CONTENTS

GYNECOLOGY

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MENSTRUATION, MENOPAUSE, CONCEPTION, CONTRACEPTION, INFERTILITY

MENSTRUATION

PRIMORDIAL FOLLICLES

→ 6-7 millions at 20 weeks of IU Life
→ 1-2 millions at birth
→ 3-4 Lakhs at Puberty
→ 400-450 utilized

CASE 1 → Women in whom fertilizat^{n} occurs

→ FIMBRIA OVARICA → Extra long fimbria which takes up oocyte
→ Life of oocyte → 24 hrs to 48 hrs [Best answer → 24 hrs]
→ Sperms fertilize oocyte in ampulla
→ Embryo reaches the uterine cavity on 3rd day of ovulat^{n}
→ IMPLANTATION WINDOW
  ↳ Implantat^{n} on Secretory or ripened endometrium on 6th to 9th day or 20th to 24th day of the menstrual cycle
  ↳ Progesterone is responsible for Secretory endometrium
    ↳ source → Corpus luteum [follicle]
→ Estrogen is responsible for Proliferatory endometrium [Source → follicle]

CASE 2 → Women in Whom fertilizat^{n} does not takes place

CORPUS LUTEUM

→ Start to degenerates [max funct^{n}] at → 9th to 10th Day
→ Complete degenat^{n} at 14th to 15th Day → SHEDDING OF ENDOMETRIUM
→ Progesterone withdrawal is responsible for Shedding of endometrium

→ Length of cervix → 3.5 to 4cm
  Short cervix → ≤ 2.5 cm

MITTLESHMERZ / MID CYCLE PAIN → dlt blood & debris [from follicle] collected into POD AT THE TIME OF OVULATION

DYSMENORRHEA [pain of menstruat^{n}] → dlt uterine contractions
Prostaglandins are responsible

CASE 3 → ANOVULATORY CYCLES

→ No MITTLESHMERZ / mid cycle pain
→ Irregular [dlt intermittent recoil of uterus]
→ Painless [dlt No / less Prostaglandins]

→ OVULATORY CYCLES ARE REGULAR & PAINFUL

DYSMENORRHEA

TYPES

PRIMARY / SPASMODIC DYSMENORRHEA

→ Pain starts 30 min before onset of periods & Stays 10 hrs post onset

→ Seen in Normal woman

CONGESTIVE / SECONDARY DYSMENORRHEA

→ Pain starts 3-4 days prior and stays throughout menses

→ Seen in PID & endometriosis

MEMBRANOUS DYSMENORRHEA

→ Fibrinolytic system in uterus is responsible for less / non clumping of blood

→ Total absence of Fibrinolytic system → endometrium shed like CAST of ENDOMETRIAL CAVITY

TREATMENT

① NSAIDS
- → IBUPROFEN
- → NAPROXEN
- → MEFENAMIC ACID

② Antispasmodics
- → DICYCLOMIN
- → DROTAVARINE
- → HYOSCINE

③ Combined Oral Contraceptives

④ Surgical Dilatation of cervix [Parous women has lesser spasmodic dysmenorrhea]

⑤ Pre Sacral Nerve ablation → Laser or thermal resectn of Hypogastric plexus

⑥ GnRH Analogues → will stop the periods

BASIC DEFINITIONS OF MENSTRUAL CYCLE

→ Length of menstrual cycle → 28 ± 7 Days
- → Polymenorrhea → < 21 Days
- Oligomenorrhea → > 35 Days

→ Duration → 2-7 Days
- Hypomenorrhea → < 2 days
- Menorrhagia > 7 days

→ Amount → 30 - 50 ml per cycle
- Excessive blood loss → > 80 ml [menorrhagia]

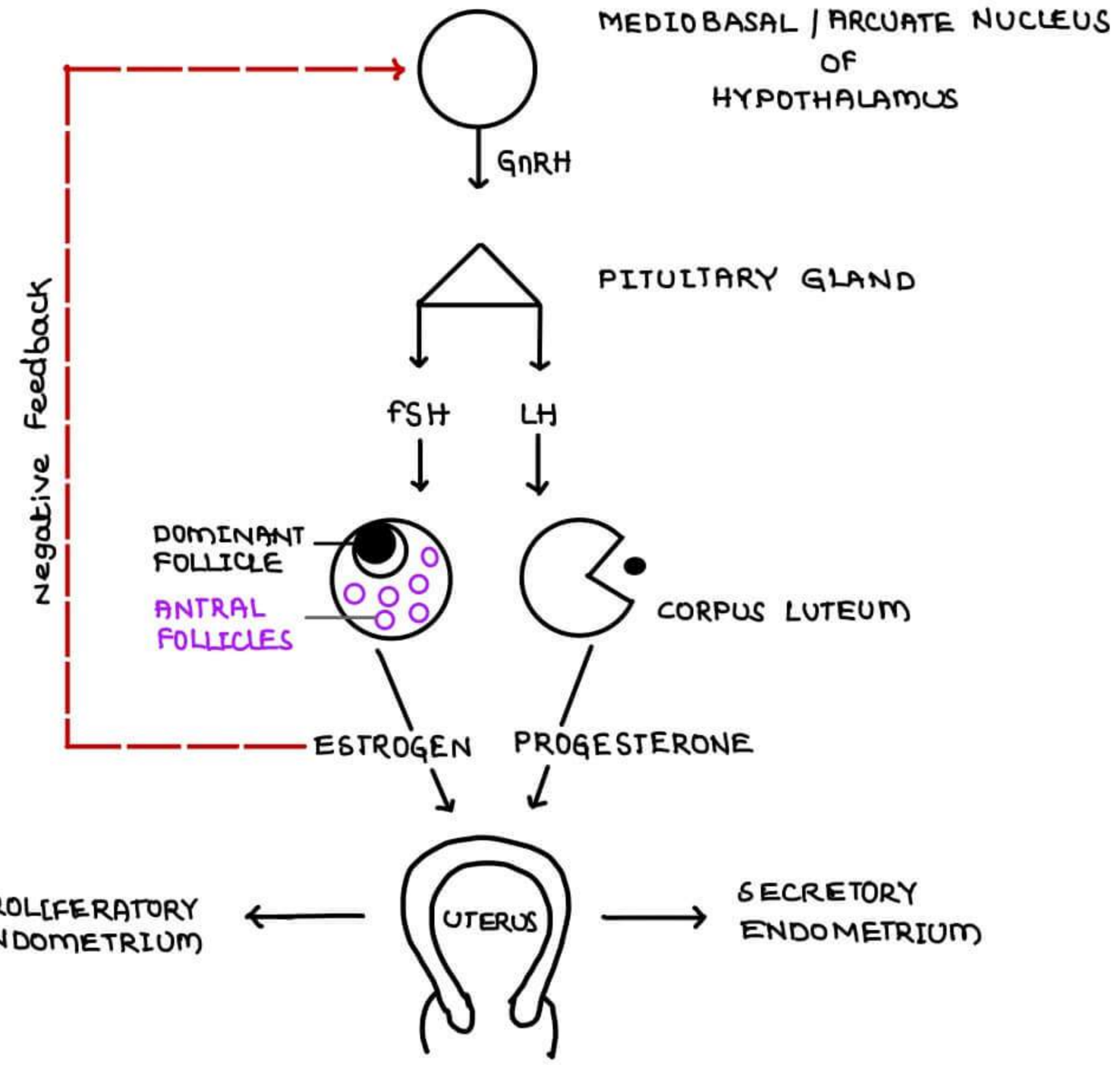
→ POLYMENORRHAGIA → < 21 days & > 80 ml of blood loss

→ METORRHAGIA → Irregular cycles superimposed on Regular cycles
→ Intermenstrual bleeding [Spotting]

→ MENOMETORRHAGIA → Irregular acyclical bleeding

→ METEROPATHIA HEMORRHAGICA
- Prolonged amenorrhea followed by heavy withdrawal
- amenorrhea → 2 1/2 - 3 months
- in a women > 40 yrs
- Anovulatory cycle, irregular
- Hyperplasia of endometrial glands ⊕nt
- Non Secretory Endometrium
- Diagnosed by curettage & microscopic Examinat^{n}
  - Cystic glandular Hyperplasia [SWISS CHEESE ENDOMETRIUM]
  - very less Stroma
- Self limited condition
- curettage is also curative

PHYSIOLOGY

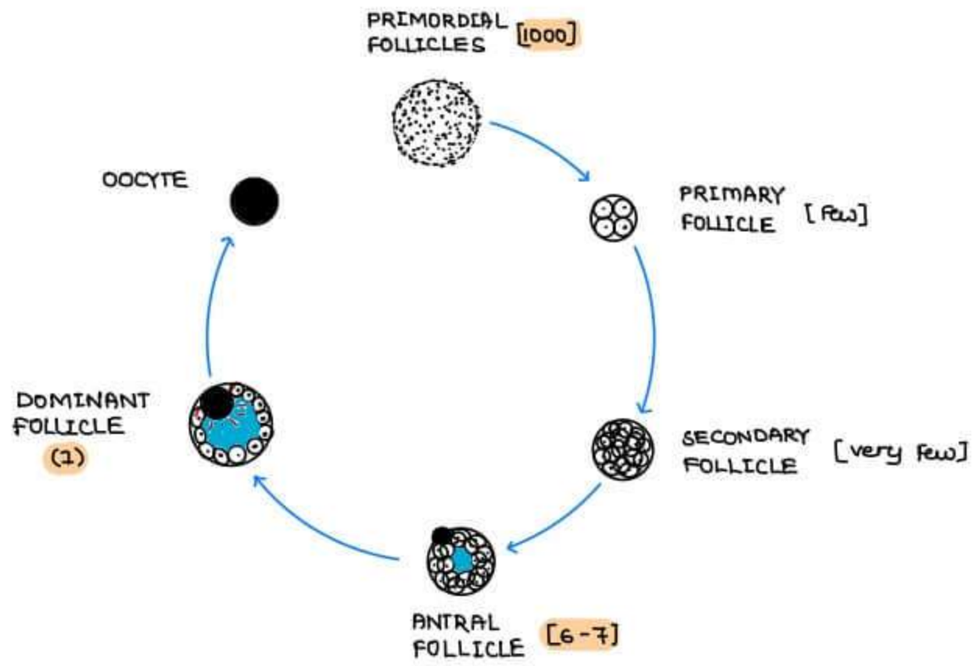


→ GnRH Releases in pulsatile fashion
- 60 minutes in follicular Phase [Faster [60 min] in follicular phase]
- 90 minutes in Luteal Phase [Longer [90 min] in Luteal phase]

→ GRANULOSA CELL OF FOLLICLE
- Sex cord cells
- produce estrogen

→ ANTRAL FOLLICLES

- Fluid filled follicles
- 6-7 made every month



→ Perimenopausal women have irregular cycles d/t OLD follicles

Fate of reproduct^{n} during perimenopausal period

1. Anovulatory cycle
2. poor oocytes
3. No fertilizat^{n}
4. Poor embryos
5. Abort^{n} [40% after 40 years]

→ > 35yrs Pregnancies → ELDERLY GRAVIDAS

indicated for

- Level II scaning
- Triple markers, dual markers
- Amniocentesis

OVARIAN RESERVE

QUANTIFICATION

OVARIAN RESERVE

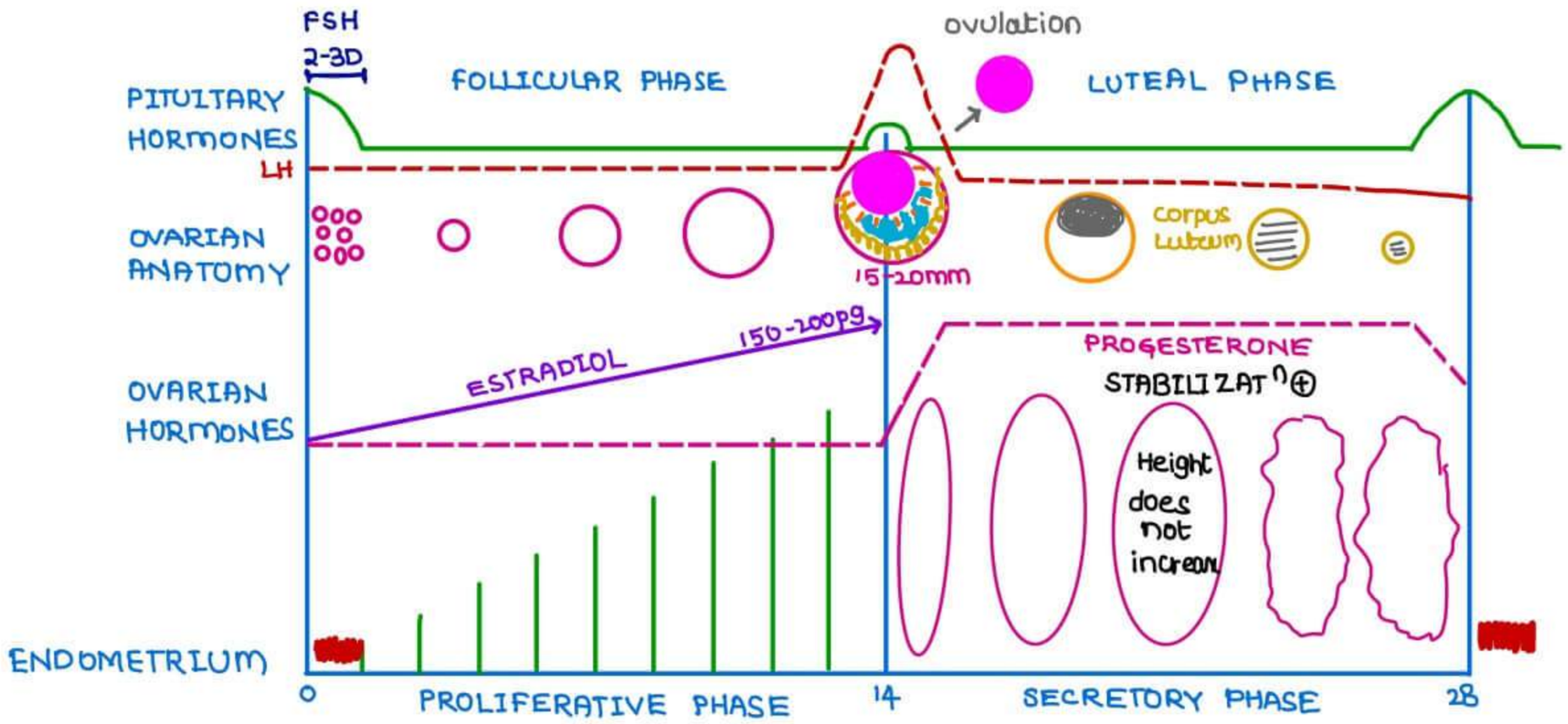
① ↓ ANTRAL FOLLICULAR COUNT [young - 6 to 7, older - 1] → ↓
② ↓ OVARIN VOLUME [young - 3.5 x 2.5 x 3 cm, older - 1 x 1.5 x 1 cm] → ↓
③ ↑ AGE → ↓
④ ↓ ESTROGEN → ↓
⑤ ↑ FSH → [younger - 2 to 6 IU, Older - > 15 IU] → ↓
⑥ ↓ ANTI MULLERIAN HORMONE → made from granulosa cells of ovary → ↓

Purpose of FSH → Estrogen Product^{n}
Purpose of LH → Progesteron Product^{n}

GOOD INDICATORS OF OVARIAN RESERVE

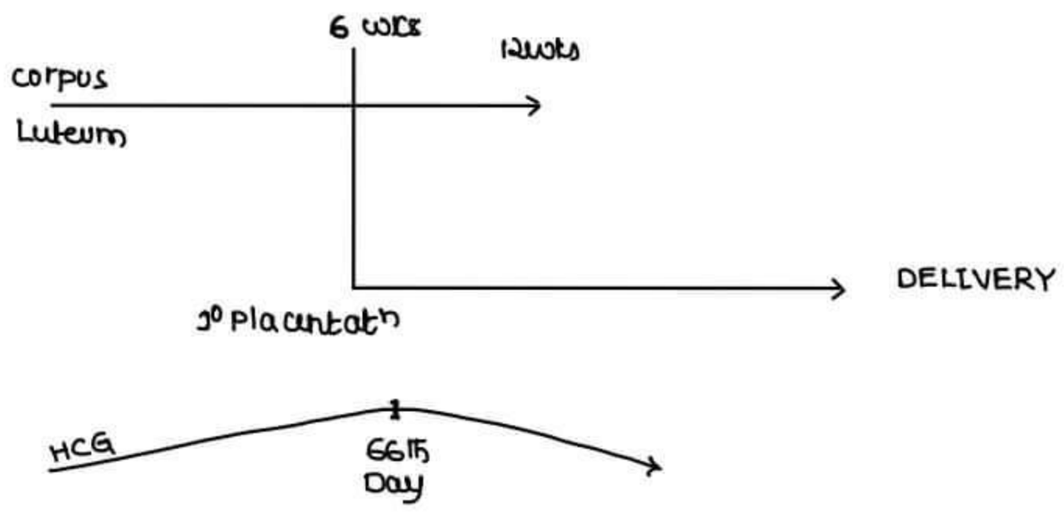
→ AFC
→ FSH
→ AMH [single best for assessment]

→ Ⓝ FSH → 2-6 IU
>10 IU → Suggestive of Menopausal women
>40 IU → Diagnostic of Menopause



MAINTAINANCE OF PREGNANCY

→ Exclusively maintained by CORPUS LUTEUM upto 6 wks
  - corpus Luteum remains upto 12 wks in pregnancy
→ By corpus luteum & placenta → from 6-12 weeks
→ only by placenta → after 12 weeks
→ Luteo-Placental shift occurs at 6 wks



→ Hyperemesis is maximum at 66 th day [9 Weeks + 3 days]
→ Abortn can be Rx by → Progesterones
  HCG
→ SPINBARKIET STRECHABILITY [Cervical mucus strechability] [max. at 14th day]
  ↓
  on drying
  ↓
  FERNING / ARBORISING PATTERN [Nacl crystals]

→ FERTILE PERIOD → 11th to 16th day
  - Life span of sperm → 72 hrs
    Life span of ovum → 24-48 hrs

CASE → On 24 th day of cycle
→ Cervical mucus is thick } fertilizatn
→ NO OOcyte } doesn't occur
→ SAFE PERIOD → Before 11 th day & after 16 th day

BILLING METHOD
→ Natural method of contracptn
→ Based on cervical mucus physiology

PROGESTERONE ONLY PILLS [POP]

Mechanism of Action
→ Cx mucus on 14 th day → thick & viscid
→ Anovulation [No OOcyte]
→ Unfarouble for implantation → Hyper secretory Endometrium
[OUT OF PHASE ENDOMETRIUM - Pinopods are internalized]
→ failure Rate → 1 to 2 %.

→ 1 St line hormonal management of abnormal uterine bleeding → PROGESTERONE
- stabilizes endometrium in a physiological way
→ Next line of management → ESTROGEN
→ First line of Drug in Acute SEVERE Menorrhagia → ESTROGEN

IVF
→ CONTROLLED OVARIAN HYPERSTIMULATION
→ Give FSH injections [multiple] from begining of the cycle, many follicles will be recruited

→ on 14 th day, under General Anesthesia & take all OOcytes from the follicles i the help of TVS
→ Take few of best OOcytes & put them into test tube
→ Fertilize i sperm in test tube → Embryo formed
→ Put the Embryo back in the uterus
→ Excess embryos are stored in liquid N_2 [-196°c] [FROZEN EMBRYO TRANSFER]

→ 1St IVF Baby → LOUISE BROWN [1978]
→ 1St IVF done by → STEPTOE & EDWARDS
→ In 2010, Noble prize given to EDWARDS

OVARIAN HYPERSTIMULATION SYNDROME

CONTROLED OVARIN HYPER STIMULATION

→ 200 x 15 eggs → 3000 pg of Estradiol
200 x 40 eggs → 8000 pg of Estradiol

→ > 3500 pg of Estradiol leads to
→ Vascular Endothelial Growth factor
Renin, Pro renin
Angiotensin
} ↑ VASCULAR PERMEABILITY

↑ VASCULAR PERMEABILITY
↓
Fluid shifts
↓
Third space collections
- Ascitis
- Pleural effusⁿ
- Pericardial effusⁿ
- edema
} Death

→ Haemoconcentration → > 45 or > 55
Ⓝ Packed cell volume [HCT] - 33
↓
Thrombo embolic phenomenon
↓
Renal Emboli
Cerebral Emboli
Hepatic Emboli
Limb Emboli
} Death

→ Torsion
Rupture of ovary
Haemorrhage
} Death

→ COH —may lead to→ OVARIAN HYPERSTIMULATION SYNDROME

OVARIN HYPERSTIMULATION SYNDROME

PRE DISPOSING FACTORS

→ Inj HCG [Initiating factor] [used for rupturing the follicle]
→ Vascular Endothelial Growth factor
→ Renin, Pro renin
→ Angiotensin

MATHUR CLASSIFICATION

→	MILD	< 8cm	NO Ascitis	
→	MODERATE	8-12	USG Ascitis	
→	SEVERE	> 12cm	Clinical Ascitis	HCT → > 45
→	CRITICAL		Tense Ascitis	HCT → > 55

→ No pregnancy is advised in severe & critical OHSS

→ frozen embryos are transferred on 6th day of ovulatn

MANAGEMENT

1 Rx of OHSS

- Avoid pregnancy in severe & critical forms
- Remove fluids → Tap Ascites & effusion
- Give Oral fluids [mild, moderate forms]

IVF → Nacl, DNS [crystalloids]

→ Albumin, Dextran, Starch [colloids]

→ mcly → 13-15% of Pts on CLOMIPHENE CITRATE

Severe forms → GONADOTROPINS

- Inj HMG [Human menopausal Gonadotropins]

Inj FSH Recombinant

→ COMBINED ORAL CONTRACEPTIVE PILLS

→ Tab Estradiol + Tab. Progesterone

→ Painless 'Regular' anovulatory cycles

→ Tab ESTRADIOL & Tab. PROGESTERONE are responsibe for menses

ARTIFICIAL PERIODS

→ ETHINYL ESTRADIOL → 0.03 mg → 30 µg

→ ADVANTAGES OF COCPs

↓ Bleeding
↓ Anemia
↓ Ca Endometrium
↓ Ca ovary
↓ Ca colon
↓ Fibroids
↓ Benign Breast Disease
↓ Ovarian cysts
↓ PID

→ DISADVANTAGES OF COCPS

↑ Ca cervix [Adeno carcinoma type]
↑ Chlamydia PID [Quite / Indolent]
↑ Gallstones

→ NO EFFECT on incidence on CA BREAST

→ ↑ GALL STONES ⟶ GALL BLADDER CANCER ???

