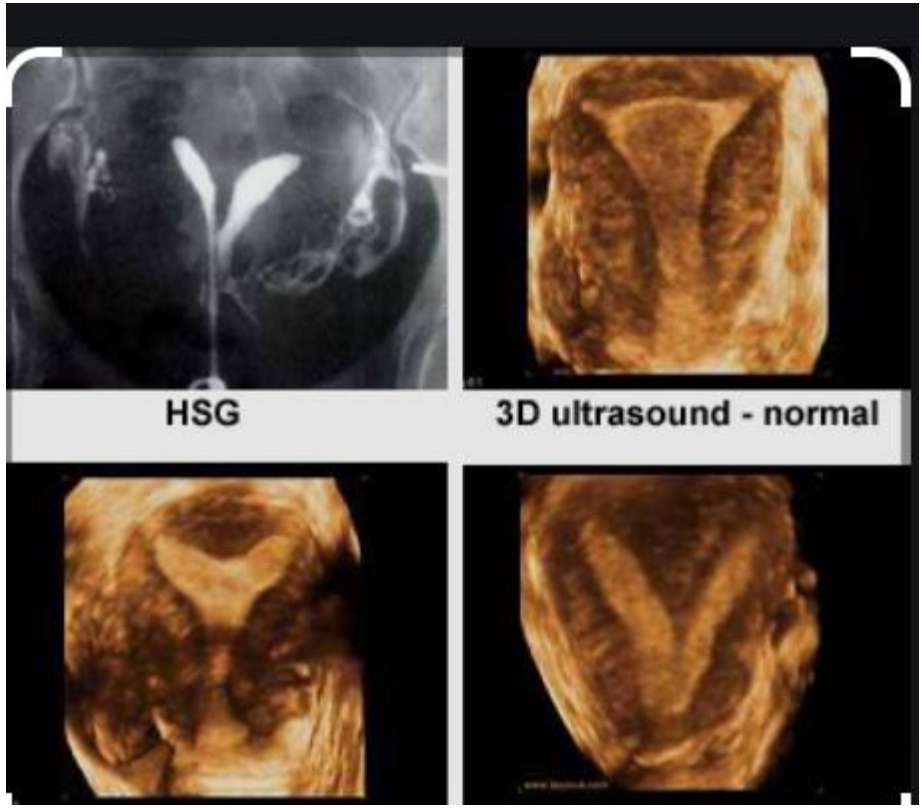
Septate uterus

Parizad.M.MD



Development

A uterine septum is believed to develop as a result of :

failure of resorption of the tissue connecting the two paramesonephric (mullerian) ducts prior to the 20th embryonic week.

While the arcuate uterus represents the mildest form of resorption failure, unlike the septum, it is not considered clinically relevant

The double cervix is a *failure of fusion*, occurring between weeks 9- 12, while the uterine septum is a *regression failure* during weeks 12–16.

Taken together, the complete septate uterus with a double cervix likely results from an insult that occurs around week 12,

while a complete septate uterus occurs from a later insult somewhere early between week 12 and 16, and a partial septate uterus ensues from an even later defect **as far out as 20 weeks.**

Prevelance:

The true prevalence of the uterine septum is difficult to ascertain as many uterine septum defects are asymptomatic, but appear to range between 1- 2/ 1,000 to as high as 15/1,000 .

The septate uterus is the most common type of uterine anomaly, with a mean incidence of **35 %** amongst all uterine abnormalities, and accounting for **~55 %** of uterine malformations when including both septate and arcuate uteri. Another study showed 3 % in an infertility population, and 5.3 % in a recurrent miscarriage population

What is the material of septum ?

Initially, uterine septa were believed to be predominantly fibrous tissue.

However, biopsy specimens and (MRI) suggest that septa are composed primarily of muscle fibers and less connective tissue

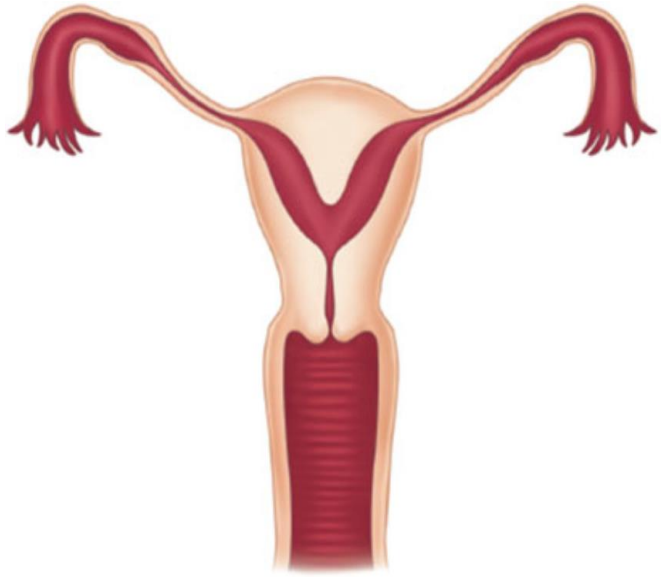
Association with renal anomalies?

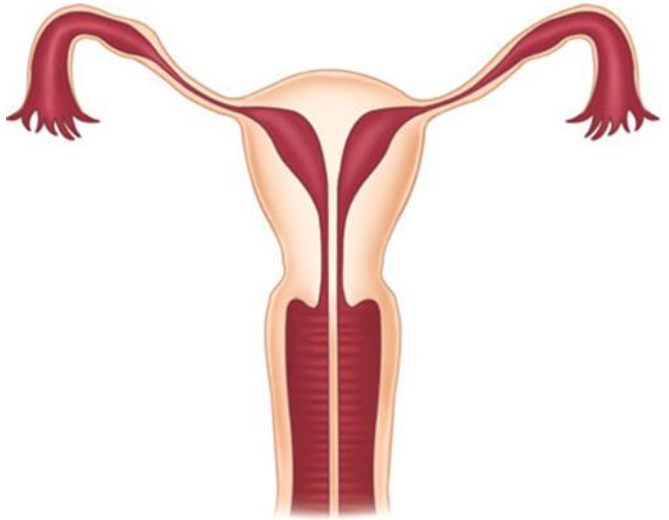
Mullerian anomalies in general may be associated with renal anomalies in approximately 11% to 30% of individuals. However, data do not exist to suggest an association between septate uterus and renal anomalies and, so,

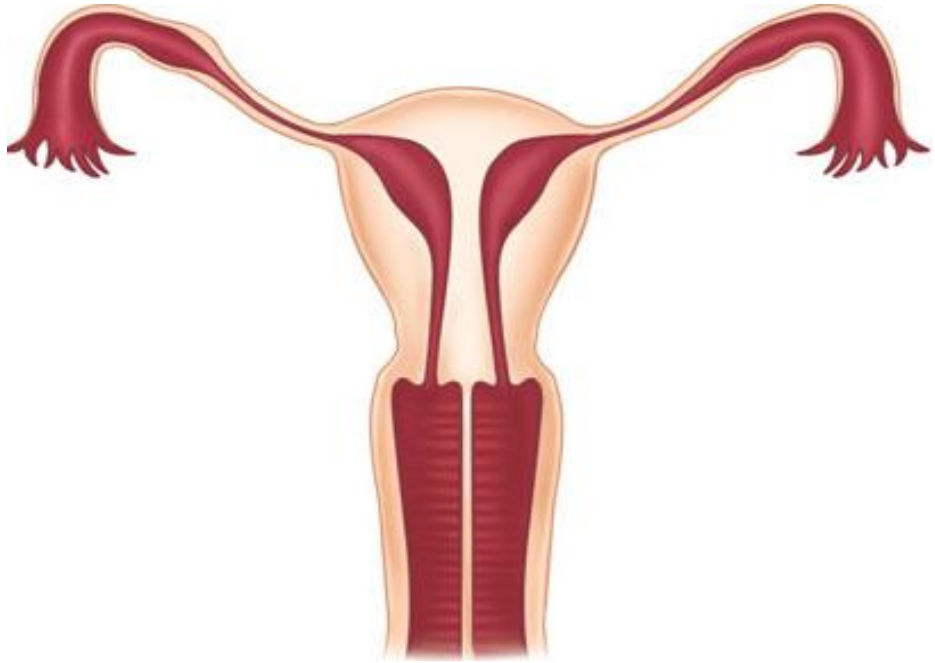
it not necessary to evaluate the renal system in all patients with a uterine septum.

