BLEEDING DISORDERS

HEMOSTASIS

1. VASCULAR PHASE
2. PLATELET PHASE
3. COAGULATION PHASE
4. FIBRINOLYTIC PHASE

VASCULAR PHASE

WHEN A BLOOD VESSEL IS DAMAGED, VASOCONSTRICTION RESULTS.

PLATELET PHASE

PLATELETS ADHERE TO THE DAMAGED SURFACE AND FORM A TEMPORARY PLUG.

C O A G U L A T I O N P H A S E

THROUGH TWO SEPARATE PATHWAYS THE CONVERSION OF FIBRINOGEN TO FIBRIN IS COMPLETE.

F I B R IN O L Y T IC P H A S E

ANTICLOTTING MECHANISMS ARE ACTIVATED TO ALLOW CLOT DISINTEGRATION AND REPAIR OF THE DAMAGED VESSEL.

HEMOSTASIS

DEPENDENT UPON:

① Vessel Wall Integrity

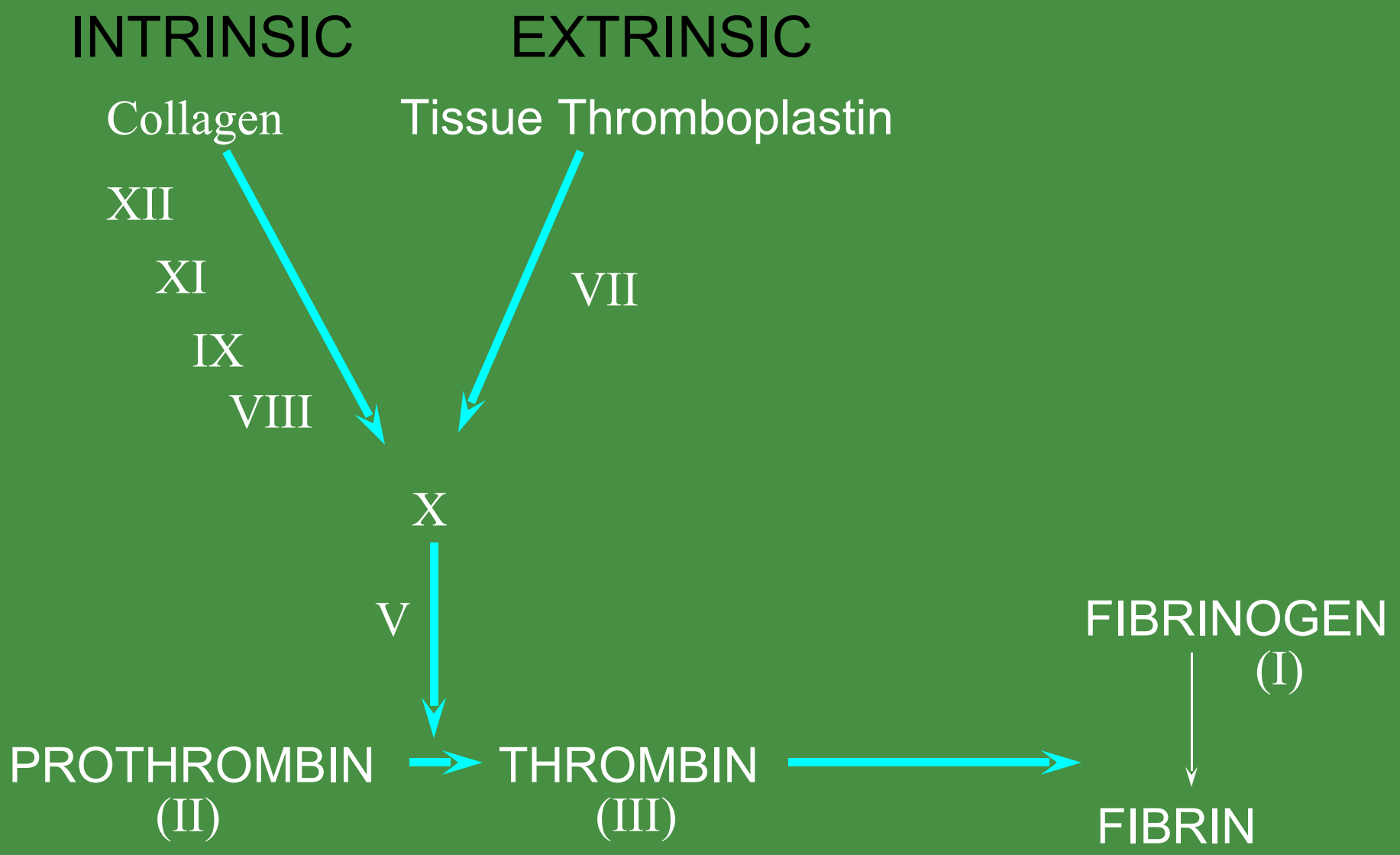
② Adequate Numbers of Platelets

③ Proper Functioning Platelets

④ Adequate Levels of Clotting Factors

⑤ Proper Function of Fibrinolytic Pathway

THE CLOTTING MECHANISM



LABORATORY EVALUATION

- PLATELET COUNT
- BLEEDING TIME (BT)
- PROTHROMBIN TIME (PT)
- PARTIAL THROMBOPLASTIN TIME (PTT)
- THROMBIN TIME (TT)

PLATELET COUNT

- NORMAL — 100,000 - 400,000 CELLS/MM^3

< 100,000	Thrombocytopenia
50,000 - 100,000	Mild Thrombocytopenia
< 50,000	Sev Thrombocytopenia

B L E E D IN G TIM E

- PROVIDES ASSESSMENT OF PLATELET COUNT AND FUNCTION

NORMAL VALUE

2-8 MINUTES

PROTHROMBIN TIME

- Measures Effectiveness of the Extrinsic Pathway
- Mnemonic - PET

NORMAL VALUE

10-15 SECS

PARTIAL THROMBOPLASTIN TIME