→ COCP causes Smooth type of Gall stones [Not predisposed for CA]
→ Gall Bladder cancer is caused by mixed & pigment gall stones

→ HEPATIC ADENOMA caused by COCPs
HEPATOCELLULAR CARCINOMA is not caused by COCPs

→ Generally COCPs are started on the 1st day of menstrual cycle
can be started at any time of menstrual cycle → QUICK START

→ CONTRA INDICATIONS

Breast feeding
Post Partum
Uncontrolled HTN [>160/100]
Active Breast cancer
Uncontrolled Diabetes mellitus
Severe Cirrhosis
Active hepatitis
on Anticonvulsants
Hyperlipidemia
Earlier DVT
Earlier Pulmonary embolism

TESTS OF OVULATION

TESTS OF OVULATION

① BBT → ↑ 0.5°F

② Sr LH → > 15 IU

③ Sr Progesterone on day 21 [>3ng/ml]

④ Serial USG → follicular monitoring [OPD - usual]

⑤ Premenstrual Endometrial Biopsy on day 21

- to check secretory changes

- When the difference b/w observed & expected changes is ≥ 2 days
  → LUTEAL PHASE DEFECTS

⑥ CERVICAL MUCUS STUDIES

- Spinbarkeit & fernig is dlt estrogen
- Serial cervical mucus studies
- Loss of SPINBARKIET & FERNING → OVULATION

⑦ DIAGNOSTIC LAPAROSCOPY

ENDOMETRIOSIS

ETIOLOGY

RETROGRADE MENSTRUATION

→ Proposed by SAMPSONS [SAMPSONS IMPLANTATION THEORY]
→ 70-80% of all women have retrograde menses
→ among them 5-10% of all women have poor immunity & ↑ estrogenecity & develop Endometriosis

AGE OF PRESENTATION → 3rd to 4th decade [25 - 35 yrs of age]

DIAGNOSIS

→ ↑ CA125
→ USG, MRI
→ Laparoscopy [Best]

SITES OF PREDILICTION

→ mc site → ovary
→ 2nd mc site → POD
→ Bowel
→ Lung [periodic hemoptysis] } VICARIOUS MENSTRUATION
→ Nose [periodic epistaxis] } VICARIOUS MENSTRUATION
→ Eyes [periodic subconjunctival Hemorrhage] } VICARIOUS MENSTRUATION

PATHOLOGY

→ POWDER BURN LESIONS / BLUE SPOTS
→ CHOCOLATE CYST OF OVARY
→ Scarring & Adhesions ↑ fallopian tube → INFERTILITY

SYMPTOMS

→ Chronic pain
→ Acute monthly exacerbation → Severe congestive dysmenorrhea
→ Deep dyspareunia
→ Menorrhagia
→ Infertility [↓/t altered tubo ovarian relat^{n} by adhesions]
  - ↓↓ intercourse
  - Poor ovulation
  - EMBRYOTOXIC ENDOMETRIOTIC DEPOSITS
    ↳ poor quality embryos
    ↳ ↓ implantation
    ↳ ↑ abortion

TREATMENT

SURGICAL Rx

→ ADHESIDLYSIS for adhes^{n}
→ CYSTECTOMY for chocolate cysts
→ ABLAT^{n} for deposits → FULGRATION OF DEPOSITS
  - Thermal or laser

→ 60 - 70% RECURRENCE

① Inj Depo Medroxy Progesterone Acetate 150mg Once in 3 months
- → creats Pseudo pregnancy State
- → Atrophy of endometrium in 3-4 months of Rx

② Tab Danazol
- → Androgen → Anti estrogenic action
- → Faster atrophy
- → S/E → Hirsutism
  Virilizatn
  - ↳ Breast atrophy
  - ↳ Hoarseness of voice
  - ↳ Clitromegaly

  } Irreversible

- → 1st sign to stop Rx ī Danazol → Hoarseness of voice

③ Combined oral Contraceptive Pills
- → Anovulatory cycles → Painless
- → Limits endometriosis

④ GnRH ANALOGUES → DEPOT or CONTINUOUS FORM
- → LEUPROLIN
  NAFERELIN
  GOSERLIN
- → down regulatn / Desensitizatn of pituitary Receptors
- → Atrophy of endometrium

MEDICAL MANAGEMENT AIMS AT STOPPING THE PERIODS

Q 25yrs ī chocolate cyst. Sx Rx done → what nxt → Medical Management
A Medical Management till conception

→ Pregnancy
→ COCPs
- → 21 × 4 Packs → 84 Days continuously
  Periods ≅ once in 90 days

→ GnRH Analogues
- → > 6months → Estrogen dependent osteoblastic actn will stop
  → Estrogen independent osteoclastic actn will continue

  } OSTEOPOROSIS

- → ADD BACK REGIME
  Low dose Estrogens
  RALOXIFINE [selective Estrogen Receptor Modulator]

ADENOMYOSIS / ENDOMETRIOSIS INTERNA

SEEN IN

- → multiparous women
- → > 40 yrs
- → 30% of hysterectomy specimens

ENDOMETRIOSIS INTERNA → Endometriosis within uterus

ASSOCIATED WITH

- → Menorrhagia
- → Progressive dysmenorrhea
- → Infertility in young women [Rare]

UTERUS → Uniformly enlarged & ≤ 14 weeks size of pregnant uterus [14cm]

DIAGNOSIS

1. USG, MRI
   - → Sub endometrial halo ⊕
   - → Hetero echoic deposits in uterine myometrium
   - → Ill defined hypoechoic areas → LAKES OF ENDOMETRIAL BLOOD
   - → Junctional zone b/w Endometrium & myometrium
     - ↳ Normal → 5-8 mm
     - ↳ Adenomyosis → > 12 mm [Diagnostic]

2. UTERINE BIOPSY / POST HYSTERECTOMY UTERINE ANALYSIS
   - → ENDOMETRIAL GLANDS in Uterine muscles → Pathognomonic
   - → DIFFUSE LOCALIZED ADENOMYSIS

TREATMENT

1. Menorrhagia → NSAIDs, Hormones
2. Young women → Hormones
   COCPs for longer duration
   IUCD's ↑ progesterone [mirena]
   Localized excision
3. Surgical Mx of Menorrhagia → D & C
4. Overall Best Rx → Hysterectomy

HORMONAL REPLACEMENT THERAPY

EFFECTS OF ESTROGENS

1 SKIN → S/C collagen ↓ → Lax - Loose skin

2 HAIR → ↓ Vellous hair → Soft thin & light in color
↑ Terminal hair → Hard, thick & Dark in color

3 VOICE → Hoarseness of voice

4 BONES → ↑ fractures
- vertebral compression fractures [mc]
- wrist fractures
- femur fractures

5 BRAIN → Mood swings
- Depression
- Anger threshold ↓
- Anxiety

→ Insomnia

→ Hot flushes [coincides ī LH flush]

6 HEART → Coronary Artery Diseases ↑

7 PELVIS → ↑ fractures

→ Ⓝ PH of vagina → Acidic
Glycogen $\xrightarrow{\text{Lactobacillus}}$ monosaccharides

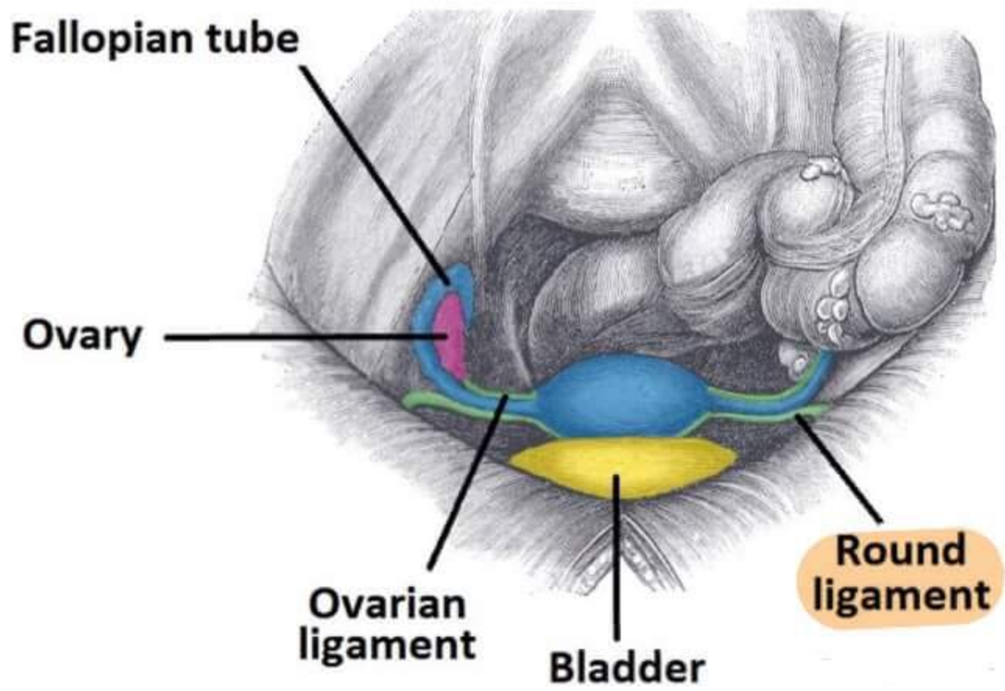
ESTROGENS → pH → Alkaline → ↓ Lactobacillus → ↑ Anaerobes → ↑ Infections
- Vaginitis
- Vulvitis
- Urethritis
- PID [Pelvic Inflammatory Diseases]

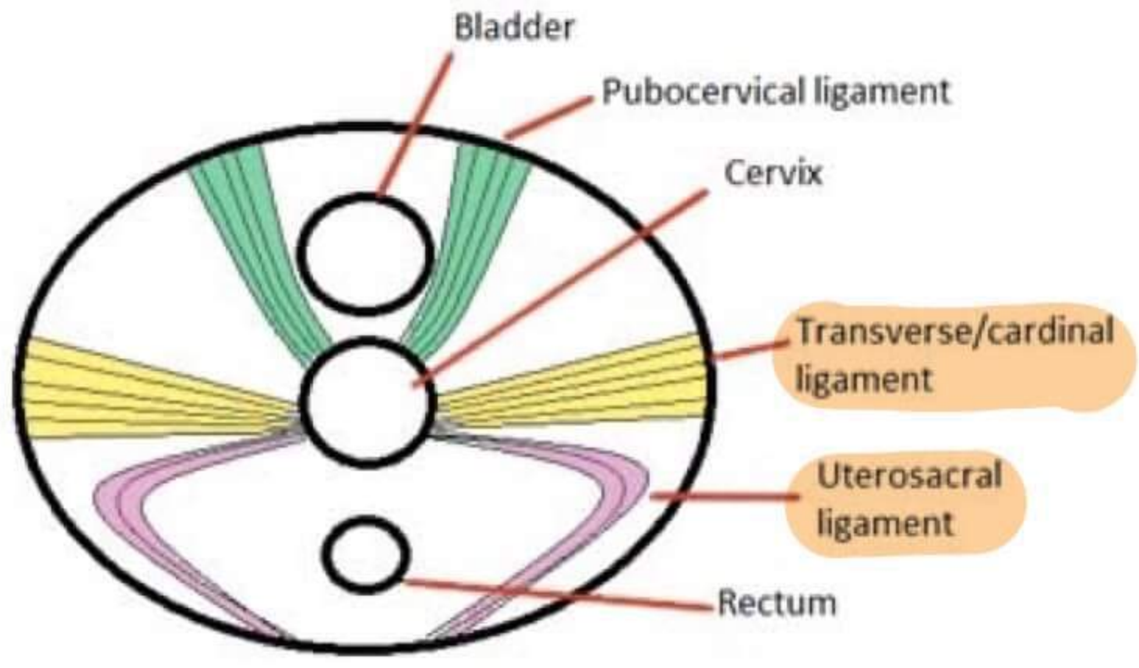
→ Dry vagina → ↓ Intercourse

→ Pelvic Organ Prolapse
- Abnormal conduct of labour is the main reason

SUPPORTS OF UTERUS

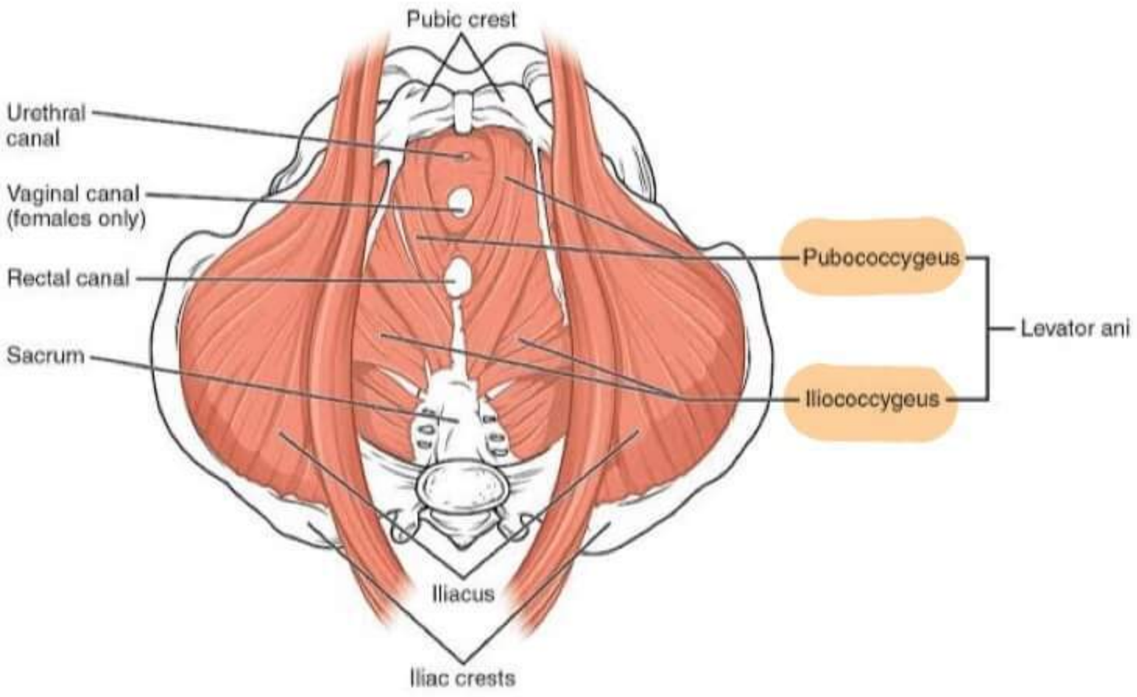
LIGAMENT SUPPORT

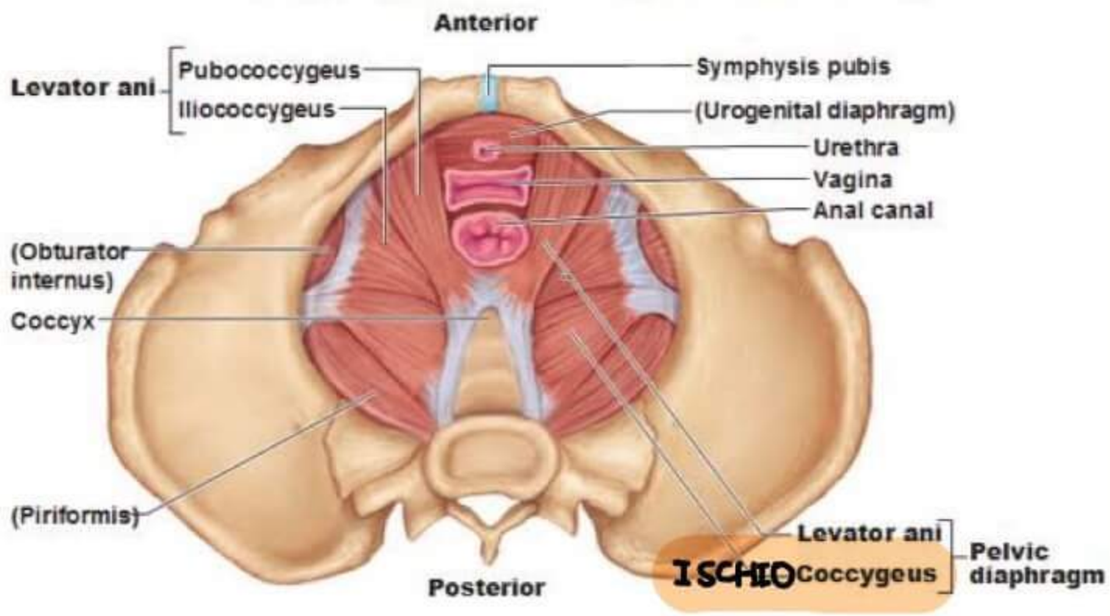




TRANSVERSE | CARDINAL LIGAMENT | MACKENRODT'S LIGAMENT → most important among Ligaments

MUSCULAR SUPPORT





INVESTIGATIONS

- → CBC
- → mammography
- → Pap Smear
- → USG → Endometrium → ≤ 4mm
- → LFT [Liver Functⁿ Tests]
- → F/PP Sugars
- → Lipid Profile
- → Serum FSH → to diagnose menopause
  to monitor HRT [if given to younger women (Premature ovarian failure)]
- → ECG

HORMONE REPLACEMENT THERAPY

① Tab ESTRADIOL 1-2 mg / Day

② Tab CONJUGATED EQUINE ESTROGENS 0.625 to 1.25 mg / Day

} Add Progesteron

③ Tab TIBOLONE

- Synthetic estrogen
- Progestational metabolite + nt
- 2.5 mg / Day

④ SERS [Selective Estrogen Receptor Modulators]

RALOXIFENE

- 60 mg / Day
- Estrogenic on bone
- Anti estrogenic on brain [CI for hot flushes]

⑤ PLANT ESTROGENS

→ Safer

→ ↓ Effective

⑥ BISPHOSPHONATES

→ non hormonal Rx of osteoporosis

→ ALENDRONATE Daily

→ RISEDRONATE Weekly

→ IBANDRONATE Monthly

⑦ CALCITONIN

→ ↓ Osteoclastic Action

PARATHORMONE EXTRACT

TERIPARATIDE

induces new bone formatⁿ

CONTRA INDICATIONS

→ undiagnosed vaginal bleeding

→ H/O Breast cancer

→ H/O Endometrial cancer

→ Liver Dysfunctⁿ

→ Thrombo embolic Diseases

→ Endometriosis

→ Fibroids

→ Porphyrias

Rx of HOT FLUSHES

→ DOC → ESTROGENS

takes 20 - 25 Days to act

→ CLONIDINE HYDRO CHLORIDE

Acute Relief

100µg OD / BD

↓ vasomotor flushing

→ ALPRAZOLAM)

0.25 mg

For Acute Relief

→ SSRI [Selective Serotonin Reuptake Inhibitors]

FLUOXETINE

Takes 6-7 Days

Coronary Artery Disease

→ Estrogens are cardioprotective

→ HRT IS NOT CARDIO PROTECTIVE

- initial few years → cardioprotective
- Long term → Detrimental to heart

→ Local Estrogens are better

ENDOMETRIAL CARCINOMA

RISK FACTORS

→ ↑ ESTROGENS

→ HRT

→ TAMOXIFEN

→ Anovulatory conditions → PCOD

→ Estrogen Producing ovarian cancers → Granulosa cell tumor

→ Early menarache

→ Late menopause

→ Abnormal Liver Funct^{n} Tests

→ Obesity → Fats { Androgens ↓ Aromatase ↓ Estrogens }

→ corpus cancer syndrome
DM – HTN – Obesity

→ Familial Predisposition ★
Ca Breast
Ca Endometrium
Ca ovary
1st degree female relatives can have either of these

→ Nulliparous women

→ 80% of this Etiology associated ī CA Endometrium → TYPE 1
20% of this etiology NO association → TYPE 2

→ ETIOLOGY → HYPERPLASIAS → CANCER

→ Age group → 45 - 55 yrs

→ HYPERPLASIAS [Premalignant]

Simple Hyperplasia without atypia	→	1%	} Give PROGESTERONE THERAPY
Complex Hyperplasia without atypia	→	3%	
Simple Hyperplasia with atypia	→	8%	} DO SIMPLE HYSTRECTOMY
Complex Hyperplasia with atypia	→	29%	

SYMPTOMS

→ Irregular Acyclical Bleeding [mc]

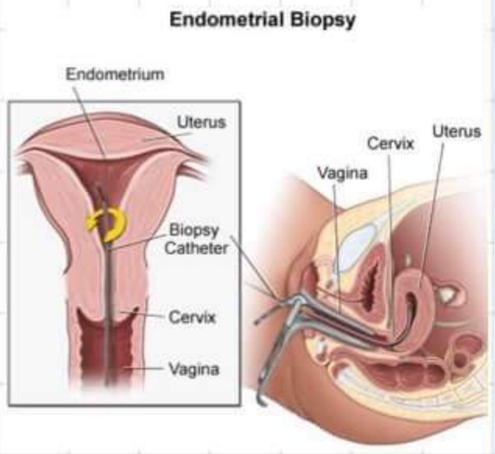
→ Post menopausal bleeding

→ Pyometra → Dirty foul smelling vaginal Discharge

~~Loss of Weight~~
Loss of appetite
~~CA~~ cachexia
~~CA Pain~~ → Late presentation

HISTOPATHOLOGY

→ Endometroid Adenocarcinoma [mc] [80%]
→ Papillary / villoglandular
→ Squamous
→ Secretory



DIAGNOSIS

→ 1st Management

PIPELLE ENDOMETRIAL BIOPSY [in OPD]

Paracurrical block may be required in few cases
90-95% sensitive
Biopsy taken from anterior wall

→ FRACTIONAL CURRETTAGE [DNC]

95 - 99% Sensitive
Done in OT

→ HYSTEROSCOPIC BIOPSY

100% Sensitive

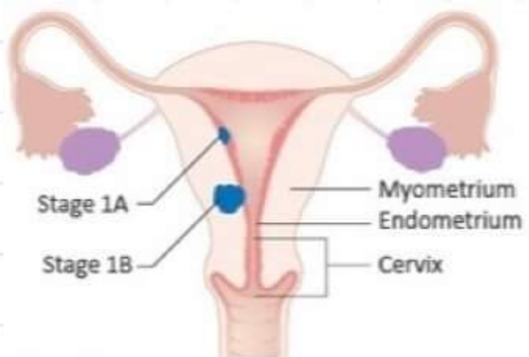
→ TVS is an helpful adjunctive procedure but not the best
→ E.T should be ≤ 4mm to be called normal

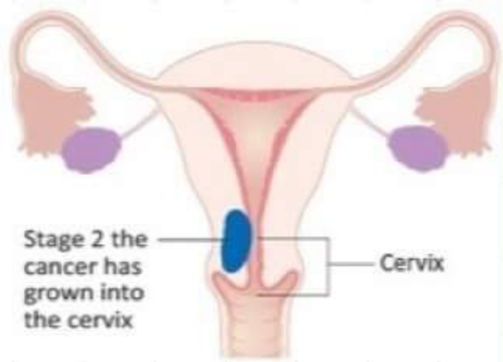
STAGING OF CA ENDOMETRIUM

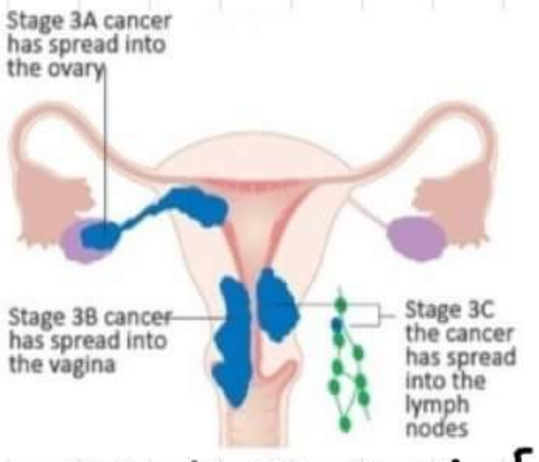
Table 1: 2009 FIGO staging system for carcinoma of the endometrium

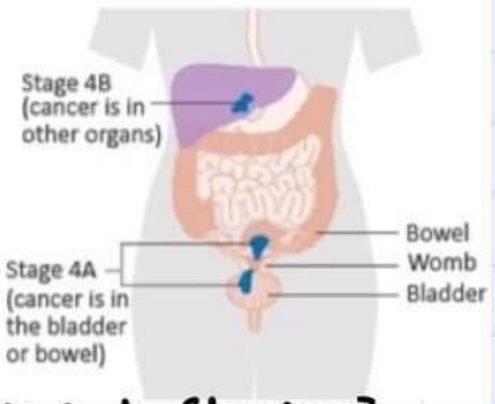
Stage I[a]	Tumor contained to the corpus uteri	
	IA	No or less than half myometrial invasion
	IB	Invasion equal to or more than half of the myometrium
Stage II		Tumor invades the cervical stroma but does not extend beyond the uterus[b]
Stage III[a]		Local and/or regional spread of tumor[c]
	IIIA	Tumor invades the serosa of the corpus uteri and/or adnexas
	IIIB	Vaginal and/or parametrial involvement
	IIIC	Metastases to pelvis and/or para-aortic lymph nodes
		IIIC1 Positive pelvic nodes
		IIIC2 Positive para-aortic lymph nodes with or without positive pelvic lymph nodes
Stage IV[b]		Tumor invades bladder and/or bowel mucosa and/or distant metastases
	IVA	Tumor invasion of bladder and/or bowel mucosa
	IVB	Disant metastases, including intra-abdominal metastases and or inguinal lymph nodes

FIGO = International Federation of Gynecology and Obstetrics
[a] Includes grades 1, 2, or 3
[b] Endocervical glandular involvement only should be considered as stage I and no longer as stage II.
[c] Positive cytology has to be reported separately without changing the stage.









