ANATOMICAL CHANGES & SEXUAL FUNCTION EVALUATION AFTER SACROSPINOUS LIGAMENT SUSPENSION IN TREATMENT OF VAGINAL VAULT PROLAPSE

Thesis

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Chapter (1)

ANATOMY OF THE EXTERNAL AND INTERNAL GENITALIA

External Genital Organs:

The female pudendum, or the external organs of generation, also called the vulva, comprises all the structures visible externally from the pubis to the perineum, i.e., the mons pubis, the labia majora and minora, the clitoris, the vestibule, the urethral opening, and various glandular and vascular structures (***Grant, 1993***).

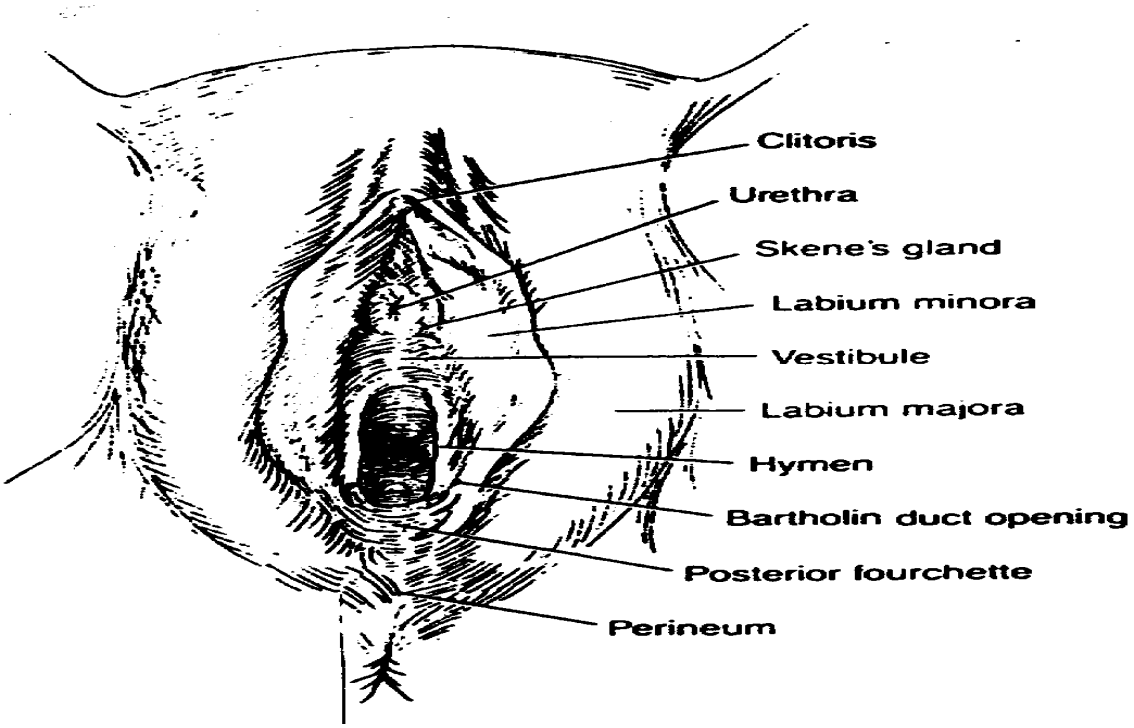


Fig (1) Vulva and perineum ***(Anderson 1996)***

1. **Mons Pubis:**

It is the most forward part of the vulva. It is formed of a pad of fat with overlying skin ***(Krantz, 1982).*** The skin in this prominence also known as the mons venires (Latin, “mountain of venues”) ***(Weingold, 1990).***

After puberty, the skin of mons pubis is covered by curly hair that forms the female escutcheon ***(Grant, 1993).*** The typical female escutcheon of hair over the mons is triangular and usually does not extend upward along the abdomen, although there is much variation depending on racial and familial traits ***(Sillman and Muto, 1995).***

2. Labia Majora:

The labia majora are two rounded folds of adipose tissue, covered with skin ***(Grant, 1993).***

Extending backwards from the mons pubis one on each side of the genital cleft surrounding the external genital organs ending in the perineum ***(Leavitt, 1986).***

It is approximately 7-9cm long, 2-4cm wide, and 1-1.5 cm thickness varying in size with higher weight, race, age and parity ***(Krantz, 1982).***

