

Chronic Endometritis

Histopathology • etiologic associations • clinicopathologic diagnosis

With acute endometritis as the principal inflammatory comparator

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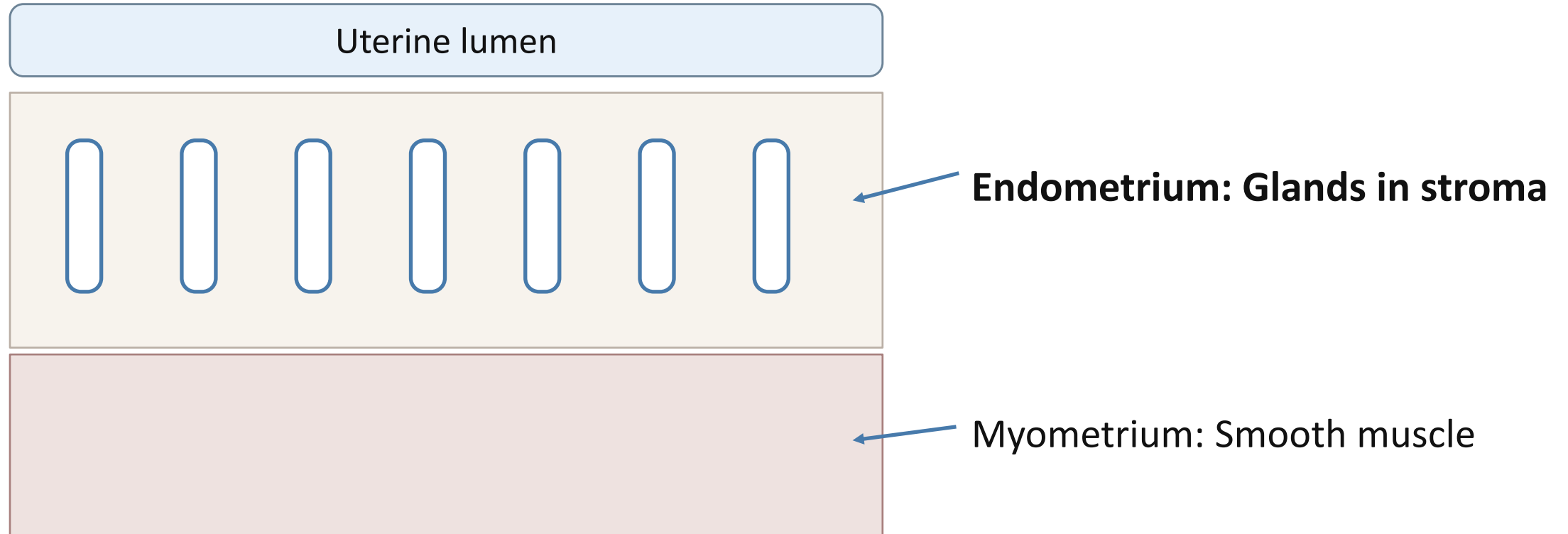
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Learning outcomes

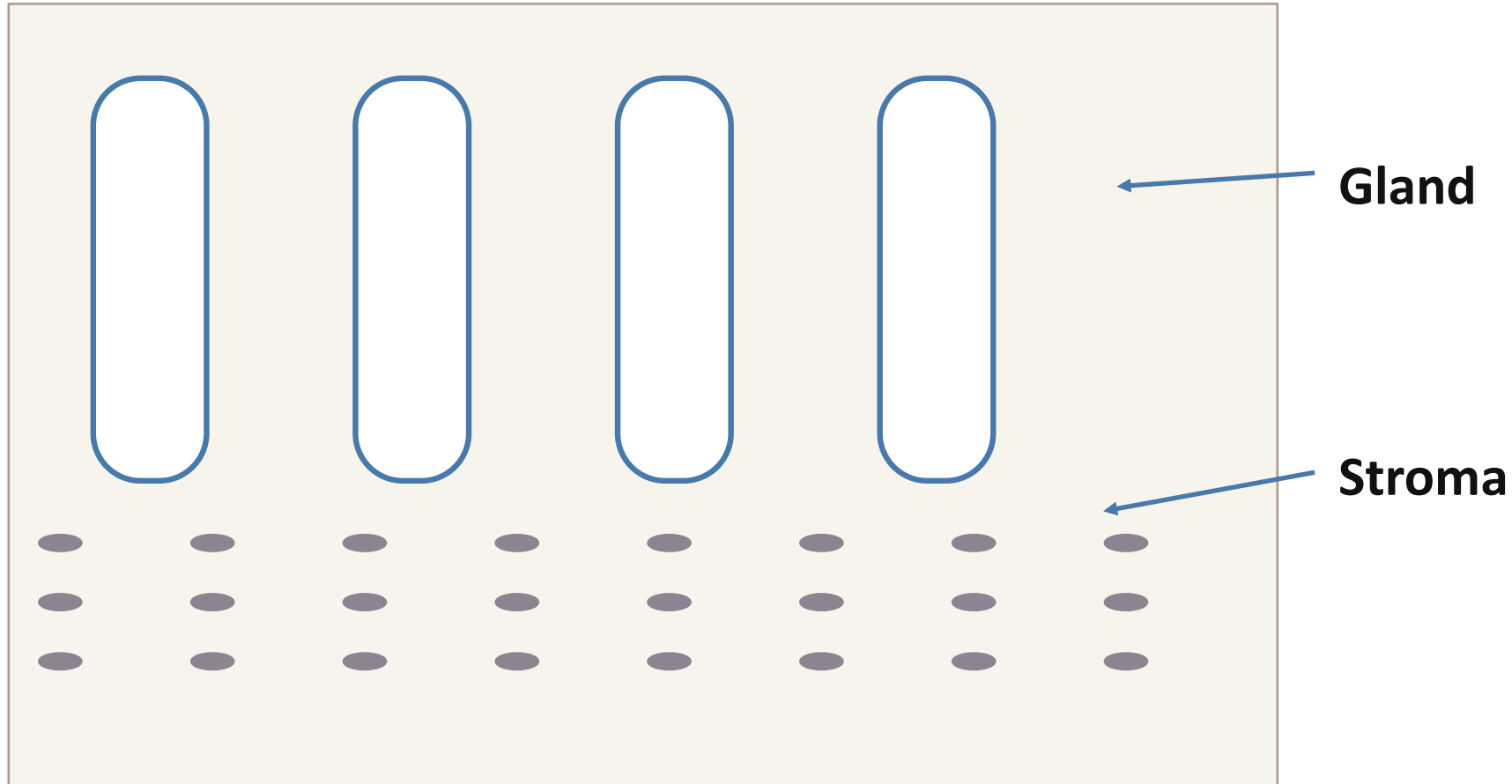
- Locate the endometrial glands and stroma within the uterine corpus.
- Distinguish acute from chronic endometrial inflammation.
- Identify the etiologic settings associated with chronic endometritis.
- Apply the stromal plasma-cell criterion with diagnostic caution.
- Integrate microscopic findings with clinical presentation.

