Glanzman Thrombasthenia (autosomal recessive)

- ↓ GPIIb-IIIa (CD41-CD61 complex) → fibrinogen can't bind platelets.

Bernard Soulier syndrome (autosomal recessive)

- ↓ GPIb (CD42b) → VWF can't bind platelets.

Immune Thrombocytopenic Purpura (ITP)

- IgG auto-antibodies against GPIIb-IIIa (chronic ITP: affects middle age adults; F>M)
- Acute ITP: affects children, follows viral infection, self-limited.
- Splenomegaly is not always present but patients benefit from splenectomy.
- ↑ megakaryocytes, large platelets, high MPV (mean platelets volume).
- Spleen shows large aggregates of B-lymphocytes & plasma cells.

Heparin Induced Thrombocytopenia

- Unfractionated heparin → IgG antibody against platelet factor 4 (cross react the platelets) → thrombosis

Thrombotic Microangiopatheis

1. Thrombotic thrombocytopenic purpura (TTP): fever, microangiopathic hemolytic anemia, thrombocytopenia, neurologic deficits & renal failure.
- ↓ ADAMTS 13 (converts the precursor of VWF into VWF) → ↑ precursor → aggregation.

2. Hemolytic uremic syndrome (HUS): dominance of renal failure, no nurological symptoms, common in children.
- Enterohemorrhagic E. coli → shiga toxin → endothelial damage & thrombosis.
- In both diseases: the small circulation is filled with platelets-rich microthrombi, without activation of clotting factors (partial thromboplastin time "PTT" & prothrombin time "PT" are normal).
- Blood film: Schistocytes, thrombocytopenia

* PT: assesses extrinsic factors (V, VII) & common pathway.
* PTT: assesses intrinsic factors (XIII, XI, IX, VIII, V) & common pathway.

Von Willibrand Disease (VWD)

- Autosomal dominant, spontaneous bleeding from mucus membranes wounds & menorrhagia
- Non-functional platelets & deficiency in factor VIII
- Homozygous state resembles hemophilia A, prolonged PTT
- Type 1 VWD: ↓ serum VWF
- Type II A: absent of high-molecular weight multimers of VWF.
- Type II B: the high molecular multimers have very short life & hyper functioning, consuming platelets → mild chronic thrombocytopenia
- Ristocetin agglutination test: activates VWF to bind GPIb → platelets clump, here the test is negative.

Hemophilia A (classical hemophilia)

- X-linked, ↓ factor VIII or normal level but non-functioning factor
- Mild deficiency → excessive bleeding after trauma.
- Severe → life-threatening bleeding (if level drops <1% of normal level).
- Deformity in joints, scant petechiae is absent, prolonged PTT, corrected by mixing study, specific assay test is available.

Hemophilia B (Christmas disease)

- X-linked, ↓ factor IX, clinically similar to hemophilia A.
- factor assay test (to differentiate it from hemophilia A) is available.

Endothelial-Related Bleeding

- Widspread endothelial damage → release of tissue factor → DIC (disseminated intravascular coagulation)
- Rapid consumption of clotting factors (prolonged PT, PTT) & platelets.
- Schistocytes, anemia & thrombocytopenia.