

Bleeding time and Clotting time





Bleeding: means loss of blood from damaged or injured small vessels.

Bleeding time: is the time interval from oozing of blood after a cut or injury till arrest of bleeding.

Hemostasis: is the process or mechanism of prevention the blood loss through the injured vessel.

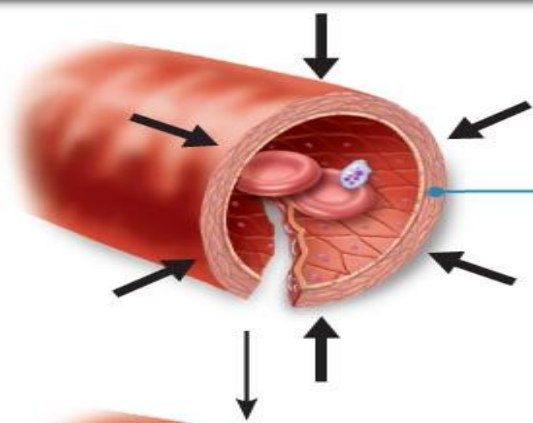
This process has three main steps



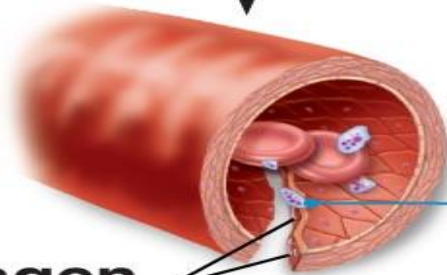
1-contraction of blood vessel: contraction of the smooth muscles in the wall of the blood vessel, this reduce the blood flow and loss from the defect in the vessel wall.

2-Aggregation of platelets: Activated platelets become sticky and adhere to the defect to form temporary platelet plug due to bind of platelets to collagen tissue.

3- Formation of blood clot.

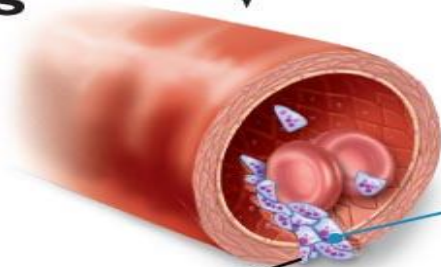


- Step ① Vascular spasm**
- Smooth muscle contracts, causing vasoconstriction.



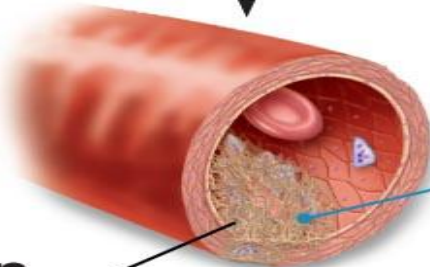
- Step ② Platelet plug formation**
- Injury to lining of vessel exposes collagen fibers; platelets adhere.

Collagen fibers



- Platelets release chemicals that make nearby platelets sticky; platelet plug forms.

Platelets



- Step ③ Coagulation**
- Fibrin forms a mesh that traps red blood cells and platelets, forming the clot.

Fibrin



∞ Aim:

To determine the bleeding time of a patient to assess platelet function and the body's ability for complete stopping of blood flow.



Principle

The test involves making a puncture wound in a superficial area of the skin and monitoring the time needed for bleeding to stop.

The bleeding Time test is usually used on:



1. Patients who have a history of prolonged bleeding after cuts.
2. Patients who have a family history of bleeding disorders.
3. The test is sometimes performed as a preoperative test to determine a patient's likely bleeding response during and after surgery.
4. The test helps identify people who have defects in their platelet function.

Duke's Method



1. Clean the lobe of the ear or tip of a finger with alcohol and let dry.
2. Pierce the lower portion of the ear lobe (or tip of a finger) with the lancet .making the incision 3-4 mm deep start the stopwatch.
3. Wipes the blood every 30 seconds with a filter paper without squeezing.
4. At the time when blood fails to appear on the filter paper, stop the stop watch.
5. Count the spot of blood on the filter paper.
6. Record the result and calculate the bleeding time. (each 2 spots = 1 min.)



- ❖ **The usual time is about 2–6 minutes.**

- ❖ **Prolonged bleeding times are generally found when :**
 1. **The platelet count is below 50,000/ μ L.**
 2. **When there is platelet dysfunction.**

Material and instrument for bleeding time test:



1. Lancet.
2. Filter paper.
3. Stop watch.
4. Cotton and Alcohol 70%.



Clotting time:

is the time interval from oozing of blood after a cut or injury till formation of clot.



Aim:

To determine the clotting time of a subject.

Principle:

A measure of the time required for blood to solidify (coagulate) after it has been removed from the body.

Material and instrument for clotting time test:



1. Fine capillary glass tubes of about 10 mm length
2. Lancet.
3. Stop watch.
4. Cotton and Alcohol 70%.

Procedure:



1. Clean the finger with alcohol 70% and allow to dry.
2. Prick the finger by lancet.
3. Draw blood up in the capillary glass tube.
4. Start the stop watch.
5. After one minute start breaking small pieces of the capillary tube every 30 second until a fibrin thread is seen between the two broken ends.



❧ Calculating the clotting time by:

(The waiting time after the glass tube is filled+ no. of capillary tubes breaks \times 30 second)

❖ Normal duration : 3 -8 minutes