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**DEPARTMENT: NURSING**

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 **ASSIGNMENT**

**Write a short note on IMPLANTATION**

**Implantation**, in reproduction physiology, the adherence of a fertilized egg to a surface in the reproductive tract, usually to the uterine wall , so that the egg may have a suitable environment for growth and development into a new offspring. Fertilization of the egg usually occurs after the egg has left the ovary and is being transported through the fallopian tubes. Male sperm cells deposited in the female reproductive tract travel up to the fallopian tubes to unite with the egg. Once fertilized, the egg begins to undergo a series of cell divisions. The egg takes up to seven days to reach the uterus; by this time the single-celled egg has divided numerous times, so that it is a ball of approximately 200 cells.

The uterus has thick walls suitable for egg attachment and growth. A female hormone known as progesterone , secreted by the corpus luteum in the ovary, influences the readiness of the uterine wall for egg implantation. It increases the blood supply in the wall, water content, and secretion of glycogen, a nutrient for the surrounding tissue and developing egg. If the uterus is not first prepared by progesterone, the egg will not attach itself. Progesterone also inhibits muscular contractions in the uterine wall that would tend to reject the adhering egg. When the egg reaches the uterus, it usually remains free in the uterine cavity for about a day. It then attaches to the uterine lining (the endometrium). Cells in the outer surface of the egg grow rapidly once contact is made with the uterine wall. The egg disrupts the surface of the endometrium and actively burrows into the deeper tissue. By the 11th day after fertilization, the egg has completely embedded itself into the endometrium. The product of conception—first the fertilized egg and then the developing child and the placenta—normally remains implanted in the human uterus for nine months.

# Implantation and placentation

Six to 10 days after fertilization, the naked sticky blastocyst comes into contact with the uterine lining and adheres to it. The site of attachment is variable and not predetermined. The uterine lining has already been preparing, under the influence of ovarian hormones , for the reception of the blastocyst. Among these preparations has been the elaboration and expulsion, by the uterine glands, of a secretion that serves as nourishment for the blastocyst, both when it is free and during its implantation. Directly after blastocyst attachment come its establishment within the thickened uterine lining and the participation of its trophoblastic capsule in the differentiation of a placenta, a structure that enables the developing embryo to enter into a direct physiological dependence on the mother.

## Implantation

The trophoblast of the blastocyst exerts an enzymic, destructive influence on the swollen uterine lining, leading to erosion of both the superficial epithelium of the uterine lining and also its deeper connective tissue. This early stage of invasion ends in a few days. The blastocyst is then completely buried within a more superficial and compact layer of the total uterine lining. While the blastocyst is completing this phase of implantation, its original shell of cellular trophoblast steadily proliferates a multitude of cells that lose their outermost membranes and merge. The result is a thick peripheral layer consisting of a common mass of cytoplasm in which many nuclei are embedded. This external investment is called syncytial trophoblast.



**implanted human embryo**Development of the human embryo, shown as half-section depictions of embryos implanted in the uterine lining.Encyclopædia Britannica, Inc.

The implanted blastocyst next proceeds to establish itself as dependent upon the uterus. The syncytial trophoblast becomes a spongy shell containing irregular cavities. This expanding mass destroys connective tissues and glands encountered in its path. Both the cellular and derivative syncytial trophoblast have the capacity of destroying such tissue.

The erosive process also taps uterine capillaries connected to spiral arteries; blood liberated from the capillaries is taken up into the trophoblastic lacunae. The spiral arteries are then invaded by the trophoblast and increase in diameter; they are now known as uteroplacental arteries and are no longer under maternal vasomotor control. This conversion process ensures that an adequate volume of blood reaches the implanted embryo. (Altered uteroplacental blood flow is a core predictor of abnormal pregnancy and intrauterine growth restriction.) Erosive activities decline in intensity by the end of the third week of of develpoment, and at this time the sac is completing the first phase of its specialization.

Occasionally a fertilized egg fails to reach the uterus, implanting and beginning to develop elsewhere. This outcome is called an ectopic, or extrauterine, pregnancy. The most common ectopic site is the uterine tube—this type of pregnancy, if not treated, can be fatal for the mother—but the peritoneum lining the abdominal cavity and even the interior of the ovary are also involved, though rarely. The unsuitability of all these sites for continued development usually leads to early death and resorption of the embryo.