All cancers in Gynecology staged surgically except CA cervix [clinical staging]

PROGNOSTIC FACTORS

→ Hysterectomy → Staging

→ Pelvic lymphadenectomy

→ Grading → Solid areas on histopathology slides

- Grade I → < 5% solid areas
- Grade II → 5 - 50% Solid areas
- Grade III → > 50% Solid areas

Single best Prognostic marker → staging > Grading

→ Age

→ Type

→ Estrogen Receptor & Progesterone receptor status

→ Previous Rx taken

TREATMENT

→ Hysterectomy is already Done

→ Stage I / II

- Grade I, myometrium < 1/2 involved → Nothing required
- Grade II, myometrium > 1/2 involved → vaginal Irradiat^{n}
- Grade III → Pelvic irradiat^{n}
- Adnexal or cervical involved → Whole abdomenal irradiat^{n}

→ Stage III / Stage IV

Radiotherapy
Surgical Therapy
chemotherapy
Hormonal Therapy
} INDIVIDUALIZED

→ VAULT OF THE VAGINA

- Left over vagina after hysterectomy
- 1st site of recurrence
- 1st line mx of recurrence → HIGH PROGESTERONE [200-250 mg/Day]
- Prevent^{n} of recurrence → VAGINAL IRRADIATION

POST MENOPAUSAL BLEEDING [> 1yr of menopause]

→ mcc in India → CA cervix

→ mc cause → CA cervix

→ mcc in western hemisphere → Endometrial Atrophy [60-70%]

- CA endometrium → 10%
- Hyperplasia → 10%
- Polyps → 10% - 12%
- HRT → 30%

→ Post menopausal women → No Estrogens [No Immunity]

↑ vaginitis → Endometritis

Atrophic Endometrium

↓

Endometritis [Senile Endometritis]

↓

Bleeding

OVARIAN TUMORS

→ 3 x 3.5 x 2.5 cm

→ Almond shaped

→ Rough surface dlt SCARS by ovulat^{n}

- Nulliparous
- Ovulation induction
- Early menarche
- Late menopause
- Perineal talc
- Asbestosis exposure

} ↑ SCARS

ETIOLOGY

① Scars → Epithelium → Healing

↑ Scars → Epithelium → over Healing → Epithelial ovarian CA

② Association ī

→ BRCA 1 [on chromosome 17]

→ BRCA 2 [on chromosome 13]

③ Familial Predisposition

→ ② 1st degree Relatives ī cancers → 35 - 40% chance OF

→ ① 1st degree Relative } 2 to 10 times chances

→ ① 2nd degree Relative }

→ 70% of all ovarian cancers → Surface Epithelial ovarian cancers

→ Age group → 6th 7th decades

→ mostly bilateral

→ Associated ī ↑ CA 125

Significant values in a postmenopausal women → > 35

premenopausal women → > 200

CLINICAL FEATURES

→ BIG Abdominal mass → mostly benign

DIAGNOSIS

→ USG features of malignancy TVS > TAS

- Bilateral
- Surface irregularities
- Cystic + Solid areas together
- Septated tumors - irregular, Septate
- Ascites +nt

TREATMENT

→ STAGING LAPAROTOMY + OPTIMAL DEBULKING

→ STEPS OF STAGING LAPARATOMY

① Midline Incision / Paramedian incision
② Acces Pelvis, Abdominal Organs
③ Washings / Ascites → for cytology [malignant cells]
④ Infra colic Omentectomy
⑤ Peritoneal Biopsies
⑥ Retroperitoneal lymph node Sampling

→ OPTIMAL DEBULKING

→ < 1.5 cm is what maximum amount can be left

OVRIAN CANCER STAGING

STAGE I → OVARY INVOLVEMENT

IA → One ovary involved

IB → Both ovaries involved

Ic → A/B ±

C_1 → Surgical Spill
C_2 → Surface growth
C_3 → Malignant Ascites / washings

STAGE II → PELVIS INVOLVEMENT

IIA → Uterus, fallopean tubes

IIB → Other Pelvic Organs

STAGE III → ABDOMINAL VISCERAL INVOLVEMENT

IIIA$_1$ Retroperitoneal lymph node involvement

A_1(i) → < 10mm
A_1(ii) → > 10mm

IIIA$_2$ microscopic Abdominal involvement

IIIB macroscopic involvement < 2cm } Superficial Liver & Spleen
IIIC macroscopic involvement > 2cm } involvement

STAGE IV

IVA Malignant pleural Effusion

IVB Deep liver & spleen deposits

Inguinal lymphnode involvement

CHEMOTHERAPY → PLATINUM BASED

① Epithelial Ovarian Tumor

@ Cyclophosphomide
Adreomycin
Platins → cis / Carbo

ⓑ Platins
Toxol
} Better choice

② GERM CELL TUMORS

@ VINCRISTINE
BLEOMYCIN
PLATINS

ⓑ BLEOMYCIN
ETOPSIDE
PLATINS
} Better choice

③ SEx CORD TUMORS

→ Surgery alone will suffice mostly

RADIOTHERAPY

→ Normal ovary radiosensitive
Ovarian tumors radioresistant
– EXCEPTION → DYSGERMINOMA

EPITHELIAL OVARIAN TUMORS

→ mc [75%]
→ older age group
→ Bilateral
→ TYPES

① SEROUS CYSTADENOMA [mc type]
→ Uniloculated
→ B/L in > 50%
→ mostly malignant
→ Surface growth + nt
→ Psammoma Bodies + nt in 40 – 45 %.
→ cells are like fallopean tube

② MUCINOUS CYSTADENOMA
→ Less malignant
→ B/L in 10%.
→ multilocular


SEROUS CYSTADENOMA


PSAMMOMA BODY

→ Pseudomyxoma Peritonei → Severe hypoproteinumia
→ mc cause in ovarian tumor → mucinous cystadenoma
→ mc cause → Appediceal cancer
→ cells are like cervix

③ BRENNER TUMOR

→ made of Transitional cells
→ NESTS → WALTHARD INCLUSIONS
→ PUFFED WHEAT TYPE
→ Benign
→ Rubbery in consistency
→ cells are like bladder
→ associated ī post menopausal bleeding
→ associated ī Pseudomeig Syndrome
→ Pseudomeig syndrome is mcly dlt Brenner Tumor

MEIG SYNDROME
Fibroma ovary
Ascites
Pleural effusion

④ ENDOMETROID TUMOR

→ Endometrial type of collections
→ 6-8% of epithelial ovarian tumors

GERM CELL TUMORS

→ younger age group
→ Unilateral

① TERATOMAS [mc]

→ Malignant [10% of teratomas]
→ Dermoid / Benign cystic Teratoma [90% of teratomas]
→ All 3 germoid Layers +nt

Endoderm	Bone, Teeth
Mesoderm	Sebaceous Secretions
Ectoderm	Hair, Endocrine glands

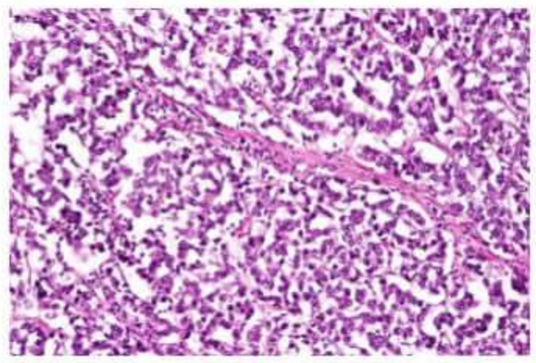
→ 10-15% are bilateral
→ Dermoids can have malignant transformat^{n} → Sq. cell carcinoma
→ Dermoids are mc tumors of pregnancy
→ Dermoids are mc tumors of torsion

② DYSGERMINOMA

→ mc Germ cell malignancy [40-45%]
→ only BIL germ cell malignancy
→ associated ī Dysgemic gonds
→ Large fleshy tumor
→ mostly malignant → Poor prognosis

DERMOID

→ SEMINOMA TYPE CELLS

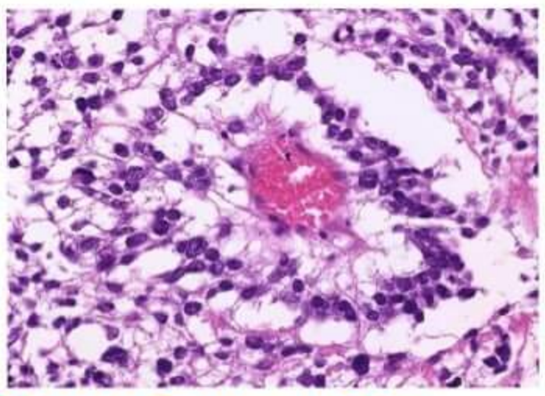


→ Large polygonal cells ī
→ clear cytoplasm & Dark stained nucleoli ī
→ back to back arrangement

→ Associated ī
→ ↑ LDH
→ ↑ Placental Alkaline PO_4
→ Alpha feto protein → Not increased

③ YOLK SAC / ENDODERMAL SINUS TUMOR & EMBRYONAL TUMORS

COMMON FEATURES
- Young women & girls
- Poor Prognosis
- ↑ Alpha feto protein



SCHILLER DUVAL BODY

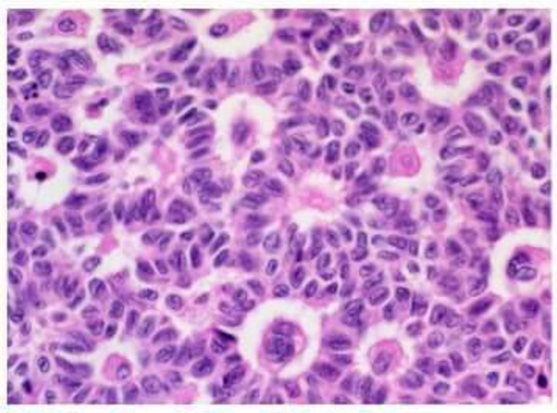
SPICIFIC FEATURES

YOLK SAC TUMOR → α_1 anti trypsin
→ SCHILLER DUVAL BODIES

EMBRYONAL TUMORS → HCG

SEX CORD TUMORS

① GRANULOSA CELL TUMORS [mc]



CARL EXNER BODIES

→ ↑ Estrogens
  - Precocious Puberty
  - Menorrhagia
  - Endometrial cancer

→ Marker → Inhibin
→ CARL EXNER BODIES
→ Contralateral Ovarian Secondaries prior to systemic deliveries

② SERTOLI LEYDIG TUMORS / ARRHENOBLASTOMAS

→ Hirsutism → male pattern baldness
→ Virilizatn → Permanent changes
  - Hoarseness
  - Breast Atrophy
  - Clitoromegaly

→ Oligomenorrhea to amenorrhea
→ Benign
→ Rapid onset hirsutism

HIRSUTISM	→	RAPID ONSET	→	Seen in	ovarian or adrenal tumors
		PUBERTY ONSET	→	Seen in	Congenital Adrenal Hyperplasia
		ADULT ONSET	→	seen in	PCOS
	→	CAUSES	→	25%	→ Idiopathic
			→	75%	→ 2° [mc → PCOS]
		MC CAUSE OF HIRSUTISM		→	PCOS

NON NEOPLASTIC OVARIAN CYSTS

→ FOLLICULAR CYST
CORPUS LUTEAL CYST
THECA LUTEIN CYST → dlt ↑HCG → Seen in Molar pregnancy, twin preg
HEMORRHAGIC CYST
→ Resolve by themselves → CONSERVATIVE MANAGEMENT

➡ mc ovarian tumor of pregnancy → Dermoid > Serous cyst
IF it is small [<5cm] & asymptomatic → NO Rx required
IF it is large [>10cm] & asymptomatic → Remove it in 2nd trimester
IF Diagnosed in 3rd trimester → Remove 6 wks after delivery
IF doing a cesarean Section → Remove at the time of C.Sectn

Secondary to ovary
mcly from CA stomach > CA Breast

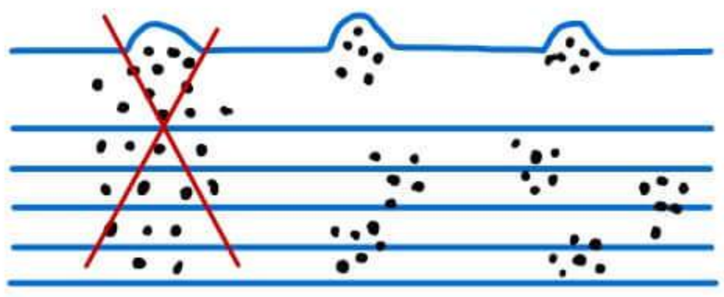
KRUKENBERG TUMOR

→ Secondary of ovary from CA stomach
→ Bilateral
→ Firm to Solid
→ Signet Ring cells
→ may have cystic degenerations
→ ovary retains it's shape

BORDERLINE EPITHELIAL OVARIAN TUMORS

Features

→ Epithelial hyperplasia
→ mitotic activity +nt
→ Nuclear atypia +nt
→ detached cell clusters +nt
→ No destructive stromal invasion



POLYCYSTIC OVARIAN SYNDROME

→ aka STEIN LEVINTHAL SYNDROME

HEADINGS

FEATURES

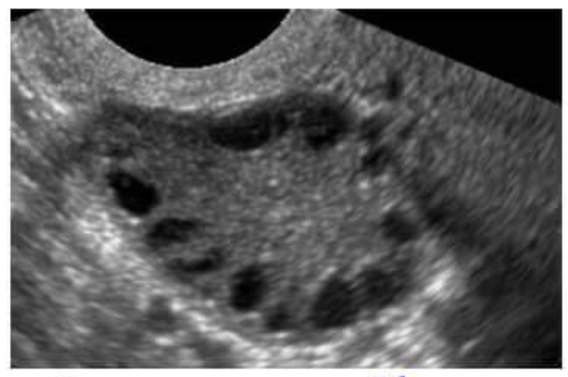
- → Anovulation
- → Hirsutism
- → Obese
- → Oligomenorrhea
- → Amenorrhea
- → Infertility
- → d/t Hyperandrogenesim
- → d/t insulin resistance

LAB PARAMETERS

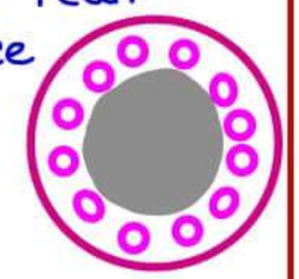
- → LH : FSH
- → Serum Testosterone
- → Serum Androstenedione
- → SHBG [Sex Hormone Binding Globulin]
- → Serum Insulin

APPEARANCE → MISNOMER

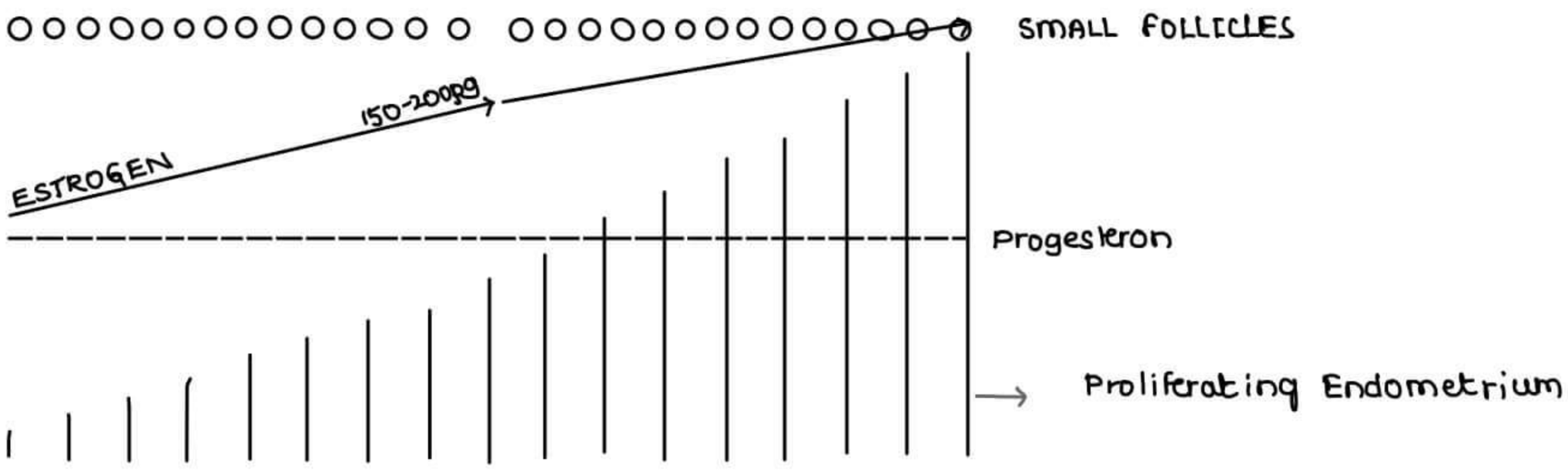
- → MULTIPLE SMALL FOLLICLES around the periphery of ovary
  - 2 - 6 mm [≤ 9mm]
  - 10 - 12 per each ovary



Ring of Pearl/
Necklace of Pearl
Appearance



- → THICK STROMA
- → ovary is 2-5 times larger than Normal



SHEDDING OF ENDOMETRIUM IS DUE TO ISCHEMIC WITHDRAWAL

HIRSUTISM & ↑ Serum Testosterone & Androstenedione

→ dlt Hyperandrogenesim

→ Androgen ⟶ Estrogens [Irreversible React ⁿ]
Aromatase

→ ↑ ESTROGEN

↓

↓ FSH & ↑ LH

→ LH : FSH → 1:1 Normal
→ 3:1 > 2:1 in PCOD

- LH ⟶ STROMA ⟶ ANDROGENS → NORMAL
- ↑LH ⟶ THICK STROMA ⟶ ↑ ANDROGENS → HIRSUTISM

→ ↑ Androgens
- ↑ Serum Testosterone
- ↑ serum Androsterodrone

↓

↓ Sex Hormone Binding Globulins

↓

↑ Free ANDROGENS

↓

HIRSUTISM

INSULIN RESISTANCE → Less glucose uptake in ovary

↓

Less energy

↓

Follicles do not grow

→ ↑ serum insulins
→ Obesity α IR

→ Dark
Shiny
Velvety
Crural Deposits
} ACANTHOSIS NIGRICANS
- Cutaneous marker of Insulin Resistance

→ HA IR AN Syndrome
HA → Hyper Androgenesim
IR → Insulin Resistance
AN → Acanthosis Nigricans

→ METABOLIC SYNDROME
→ Waist → ≥ 35 inches [≥ 89 cm]
→ Tri Glycerides → > 150 mg/dl
→ HDL → < 50 mg/dl
→ BP → > 130/85 mm Hg
→ fasting glucose → 110 - 126
→ 75 gms OGTT 2hr values → > 140 - 199

→ At Least 3 or more → metabolic syndrome

TREATMENT

ANOVULATION TREATMENT

① ↓ Weight → ovulation [in 30% cases]
② Insulin Sensitizers [metformin] → Ovulate [in 30% cases]
③ CLOMIPHENE CITRATE → Ovulate [in 80% cases]
→ Pregnant [in 40% cases]

④ Inj Recombinant FSH
⑤ Inj Human Gonadotropins

⑥ Aromatase Inhibitor → LETROZOLE [1st Line Drug]

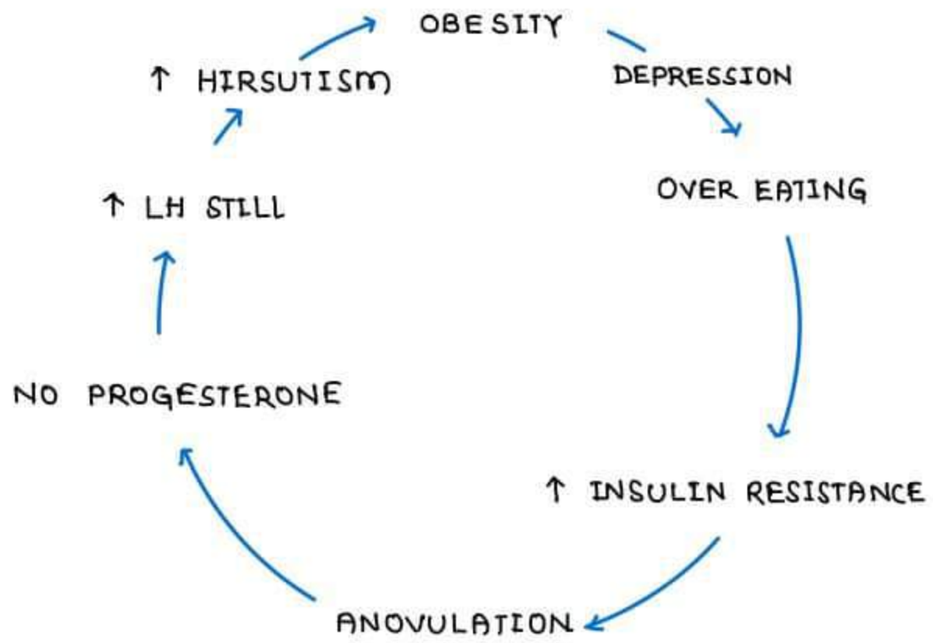
IRREGULAR CYCLES TREATMENT

① COMBINED ORAL CONTRACEPTIVE PILLS
② PROGESTERONE ONLY PILLS
for 10 days [from 14th day/mid cycle]
for 5 days [from 20th day]

HIRSUTISM TREATMENT

① ANTI ANDROGENS
- CYPROTERONE ACETATE
- FINASTERIDE
- FLUTAMIDE
- SPIRANOLACTONE [1st line drug]

② COSMETIC TREATMENT for hair → Prevents Depression



15 - 20% Women in world have PCOS [1 in 5 females]
mc endocrinological disorder of reproductive age group → PCOS
mc cause of Hirsutism → PCOS

ROTTERDAM / ESHRE / ANDROGEN EXCESS SOCIETY / ASRM CRITERIA

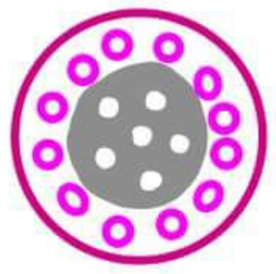
DIAGNOSTIC REQUISITES → Any 2 of the 3

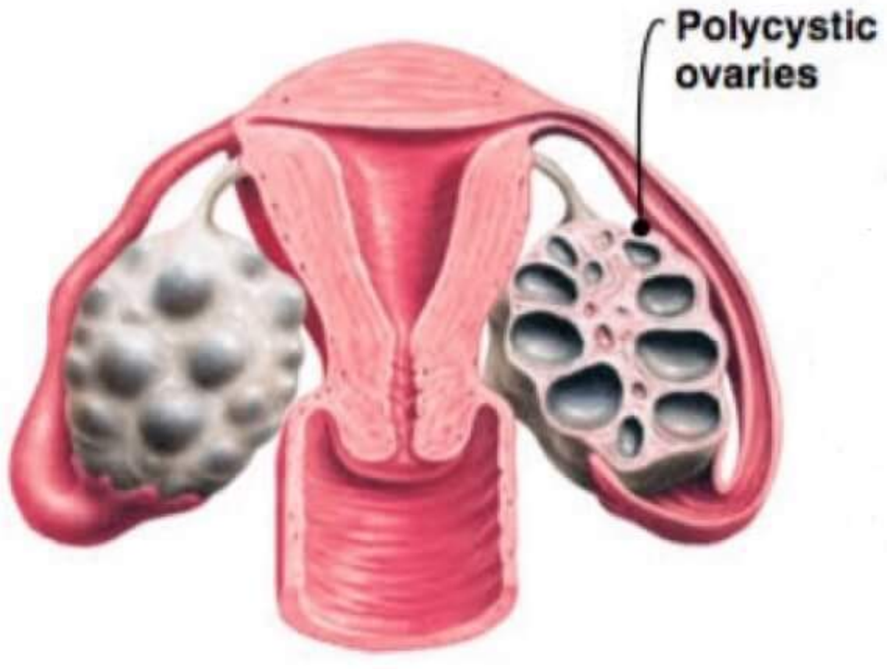
① Anovulation
② Hyperandrogenesim → Clinical / Lab
③ +/- PCO Look On USG

SURGICAL TREATMENT

① LAPAROSCOPIC OVARIAN DRILLING
- → THICK STROMA → ↑ Local Androgens → Harder Follicles
- → PURPOSE → ↓ Androgenic Stroma → Better follicular growth

LAPAROSCOPIC OVARIAN DRILLING





CERVICAL CARCINOMA

→ mc cancer of women in India → CA Cervix

SCREENING

PAP SMEAR

→ by Iyer's Spatula

→ Sensitivity → 47 to 62%.

- ⊕ Cytobrush → ↑ Sensitivity upto 90%.