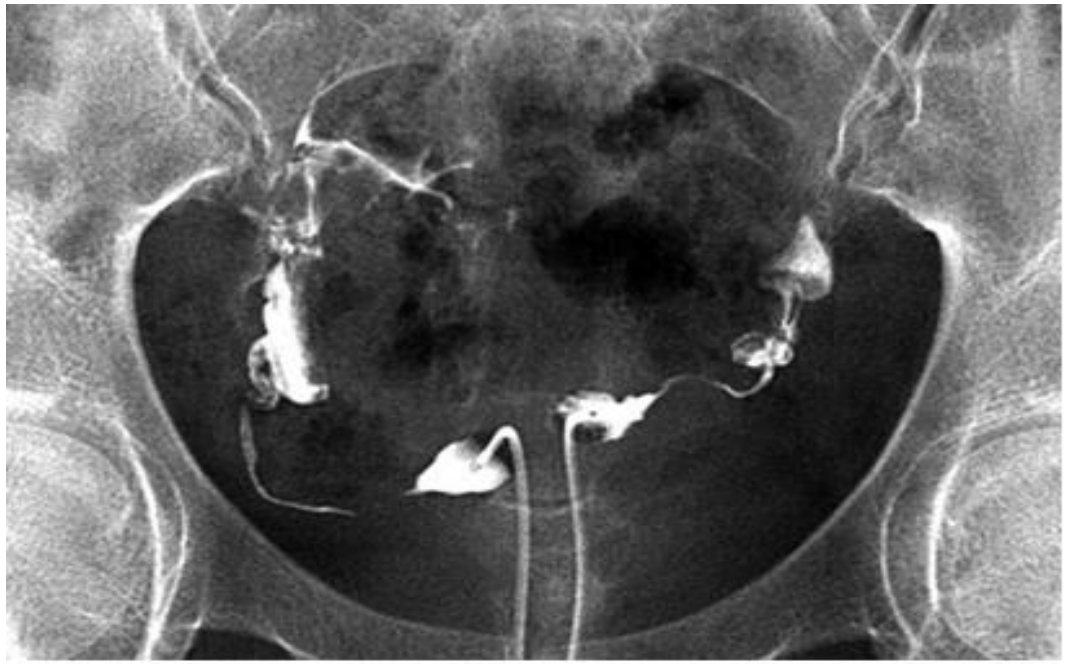
Types of septum :

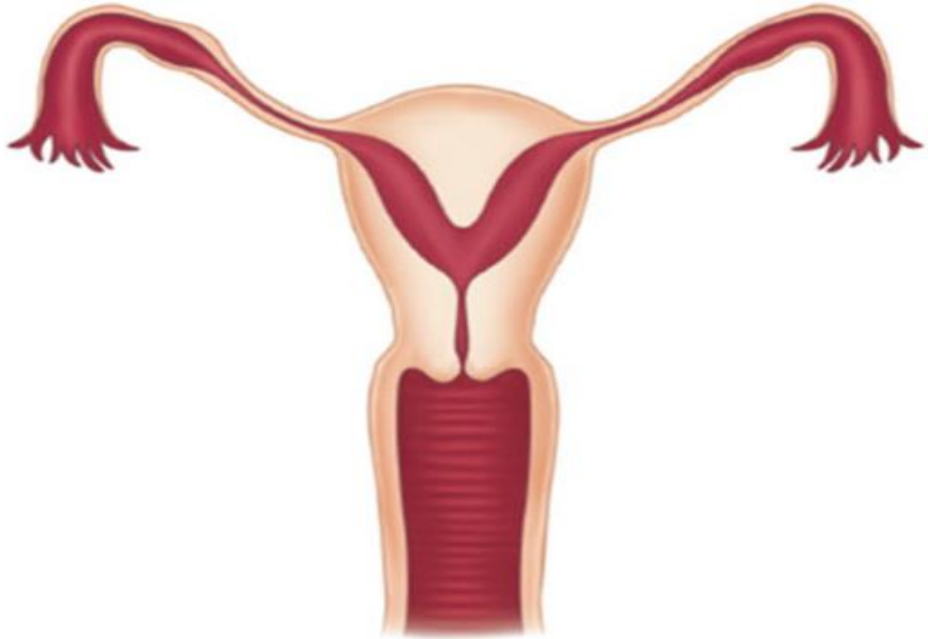
Septate uteri have a **spectrum of configurations** including incomplete/partial septate to complete septate uterus. A partial septate uterus refers to a single fundus and cervix with a uterine septum extending from the top of the endometrial cavity toward the cervix. The size and shape of the septum can vary by width, length, and vascularity.

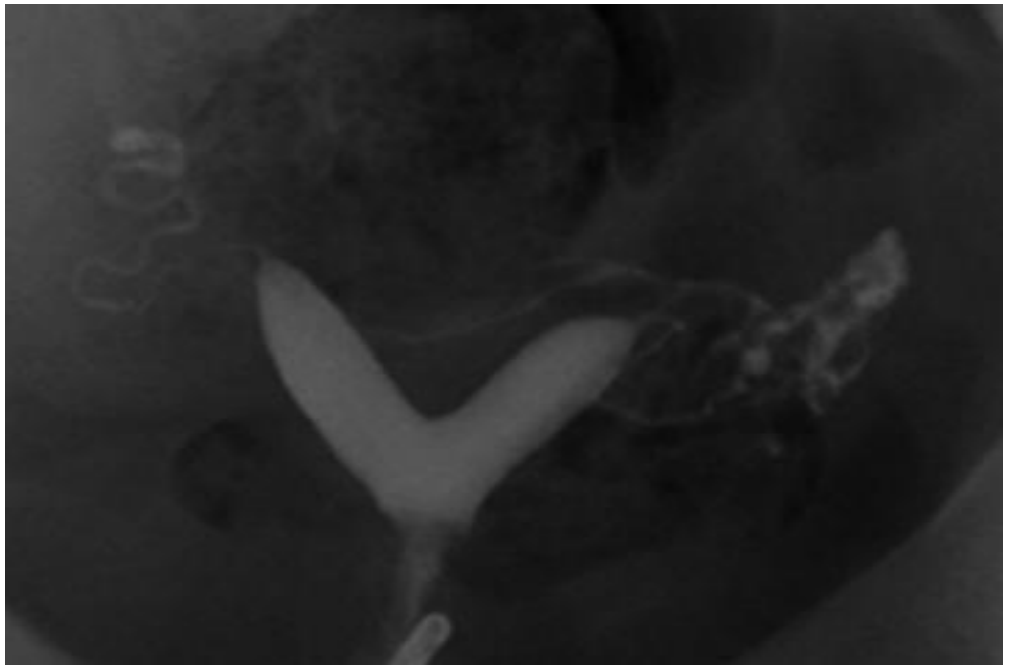












AFS Classification system supplemented with proposed additional morphometric criteria