The labia majora are covered with coarse skin of the squamous epithelial nature and contain sebaceous glands, sweat glands, hair follicles and apocrine glands. At pubarche, hair appears on the outer surface of the labia majora, whereas the inner surfaces remain hairless and the skin is softer, moister and pinker. The inner surface is lubricated by secretions of sebaceous and other glands ***(Weingold, 1990).***

When unstimulated sexually labia majora normally meet in the midline providing protection to the external genital organs. Obstetric trauma may cause loss of integrity of labia majora and subsequent loss of protection to vaginal outlet. Thus the response patterns of the labia majora to effective sexual stimulation may be inforced markedly by the patient's obstetric history ***(Masters and Johnson, 1966).***

The blood supply of the labia majora is derived from the internal pudendal artery through the posterior labial branch and from a small branch of the obturator artery***(Sillman and Muto, 1995).*** The venous drainage is extensive in the form of a plexus. The veins communicate with dorsal vein of clitoris, the vein of the labia minora and the perineal veins, as well as with inferior hemorrhoidal plexus ***(Krantz, 1982).***

The nerve supply is from multiple sources. The pudendal nerve, derived from the second to fourth sacral nerves, gives of the perineal branch from which the posterior labial nerve arises. The latter innervates the labia majora and the lateral portion of the urethral triangle. There is adjunctive innervations from the ilioinguinal, internal branch of the genitocrural and the genital branch of the lesser sciatic (posterior femoral cutaneous) nerves ***(Sillman and Muto, 1995).***

3. Labia Minora:

The labia minora are two flat, reddish folds of tissue, visible when the labia majora are separated. They vary greatly in size and shape. In nulliparous women, the labia minora usually are not visible behind the non-separated labia majora, whereas in multiparous women, it is common for the labia minora to project beyond the labia majora ***(Grant, 1993).***

They extend from the clitoris posteriorly to about two-thirds of the distance toward the perineum. Anteriorly, the labia minora join together and in so doing, split to form two folds, one fold covering the glans of the clitoris to form its prepuce(hood of clitoris) (Latin, "foreskin"), the other passing beneath the glans

to form the frenulum (Latin, “a small bridle”). The labia minora are formed of non keratinized skin without hair follicles but very rich in sebaceous glands. The labia are extremely vascular with a predominance of veins surrounded by elastic tissue. They are therefore erectile during sexual excitation, although the degree of erectility is not comparable to that of the clitoris ***(Weingold, 1990).***

The main source of arterial supply is through anastomosis from the superficial perineal artery, which is a branch from the dorsal artery of the clitoris, and from the medial aspect of the rete of the labia majora. The venous drainage is to the vaginal veins, directly to the veins of the labia majora, to the inferior hemorrhoids posteriorly, and to the clitoral veins superiorly. The innervation of the labia minora originates in part from fibers that supply the labia majora and from branches of the pudendal nerve as it emerges from the pudendal canal ***(Leavitt, 1986).***

Immediately preceding and during coitus the labia become moist and lubricated with secretions from vestibular and sebaceous glands ***(Sillman and Muto, 1995).*** During intercourse the penis thrusts into the vagina and traction is placed on the labia minora pulling the hood down over the clitoris. As the penis withdraws from the vagina the traction is decreased and the hood slides back over the clitoris. This movement of the hood back and forth over the clitoris is an important source of sexual arousal ***(Masters and Johnson, 1962).*** Like the clitoris, the labia minora are full of touch and sexual stimulating corpuscles, their rich blood supply makes them flare and swell early in the sex act ***(Karim, 1988).*** The labia minora have specific importance in the process of urination. Following vulvectomy, uncontrolled “spraying” is common ***(Sillman and Muto, 1995).***

4. The Clitoris:

The clitoris (Greek, “shut up” or “concealed”) is a small, cylindrical erectile organ ***(Weingold, 1990)***, lying in the front of the symphysis almost hidden by the foreparts of the labia majora. It has a glans, prepuce, body and two crura (corpora cavernosa) which attach it to the pubic bones. Only the glans and prepuce are visible, but the body is palpable against the symphysis pubis as a small cord-like structure ***(Tindall, 1987).***

