

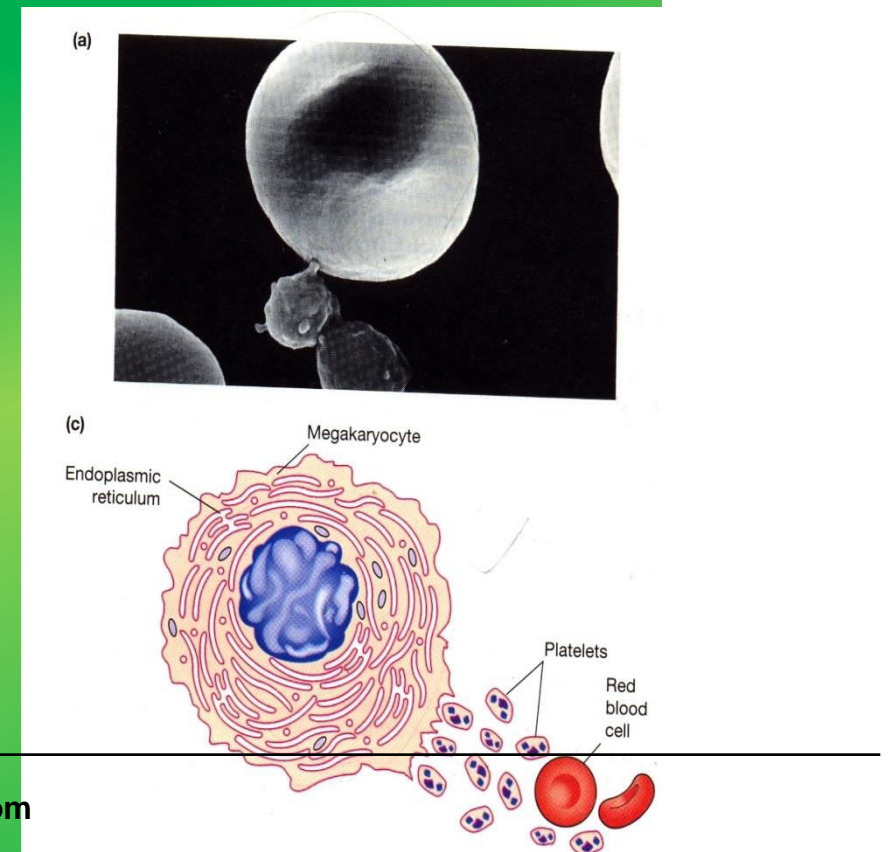
Platelets

Size: 1 – 4 Micro meter in diameter

Normal Count: 1, 50000 – 300,000 / cu mm or
micro liter

Live span: 10 days

Megakaryocyte 35-160 micron



Platelet membranes contain receptors for

- Collagen
- ADP
- Vessel wall Von Willebrand factor
- Fibrinogen
- Glycoprotein
- Prothrombin

Platelets cytoplasm contain

- Actin
- Myosin
- Thrombosthenin
- Glycogen
- Lysosomes
- Fibrin stabilizing factor
- Granules

I. Dense granules

Contains non protein substances e.g. Serotonin, ADP, Ca and other nucleotides.

II. Alpha granules:

Secrete proteins e.g. Clotting factors, platelet derived growth factor (PDGF), Von Willebrand factor.

Regulation of Platelet Production

- Thrombopoietin
- Erythropoietin
- Menstrual cycle
- Adrenaline
- Injury
- Hypoxia
- Smoking
- Vitamin deficiency

Thrombocytosis

Increase no of platelets in the blood

Causes.

1. After acute haemorrhage
2. Splenectomy
3. Polycythemia vera

Thrombocytopenia

Decreased Number of platelets in the blood

Causes.

1. Idiopathic
2. Secondary
 - a. Pancytopenia
 - b. Increased destruction of platelets
 - c. Hypersplenism
 - d. Leukemia

Hemostasis

Arrest of bleeding/ prevention of blood loss when there is vessel injury

Involves three steps

A. Vascular spasm

- a. Inherent vascular response
- b. Sympathetically induced vasoconstriction
- c. Vasoconstrictor substance e.g Thromboxane A_2 .

