

# What does vasculitis mean to us? - Dr Deepak Parikh

## I. Definition: Vasculitis vs. Mimickers

The core of the diagnosis lies in understanding that vasculitis is an **inflammatory injury** to blood vessels.

### 1. Hallmarks of Vasculitis

- **Mandatory Inflammation:** There must be an inflammatory response within the vessel wall. A simple "shortcut" or mechanical trauma to a vessel is not vasculitis.
- **Fibrinoid Necrosis:** The destruction of the vessel wall leads to the leakage of blood and subsequent necrotic changes.
- **Vasculitis is a Mechanism, Not a Final Diagnosis:** Like a "fever," you must identify the underlying cause (infection, drug, autoimmune disease).

### 2. Vasculopathy vs. Vasculitis

- **Vasculopathy:** A mechanical or thrombotic occlusion of blood vessels **without** a primary inflammatory process.
- **Vasculitis:** Primary inflammation of the vessel wall is the defining feature.

### 3. Connective Tissue Disease (CTD) Link

Connective tissue diseases like **Lupus Erythematosus (LE)** are autoimmune and inflammatory. Vasculitis can be one of the many clinical presentations of a CTD when the inflammation targets the vasculature.

## II. Anatomy of the Skin Vasculature

Clinical presentation is determined primarily by the **depth** and **size** of the affected vessels.

- **Small Vessel Vasculitis:** Affects the arterioles, venules, and capillaries at the junction of the papillary and reticular dermis.
- **Medium Vessel Vasculitis:** Affects vessels at the junction of the dermis and the subcutis.
- **Large Vessel Vasculitis:** Rarely presents primarily in the skin; these patients usually present to systemic physicians.

## III. Pathophysiology: The Mechanism of Injury

Regardless of the trigger (infectious, drug-induced, or idiopathic), the process follows a predictable cascade:

1. **Immune Complex Formation:** Triggers lead to the formation of immune complexes.
2. **Deposition:** These complexes deposit into the blood vessel walls.
3. **Complement Activation:** The C3 and C4 complements are activated.
4. **Neutrophil Recruitment:** Inflammatory cells and cytokines are released, bringing neutrophils to the site.
5. **Endothelial Damage:** Neutrophils cause oxidative damage to endothelial cells, leading to **fibrinoid necrosis**.
6. **Ischemia:** The compromised blood supply leads to tissue death (necrosis).

## IV. Clinical Manifestations

### 1. Small Vessel Markers

- **Palpable Purpura:** The clinical hallmark. It is typically **bilateral, symmetrical**, and found on the **lower legs** due to gravitational pressure.
- **Monomorphic Presentation:** Small vessel disease often presents with only one type of lesion (e.g., only purpura).

### 2. Medium/Deeper Vessel Markers

- **Polymorphism:** As deeper vessels are involved, the presentation becomes "multiform." You will see a mix of ulcers, nodules, pitted scars, and gangrene.
- **Livedo Racemosa:** A branched, discontinuous, "broken" net-like pattern. Unlike the physiological *Cutis Marmorata*, this indicates a pathological disruption of the cone-shaped blood supply to the skin.

### 3. Livedo Patterns

Term	Description	Significance
<b>Livedo Reticularis</b>	Complete, closed net-like pattern.	Often physiological (cold-induced).
<b>Livedo Racemosa</b>	Broken, irregular, branched lines.	Hallmark of <b>Vasculitis</b> .
<b>Retiform Purpura</b>	Branching purpura with necrosis.	Indicates complete vascular occlusion.

## V. Terminology & ANCA Testing

### 1. Leukocytoclastic Vasculitis (LCV)

- **Definition:** "Leukocytoclastic" refers to the fragmentation of white blood cells.
- **Nuclear Dust:** The histological presence of leukocyte fragments. This is a histological mechanism, not a clinical diagnosis.
- 

### 2. ANCA (Anti-Neutrophil Cytoplasmic Antibodies)

ANCA are autoantibodies that target components inside neutrophils.

- **C-ANCA (Cytoplasmic):** Targets **Serine Protease 3 (PR3)**. Associated with Granulomatosis with Polyangiitis (GPA).
- **P-ANCA (Perinuclear):** Targets **Myeloperoxidase (MPO)**. Associated with Microscopic Polyangiitis or Eosinophilic Granulomatosis with Polyangiitis (EGPA).

**Clinical Pearl:** Not all vasculitis is ANCA-associated. For example, **IgA Vasculitis (formerly Henoch-Schönlein Purpura)** is always ANCA-negative.

## VI. Classification of Cutaneous Vasculitis

### 1. Small Vessel Vasculitis

- **IgA-Associated Vasculitis:** The new preferred terminology for Henoch-Schönlein Purpura.
- **Non-IgA Associated:** Includes IgG or IgM mediated leukocytoclastic vasculitis.
- **Urticarial Vasculitis:** Presents as hives that last >24 hours. Must check complement levels (C3, C4); **Hypocomplementemic** urticarial vasculitis suggests severe systemic risk.

### 2. Variable Vessel Vasculitis

- **Behçet's Disease:** Can involve vessels of any size (small, medium, or large).

### 3. Medium Vessel Vasculitis

- **Cutaneous Polyarteritis Nodosa (cPAN):** Extremely rare in routine pediatric practice but presents with painful nodules and livedo.