The crura are 3-4cm long in the flaccid state but in erection are4.5-5cm long. The body is 2.5-3cmin length and is surrounded by a connective tissue capsule of fibroelastic tissue termed the clitoridean fascia ***(Leavitt, 1986).***

The clitoris is made up of erectile tissue, with many large and small venous channels surrounded by extensive bundles of involuntary muscle tissue. The erectile tissue is arranged in the two corpora cavernosa. During coitus, it becomes erect and plays a considerable part in inducing female orgasm. The clitoris is richly supplied with nerves, making it the most erotically sensitive part of the vulva ***(Grant, 1978).***

Blood supply to the clitoris is from dorsal artery of the clitoris, a terminal branch of the internal pudendal artery, which is the terminal division of the anterior division of the internal iliac artery. Venous drainage of clitoris begins in rich plexus around the crura of the glans to join the pudendal plexus. The innervation of the clitoris is through the terminal branch of the pudendal nerve. It terminates in branches within the glans, crura and prepuce ***(Krantz, 1982).***

The function of the clitoris is that of a sexual "nerve center". Before contact, sexual stimulation causes vascular engorgement and enlargement, so that when the penis is inserted the clitoris becomes particularly sensitive to the motion of the shaft.. Orgasm in the female may be brought about by this stimulation even in the absence of the vagina and consists of an interrelated reflex resulting in forceful contractions of voluntary and involuntary musculature of the pelvis and pelvic viscera. After orgasm has been experienced and a conditioned reflex established, the presence of the clitoris is not absolutely necessary. Women who have had vulvectomy with excision of the clitoris are capable of experiencing orgasm. However, major sexual problems are common, as they are with women who have undergone "female circumcision" ***(Sillman and Muto, 1995).***

5. Vestibule:

The definition of vestibule (Latin, "vestibulum" meaning a forecourt or a hall next to the entrance) ***(Tindall, 1987).*** The vestibule is the space lying between the anterior inner aspects of the labia minora and is bounded posteriorly by the vaginal introitus ***(Weingold, 1990).***

It is usually perforated by six openings: the urethra, the vagina, the ducts of the two bartholin glands, and at times, the ducts of the two Para urethral glands, also called skene's ducts and glands ***(Grant, 1993).***

6. Vestibular Bulb:

The two bulbs are collections of erectile tissue, each passes backwards from the root of the clitoris, lying deep to the bulbocavernosus muscle (sphincter vaginae) but superficial to the lower layer of the triangular ligament (urogenital diaphragm), the compressor urethrae (external urethral sphincter) and the deep transverse perineal muscles ***(Tindall, 1987).***

7. Bartholin's Glands:

Bartholin's glands (named for Casper Bartholin, Jr., Danish anatomist, 1655-1738) ***(Weingold, 1990).*** A pair of small compound glands about 0.5-1 cm in diameter, each of which is situated beneath the vestibule on either side of the vaginal opening ***(Grant, 1993).***

The glands are normally small and can be palpated only in rather thin women or if enlarged by inflammation or tumor. The duct openings are in the posterior introitus. Rapid growth occurs at puberty and shrinkage occurs after menopause. Microscopically, the glands show a single layer of high columnar epithelium in the alveoli but the duct is lined by transitional epithelium except for a short invagination of stratified squamous epithelium at the orifice ***(Leavitt, 1986).***

The secretion is colorless and mucoid. . It is produced mainly in response to sexual excitement when considerable amounts are exuded into the vulva to act as a lubricant for coitus ***(Weingold, 1990).***

The blood supply comes through small branch on the bulbocavernosus muscle and venous drainage with that of bulbocavernosus body ***(Tindall, 1987).***

8. Urethra:

The lower two-thirds of the urethra lies immediately above the anterior vaginal wall and terminates externally at the urethral meatus ***(Grant, 1993).*** The urethra meatus is a small slit like external orifice of the urethera (Greek, ouros, “drizzling rain”). Just below the outer part of the urethral meatus are the orifices of the paraurethral or skene’s ducts (Alexander skene, American gynecologist, 1838-1900), which run below and parallel to the urethra for a distance of 1.5 cm ***(Weingold, 1990).***

9. Vaginal Orifice:

The vaginal orifice is bordered by the vestibule anteriorly, the labia minora laterally, and the fourchette posteriorly ***(Weingold, 1990).***