- Measures Effectiveness of the Intrinsic Pathway
- Mnemonic - PITT

NORMAL VALUE

25-40 SECS

THROMBIN TIME

- Time for Thrombin To Convert
  Fibrinogen ⟶ Fibrin
- A Measure of Fibrinolytic Pathway

NORMAL VALUE

9-13 SECS

So What Causes Bleeding Disorders?

- **VESSEL DEFECTS**
- PLATELET DISORDERS
- FACTOR DEFICIENCIES
- OTHER DISORDERS

VESSEL DEFECTS

- VITAMIN C DEFICIENCY
- BACTERIAL & VIRAL INFECTIONS
- ACQUIRED

So What Causes Bleeding Disorders?

- VESSEL DEFECTS
- PLATELET DISORDERS
- FACTOR DEFICIENCIES
- OTHER DISORDERS

PLATELET DISORDERS

- THROMBOCYTOPENIA
- THROMBOCYTOPATHY

THROMBOCYTOPENIA

INADEQUATE NUMBER OF PLATELETS

THROMBOCYTOPATHY

ADEQUATE NUMBER BUT ABNORMAL FUNCTION

THROMBOCYTOPENIA

- DRUG INDUCED
- BONE MARROW FAILURE
- HYPERSPLENISM
- OTHER CAUSES

THROMBOCYTOPENIA

- DRUG INDUCED

.Alcohol

.Thiazide Diuretics

THROMBOCYTOPENIA

- BONE MARROW FAILURE
  - Viral Infections
  - Nutritional Deficiencies
  - Chemotherapy & Radiation Therapy
  - Infiltration of Abnormal Cells
    - Aplastic Anemia
    - Leukemia
    - Metastatic Cancer

THROMBOCYTOPENIA

- HYPERSPLENISM
  - Increase in Size Leads to Destruction of Platelets
  - Associated with Portal Hypertension Seen in Patients with Cirrhosis

THROMBOCYTOPENIA

- OTHER CAUSES
  - Lymphoma
  - HIV Virus
  - Idiopathic Thrombocytopenia Purpura (ITP)