## VII. Take-Home Points for Practice

- **Determine the Scope:** Is the disease limited to the skin or is it systemic?
- **Check for Polymorphism:** If you see more than just purpura (e.g., ulcers + nodules), look for deeper vessel involvement and systemic organ damage (kidneys, lungs).
- **Use Terminology Correctly:** Avoid using "Henoch-Schönlein"; use **IgA Vasculitis**. Avoid using "LCV" as a final diagnosis; it is a histological description.
- **ANCA is not for everyone:** Only order ANCA if you suspect deeper/systemic vessel involvement, not for simple palpable purpura.

# Relevance of skin biopsy in diagnosis of cutaneous vasculitis

## Dr Chirag Desai

The role of skin biopsy and histopathology in diagnosing vasculitis. The lecture emphasizes that the success of a biopsy depends on the clinician's ability to correlate clinical lesions with vessel depth, timing, and sampling technique.

### I. Correlation: Clinical Lesions and Vessel Depth

A clinician can predict histopathological outcomes based on the morphology of the skin lesions.

Clinical Presentation	Likely Vessel Involvement	Depth in Skin
Wheals, purpuric macules	Small vessels	Superficial dermis
Palpable purpura, vesiculobullous lesions	Small to medium vessels	Mid-dermis
Ulcers, nodules, pitted scars, Livedo reticularis	Medium-sized vessels	Dermis-subcutis junction

**Critical Note:** Shave biopsies are insufficient for vasculitis. A **4 mm deep punch** or **incisional biopsy** is required to capture the vessels at the dermis-subcutis junction.

### II. Biopsy Technique and Timing

The histopathological features of vasculitis are dynamic and change rapidly.

#### 1. Optimal Timing

- **Ideal:** Within 24 hours of lesion appearance.
- **Acceptable:** Up to 48 hours.
- **Late (>72 hours):** Neutrophils recede, replaced by lymphocytes and reparative changes (fibroplasia), making a specific diagnosis of Leukocytoclastic Vasculitis (LCV) difficult.

#### 2. Site Selection

- **Small Vessel:** Choose the most tender, purpuric, or slightly raised papule.
- **Deep Ulcers:** Perform an **incisional biopsy** involving the edge of the lesion and the central necrotic area (where the necrosed vessel is located).

- **DIF (Direct Immunofluorescence):** Ideally taken from a **blanchable (early)** lesion. In vasculitis, immunoglobulins are consumed in the inflammatory process, so catching the early phase is critical.

### III. Histopathological Criteria for Vasculitis

Pathologists look for three hallmark signs to confirm active vasculitis.

#### 1. Small Vessel (LCV) Criteria

- **Angiocentric/Angioinvasive Infiltrate:** Inflammatory cells must be within or immediately surrounding the vessel wall.
- **Vessel Wall Damage:** Endothelial swelling or sloughing.
- **Fibrinoid Necrosis:** Deposition of dark pink fibrin (smudgy appearance) within or around the vessel wall.
- **Leukocytoclasia:** Presence of "nuclear dust" (fragmented neutrophil nuclei).
- 

#### 2. Medium Vessel Criteria

- **Intramural Infiltrate:** Inflammatory cells within the muscular wall of the artery.
- **Note:** In medium vessels, any intramural infiltrate is considered pathological (unlike small vessels where *diapedesis* can be physiological).
- **Thrombi:** Intraluminal fibrin or blood clots blocking the vessel.

### IV. Specific Vasculitis Patterns

#### 1. Stages of LCV Evolution

1. **Early:** Angiocentric infiltrate with minimal fibrin.
2. **Fully Developed:** Classic fibrinoid necrosis and abundant nuclear dust.
3. **Late/Resolving:** Predominantly lymphocytic infiltrate, extravasated RBCs, and fibroplasia. Reports often use "suggestive of" rather than "diagnostic" at this stage.

#### 2. Urticarial Vasculitis

Features are often subtle. It presents as an LCV but with minimal leukocytoclasia and some eosinophils. Lesions clinically last >24 hours and often leave residual bruising.

#### 3. Eosinophilic Vasculitis

Characterized by a damage-to-vessel wall with significant tissue eosinophilia.

- **Associations:** Drugs, HIV, Hypereosinophilic Syndrome, and **EGPA** (Eosinophilic Granulomatosis with Polyangiitis/Churg-Strauss).

#### 4. Granulomatous Vasculitis

- **GPA (Wegener's):** Characterized by "Blue Granulomas" (neutrophilic centers with a palisade of histiocytes). Granulomas are typically extravascular.
- **EGPA (Churg-Strauss):** Characterized by "Red Granulomas" (eosinophilic/neutrophilic centers that stain collagen red).

#### 5. Polyarteritis Nodosa (PAN)

A neutrophilic medium-sized arteritis found at the dermis-subcutis junction. The panel notes that PAN may be viewed as a "reaction pattern" shared with other disorders like DADA2 (Adenosine Deaminase 2 deficiency).

#### V. Direct Immunofluorescence (DIF)

DIF is a supportive tool, especially in cases like IgA Vasculitis (HSP).

- **Requirements:** Must be sent in **Michel's Medium**.
- **Finding:** Vascular deposition of IgA, IgG, IgM, or C3.
- **Caveat:** High rate of false negatives if the biopsy is taken too late (antibodies are degraded or consumed).

#### VI. Take-Home Messages for Clinicians

- **H&E is the Gold Standard:** No special stain supersedes a well-prepared Hematoxylin and Eosin slide.
- **Vasculopathy vs. Vasculitis:** Vasculopathy shows fibrin and thrombi without the significant inflammatory infiltrate seen in true vasculitis.
- **Collaboration is Key:** The dermatologist and pathologist must communicate closely. A "blind" biopsy without clinical context often leads to inconclusive results.
- **Depth and Timing:** These are the two most common reasons for a "failed" or non-specific biopsy report.

