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**UTERINE SHAPE AFTER
CAESAREAN SECTION**

THESIS

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ANATOMY OF THE UTERUS AND FALLOPIAN TUBES

The Uterus:

The uterus is pear-shaped organ consisting of upper part called fundus, a main part called the body, a constricted part called the isthmus, and a narrow, terminal part called the cervix or neck. It lies in the pelvic cavity with the bladder in front and the rectum behind. During active sexual life its thick walls are composed largely of muscle fibres, but its structure differs before puberty and after the menopause.

Its anterior and posterior walls are in apposition. The uterine cavity communicates with the general peritoneal cavity via the uterine tubes above and with the exterior via the vaginal cavity below.

The uterus is about 7.5 cm long, 5 cm wide, at the fundus, and its wall are about 1.25 cm thick. The virginal uterus weighs from 40 to 50 grams and the parous uterus 50 to 70 grams during active sexual life. The organ is remarkable in that not only is its lining membrane renewed every four weeks for a period of 35 years or

more, but it is required to enlarge out of all proportion to its original size in order to accomodate the requirements of the growing foetus, while even more remarkable in its return to something approaching its normal size soon after parturition. All dimensions of the uterus are increased by about 1.2 cm in multiparous women. Immediately after delivery, the uterus weighs about 908 grams and by the eighth day its weight falls to about 454 grams. During the second week, it loses from 113 to 227 grams but after that the loss in weight is gradual.

The fundus of the uterus is that part of the organ which lies above the openings of the uterine tubes. The body lies between these openings and the isthmus. The isthmus is a constricted part about 1.5 cm long in the non-pregnant uterus. The cervix is cylindrical in shape. It commences at the isthmus and ends at the external uterine orifice, which opens into the vagina. The cervix perforates the anterior vaginal wall and these two structures are intimately blended together and cannot be separated except by dissection. A part of the cervix lies above the vagina "the supravaginal cervix" and a part lies within the vagina "the intravaginal cervix".

The angles formed by the union of the tubes with the uterus are known as superior angles; and because they coincide with the position of the uterine horns in the lower animals, they are sometimes referred to as the cornua of the uterus.

The external uterine orifice or external os is circular and smooth in nullipara but in multipara it is transverse and often fissured. The intravaginal cervix is directed obliquely downwards and backwards and usually impinges on the posterior vaginal wall, thus the anterior lip lies below the posterior lip, and it is this lip that the finger first touches when a vaginal examination is made.

The uterus is normally in a position of ante flexion and anteversion, but its position in the body varies with the degree of distension of the adjacent viscera, especially the bladder and to a less extent, the pelvic colon and rectum. It is not usually situated in the midline but inclines to the right and is slightly twisted in that direction. It has three surfaces and two lateral borders.

The anterior surface is flat and directed downwards and slightly forwards. It lies directly on the bladder. In cases of full bladder the normal antelexion and anteversion of the uterus is diminished, or even lost altogether, for the organ may achieve a vertical position or stage towards retroversion.

The posterior surface is convex and lies in relation with the pelvic colon, rectum and coils of small intestine the rectouterine pouch intervenes between the uterus and rectum. Each lateral border is in direct relation with the uterine vessels, the medial border of the broad ligament and the parametrium.

The cavity of the uterus can be divided for purposes of description into the cavity of the body and the cavity of the cervix. There is no cavity in the fundus.

The cavity of the body is triangular in shape, with its base above and its apex below, and measures about 3.5 cm in length, but is longer in multipara. It is extremely narrow cleft when compared with the size of the organ and this is especially so in nullipara. At its base, it communicates with the uterine tubes and its apex

with the cervical canal. The apex of the cavity of the body corresponds to the internal os and lies on level with the isthmus uteri. Kearns⁽¹⁴⁾, refers to the internal os as the internal uterine sphincter, which acts in this capacity until the third month of pregnancy when it begins to relax. Late in pregnancy, it prevents the ovum chamber from becoming over-dilated in its lower part and during labour it prevents over-distension and possible rupture of the weak isthmio region.