	ASRM Classification	Internal uterine cavity indention (cm)	External uterine contour cleft (cm)
Septate uterus	Class V	≥1.5	<1
Arcuate uterus	Class VI	1–1.5	<1
Bicornuate uterus	Class IV	≥1.5	≥1

ESHRE/ESGE criteria, Class U2 septate

The internal fundal indentations of >50 % of the uterine wall thickness

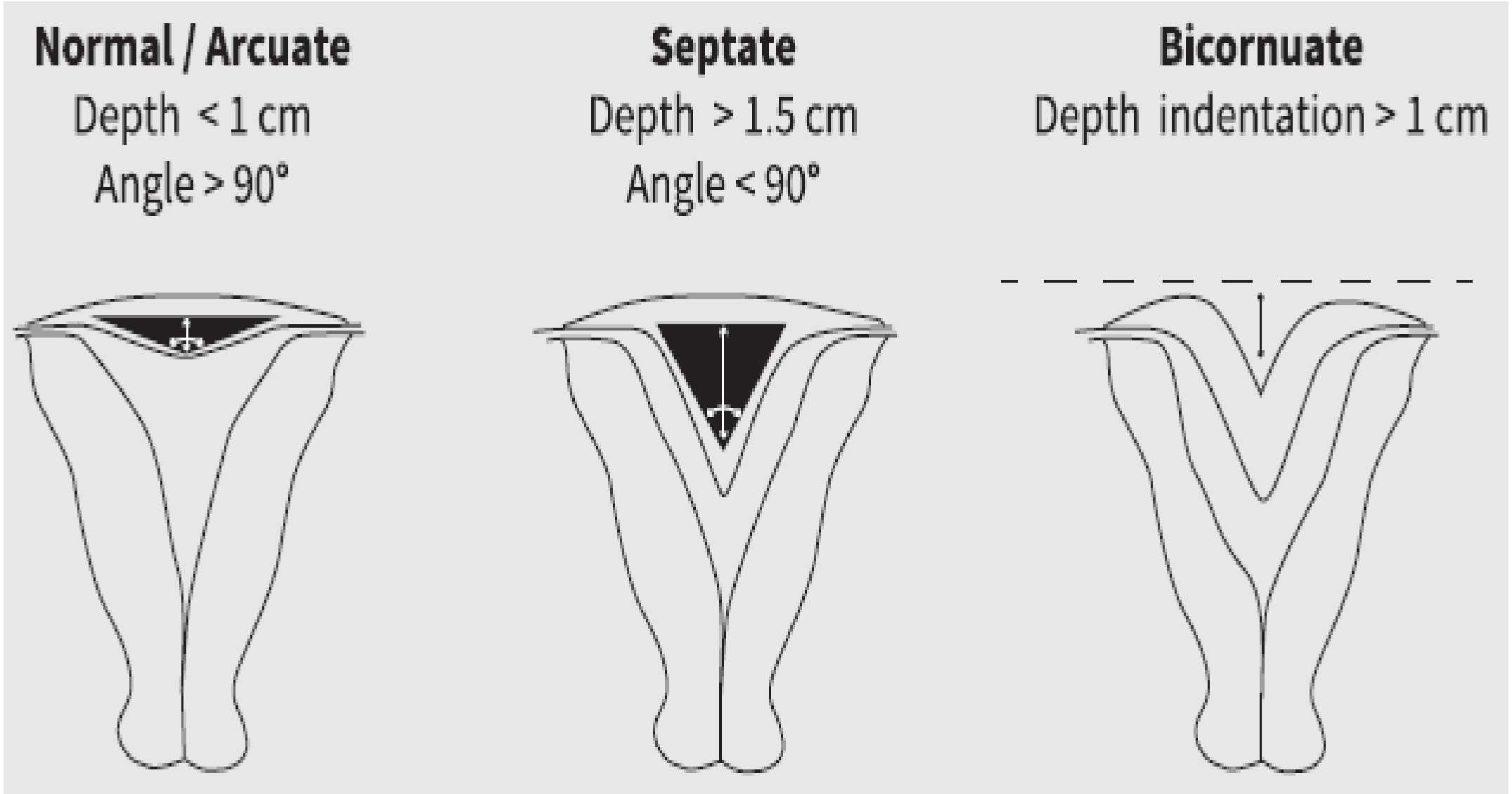
&

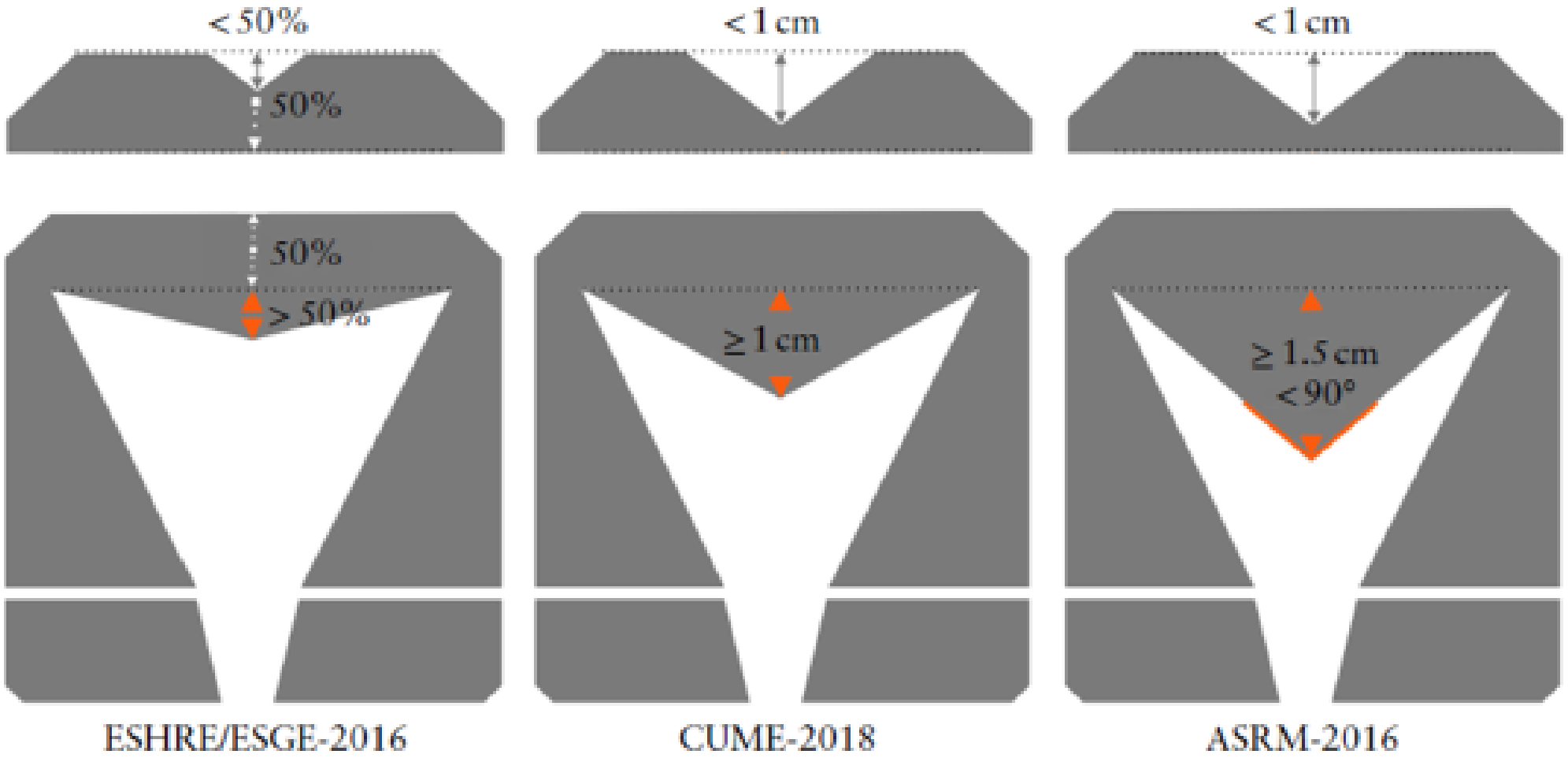
the external cleft is <50 % of the largest wall thickness measured in the

sagittal plane .