**Clinical decision-making process behind skin biopsies**, the nuances of identifying systemic involvement, and the logistical challenges of diagnostic pathology in a pediatric setting.

## I. Etiology and Clinical "Warning Signs"

Distinguish between drug-induced and infection-triggered vasculitis based on the depth of vessel involvement and morphological presentation.

### 1. Drugs vs. Infection

- **Drug-Induced Vasculitis:** Typically presents as **small vessel involvement**. Clinically, this manifests as isolated palpable purpura or superficial vesicles. However, drugs can be "great mimics" (similar to syphilis) and occasionally involve a broader spectrum of vessels.
- **Infection-Triggered Vasculitis:** Usually involves **both small and medium vessels**. Warning signs include deeper pathology such as:
  - Large, deep ulcerations.
  - Hemorrhagic bullae/vesicles.
  - Necrotic lesions.

### 2. The Clinician's Primary Goal

The dermatologist must determine if the condition is **Primary Cutaneous** or **Systemic**.

- **Systemic Target Organs:** If systemic involvement is suspected, clinicians must prioritize screening the **Lungs, Kidneys, and GI Tract**.

## II. The Art of the Biopsy: Technique & Depth

The consensus among the speakers is that the quality of the biopsy directly dictates the accuracy of the pathology report.

### 1. Depth is Non-Negotiable

- **The "Pop-Out" Rule:** For a biopsy to be adequate, the tissue should "pop out" during the procedure, indicating you have reached the **dermis-subcutis junction**.
- **Punch vs. Excision:** While punch biopsies are common, they are often "grossly inadequate" for medium-vessel diseases like Polyarteritis Nodosa (PAN).
- **Double Biopsy Technique:** If limited to punch tools, take a **6 mm punch** followed by a **4 mm punch** through the same center to achieve necessary depth.

### 2. Site Selection

- **Nodular Lesions (e.g., PAN):** These require deep vessel visualization. Biopsying the **center** of the most tender, early lesion is preferred.
- **Ulcers:** Biopsy the **edge** to see the transition, but for deep vasculitis, the central necrotic area may contain the primary affected vessel.

### III. Timing and Logistics

Timing is the most frequent reason for "false negative" pathology or immunofluorescence.

#### 1. The 24-48 Hour Window

- **H&E (Histopathology):** Best within 24–48 hours to see "leukocytoclasia in its full glory." Late biopsies (resolving stage) will show non-specific lymphocytic infiltrates or reparative fibroplasia.
- **DIF (Direct Immunofluorescence):** **Do not waste the patient's money** on DIF if the lesion is older than 48 hours. Immunoglobulins degrade rapidly, and the diagnostic yield drops significantly.

#### 2. Transport Media

- **Michel's Medium:** The gold standard for DIF.
- **Normal Saline:** Only acceptable if the sample can be **processed** (not just transported) within **one hour**. Most private practices cannot meet this "one-hour processing" requirement; therefore, saline is generally discouraged for transport.

### IV. Pathological Controversies & Mimics

#### 1. Lymphocytic Vasculitis vs. Capillaritis

- **Lymphocytic Capillaritis (PPD):** While RBCs leak out (causing the characteristic "cayenne pepper" spots), many pathologists (like those following the Weeden school) do not classify Pigmented Purpuric Dermatitis as a true vasculitis because it often lacks the mandatory wall damage and fibrinoid necrosis.
- **Definition Check:** Simply having blood leak from a vessel (e.g., from a cut or trauma) does not equal vasculitis. Vasculitis requires an **immunological response** causing vessel wall destruction.

#### 2. Erythema Elevatum Diutinum (EED)

Unlike acute small-vessel vasculitis, EED is a **chronic** vasculitis. While the 24-hour rule is less rigid here, the diagnosis relies on identifying "leukocytoclastic vasculitis with fibrosis" in older lesions.

## V. Practical Takeaways for the Clinician

- **Patient Education:** Patients are often unable to accurately date the start of a lesion. Clinicians should look for the "freshest" palpable purpura.
- **Responsibility:** The dermatologist should ideally select the lesion and perform the biopsy themselves (or send the patient to the pathologist) to ensure the clinical-pathological correlation is preserved.
- **Cost Management:** At approximately ₹2,700–₹4,000 per test, clinicians must be judicious—especially regarding DIF in late-stage lesions.

# Cutaneous Vasculitis - relevant investigations - Dr Jeta Buch

## I. Core Screening & Inflammatory Markers

Investigations are designed to assess the **inflammatory burden**, identify **organ involvement**, and pinpoint **triggers**.

### 1. General Blood Work

- **CBC with Differential:** Anemia, leukocytosis, and thrombocytosis are common non-specific signs of underlying inflammation.
- **Peripheral Eosinophilia:** If present, consider **Eosinophilic Granulomatosis with Polyangiitis (EGPA)** or drug-induced vasculitis. High **IgE** levels strongly support an EGPA diagnosis.
- **ESR vs. CRP:**
- **ESR (Erythrocyte Sedimentation Rate):** Indicates the **duration** of inflammation. Must be corrected for hemoglobin and PCV levels for accurate interpretation.
- **CRP (C-Reactive Protein):** Indicates the **intensity** of inflammation.
- **Interpretation:** High ESR + High CRP = **Active Flare**. High ESR + Low CRP = **Chronic Disease**. Low ESR + High CRP = **Early Flare/Infection**.

