HANDWRITTEN NOTES

DAMS

GYNAECOLOGY

CRISP, CONCISE, CONCEPTUAL

Integrated Edition

Student first @DAMS

DAMS Publications

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Phone : 011-4009 4009, 9899664533
http://www.damsdelhi.com
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HOW TO MAKE BEST USE OF NOTES?

A Message by Mentor Duo Specially for you,

- *Read the notes thoroughly, they are absolutely concise, crisp & conceptual and hence it is best advised not to add a lot of extra information to them as that will dilute the quality.*
- *Images have been provided alongside to aid in better understanding and also help you solve image-based questions, these images have been specially picked by the faculty so have a high probability of being asked in exams.*
- *Notes are handwritten in a way to help make them easier to retain, a lot of tables, graphs and algorithms have been used to simplify the learning.*
- *While reading notes try and use the CFAQ technique —*
  - *A. Use the C to denote concept part in the notes and ensure you are clear with this part in the first go if not then it's advisable to listen to this part of the video from your course.*
  - *B. Use the F To denotes facts in your notes, it is okay if you can't remember them in first go but will need repeat reading. But these facts are important for exams as they could be integrated to clinical questions.*
  - *C. Use A to denote applied parts, this is how concepts and facts are asked indirectly in exams. This will also help you develop MCQ solving skill.*
  - *D. Use Q to denote areas where faculty has said it's a direct question or a PYQ or a potential question.*
- *This technique will help you summarize your notes In way that your second reading will become easy and faster.*
- *Active space has been provided with these notes to make your own annotations alongside and this will help you maintain one single notebook for one subject.*
- *Try and solve MCQs with every topic from DQB. Your goal should be to start with at least 30 MCQs every day and then increase to at least 50 MCQs every day. Also, when you do a topic wrong write it alongside the notes that this topic needs to be read again but mark only the specific area that you have done wrong not the whole topic.*
- *After the topic is covered then in the active space try and summarize the topic in the form of mind map. This will help in active recall and make your revision easier.*

Best Wishes & Happy Learning!!!!!

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EMBRYOLOGICAL DEVELOPMENT

Gonad : Ovary

Internal genitalia :
- Uterus
- Fallopian tube
- Cervix
- Vagina

External genitalia : Vulva
- Clitoris
- Labia minora
- Labia Majora
- Opening of vagina
- Glands

Gonadal development

Embryological origin of Gonads : Genital ridge (Gonadal)
In embryonic life, this area can be identified at 5 weeks
Bipotential - can develop into male or female gonad

Genital ridge

KARYOTYPE

Female gonad
46 XX
Absence of Y
Genital ridge
↓
Ovary - 8 week
(Gene : NNT4 / FOXL2 / RSPO1)

Functionally normal ovary : XX

Turner syndrome :
45 XO

- Ovary appears in embryonic life, but it is not normal
- They undergo accelerated atresia

At birth,
Replaced by fibrotic streaks - Streak gonads (ovaries)

Gonadal dysgenesis
M/C type :- Turner Syndrome

Male gonad
46 XY
SRY Region :
- Short arm of Y chromosome (distal fragment)
- Normal functioning signals : SOX 9

Testes - 7 weeks (approx)

Sweyer syndrome :
46 XY

Mutation of SRY region
(Point mutations or deletions
↓
Becomes non-functional

Abnormal gonadal development - bilateral streak gonads

Gonadal dysgenesis
Pure or complete gonadal deletions

Embryological development of Internal Genitalia

Female

Uterus , Cervix ,
Fallopian tube , vagina

↓

Paramesonephric ducts
/ Mullerian Ducts

Males

Seminal vesicle , ejaculatory duct , SEED
epididymis , ductus difference

↓

Mesonephric ducts /
Wolffian ducts

→ Appear in the embryo - 6 weeks ←

Ovary : 8 weeks
x MIS
x Testosterone

Mullerian duct persists -
female internal genitalia

Wolffian duct -
Disappears

• Estrogen is not required for appearance of the internal genitalia

• Required for sexual growth at puberty

Turner syndrome :
45 XO

Ovary - absent
Uterus - present

At puberty ,

It does not grow because there is no estrogen
Hypoplastic infantile (small uterus)

