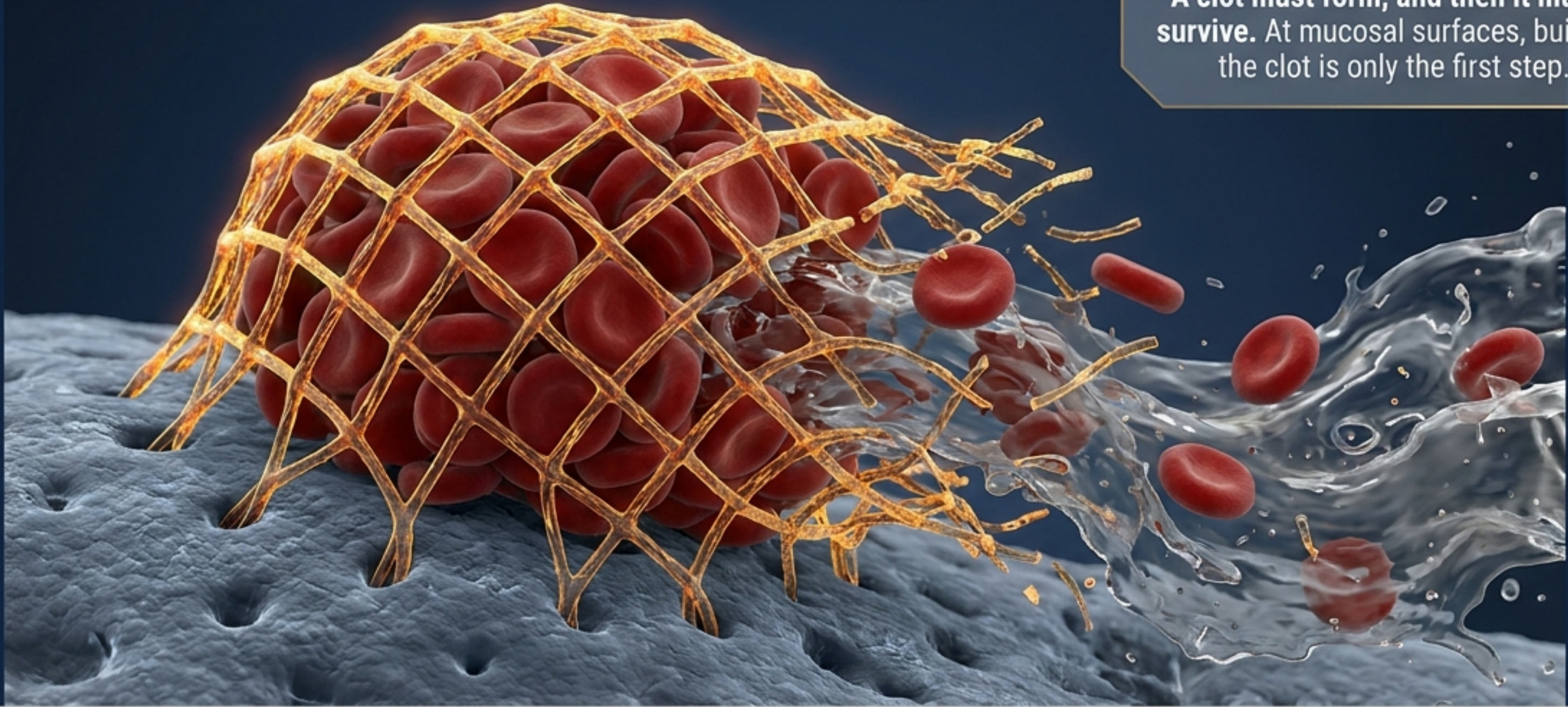


A clot must form, and then it must survive. At mucosal surfaces, building the clot is only the first step.

