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Lec.2

CLOTTING TIME

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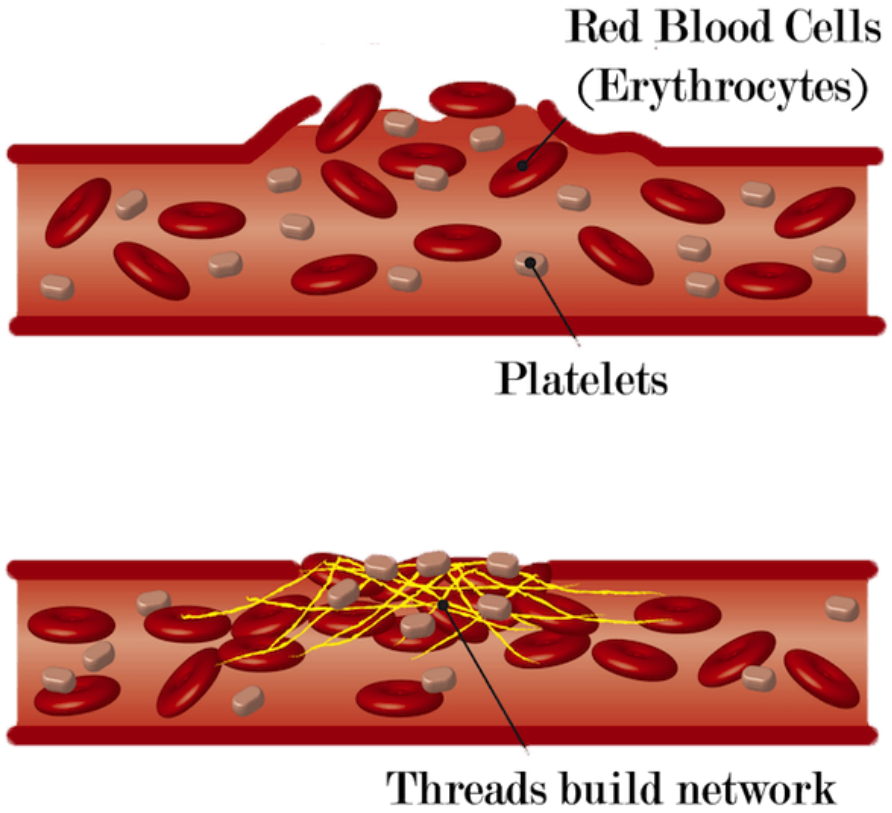
فيديو توضيحي

- https://www.youtube.com/watch?v=vWSYkTJs7hs

Introduction to Blood Clotting

- Blood clotting is a vital process that prevents excessive bleeding after injury,It involves platelets and plasma proteins (clotting factors) working together.
- Clotting Time is a key diagnostic test to evaluate the effectiveness of this system.

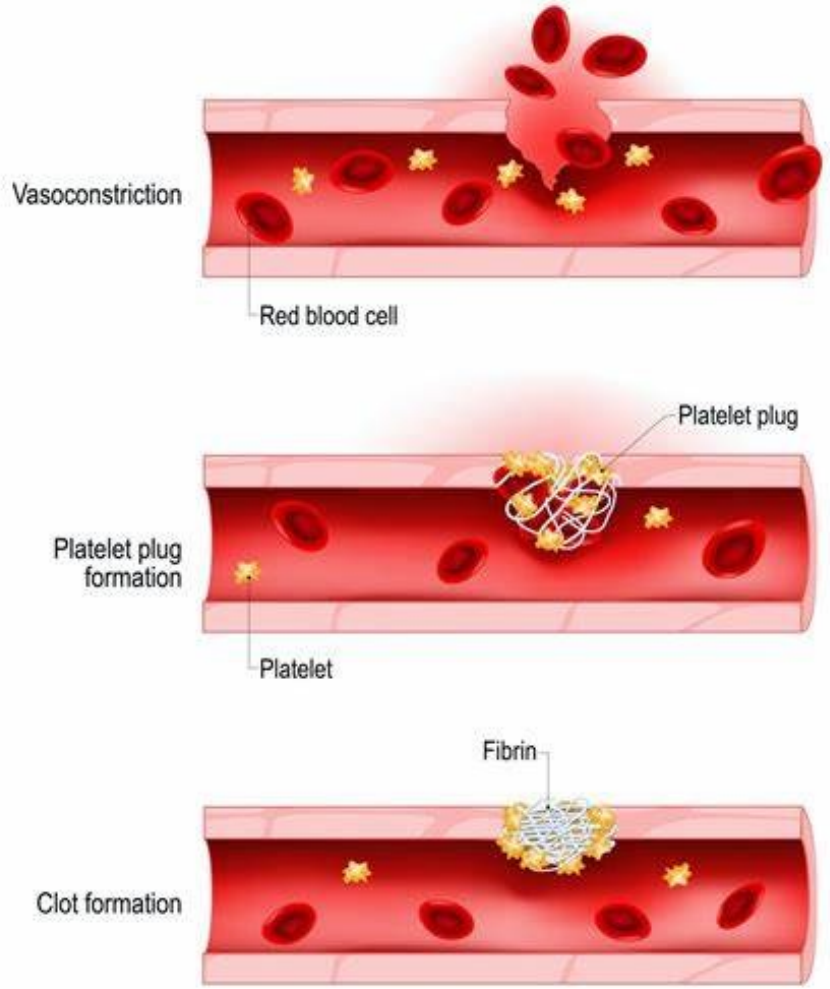


Definition of Clotting Time

- **Clotting Time (CT)** is the time taken by blood to clot after being drawn from the body. It reflects the efficiency of the intrinsic pathway of coagulation.
- Normal values range between 6 to 10 minutes.