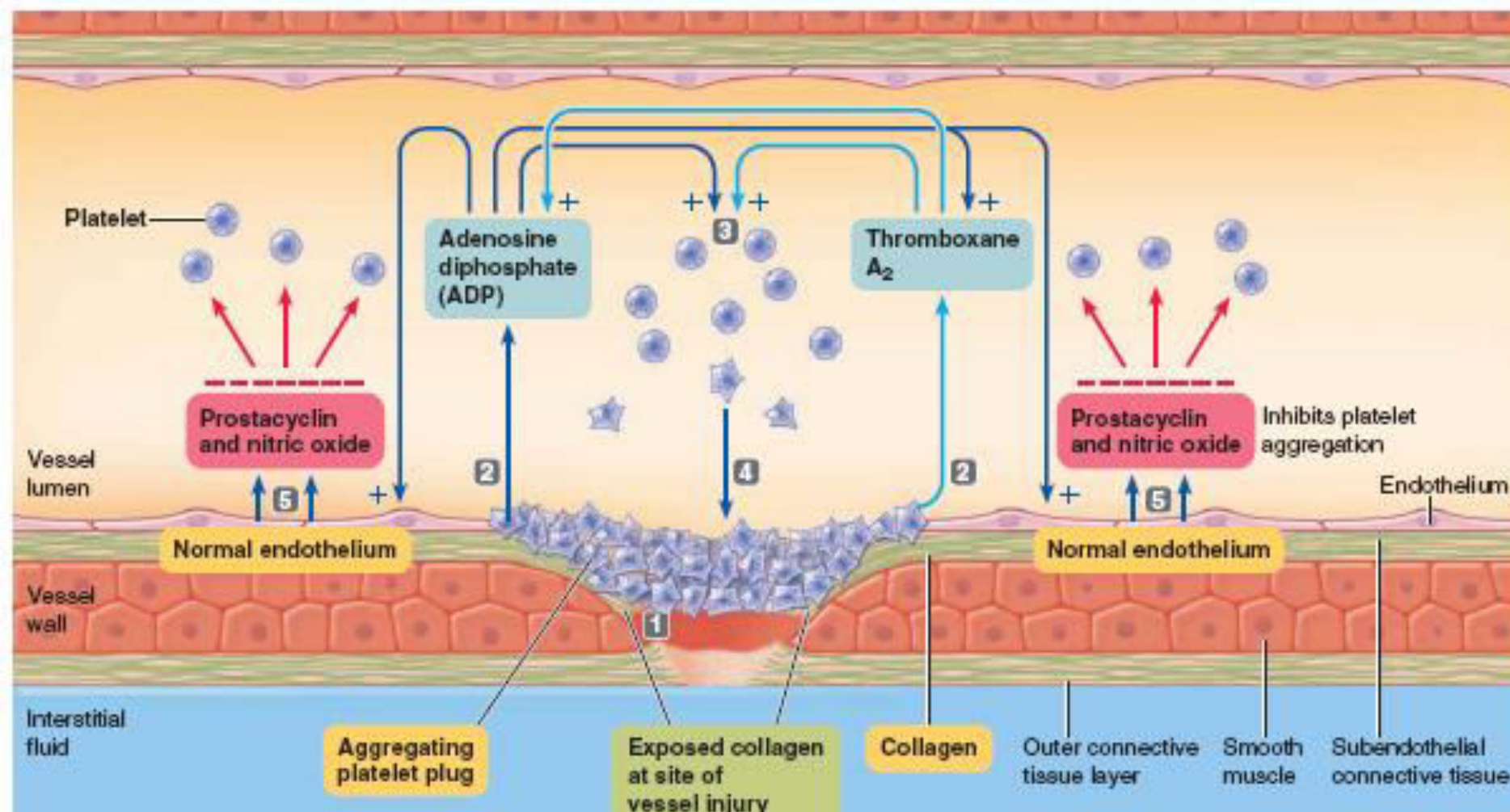
B. Formation of platelet plug

- a. Platelet adhesion
- b. Platelet activation
- c. Platelet aggregation.

C. Clot formation

- a. Intrinsic system
- b. Extrinsic system
- c. Growth of fibrous tissue in clot

Formation of Platelet Plug



1 Platelets adhere to and are activated by exposed collagen at the site of vessel injury.

2 Activated platelets release ADP and thromboxane A₂.

3 These chemical messengers work together to activate other platelets passing by.

4 Newly activated platelets aggregate onto growing platelet plug and release even more platelet-attracting chemicals.

5 Normal (uninjured) endothelium releases prostacyclin and nitric oxide, which inhibit platelet aggregation, so platelet plug is confined to site of injury.

Functions of Platelet Plug

- Seals the break in the vessel
- Strengthens loose plug –actin and myosin
- Reinforce initial vascular spasm—
serotonin, epinephrine, thromboxane A_2
- Enhances blood coagulation