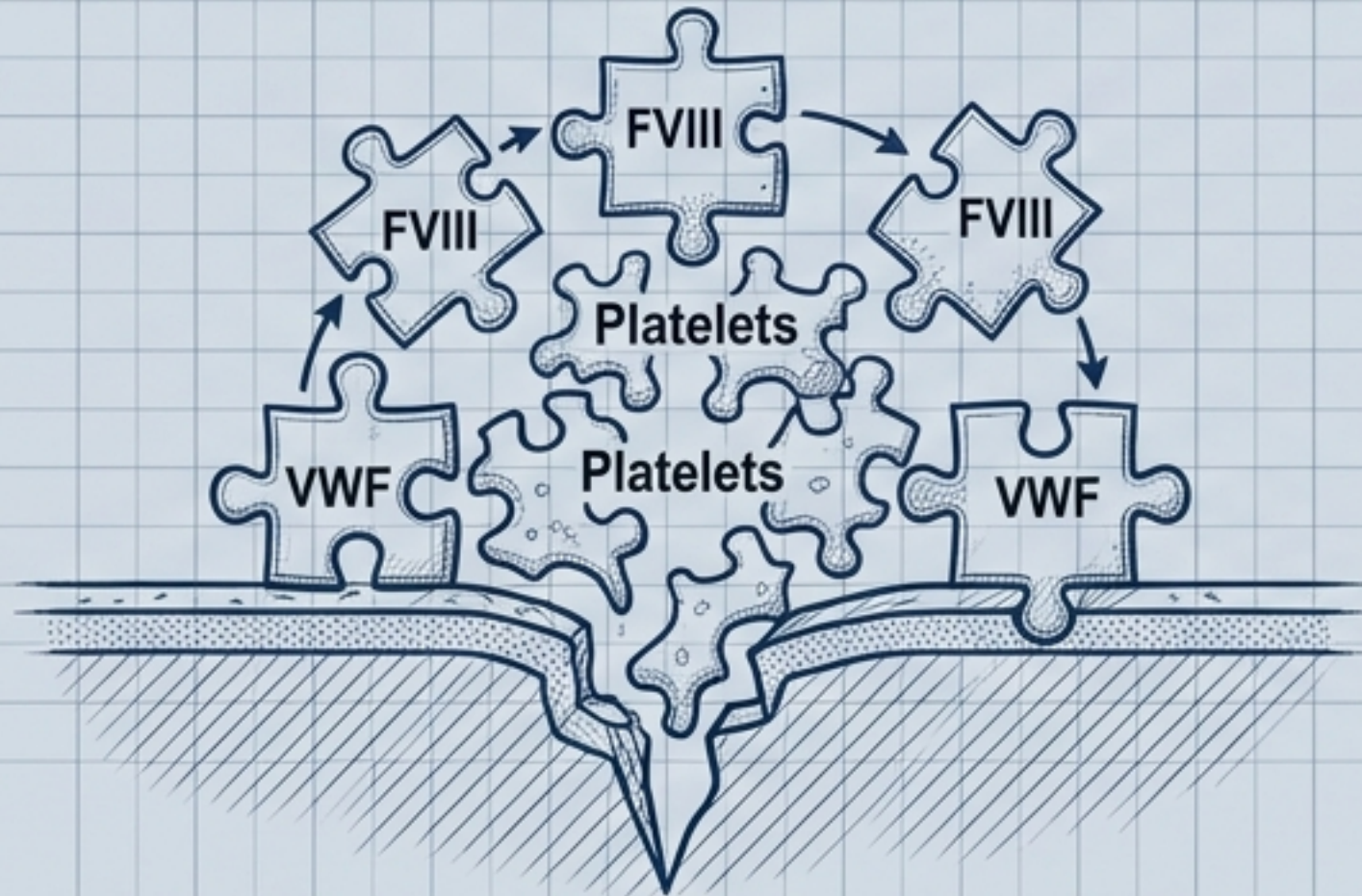


Clot Preservation in VWD: Antifibrinolytics & Local Support

Raising VWF is only half the hemostatic equation.

The Two Halves of Hemostasis

Phase 1 – Formation



The Goal: Build the scaffold. Recognize injury, capture platelets, and stabilize the initial plug.

The Tools: Desmopressin (releases VWF) and Concentrates (replace VWF).

The Limitation: These therapies build the clot but cannot protect it from local environmental destruction.

Phase 2 – Persistence



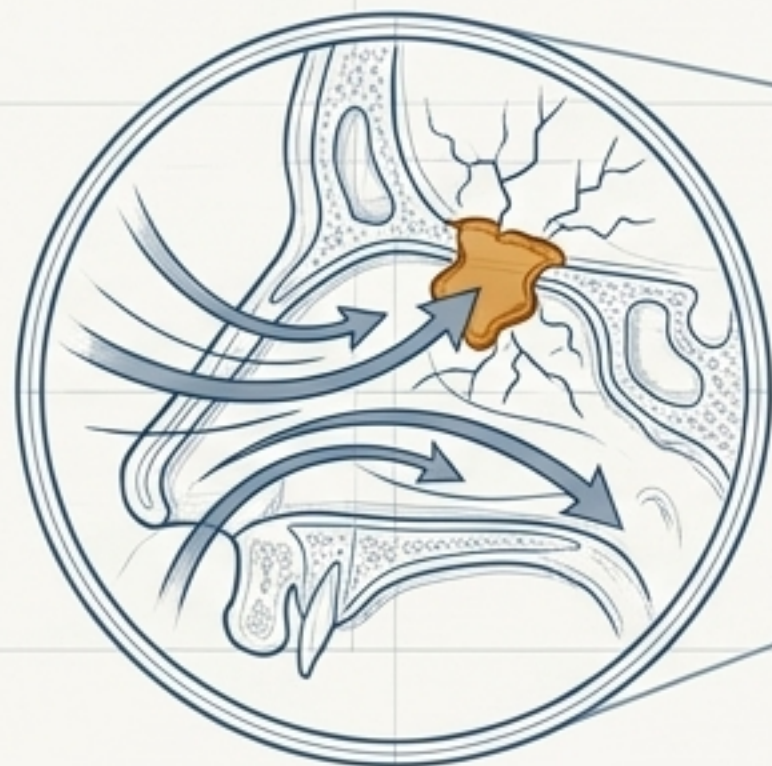
The Goal: Preserve the structure. Keep the clot intact long enough for tissue repair.

The Tools: Antifibrinolytics (TXA, Aminocaproic Acid) and Local Measures.

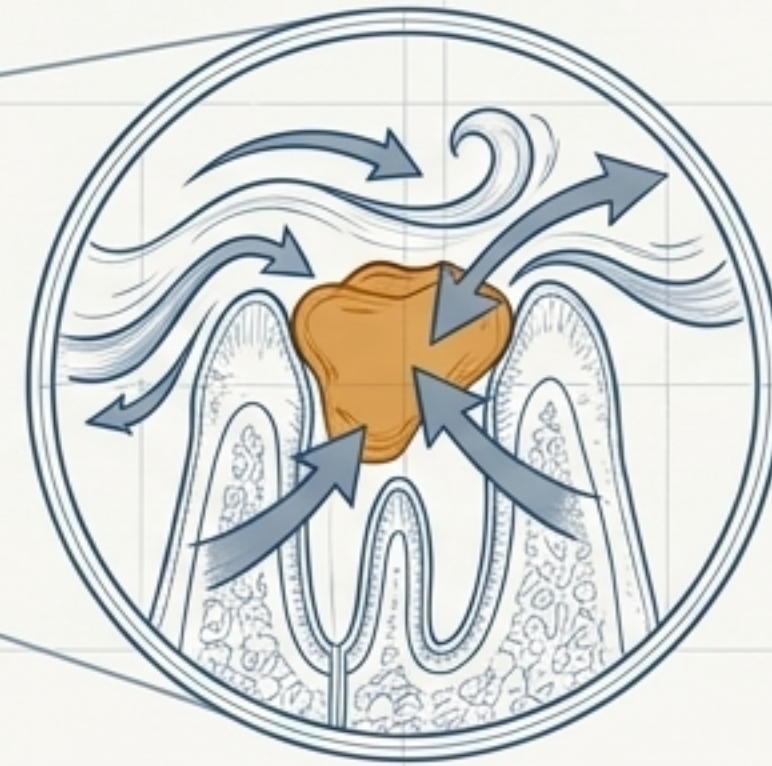
The Reality: Antifibrinolytics do not correct VWF or platelet adhesion. They are supportive therapies that hold the line.

