ANATOMY OF THE OVARY

The ovary is an ovum-producing reproductive organ, often found in pairs as part of the vertebrate female reproductive system. Ovaries in females are homologous to testes in males, in that they are both gonads and endocrine glands ***(Langman, 2006).***

1-Shape and Size:

They are two nodular bodies, situated one on either side of the uterus in relation to the lateral wall of the pelvis, and attached to the back of the broad ligament of the uterus by mesovarium, behind and below the uterine tubes. The ovaries are of a grayish-pink color, and present either a smooth or a puckered uneven surface. They are each about 4cm. in length, 2cm. in width, and about 8mm. in thickness, and from 2 to 3.5gm in weight ***(Standring, et al. 2008).***

The ovary has lateral and medial surfaces, upper tubal extremity, lower uterine extremity, anterior mesovarian border and a posterior free border ***(Romanes, 1997).***

The mesovarium attaches each ovary to the broad ligament , the infundibulopelvic (suspensory) ligament attaches each ovary to the lateral pelvic wall and contains the ovarian neurovascular bundle ,the ovarian ligament (proper) runs within the broad ligament from the inferior medial pole of each ovary to the uterus near the cornu ***(April ,1997).***

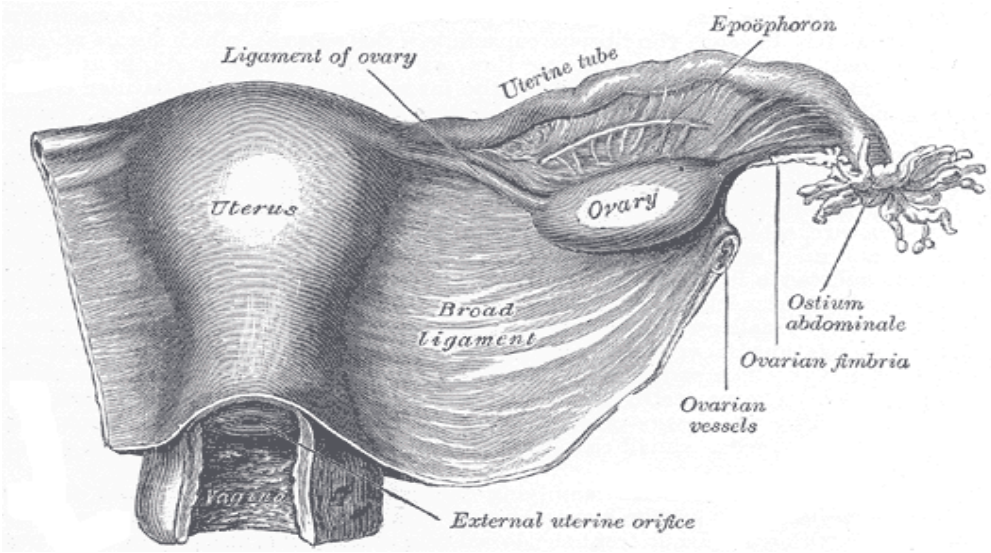

Figure (3): uterus, ovary and right broad ligament, seen from behind (Standring, et al. 2008).

Ovulation, prompted by luteinizing hormone from the anterior pituitary gland, occurs when the mature follicle at the surface of the ovary ruptures and releases the secondary oocyte into the peritoneal cavity. The ovulated secondary oocyte, ready for fertilization is still surrounded by the zona pellucida and a few layers of cells called the corona radiate ***(Goldstein, 1990).***

If it is not fertilized, the secondary oocyte degenerates in two days. If a sperm passes through the corona radiata and zona pellucida and enters the cytoplasm of the secondary oocyte, the second meiotic division resumes forming a polar body and a mature ovum ***(Rosen, et al.1992).***

Ovaries secrete both estrogen and progesterone. Estrogen is responsible for the appearance of secondary sex characteristics of females at puberty and for the maturation and maintenance of the reproductive organs in their mature functional state. Progesterone functions with estrogen by promoting cyclic changes in the endometrium (it prepares the endometrium for pregnancy), as well as by helping to maintaining the endometrium in a healthy state during pregnancy ***(Fackelmann, 1992).***

2-Vascular Supply:

The ovarian arteries arise from the abdominal aorta at the level of L2 vertebra and descend along the posterior abdominal wall. On reaching the pelvic brim, the ovarian arteries cross over the external iliac vessels and enter the suspensory ligaments of the ovary. At the level of the ovary, the ovarian artery sends branches through the mesovarim to the ovary and continues medially in the broad ligament to supply the uterine tube. It anastomoses with the uterine artery ***(Moore, et al. 1999).***

The veins emerge from the hilum in the form of a plexus, the pampiniform plexus; the ovarian vein is formed from this plexus, and leaves the pelvis in company with the artery ***(Motta, et al. 2003).***

The lymphatic of the ovary drain to para aortic nodes alongside the origin of the ovarian artery, just above the level of the umbilicus

L2. Clinical observation shows that it is also possible for lymph to reach inguinal nodes via the round ligament and the inguinal canal, and to reach the opposite ovary by passing across the fundus of the uterus ***(Macminn, 1994).***

3-Nerve Supply:

The nerves are derived from the hypogastric or pelvic plexus, and from the ovarian plexus, the uterine tube receiving a branch from one of the uterine nerves ***(Standring, et al. 2008).***

4-Microanatomy:

The surface of the ovary is covered by a layer of columnar cells which constitutes the germinal epithelium of Waldeyer. This epithelium gives the ovary a dull gray colour as compared with the shining smoothness of the peritoneum; and the transition between the squamous epithelium of the peritoneum and the columnar cells which cover the ovary is usually marked by a line around the anterior border of the ovary ***(Richard, et al. 2005).***

Tunica albuginea is a whitish capsule of dense, connective tissue immediately deep to the germinal epithelium. Stroma is a region of connective tissue deep to the tunica albuginea and composed of an outer, dense layer called the cortex and an inner, loose layer known as the medulla ***(speroff and Fritz, 2004).***

In the cortical layer of the stroma there are a large number of minute vesicles, of uniform size, about 0.25mm. in diameter. These are the follicles in their earliest condition. They are especially numerous in the ovary of the young child. After puberty, and during the whole of the child-bearing period, large and mature, or almost mature follicles are also found in the cortical layer in small numbers, and also "corpora lutea". The remains of follicles which have burst and are undergoing atrophy and absorption ***(Delancey, 2000).***

Beneath this superficial stratum, other large and more or less mature follicles are found imbedded in the ovarian stroma. These increase in size as they recede from the surface toward a highly vascular stroma in the center of the organ, termed the medullary substance. Graafian follicle is a large fluid filled follicle that will soon rupture and expel a secondary oocyte ***(Grunfeld, et al. 1991).***

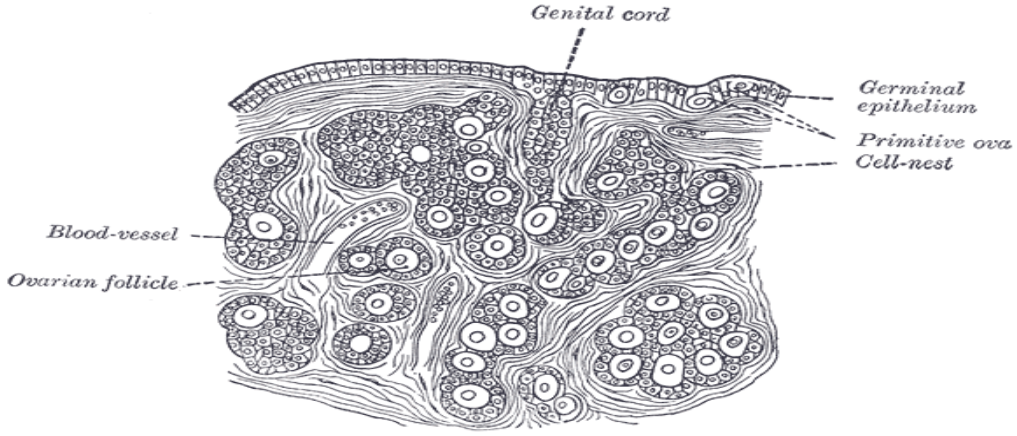

Figure (4): section of the ovary of a newly born child. Germinal epithelium is seen at top. Primitive ova are seen in their cell-nests. The Genital cord or genital ridge is still discernible in this young child. A blood vessel and an ovarian follicle is also seen (Standring, et al. 2008).