It varies considerably in size and shape. In virginal women, it most often is hidden entirely by the overlapping labia minora, and when exposed it usually appears almost closed by the hymen ***(Grant, 1993).*** A delicate incomplete membrane that has one or more apertures to permit the outflow of menstrual blood. The membrane is composed of firm connective tissue covered on both sides by stratified squamous epithelium. It is relatively avascular so that its tearing at the initial attempts at coitus results in only slight loss of blood, the tear is most commonly found posteriorly or posterolaterally. During childbirth, the hymen is destroyed, its remains being a few tags around the vaginal orifice, the carunculae myrtiformes (Latin,” little piece of flesh”) ***(Weingold, 1990).***

10. Perineum:

The perineum (Greek, “around evacuation”) comprises the less hairy skin and subcutaneous tissue that lie between the vaginal orifice and the anus, covering the muscular perineal body. Its length, which varies from 2-5 cm or more, influences the resistance it offers and the injuries it sustains during child birth ***(Weingold, 1990).***

Some gynecologists regard the perineum as part of the vulva, and many include under this term the perineal body (central tendon of the perineum) as well as the overlying skin. To anatomists, “perineum” means all structures within the bony outlet of the pelvis ***(Tindall, 1987).***

Changes in the vulva with age and parity:

The tissues of the vulva are sensitive to sex hormones, especially estrogens, so their anatomy and function change with age and the endocrine environment ***(Tindall, 1987)***

The skin of the labia majora and the mons pubis is devoid of hair in infancy and childhood. The labia majora are plump in the neonate and tend to obscure the surprisingly well developed labia minora. Soon after the neonatal period, this relative hypertrophy disappears so that the labia minora and the clitoris appear relatively prominent ***(Weingold, 1990).***

During childhood, the skin of all the tissues is thin and delicate and that of the vestibule reddish in colour ***(Tindall, 1987).*** At pubarche, the subcutaneous fat in the mons and labia majora reappears along with the growth of hair. The labia minora and vaginal orifice become less apparent or hidden ***(Weingold, 1990).***

After mechanical disruption of the hymen, the next major alteration in the vulvar tissue results from childhood. The fourchette and the more external fossa navicularis are generally obliterated during delivery. The perineum is often lacerated, resulting in scarring and a significant reduction in its anterior-posterior length. This results in a widening of the vaginal orifice and greater exposure to the vaginal canal because of separation of the posterior labia majora ***(Weingold, 1990).***

In old age all the tissues atrophy and the skin becomes drier, thinner and glazed. The subcutaneous fat is lessened except in obese women. The labia minora shrink and may almost disappear. The vaginal orifice tends to contract. Pubic hair becomes sparse ***(Tindall, 1987).***

Female internal genitalia

1. The Vagina:

The vagina (Latin, “sheath”) is an elastic musculomembranous canal that connects the vulva with the uterus ***(Weingold, 1990).***

It is the interface between the environment and the generative tract. Its functions are to provide an outflow duct for menstrual discharge, to receive the penis during intercourse, and to form the lowermost part of the birth canal. Clinically it provides access to upper genital tract structures ***(Bengtson, 1995).*** (Fig. 2).