The Mucosal Challenge: Managing Hostile Terrain

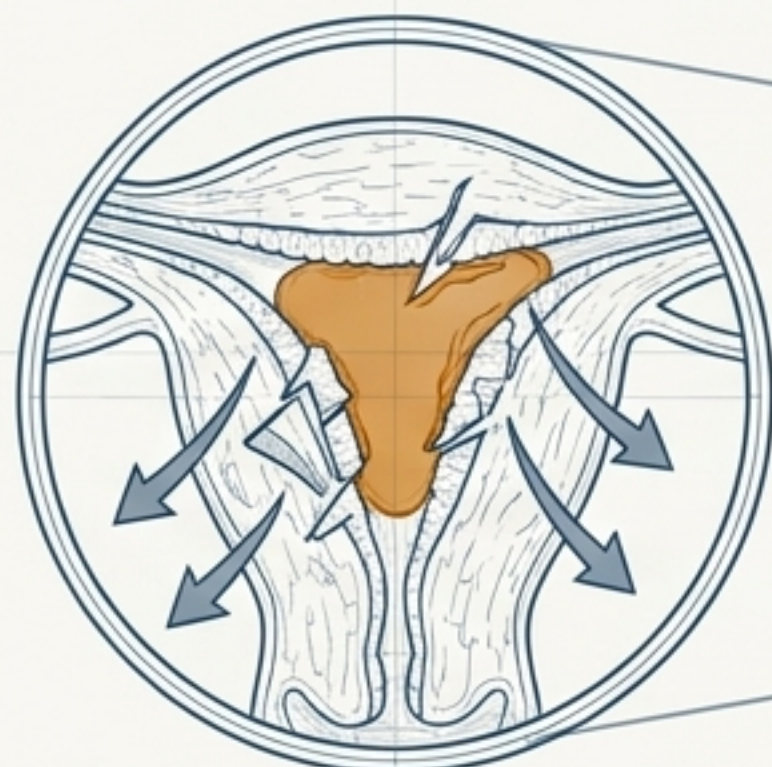
Mucosal bleeding is difficult because clots do not just fail to form—they are actively washed away, dissolved, or mechanically disrupted.



Nasal Cavity:
Exposed & Fragile.
High air velocity, crusting,
and constant mechanical
trauma.



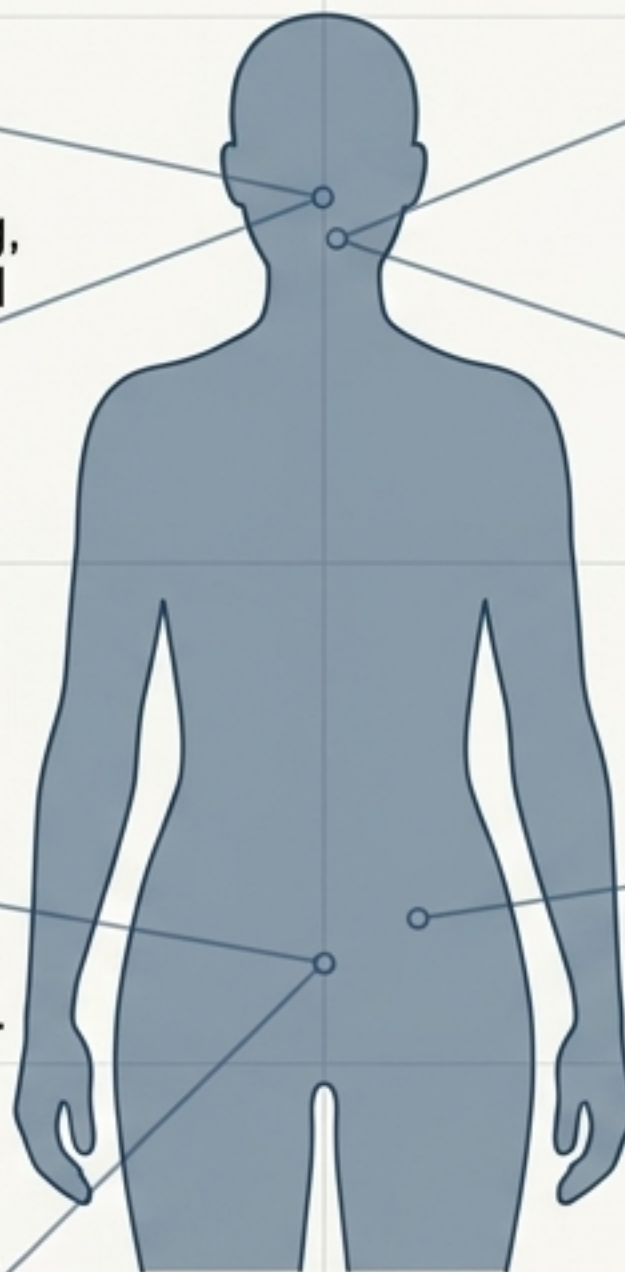
Oral Cavity / Dental:
Wet & Mobile.
Salivary washout,
active fibrinolysis,
chewing, and speech.



Uterus:
Remodeling & Shedding.
Recurring structural
collapse, massive
massive surface area,
and menstrual shedding.