→ SITE → Transformatⁿ zone (Squamo Columnar Junction]

- Endometrium → columnar
- Vagina & cervix → Squamous

- Located at 1.7 to 2.3 cm from the External OS
  changes locatⁿ ĩ age group

ETIOLOGY

→ HPV
- 16 → mc
- 18 → most malignant

→ HSV 1 & 2

→ HIV 1 & 2

→ Commercial sex worker
→ Women ĩ many partners
→ Partner ĩ STD
→ Early intercourse [< 16 yrs]
→ Smokers
→ Low Socio Economic status

→ Time to do pap smear
- → Any women > 21yrs of age
- → Any women 3 yrs after 1St Sexual exposure in India
- → From 21 to 29 years, Sexually active women should have cytology every 3 years
- → From 30 - 65 yrs : CO - TEST [PAP + HPV] : if negative then 5 yearly
  if only cytology done, then once in 3 years if cytology is negative
- → After 65 yrs : No more PAP, if 3 cytology are negative or
  2 CO-TEST are negative

→ SUSCEPTIBLE TIMINGS
- → at puberty
- → after delivery

→ SCREENING TEST → done on women at risk

DYSPLASIA CLASSIFICATION

CIN I	→	1/3 rd abnormal	→ LOW GRADE LESION
CIN II	→	>1/3 rd to <2/3 rd abnormal	} HIGH GRADE LESIONS
CIN III	→	>2/3 rd abnormal	
CIS	→	all cells are abnormal	

MANAGEMENT

CIN1 MANAGEMENT

→ CIN I —5yrs→ CIN III —10yrs→ CA CERVIX

→ 6 monthly pap smear
Antivirals & Anti biotics given
HPV DNA is done

→ CIN I & CIN II → 65-80% regress spontaneously

CIN III MANAGEMENT

→ conizath not done
Problems ī conizath
→ short cx → incomptence → abortions
→ Stenosed → infertility

→ COLPOSCOPIC [vaginoscopic] BIOPSY DONE
→ Acetic Acid used
coagulati the proteins → make the area ACETOWHITE
Biopsy is taken from Acetowhite areas

→ Schiller Iodine [LUGOL IODINE] Can be used
stains the glycogen rich areas → MAHOGANY BROWN
Biopsy taken from Schiller NEGATIVE AREAS

→ VIAA → Visual Inspectn under Acetic Acid
VILI → Visual Inspectn under Lugol's iodine
} also be done

→ Results of colposcopic Biopsy
1. Invasive cancer Cx → Rx by Radical hysterectomy
2. Biopsy Proven CIN III → Rx by LLETZ [LEEP]
LLETZ – Large loop excisn of transmisn zone
LEEP – Loop electro surgical excisn Procedure
} BEST Rx

→ Rx LASER CONIZATn
– expensive & Difficult

→ Sx CONIZATION [if > 35 yrs]
HYSTERECTOMY [if > 40 yrs]

SYMPTOMS OF CA CERVIX

→ Abnormal bleeding
- Post coital bleeding [mc]
- Post menopausal bleeding

→ foul smelling discharge
→ Cancer cachexia
→ Cancer pain
→ Pyometra → Dirty vaginal discharge
→ Uremic symptoms

Mx of POST COITAL BLEEDING

DO COLPOSCOPIC BIOPSY

→ Done in Post coital bleeding
CIN III [Cervical Intra epithelial Neoplasia]
CIS [Carcinoma in Situ]

STAGING

CLINICAL STAGING DONE WITH

→ P/ vaginal Examination
→ P/ Speculum Examination ⊕ PET CT / MRI
→ P/ rectal Examination [for Parametrium]
→ Proctosigmoidoscopy
→ cystoscopy [for bladder]

STAGE I → LIMITED TO CERVIX
IA → MICROSCOPIC CANCER
A_1 → < 3 mm depth
A_2 → 3-5 mm depth
} Transverse spread < 7 mm → ⊗ REMOVED

IB → CLINICAL / OBVIOUS CANCER
B_1 → < 2 cm
B_2 → 2 - 4 cm
B_3 → > 4 cm

STAGE II A → UPPER VAGINA INVOLVED [II A1 → < 4 cm ; II A2 → > 4 cm]
II B → PARAMETRIAL INVOLVEMENT BUT SHORT OF PELVIC SIDE WALL

STAGE III A → LOWER 1/3 rd VAGINAL INVOLVEMENT
III B → PARAMETRIAL INVOLVEMENT TILL THE PELVIC SIDE WALL [HYDRONEPHROSIS+]

MC STAGE OF CA CERVIX PRESENTATION IN INDIA → STAGE III B

III C1	→	Pelvic Lymphnodes involved
C2	→	Para Aortic Lymphnodes involved

} IMAGING [PET CT / MRI / USG] REQUIRED

STAGE IV A → BLADDER & BOWEL INVOLVEMENT

IV B → DISTANT METASTASIS

* PINK COLOUR INDICATES NEW CHANGES

→ Cervix doesn't drain into inguinal group of lymph nodes
inguinal group of lymph nodes are not involved

→ cervical cancer spreading to endometrium does not change staging

TREATMENT

STAGE I - IIA → Radical hysterectomy

STAGE ≥ IIB → chemo Radiation

Radiotherapy alone is effective Rx in all stages

Maximum radiatn given at

POINT A

→ 2 cm above & 2cm lateral to external os

→ ureter crosses the uterine artery [bridge over water] here
ureter is under the uterine artery

→ Parametrium seen here

→ upto 7500 to 8000 RADs given here

POINT B

→ 3 cm Lateral To point A

→ obturator lymph nodes at the pelvic side walls
Obturator LN → Sentinel group of LN

→ upto 6000 RADs given here

HISTOPATHOLOGY

1 Squamous cell carcinoma
- a Large cell Keratinising variant [mc]
- b Large cell Non Keratinising variant
- c Small cell variant

→ mc cause of death in CA cervix → uremia
2nd mc cause of death → Haemorrhage
3rd mc cause of death → infectn

→ most common site of begining of cancer → Anterior Lip

VACCINES

1 GUARDASIL

→ quadrivalent

16, 18, 6, 11

→ Non valent vaccine

6, 11, 16, 18, 31, 33, 45, 52, 58

2 CERVARIX

Bivalent

16, 18

→ Chance of prevent^{n} if given before exposure → upto 90%.
Chance of prevent^{n} if given after exposure → upto 40%.

→ Given after 9 yrs, upto 25 yrs

POST MENOPAUSAL BLEEDING

→ Any bleeding after 1 year of menopause

SYMPTOMS OF CA CERVIX & CA ENDOMETRIUM

CA CERVIX	CA ENDOMEIRIUM
→ Post coital bleeding [mc]	→ Post menopausal bleeding
→ Post menopausal bleeding	→ irregular vaginal bleeding
→ Irregular vaginal Bleeding	→ Pyometra
→ Foul smell discharge	→
→ Pyometra	
→ Cancer cachexia	
→ Uremia, pelvic pain	

CAUSES OF POST MENOPAUSAL BLEEDING

→ MC cause in India → CA cervix

→ MC cause of post menopausal bleeding → CA cervix

→ MC cause of post menopausal bleeding [Western]

1. Endometrial Atrophy [60-80%]
2. HRT [30%]
3. CA Endometrium [10%]
4. Endometrial Hyperplasia [10%]
5. Polyps [10%]

ENDOMETRIAL ATROPHY → SENILE ENDOMETRITIS → BLEED

VULVAR CARCINOMA

→ Age group → ≅ 65 yrs

PRESENTATION

→ Pruritis [mc]
→ mass in perineum
→ Lump in perineum
→ Cancer cachexia
→ Cancer pain

PREDISPOSING FACTORS

→ HPV 6
→ VIN [vulval intraepithelial neoplasia]
→ CIN
→ Lichen sclerosis
→ Smoking
→ Alcoholics
→ immuno suppressants
→ Squamous hyperplasia

TYPES

→ Squamous cell carcinoma [92%] → mc
→ Melanoma [2-4%] → 2nd mc
→ Basal cell carcinoma [2-3%] → 3rd mc

SQUAMOUS CELL CARCINOMA

BASALOID [WARTY]	KERATINIZING
→ younger age group → multifocal → Predisposing factors HPV VIN Smoking	→ older age group → unifocal → Predisposing factors No a/w HPV a/w Lichen sclerosis a/w squamous hyperplasia

5 YEAR SURVIVAL

→ ca vulva ī out Inguino femoral LN involvement → > 90%.
→ ca vulva ī Inguino femoral LN involvement → ⩽ 50%.

→ Groin recurrence → POOR PROGNOSIS

DIAGNOSIS

→ Labia majora involved in 60%.

→ Clitoris involved in 15%

→ IF Lesion is

≤ 1 cm → excisional Biopsy

> 1cm → Keys punch Biopsy

KEYS PUNCH

STAGING

STAGE I		Limited to vulva
	IA	Size → < 2cm , Invasion → < 1mm
	IB	Size → > 2 cm , Invasion → > 1mm
STAGE II		Adjacent Organ involvement
		Lower 1/3 rd vagina Lower 1/3 rd of urethra , anus
STAGE III		Inguinal femoral LN involvement
	IIIAi	One LN → > 5mm
	Aii	One or two LN → < 5m
	IIIBi	two LN → > 5mm
	Bii	more than 3 LN → < 5 mm
	IIIC	LN involvement ⊕ , ī extra capsular spread
STAGE IV		
	IVAi	Upper urethra , Upper vagina , rectal involvement growth stuck to pelvic bone
	Aii	fixed or ulcerated LN
	IVB	Distant metastasis Pelvic LN

→ STAGE I, STAGE II } NO LN INVOLVEMENT

TREATMENT

STAGE I & II → Radical vulvectomy
Sentinel LN Biopsy
Superficial Inguinal
Deep inguinal
Femoral

if negative → Radical vulvectomy alone
if positive → Radical vulvectomy + LN removal

STAGE III & IV → Chemotherapy ⟶ follow ĩ surgery
Mitomycin
5 FU

Radiotherapy ⟶ follow ĩ surgery

STAGE IA → WIDE EXCISION

FIBROIDS

→ monoclonal tumors
→ Pseudo capsule may be present
→ always starts in intramural area → Pushes fibroid either Submucosal or Subserosal

ETIOLOGY

→ incidence
  → 30% of women
  → >50 yrs → 80%

→ 2.5 times of more chance if female relative has one
→ a/w chromosomal abnormality [40%]
  - 12 - 14 Translocatn
  - 12 Trisomy
  - 7 deletion

→ obese women
→ red meat eater
→ nulliparous women
→ Estrogens & progesterons
→ Growth factors
  - Transforming growth factor β
  - Platelet derived growth factor
  - Epidermal growth factor

CLINICAL FEATURES

SYMPTOMS

→ PAIN
- dlt contraction
  compression
  compaction
  degeneration

→ INFERTILITY
- dlt compression
  FB action

→ BLEEDING
- dlt ↑ endometrial recruitment
  poor contractility
  ↑ vasodilator Prostaglandins

→ BOWEL & BLADDER SYMPTOMS
↑ frequency [mc]
retentn of urine also present

DIAGNOSIS

→ USG → also used for mapping
→ MRI [Best]

Rx OF FIBROIDS

→ Small [<5cm] ī NO pain / bleeding / infertility → NO Rx required
→ Small [<5cm] ī pain / bleeding / infertility → Rx given
→ Large [>10cm] → Rx given
→ Large [>10cm] ī NO pain / bleeding / infertility → Rx given

→ Larger the fibroid ∝ DEGENERATIVE CHANGES
- Hyaline degeneratn
- Red degeneratn
  in pregnancy, in 2nd trimester
  mostly conservative Rx
  never operate
- Lipoid degeneratn
- calcific degeneratn → WOMB STONE
- sarcomatous degeneratn [<0.5%, rarest]

MEDICAL MANAGEMENT

→ ↓ Bleeding
↓ Size

① NSAIDs
② GnRH Analogues by Depot form → Down regulates pituitary
③ GnRH Antagonists [CETROTIDE]
④ MIFEPRISTONE → antiprogestin → ↓ Size
⑤ PROGESTERONE [IUCD Levonorgestrol] → ↓ Bleeding

⑥ UTERINE ARTERY EMBOLIZATION

- uses Poly vinyl Alcohol particles
- upto 80% reductⁿ in pain & bleeding

⑦ HIGH FREQUENCY USG

- HiFU → High Frequency focussed USG
- MRGFUS → MR Guided focussed USG

SURGICAL MANAGEMENT

PRE REQUISITES

→ Hb → > 10gm%

→ arrange blood

→ minimize incisⁿ on uterus
avoid posterior wall incision [S/E → Retroversion]

→ Technique to ↓ blood loss
- torniquet usage
- vasopressin usage

→ ↓ handling of fallopian tube

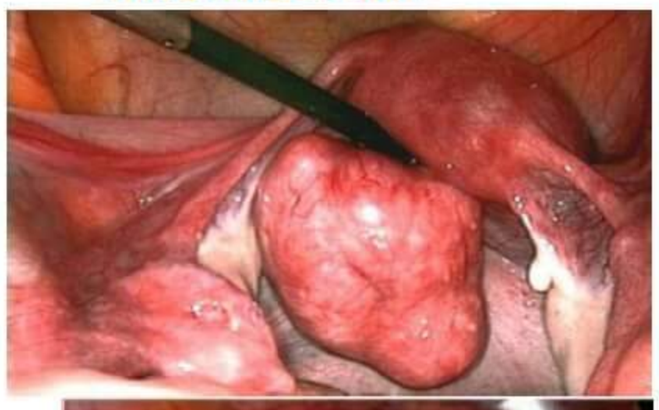
→ Semen Analysis

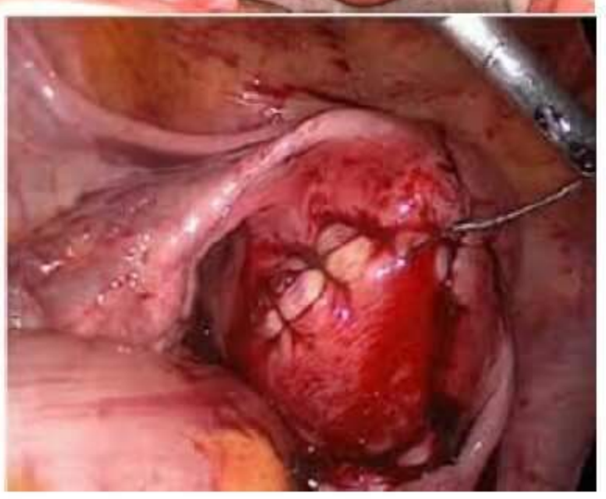
→ FIBROID IN PREGNANCY → Rx is CONSERVATIVE

→ in younger women → MYOMECTOMY

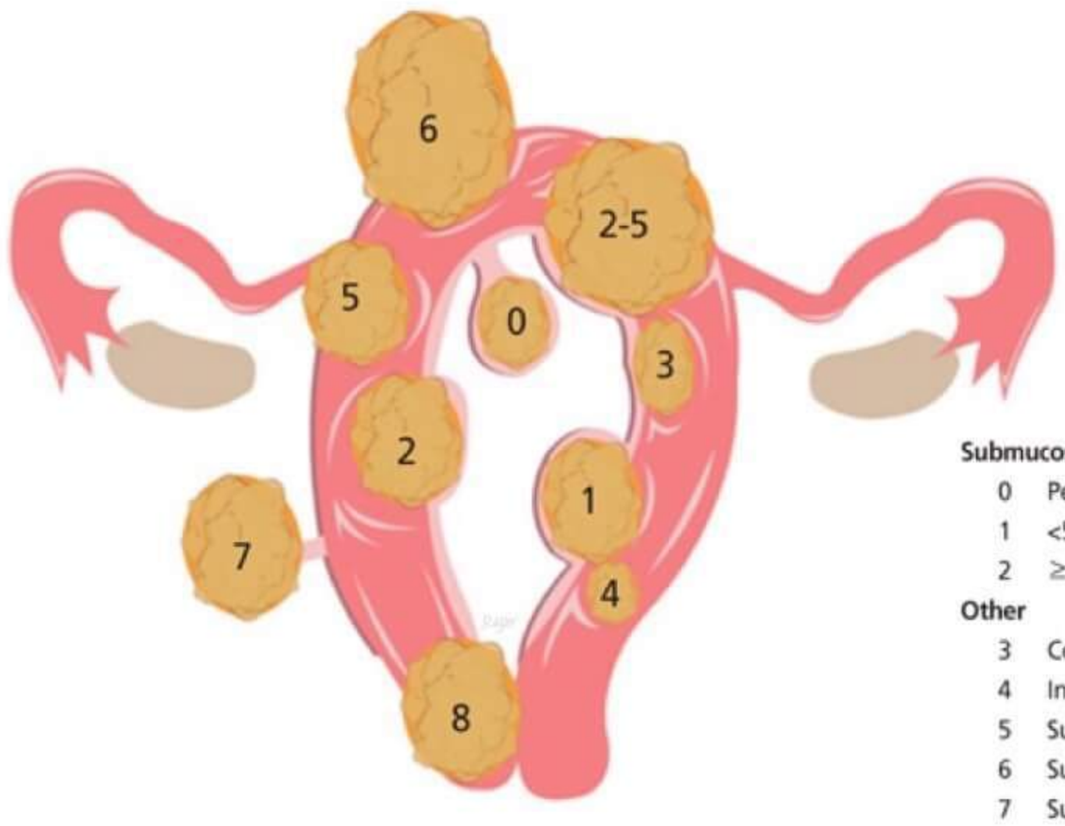
→ in older women → HYSTERECTOMY

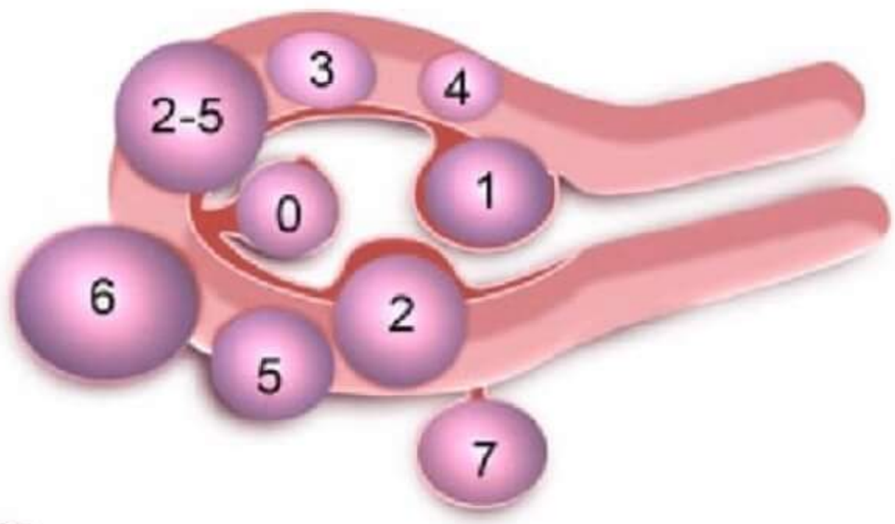
MYOMECTOMY





FIGO CLASSIFICATION





Leiomyoma subclassification system

Submucosal
- 0 Pedunculated intracavitary
- 1 <50% intramural
- 2 ≥50% intramural

Other
- 3 Contacts endometrium 100% intramural
- 4 Intramural
- 5 Subserosal ≥50% intramural
- 6 Subserosal <50% intramural
- 7 Subserosal pedunculated
- 8 Other (specify e.g., cervical parasitic)

→ if a fibroid is impinging on 2 locations at once, then the mucosal relatⁿ should mention first

MYOMECTOMY

HYSTEROSCOPIC MYOMECTOMY

→ indicated for Type 0, Type 1 Fibroids [some surgeons do it for Type II fibroids]

→ Size should be < 3 cm

→ The fibroid is ⩽ 50% intramural

→ The FLUID which distends the uterus have different criteria

→ DEFICIT OF MEDIA TO BE CONSIDERED

	WARNED	STOP SURGERY
NON ELECTROLYTE MEDIA Glycine	750 ml	1500 ml
ELECTROLYTE MEDIA Saline	1000 ml	2500 ml

unipolar current can't be used ī electrolyte media

→ PROBLEMS OF EXCESS OF FLUID

- → Pulmonary Edema
- → cerebral edema
- → cardiac failure
- → Hyperammonemia
- → Hyponatremia
- → Death

LAPAROSCOPIC MYOMECTOMY

→ Type 5, 6, 7 fibroids are easily removed by this procedure

→ Subserous fibroids are easily removed

→ SALIENT FEATURES

- ↳ Blood loss ↓
- ↳ Earlier recovery

→ CRITERIA

- → 3-4 fibroids of 5 cm size or lesser
- → 1 fibroid of 15 cm or smaller

HYSTERECTOMY

CLASSIFICATION

- → Total
- → Sub total
- → Abdominal
- → vaginal
- → T or T out B/L Salpingo oophorectomy
- → T or T out U/L Salpingo Oophorectomy
- → Emergency
- → Planned
- → Obstetric indication
- → Gynecological indications
- → Laparoscopic
- → open
- → robotic

INDICATIONS

- → Fibroid uterus [40-45%] [mc]
- → Endometriosis [15-20%]
- → Prolapse [15%]
- → Dysfunctional uterine bleeding
- → Pelvic inflammatory Disease
- → Chronic Pelvic Pain

PRE REQUISITES

- → consent
- → rule out pregnancy
- → Pap smear examinatⁿ
- → arrange blood
- → Precautious measures for Venous thrombo embolism
- → INDUCTIVE Antibiotics [T in 1 hr]

COMPLICATIONS

INTRA OP INJURIES to Bowel, Bladder & Vessels

URETER INJURY

- → in a hysterectomy, mc site of injury → at the site of crossing the uterine artery
- → overall, mc site of injury → at the Pelvic Brim

POST OP COMPLICATIONS

HEMORRHAGE

- → Immediate → visualized
  if retroperitoneal [Look for signs - ↑PR, Shock]
- → Reactionary → in 1st 24hrs d/t slippage of ligature
- → secondary → >24 hrs uptill 2-3 weeks d/t infections

WOUND INFECTIONS [4-6% cases]

CUFF CELLULITIS [vaginal cuff]

URINARY RETENTION - dlt bladder hypotonia

URITERIC INJURY

- Post op flank pain
- do USG/CT for Dx
- do cystoscopy to localise the block

BLADDER INJURY

- Vesico vaginal fistula
- Uretero vaginal fistula

PROLAPSE OF FALLOPIAN TUBE through the vault

CUFF DEHISCENCE

- advise not to have intercourse for 6 weeks

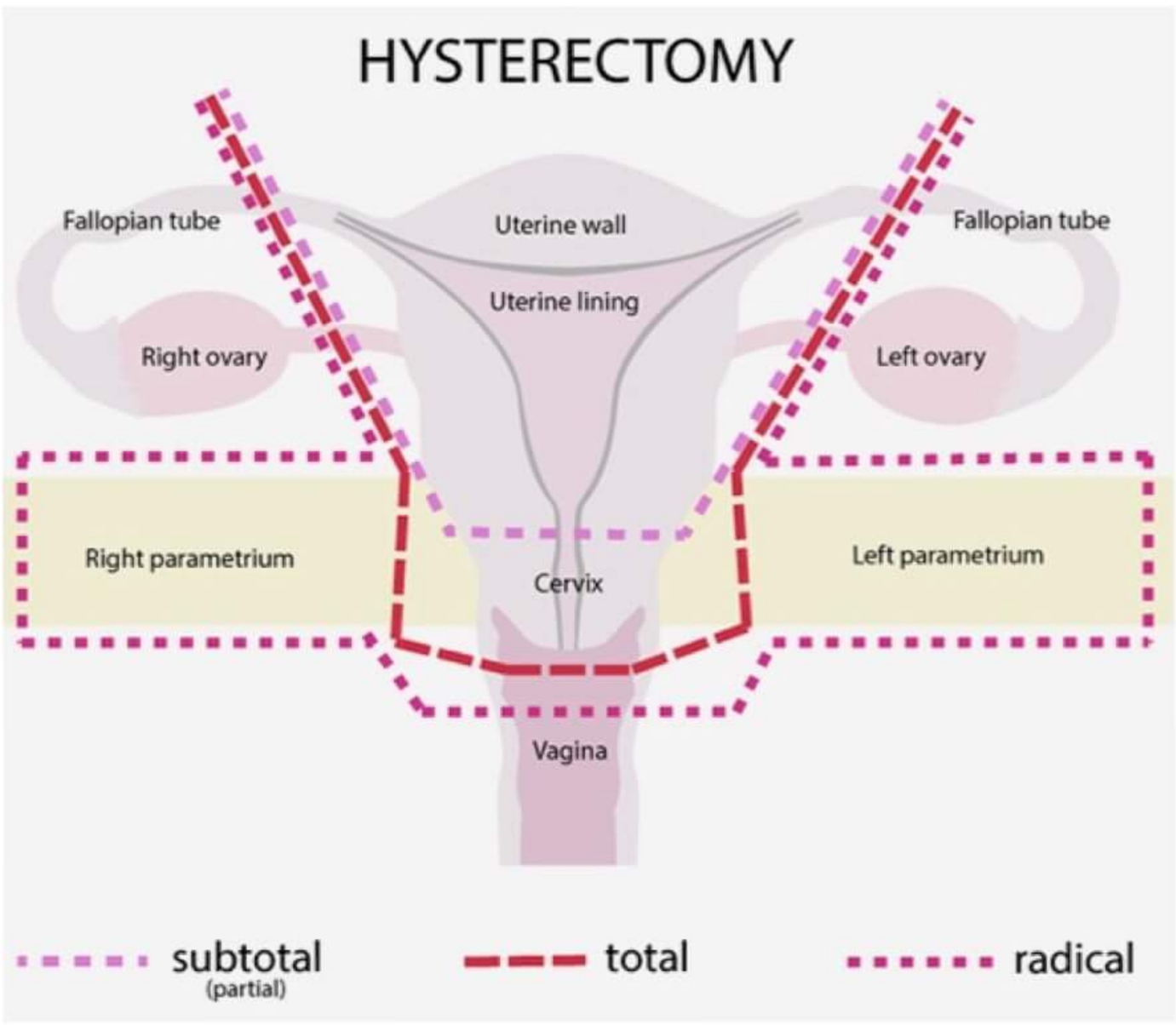
LAPAROSCOPIC HYSTERECTOMY

① LAVH [Laparoscopic Assisted vaginal Hysterectomy]

- Diagnostic Laparoscopy + Vaginal Hysterectomy
- Adhesiolysis + Vaginal Hysterec. ny
- Resection of Adnexae
- Uterines Resected after bladder mobilization

② Total Laparoscopic Hysterectomy

METHODS



OVARIES

→ Conserve ovaries at least till 50 yrs

→ if Surgical OOphorectomy done < 50 yrs, more chances of Coronary Artery Disease by 65 yrs