### 2. Identifying Triggers

- **Streptococcal Infection:** ASO titers and throat swabs are essential if suspecting **Cutaneous Polyarteritis Nodosa (cPAN)** or **IgA Vasculitis**.
- **Viral Markers:**
- **Hepatitis B (HBV):** Traditionally linked to PAN (though incidence is dropping due to vaccination).
- **Hepatitis C (HCV):** Frequently implicated in **Cryoglobulinemic Vasculitis**.

## II. Renal Status: The Barrier vs. Function Paradigm

The speaker highlights a critical sequence of renal damage: **Barrier damage occurs before functional loss**.

### 1. The Progression of Damage

1. **Stage 1 (Barrier Damage):** Immune-mediated injury to the vessel wall causes the glomerulus to leak cells and protein. This presents as **proteinuria** and **hematuria**.
2. **Stage 2 (Compensatory Phase):** Unaffected nephrons undergo hypertrophy; therefore, **urea**, **creatinine**, and **eGFR** remain normal despite active disease.

- 3. Stage 3 (Structural Damage):** As more nephrons fail, \$urea\$ and \$creatinine\$ rise, and \$eGFR\$ falls. **Clinical Rule:** Always perform urine analysis early. Do not wait for \$GFR\$ to fall to diagnose renal involvement.

## 2. Monitoring Proteinuria

- **24-Hour Urine Protein:** The gold standard.
- *Collection Protocol:* Discard the first void on Day 1. Collect all urine for 24 hours (including the first void of Day 2). Store in a refrigerator to prevent protein degradation.
- **UPCR (Urine Protein-to-Creatinine Ratio):** The practical surrogate for screening and monitoring. Use the **first morning void** to reduce diurnal variability.
- **uACR (Urine Albumin-to-Creatinine Ratio):** Not recommended for vasculitis as it misses non-albumin proteins.

## 3. Interpreting Hematuria

- **Macroscopic (Cola-colored):** If occurring with tonsillopharyngitis (synpharyngitic pattern), it suggests **IgA Vasculitis**.
- **Microscopic:** Persistent microscopic hematuria (>1 month) suggests **ANCA-associated vasculitis** and active organ damage.
- **Acanthocytes (Dysmorphic RBCs):** Presence suggests a glomerular source of bleeding.

## III. Immunological Parameters

The session clarifies the shift from traditional "ANA" testing to more sophisticated methods.

- **Hep-2 by IIF (Indirect Immunofluorescence):** The preferred term over "ANA." It detects antibodies against the nucleus, cytoplasm, and mitotic apparatus.
- *Significance:* Isolated low-titer positivity is often non-specific and does not predict future connective tissue disease (CTD).
- **DFS70 Antibody:** If present in isolation, it helps **rule out** systemic autoimmune rheumatic diseases.
- **Complement Levels (C3, C4):**
- **Low C1q + Low C3/C4:** Suspect Hypocomplementemic Urticarial Vasculitis.
- **Low C4(Normal C3):** Suggests Cryoglobulinemic Vasculitis or Sjogren's.
- **Low C3 (Normal C4):** Suggests the alternative pathway (Infection/Sepsis).
- **Both Low:** Suggests SLE or immune complex disease.

## IV. Specific Vasculitis Phenotypes

### 1. IgA Vasculitis (HSP)

- Renal involvement occurs in **20–60%** of cases.
- **Monitoring:** Urine analysis/UPCR should be done **weekly for the first month**, then monthly for 6 months. Continue monitoring for 6–12 months even if initial tests are normal.

### 2. Behçet's Disease (BD)

- Primarily a clinical diagnosis.
- **Common Femoral Vein (CFV) Thickness:** A new diagnostic tool.
- **Cut-off:** Thickness **> 0.5 cm** has a 90% probability of BD, regardless of systemic markers. It is a highly specific, non-invasive supportive tool.

### 3. Kawasaki Disease (KD)

Diagnosis is stamped if **ESR  $>40$  mm/hr** or **CRP  $>3$  mg/dL** plus **3+** supplemental criteria:

- Albumin  $<3$  g/dL.
- Anemia for age.
- Leukocytosis  $>15,000$   $\mu$ L
- Thrombocytosis  $>450,000$   $\mu$ L (after day 7).
- Sterile pyuria  $>10$  WBCs/hpf.
- Elevated ALT.

## V. Take-Home Messages

1. **Clinicopathological correlation** remains the gold standard; lab tests cannot diagnose vasculitis in isolation.
2. **Vasculitis is a spectrum**, not a single static diagnosis; it evolves as a mechanism of injury.
3. **Urine analysis is the key** to early detection of systemic progression.
4. **Identify mimics** (infection, drugs, malignancy) before committing to aggressive immunosuppression.

# Treatment of Cutaneous Vasculitis: An Overview - Dr Sunil Tolat

## I. Strategic Goals and Classification

The primary objectives in managing pediatric vasculitis are to suppress acute inflammation, prevent end-organ damage, and achieve a durable steroid-free remission. Clinicians must first classify the presentation into one of three buckets to determine the aggressiveness of the intervention:

1. **Mild to Moderate:** Single-organ (skin-limited) involvement.
2. **Recurrent or Chronic:** Frequent relapses requiring long-term modulation.
3. **Severe Systemic:** Multi-organ involvement (e.g., ANCA-positive vasculitides or systemic PAN).

**The Rule of Infection:** In pediatric practice, vasculitis is frequently a post-infective phenomenon. It is clinically mandatory to rule out and treat underlying infectious triggers before initiating high-potency immunosuppression.

## II. The Therapeutic Framework: Induction and Maintenance

Management is divided into distinct phases to balance efficacy with long-term safety.

