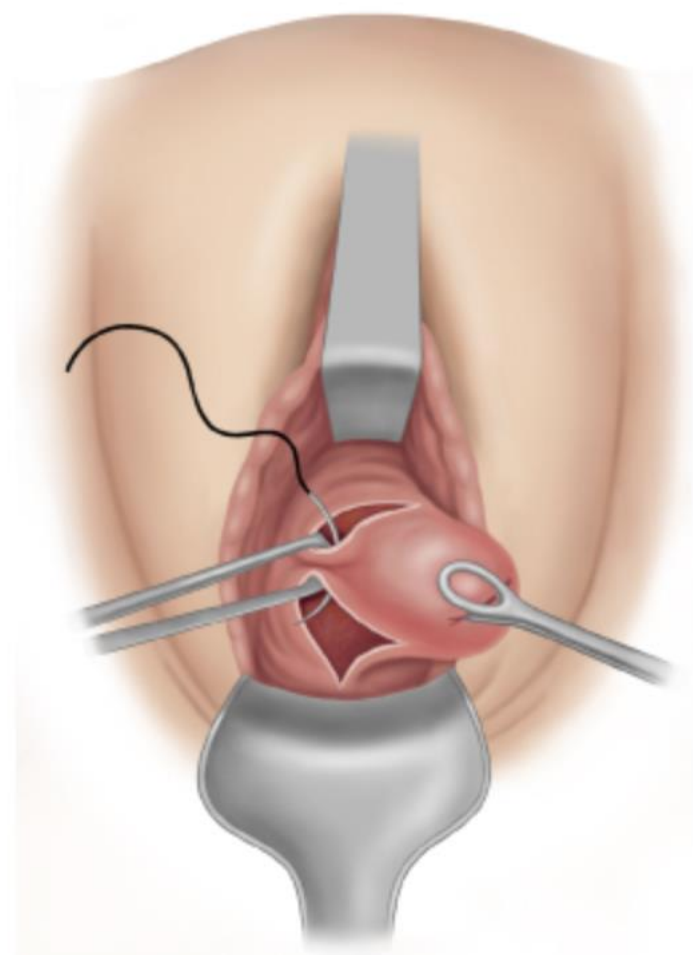
- Physical examination-indicated:
 - Pre-operation: **Cefazolin** (antibiotics prophylaxis) and **indomethacin** (uterine relaxation and reduce membrane prolapse)
 - Cerclage: before 24 weeks of gestation, also called rescue or emergency cerclage
 - Continue supplemental progesterone postoperatively

Transvaginal cervical cerclage

- Contradictions:
 - Fetal anomaly incompatible with life
 - Intrauterine infection
 - Active preterm labor
 - Preterm prelabor rupture of membranes (PPROM)
 - Fetal demise
 - Active uterine bleeding (eg, placental abruption); however, placenta previa is not an absolute contraindication to cerclage placement.
- Most cerclages are placed between **12 and 24 weeks** of gestation
 - less than 12 weeks: results of aneuploidy screening may not be available
 - 24 to 28 weeks: **avoid accidental rupture of the fetal membranes** leading to extremely preterm delivery, with its attendant high risk of neonatal morbidity and mortality
 - >28 weeks: births at this gestational age are likely to have a reasonably good outcome.

Transvaginal cervical cerclage

- McDonald cerclage(右)
- Shirodkar cerclage (下)



Transvaginal cervical cerclage

- Complications:
 - **Membrane rupture**
 - **Intraamniotic infection**
 - Suture migration
 - Others: cervical dystocia and cervical trauma in labor
 - Rare: uterine rupture, excessive bleeding and fistula formation
- The frequency of complications is higher with increasing gestational age and cervical dilation, but not higher with McDonald versus Shirodkar cerclage.