PROPHYLACTIC OOPHORECTOMY

→ BRCA I & BRCA II

→ 1° female relatives having CA Breast, CA Ovary → 10-50% Risk

ABNORMAL UTERINE BLEEDING

MANAGEMENT

1 NSAIDs

→ inhibits vasodilator prostaglandins

→ ↓ Pain

↓ bleeding in uterine blood vessels

→ 1st Line drug

2 TRANEXEMIC ACID

→ Bleeding

↓

Fibrin Plug

↓

Fibrinolysis ← Plasmin ← Plasminogen

TRANEXEMIC ACID

↓

Rebleeding

→ 1st Line drug

3 HORMONAL MANAGEMENT

→ PROGESTERONE → Stabilizes the endometrium

→ ESTROGEN → forms new endometrial glands

ESTROGEN WITHDRAWAL > PROGESTERONE WITHDRAWL

→ COMBINED ORAL CONTRACEPTIVE PILLS

→ DANAZOL | ANDROGENS → Leads to Endometrial atrophy

→ GnRH ANALOGUES → down regulatn of Pituitary

→ IUCD LEVONORGESTROL [MIRENA]

4 SURGICAL MANAGEMENT

→ THERAPEUTIC CURRETTAGE /
HEMOSTATIC CURRETTAGE /
DILATATION & CURRETTAGE [DNC]

→ B/L UTERINE ARTERY EMBOLIZATION by PVA [poly Vinyl Alcohol] Particles

→ TRANS CERVICAL RESECTION of ENDOMETRIUM [TCRE]

→ MICRO WAVE METHOD

→ THERMAL METHOD → 87°C x 8 min

→ HYSTERECTOMY

CAUSES

1 Tumors

2 Infections

3 Pregnancy related causes ; for Example :

- 28th July → Last menstrual Period

↓

11th August → Ovulated

↓

Embryo implanted on fallopean tube on 17th August

↓

28th August missed her period

↓

30th August bleeding occurs

→ mc fate of ectopic pregnancy → vascular inefficiency
- embryo degenerat^{n}
- ↓ Progesterone
- SHEDDING OF DECIDUA

→ other outcomes of ectopic pregnancy → Tubal abort^{n}
Rupture

4 Systemic Disorder
- Hypothyroidism
- Liver disorder

5 Coagulat^{n} defects → von villebrand disease , ITP

6 Drugs → Heparin, warfarin , COCP, IUCD

7 Dysfunctional Uterine bleeding → Diagnosis of exclusion

DUB [DYSFUNCTIONAL UTERINE BLEEDING]

CONDITIONS

ANOVULATORY DUB

1 Pubertal Girls

2 Perimenopausal women

3 Metropathia Haemorrhagica

→ ANOVULATORY DUB → mc

in 65% ε anovulatory DUB , the Endometrium is Hyperplastic

OVULATORY DUB

1 Corpus luteal ↓ed function

↓

Irregular ripening

↓

Premenstrual Spotting / Bleeding

2 Corpus Luteum ↑ed function

↓

irregular shedding

↓

Post menstrual spotting / Bleeding

MULLERIAN ABNORMALITIES

EMBRYOLOGICAL DEVELOPMENT & IT'S ABNORMALITIES

→ Female internal genitalia derived from MULLARIAN/ PARA MESONEPHRIC DUCT
→ male internal genitalia derived from WOLFIAN / MESONEPHRIC /GARTNER DUCT

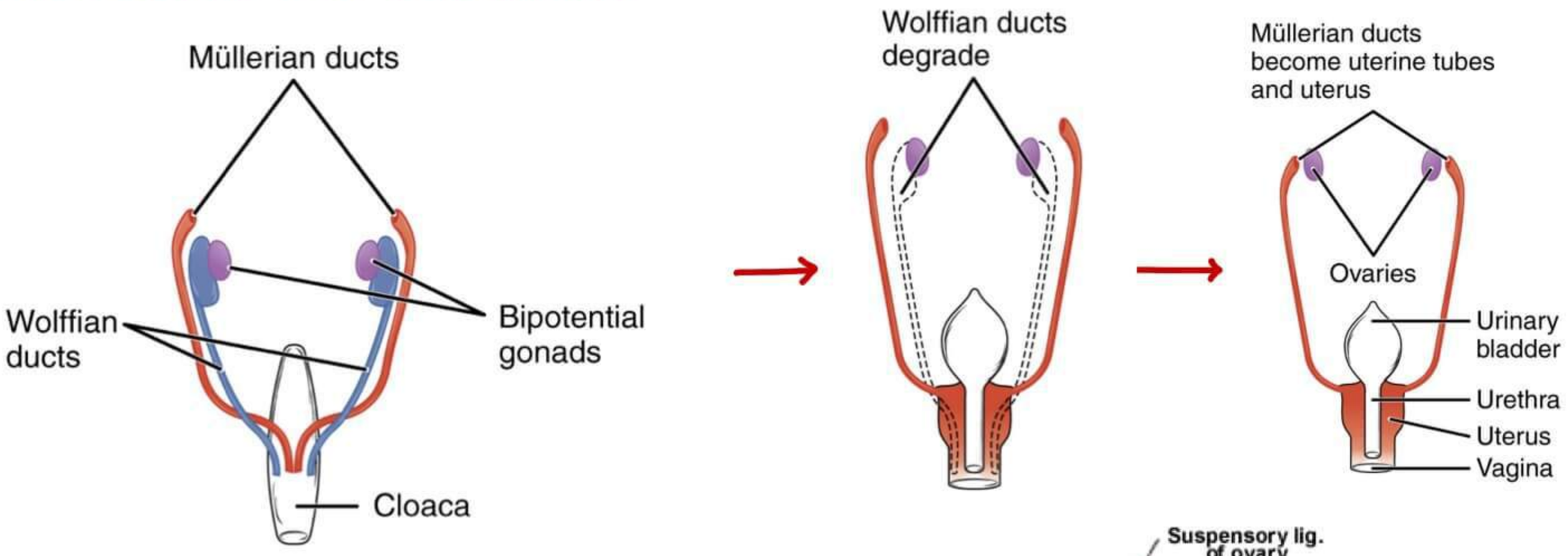
MULLARIN DUCT DERIVATIVES

→ Uterus
cervix
fallopean tubes
4/5 th OF vagina
- Lower 1/5 th derived from UROGENITAL SINUS
- ovaries are derived from GENITAL RIDGE

WOLFIAN DUCT DERIVATIVES

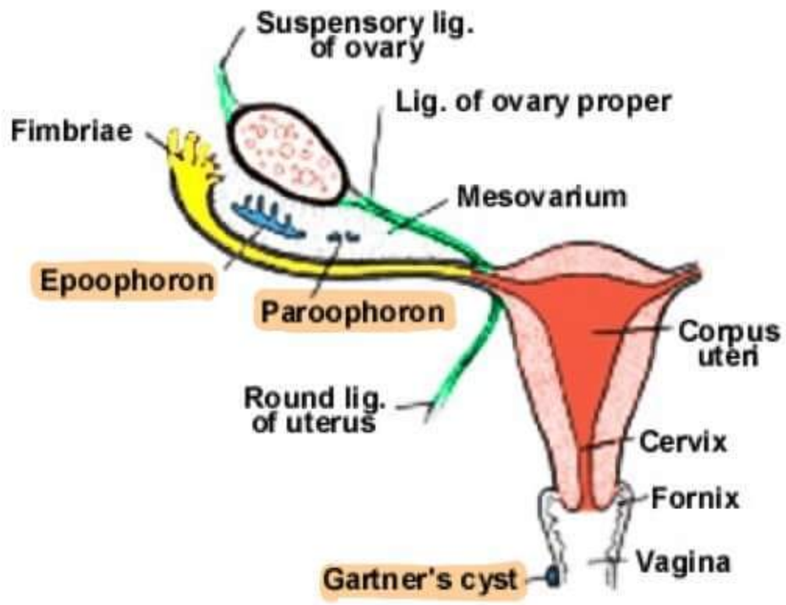
→ Epididymus
→ vas deferens
→ Seminiferous tubules
→ Prostatic urethra

FEMALE GENITAL TRACT DEVELOPMENT



FATE OF WOLFIAN DUCT IN FEMALES

→ Remanents of wolfian duct
- Epoophoron → above the ovary
- Paraoophoron → beside the ovary



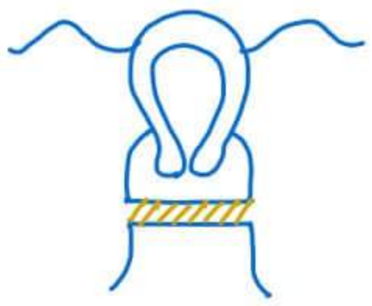
→ obliterated male duct at upper lateral vaginal wall → may lead to

GARTNER CYST
- mostly asymptomatic
- Rx by SIMPLE EXCISION

BARTHOLIN ABCESS
- gland present at anterior 2/3 rd & posterior 1/3 rd of vulva
- Rx by MARSUPILIZATION [Exteriorizat^{n} OF cavity]

MULLARIAN DUCT ANOMALIES

VERTICAL FUSION DEFECTS



TRANSVERSE VAGINAL SEPTUM

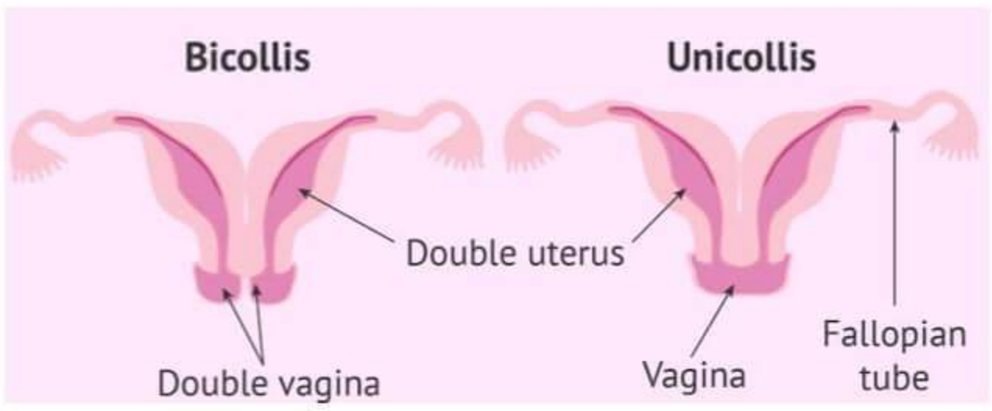
VAGINAL ATRESIA

CERVICAL VAGINAL ATRESIA

COMPLETE MULLERIAN AGENESIS

LATERAL FUSION DEFECTS

1 DIDELPHYS



2 UNICORNUATE

3 SEPTATE

4. BICORNUATE

SEPTATE VS BICORNUATE UTERUS

→ On Hysterosalpingography, both septate & bicornuate uterus looks similar

- Angle between 2 cavities
  - $< 90°$ [Acute] → Septate Uterus
  - $> 90°$ [obtuse] → Bicornuate uterus

- Distance b/w 2 cavities
  - < 4cm → Septate Uterus
  - > 4cm → Bicornuate uterus

- Fundus
  - Broad → Septate Uterus
  - indented/bimpling → Bicornuate uterus

SEPTATE UTERUS IS THE SINGLE MOST COMMON MULLERIAN DEFECT

→ Best way to distinguish b/w Septate & bicornuate uterus
  → DIAGNOSTIC LAPAROSCOPY + HYSTEROSCOPY
  → MRI [Best imaging method]

→ TREATMENT
  → Septate uterus → removal of septum through hysteroscopy
  → Bicornuate uterus → Unification surgery [STRASSMAN'S or JONE'S]

→ Only indicatⁿ of unifying the uterus in bicornuate uterus → Recurrent Abortions

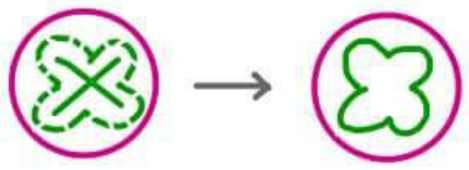
CRYPTOMENORRHEA

→ Menstruatⁿ present [Hematometra - blood in uterus ; Hematocolpos - blood in vagina] but menstrual blood not coming out
  → Transverse vaginal septum
  → Vaginal atresia
  → Cervical vaginal atresia
  → Imperforate hymen


IMPERFORATE HYMEN

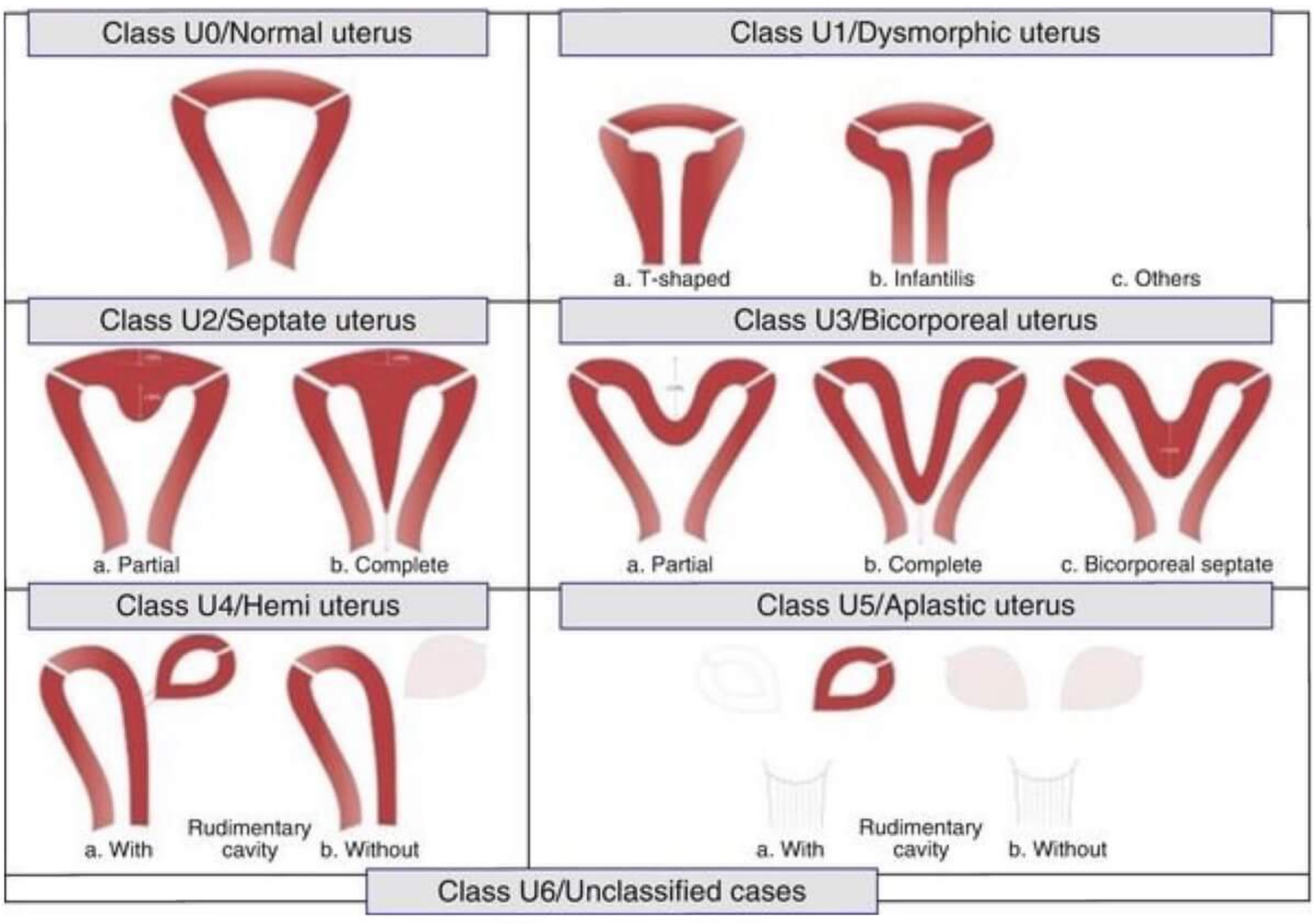
IMPERFORATE HYMEN

→ Not a mullerian anomaly
→ It is a cannulatⁿ defect
→ Rx → 1 cruciate incisⁿ given
  2 cut along the incision



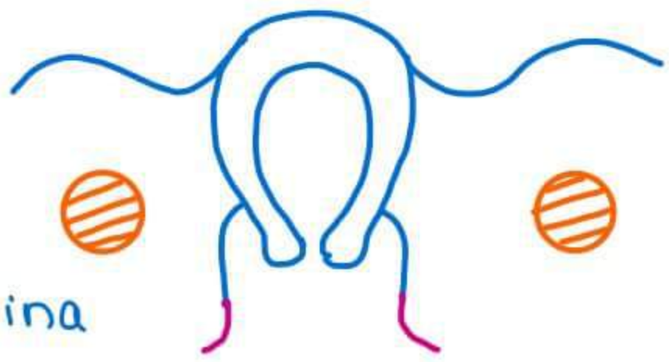
ESHRE CLASSIFICATION

→ European Society for Human Reproduction & Embryology



INTERSEX

STRUCTURES	DERIVED FROM
Uterus	Mullerian / Paramesonephric ducts
cervix	
fallopean tubes	Genital ridge
upper 4/5th OF vagina	urogenital sinus
OVARIES	
LOWER 1/5 th OF VAGINA	



FORMATION OF EXTERNAL GENITALIA

→ After 6 wks of intrauterine life, Sexual differentiatn begins

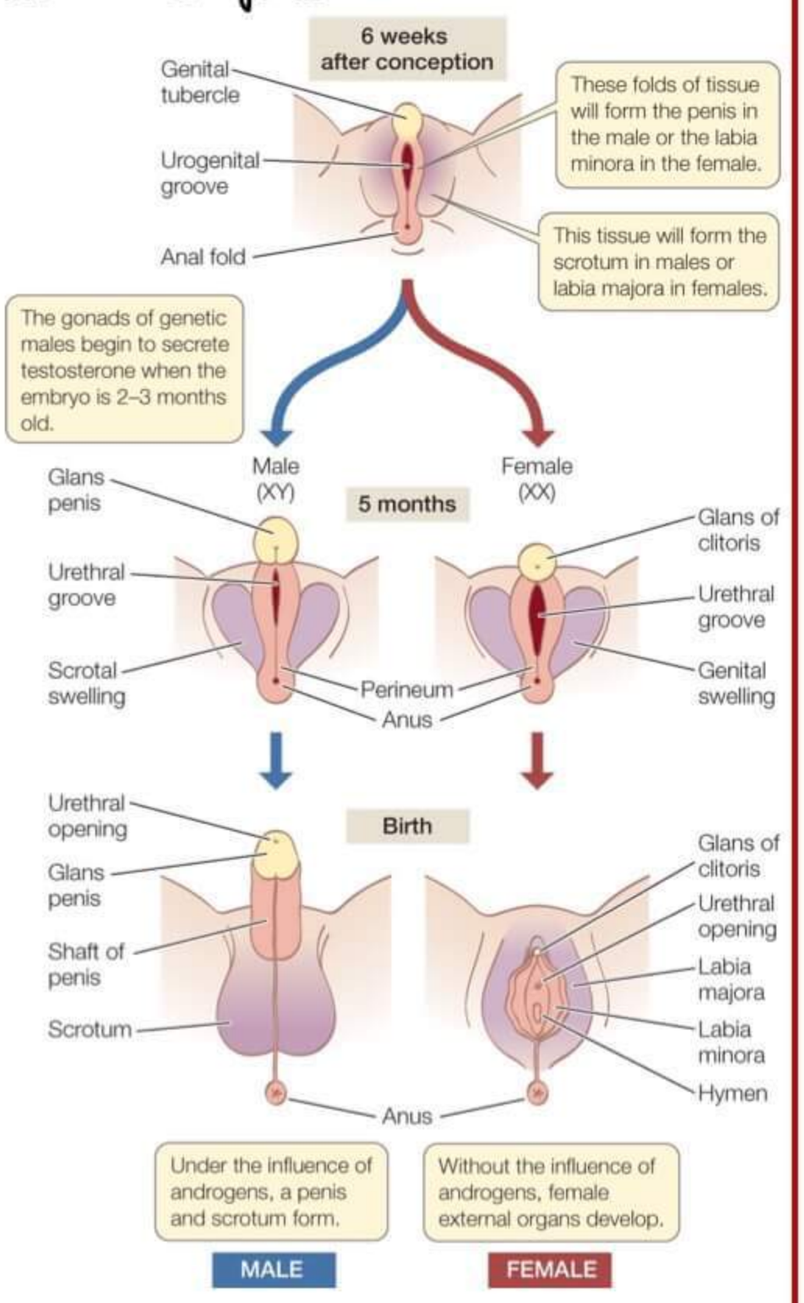
→ Sexual differentiatn is based on

- Genetic Sex [46 xx or 46 xY]
- Gonadal Sex [ovary or testes]
- Phenotype [vulva or Phallus]

→ Y chromosome has

- Sex determining Region Y [SRY]
- Testes Determining Factor [TDF]

→ Ext. genital formatn is under the influnce OF ANDROGENS



>6 WKS	>6 WKS
↓	↓
MALE	FEMALE
TESTES	OVARIES
↓	↓
ANDROGENS	NO ANDROGENS
↓	↓
Descent of testes	Labia majora
Formatn of Scrotum	Labia minora
Formatn OF Penis	clitoris
	Lower 1/5 th of vagina by urogenital sinus

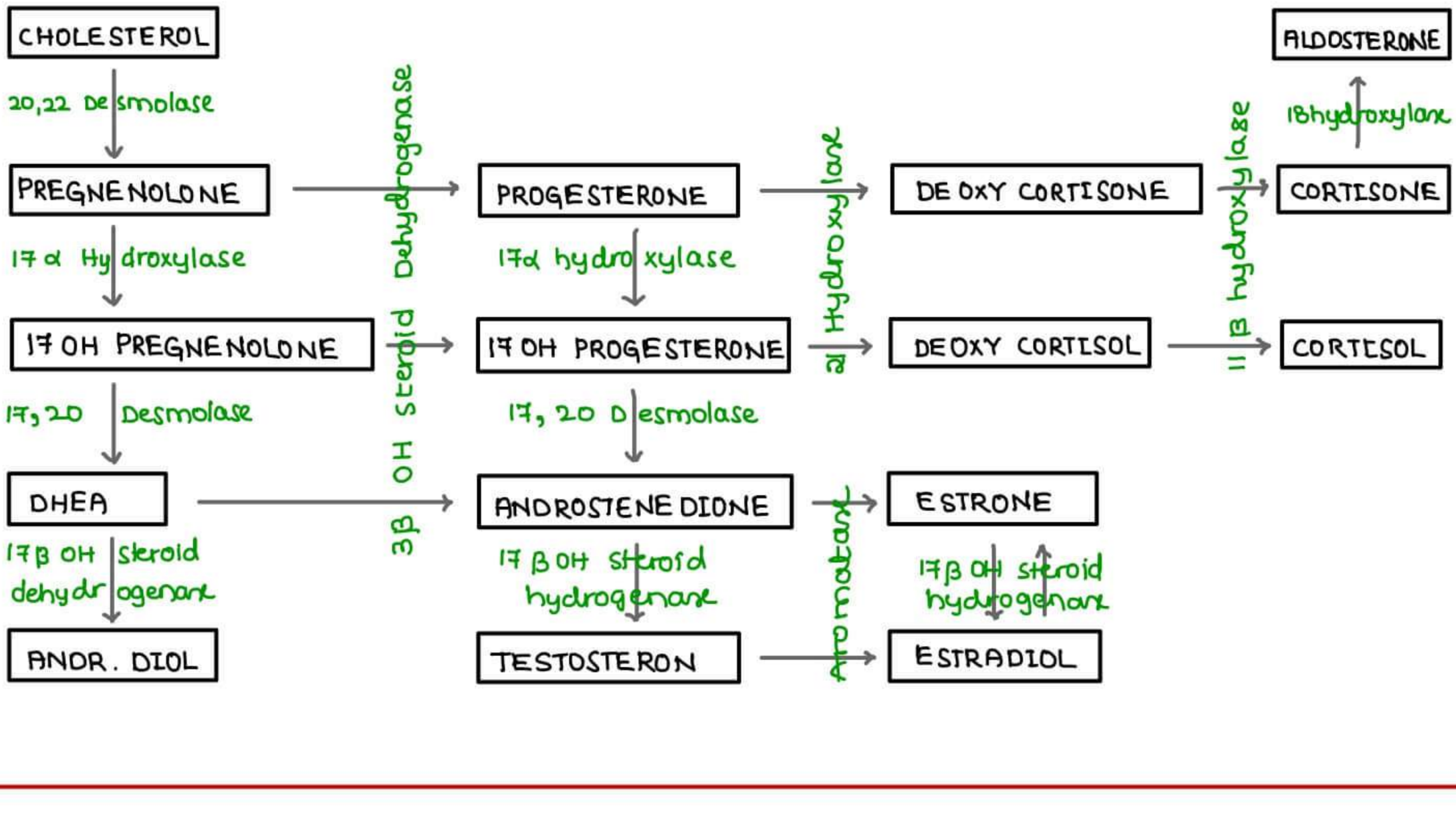
DEFAULT / BASIC HUMAN SEXUALITY → FEMALE

