Structures in relation to pelvic floor

The superior surface is related to the following:

1. Pelvic organs from anterior to posterior are bladder, vagina, uterus and rectum.
2. Pelvic cellular tissues between the pelvic peritoneum and upper surface of the levator ani which fill all the available spaces.
3. Ureter lies on the floor in relation to the lateral vaginal fornix. The uterine artery lies above and the vaginal artery lies below it.
4. Pelvic nerves

The inferior surface is related to the anatomical perineum.

NERVE SUPPLY

It is supplied by the 4th sacral nerve, inferior rectal nerve and a perineal branch of pudendal nerve S2, 3, 4.

Functions

1. To support the pelvic organs - The pubovaginalis which forms a 'U' shaped sling, supports the vagina which in turn supports the other pelvic organs, bladder and uterus. Weakness or tear of this sling during parturition is responsible for prolapse of the organs concerned.
2. To maintain intra abdominal pressure by reflexly responding to its changes.
3. Facilitates anterior internal rotation of the presenting part when it presses on the pelvic floor.
4. Puborectalis plays an ancillary role to the action of the external anal sphincter.
5. Ischiococcygeus helps to stabilise the sacroiliac and sacrococcygeal joints.
6. To steady the perineal body.

PELVIC FLOOR DURING PREGNANCY AND PARTURITION

During pregnancy levator muscles hypertrophy, become less rigid and more distensible. Due to water retention, it swells up and sags down. In the second stage, the pubovaginalis and puborectalis relax and the levator ani is drawn up over the advancing presenting part in the second stage. Failure of the levator ani to relax at the crucial moment may lead to extensive damage of the pelvic structures. The effect of such a displacement is to elongate the birth canal which is composed solely of soft parts below the bony outlet. The soft canal has got deep lateral and posterior walls and its axis is in continuation with the axis of the bony pelvis.

BREASTS

The breasts, or mammary glands, are considered accessory organs of reproduction because of their functional relationship to reproduction, that is, to secrete milk for the infant (Fig. 1.8). The process is called lactation. The nipple, in the center of the breasts, is surrounded by a pigmented areola, which darkens during pregnancy. Montgomery's glands (Montgomery's tubercles) are small sebaceous glands in the areola that secrete a substance that lubricates and protects the breasts during lactation (when the infant sucks). Each breast is divided into a number of lobes (15 to 20), which can be visualized as a tree-like structure. They are separated by adipose and fibrous tissue. Beginning at the nipple are 10 to 20 branch like structures called lobes. Branching off from each lobe are 20 to 40 lobules; each lobule branches further, dividing into 20 to 80 sac like structures called alveoli. These sac like structures have a lining that contains tiny secretory cells called acini, which secrete milk. Surrounding the alveolar cells are contractile cells called myoepithelial cells, which contract the alveolus and eject milk into the reservoir called the lactiferous ducts. It is from these ducts that the infant, by sucking, gets milk through the nipple.

During pregnancy, high levels of estrogen and progesterone produced by the placenta inhibit milk secretion. After the expulsion of the placenta, there is an abrupt change in estrogen

developing blastocyst) is called the ***decidua basalis*** (Fig. 2.9). The part of the decidua that separates the embryo from the uterine lumen is called the ***decidua capsularis***, while the part lining the rest of the uterine cavity is called the ***decidua parietalis.*** The decidua basalis consists predominantly of large decidual cells which contain large amounts of lipids and glycogen (that presumably provide a source of nutrition for the embryo). The decidua basalis is also referred to as the decidual plate, and is firmly united to the chorion.

At the end of pregnancy, the decidua is shed off, along with the placenta and membranes.

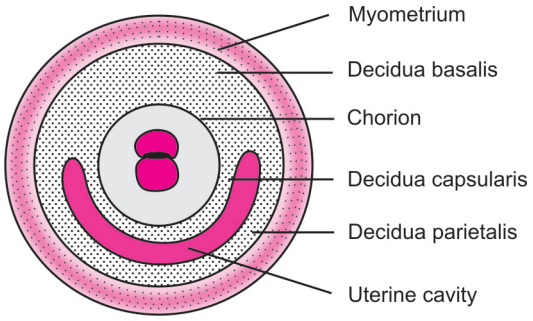


Fig. 2.9: Subdivisions of decidua

FORMATION OF CHORIONIC VILLI

The essential functional elements of the placenta are very small finger-like process or villi. These villi are surrounded by maternal blood. In the substance of the villi, there are capillaries through which the fetal blood circulates. Exchanges between the maternal and fetal circulations take place through the tissues forming the walls of the villi (Fig. 2.10).