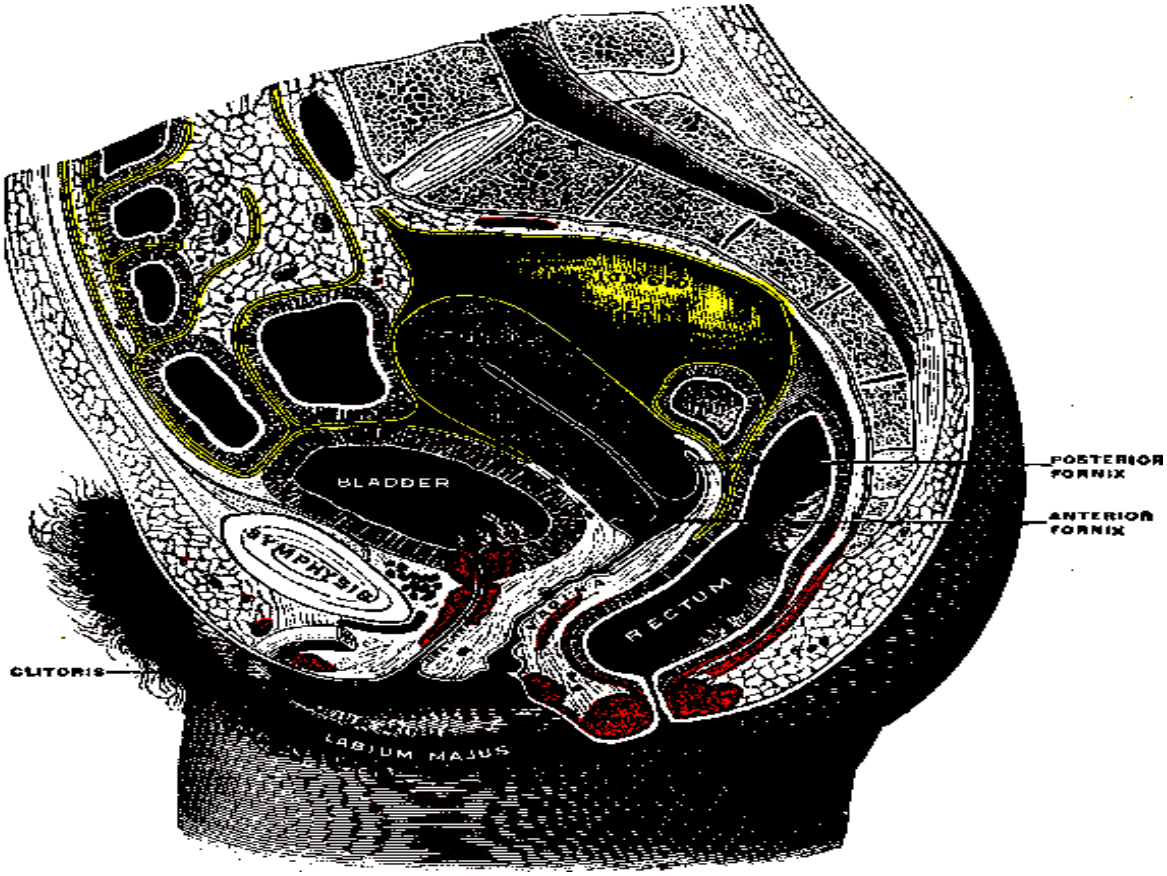


fig (2) Sagittal section of female pelvis ***(Gray Henry 1918)*.**

In the dorsal lithotomy position, the vagina is directed posteriorly toward the sacrum, but its axis is almost horizontal in the upright position ***(Anderson, 1996).***Superiorly the uterine cervix projects into the vagina through its anterior wall. The axis of the vagina forms an angle of approximately 90 degrees with the axis of the cervical canal ***(Bengtson, 1995).***

The vault of the vagina is divided into four areas according to their relations to the cervix: The posterior fornix, which is capacious, the anterior fornix, which is shallow, and two lateral fornices ***(Tindall, 1987).***

The vagina pierces the triangular ligament and the pelvic diaphragm at approximately 1 and 2.5 cm, respectively, form its external orifice ***(Weingold, 1990).*** The posterior wall of the vagina is longer than the anterior wall by approximately 3 cm due to the anterior attachment of the cervix ***(Tindall, 1987).*** The average vaginal length of the posterior vagina is stated by Dickinson to be approximately 9 cm, Masters and Johnson (1966) put the posterior vaginal length as 7 to 8 cm, which increased to 9.5 to 10 cm during the sexual excitement phase, and the width 3 to 4 cm, which also increases during the excitement phase ***(Given et al., 1993).***

The vagina is not of uniform caliber, being nearly twice as large in its upper part and somewhat flask shaped ***(Weingold, 1990).*** Introital caliber may vary more than vaginal length, depending on factors such as parity, menopause, estrogen status, integrity of the perineal body and anal sphincters ***(Weber et al., 2000).***

If the walls are separated, the vagina of the nulliparous married woman has a diameter of approximately 4-5 cm, at its lower end and is twice as wide at its upper end. Marriage and regular coitus result in some stretching of the vaginal walls, and this increased by childbearing. After the menopause it undergoes contracture in length and width, but this change is to some extent counteracted by the continuance of regular coitus ***(Tindall, 1987).***

The perineal muscles cause a relative constriction of the outlet diameter. The mid portion is flattened when relaxed, which creates only a potential space ***(Bengtson, 1995).***