### 1. Induction Therapy (Achieving Remission)

The goal is a rapid halt of the inflammatory cascade. The go-to agents include:

- **Corticosteroids:** The cornerstone of induction. Typically dosed at **1–2 mg/kg/day** or administered as pulse therapy for severe cases.
- **Cyclophosphamide:** Reserved for life- or organ-threatening disease (e.g., severe ANCA-positive or renal-involved IgA vasculitis). It is used strictly for induction due to its toxicity profile.
- **Rituximab:** Increasingly used as a first-line substitute for cyclophosphamide to achieve B-cell depletion while sparing the patient from alkylating agent toxicity.

### 2. Maintenance Therapy (Preventing Relapse)

Once remission is achieved, the patient is transitioned to safer, steroid-sparing agents:

- **Azathioprine (AZA)**
- **Methotrexate (MTX)**
- **Mycophenolate Mofetil (MMF)**

### III. Therapeutic Categories and Clinical Applications

Category	Specific Agents	Clinical Indications	Key Considerations
<b>Antineutrophilic</b>	Colchicine, Dapsone	CSVV, Cutaneous PAN, Urticarial Vasculitis	Dapsone requires G6PD testing; Colchicine is a first-line choice for skin-limited CSVV.
<b>Antimetabolites</b>	MTX, AZA, MMF	Chronic/ Recurrent CSVV, Maintenance in systemic disease	Require monitoring for hepatotoxicity (MTX) and leukopenia (AZA).
<b>Biologics</b>	Rituximab, Infliximab, Tocilizumab, Anakinra	Refractory KD, ANCA-positive, DADA2	Infliximab is the gold standard for IVIG-resistant Kawasaki Disease.
<b>Complement Inhibitors</b>	Avacopan	ANCA-associated vasculitis	Targeted C5a receptor antagonist; reduces the need for high-dose steroids.

### IV. Disease-Specific Protocols

#### 1. IgA Vasculitis (HSP)

- **First Line:** Supportive care and NSAIDs.
- **Escalation:** Systemic steroids for severe GI or joint involvement.
- **Renal Sparing:** Cyclophosphamide or MMF for biopsy-proven glomerulonephritis.

#### 2. Kawasaki Disease (KD)

- **Gold Standard:** High-dose IVIG + High-dose Aspirin (**50–60 mg/kg/day**).
- **IVIG-Resistant KD:** Infliximab, Anakinra (IL-1 inhibitor), or pulse-dose Prednisolone.

- **Aneurysm Prevention:** Recent trends explore mTOR inhibitors (Sirolimus) and ACE inhibitors/ARBs for remodeling.

### 3. Polyarteritis Nodosa (PAN) & DADA2

- **Systemic PAN:** High-dose steroids + Cyclophosphamide.
- **DADA2 (Mimicker):** Must be treated with **Anti-TNF therapy** (Infliximab/ Adalimumab) rather than standard PAN protocols.

## V. Long-Term Risks and Monitoring

In pediatric populations, the side-effect profile of these drugs often dictates the choice of therapy:

- **Corticosteroids:** Primary concern is **growth failure** and metabolic dysfunction.
- **Cyclophosphamide:** High risk of **permanent infertility** (especially in post-pubertal girls) and secondary malignancies.
- **Methotrexate:** Potential for cumulative hepatotoxicity; requires regular LFT monitoring.
- **Rituximab:** Can lead to **hypogammaglobulinemia** and increased susceptibility to secondary infections.

## VI. Recent Therapeutic Advances

The field is moving toward highly targeted molecular interventions:

- **Targeted Budesonide:** Designed for release at the **Peyer's patches** in the intestine to suppress IgA production at its source.
- **B-Cell Proliferation Blockers:** Agents like **Belimumab** are being investigated to deactivate B-cell survival pathways.
- **Complement Pathway Blockers:** Avacopan and Narsoplimab offer a non-steroidal pathway to control neutrophil-driven damage in small-vessel vasculitis.

## Case Discussion - Dr Deepak Parikh

Dr Jeta Buch, Dr Manish Shah, Dr Divya Gupta, Dr Sahana Srinivas,  
Dr Vasudha Belgaumkar, Dr Ramkumar Ramamoorthy

### I. Henoch-Schönlein Purpura (HSP) / IgA Vasculitis

HSP is the most common pediatric vasculitis. The discussion clarifies the transition in terminology to **IgA Vasculitis** to reflect its pathophysiology.

#### 1. Clinical Presentation

- **Hallmarks:** Palpable purpura (non-blanchable), predominantly on lower limbs and buttocks.
- **Koebnerization:** A hallmark sign where lesions form at sites of trauma or pressure.
- **Systemic Symptoms:** Migratory arthralgia (often transient), abdominal pain (colicky), and potential renal involvement (hematuria/proteinuria).
- **Timing:** Often follows an upper respiratory infection (URI) by roughly 5–10 days.

#### 2. Diagnosis and Monitoring

- **Biopsy/DIF:** Direct Immunofluorescence (DIF) showing IgA deposition is definitive. However, the panel notes DIF may only be positive in about 60–70% of cases depending on timing.
- **Renal Surveillance:** Mandatory follow-up for **6 months**. Weekly urine analysis for the first 8 weeks is recommended to detect microscopic proteinuria.
- **Clinical Pearl:** Check blood pressure in every child with HSP.

#### 3. Management

- **Supportive:** Rest, leg elevation, and NSAIDs for joint pain (after ruling out GI bleeding).
- **Oral Steroids:** Reserved for severe GI involvement (to prevent intussusception), severe scrotal edema (risk of torsion mimicry), or significant renal disease. They do **not** prevent future renal relapse but provide symptomatic relief.