	MULLERIAN AGENESIS	TESTICULAR FEMINIZATION SYNDROME/ ANDROGEN INSENSITIVITY SYNDROME
KARYOTYPE	→ 46 xx	→ 46 XY
GONAD	→ Ovary	→ Testes
UTERUS, TUBES	→ Absent	→ Absent
VAGINA	→ Shallow blind	→ Shallow blind
VULVA	→ Normal	→ Normal
BREAST	→ Feminine	→ Large feminine
PERIODS	→ Absent	→ Absent
ANDROGENS	→ 20-80 ng/dl	→ 200 - 800 ng/dL
PUBIC/AXILLARY HAIR	→ Present	→ Absent

→ In Testicular feminizat^{n} syndrome,
- In periphery, ANDROGENS $\xrightarrow{\text{Aromatase}}$ ESTROGENS
- ESTROGENS ⟶ Large feminine breasts
  Pubic & axillary hair absent

→ TFS is distinguished from Mullerian Agenesis by
- Absent axillary & pubic hair [clinical suspicion]
- Karyotyping → 46 XY
- USG reveals undescended testes [mostly in abdomen / occasionally in inguinal canal]

→ undescended testes removed in TFS at the time of puberty



→ 21 Hydroxylase Deficiency ,

↓

↓ Steroid Hormones

↓

× Negative feedback to Hypothalamus

↓

↑ ACTH

↓

↑ SEX HORMONES

CONGENITAL ADRENAL HYPERPLASIA

→ dlt deficiency of 21 Hydroxylase enzyme

① classical variety

→ Boy → Precocious puberty

→ In Girl

- penis & scrotum + nt
- NO testes

} AMBIGUOUS GENITALIA

② Sn Salt Loosing variety

- ↓ Na^+
  ↓ H_2O
  ↑ K^+
- Fatal to the baby [boy or girl]

③ Late onset / Adult onset Adrenal Hyperplasia

→ Rx by Long term steroids

→ mc cause of CAH → 21 β hydroxylase deficiency
2nd mc cause of CAH → 11 β hydroxylase deficiency

→ PREVENTION

- Start the steroids at the time of Dx of next pregnancy

→ GENETIC MALE & PHENOTYPIC FEMALE → MALE PSEUDOHERMAPHRODITE

GENETIC FEMALE & PHENOTYPIC MALE → FEMALE PSEUDOHERMAPHRODITE

EXAMPLES OF

MALE PSEUDOHERMAPHRODITE → TFS

FEMALE PSEUDOHERMAPHRODITE → CAH

→ TRUE HERMAPHRODITE

- MALE + FEMALE KARYOTYPE &
- MALE + FEMALE GONADS → OVOTESTIS &
- MALE + FEMALE EXTERNAL GENITALIA

GONADAL DYSGENESIS

SWYER SYNDROME

→ 46 XY Female

TURNER SYNDROME

Streak gonads

↓ Estrogens

Small uterus

Primary amenorrhea

MIXED GONADAL DYSGENESIS

→ Male + female karyotype

Male + female Gonads

- U/L undescended testes → not working
- Contralateral streak ovary → not working

→ External genitalia → female

→ 1/3 rd of mixed gonadal dysgenesis have Turner phenotype

IN GONADAL DYSGENESIS, THE EXTERNAL GENITALIA IS ALWAYS OF FEMALE

→ mc cause of 1° Amenorrhea → Gonadal Dysgenesis

mc type of gonadal dysgenesis → Turner syndrome

Q Short stature
1° amenorrhea
Streak gonad
on USG → hypoplastic uterus

} **TURNER SYNDROME**

→ 46 xx → 1 Barr body [Normal female]

→ 46 xo → No Barr body → TURNER SYNDROME

Short stature

Shield chest

Low set hair line

Lymphedema

Normal Intellegence

→ 46 XY → No Barr Body [Normal male]

→ 47 XXY → KLINEFELTER SYNDROME

Tall stature

Gynecomastia

Obesity

azoospermia

infertility

Mental Retardath

Q Which one has the best clinical prognosis ?

A CAH

B TFS

C MIXED GONADAL DYSGENESIS

D TRUE HERMAPHRODITES

GAMETOGENESIS

SPERMATOGENESIS

SPERMATOGONIA —75 Days→ SPERMATOZOA

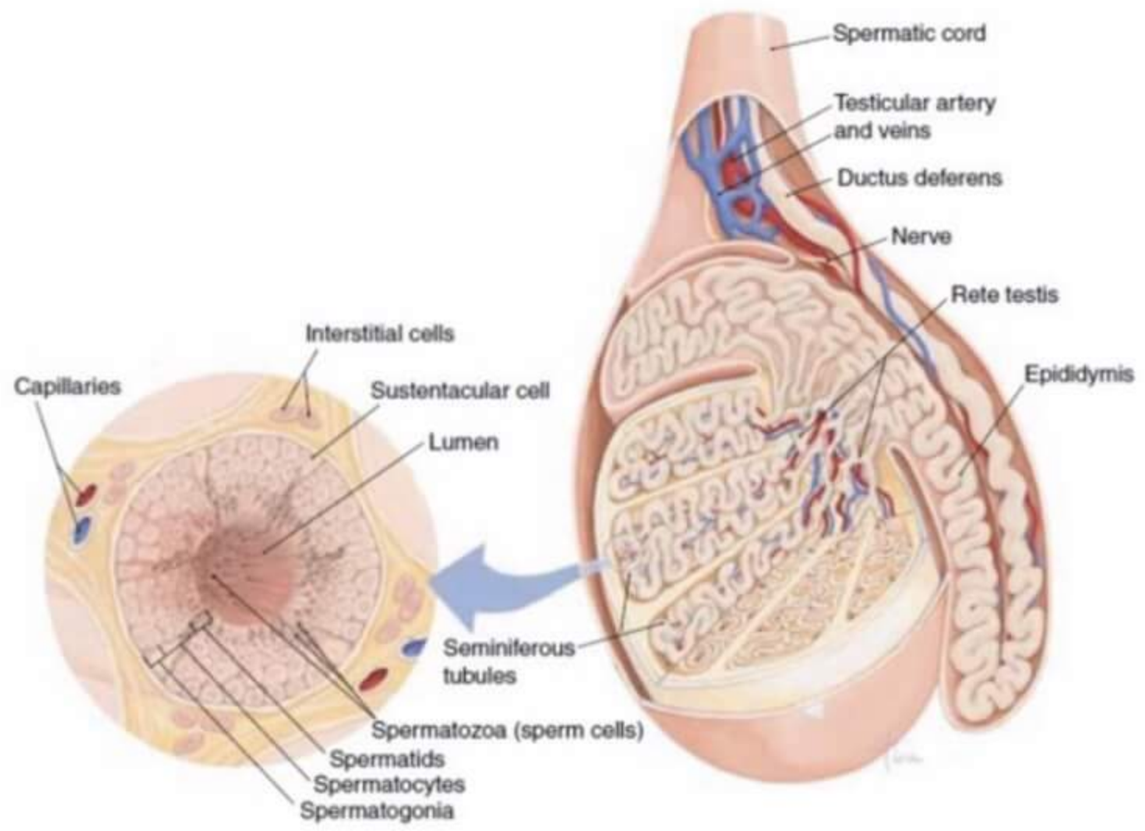
IN TESTIS

LH —acts on→ Leydig cells —produce→ TESTOSTERONE

FSH —acts on→ Sertoli cells [lining the Seminiferous tubules] —→ SPERMS

SPERM PATHWAY

TESTIS [250-290 lobules ⊕nt]
↓
SEMINIFEROUS TUBULES
↓
RETE TESTIS
↓
EPIDIDYMUS [Sperms are stored]
↓ 2-6 Days
VAS DEFERENS [more motile sperms
↓
EJACULATORY DUCT
↓
URETHRA
↓
PENIS

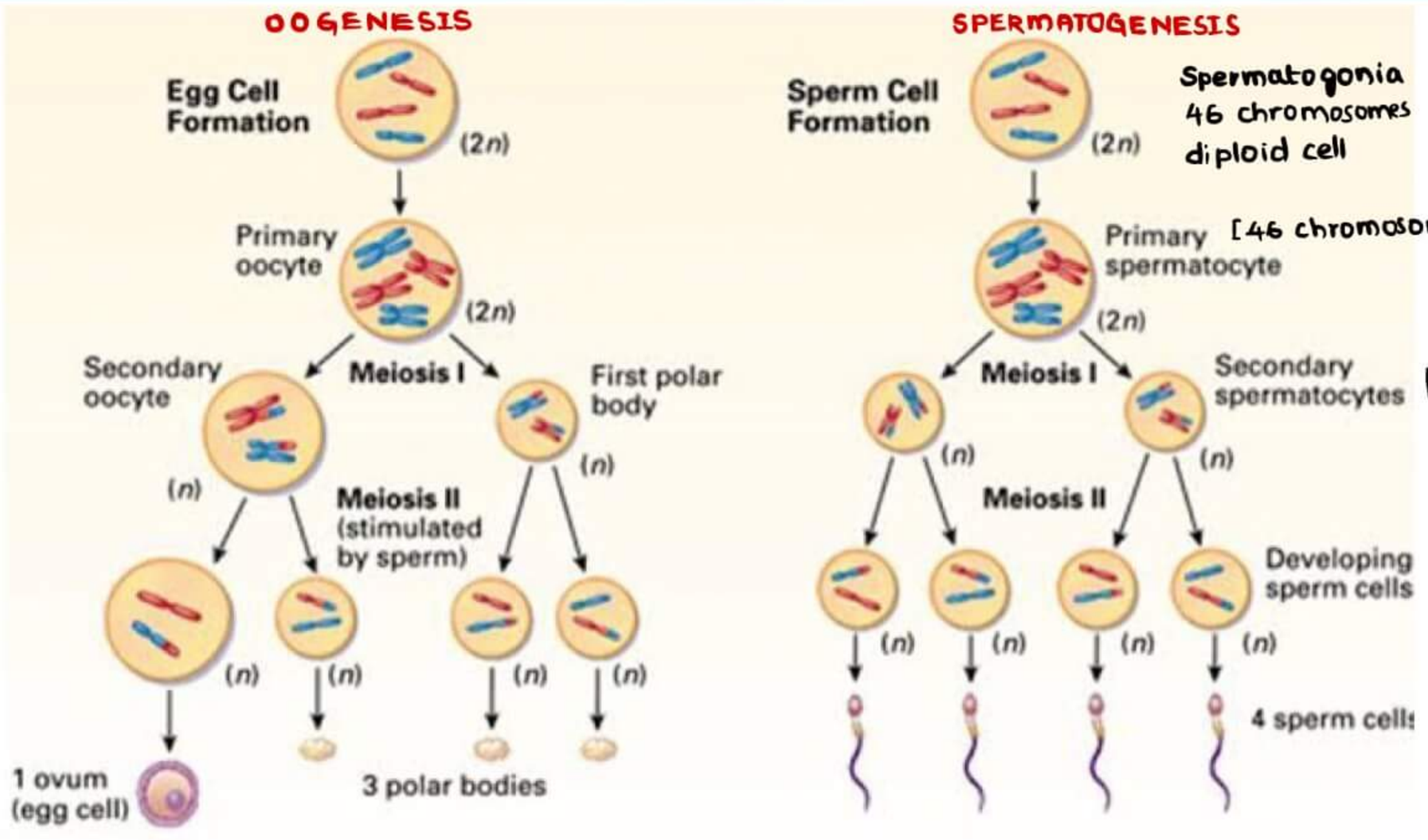


SPERMATOGENESIS

→ 1 Spermatogonia gives rise to 4 Sperms

→ SPERMATID —48 hrs→ SPERMATOZOA
[non-motile] [motile]

→ Formation of Spermatozoa From Spermatid include
  ↳ condensation of nucleus occur
  ↳ Formation of tail occur
  ↳ motility
  ↳ Acrosomal cap [Golgi apparatus]



OOGENESIS

- → 1 oogonium gives rise to 1 ovum & 3 polar bodies [extra genetic material
- → oogonia starts forming from 8 wks of IUL
- → PRIMARY OOCYTES
  - → maximum at 20 wks of IUL [6-7 wks]
  - → present at birth
  - → Rest in Prophase I [meiotic division] at the time of birth
  - → Meiosis I completed at the time of ovulation [Puberty]

- → Secondary oocyte & 1 polar body released [at the time of ovulation]
- → secondary oocyte is arrested in Metaphase [meiosis II]
- → After fertization, 2nd polar body & ovum are released

AFTER EJACULATION, Sperms reach posterior fornix of vagina $\xrightarrow{2\ min}$ ampulla

CAPACITATION OF SPERMS

- → the potential to fertilize oocyte
- → takes place in cervical mucus
- → steps responsible for capacitation
  - ↳ removal of inhibitory mediator [cholesterol]
  - ↳ Tyrosine phosphorylation
  - ↳ influx of ca^{2+} ions

ACROSOMAL REACTION

Acrosomal cap
[Golgi apparatus]
↓ Acrosome breakdown

Release Acrosin to fertilize oocyte
[Penetrate zona pellucida of oocyte]
↓
Acrosin [Hyaluronidase] will soften the zona pellucida [Acrosome reaction]

CORTICAL REACTION

one sperm gets inside
↓
cortical granules released in perivitelline space of oocyte
↓
This reaction makes the oocyte impermeable again

PUBERTAL CHANGES

First event of puberty → Growthspurt

SPECIFIC EVENTS OF PUBERTY IN GIRLS

Breast	→	Thelarche [T]
Pubic axillary hair	→	Pubarche [P]
Height	→	Linear growth spurt
Periods	→	Menarche

→ Time taken for the above specific events → 4.5 yrs

TIMING

→ TIMING to start of Periods → 10 - 12 yrs
→ if periods start at 9 - 10 yrs → EARLY PERIODS
→ if periods start at < 8 yrs → PRECOCIOUS PUBERTY

→ mc cause of precocious puberty → Idiopathic
→ Rx of precocious puberty → GnRH analogues

DELAYED PUBERTY

→ no periods till 13 yrs of age
→ Pubarche + nt, no periods till 15 yrs

TANNER STAGING [For breast & pubic hair development]

STAGE I	→	NO growth, no mound, no development of breast
STAGE II	→	significant amount of growth ⊕ nt
STAGE III	→	much developed breast
	→	nipple is above the midplane of breast mound
STAGE IV	→	much more developed breast secondary mound present
STAGE V	→	Bigger breast [mature breast] no secondary mound nipple is below the midplane

→ Girls starts development of puberty → 10 - 12 yrs [10.5 yrs]
→ Boys starts his pubertal develop → 11.5 yrs
→ SPECIFIC EVENTS OF PUBERTY IN BOYS
  → Testicular size [T]
  → Penile length [P]
  → Pubic hair
  → Growth Spurt

→ SEQUENCE OF PUBERTY ONSET : Obese girls → Normal girls → Low weight → Anorexic
→ After attaining 23.5% Fat, girl period starts
→ Estrogen mostly responsible for events of puberty in girls like breast development, uterine development, periods
→ For Boys androgens mostly responsible for pubertal develop

INFERTILITY

→ 15 - 20% couples are infertile

→ INFERTILE → AFTER 1YR OF UNPROTECTED INTERCOURSE

→ CHANCE OF CONCEPTION ↓ UNPROTECTED INTERCOURSE

90% couple	→	1 yr
80% couple	→	1st 6 months
10% couple	→	next 6 month

→ 1 Act of intercourse at 14th day , chance of conceptn → 4 - 8%.

→ chance of conceptn ↑ many acts in one month → 25%.

CAUSES

→ % of Distribution of causes responsible for infertility

MALE	→	20 - 30%
FEMALE	→	30 - 40%
MALE + FEMALE	→	10 - 40%
UNEXPLAINED	→	10 - 20%

MALE CAUSES

→ oligospermia

→ Azoospermia

FEMALE CAUSES

→ Anovulatory factors > Tubal factors

WHO CLASSIFICATION OF ANOVULATION

TYPE I	→	Hypogonadotropic Hypogonadism	
TYPE II		Normogonadotropic Hypogonadism	→ PCOS
TYPE III		Hypergonadotropic Hypogonadism	→ Premature Ovarian fail.
TYPE IV		Hyperprolactinemia	

HISTORY TAKING

MALE SPECIFIC HISTORY

→ Act of intercourse

→ Infections → mumps , TB , Filariasis , STDs

→ Previous Sx → Orchidopexy / undescended testes

→ Hernia Sx , Varicocele Sx , Hydrocele Sx

→ Alcoholic , smoker

FEMALE SPECIFIC HISTORY

→ Infections → Recurrent PID , Endometriosis , TB pelvis

→ MTP / Abortions

→ Alcohol , smoking

INVESTIGATIONS

1 SEMEN ANALYSIS

→ 1st investigation to be done

→ 2010 WHO SEMEN ANALYSIS

PH	→	> 7.2
volume	→	> 1.5 ml
concentration	→	> 15 million/ml
Count	→	> 39 million [36-42 million]
motility	→	> 40% [32% must be actively motile]
Morphology	→	> 4% should be (N) [KRUGER'S STRICT CRITERIA]
Vitality	→	> 58% should be Normal
Leucocyte count	→	< 1×10^6 / ml

2 WOMEN

P/V Examination

TVS

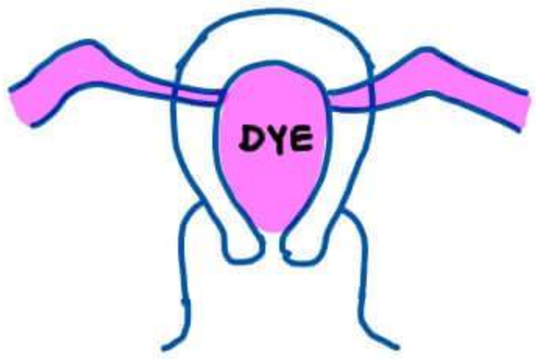
Ovulation Tests

- Basal Body Temperature [>0.5°F]
- USG - Follicular Monitoring
- LH → > 15 IU
- Sr. Progesterone → > 3ng/ml on day 21
- Endometrial Biopsy

Hystero salpingo graphy

- Tells about Uterine cavity
- Tells about Tubal patency

HYSTERO SALPINGOGRAPHY



Laparo Hystero Scopy

- Better investigatⁿ to know anatomy
- Diagnostic
- Therapeutic

TREATMENT

1 OVULATION INDUCTION

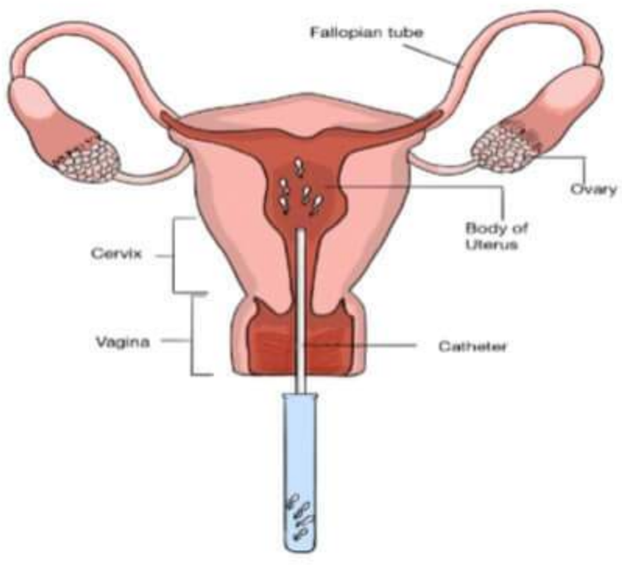
→ Indicated for anovulation

→ Clomiphene citrate

Letrozole

HMG

FSH



Intra Uterine insemination

2 INTRA UTERINE INSEMINATION by Washed Sperms

→ Indicated for Low count sperms, Endometriosis, Cervical factor infertility

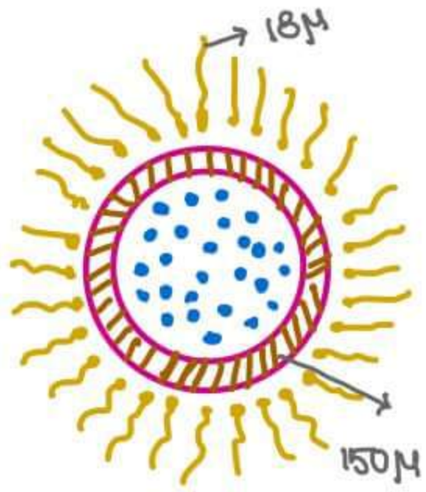
→ Successful in 15 - 20% of cases

3 IN VITRO FERTILIZATION

→ indicated for tubal blockage, Low count sperms, Endometriosis, Cervical factor infertility

→ 2 or 3 Day 3 [8 cell] embryos are transfered or
1 or 2 Day 5 [Blastocysts] embryos are transfered

→ Success rate → 40 - 45 % [pregnancy]
Takehome baby rate → 25 - 30 %.

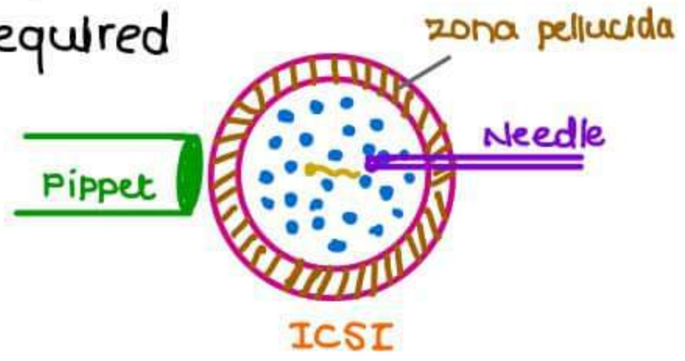


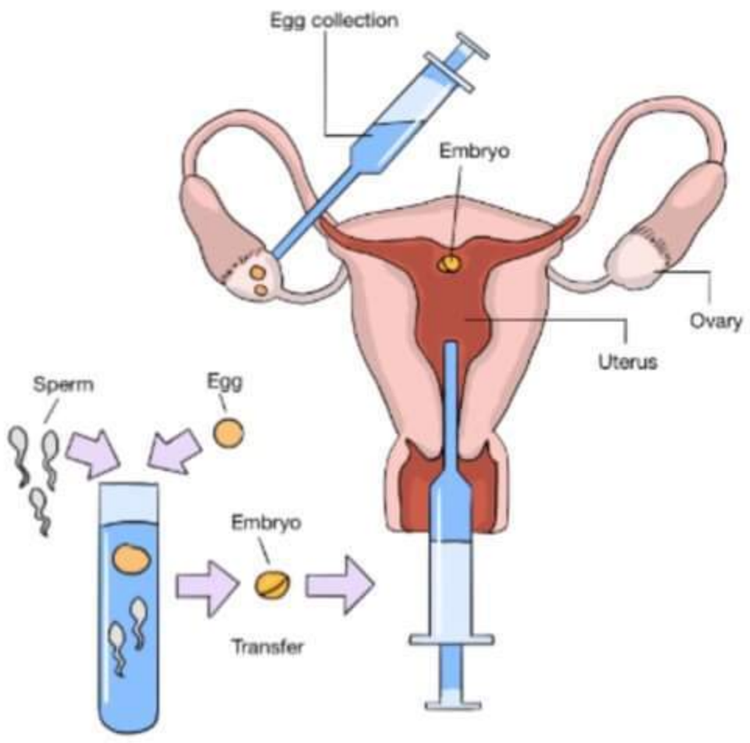
→ IN VIVO,
1/5th of Semen will reach the site of fertilizatn
1 Lakh sperms collide ī Ovum & release ACROSIN
Acrosin soften the ZONA PELLUCIDA → ACROSOME REACTION
Fertilizatn occurs & followed by ZONA REACTn, which hardens zona again

→ IVF requires 1 Lakh Sperms to fertilize a oocyte
So, for IVF atleast 3-5 million Sperms required
for IUI atleast 5-10 million Sperms required

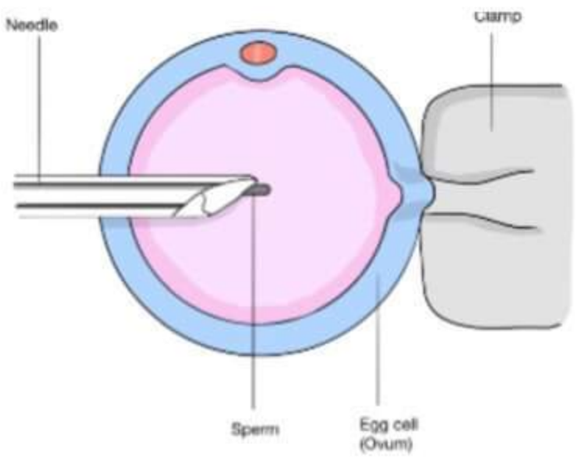
4 INTRA CYTOPLASMIC SPERM INJECTION

→ indicated for very very Low Sperm count





INVITRO FERTILIZATION



INTRA CYTOPLASMIC SPERM INJECTION

AZOOSPERMIA [obstructive Azoospermia]

→ Normal FSH & Azoospermia → obstructive Azoospermia

→ SPERM EXTRACTION TECHNIQUES

PESA [Percutaneous Epididymal Sperm Aspiration]

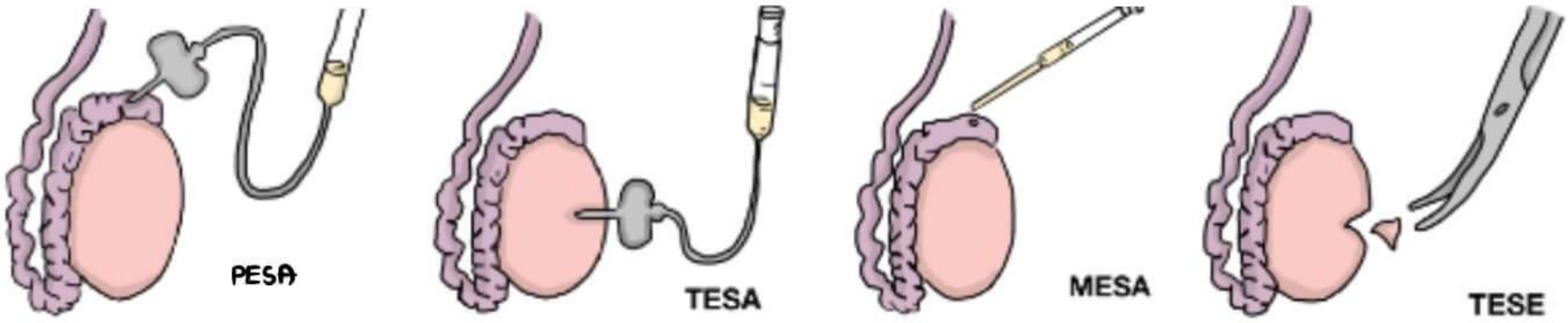
TESA [TEsticular Sperm Aspiration]

- Both can be done under Local anesthesia
- Both are Simple techniques [Needle Aspiration]

MESA [Microsurgical Epididymal Sperm Aspiratn]

TESE [TEsticular Sperm Extractn]

- Both are done under GA
- Both are complicated Techniques



Q Best technique to get quality sperms ?