There is no distinct arcuate uterus anomaly within the ESHRE/ESGE classification system.

ASRM definitions of normal/arcuate, septate, and bicornuate uterus





Septate uterus according to three different definitions:

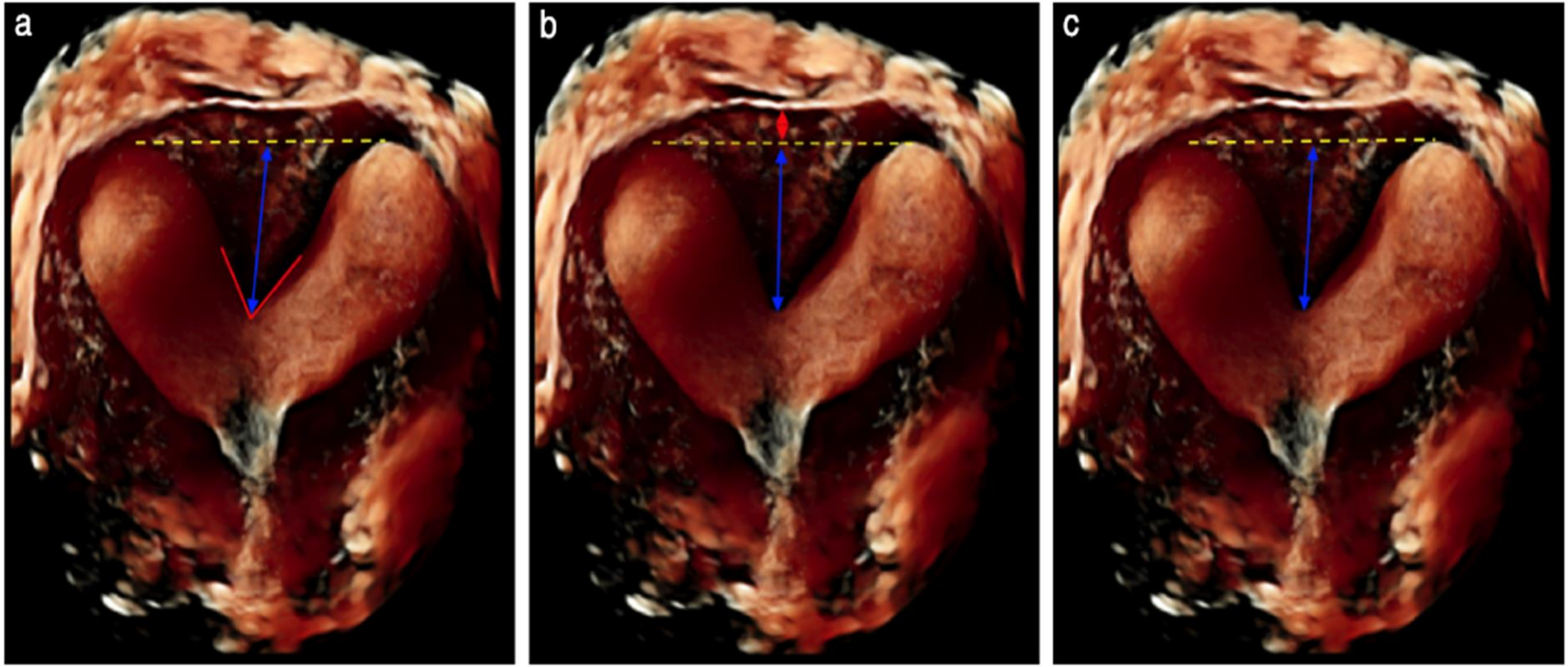


Figure 7 Ultrasound images of uterus that satisfied all three definitions of septate uterus: according to (a) ASRM-2016; (b) ESHRE/ESGE-2016 and (c) CUME-2018. In our study population of 261 consecutive patients in normal clinical practice, such uteri were relatively rare (2.7%) in comparison to those which satisfied just one definition (32.6%).

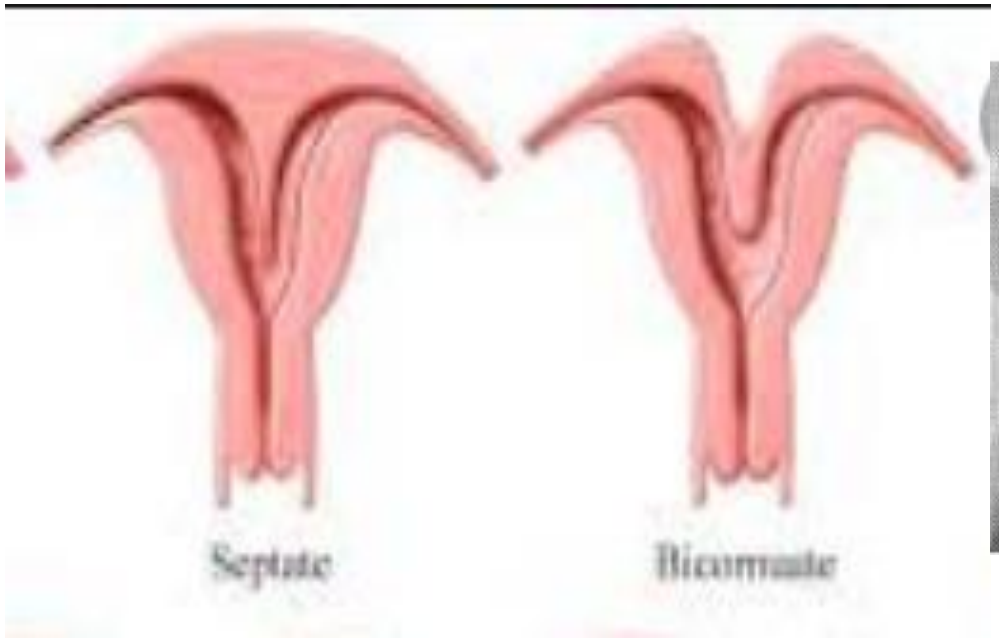
DX:

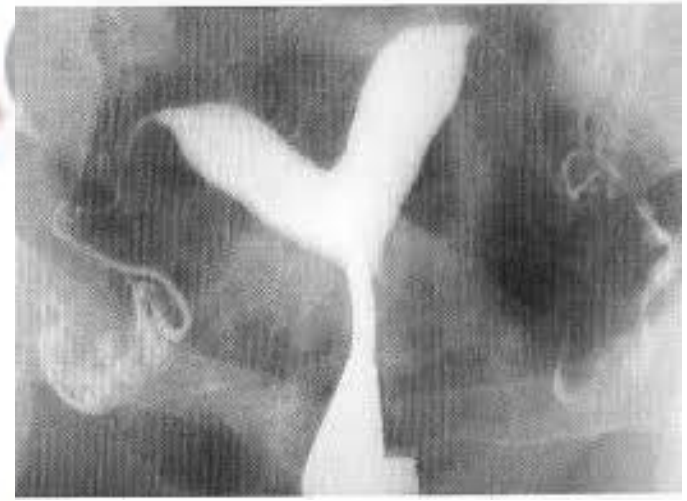
There is fair evidence that **3-D ultrasound**, **sonohysterography**, and **MRI** are good diagnostic tests for distinguishing a septate and bicornuate uterus when compared with *laparoscopy/ hysteroscopy.*




DDX:

The most important anomaly that needs to be differentiated from a septate uterus is a **bicornuate uterus**. Both the septate and the bicornuate uterus have a partitioned cavity





Indications for treatment:

The most accepted indication for surgical correction Is **recurrent pregnancy loss**, which usually occurs in the first trimester,

(pregnancy loss occurs in only 20–25 % of patients with a septate uterus)

The septate and partial septate uteri, appeared to have

the poorest reproductive performance, with a

reduced conception rate (OR 0.86; 95% CI 0.77–0.96) and

increased risk of first-trimester miscarriage (OR 2.89; 95% CI 2.02–4.14),

preterm birth (OR 2.14; 95% CI 1.48–3.11), and

fetal malpresentation at delivery, placental abruption and abnormal

placentation (OR 6.24; 95% CI 4.05–9.62).