Testes : 7 weeks
Sertoli cells - 7 weeks
• produce MIS

Leydig cells - 8 weeks
• produced testosterone

MIS -
disappearance of Mullerian ducts
(Ipsilateral)

Gene - chromosome 19
Gene for receptor - chromosome 12

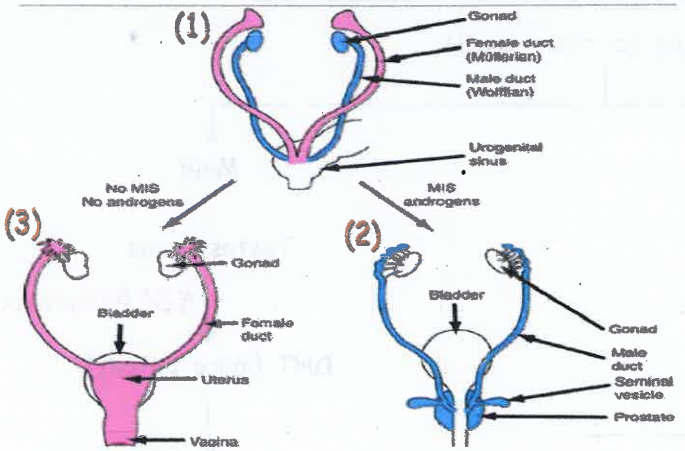
Testosterone
↓
Wolffian ducts
↓
SEED

Sweyer syndrome :
46 XY

Streak gonads
Uterus - present
(No MIS)

Internal genitalia female

Internal genitalia can be differentiated into male or female by 10 weeks

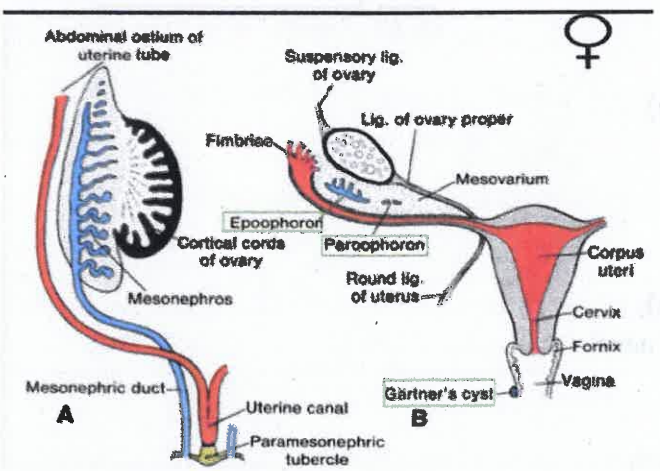


1).
Both female and male ducts are present

2).
- MIS and androgens are present
- The Mullerian duct has disappeared : 9 weeks
- Testosterone has acted on the Wolffian duct and converted into male genitalia

3).
- Wolffian duct has disappeared : 9 weeks

Remnants



Wolffian Duct

Epophoron
- Cranial / Lateral
- Mesonephric tubules
- between ovary and fallopian tube

Parophoron
- Medial
- Mesonephric tubules
- below the epophoron

Paraovarian or paratubal cyst

Mullerian Duct
- appendix of testes
- Hydatid of morgagni

Gartner's duct
- Mesonephric duct
- cyst in vagina (Anterolateral wall)

Location of remnants - Broad Ligament

Embryological development of External Genitalia

Urogenital sinus (UGS)

Female

x testosterone
x DHT

In the absence of these, it will convert into female structures

46 XX Ovary
Access androgens during embryonic life
↓
External genitalia become male like

Female pseudohermaphrodite

M/C cause :
CAH (congenital adrenal hyperplasia)