A PESA

B TESA

C MESA

D TESE

Q controlled ovarian Hyperstimulatⁿ was given for IVF

Pre trigger [HCG], Estradiol levels → 800 pg

What is the next step in management

Ⓐ cancel the cycle

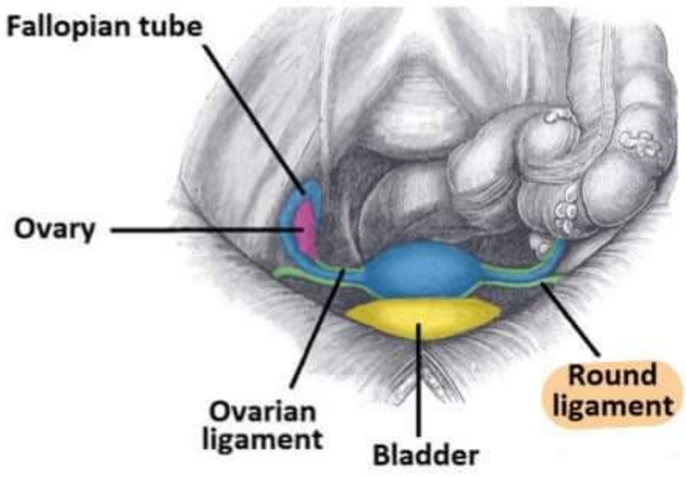
Ⓑ continue Stimulatⁿ for 1 to 2 days & check estradiol

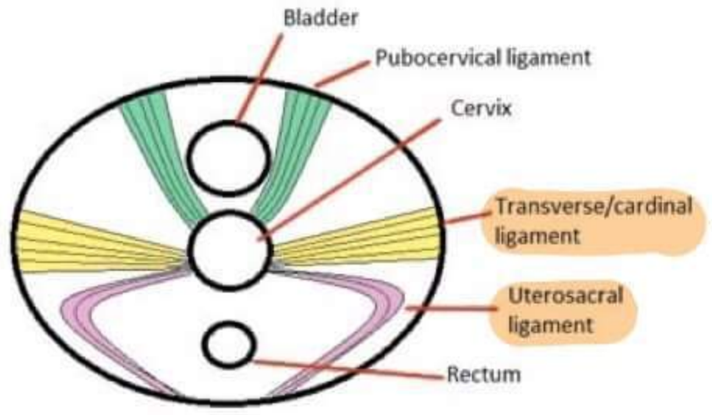
→ IDEAL TEMPERATURE FOR SPERMATOGENESIS → 35 - 35.5°C

GENITAL PROLAPSE

SUPPORTS OF UTERUS

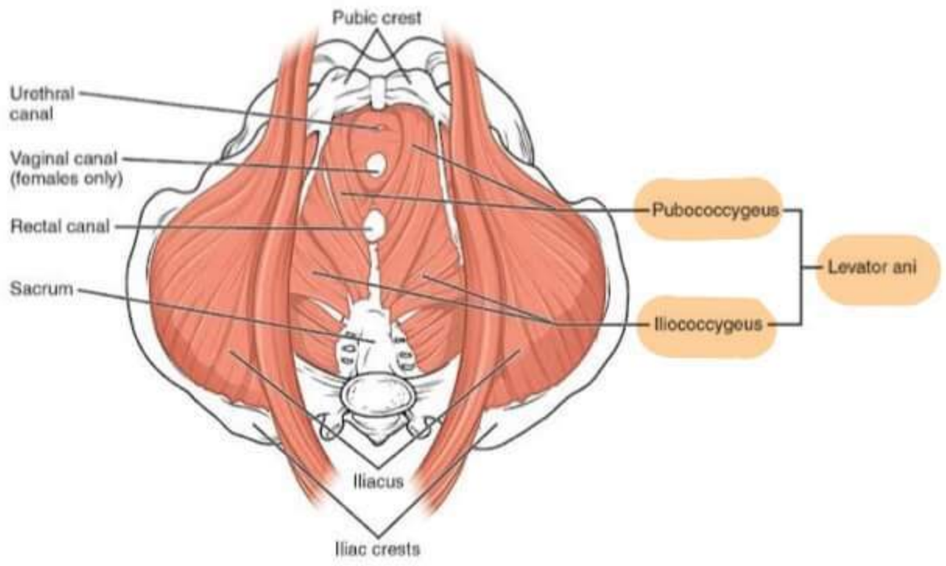
LIGAMENT SUPPORT



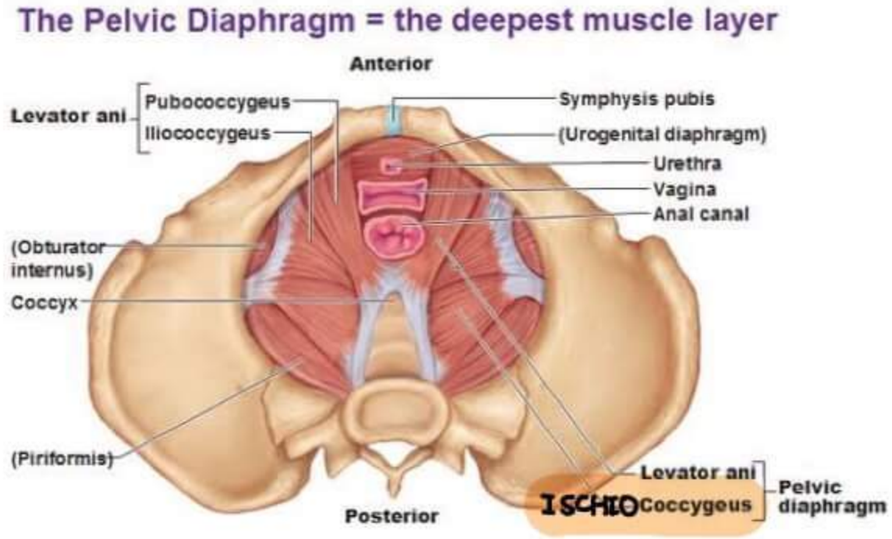


/ Mackenrodt's ligament ← most important among ligaments

MUSCULAR SUPPORT



The Pelvic Diaphragm = the deepest muscle layer



→ Muscles are the best supports of the uterus

CAUSES

→ Abnormal conduct of labour → most important cause

- Early bearing down
- prolong 2nd stage
- faulty instrumentatn
- early resumptn of work
- multiparity

→ connective tissue disorders

→ Spina bifida

→ ↑ abdominal pressure

- ascites
- chronic cough
- abdominal mass

EARLY BEARING DOWN [against the partly dilated [3cm or 5cm] cervix]

→ Leads to cervical streching / enlongation & cervical descent

→ In PAROUS PROLAPSE, usually cervical elongatn is present

PROLONGED 2nd STAGE OF LABOUR

→ in Primi → ≈ 1hr ; Upper limit is 2hr
in multi → ≈ ½ hr ; Upper limit is 1 hr

→ Ischemic damage of nerves causing Neuronal injury

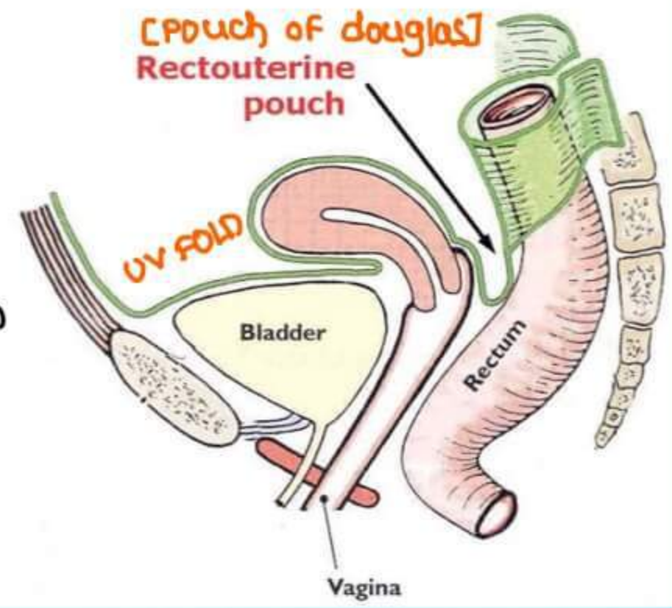
- Single most important injury predisposing to prolapse

FAULTY INSTRUMENTATION

→ Good instrumentatⁿ prevents prolapse

→ Faulty instrumentatⁿ causes prolapse

EARLY RESUMPTION OF WORK → < 6 wks of puerperium



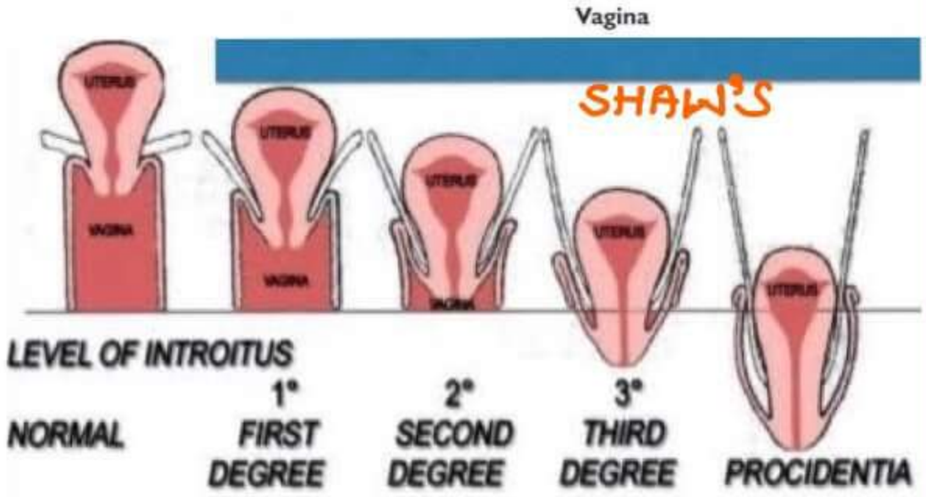
SHAW'S CLASSIFICATION

STAGE I → Cervix is just below the N level

STAGE II → Cervix is at introitus

STAGE III → Cervix is outside

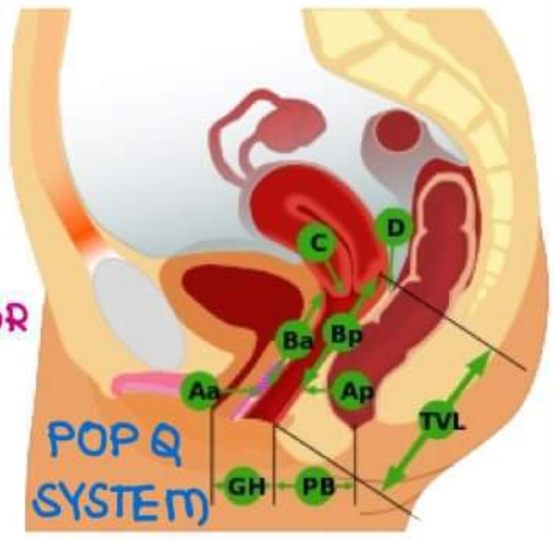
STAGE IV → PROCIDENTIA
[Full uterus has prolapsed]



POP Q SYSTEM

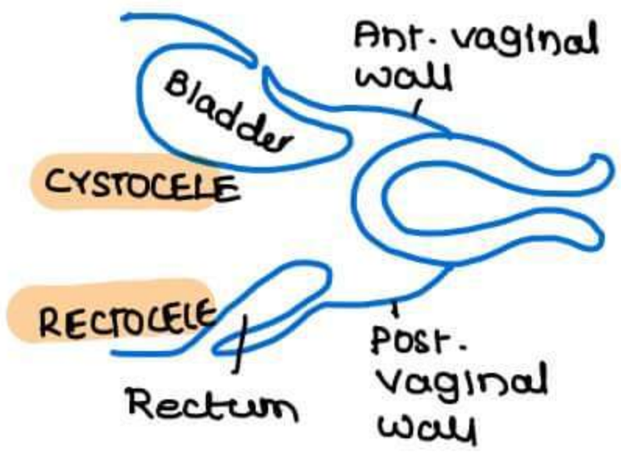
→ Pelvic Organ Prolapse Quantification System

→ Reproducibility is good & good for comparision



PARTS OF PROLAPSE WHEN YOU GO FROM ANTERIOR TO POSTERIOR

→ Anterior vaginal wall
Urethrocele
Cystocele
Uterus
Rectocele
Posterior vaginal wall



CYSTOCELE - COMPLICATIONS

→ Difficult in initiatⁿ of micturition

→ Retention of urine

→ Infection

→ Stone formatⁿ

RECTOCELE - COMPLICATIONS

→ Difficult initiatⁿ

→ Fecolith formatⁿ


REPOSITⁿ by PESSARY

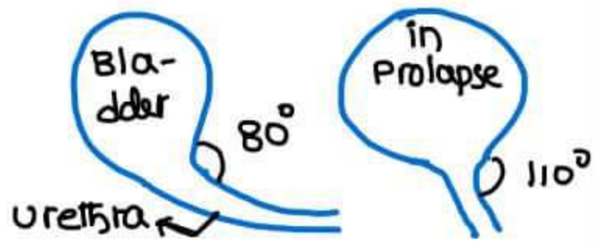
OTHER COMPLICATIONS

→ Venous congestⁿ dlt vaginal band → DEOXYGENATED UTERUS

→ DECUBITOUS / DEPENDENT ULCER [dlt venous congestⁿ]
- Rx → Repositioning ī Pessary

→ STRESS URINARY INCONTINENCE

→ Dragging sensatⁿ
Something coming out of vagina
} mc presentatⁿ
Sense of insecurity in the vagina / Perineum



PREVENTION OF PROLAPSE

→ Physiotherapy
- antenatal
- post natal

TREATMENT

→ Rx for elderly women [mc age group]

1 VAGINAL HYSTERECTOMY ī PELVIC FLOOR REPAIR
- → aka WARD & MAYO'S OPERATION
- → Hysterectomy done
- → Repositioned bladder & rectum
- → vault closure done
- → Anterior colporraphy done } PELVIC FLOOR REPAIR
- → Posterior Colpo perineorraphy done

→ VAULT PROLAPSE
- present in 3-4 months of surgery of WARD & MAYO'S OPERATⁿ
- dlt pressure by enterocele through peritoneal defects
- mc cause → neglected enterocele
- Prevented by High ligatⁿ or closure of peritoneal defect
- Rx by SACROSPINOPEXY / SACROPEXY
  - Repositⁿ the vault physically
  - tie the vault to ischial spines or uterosacral ligament

→ STRESS URINARY INCONTINENCE
- present by 2-3 weeks of Sx [hysterectomy]
- dlt improper anterior wall repair

→ Rx for younger women

FOTHERGIL REPAIR / MANCHESTER REPAIR
- → Reposit the uterus
- → DNC [Dilatation & curettage] to be done
- → DO cervical amputatⁿ for the lax / elogated cervix
- → ī Fothergil stich, support the uterus ī Mackenrodt' ligament
- → Pelvic floor repair done along ī fothergil stich
- → Reposit the bladder & rectum
- → Pioneered by DONALD in Manchester city Hospital

→ Rx for NULLIPAROUS PROLAPSE of very young women

SLING SURGERIES

→ Tie a sling to the posterior part of cervix & pull in & tie inside

→ SHIRODKAR SLING → tie to Anterior Longitudinal ligment
KHANNA'S SLING tie to Anterior Superior iliac spine
PURANDARE'S SLING rectus sheath

STRESS URINARY INCONTINENCE

→ d/t improper anterior colporraphy

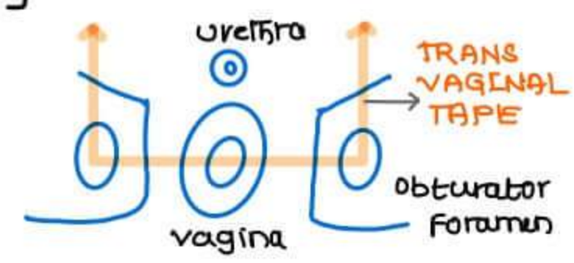
→ can be a complication in 2-3 wks after hysterectomy

→ Surgical Management

1 PEYRERA'S } - Needle suspenpension procedure
2 STAMEY'S } - uplifting of urethra

3 MMK'S COLPOSUSPENSION } uplifting of ant. vaginal wall
4 BURCH COLPOSUSPENSION }

5 TRANS VAGINAL TAPE
6 KELLY'S STITCH



- Plicate the paravesicle tissues under the bladder neck

→ BEST LONG LASTING RESULTS GIVEN BY COLPOSUSPENSION [upto 95%]

URINARY FISTULA IN OBSTETRICS

OBSTRUCTED LABOUR

→ No progress of labour inspite of GOOD UTERINE CONTRACTIONS
→ Rx by Cesarean Section
→ In the case of ischemic injury to vagina & bladder
  — 5-7 days later, Vesico vaginal fistula presents
  — Prevented by urinary catheterizatn from 14-21 Days

URINARY FISTULAS IN OBSTETRICS

CAUSES OF VESICO VAGINAL FISTULA

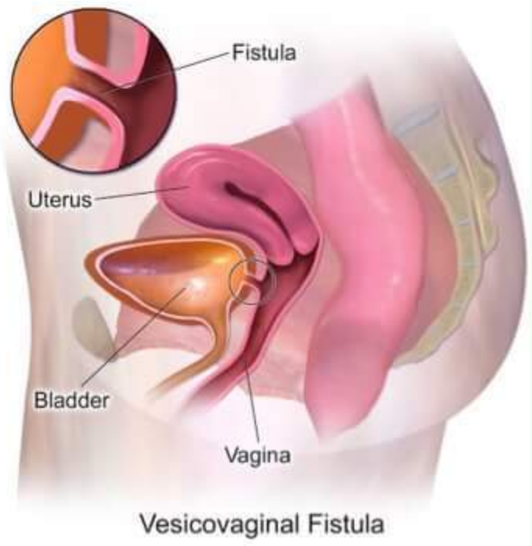
① OBSTETRIC CAUSES
- Obstructed labour
- Faulty instrumentatn
- Destructive operations

② GYNECOLOGICAL CAUSES
- Hysterectomy
- WERTHEIM → ureteric dissections

③ RADIATION INJURIES → painful fistula

PRESENTATION

→ constant dribling of urine
→ Vulva & thighs are excoriated
→ Splash dysuria
→ UTI



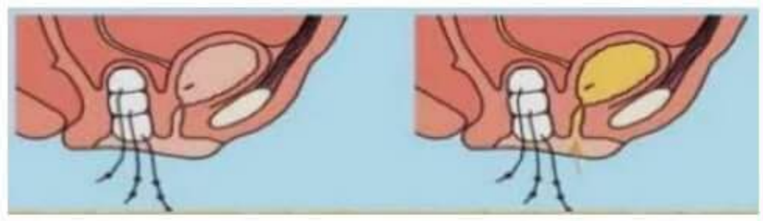
Vesicovaginal Fistula

TREATMENT

1 DIVERT THE STREAM → Ī catheter
2 ZINC CREAM ON THIGH → works as Emollient
3 ANTIBIOTICS
4 REPAIR
- Do not repair immediately
- wait for scarring to happen
- Wait for 2 ½ - 3 months

DIAGNOSIS

① 3 SWAB TEST
→ Methylene blue is injected into the bladder

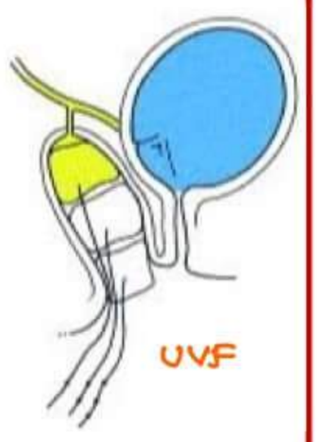

3 SWAB TEST

② Mid vaginal fistula
- mc in our country
- dlt obstructed labour

⑥ HIGH VAGINAL FISTULA
- d/t forceps
  vaginal hysterectomy

© LOW VAGINAL FISTULA
- d/t urethro vaginal fistula or
  Low vaginal fistula d/t radiatⁿ injury

→ Destructive operations can cause any type of fistula



CASE → Top most cotton ball is not blue in color but it is colourless but WET
- urinary source is not bladder
- Source is ureter → URETERO VAGINAL FISTULA
  - Leaking + continence +nt

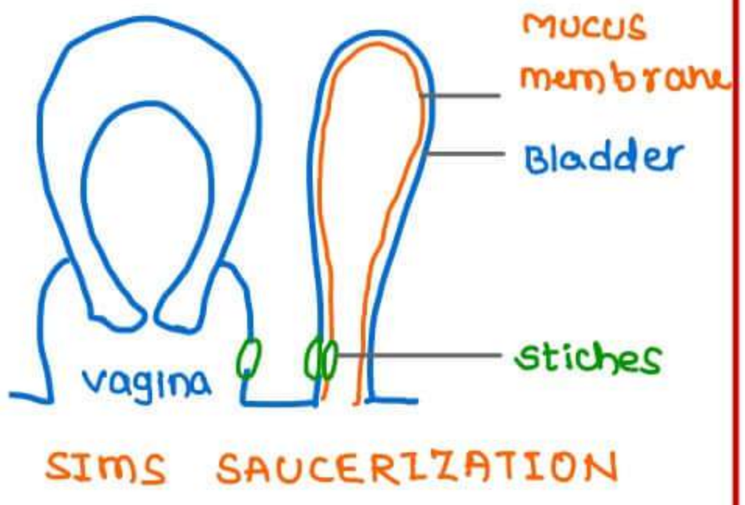
② DOUBLE DYE TEST
- Cotton balls in vagina
- Methylene blue in the bladder
- Pyridium tablets given orally → impart RED colour to urine
- Helps to Dx uretero vaginal fistula

③ Best diagnostic test for vesico vaginal fistula → CYSTOSCOPY
Best diagnostic test for uretero vaginal fistula → INTRA VENOUS UROGRAPHY

YUSSUF'S SYNDROME
→ Vesico uterine fistula
→ presents ↓ menouria

REPAIR

① SIMS SAUCERIZATION for VVF
- done under General anesthesia
- 3 circular stiches on
  - mucus membrane of bladder
  - Bladder
  - Vagina
- Done in KNEE CHEST POSITION



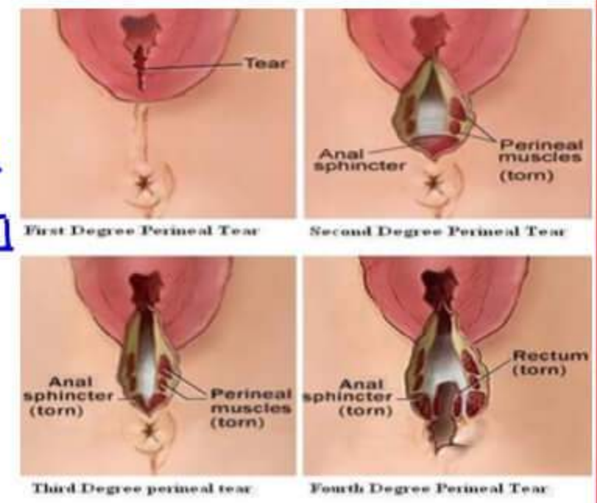
SIMS SAUCERIZATION

② LOW RECTO VAGINAL FISTULA REPAIR
- make it a complete Perineal Tear & repair

③ HIGH RECTO VAGINAL FISTULA REPAIR
- Divert the bowel → Colostomy
- Repair in layers