The villi are formed as off shoots from the surface of trophoblast, along with the underlying extra-embryonic mesoderm, constitutes the chorion (the villi), the arising from it, are called chorionic villi.

The chorionic villi are first formed all over the trophoblast and grow into the surrounding decidua (Fig. 2.11). Those related to the decidua

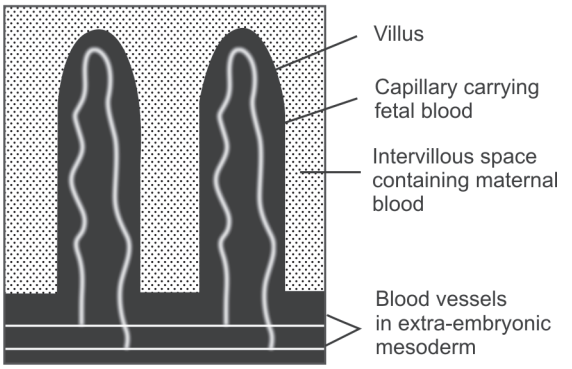


Fig. 2.10: Scheme to show that fetal blood circulating through capillaries of villi is in close relation to maternal blood in the transverse space

capsularis are transitory. After sometime they degenerate. This part of the chorion becomes smooth and is called the ***chorion laevae.***

The part of the chorion that helps form the placenta is called the ***chorion frondosum***.

The essential features of the formation of chorionic villi are as follows:

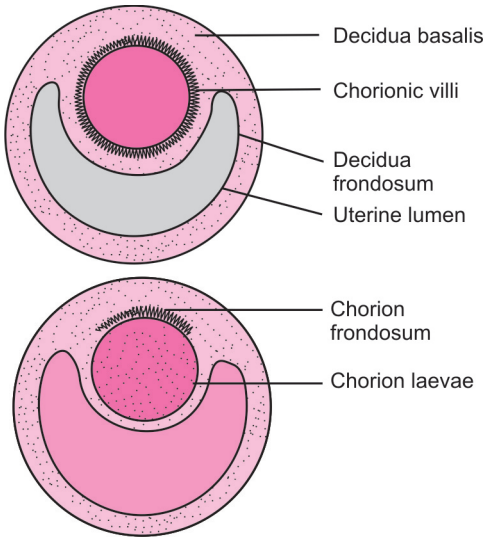


Fig. 2.11: Two stages in the formation of chorionic villi

The trophoblast is at first made up of a single layer of cells (Fig. 2.12). As these cells multiply, two distinct layers are formed. One continuous

MENSTRUAL DISORDERS

Menstrual disorders are the commonest gynecological problem among the women. The common menstrual disorders are:

- Amenorrhoea
- Dysmenorrhoea
- Metrorrhagia
- Menorrhagia
- Polymenorrhoea

1. AMENORRHOEA

Definition

Amenorrhoea is a symptom of absence of menses. This is not a disease but symptom of a disease.

Aetiology

Physiological amenorrhoea is caused by pregnancy, sometimes during lactation, after menopause and before menarche; pregnancy is the commonest cause of amenorrhoea.

Pathological amenorrhoea

I. Primary
II. Secondary

Primary amenorrhoea menarche does not appear in a girl who completed 18 year's age. The causes are grouped as:

1. Endocrinal

1. Hypothalamic

- obesity (>70 kg)
- Environmental change
- Anorexia nervosa in adolescents.
- Kallman's syndrome due to lack of hypothalamic GnRh—primary amenorrhoea, sexual infantilism and anosmia (loss of smell)
- Hydrocephalus
- Head injury, meningitis

2. Pituitary

- *Pituitary dwarf*
  - *Empty sella syndrome*—deficient pituitary tissue
  - Pituitary tumours (adenoma) as in acromegaly (growth hormone, tumour) Cushing syndrome
  - Hyperprolactinaemia
  - *Ovarian*
  - Polycystic ovarian syndrome
  - Testicular feminisation syndrome-gonad is testes, external genitalia female, uterus absent, there is androgen insen-sitivity to end organ tissues
  - ovarian tumours—arrhenoblastoma