M/C enzyme deficiency :
21 hydroxylase

There is salt wasting (hyponatremia), and as a result, the individuals will have hypotension

Abnormal sexual development at birth :
1st : Quickly assess the karyotype
2nd : Electrolytes

Male

Testosterone
↓ 5α Reductase
DHT (more potent)
↓
UGS - Male

46 XY Testes
Lacks 5α Reductase
x DHT
So, external genitalia will become female like
Male pseudohermaphrodite
46 XY Female like ext genitalia

Urogenital sinus (UGS)		
Female		Male
Clitoris	Genital tubercle	Penis
Labia minora	Genital fold	Penile urethra
Labia majora	Genital swelling	Scrotum

Excess androgen
- clitoromegaly
- fusion of labia minor

→ Abnormal development (Ambiguous genitalia) → Expedite karyotype

↓

46 XX
CAH

↓

Electrolytes

True hermaphrodite
- they have functional tissue of both gonads : Ovary / testes
- also called as = ovotesticular syndrome
- External genitalia = ambiguous
- karyotype can be 46XX (M/C) , 46XY or mosaic

External genitalia can be differentiated into male or female by 12 to 14 weeks

Homologous organs

Female	Male
Glands of SKENE Small paraurethral glands	Prostate
Bartholins gland	Bulbourethral gland (Cowper's gland)

When the phenotype is female (external genitalia) & The genotype is male (46XY)
Male pseudohermaphrodite
There is increased risk of gonadal tumours → gonadectomy

Most common tumour in abnormal gonads : Gonadoblastoma (benign)
Most common cancer in this gonads : Dysgerminoma

Sweyer syndrome : 46 XY	Turner syndrome : 45 XO
x Testes ; x male hormones	
External genital - female	No Y chromosome
Male pseudohermaphrodite	
Abnormal gonads - Dysgenetic - streak	No routine gonadectomy
Gonadectomy is to be done as soon as the diagnosis is made	

FIB

(Q). Testes determining region on Y chromosome is SRY and it is located on short arm distal

(Q). Leydig cells start producing testosterone from testes by 8 weeks

(Q). First stimulus for testosterone release from fetal testes is HCG

(Q). Cranial remnant of mesonephric tubule is Epoophoron - organ of Rosenmuller

(Q). Location of Wolffian duct Remnant is broad ligament

(Q). Sex of the fetus can be identified by 12 to 14 weeks

(Q). Homologous structure to prostate in female is gland of SKENE

(Q). In 5α reductase deficiency, the external genitalia at birth are female and it is called as male pseudohermaphrodite

(Q). In Sweyer syndrome, mention the following.

Karyotype 46XY

Uterus present

Gonads streak

External genitalia female

(Q). Most common cause of female pseudohermaphrodite is CAH 21 Hydroxylase deficiency

MULLERIAN ANOMALIES

Development of Uterus

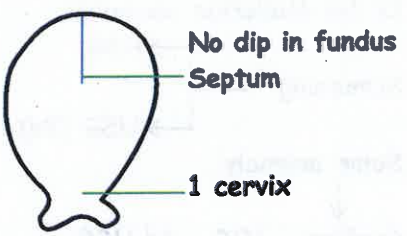
Mullerian abnormalities
2 Mullerian ducts = fuse
Direction of fusion - caudal to cranial
Cavity formation - dissolution of midline septum
Direction - caudal to cranial
18-20 week : cavity formation ⟶ Canalisation

Septate uterus
- M/C anomaly
- M/C associated with RPL / abortions
- 2nd Trimester abortions > 1st Trimester
- worst reproductive outcome
- Repair = Trans cervical septoplasty (metroplasty)

↓

Hystereoscopic ressection

Jones metroplasty
Tompkins metroplasty
] Older Sx : not done now

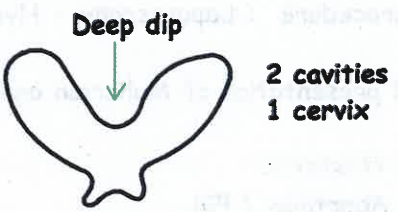


Bicornuate unicollis
- Partial fusion
- 2nd M/C Mullerian anomaly
- good outcome = no routine repair