Mechanism of Blood Coagulation

- 1. Vascular spasms
- 2. Platelet plug formation.
- 3. Formation of a blood clot.



Methods of Measuring Clotting Time

- Capillary Tube Method
- Wright's Method
- Automated Coagulation Devices

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- https://youtu.be/NDtFtd1sWdE

Methods of Measuring Clotting Time

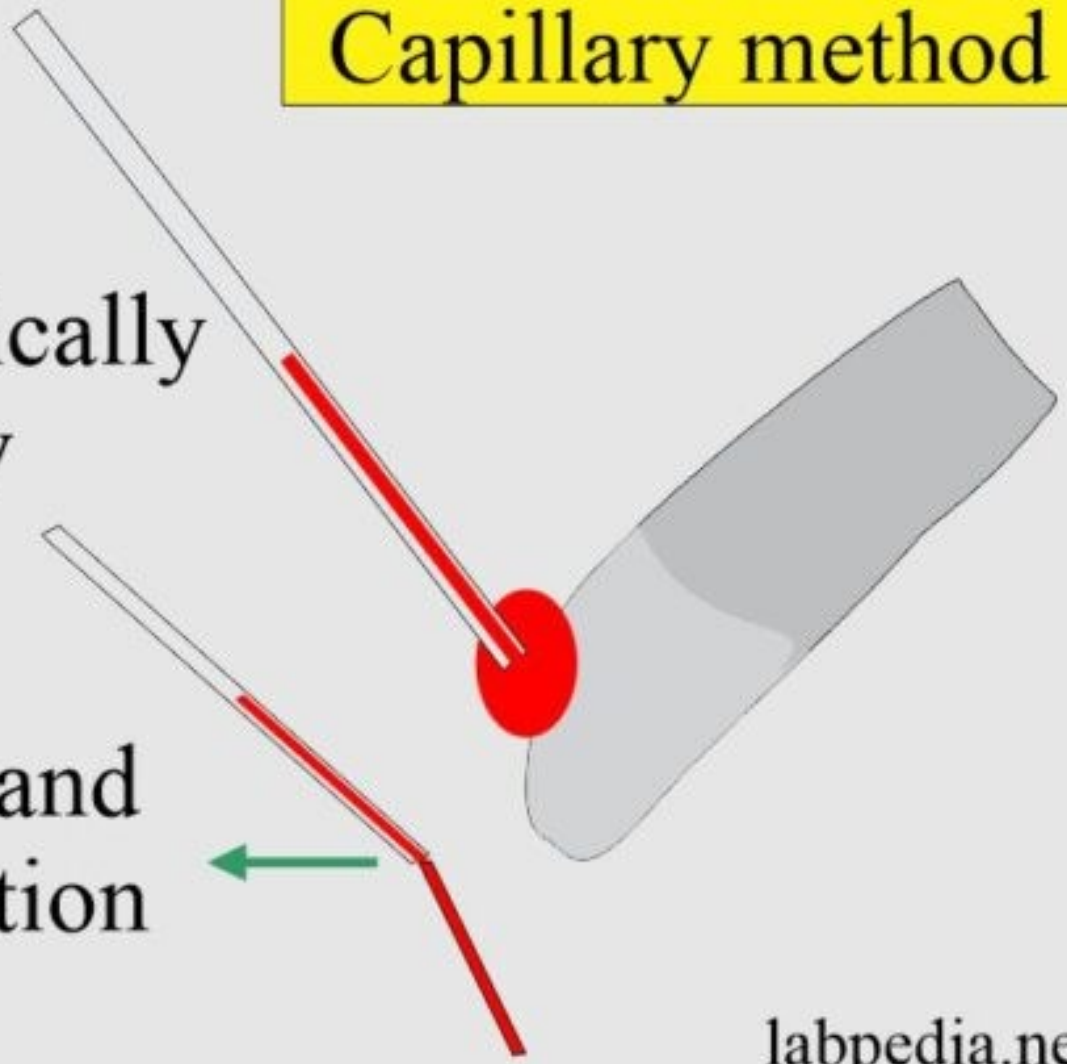
- **Capillary Tube Method**

1. Warm the capillary tube to 37°C if possible.
2. Prick the fingertip using a sterile lancet.
3. Wipe away the first drop of blood.
4. Fill a clean, dry capillary tube with blood.
5. Start a stopwatch as soon as blood enters the tube.
6. Break small portions of the tube every 30 seconds.
7. The test ends when fibrin strands appear between the broken ends.
8. Record the time – this is the clotting time.

Capillary method

After the prick
Blood will automatically
suck in the capillary

Break the capillary and
note the clot formation



labpedia.net

Prolonged CT may indicate:

- Clotting factor deficiencies
- Anticoagulant therapy (e.g., heparin)
- Liver disease
- Hemophilia
- Shortened CT is rare but may reflect hypercoagulability

Factors Affecting Clotting Time

- Several factors can influence Clotting Time, leading to either prolongation or shortening of the results:

1. **Temperature:** Lower temperatures slow down clotting.
2. **Platelet count and function:** Low platelet count or dysfunctional platelets prolong clotting.
3. **Clotting factor levels:** Deficiency in factors affects CT.
4. **Medications:** Anticoagulants like heparin and warfarin prolong clotting time.
5. **Liver disease:** The liver produces most clotting factors; dysfunction prolongs CT.
6. **Vitamin K deficiency:** Essential for synthesis of clotting factors .
7. **Laboratory technique:** Tube cleanliness, operator skill, and timing accuracy.
8. **Genetic disorders:** Hemophilia, von Willebrand disease, etc.