Indications for treatment:

Other indications have included **infertility or subfertility**; however, the strength of this indication is weaker given the fact that a septate uterus does not usually contribute to the etiology of infertility.

Observational studies have demonstrated improved spontaneous pregnancy rates after hysteroscopic metroplasty and three observational studies found benefit t for removing a uterine septum by hysteroscopic metroplasty in subfertile and infertile women with a uterine septum

Indication for treatment

Patients undergoing (ART) may also undergo resection of a uterine septum prior to their planned treatment.

Should septum be resected for incidentally diagnosed in infertile women?

It is debatable & **unproven**. If surgery is planned, women should be fully informed of the limited evidence on its efficacy and of intraoperative and postoperative risks associated with surgery.

What is NICE guidance on hysteroscopy metroplasty?

National institute for health and care excellence

- **women** with recurrent miscarriage should be offered hysteroscopic metroplasty of a uterine septum as long as appropriate clinical governance arrangements are put in place.
- **women** with infertility, NICE states that current evidence on efficacy to improve pregnancy rates is inadequate in quantity and quality.

What is the definite etiology and pathophysiological processes underlying infertility and miscarriage in septated uterus?

Definite etiology remain uncertain:

Various hypotheses:

endometrium overlying the septum being abnormal thus providing a suboptimal site for implantation, disorderly and decreased blood supply insufficient to support placentation and embryo growth, and uncoordinated uterine contractions or reduced uterine capacity.

Summary statements:

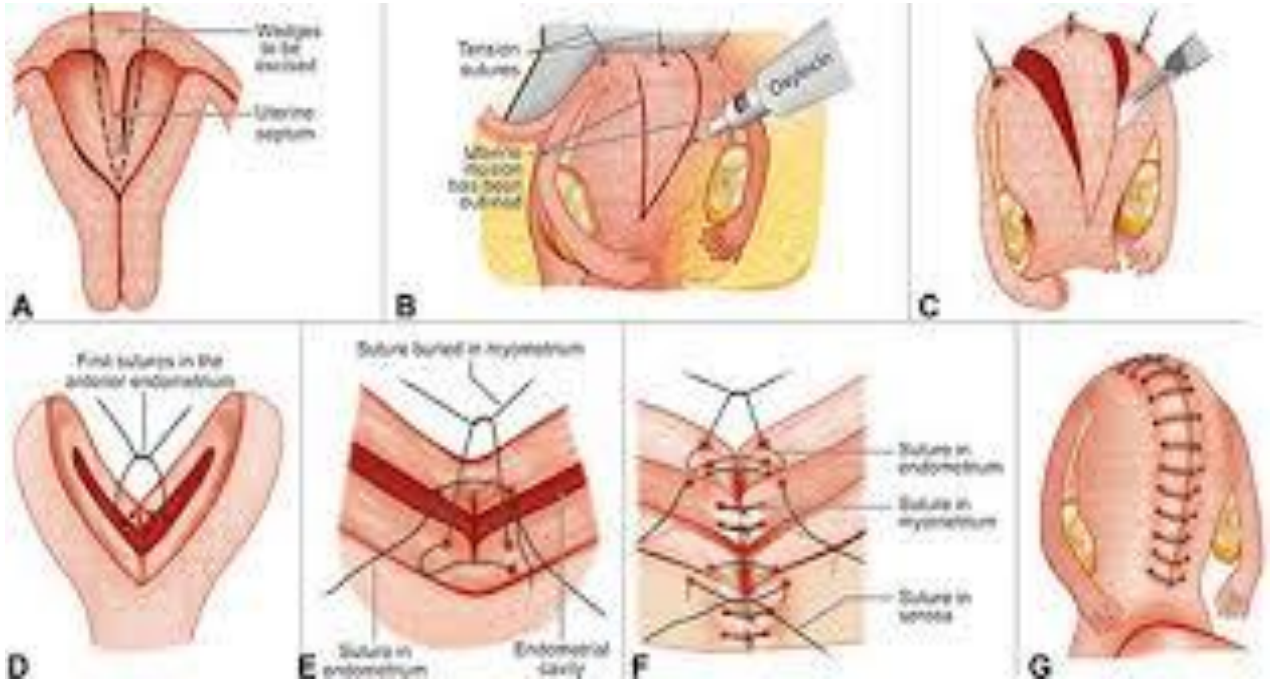
There is fair evidence that a uterine septum contributes to

- miscarriage and preterm birth.

Some evidence suggests that a uterine septum may increase the risk of other adverse pregnancy outcomes such as :

- malpresentation,
- IUGR, perinatal mortality.
- placental abruption,

Surgical techniques



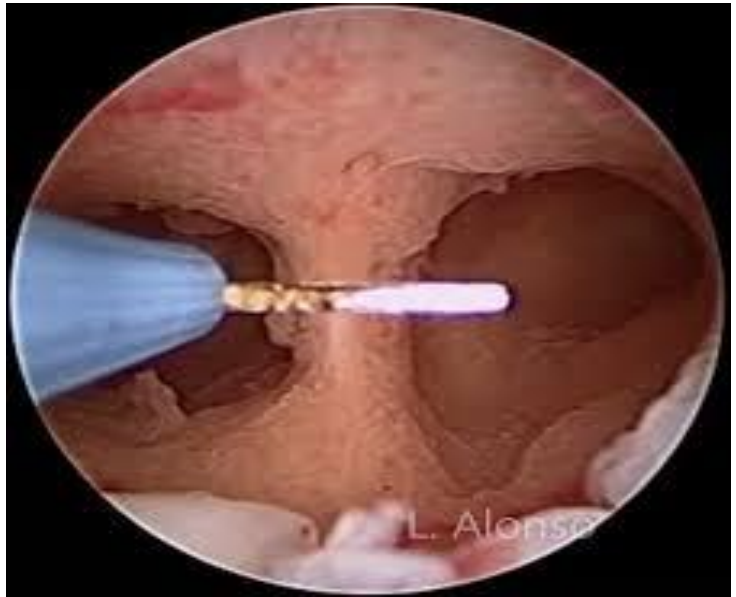
Metroplasty may be performed by:

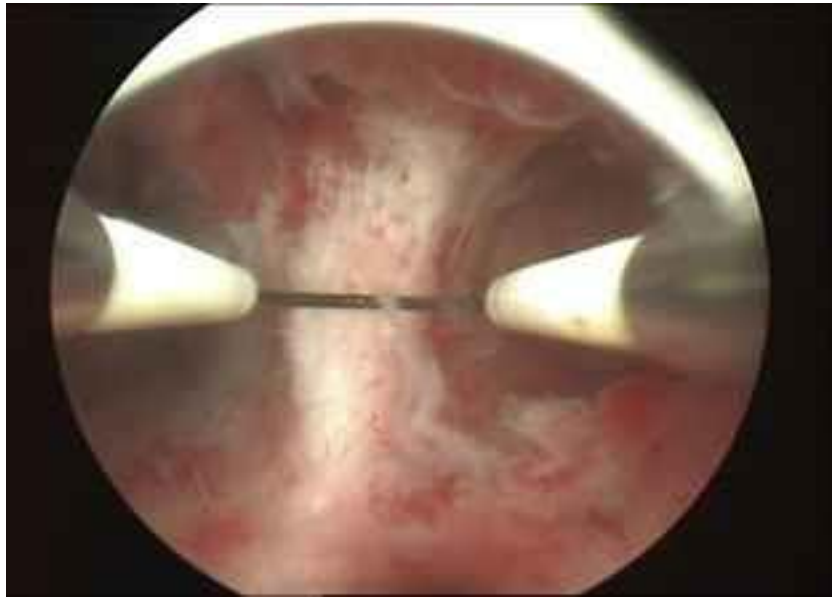
The transabdominal historically, metroplasty was performed via **the Jones** method or **the Tompkins** method , which have largely been abandoned.