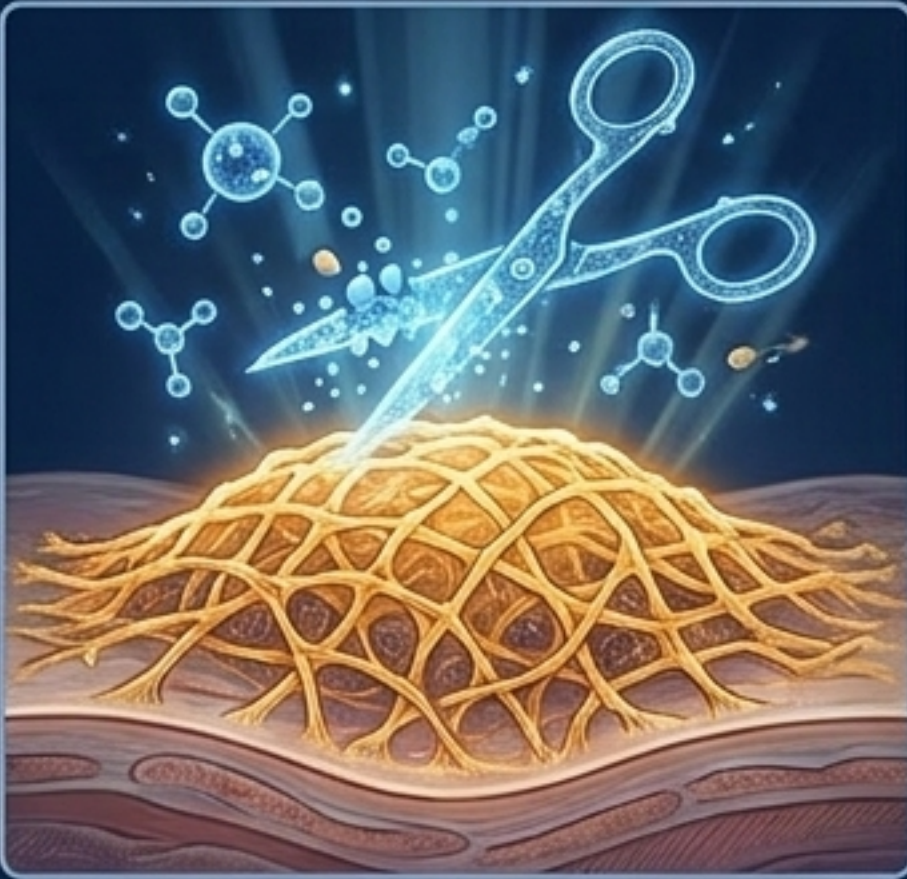
Gastrointestinal Tract:
Chemical & Peristaltic.
High enzyme activity,
mechanical transit
(Caution: recurrent
GI bleeding often
requires broader VWF-
directed strategies).



Mechanism of Action: Capping the Fibrinolytic Shears

Key Concept: The goal is not to make a new clot from nothing. The goal is to prevent premature clot dissolution.

1. High Local Activity



Mucosal surfaces naturally possess high levels of fibrinolytic activity to prevent unnecessary scar tissue.

2. The Plasmin Threat



Plasmin degrades the fibrin mesh faster than the VWD-impaired coagulation cascade can rebuild it.

3. The Intervention



Tranexamic acid and aminocaproic acid interfere directly with the plasminogen-plasmin system, capping the breakdown process.

*Footnote: Antifibrinolytics do not replace absent VWF. They rely entirely on a baseline clot being formed.

The Primary Tools: Antifibrinolytic Agents

Tranexamic Acid (TXA)



- **Role:** The central antifibrinolytic for VWD.
- **Delivery:** Oral, IV, or Topical.
- **Common Indications:** Dental procedures, epistaxis, heavy menstrual bleeding, minor mucosal procedures, postpartum support.
- **Guideline Context:** 2021 ASH/ISTH/NHF/WFH guidelines support TXA as a standalone therapy for minor procedures in selected mild Type 1 patients (baseline VWF > 0.30 IU/mL).

Aminocaproic Acid



- **Role:** The pragmatic alternative.
- **Delivery:** Oral liquid, Oral rinses, IV.
- **Common Indications:** Highly effective as a localized oral rinse for dental procedures. Widely used liquid formulation for pediatric patients.
- **Guideline Context:** Acknowledged by 2021 guidelines as a reasonable alternative when specific formulations (like rinses or pediatric liquids) align better with patient needs.

Local Measures In Measures Are Active Treatment, Not Decoration

In mucosal bleeding, a systemic plan without local hemostasis will likely fail. A local plan without systemic support may also fail. **Good care requires both.**

Gelatin Sponges



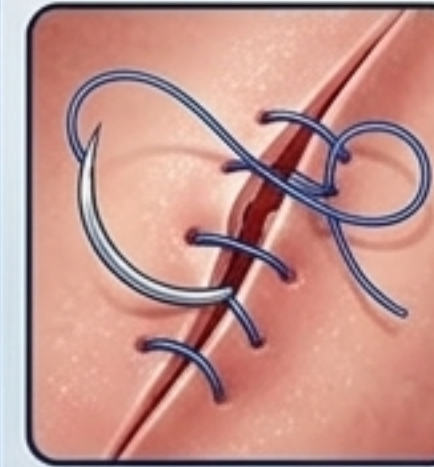
Provide a physical matrix for clot adherence in voids.

Fibrin Glue



Instantly seals micro-vascular beds without relying on host coagulation.

Suturing



Mechanically reduces exposed surface area and counters local tissue mobility.

Emollients & Humidification



Prevent the crusting and re-injury of fragile nasal mucosa.

TXA Rinses



Bathe the local terrain in high-concentration antifibrinolytics without systemic load.