If repair is to be done : Unification Sx

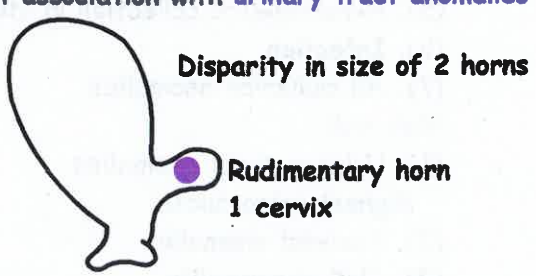
↓

Strassman metroplasty

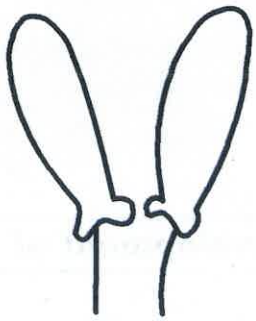


Unicornuate
- banana shaped deviated uterus
- rudimentary horn pregnancy = ectopic pregnancy
- U/L dysmenorrhea

Associated with ectopic ovary
Highest association with urinary tract anomalies
] On the side of abnormality or rudimentary



Didelphius



- complete failure of fusion of Mullerian ducts
- 2 cervix / size of 2 uterus is similar
- disparity in size can be seen in pregnancy
- HSG : 2 cannulations (2 cervix)
- Has highest association with vaginal septum - Didelphius
- Reproductive outcome is good = no routine repair
- If repair is done : Strassman metroplasty

Arcuate

- normal Fundus

Small dip inside the cavity (shallow and wide - HSG)

Normal variant

Best reproductive outcome

Arcuate > Didelphius > Bicornuate

Ix for Mullerian anomalies

Screening → HSG / USG (2d)

Some anomaly

↓

Confirm : IOC - 3d USG

↓

Gold standard : MRI - complex anomalies

↓

Best procedure : Laparoscopy + Hysteroscopy

Clinical presentation of Mullerian anomaly

Obstetric

(1). Abortions / PRL
(2). Preterm labour
(3). IUGR
(4). Malpresentations

Transverse lie is not possible in Unicornuate / Diadelphius

M/C malpresentation is Septate breach

(5). Increase risk of CS
(6). Abnormal Placenta
- Placental previa
- PAS

(7). Pre eclampsia
- abnormal vascular supply
- associated with renal anomalies

(8). Ectopic pregnancy : Unicornuate

Gynaecological

(1). Obstruction to menstrual blood flow
(2). Dysmenorrhea
(3). Retrograde menses

↓

Endometriosis

(4). Blood collects in vagina

↓

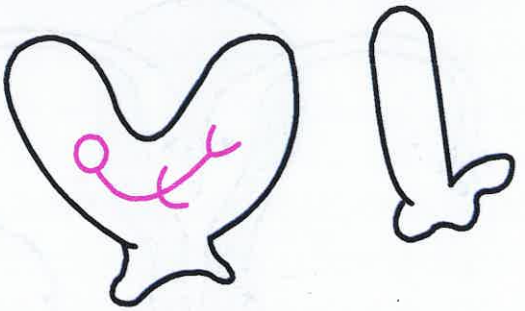
Hematocolpos

(5). Hematometra collection in uterus
(6). Infection
(7). All mullerian anomalies

