Function and Mechanism in implantation

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Function in implantation

What are Pinopodes?

Pinopodes are small, finger-like protrusions from the endometrium. They appear between day 19 and day 21 of gestational age.

Function

- Pinopodes endocytose uterine fluid and macromolecules are in it. The volume of the uterus decreases, walls come closer to the embryo blast floating in it.
- Pinopodes absorbs fluid continuously and in the early implantation stage it removes most of it.

Adaption of secretions

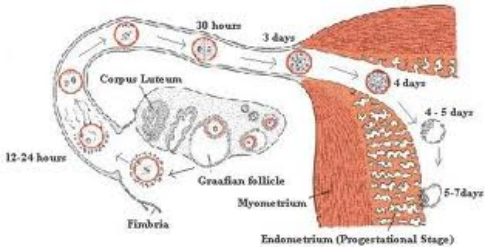
The target of the secretions is the embryoblast, and has several functions on it.

Nourishment

Before implantation the embryo blast remain in the uterine cavity for around seventy two hours. During this period the embryo does not receive nourishment from the mother's blood. Embryo access the secreted nutrients like iron and fat-soluble vitamins in the uterine cavity.

Growth and implantation

The endometrium secretes not only the nourishments for the embryo also several steroid-dependent proteins which induces the growth and implantation of embryo. Endometrium also secretes Cholesterol and steroids.



Mechanism in Implantation

Movement of embryo from Fallopian tube to Uterus Implantation is initiated when the blastocyst comes into contact with the

uterine wall.

Zona hatching

- Through hatching process the blastocyst get rid of thezona pellucida to perform the implantation process.

Apposition

- Apposition is the primary connection between the blastocyst and the endometrium.

Location

- The entire surface of the blastocyst has a potential to form the apposition to the decidua.

Adhesion

This is the strongest attachment to the endometrium when compared to other loose apposition. The trophoblasts adhere by penetrating the endometrium, with protrusions of trophoblast cells.

Communication

- The blastocyst communicate through thereceptor-ligand-interactions to the endometrium to adapt further to its presence, e.g. by changes in thecytoskeleton of decidual cells.
- This dislodges the decidual cells from their connection to the underlyingbasal lamina.
- This helps the blastocyst to perform the succeeding invasion.

Proteoglycan receptors

Present on the surface of the decidua of the uterus. This ligand-receptor system also is present just at the implantation window.

Invasion

- Further growth of the blastocyst in the endometrium.

Syncytiotrophoblasts

- After a series of procedures the whole embryo is embedded in the endometrium. Placental formation begins.

Secretions

Autocrine factors stimulates further invade the endometrium.

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