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In humans, implantation is the stage of pregnancy at which the embryo adheres to the wall of the uterus. At this stage of prenatal development, the conceptus is called a blastocyst. It is by this adhesion that the embryo receives oxygen and nutrients from the mother to be able to grow.

In humans, implantation of a fertilized ovum is most likely to occur around nine days after ovulation; however, this can range between six and 12 days.

Blastomere formation:

The zygote develops by mitosis, and when it has developed into 16 cells becomes known as the morula. Until this stage in development, all cells (blastomeres) are autonomous and not specified to any fate. In many animals, the morula then develops by cavitation to become the blastula. Cellular differentiation then develops the blastula's cells into two types: trophoblast cells that surround the blastocoel and an inner mass of cells (the embryoblast). The conceptus is then known as the blastocyst.

Implantation:

Implantation is critical to the survival and development of the early human embryo. It establishes a connection between the mother and the early embryo which will continue through the remainder of the pregnancy. Implantation is made possible through structural changes in both the blastocyst and endometrial wall.[5] The zona pellucida surrounding the blastocyst breaches, referred to as hatching. This removes the constraint on the physical size of the embryonic mass and exposes the outer cells of the blastocyst to the interior of the uterus. Furthermore, hormonal changes in the mother, specifically a peak in luteinizing hormone (LH), prepare the endometrium to receive and envelop the blastocyst. The immune system is also modulated to allow for the invasion of the foreign embryonic cells. Once bound to the extracellular matrix of the endometrium, trophoblast cells secrete enzymes and other factors to embed the blastocyst into the uterine wall. The enzymes released degrade the endometrial lining, while autocrine growth factors such as human chorionic gonadotropin (hCG) and insulin-like growth factor (IGF) allow the blastocyst to further invade the endometrium.[6]

Implantation in the uterine wall allows for the next step in embryogenesis, gastrulation, which includes the formation of the placenta from trophoblastic cells and differentiation of the inner

cell mass into the amniotic sac and epiblast.