

Aibe Sarah Nimo

18/mhs02/024

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implantation is a process in which a developing embryo , moving as a blastocyst through a uterus, makes contact with the uterine wall and remains attached to it until birth.

As the zygote moves through the fallopian tube it undergoes several rounds of cell division, a process called cleavage. Zygote takes 3 to 5 days to reach the uterine cavity from the fallopian tube. While travelling through the fallopian tube, the zygote receives its nutrition from the secretions of fallopian tube. These cell divisions produce the inner cell mass (ICM), which will become the embryo, and the trophoblast, which surrounds the ICM and interacts with maternal tissues. Together, the ICM and the trophoblast are called the blastocyst. A blastocyst successfully implants in the uterus when, as the Zona pellucida exits the fallopian tube, the blastocyst leaves the zona pellucida and binds to the endometrium. After reaching the uterus, the developing zygote/ blastocyst remains freely in the uterine cavity for 2 to 4 days before it is implanted. Thus, it takes about 1 week for implantation after the day of fertilization. During the stay in uterine cavity before implantation, the zygote receives its nutrition from secretion of endometrium, which is known as uterine milk.

Once the blastocyst adheres to the uterine wall, the trophoblast secretes enzymes that digest the extracellular matrix of endometrial tissue. The trophoblast cells then begin to intrude between the endometrial cells, attaching the blastocyst to the uterine surface. Further secretions of enzymes allow the blastocyst to bury itself deeply among the uterine stromal cells that form the structural components of the uterus. As soon as trophoblast attaches to the endometrial epithelium it proliferates rapidly and differentiates to form two layers ; the inner layer of cytotrophoblast and the outer layer of syncytiotrophoblast . blood filled lacunae appears in the syncytiotrophoblast , the syncytiotrophoblast erodes endometrial blood vessels, , allowing maternal blood to seep in and out of lacunae networks , thereby establishing a primitive uteroplacental circulation

Implantation of the blastocyst is completed during the second week of embryonic development