PERINEAL TEARS

- → Mucosal layer tear of vagina → TYPE I
- → mucosa + muscle tear → TYPE II
- → mucosa + muscle + Anal tear → TYPE III
  - <50% External anal Sphincter tear – III a
  - >50% External anal Sphincter tear – III b
  - Internal anal Sphincter tear – III c
- → mucosa + muscle + Anus + Rectal tear → TYPE IV



COMPLETE PERINEAL TEAR

- → TYPE III, TYPE IV } COMPLETE PERINEAL TEAR → Repair immediately

- → After 24 hrs in a Complete tear, there is colonizatn of cut ends
- → Will breakdown if repair
- → Wait for 2 1/2 – 3 months [atleast 6 wks]

EMERGENCY CONTRACEPTIVES

INTERCEPTION / EMERGENCY CONTRACEPTION / POST COITAL CONTRACEPTION

→ contraception within 72 hrs of unprotected intercourse

→ implantation of embryo takes place during 6 th day after intercourse. so, abortion cannot be done for these cases. Emergency contraceptives are preferred

→ ABORTION IS NOT A METHOD OF EMERGENCY CONTRACEPTION

DRUGS USED IN EMERGENCY CONTRACEPTION

1. LEVONORGESTREL

→ contains Progesterone

→ Dosage → 0.75 mg x 2 tablets
→ 1.5 mg of 1 tablet available now

→ MOA

1. ↓ LH → ↓ Ovulation → NO pregnancy

2. Progesterone → ↑↑ Endometrial secretion → TOO FLUFFY / OUT OF PHASE
ENDOMETRIUM → Difficult for embryo implantation

3. Progesterone → ↓ tubal motility → Late arrival of embryo into
uterus → NO IMPLANTATION

↳ Thickening of cervical mucus [This mechanism CAN NOT used for emergency contraception as the sperms have already crossed the cervix after intercourse

2. YUZPEE REGIME [COCP]

→ 2 pills given at morning, after 12 hrs of time other 2 pills are given

→ MOA

↳ COCP reduces ovulation

↳ COCP reduces chances of implantation by altering endometrium

→ SIE → ↑ vomiting

3. MIFEPRISTONE / RU 486 / ANTI PROGESTIN

→ MOA → reduces implantation

→ Dosage → 10 - 50 mg for emergency contraception

4. ULIPRISTAL ACETATE

→ Selective progesterone receptor modulator [SPRM]

→ Dosage → 30 mg , 1 tablet

→ ELLA → Brand name

→ Better than Levonorgestrel [as it is effective upto 5 days]

→ Not the DOC of emergency contraception dlt non regular availability in India

5. INTRAUTERINE CONTRACEPTIVE DEVICE [IUCD]

→ IUCD reduces implantation
→ useful upto 5 days [uniformly effective]
→ most effective method among emergency contraceptives, but not the best method as it requires insertion of device [not a comfortable procedure]

CRITERIA FOR DRUG OF CHOICE FOR EMERGENCY CONTRACEPTIVES

→ over the counter available drug
→ no prescription required
→ Easy to use

Best method of emergency contraception → Levonorgestrel
DOC of emergency contraception → Levonorgestrel
Brand name of Levonorgestrel → i - PILL

TYPES OF ORAL CONTRACEPTIVE PILLS

1. MONOPHASIC PILLS

→ Fixed dosage of Estrogen & Progesterone ∴ good control of cyclicity but not ∴ side effects
→ Eg. Oestrogen → upto 50 µg / day ; Progesterone → upto 1 mg/day

2. BIPHASIC PILLS

→ Fixed amount of estrogen while the amount of Progesterone is increased after mid cycle
→ Eg. Oestrogen → constant
Progesterone → 11 days at 50 µg, rest 10 days at 125 µg

3. TRIPHASIC PILLS

→ amount of Progesterone is constantly increased in 3 phases, while amount of estrogen may be fixed or variable by increasing little and back to original dosage

→ Eg. Estrogen → 30 µg | 40 µg | 30 µg
Progesterone → 50 µg | 75 µg | 125 µg

→ Triphasic pills are for better cyclic control & fewer side effects

LAPAROSCOPIC STERILIZATION

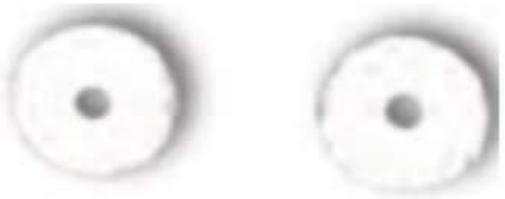
Laparoscopic sterilization done by using

1. LAPAROSCOPIC CLIPS

FILSCHE CLIPS (clips ∴out serrations)

HULKA CLEMENS CLIPS (clips ∴ Serrations)

2. LAPAROSCOPIC RINGS



FALLOPE RINGS

- → FALLOPE RINGS are silastic rings that are forced over the tube using Laprocator
- → Isthmus of fallopian tube is the area to be ligated for sterilization
- → A loop is made at the fallopian tube [near isthmus] & falope ring are forced at the base of the loop. They provide tight grip & cause ischemic necrosis of fallopian tube instataneously & the loop fall off

3. CAUTERIZATION

- → TYPES OF CAUTERY
  1. mono polar cautery
  2. Bipolar cautery

- → Fallopean tube is held b|w the prongs of cautery & high voltage current is passed which burn the tube at isthmus & also lateral side of tube [which makes it the last priority]

- → not recommended now - a - days
- → it has worst chances of reversibility

BEST RE-ANASTOMOSIS OF ANY TUBECTOMY PROCEDURE → LAPAROSCOPIC CLIPS
WORST RE-ANASTOMOSIS OF ANY TUBECTOMY PROCEDURE → CAUTERY

MONOPOLAR CAUTERY IS WORSE THAN BIPOLAR CAUTERY

BIPOLAR CAUTERY

- → current goes from one prongs to the fallopian tube & goes to the other prong & goes back to machine [generating to current]

MONOPOLAR CAUTERY

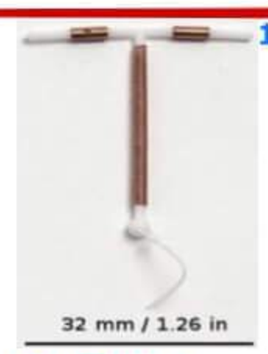
- → current flows through the instrument into the fallopean tube & into the earthling attached to patient
- → current dissipation is more in monopolar cautery

IUCDs [intra uterine contraceptive Devices]

- → FUNCTION → to induce foreign body action
  → uterus will contract to expel the FB [IUCD], thus the FB action will expel the embryo

- → 1st Generation IUCD → LIPPES LOOP [Inert]
- → 2nd Generation IUCD → COPPER DEVICES [multiload]
- → 3rd Generation IUCD → PROGESTERONE CONTAINING IUCDs

COPPER DEVICES | 2nd GENERATION IUCDs | CU 380 A



CU 380 A

- → A → Arms [contain copper]
- → 380 → amount of Cu in CU 380 A → 380 mm^2
- → Gold | Silver is impregnated in copper
- → can be used upto 10 yrs

MOA

- → Foreign body action & Aseptic inflammation of endometrium causing reduced chance of implantation & reduction of sperm motility & fertilization, Sperm destruction

HORMONE CONTAINING IUCDs | 3rd GENERATION IUCDs

1. PROGESTASERT

- → contains 38 mg Progesterone
- → 65 Mg of progesterone is released per day
- → can be used for 18 months

MOA

- → Foreign Body action to prevent pregnancy
- → cervical mucus thickening [major action]
- → Non receptive endometrium [↑ progesterone causes atropic endometrium]
- → Anovulation [40% of patients only]

2. LEVONORGESTREL CONTAINING IUC DEVICES [MIRENA]

- → contains 52 mg of progesterone
- → 20 µg of progesterone is released per day
- → can be used upto 5 years

USES

- → contraception
- → ↑ bleeding control

MOA

- → Foreign Body action to prevent pregnancy
- → cervical mucus thickening
- → Non receptive endometrium [major action]
- → Anovulation

SIDE EFFECTS OF IUCD

1. Bleeding
   - → mc side effect [3 times more common than Pain]
   - → Tranexamic acid & NSAIDs are given for 1st 3 cycles during periods
   - → Best time of insertion of IUCD → within last days of periods
2. Pain [2nd mc SIE]
3. Infection
4. PIDs [should be ruled out before inserting IUCDs]
5. Perforation [rare]

ECTOPIC PREGNANCY & IUCDs

→ CHANCE OF ECTOPIC PREGNANCY IF A NORMAL WOMEN CONCEIVES → 1-2%.

→ % OF TYPE OF PREGNANCY IF A WOMEN ī IUCD CONCEIVES

a. Intra uterine pregnancy → 95-96%

b. Ectopic pregnancy → 4-5%

→ CATCH POINT

→ incidence of pregnancy is less for women ī IUCD when compared ī Ⓝ women

→ therefore, incidence of ectopic pregnancy is also less for women ī IUCD when compared to Ⓝ women ī out IUCD

→ If a women ī IUCD is pregnant → Rule out Ectopic pregnancy

MANAGEMENT OF IUCD ī PREGNANCY

1. REMOVE IUCD → IUCD + Pregnancy → > 50% chances of abortion

2. MANAGE AS PATIENTS WISH

Wants to continue pregnancy
↓
continue pregnancy

does not Wants to continue pregnancy
↓
offer medical termination of pregnancy

3. IF THREAD NOT SEEN i.e. IUCD CAN NOT BE REMOVED

Wants to continue pregnancy
↓
continue pregnancy ī IUCD with advise of risk of abortion being 50% & risk of premature rupture of membranes
Anomalies can not happened ī IUCD

does not Wants to continue pregnancy
↓
offer medical terminatⁿ of pregnancy

4. MISSING IUCD

→ Advise patient that IUCD will expel spontaneously & ask them to feel for IUCD thread over vagina for the 1st 3 cycles.

→ If she can not feel for thread, in OPD, IUCD is removed ī the help of IUCD hook

→ Even if IUCD can not be removed using hook, use ultrasound | x-Ray of pelvis to locate IUCD.

→ some times, IF IUCD is perforated,

↳ First AP view of x-Ray is preferred to check whether IUCD is inside the body of patient.

↳ if IUCD present, then do lateral view of x-Ray to see wether IUCD is inside the uterus / outside the uterus

CONTRAINDICATIONS OF IUCDS

1. Pregnancy
2. Puerperal Sepsis
3. STD / PID
4. undiagnosed vaginal bleeding
5. Uterine anomalies
6. cancer of cervix
7. Cancer of Uterus

IMPLANTS


SUB DERMAL IMPLANTS

→ Progesterone containing devices
→ SUB DERMAL IMPLANTS
  ↳ inserted into arm of women
  ↳ very good control as contraceptive
  ↳ failure rate of implants is very low even when compared to vasectomy & tubectomy

NORPLANT

→ contains 36 mg of Progesterone & 6 rods [total → 216 mgs of Progesterone]
→ can be used for 5 years

NORPLANT II | JADELLE

→ contains only 2 rods → lesser discomfort for patients
→ contains 75 mg x 2 → 150 mg of Progesterone
→ can be used for 3 years
→ should be removed after 3 years surgically under Local anesthesia

IMPLANON

→ contains 68 mg of Etonogestrel
→ Etonogestrel is biological metabolite of Desogestrel
→ can be used for 3 years
→ has only one rod [less discomfort]
→ easy insertion & easy removal

NEXPLANON

→ Advance of implanon
→ has Barium Sulphate coated arm
→ Localization can be easier

COMMON SIDE EFFECTS OF IMPLANTS

→ Headache
→ Weight gain
→ vaginitis
→ irregular bleeding
→ Breast pain
→ Abdominal fullness, pain

COMMON SIE OF IMPLANTS → BREAK THROUGH BLEEDING

NUVA RING / VAGINAL RING


NUVA RING

→ contain Etonogestrel + Ethynyl Estradiol
→ can be inserted just before intercourse
→ Etonogestrel → 0.120 mg/day
  Ethynyl Estradiol → 0.015 mg/day
  } are released through the ring
→ works for 3 weeks
→ After removal, within a gap of 1 week, women will get her periods & then reinsertion can be done
→ conveniently used as they don't have to remember

SPONGE / TODAY


sponge | today

→ can be inserted first before intercourse into vagina
→ works for 24 hrs
→ contain Nonoxynol – 9 [spermicidal]
→ has band attached to it which makes it easy for removal

INJECTABLE PROGESTERONE

1. DMPA [DEPOT MEDROXYPROGESTERONE ACETATE]

→ contains 150 mg of Progesterone
→ Given once in 3 months

2. NET - EN [NOR ETHISTERONE ENANTHATE]

→ contains 200 µg of Progesterone
→ given once in 2 months.

MOA OF DMPA & NET - EN

continuous injection OF DMPA & NET-EN
↓
Endometrium becomes atrophic
↓
Reduces implantation
increases cervical mucus thickening
causes anovulation

EVRA PATCH

→ size of 4 cm approx. applied over the arm, abdomen
→ contains E. Estradiol & Norelgestromin
→ Ethynyl Estradiol of 20 µg & Norelgestromin of 150 µg per day are relased
→ has to be changed every week & the 4 th week is given as break & patient will have periods

BARRIER

→ most convenient contraceptives
→ Eg. condoms, Diaphragms

CONDOMS

→ not used as ideal method all the time
→ conveniently used for people having multiple partners
→ interferes ī pleasures
→ high failure rate

DIAPHRAGM / DUTCH CAP

→ convex part is facing outside ; hollow part fixes into the cervix
→ always used ī spermicidal cream| jelly [nonoxynol-9]
→ can be used during intercourse
→ For best effectivity → insert atleast 4 hrs prior to intercourse
→ should be removed within 6 hrs of intercourse
→ if not removed → Toxic shock Syndrome [dlt Staph. aureus (mc), Streptococcus [rarely] may occur

NATURAL METHODS OF PREVENTING PREGNANCIES

1. ABSTINENCE [no sex]
2. WITHDRAWAL TECHNIQUE
   - → pulling out before ejaculation
   - → DISADVANTAGES
     - ↳ pre - ejaculate can have sperms that can lead to pregnancy
     - ↳ high failure rate

3. RHYTHM METHOD / FERTILE PERIOD METHOD / SAFE PERIOD METHOD / CALENDAR METHOD
4. CERVICAL MUCUS METHOD / BILLING'S METHOD
   - → Thin cervical mucus / wet days → avoid intercourse
   - → Dry days [cervical mucus thick, very little → can have intercourse

5. BASED ON BASAL BODY TEMPERATURE
   - → Progesterone is a thermogenic hormone
   - → After ovulation, Progesterone cause rise in temperature by 0.5°F
   - → This alarms when to avoid intercourse ī partner
   - → ↑ failure rates → require lot of commitment & accuracy is less
   - → Pearl index → 60/100 women years

PEARL INDEX [Failure rates are described]

$$\text{PEARL INDEX} = \frac{\text{Total no. of accidental pregnancies}}{\text{Total months of exposure}} \times 1200$$

METHODS OF CONTRACEPTION	PEARL INDEX
IMPLANTS	0.05
VASECTOMY	0.1
TUBECTOMY	0.2
IUCD	0.5
COCP	0.5 - 0.6
LEVONORGESTREL	0.2
POP	1 - 2
BARRIERS [CONDOMES]	
→ Ideal usage	9
→ Typical usage	14 - 21

LONG ACTING REVERSIBLE CONTRACEPTIVES [LARC]

- → Levonorgestrel
- → Implant

- → Now-a-days, these are preferred over permanent sterilization procedures

BARRIERS

- → For making barriers more effective, spermicidal jellies are used

PROPER CONDOM USAGE

- → should be used on Fully erect penis
- → Reservoir not to be pushed over the glans & not to be checked for patency
- → After intercourse, withdraw penis in fully erect state

IN FOLLOW UP OF MOLAR PREGNANCY

→ should not conceive for next 6 months atleast

→ HCG from pregnancy & HCG from trophoblastic disease will be hard to differentiate. so, contraceptives are given for 6 months

→ contraceptive of choice → combined oral contraceptives

→ IUCDs not used as they can cause perforat^{n}

FOR PATIENTS ī HEART DISEASE

→ IUCDs are used [shorter threads]

↳ monofilaments are used now

↳ polyfilaments used earlier [↑ risk of ascending infection]

→ COCP, POP are not given [cause water retention]

FOR DIABETIC PATIENTS

→ COCP

→ IUCDs [preferred]

In UNCONTROLLED DIABETES

→ contraceptives can^{o}t be used

↳ Both Estrogen & Sugars are metabolized in liver

↳ ↑ sugar levels can disturb contraceptive usage

→ Barriers ī spermicidal jellies are preferred

IN STDs | HIV PATIENTS

→ Barriers ī spermicidal jellies are preferred

→ double barrier → both partner to wear condoms

FOR NEWLY MARRIED COUPLE → COCP

FOR COUPLES STAYING IN DIFFERENT CITIES

→ Barriers, emergency contraceptives, COCPs are not preferred

→ IUCDs [fill it, forget it] are most preferred

FOR POST NATAL / LACTATIONAL AMENORRHEA [within 6 wks of delivery]

→ COCPs are not preferred as they can cause lactational failure

↳ Estrogen will cause glandular proliferat^{n} → block Lactiferous ducts]

→ Progesterone only pills are preferred

→ Patients after 6 wks of delivery → IUCD is preferred

→ UNSAFE BELIEF → LACTATION ITSELF IS PROTECTION AGAINST PREGNANCY

↳ Prolactin → inhibits GnRH → FSH & LH not released → no ovulation

↳ But continous breastfeeding can only prevent ovulation, which is not possible

POST PLACENTAL IUCD

→ IUCD inserted in uterus after removal of placenta during delivery

→ During uterus contract^{n} after delivery [uterus involution], it may expel copper out.

→ But the expulsion rate is not found to be > 12 % [WHO]

ASHERMAN SYNDROME

ETIOLOGY

1. OVERZEALOUS CURRETTAGE done for
   - → AUB (Abnormal Uterine bleeding)
   - → MTP
   - → 2° PPH [dlt retained bits of Placenta]

   - → causes Scarring & Fibrosis of endometrium [no gland development further]
   - → Leads to 2° amennorrhea → ASHERMAN SYNDROME

2. ENDOMETRIAL TB → also causes ASHERMAN SYNDROME

CURRETTAGE DONE FOR 2° PPH IS MORE LIKELY TO CAUSE ASHERMAN SYNDROME

TREATMENT

1. Hysteroscopic Adhesiolysis
2. Follow ĩ High Dose Estrogens & Progestrones

TUBERCULAR PID

→ Incidence → 20-25% of women in India

PATHOGENESIS

→ Endometritis → Menorrhagia [initially]
↓
Endometrial destruct^{n}
↓
ASHERMAN SYNDROME → oligomenorrhea
Hypomenorrhea
Amenorrhea [mc]

→ Fallopian Tube
- ↳ Calcific, beaded, rigid tube
- ↳ Hydrosalpinx → TOBACCO POUCH HYDROSALPINX
- ↳ RETORT SHAPED HYDROSALPINX

TREATMENT

→ 4 Drugs for 2 months &
3 Drugs for 4 months

→ Do not stop the Rx in 1st trimester

PELVIC INFLAMMATORY DISEASE

CAUSES

- → Chlamydia → most prevalent ; Indolent
- → Gonorrhea → most common in OPD
- → Mycoplasma
- → TB
- → Ureaplasma
- → Bacteroide
- → Pepto streptococcus
- → **Bacterial vaginosis** [important cause]
- → Streptococcus

CLINICAL FEATURES

SYMPTOMS

- → Pain abdomen
- → congestive dysmenorrhea
- → Dysparunia
- → fever

SIGNS

- → Febrile
  - ↳ ADMIT IF
    - → temp > 38°C / 100.4°F
    - → Severe symptoms
    - → Suspicious pelvic abscess
    - → Unreliable
    - → uncertain diagnosis

- → ↑ CRP
- → Leucocytosis
- → On P/V
  - ↳ cervical motⁿ tenderness
  - ↳ Uterine tenderness
  - ↳ Adnexal tenderness

} CLINICAL TRIAD helps in Diagnosis

CERVICAL MOTION TENDERNESS ALSO BE SEEN IN RUPTURED ECTOPIC PREGNANCY

DIAGNOSIS

ADDITIONAL CRITERIA

1. CULTURE & SENSITIVITY OF
   - → Endometrical Biopsy
   - → vaginal swab
   - → Cervical Swab

   - → CULTURE MEDIAS FOR
     1. GONORRHEA → Thayer martin media
     2. CHLAMYDIA → Mc Coy cell Lines [PCR Preferred]

2. ↑ ESR / CRP
3. ↑ TLC
4. FEVER > 100.4° F [38°C]

ELABORATE CRITERIA

5. DIAGNOSTIC LAPAROSCOPY
   → gives direct evidence
   → Laparoscopy "IF DONE" is the best way to diagnose PID

6. USG → documents Pelvic / tubo ovarian abscess

DISCHARGE CRITERIA → Temperature < 99.5°F

TREATMENT

→ CENTRE FOR DISEASE CONTROL OF ATLANTA
   → IN PATIENT REGIMES
   → OUT PATIENT REGIMES

→ Broad spectrum antibiotics

OPD REGIME

→ CEFOXITINE 2gm iv or } 1 shot for gonorrhea
  CEFOTAXIME 1gm iv

→ DOXYCYCLINE 100gm BD x 14 Days → for chlamydia

→ METRONIDAZOLE 500mg BD x 14Days → for anaerobes
for Bacterial vaginosis

→ AZITHROMYCIN can be given instead OF DOXYCYCLINE
→ CLINDAMYCIN can be given instead of METRONIDAZOLE

VAGINITIS

PH of vagina → 4.5 [candidiasis can occur in acidic pH]

Bacterial vaginosis } can occur in Alkaline PH [>7]
Trichomoniasis } Alkalinity shift also predispose [5.5 or 6...]

AMSEL'S CRITERIA

→ useful in Dx of Bacterial vaginosis
→ ≥ 3 out of 4 are required

1. creamy discharge
2. WHIFF TEST ⊕
3. Fishy odour
4. CLUE CELLS

CANDIDIASIS

→ DIMORPHIC FUNGI
  Blastospores [Spread]
  Mycelia [invasⁿ & adherence]

→ curdy white discharge
  plaques on vaginal wall
  on removal → Petechiae

→ out of proportⁿ PRURITIS

→ complicated / uncomplicated

uncomplicated
- seen in Ⓝ women
- Good prognosis
- a/w albicans

complicated
- in immunocompromised [in DM, TB, pregnancy etc]
- Recurrent, Severe
- a/w non-albicans

→ TREATMENT
- AZOLES
- oral FLUCONAZOLE
- Rᵧ both ♂ & ♀

BACTERIAL VAGINOSIS

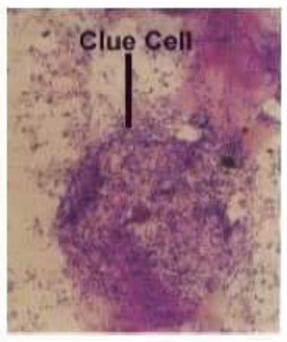
→ Hemophilus vaginalis
  aka Gardenella vaginalis

→ creamy discharge

→ WHIFF TEST → +ve
  - Secretⁿ + 10% KOH → amines

→ Fishy odour

→ CLUE CELLS - vaginal epithelium ī embeded bacteria



→ NO PRURITIS

→ TREATMENT
- METRONIDAZOLE
- Rᵧ the women [no sexual transmission]

TRICHOMONIASIS

→ by Trichomonas vaginalis
  flagellate protozoan
  motile organism
  causes severe irritatⁿ
  Causes Severe pruritis

→ COLPITIS MACULARIS [STRAWBERRY VAGINA]

→ Greenish yellow, frothy discharge

→ TREATMENT
- METRONIDAZOLE
- Rᵧ both man & woman

→ MC VAGINITIS → BACTERIAL VAGINOSIS

BACTERIAL VAGINOSIS can cause
- → PID
- → Relapse of PID
- → chorioamnionitis [PID in pregnancy] → Abortion, IU Death, Puerperal Sepsis
- → Vault cellulitis

→ WHIFF TEST CAN ALSO BE POSITIVE IN TRICHOMONIASIS
- As both Bacterial vaginosis & Trichomoniasis CO-EXISTS
- Classical for Bacterial vaginosis

→ Rᵧ the male partner also in Trichomoniasis

→ Rᵧ the male partner also in candidiasis