High risk

(1). Urinary tract anomalies
- Highest unicornuate

(2). Skeletal anomalies
(3). CNS abnormality



Mullerian anomalies
Usually do not cause infertility

Infertility → Septate

FIB

(Q). IOC for Mullerian anomalies is 3D USG

(Q). Which anomaly has highest association with urinary anomalies - Unicornuate

(Q). Which anomaly has highest association with vagina septum - didelphius

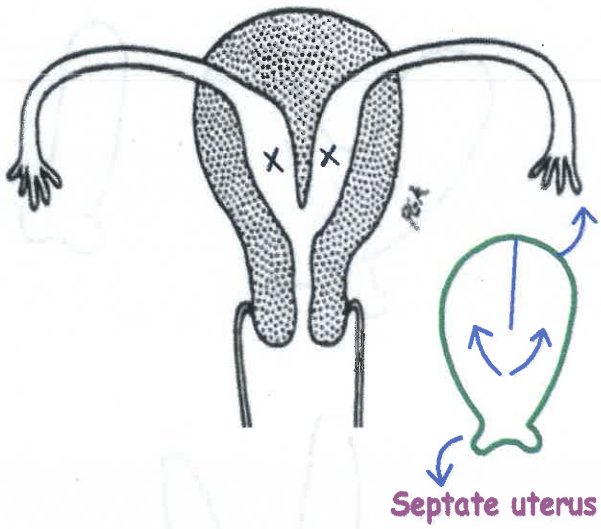
(Q). Which anomaly has highest association with RPL - Septate

(Q). If we are seeing 2 uterine horns of same size and 2 cervix diagnosis Didelphius

(Q). Distortion of midline septum = direction caudal to cranial

(Q). Which of the following can differentiate b/w Septate & Bicornuate
(a). HSG
(b). P/S
(c). Hysterectomy
(d). Laproscopy
D - Laproscopy