The hysteroscopic minimally invasive, approach has offers patients outpatient surgery with shorter recovery time, decreased complication rates, and the possibility of a <u>subsequent vaginal delivery.</u>

Hysteroscopy septolysis

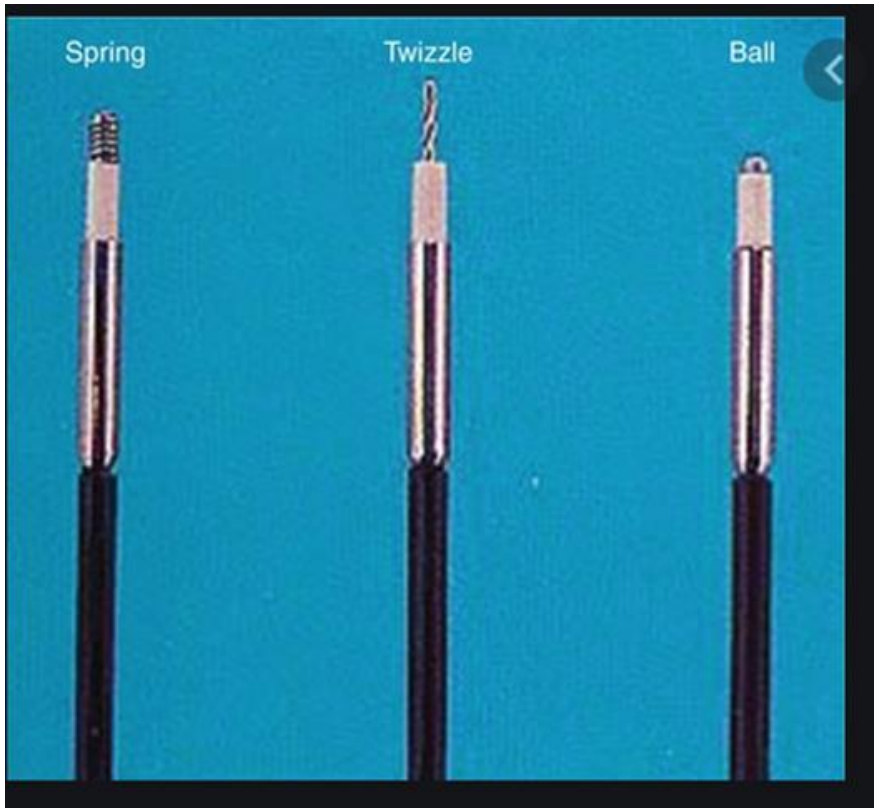
The procedure can be performed under transabdominal ultrasound or laparoscopic guidance to reduce the risk of uterine perforation and to ensure adequacy of the procedure. It is good practice to measure the septal length preoperatively using 3D ultrasound or MRI to ensure surgical safety and efficacy.





Hysteroscopic septolysis

There are several different hysteroscopic instruments and tools that can be used for a septum resection. The most commonly used are hysteroscopic scissors and electrosurgical instruments, but other techniques include the use of lasers (argon and neodymium:yttrium-aluminum- garnet (Nd:YAG) lasers), vaporizing or bipolar electrodes (Versapoint) and mechanical morcellators



Which method is superior ?

Different techniques offer various benefits, but only limited studies have examined Superiority of different techniques with regard to reproductive outcomes.

Are septum characteristic associated with worse reproductive outcomes?

There were no differences in the incidence of abortions and late pregnancy complications in patients with uterine septum extending < 1/3 of the uterine cavity and those with a septal length of > 2/3 of the uterine cavity. There were also no differences in the incidence of obstetrical complications when comparing a thick septum (defined as >1 cm) and thin septum (defined as <1 cm).

When is the best time for surgery?

when surgery is planned, the best timing for the surgery is in the early follicular phase, as the endometrial lining will be thin and therefore aid in surgical visualization.

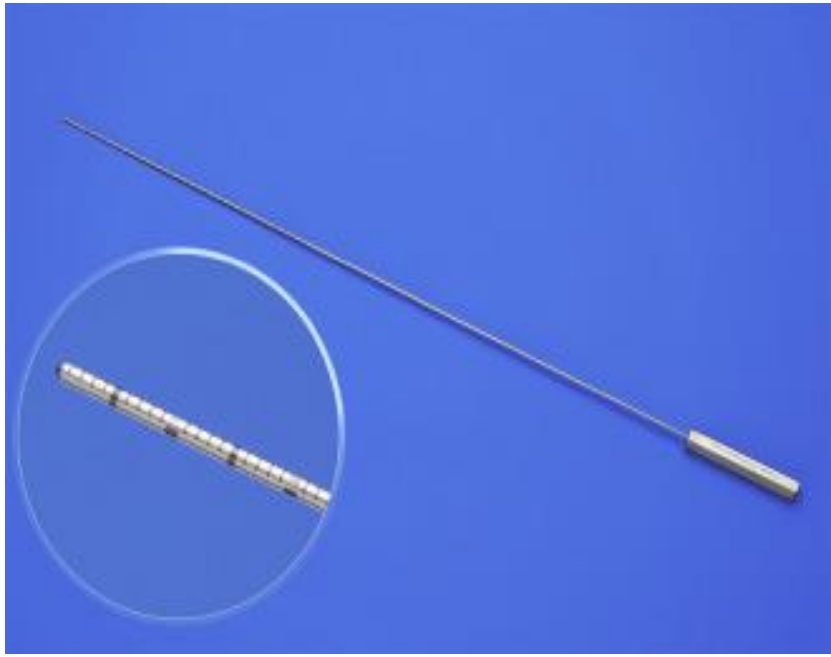
Do they need Preoperative endometrial suppression?

However, there is insufficient evidence and is not used routinely, but may improve visualisation and operative precision.

Although OCP and progestins are commonly used preoperatively to thin the lining, Danazol and (GnRH) agonists have also been used.