Although the width and length of the vagina show considerable individual variations, anatomical shortness or narrowness is rarely a cause of difficulty or pain on coitus because the vagina is distensible and accommodates itself ***(Tindall, 1987).*** Stretching is allowed by the presence of multiple circumferential folds of rugae in the vaginal wall, the rugae become less prominent after menopause ***(Bengtson, 1995).***

The vagina is closely applied anteriorly to the urethra, bladder neck and trigonal region, and posterior bladder; posteriorly, the vagina lies in association with the perineal body, anal canal, lower rectum and posterior cul-de-sac. It is separated from both the lower urinary and gastrointestinal tracts by their investing layers of endopelvic fascia ***(Berek, 1996).***

The vagina is kept in its position by two systems, one from above (cardinal ligament, or parametrium, along with the connective tissue attachment between the vaginal sulci and the arci tendineus) and one from below levator muscle or pelvic diaphragm). Genital prolapse can render either one or both mechanisms ineffective ***(Reiffenstuhl, 2000).***

Significance of Restoration of Normal vaginal Depth and Axis:

Colpography demonstrates an almost horizontal axis to the normal upper vagina of the patient in standing position, which is accentuated by straining.

The upper vagina and the rectum lie upon the similarly horizontal levator plate, formed posterior to the rectum by the fused levator ani muscles. Radiographic colpography demonstrated the presence of a distinct, superiorly convex, perineal curve in the sagittal plane of the lower vagina. The upper third of the vagina lies in an almost horizontal axis, even with the patient in a standing position. The upper vagina lies on the rectum which, in turn, lies upon and parallel to the levator plate. Indeed, it is the horizontal position of the supporting levator plate which accounts for a similar axis in the upper vagina. The cervix and upper vagina, though movable, are held over the levator plate posterior to the genital hiatus by the cardinal and uterosacral ligaments. Pathologic elongation of these ligaments may permit the vagina to invert. As from obstetric damage, the mobility of the cervix may be so great as to permit it to slide anteriorly, even, under some circumstances, over the edge of the levator plate. This relationship permits inversion of the upper vagina and accounts for one form of genital prolapse. A postoperatively shortened vagina, ending anterior to the levator plate, will prolapse more readily than will a long vagina. This is because intra-abdominal pressure tends to push the shortened vaginal vault over the edge of the genital hiatus. Prolapse of the vagina will be even more likely to develop if support of the levator plate is defective

The levator plate is formed by the fused levator ani muscles which extend posteriorly from the point of midline fusion, just behind the levator hiatus, to their coccygeal insertion. The rectum, vagina and urethra pass through the hiatus. If the levator ani muscle is defective, the inclination of the plate will be downward and the hiatus will sag. If, in addition, the axis of the levator plate is defective, prolapse is even more likely to develop. Postoperative recurrent prolapse is less likely to develop when the goal of the vaginal reconstructive operation is to maintain depth and reconstitute the horizontal upper axis.***(Nichols and Randall 1996; Funt et al., 1978).***

To further understanding of the vaginal anatomy, histologic examination of a vagina from autopsy specimens demonstrated that the three vaginal layers are mucosa, muscularis and adventitia as reported by ***(Weber and Walters (1997).***

The mucus membrane is composed of a non keratinized stratified squamous epithelium and a lamina propria ***(Bengtson, 1995).*** The vaginal epithelium undergoes cyclic histologic change in association with menstruation. Under normal conditions, the surface is devoid of keratin, but it is capable of becoming keratinized under chronic irritative stimulation, such as in vaginal prolapse ***(Weingold, 1990).***

The lamina propria is a dense layer of fibroblastic tissue generously supplied with blood vessels and lymphatics. It functions as erectile tissue during sexual arousal ***(Bengtson, 1995).***

There are no glands in the vagina under normal conditions, the vagina is lubricated by secretions from the cervix and bartholin's glands ***(Kistner, 1986).***

Although it may in part represent a transudate, the vaginal secretion arises mainly from the constant breakdown of superficial epithelial cells ***(Tindall, 1987).*** The pH of the vaginal secretion averages 4.5, this acidity accounts for the relative resistance of the adult vagina to infection ***(Weingold, 1990).***