(Q). Best reproductive outcome is seen with Arcuate > Didelphius

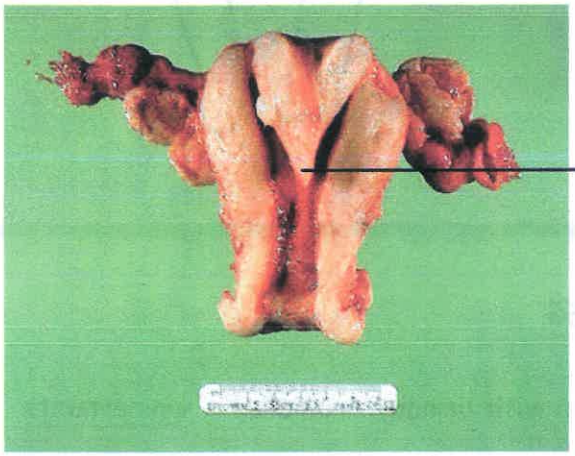


Septate uterus

No dip in Fundus
External contour normal
1 cervix

Incomplete dissolution of septum

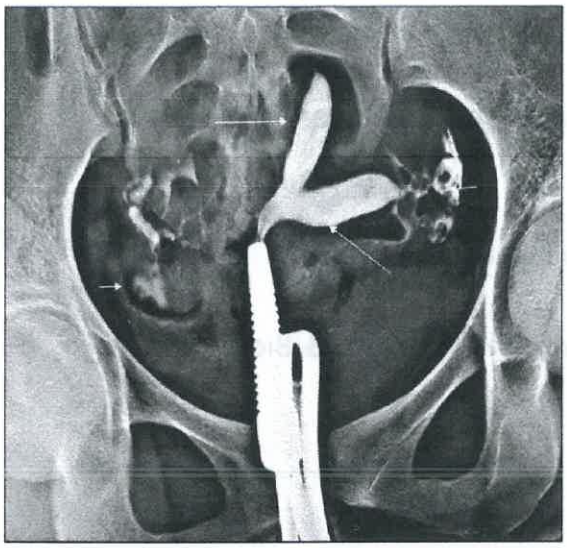
M/C mullerian anomaly



Septum
- avascular
- distortion of cavity

] Abortions & RPL

M/C anomaly to cause RPL :
Septate uterus



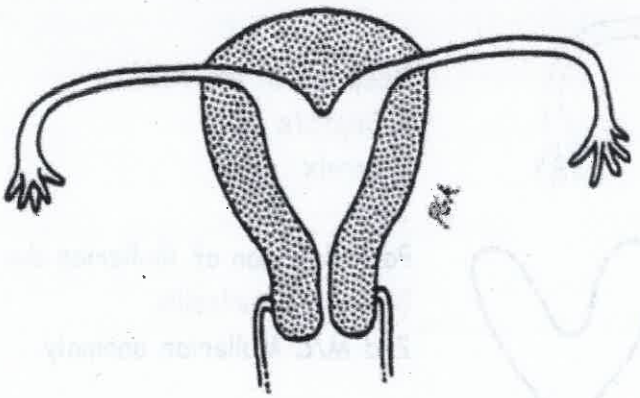
HSG

Hysterosalpingo graph
- screen for anomalies
- only shows inside of uterus

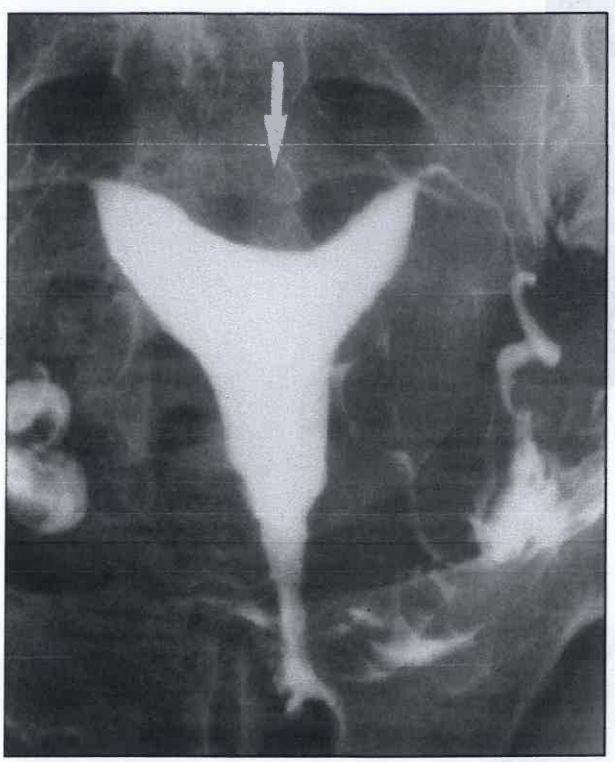
x External contour

HSG x confirmatory

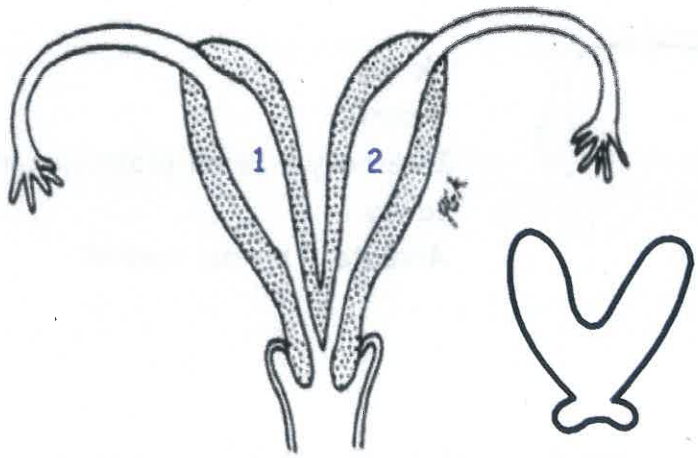
Angle b/w two horns
Narrow (< 75°C) = likely to be separate



