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Level/Department: 200L/Nursing.

Course Code: PHS212

Assignment Title: Fertilization.

Write a short note on implantation.

Implantation is the process which the fertilized ovum called ZYGOTE implants (fixes itself or gets attached) in the endometrial lining of uterus.

After the fertilization, the ovum is known as zygote. Zygote takes three to five days to reach the uterine cavity from fallopian tube. While travelling through the fallopian tube, the zygote receives its nutrition from the secretions of fallopian tube.

After reaching the uterus, the developing zygote remains freely in the uterine cavity for two or four days before it is implanted. Thus, it takes about one week for implantation after the day of fertilization. During the stay in uterine cavity before implantation, the zygote receives its nutrition from the secretion of endometrium, which is known as uterine milk.

Just before implantation, the zygote develops into morula and then the implantation starts. A layer of spherical cells called trophoblast cells is formed around morula. Trophoblast cells release proteolytic enzymes over the surface of endometrium. These enzymes digest the cells of the endometrium. Now, morula moves through the digested part of endometrium and implants itself.

The initial phase of the implantation process is "adplantation". This first phase requires the newly hatched blastocyst to loosely adhere to the endometrial epithelium, often "rolling" to the eventual site of implantation where it is firmly adhered. This process requires both the blastocyst adhesion interaction with the endometrium during the "receptive window".

Subsequent development of the placenta allows maternal support of embryonic and fetal development. If implantation has not proceeded sufficiently during the menstrual cycle to allow hormonal feedback to the ovary, then the next cycle may commence leading to conceptus loss. There is also evidence, from animal models, that a conceptus with major genetic does not develop or implant correctly leading to their loss during the first and second weeks of development.

In recent years with the development of Assisted Reproductive Technologies (ART or IVF) there is a growing interest in this process, with techniques that introduce the blastocyst into the uterus to allow normal implantation to occur.

Abnormal implantation is where this process does not occur in the body of the uterus (ectopic) or where the placenta forms incorrectly. In addition implantation can occur normally

but with an abnormal conceptus, as in a hydatiform mole development.