THROMBOCYTOPATHY

- UREMIA
- INHERITED DISORDERS
- MYELOPROLIFERATIVE DISORDERS
- DRUG INDUCED

THROMBOCYTOPATHY

- DRUG INDUCED

ASPIRIN

IRREVERSIBLY BINDS TO THE PLATELET FOR ITS ENTIRE LIFESPAN (7-10 DAYS)

THROMBOCYTOPATHY

- DRUG INDUCED

NSAIDS

REVERSIBLY BINDS TO THE PLATELET
FOR A LIMITED TIME PERIOD
(APPROX 6 HOURS)

FACTOR DEFICIENCIES

(CONGENITAL)

- HEMOPHILIA A
- HEMOPHILIA B
- VON WILLEBRAND'S DISEASE

FACTOR DEFICIENCIES

- HEMOPHILIA A (Classic Hemophilia)
  - 80-85% of all Hemophiliacs
  - Deficiency of Factor VIII
  - Lab Results - Prolonged PTT

- HEMOPHILIA B (Christmas Disease)
  - 10-15% of all Hemophiliacs
  - Deficiency of Factor IX
  - Lab Test - Prolonged PTT

FACTOR DEFICIENCIES

- VON WILLEBRAND'S DISEASE
  - Deficiency of VWF & amount of Factor VIII
  - Lab Results - Prolonged BT, PTT

OTHER DISORDERS

(ACQUIRED)

- ORAL ANTICOAGULANTS
  - COUMARIN
  - HEPARIN
- LIVER DISEASE
- MALABSORPTION
- BROAD-SPECTRUM ANTIBIOTICS

OTHER DISORDERS

- ORAL ANTICOAGULANTS

  Coumarin Prevents Thromboembolic Events & is a Vit K Antagonist. Monitored by PT times.

  Heparin Therapy is Monitored by PTT times.

OTHER DISORDERS

- MALABSORPTION
  - Various Intestinal Diseases Will Interfere w/ Bile Acid Metabolism.
  - Bile Acids are Required for Vit K Absorption so You Will See a Deficiency in Vit K Dependent Coagulation Factors (II,VII,IX,X).

OTHER DISORDERS

* LIVER DISEASE
  - Jaundice Results in Malabsorption of Vit K.
  - Liver Disease can Result in Reduced Production of Coagulation Factors (I,II,V,VII,IX,X).

OTHER DISORDERS

- BROAD-SPECTRUM ANTIBIOTICS
  - Change in Intestinal Flora which Might Decrease Vitamin K Production.
  - Vitamin K is Necessary for the Liver to Produce Coagulation Factors II,VII,IX,X.

DENTAL EVALUATION

- GOOD THOROUGH MEDICAL HISTORY
- A PHYSICAL EXAMINATION
- SCREENING CLINICAL LAB TESTS
- EXCESSIVE BLEEDING FOLLOWING SURGICAL PROCEDURE

GOOD THOROUGH HISTORY

- Family HX
- Personal HX
- Medications
- Past & Present Illness
- Spontaneous Bleeding

REVIEW PATIENT'S MEDS

FIVE DRUGS THAT INTERFERE WITH HEMOSTASIS

- ASPIRIN
- ANTICOAGULANTS
- ANTIBIOTICS
- ALCOHOL
- ANTICANCER

ORAL MANIFESTATIONS

- Petechiae & Ecchymosis
- Gingival Hyperplasia
- Spontaneous Gingival Bleeding
- Ulceration of Oral Mucosa
- Lymphadenopathy

DENTAL PATIENTS

- LOW RISK
  - Patients with No Hx of Bleeding Disorders
  - Normal Laboratory Results

- MODERATE RISK
  - Patients on Chronic Oral Anticoagulant Therapy.

    PT is 1.5 - 2 Times Control Range
  - Patients on Chronic Aspirin Therapy

DENTAL PATIENTS

- HIGH RISK
  - Patients with Known Bleeding Disorders
  - Patients without Known Bleeding Disorders Who Have Abnormal Laboratory Results

DENTAL MANAGEMENT

- LOW RISK PATIENTS
  - Normal Protocol
- MODERATE RISK PATIENTS
  - Anticoagulants - Consult Physician
  - Aspirin Therapy - BT, Consult Physician