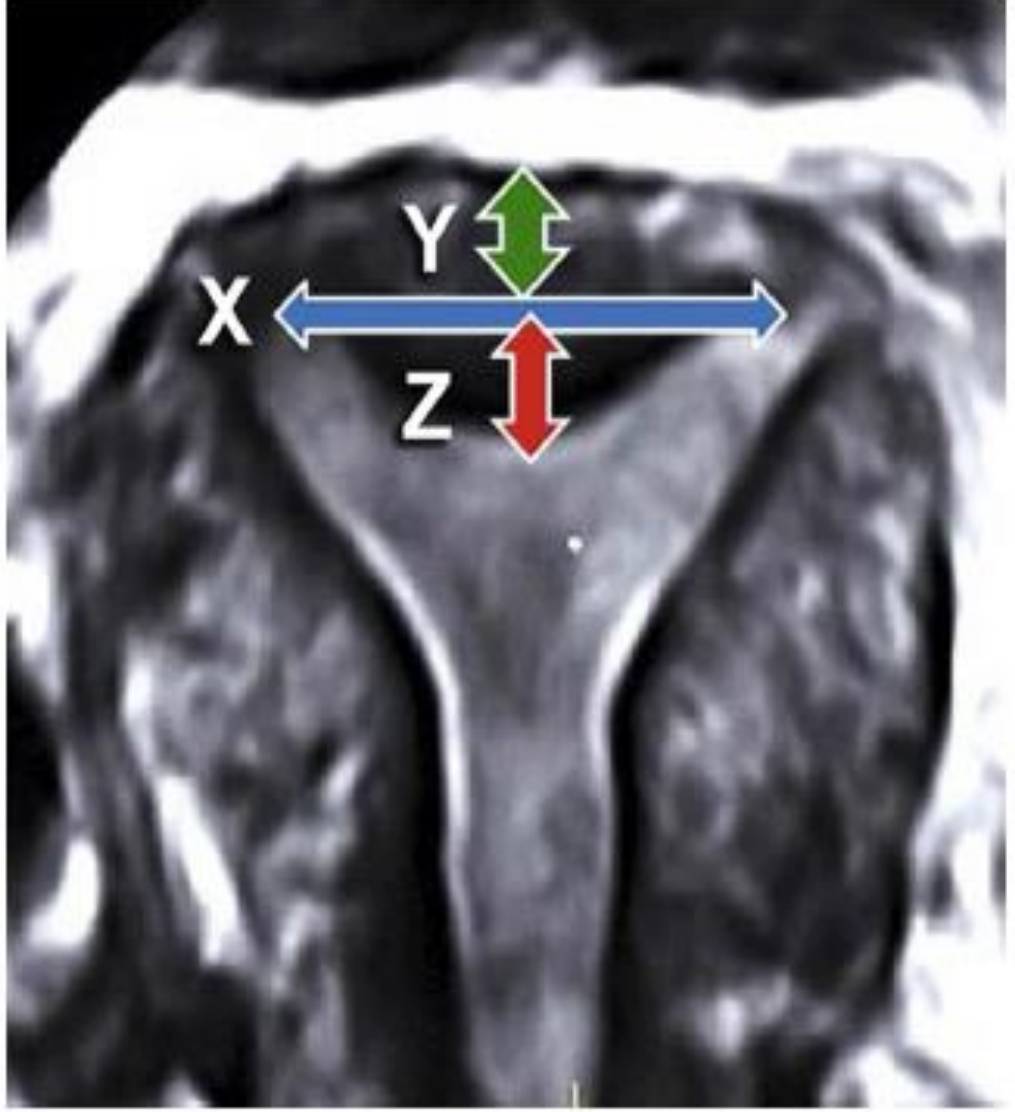
How Far septum should be resected?

Regardless of tool used, typically, the septum is incised to the level of the myometrium or until bleeding is noted within the tissue, representative of myometrium, and/or the surgeon is able to visualize both tubal ostia within the same panoramic view , or using a **graduated intrauterine palpator** to objectively check the portion of septum resected, verifies completion of resection. The presence of a residual septum 0.5–1.0 cm in length may not adversely influence outcome.

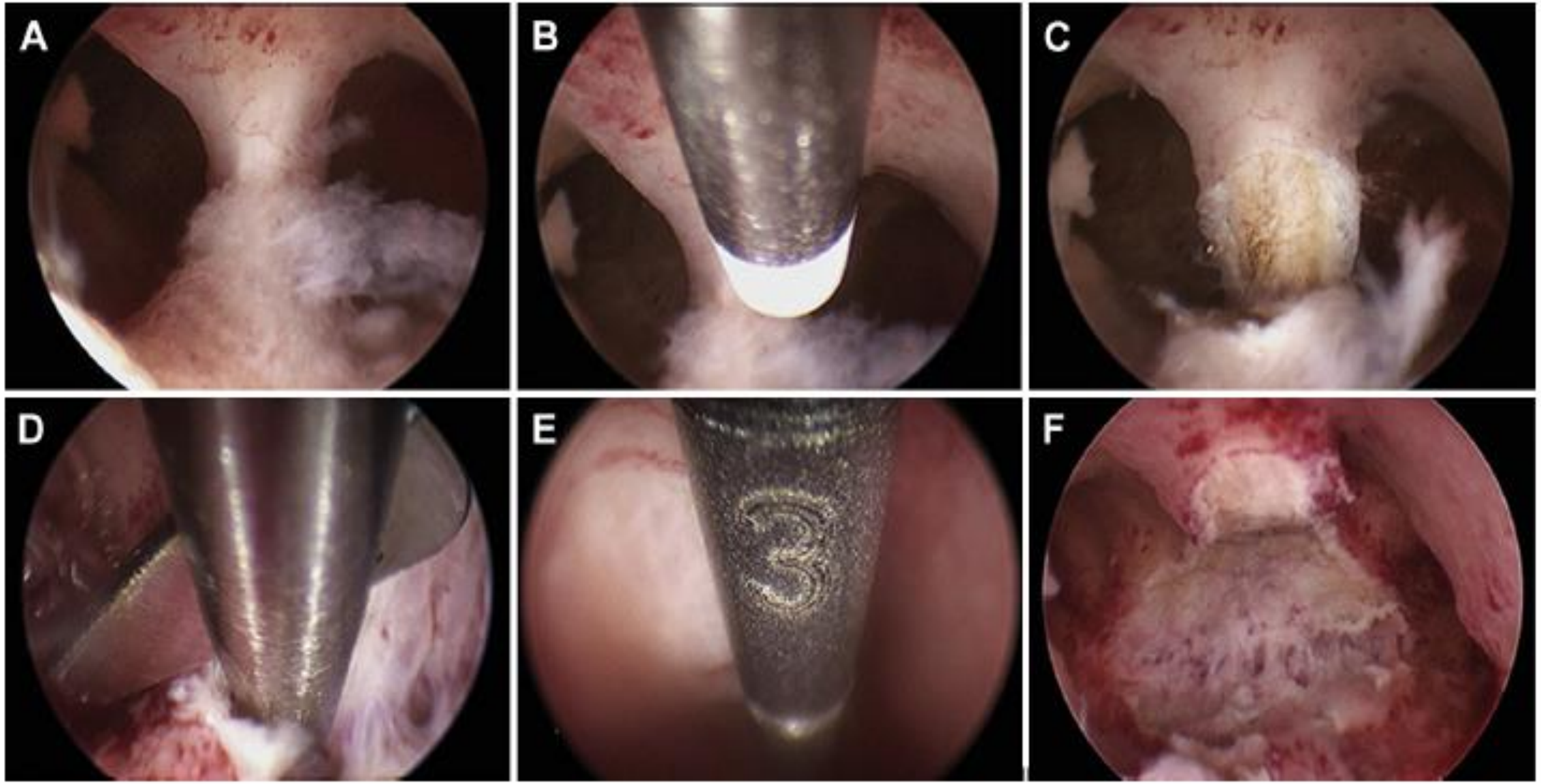


The graduated intrauterine palpator

metroplasty was stopped when the graduated intrauterine palpator introduced via the working channel of the hysteroscope, showed that the resected septum ([Z + Y] - 1.0 cm) corresponded to presurgical ultrasonographic measurements, obtaining a fundal notch of 1.0 cm.



Graduated intrauterine palpator



Intra uterin adhesion

The risk of intrauterine synechiae after hysteroscopic metroplasty appears to be low.