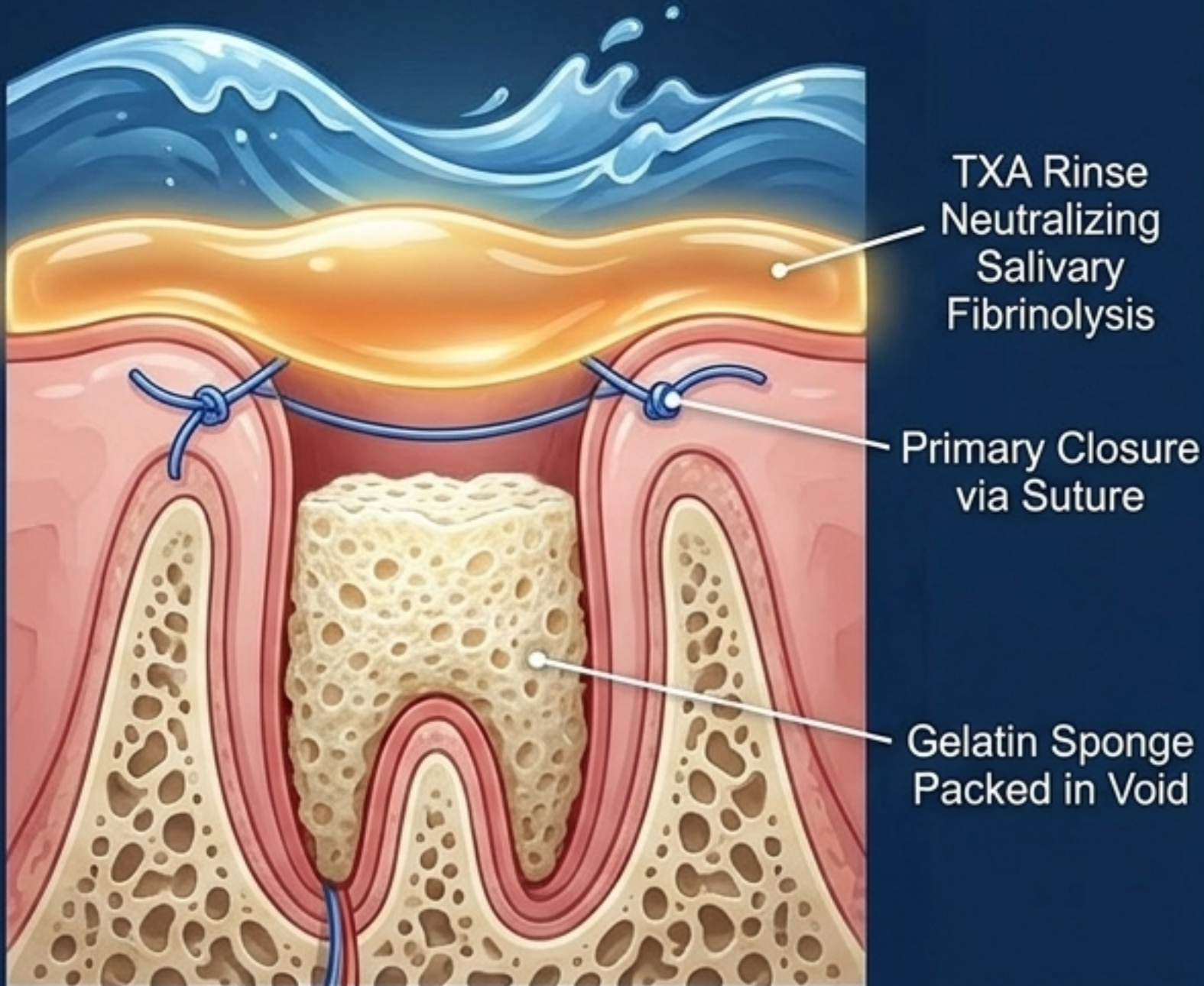
Direct Pressure/Packing



Counteracts local hydrostatic capillary pressure.

Terrain Application 1: Dental & Oral Hemostasis

Context: The dental injury is local, the surface is mucosal, saliva disrupts stability, and chewing creates massive mechanical stress.



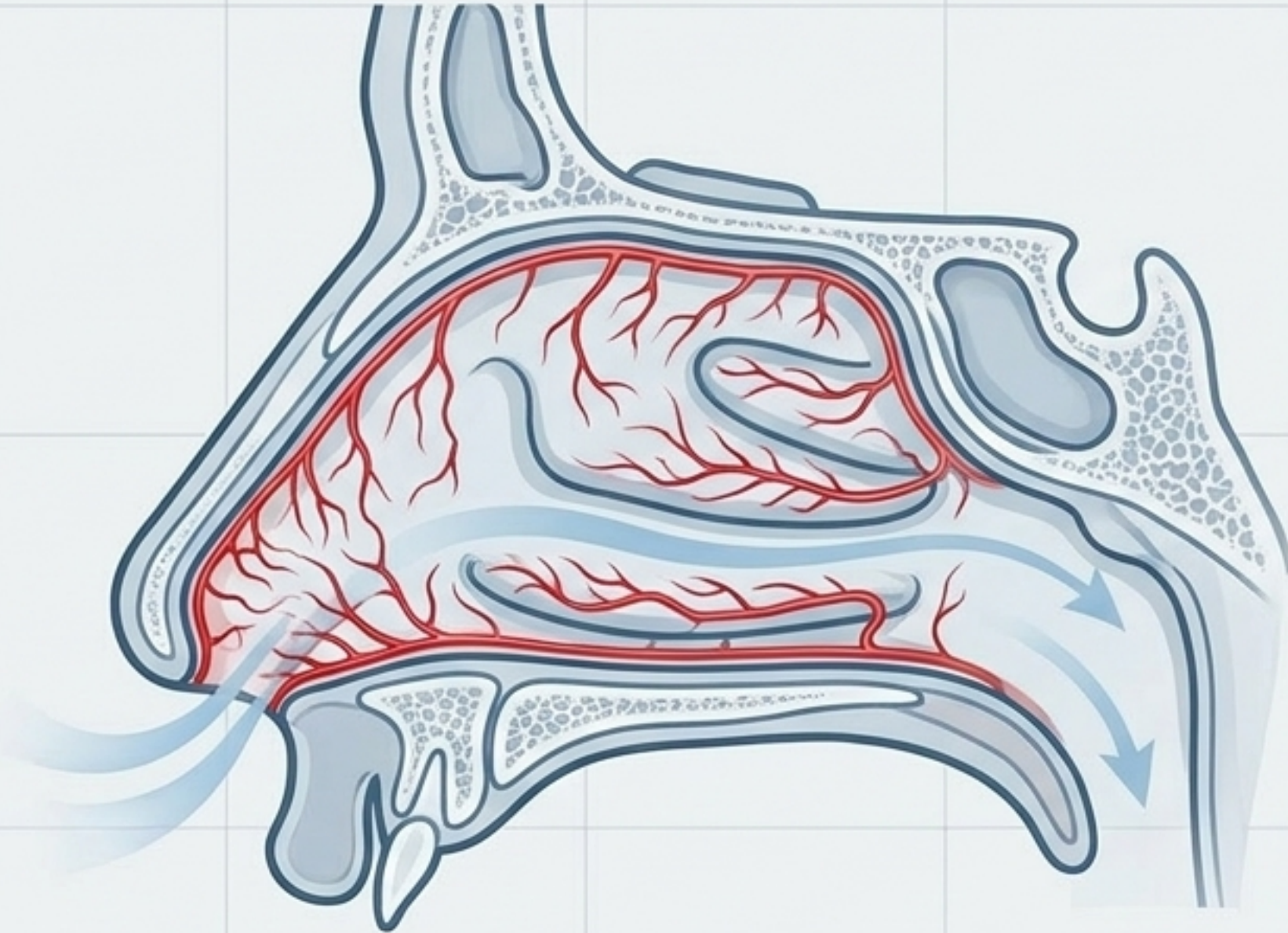
Multidisciplinary Site Plan

- ☐ **Pre-procedure:** Coordinate with the dental proceduralist. Assess need for VWF-raising therapy (desmopressin/concentrates).
- ☐ **Intra-procedure:** Avoid traumatic technique. Utilize local packing (gelatin sponge) and primary closure (suturing).
- ☐ **Post-procedure:** Initiate TXA or aminocaproic acid rinse to neutralize salivary fibrinolysis.

