"Day 9 of Development (Lacunar Stage)"

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1. Progress of Implantation

- The blastocyst becomes more deeply embedded in the endometrium
- The surface defect in the uterine epithelium is sealed

Mechanism of Closure

- A fibrin coagulum (plug) forms at the site of entry

High-Yield Point

- This sealing prevents bleeding and infection at the implantation site

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2. Trophoblast Development – Lacunar Stage

Key Change

- The syncytiotrophoblast develops vacuoles

Process of Lacunae Formation

Syncytiotrophoblast → Vacuoles appear within syncytium → Vacuoles enlarge → Vacuoles fuse → Formation of large spaces (lacunae)

Definition

- This stage is called the lacunar stage

Concept

- Lacunae = early spaces that will later contribute to intervillous spaces of placenta

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3. Embryonic vs Abembryonic Pole (Important Distinction)

Feature	Embryonic Pole	Abembryonic Pole
Activity	Rapid trophoblast development	Membrane formation
Key event	Lacunae formation	Exocoelomic membrane formation

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4. Exocoelomic (Heuser's) Membrane Formation

Origin

- Derived from hypoblast cells

Description

- Thin, flattened membrane
- Lines the inner surface of cytotrophoblast

Formation Process

Hypoblast cells → Migrate along inner surface of cytotrophoblast → Form thin lining → Exocoelomic (Heuser's) membrane

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5. Primitive Yolk Sac Formation

Key Concept

- The exocoelomic membrane + hypoblast form the lining of a new cavity

Flowchart

Hypoblast

- Exocoelomic membrane → Line a cavity → Formation of exocoelomic cavity → Also called primitive yolk sac

6. Integrated Overview

- Blastocyst (deeper implantation) → Surface epithelium defect → Sealed by fibrin coagulum
- Trophoblast (embryonic pole) → Syncytiotrophoblast develops vacuoles → Vacuoles fuse → Lacunae form → Lacunar stage
- Hypoblast activity (abembryonic pole) → Cells migrate → Form exocoelomic membrane → Lines cytotrophoblast
- Formation of cavity → Primitive yolk sac (exocoelomic cavity)

7. Clinical Correlation

Lacunar Stage Significance

- Beginning of uteroplacental circulation development
- Lacunae will later connect with maternal blood sinusoids

Exam Trap

- Primitive yolk sac is NOT the definitive yolk sac
- It is a temporary early structure

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8. Quick Revision Points

- Day 9 = lacunar stage
- Syncytiotrophoblast:
  - Develops vacuoles → lacunae
- Implantation site:
  - Closed by fibrin plug

- Hypoblast forms:
  - Exocoelomic (Heuser's) membrane
- New cavity:
  - Primitive yolk sac

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