Etamsylate (Sylate), Mechanism of Action, Indication and Dosage

Etamsylate is a synthetic antihemorrhagic (hemostatic) agent primarily used to reduce bleeding by enhancing the initial phase of hemostasis, specifically by promoting **endothelial-platelet interactions** . Unlike many hemostatics, etamsylate does **not cause vasoconstriction** , nor does it affect the coagulation cascade or fibrinolysis.

Mechanism of Action

- **Primary action** : Improves platelet adhesiveness to damaged endothelium, promoting platelet plug formation.
- **Effect on capillaries** : Increases capillary resistance and reduces capillary permeability, which decreases bleeding time and blood loss.
- **Does NOT** :
    - Affect fibrin mesh breakdown (fibrinolysis).
    - Modify plasma coagulation factors.
    - Induce vasoconstriction.

Pharmacokinetics

- Crosses the **placental barrier** , resulting in similar drug concentrations in maternal and fetal blood.
- Onset of action: 1 to 5 minutes after parenteral administration.
- Excretion: Mostly unchanged via biliary, urinary, and intestinal routes.
- Blood levels: Approximately 6.5%–11.5% remains after 1 hour post administration.
- **No teratogenic effects** reported in multi-generational animal studies.

Indications

Internal Medicine

- Prevention and treatment of **capillary hemorrhages** of various origins.
- Conditions with bleeding symptoms:
    - Hematuria (blood in urine)
    - Hematemesis (vomiting blood)
    - Melena (black tarry stools from GI bleeding)
    - Metrorrhagia (abnormal uterine bleeding)
    - Primary or IUD-related metrorrhagia
    - Hemorrhagic gingivitis

Surgery

- Prevention and management of postoperative bleeding (oozing), especially in highly vascularized tissues.
- Specific surgical fields:

- Ear, Nose, and Throat (ENT)
- Urology
- Ophthalmology
- Odontostomatology (dental surgery)
- Plastic and reconstructive surgery

Obstetrics and Gynecology

- Used to control bleeding during gynecological and obstetric surgeries.

Pediatrics

- Prevention of hemorrhages in premature or preterm neonates.

Dosage and Administration

Adults

- **Preoperative** : 1–2 ampoules (IV/IM) 1 hour before surgery.
- **Perioperative** : 1–2 ampoules (IV), repeat if necessary.
- **Postoperative** : 1–2 ampoules (IV/IM) every 4–6 hours as long as bleeding risk persists.
- **Emergency bleeding** : 1–2 ampoules every 4–6 hours, titrated to severity.

  Note : IV doses should ideally be diluted 1:2 with dextrose or saline.

Local Use

- Swab soaked with ampoule content applied directly to bleeding site or tooth socket post-extraction. May be repeated as needed, often combined with systemic administration.

Pediatrics

- Half of the adult dose.

Neonates

- 10 mg/kg body weight (approx. 0.1 mL or 12.5 mg) IM within 2 hours after birth, then every 6 hours for 4 days.

Contraindications and Precautions

- **Avoid use during the first trimester of pregnancy** due to insufficient safety data.
- Use cautiously in patients with known hypersensitivity to etamsylate.

Adverse Effects

- Generally well tolerated.
- Rare side effects may include:

    - Nausea and vomiting
    - Headache
    - Skin rash
- No significant allergic or serological reactions reported.

High-Yield Notes

- **Etamsylate promotes hemostasis by enhancing platelet-endothelium interaction without affecting coagulation factors or fibrinolysis.**
- Does **not cause vasoconstriction** , distinguishing it from other hemostatic agents like vasopressin.
- Crosses placenta, so fetal exposure occurs; however, no teratogenicity seen in animal studies.
- Useful for bleeding in various clinical settings: internal medicine (capillary hemorrhages), surgery (post-op bleeding), obstetrics (metrorrhagia), and neonatology (preterm hemorrhages).
- Administered parenterally (IV/IM); local topical use possible.
- Avoid first trimester of pregnancy.
- Side effects are rare and mild.