3. Thyroid—hypo or hyperthyroidism
4. Adrenal—Congenital adrenogenital syndrome, adrenal tumours
5. Pancreas—Juvenile diabetes mellitus

I. **Nutrition:** Gross under nutrition in childhood and adolescence may cause amenorrhoea

II. **Drugs and disease**
Anabolic hormones GnRh analogue, Depoprovera in precocious puberty, testosterone, antipsychotic, antiepileptic drugs systemic diseases—tuberculosis of lungs, lymph nodes, bone, severe anaemia and other serious illness.

III. **Chromosomal** (a) Turner's syndrome (45×0)—streak gonad, absent breast, infantile uterus, primary amenorrhoea.

IV. **Uterovaginal atresia**
- Cyptomenorrhoea due to imperforate hymen
- Endometrial tuberculosis can be the cause in developing countries.
- Pregnancy is rarely encountered.

Secondary amenorrhoea common

This is cessation of menses for 3 months or more following normal menstrual cycles.

Causes are grouped as

I. Endocrinal
- Hypothalamic
- Anxiety, mental tension, environmental changes
- Obesity

- Breakthrough bleeding in oral contraceptive
- Post-IUCD bleeding.

Where the term is used for irregular vaginal haemorrhage, the vaginal and vulval growths, vaginitis, vaginal ulcer are the causes of metrorrhagia.

Treatment: The cause is investigated and appropriately treated.

4. MENORRHAGIA

Means excessive menstrual loss in amount or duration or both causing (more than 80 ml) blood loss. Menotaxis means prolonged menstruation in duration.

Aetiology

I. Pelvic causes
- Uterine fibroid
- Pelvic inflammatory disease, e.g. chronic salpingo-oophoritis, chronic endometritis (tubercular)
- Pelvic endometriosis, adenomyosis
- Endometrial polyps
- Carcinoma of the endometrium
- Uterine malformation, e.g. double uterus
- Intrauterine contraceptive device (IUCD)

II. Endocrinal disorders
- Dysfunctional uterine bleeding
- Polycystic ovarian syndrome (PCOS)
- Hypothyroidism.

III. Systemic diseases

a. **Blood disorders** (haematological)—purpura, leukaemia, some cases of moderate anaemia.

b. **General disease**
- Chronic hypertension
- Heart disease with chronic congestive failure
- Chronic nephritis
- Under nutrition
- Emotional disturbances like mental anxiety, sorrow, sexual excesses, etc.

IV. Drugs—prolonged taking of aspirin

5. DYSFUNCTIONAL UTERINE BLEEDING (DUB)

Definition

This is excessive menses more than 80 ml where no organic cause (systemic, haematological or pelvic) can be detected. The nature of bleeding is one of menorrhagia, polymenorrhoea, metrorrhagia and continuous bleeding preceded by amenorrhoea (metropathic bleeding).

Incidence

Dysfunctional uterine haemorrhage constitutes about 15–20 percent of all gynaecological admissions in an institution.

Aetiology

Dysfunctional uterine bleeding is due to
- Anovulation (85%) particularly during adolescent and premenopause, anovulatory DUB is painless.
- Mental anxiety

Histology

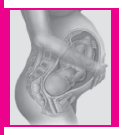
Endometrial pattern in DUB shows:
1. Proliferative endometrium in secretory phase (anovulation)
2. Secretary endometrium (ovulatory)
3. Endometrial hyperplasia and adenomatous hyperplasia, cystic glandular hyperplasia (metropathia) due to chronic anovulation.

METROPATHIA HAEMORRHAGIA (SCHRODER DISEASE)

Bleeding is painless. This is commonly seen in premenopause and adolescence. Chronic anovulation and prolonged oestrogen effect causes cystic glandular hyperplasia in endometrium and myohyperplasia in uterus.

Pathology of metropathia

1. The ovary, either one or both ovaries are more or less enlarged and contain unruptured cystic follicles with absence of active corpus luteum.
2. The uterus. This becomes uniformly but mildly enlarged due to myohyperplasia.



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