The amount and composition of vaginal fluids are influenced by the hormonal status and by the presence of erotic stimuli. Estrogen deprivation causes a decrease in blood flow to the paravaginal tissues and thus depresses production of vaginal fluids in basal and aroused states. These changes are typically seen in postmenopausal states, they may also occur in pregnancy, lactation and other progesterone dominant states. Clinically, hypoestrogenism is associated with atrophic vaginitis, symptoms include painful intercourse (dyspareunia), dryness and abnormal bleeding. The treatment includes local or systemic estrogen, vaginal lubricants are available to women who cannot use estrogen ***(Bengtson, 1995).***

The vagina not only secretes, it absorbs water, electrolytes and substances of low molecular weight. This property is utilized when therapeutic agents such as estrogens and glucose are administrated locally. Absorption are believed to occur mainly in the lateral recesses of the lower vagina ***(Tindall, 1987).***

Deep to the mucous membrane is the muscularis that consists of an inner circular and outer longitudinal layer of smooth muscle. The layers are not distinguished by interposed fascial fibers ***(Bengtson, 1995).***

The adventitial coat is an outer layer of dense connective tissue in which there are numerous blood vessels and nerves. It blends imperceptibly with the perivaginal (rectovaginal and vesicovaginal) fascia and is in itself supportive ***(Kistner, 1986).***

The blood supply of the vagina includes the vaginal artery and branches from the uterine, middle rectal and internal pudendal arteries. The innervation of the vagina is as follows: The upper vagina – uterovaginal plexus; the distal vagina – pudendal nerve ***(Berek, 1996).***

Marriage and regular coitus result in some stretching of the vaginal walls, and this is increased by childbearing. Repeated childbirth leads to obliteration of the rugae and the vagina becomes a smooth-walled and rather patulous canal. After the menopause it undergoes contracture in length and width, but this change is to some extent counteracted by the continuance of regular coitus. The fornices become shallow, however, and the cervix no longer projects far into the vault. The vagina is said to become tent-shaped ***(Tindall, 1987).***

Anatomy of the uterus:

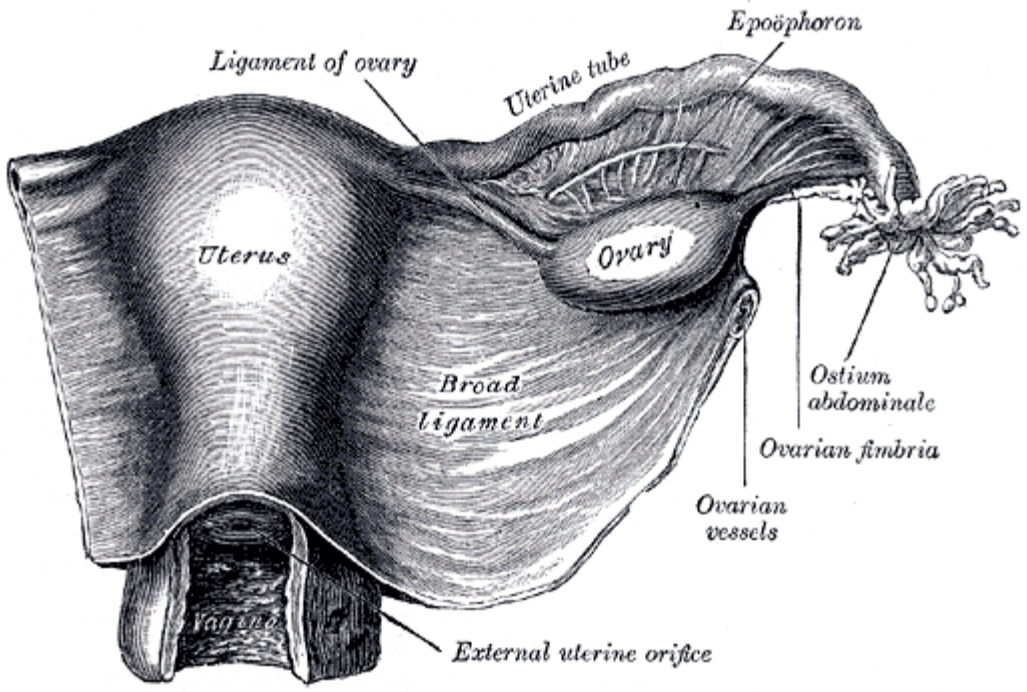
The **uterus** is a hollow, thick-walled, muscular organ situated deeply in the pelvic cavity between the bladder and rectum. Into its upper part the uterine tubes open, one on either side, while below, its cavity communicates with that of the vagina.*In the virgin state* the uterus is flattened antero-posteriorly and is pyriform in shape, with the apex directed downward and backward. It lies between the bladder in front and the pelvic or sigmoid colon and rectum behind, and is completely within the pelvis, so that its base is below the level of the superior pelvic aperture. Its upper part is suspended by the broad and the round ligaments, while its lower portion is imbedded in the fibrous tissue of the pelvis. The long axis of the uterus usually lies approximately in the axis of the superior pelvic aperture, but as the organ is freely movable its position varies with the state of distension of the bladder and rectum. Except when much displaced by a fully distended bladder, it forms a forward angle with the vagina, since the axis of the vagina corresponds to the axes of the cavity and inferior aperture of the pelvis. The uterus measures about 7.5 cm. in length, 5 cm. in breadth, at its upper part, and nearly 2.5 cm. in thickness; it weighs from 30 to 40 gm. It is divisible into two portions. On the surface, about midway between the apex and base, is a slight constriction, known as the **isthmus,** and corresponding to this in the interior is a narrowing of the uterine cavity, the **internal orifice** of the uterus. The portion above the isthmus is termed the **body,** and that below, the **cervix.** The part of the body which lies above a plane passing through the points of entrance of the uterine tubes is known as the **fundus.Body (*corpus uteri*).**—The body gradually narrows from the fundus to the isthmus. The **vesical** or **anterior surface** (*facies vesicalis*) is flattened and covered by peritoneum, which is reflected on to the bladder to form the vesicouterine excavation. The surface lies in apposition with the bladder. The **intestinal** or **posterior surface** (*facies intestinalis*) is convex transversely and is covered by peritoneum, which is continued down on to the cervix and vagina. It is in relation with the sigmoid colon, from which it is usually separated by some coils of small intestine.