### II. Acute Hemorrhagic Edema of Infancy (AHEI)

Often confused with HSP, AHEI has a distinct "ghastly" clinical look but a generally benign course.

## 1. Diagnostic Features

- **Age:** Typically < 2 years.
- **Morphology:** Large, targetoid, "cockade" (badge-like) purpuric plaques.
- **Scalloped Margins:** A highly characteristic feature of AHEI lesions.
- **Distribution:** Primarily affects the **face**, ears, and distal extremities. Facial edema is a diagnostic hallmark.
- **Prognosis:** Despite the dramatic appearance, the child is usually non-toxic, and systemic involvement is rare. It resolves spontaneously in 1–3 weeks.

## III. Small Vessel Vasculitis: Terminology & Pathology

The panel emphasizes precision in descriptive terms:

- **Leukocytoclastic Vasculitis (LCV):** A histopathological description (neutrophilic infiltrate, nuclear dust/karyorrhexis), not a diagnosis.
- **Cutaneous Small Vessel Vasculitis (CSVV):** A generic name encompassing IgA and non-IgA (IgG/IgM) types.
- **Urticaria Multiforme:** Often presents as annular, blanchable wheels with dusky centers; must be differentiated from urticarial vasculitis (which persists > 24 hours and leaves bruising).

## IV. Medium Vessel Vasculitis and Systemic Mimics

### 1. Behçet's Disease

- **Presentation:** Recurrent orogenital ulcers, uveitis, and skin lesions (pseudofolliculitis or pyoderma gangrenosum-like ulcers).
- **Pathergy Test:** Often positive (pustule formation at needle prick site).
- **Systemic Risk:** Can involve the CNS and large vessels. The panel notes it can be "notorious" and rapidly progressive in children.

### 2. Rickettsial Vasculitis (Meningoencephalitis)

- **Clinical Scenario:** Fever, seizures (status epilepticus), and stellate purpura.
- **The "Eschar":** A necrotic crust at the tick bite site (crucial diagnostic clue).
- **Management: Doxycycline** is life-saving and should be started empirically if suspected. A dramatic response (defervescence) within 48 hours confirms the diagnosis.

### 3. Cutaneous Polyarteritis Nodosa (cPAN)

- **Presentation:** Deep, extremely tender nodules, **Livedo racemosa** (broken, irregular reticulate pattern), and sometimes finger gangrene.

- **Pathology:** Fibrinoid necrosis of medium-sized arteries in the septa of the subcutaneous fat.
- **Distinction:** Unlike systemic PAN, cPAN is usually limited to skin, joints, and muscles.

## V. Panniculitis Comparison

Differences between Septal and Lobular panniculitis.

Feature	Erythema Nodosum (EN)	Erythema Induratum (EI) / Nodular Vasculitis
Pathology	Septal Panniculitis	Lobular Panniculitis + Vasculitis
Location	Pre-tibial (Shins)	Posterior calves
Ulceration	Rare	Common
Primary Cause	Streptococcal infection, Sarcoid	Tuberculosis (ID reaction)
Treatment	NSAIDs, Bed rest, Treat Strep	Anti-tubercular Therapy (ATT)

## VI. Diagnostic Pearls for "Reticulate" Patterns

- **Cutis Marmorata:** Physiological, transient lacy pattern that disappears with warming.
- **Livedo Reticularis:** Regular, closed lace-like pattern.
- **Livedo Racemosa:** Irregular, "broken" pattern; always signifies underlying pathology (e.g., vasculitis or Lupus).

## VII. Final Management Strategy

- **Colchicine:** The "go-to" drug for chronic or recurrent small-vessel vasculitis (IgG/IgM) due to its low side-effect profile compared to steroids.
- **Empirical Antibiotics:** Cefadroxil or Azithromycin for 10 days to treat potential occult triggers.
- **Thalidomide:** Acknowledged as a "wonderful drug" for refractory cases of Prurigo Nodularis or certain vasculitic ulcers in children, despite common hesitance.
- **Pediatric Rheumatology Referral:** Essential for any case involving systemic activation, persistent fever, or suspected Behçet's/Lupus vasculitis

# How to approach a child with Vulvo-Vaginitis - Dr Nina Madnani

A clinical approach to pediatric vulvo-vaginal disorders, emphasizing that these cases are often under-represented in dermatology clinics, typically being diverted to pediatricians or gynecologists.

## I. Clinical Anatomy & Physiology Across Ages

Understanding the "normal" state is crucial for identifying pathology, as the pediatric vulva undergoes significant hormonal changes.

### 1. The Hormonal Influence (Estrogen & pH)

- **Newborn (0–4 weeks):** Influenced by maternal estrogens. The vulva appears plump and fleshy; a small amount of discharge (physiological leukorrhea) or even transient withdrawal bleeding is normal. The **pH is acidic**.
- **Childhood (Pre-puberty):** Estrogen levels drop. The labia majora become less plump, the labia minora are often barely visible, and the mucosa is thin and atrophic. The **pH shifts to alkaline (Neutral to Basic)**.
- **Adolescence (Puberty):** With the surge of endogenous estrogen, the vulva returns to a plump state, the vaginal mucosa thickens, and the **pH becomes acidic** again.
- 

**The "Fluconazole Entreaty":** *Candida* requires an acidic environment to thrive.

Therefore, **vulvovaginal candidiasis is rare in prepubertal girls** unless they are immunosuppressed, diabetic, or on chronic antibiotics. Empirical fluconazole in toddlers is usually incorrect.

