PREGNANCY AND EMBRYONIC DEVELOPMENT

- Following implantation, the trophoblast develops finger-like projections known as chorionic villi, surrounded by uterine tissue and maternal blood.
- These chorionic villi and uterine tissue intertwine, forming a combined structure called the placenta, serving as a connection between the developing embryo (foetus) and the mother's body.
- The placenta plays a crucial role in supplying oxygen and nutrients to the embryo, while also aiding in the removal of carbon dioxide and waste materials.
- Additionally, the placenta functions as an endocrine tissue, producing hormones such as human chorionic gonadotropin (hCG), human placental lactogen (hPL or chorionic somatomammotropin), chorionic corticotropin, estrogens, progestogens, and later in pregnancy, relaxin.

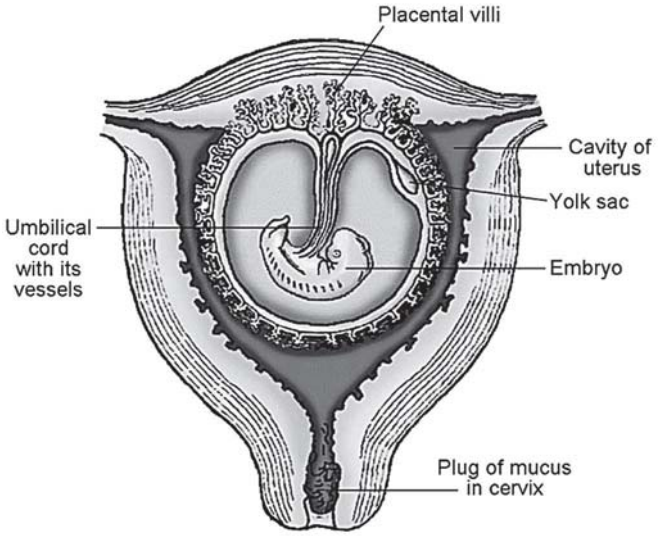

Fig.: The human foetus within the uterus

Resonate the Concept

- During the second week after fertilization, the developing placenta begins to produce a hormone called hCG. In the early stages of pregnancy, hCG supports the corpus luteum, ensuring the production of progesterone for the maintenance of the uterine endometrium. After three months, the placenta takes over progesterone production, crucial for sustaining the uterine lining.
- Hormones such as hCG, hPL, chorionic corticotropin, and relaxin are exclusive to women during pregnancy. Relaxin and progesterone, in the early stages, inhibit uterine contractions, securing the pregnancy. Produced by the ovary, relaxin aids in parturition by softening the connective tissue of the pubic symphysis. Additionally, other hormones like estrogens, progestogens, cortisol, prolactin, and thyroxine significantly increase during pregnancy, supporting fetal growth, metabolic changes, and pregnancy maintenance.
- Right after implantation, the inner cell mass differentiates into the ectoderm, endoderm, and mesoderm layers. These three layers collectively form the gastrula, giving rise to all adult tissues and organs. Stem cells within the inner cell mass possess the ability to develop into various tissues and organs.
- Human pregnancy spans nine months, while dogs gestate for 60-65 days, elephants for 607-641 days, and cats for 52-65 days.
- Developmental Milestones during Human Pregnancy:
  1. One month: Formation of the embryo's heart.
  2. Two months: Limb and digit development in the foetus.

3. Twelve weeks (first trimester): Major organ systems are formed, including well-developed limbs and external genital organs.
4. Fifth month: First foetal movements (Quackening) and appearance of hair on the head.
5. Twenty-four weeks (second trimester): Body covered with fine hair, eyelids separate, and eyelashes form.
6. Nine months: Full development of the foetus, ready for delivery.