No dip
1 cervix
Internally : Small protrusion in cavity
Arcuate - normal variant

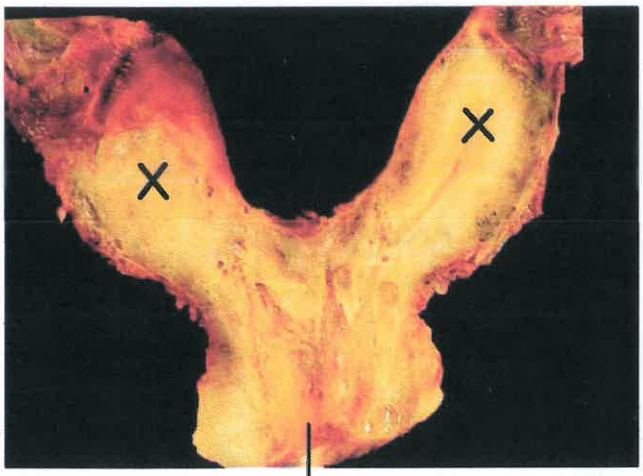


Arcuate
Shallow & wide



Deep dip in the fundus
x Septate
1 cervix

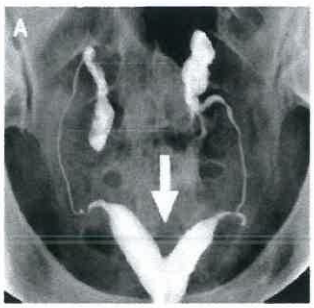
Partial fusion of Mullerian ducts
Bicornuate unicollis
2nd M/C Mullerian anomaly



Bicornuate

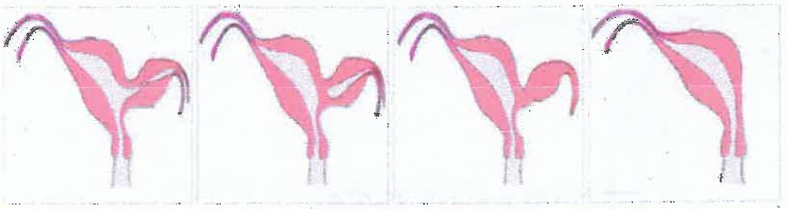
Cervix

HSG

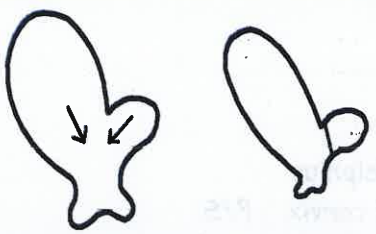


A :
- Narrow angle
- Likely to be Septate

B :
- Wider angle
- Bicornuate



Type A1a: Communicating	Type A1b: Non communicating	Type A2: No Cavity	Type B: No Horn
10%	22%	33%	35%



One duct has formed uterus
Other : rudimentary horn
Unicornuate
1 cervix
No dip in the uterus
Disparity in size

HSG : Unicornuate
Saline - USG

Deviated uterus
Banana shaped
Unicornuate

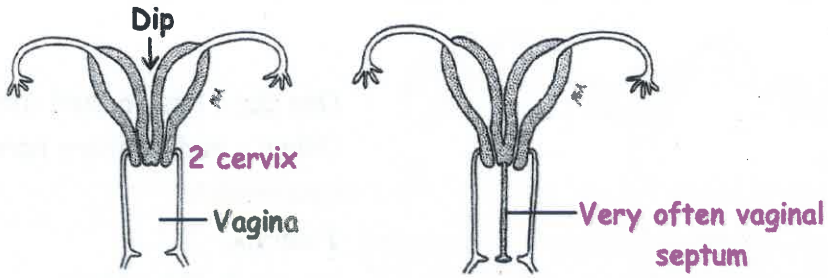
Intra op

Unicornuate

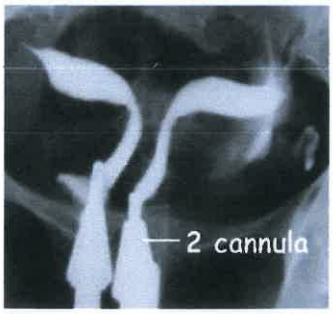
Can also be Didelphius
Pregnancy - in only 1 uterus

Rudimentary horn

History :
2 cervix : Didelphius



Uterus didelphius
- 2 uterus
- 2 cervix



Didelphius
- 2 cervix : P/S

Personal Notes