## II. The Clinical Approach & Examination

Examination of this area in children requires extreme sensitivity to avoid trauma and respect "good touch/bad touch" education.

### 1. Patient Positioning

- **Supine Frog-Leg:** Patient lies on the back, hips abducted, knees flexed. Best for toddlers/infants on a parent's lap.
- **Knee-Chest (Prone or Lateral):** Allows for better visualization of the vaginal vault without instrumentation.
- **Standing/Leaning:** Useful for older children who are anxious about lying down.

## 2. Examination Standards

- **Consent & Chaperone:** Mandatory for all ages; a female chaperone is essential if the clinician is male.
- **Avoid "Peep-Hole" Dermatology:** Ensure adequate lighting and full exposure to see the entire perianal and vulvar area.
- **Biopsy:** Should be a last resort in children due to potential psychological trauma. Reserved for cases non-responsive to treatment or suspected malignancy.

## III. Vaginitis: Causes and Signs

Vaginitis refers to inflammation/infection within the vaginal tunnel, often presenting as discharge or odor.

- **Physiological Discharge:** Colorless, odorless; seen in neonates or mid-cycle adolescents.
- **Foreign Bodies:** Suspect if there is a **foul-smelling, blood-stained discharge** that is unresponsive to antibiotics. Common in toddlers "exploring" their bodies.
- **Pinworms (*Enterobius vermicularis*):** Causes intense nocturnal itching. Diagnosis via tape test.
- **Infections:** Low-virulence bacteria (e.g., Group A Strep) can be transferred from the respiratory tract (hand-to-genital contact).

## IV. Vulvitis: Common Dermatological Conditions

Vulvitis is the inflammation of the external skin.

### 1. Contact Dermatitis (Irritant & Allergic)

- **Irritants:** Over-washing with soaps, "hygiene washes," Dettol, or fecal contamination.
- **Allergens:** Wipes (containing Methylisothiazolinone/MCI), fragrances in sanitary napkins, or bubble baths.
- **The "OCD Mother" Syndrome:** Excessive scrubbing disrupts the skin barrier, leading to chronic inflammation.

### 2. Psoriasis & Seborrheic Dermatitis

- **Psoriasis:** Presents as well-demarcated, bright red plaques. Unlike adult psoriasis, it may appear less scaly due to maceration in the fold areas.
- **Seborrheic Dermatitis:** Typically involves the folds and is often associated with "cradle cap" history.

### 3. Lichen Sclerosus (LS)

LS is a progressive, inflammatory dermatosis that requires early diagnosis to prevent anatomical distortion.

- **Clinical Features:** Shiny, "parchment-skin" atrophy, "figure-of-eight" involvement (vulva and anus), and "TEARS" (ecchymosis/bruising).
- **Dermoscopy:** Highly effective for diagnosis; shows white structureless areas and follicular plugging.
- **Prognosis:** Does **not** always resolve at puberty. 75% of symptomatic girls remain symptomatic as adults. There is a 3-5% lifetime risk of squamous cell carcinoma if left untreated.

### V. Hygiene Counseling

A minimalist approach to pediatric vulvar care:

1. **Water Only:** Clean with normal temperature water.
2. **No Soaps/Washes:** Avoid "pH-balanced" baby washes or medicated cleansers.
3. **Dab Dry:** Do not rub the area.
4. **Front-to-Back:** Always wipe/wash from front to back to avoid enteric bacterial contamination.
5. **Barrier Protection:** Use plain Petroleum Jelly (Vaseline) as a barrier for diaper-aged children.

### VI. Red Flags: Sexual Abuse

Clinicians must remain vigilant for signs of abuse using the **TEARS** acronym:

- **T** - Tears (Lacerations)
- **E** - Ecchymosis (Bruising)
- **A** - Abrasions
- **R** - Redness (Erythema)
- **S** - Swelling

### VII. Key Takeaways for the Clinician

- **Diagnostic Acumen:** Use Dermoscopy and pH strips to differentiate between inflammatory and infectious causes.
- **Swabbing:** If discharge is present, use a thin urethral swab at the introitus rather than deep vaginal penetration.
- **Counseling:** Spend time explaining the chronic nature of conditions like Psoriasis or Lichen Sclerosus to ensure parental compliance and prevent "doctor-shopping."

# Case discussion on Vulvar dermatoses

Dr Deepak Parikh, Dr Resham Vasani, Dr Manjyot Gautam,  
Dr Sahana Srinivas, Dr Rajesh Jadhav, Dr Jeta Buch, Dr Preeti Seth

## I. General Principles of Pediatric Genital Care

A "back to basics" approach to manage common irritations and anxieties.

- **Hygiene as Therapy:**
  - **Lukewarm Water Soaks:** Sitting in plain water for 5 minutes, 4 times a day, is highly effective for cleaning the vaginal cavity and hydrating sensitive skin without the need for harsh cleansers.
  - **The "Less is More" Rule:** Avoid aggressive scrubbing.
- **Physical Barriers:**
  - Shift from "V-shaped" underwear to **bloomers or loose-fitting boxers**. This prevents mechanical friction and protects the area from environmental dirt (dust, sand) that toddlers encounter while playing.
- **Counseling vs. Treatment:**
  - Many presentations (e.g., physiological discharge during *Adrenarche* or *Menarche*) are normal developmental milestones. Reassurance of the parents is often the primary intervention.

## II. Congenital and Structural Anomalies

### 1. Bladder Exstrophy

A rare condition where the anterior abdominal wall and bladder do not develop correctly, leaving the bladder everted and the mucosal aspect exposed.