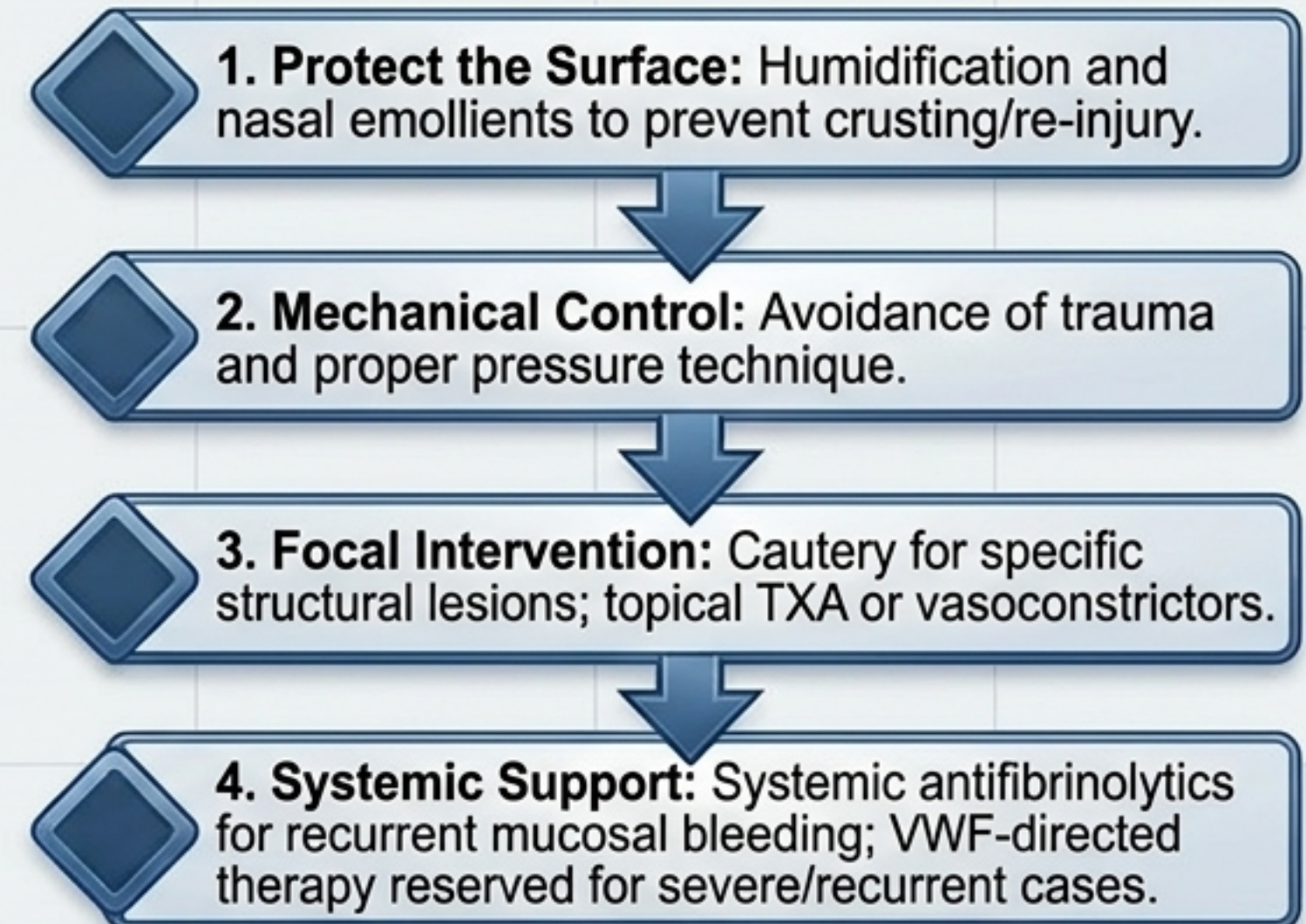
Takeaway: Dental hemostasis is not cosmetic detail; it is **mechanism at the surface**. If **bleeding is local**, **part of the treatment must be local**.

Terrain Application 2: Epistaxis

Context: Epistaxis is common in VWD, but also in the general population. The nasal mucosa is exceptionally fragile, highly vascular, and constantly exposed to airflow and trauma.