Uterine septal **width** and **surface area** have been noted to be predictors of abnormal cavities postoperatively, but this finding is not uniformly noted . Lastly, the need for reoperation after hysteroscopic metroplasty appears to be low, ranging **from 0 to 23 %,** and

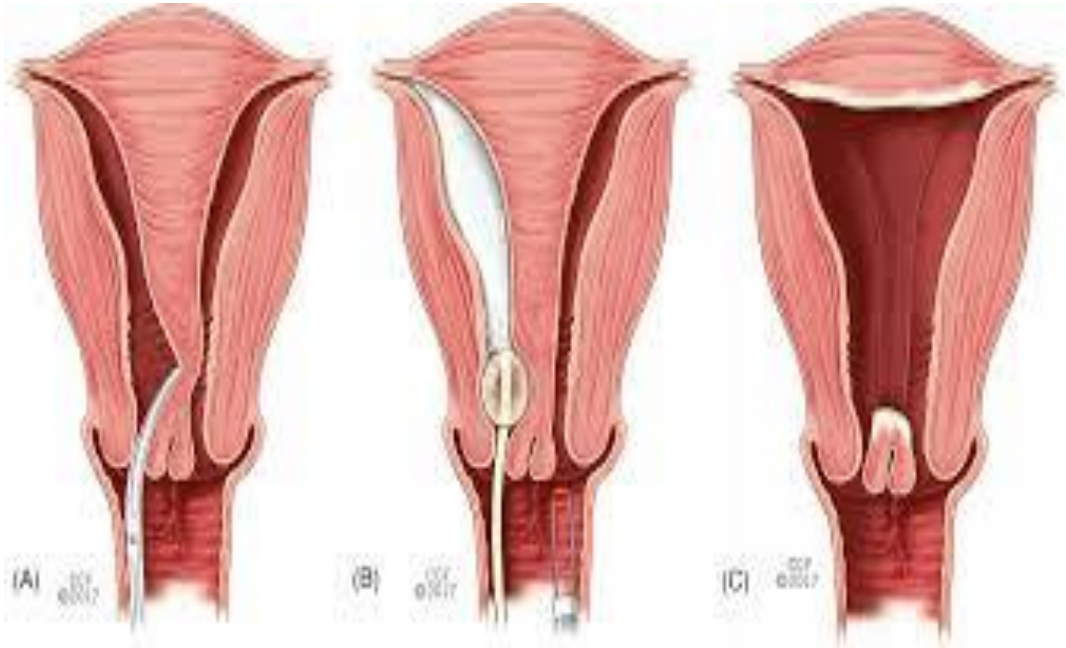
What should be done postoperatively to promote endometrial healing and reduce scarring?

With no proven benefit, and no randomized controlled trials evaluating this, postoperative **E** is often used to induce endometrial growth, followed by a **P** to induce a withdrawal bleeding.

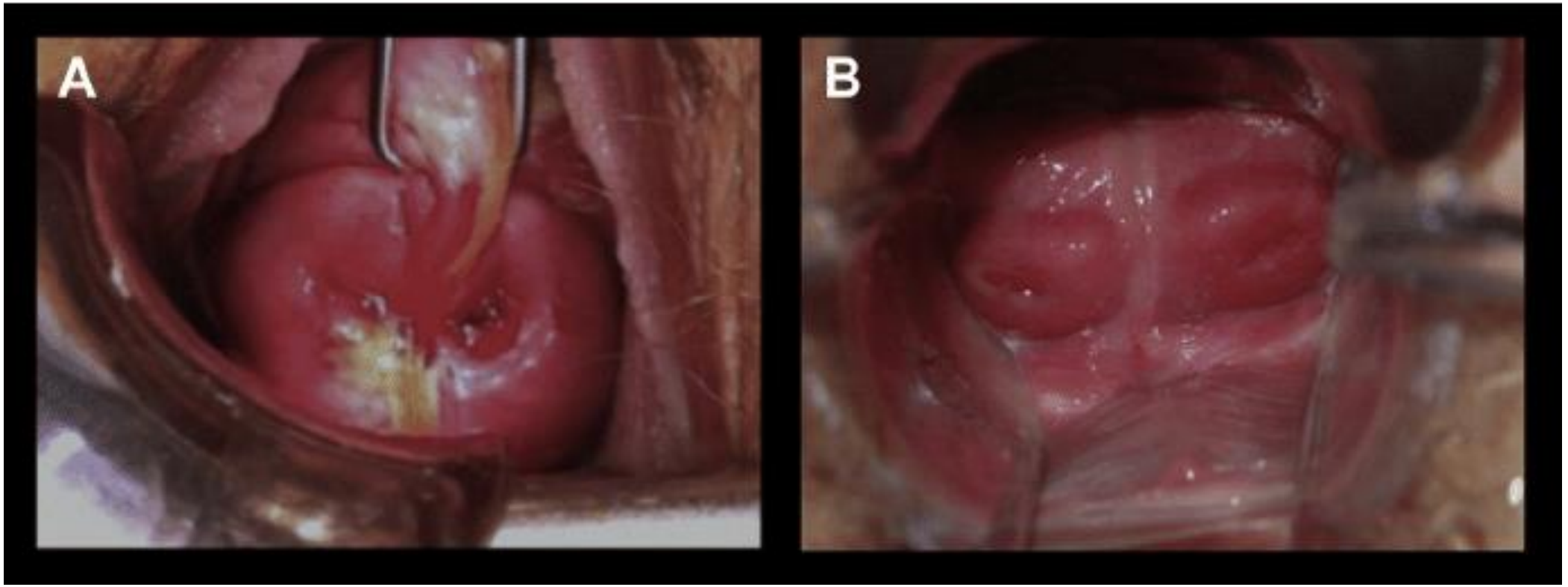
- Copper IUD & Balloon , Foley catheter , stent
- Combination of IUD and E+P
- Intrauterine anti-adhesion agents (intrauterine auto-crosslinked) hyaluronic acid gel to prevent adhesion formation.

Complete septate uteri with cervical duplication

These kind of anomalies require special attention. *Wang et al.* performed hysteroscopic metroplasty on 25 women with complete septate uteri with Cervical duplication, all who had concurrent laparoscopy and transabdominal ultrasound. A Hank dilator was inserted into one cervix and the hysteroscopic resectoscope (with knife cutting or wire loop electrode) was inserted into the other cervix, with the Hank dilator serving as a visual marker when the perforation was made in the septum just above the internal os. The **Hank dilator** also prevented leakage of the distension media through the second Cervix. There were no complications and 68.2 % of the cases had no residual septum. Fertil Steril. 2009;91:2643–9.



In the studies mentioned above, the portion of the septum creating the cervical duplication was preserved. This seems to be the consensus in the literature with **the idea to protect the cervical integrity** and avoid cervical incompetence in subsequent pregnancies



Complication:

Intraoperative complications include **endocervical** or **intracavitary injury**, such as the **creation of false paths**, **uterine perforation, uterine bleeding, Fluid overload, allergic reactions to distending media (such as Dextran 70), and general anesthesia risks** . Patients undergoing a hysteroscopic procedure should be aware of the possible need for a laparoscopy or laparotomy if a uterine perforation occurs, in order to evaluate and repair any intra-abdominal injury, such as a bowel injury.

Should uterin cavity be reevaluated post hysteroscopy?

At 1-3 months postoperatively, the cavity can be offered to reexamined to evaluate for any residual septum, adhesions, or other anatomic abnormalities. This can be done with imaging or a diagnostic hysteroscopy. Fine adhesion could be removed in early stage of formation by second look hysteroscopy.

When a women can conceive after the metroplasy ?

While observational studies suggest that the uterine cavity is **healed 2 months after** septal division, there is insufficient evidence to advocate a specific length of time before a woman should conceive after the procedure.


Thank
you!