The **fundus** (*fundus uteri*) is convex in all directions, and covered by peritoneum continuous with that on the vesical and intestinal surfaces. On it rest some coils of small intestine, and occasionally the distended sigmoid colon. The **lateral margins** (*margo lateralis*) are slightly convex. At the upper end of each the uterine tube pierces the uterine wall. Below and in front of this point the round ligament of the uterus is fixed, while behind it is the attachment of the ligament of the ovary. These three structures lie within a fold of peritoneum which is reflected from the margin of the uterus to the wall of the pelvis, and is named the **broad ligament**

Cervix (*cervix uteri; neck*).—The cervix is the lower constricted segment of the uterus. It is somewhat conical in shape, with its truncated apex directed downward and backward, but is slightly wider in the middle than either above or below. Owing to its relationships, it is less freely movable than

the body, so that the latter may bend on it. The long axis of the cervix is therefore seldom in the same straight line as the long axis of the body. The long axis of the uterus as a whole presents the form of a curved line with its concavity forward, or in extreme cases may present an angular bend at the region of the isthmus. The cervix projects through the anterior wall of the vagina, which divides it into an upper, supravaginal portion, and a lower, vaginal portion.

The **supravaginal portion** (*portio supravaginalis* [*cervicis*]) is separated *in front* from the bladder by fibrous tissue (**parametrium**), which extends also on to its *sides* and lateralward between the layers of the broad ligaments. The uterine arteries reach the margins of the cervix in this fibrous tissue, while on either side the ureter runs downward and forward in it at a distance of about 2 cm. from the cervix. *Posteriorly,* the supravaginal cervix is covered by peritoneum, which is prolonged below on to the posterior vaginal wall, when it is reflected on to the rectum, forming the rectouterine excavation. It is in relation with the rectum, from which it may be separated by coils of small intestine. The **vaginal portion** (*portio vaginalis* [*cervicis*]) of the cervix projects free into the anterior wall of the vagina between the anterior and posterior fornices. On its rounded extremity is a small, depressed, somewhat circular aperture, the **external orifice of the uterus,** through which the cavity of the cervix communicates with that of the vagina. The external orifice is bounded by two lips, an anterior and a posterior, of which the anterior is the shorter and thicker, although, on account of the slope of the cervix, it projects lower than the posterior. Normally, both lips are in contact with the posterior vaginal wall(***Gray Henry 1918)***



Fig(3) anatomy of the uterus ***(Gray Henry 1993)***