Step-by-Step Control Pathway

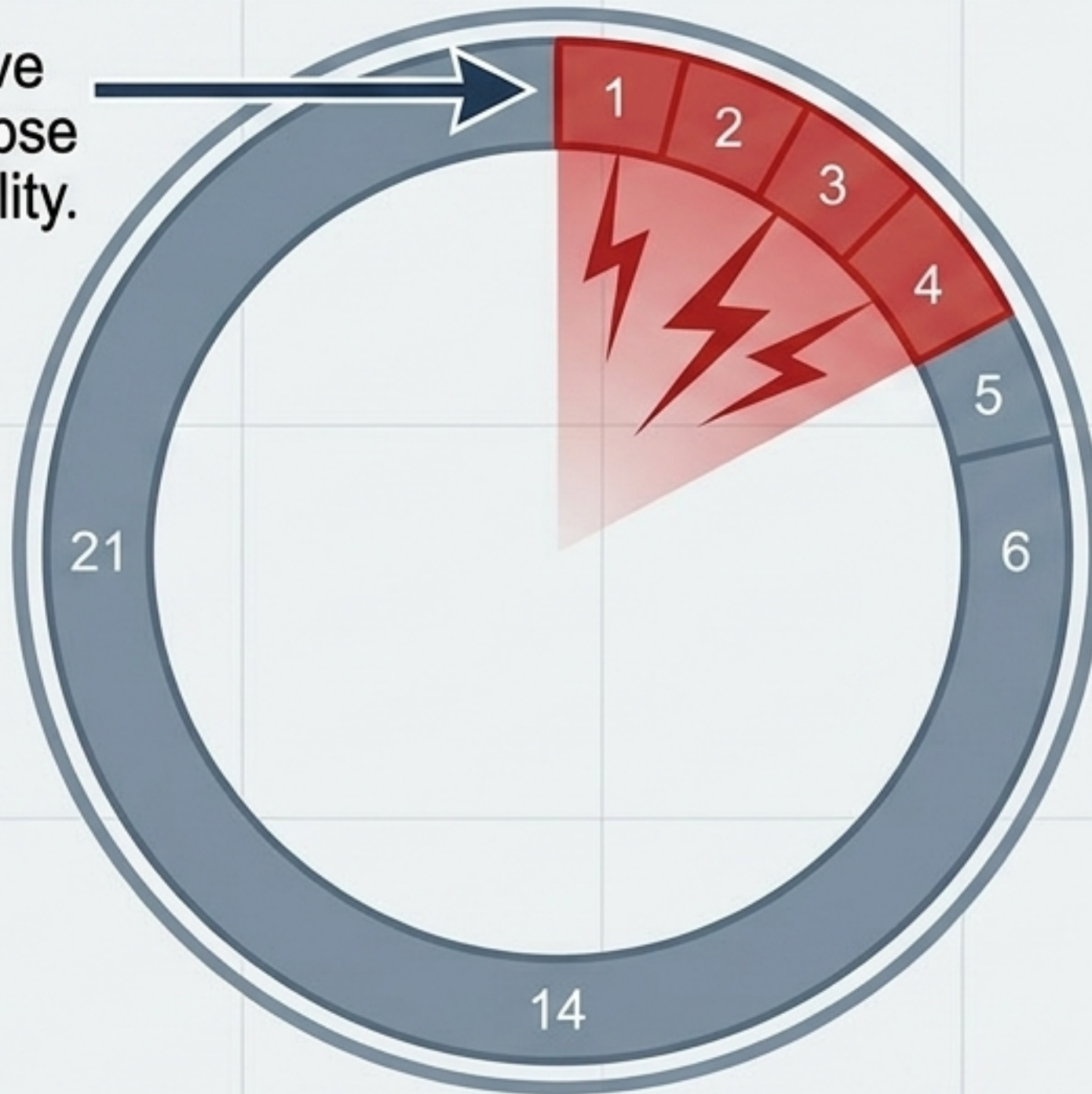


Takeaway: Avoid treating epistaxis only as a systemic factor problem. **The missing intervention is often better local control, not more VWF.**

Terrain Application 3: Heavy Menstrual Bleeding

Context: HMB is not merely a VWF-level problem; it is a recurring clot-stability and structural shedding problem. Clot protection often matters more than acute factor correction.

Period of active structural collapse and clot instability.



Guideline Approach (2021 ASH/ISTH/NHF/WFH)

- **Desiring Pregnancy:** TXA is suggested over desmopressin.
- **Not Desiring Pregnancy:** Hormonal therapy or TXA are favored over desmopressin.

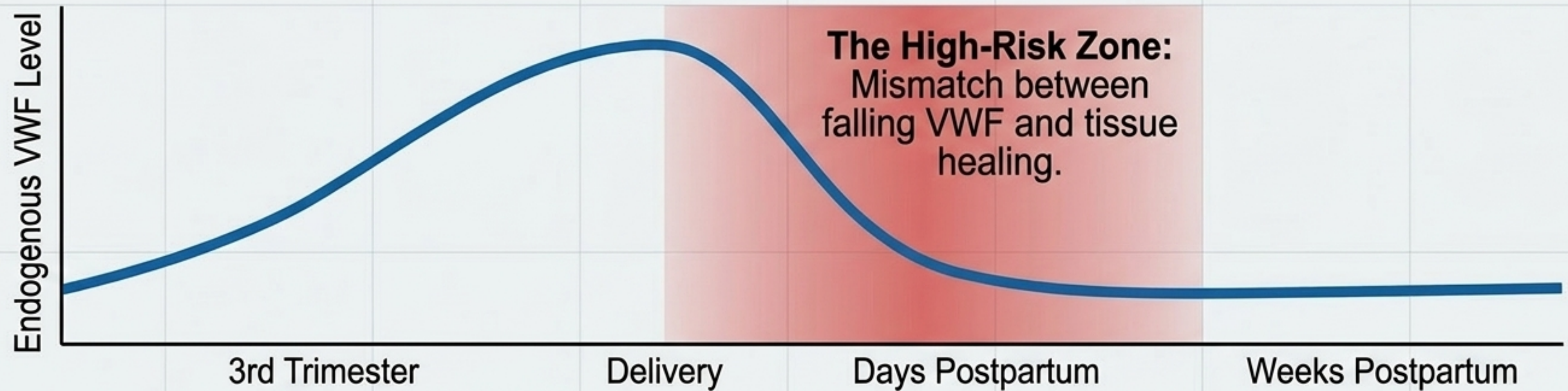
Mandatory Parallel Care: Iron Repletion

- Iron deficiency must be actively assessed and treated.
- Anemia and iron deficiency independently drive adverse outcomes and drastically reduce health-related quality of life.

**Note: VWD may explain the bleeding tendency, but it does not exclude underlying uterine pathology (e.g., fibroids).*

Terrain Application 4: The Postpartum Vulnerability Interval

Context: Postpartum care is not just about the moment of delivery. It is about the days and weeks after, when massive tissue remodeling and rapidly falling VWF levels collide.



The Recommendation

The 2021 guidelines suggest TXA use over **no TXA** in **women** with Type 1 VWD or low VWF during the postpartum period.

Severe Phenotypes

For **Type 2 and Type 3 VWD**, **TXA alone is insufficient**. **VWF-directed therapy** is often required alongside TXA.

Takeaway: Bleeding risk increases sharply after the moment that initially looked reassuring. Protect the clot while the tissue involutes.

Safety & Contraindications: The Terrain Warning

The Golden Rule: A drug that is ideal for the oral mucosa may be **strictly contraindicated** in the upper tract. Site matters.