The cavity of the cervix is fusiform. It commences at the internal os and ends at the external uterine orifice or external os. The mucous membrane of the cervical canal in the nullipara, consists of a series of folds. There is a vertical fold on each of the anterior and posterior walls from which oblique folds radiate. The pattern so resembles the branches of the tree that it is called the arbor vitae uteri. The folds dovetail into one another, forming a valve which helps to retain the products of uterine secretion within the cavity of the body. These folds tend to become flattened during child birth and disappear after the first pregnancy.

The Upper Uterine Segment, the Lower Uterine Segment and the Isthmic Uteri:

Anatomically the isthmus of the uterus, is circular border line area between body and cervix. It is indicated by a slight constriction on the surface of the uterus and roughly corresponds to the level of the internal os and the line of reflection of the peritoneum from the body of the uterus to the superior surface of the bladder. Its size is given as from 5-10 mm in length in the non-pregnant uterus.

The cervix in the non-pregnant uterus is composed predominantly of fibrous tissue. The wall of the corpus uteri is in contrast composed of smooth muscle and the transition from the fibrous to a muscular wall is usually quite abrupt, although in some cases it may be gradual.

In the non-pregnant uterus, the isthmus is an indefinable variable segment with a wall of smooth muscle, bounded below by a fibrous cervix and blending imperceptibly above with the uterine musculature. The isthmus is part of the body and that it is wrong to consider it as separate entity. The mucosa of the isthmus is similar to that of the corpus but less well developed. The response

of the isthmus to pathological and hormonal stimuli is relatively small, so that it does not develop premenstrual hypertrophy or a predecidual compacta. Marshall⁽¹⁷⁾ points out that when Caesarean section is terminated by supravaginal hysterectomy and as much as 4-5 cm of the lower segment is left attached to the cervix, there is no recurrence of menstruation. There is biochemical difference between the mucosa of the isthmus and that of the body, in that the isthmus mucosa contains only a small amount of glycogen. There was a separate arterial supply for the isthmus and this part of the uterus has a separate function.

In the pregnant uterus the length of the cervix does not change significantly during early pregnancy. In the third month of pregnancy the isthmus elongates with the rest of the uterine musculature. When the elongation occurs the products of conception are confined to the part of the uterus which lies above the isthmus but when they require more space, the isthmic musculature unfolds and comes to be incorporated in the ovum chamber. This unfolding is limited inferiorly by the fibrous cervix. The isthmus forms a modified decidua but this is very limited,

for the compacta is not well defined and the spongiosa is thin. The canal of the isthmus is gradually absorbed into the general uterine cavity which descends to the level of the internal os about the fourth month of gestation. The isthmus uteri now becomes the lower uterine segment. In this region, the decidua capsularis is only loosely attached to the endometrium of the uterus and it is suggested that this is an important factor in permitting further expansion and elongation of the lower segment during pregnancy and labour. Gradually the whole of the isthmus and the major part of the cervix become incorporated in the ovum chamber.

During labour the uterus is divided into an upper active segment which is continually contracting and shortening, and a lower passive segment which is dilating and lengthening. The contractions of the upper segment are followed by some degree of relaxation although the muscle fibers never quite regain their normal length. Each successive contraction therefore commences almost at the point where the previous finished. This phenomenon, which is known as retraction, ensures the onward progression of the labour and is of particular importance in the control of post-partum haemorrhage.

The isthmus, during labour, sides with the cervix and as the lower uterine segment its role is purely passive. If the presentation is normal, only the lower third of the cervical canal and the external os remain to be dilated during the first stage of labour and they gradually become indistinguishably incorporated into the ovum chamber. The lower uterine segment becomes more and more attenuated, its shape is entirely altered and in the later stage of labour it is merged with the vagina, forming an enormously dilated, cylindrical birth canal.

The peritoneum covers the uterus with exception of the lateral borders, the anterior part of the supravaginal cervix and the whole of the intravaginal cervix. From the anterior surface of the uterus, the peritoneum is reflected to the superior surface of the bladder, forming the shallow uterovesical pouch, from the post surface of the uterus the peritoneum is continued down as far as the upper third of the vagina, whence it is reflected to the anterior surface of the rectum, forming the rectovaginal pouch, more commonly called the pouch of Douglas. From the lateral borders of the uterus two layers of peritoneum on each side are reflected to the lateral pelvic walls forming the ligaments of the uterus.