- **Clinical Presentation:** A red, moist mass on the lower abdomen present since birth. Chronic exposure leads to **squamous metaplasia** (keratinization).
- **Secondary Complications:** Constant urine dribbling leads to severe **Irritant Contact Dermatitis**.
- **Management:**
- **Tegaderm Dressing:** A film dressing with a small opening to direct urine into the diaper.
- **Natural Alternatives:** In resource-limited settings, **Banana leaf dressings** are preferred over Betel leaves (which can cause leukomelanosis). Banana leaves have high healing properties and are non-adherent.

### III. Inflammatory and Papulosquamous Disorders

#### 1. Pseudo-verrucous Papules and Nodules

Often misdiagnosed as warts (*Condyloma*) or *Lymphangioma*.

- **Etiology:** Chronic moisture and friction, frequently seen in children with fecal/urinary incontinence (e.g., post-anorectal malformation surgery).
- **Management:** Requires targeting bacterial overgrowth with oral antibiotics initially, followed by barrier creams and enema programs to achieve "social continence."

#### 2. Genital Psoriasis

A critical takeaway is that **mucosal involvement in psoriasis is common** but frequently missed.

- **Presentation:** Well-defined, glazed, erythematous patches on the glans, foreskin, or labia. Scaling is often absent due to the moist environment (maceration).
- **Diagnosis:** Dermoscopy is highly useful. In circumscribed patients, scaling may be more visible.
- **Treatment:** Avoid potent fluorinated steroids. Start with **Pimecrolimus** or mild **Hydrocortisone**, tapering quickly to maintain the barrier.

#### 3. Atopic Dermatitis (AD)

- **Peno-pubic/ peno-scrotal Junction:** These are specific "trigger areas" for pediatric AD.
- **Friction Factor:** Tight clothing or sports gear can lead to "eczematization" in these regions.
- **The "Cyclist's Vulvitis" Case:** A unique example where chronic friction and heat from competitive cycling induced lichenoid changes, highlighting the need for a detailed lifestyle history.

### IV. Vascular and Complex Systemic Conditions

#### 1. Ulcerative Hemangiomas

- **Risk Factors:** Large segmental hemangiomas or those in intertriginous areas (groin/perianal) are prone to ulceration due to tissue hypoxia and friction.
- **The "PELVIS" and "LUMBAR" Syndromes:** Any perianal or sacral hemangioma warrants an **MRI** to rule out internal structural anomalies (not just a sonography).
- **Pharmacological Protocol:**
- **Oral Steroids:**  $2 \text{ mg/kg/day}$  for 3 weeks, then tapered.

- **Propranolol:** Start low (1mg/kg) to avoid aggravating ulceration through vasoconstriction, eventually titrating to 2 mg/kg}
- **Metronidazole:** Useful for perianal ulcers to manage anaerobic contamination.

## 2. Metastatic Cutaneous Crohn's Disease

- **Clinical Signs:** "Knife-cut" ulcers, significant induration, and vulvar/scrotal edema.
- **Perianal Tags:** Caused by lymphatic obstruction from granulomatous infiltration.
- **Histopathology:** Non-caseating granulomas with epithelioid cells and Langhans giant cells.
- **Diagnostic Tool: Fecal Calprotectin** (levels > 100 –250 suggest IBD) is a valuable non-invasive marker for pediatric patients.

## V. Infections and Infestations

- **Molluscum Contagiosum:** In neonates, this is usually **vertical transmission** (perinatal contact) rather than sexual abuse. **5%–10% KOH** is preferred over cryotherapy for home application.
- **Nodular Scabies:** A hypersensitivity reaction that can persist for months. Treatment involves **Permethrin** (as an anti-inflammatory/antibacterial agent) combined with mid-strength steroids like **Mometasone** or **Fluticasone**, tapered down to **Clobetasone butyrate**.

## VI. Ethical, Legal, and Professional Practice

### 1. The POCSO Act (2012)

Practitioners in India must be aware of the **Protection of Children from Sexual Offences Act**.

- **Mandatory Reporting:** Any suspicion of sexual abuse must be reported to the police or a One-Stop Center (e.g., at KEM Hospital). Failure to report is a punishable offense.
- **The Art of Counseling:** In private practice, the "science" of medicine must be balanced with the "art" of social handling. Labels like "Condyloma Accumulata" carry heavy social weight; using broader terms like "viral warts" while counseling parents to investigate safely is often a more effective way to protect the family unit.

### 2. Smegma Pearls

- **Appearance:** Asymptomatic, translucent papules under the prepuce.
- **Reassurance:** These are simply collections of smegma and are entirely benign. They do not require surgery or aggressive cleaning.

### Summary Table: Steroid Selection for Pediatric Genitals

<b>Class</b>	<b>Examples</b>	<b>Note</b>
<b>High Potency</b>	Clobetasol Propionate	<b>Contraindicated</b> in pediatric genital skin.
<b>Mid Potency</b>	Mometasone, Fluticasone	Use for short bursts (< 1 week) to control flares.
<b>Mild Potency</b>	Clobetasone butyrate, Desonide	Preferred for short-term maintenance.
<b>Lowest Potency</b>	Hydrocortisone	Safest for long-term use in the folds.
<b>Non-Steroidal</b>	Pimecrolimus, Tacrolimus	Excellent for tapering and long-term control.

**Conclusion:** The pediatric genital area is a mirror of systemic health and local hygiene. Success in this field relies on sharp diagnostic acumen, minimal surgical intervention, and empathetic communication.