Ideal Terrain: Oral & Mucosal



Antifibrinolytics are highly effective and generally safe for localized mucosal stabilization where structural obstruction is not a risk.

Contraindication: Hematuria & Urinary Tract



- **Antifibrinolytic** use in hematuria of unknown origin, or suspected renal/ureteral bleeding, is strongly cautioned against.
- **Mechanism of harm:** Preventing clot breakdown in the confined space of the ureter can cause permanent, obstructing clots and severe renal damage.

Caution: The Thrombotic Overlap. In patients at higher baseline risk of thrombosis, avoid combining extended periods of very high VWF/FVIII levels (via concentrates) with extended systemic TXA use.

Monitoring: The Clinical Compass

Context: Unlike VWF replacement or desmopressin, antifibrinolytics have no simple laboratory response marker. There is no routine “TXA level” to guide mucosal bleeding control.

What the Lab sees



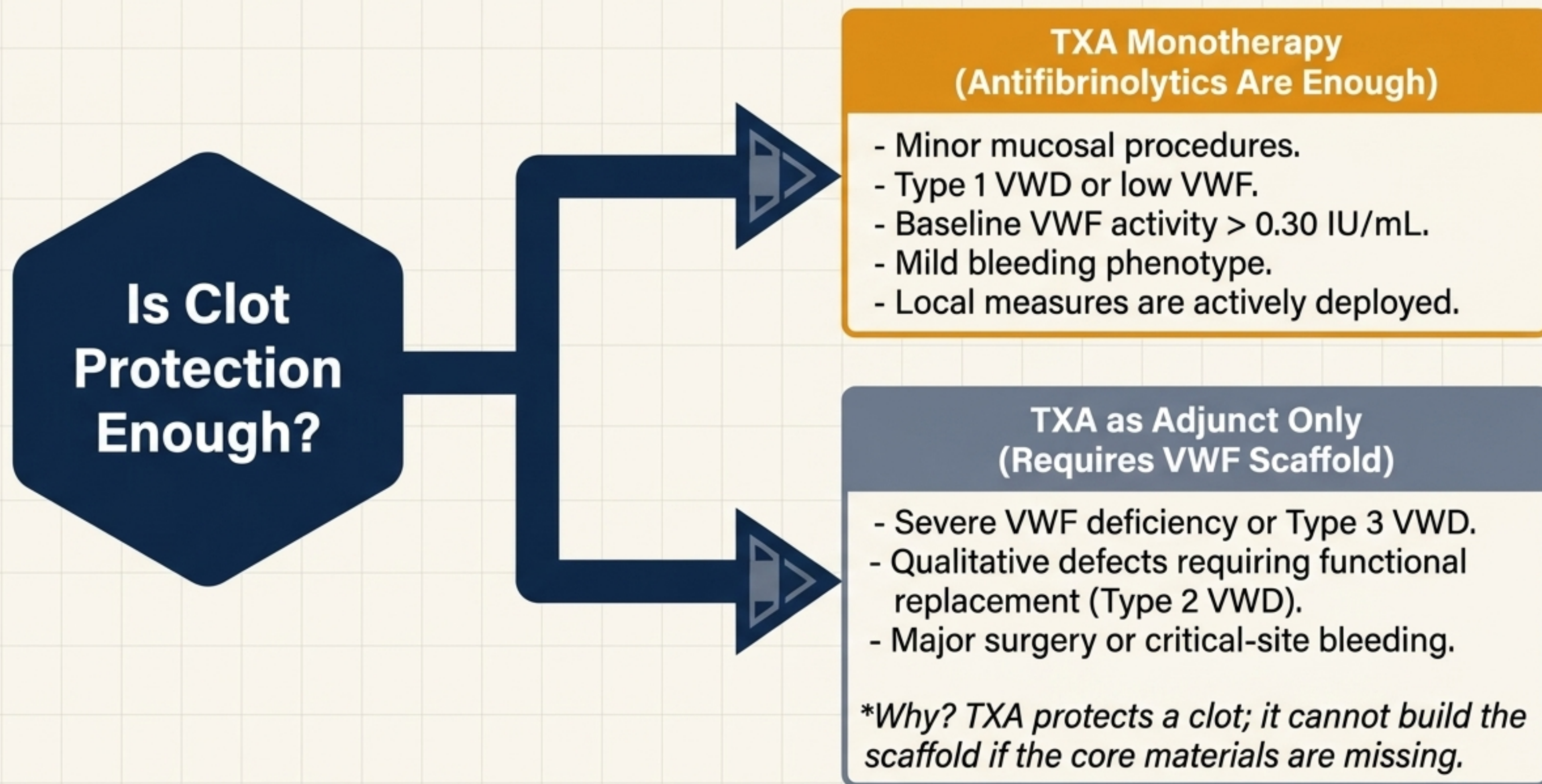
No Target. The laboratory can tell you if VWF rose, but it cannot measure local mucosal clot stability.

What the **Clinician** sees

-
- ☒ Is the bleeding slowing?
 - ☒ Is the local site visually stable?
 - ☒ Is the patient tolerating the therapy?
 - ☒ Is the hemoglobin stabilizing?
 - ☒ Does bleeding recur when therapy stops?

The patient tells you whether the clot actually held.

Diagnostic Matrix: When is Protection Enough?



Synthesis: Layered Terrain-Matching

Combination therapy is not random escalation. It is matching a specific therapy to a specific layer of the bleeding problem.



Insight: Good VWD care does not just treat the systemic laboratory defect; it actively treats the local terrain.

Reflect & Apply



The Case:

- **Patient:** 19-year-old woman with Type 1 VWD.
- **Procedure:** Extraction of two wisdom teeth.
- **Baseline:** VWF activity is 42 IU/dL.
- **History:** Mild phenotype, but prolonged oozing after standard dental cleanings. No major surgery.
- **The Situation:** The systemic laboratory values are reassuring. The local mucosal site is hostile.

1. Is the main challenge here systemic hemostasis, local clot stability, or both?

3. How would this plan drastically change if she had Type 3 VWD?

2. Why might local clot protection (TXA rinse, gelatin sponge, suturing) be more decisive here than chasing a VWF activity target?

VWD treatment is not only about forming the clot. It is also about helping the clot survive where the body needs it most.