Uterine corpus: The anatomic substrate



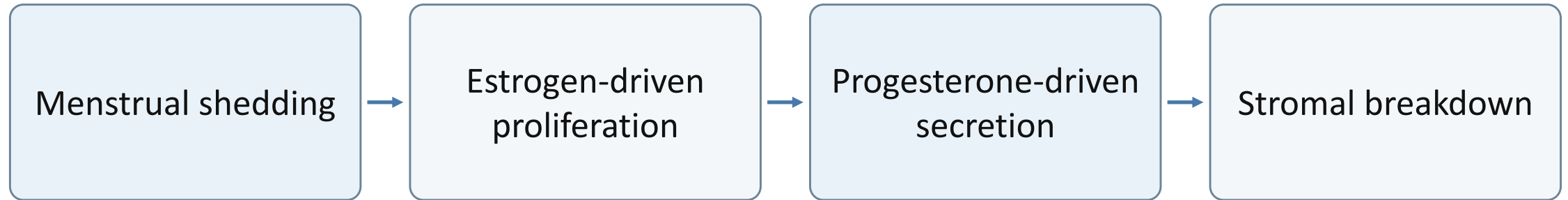
Original anatomical schematic; Layers and glands are simplified, not a histologic specimen.

Glands and stroma: Two diagnostic compartments



Original schematic — cell distribution is illustrative, not diagnostic evidence.

Cycle-dependent endometrial remodeling



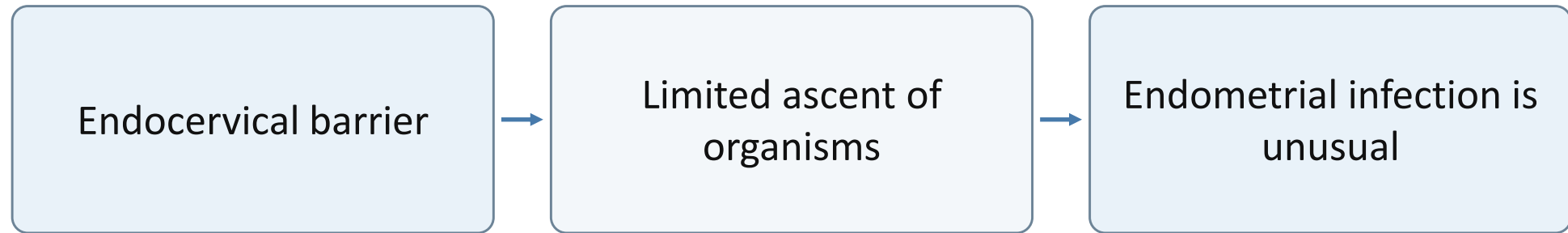
Normal histologic cycle: What changes?

Phase	Glands	Stroma
Proliferative	Straight; Epithelial mitoses	Cellular; Actively proliferating
Early secretory	Subnuclear vacuoles	Begins functional differentiation
Late secretory	Tortuous / serrated	Edema and predecidual change
Menstrual	Fragmentation	Breakdown with hemorrhage

Physiologic leukocytes are not sufficient

- Late secretory endometrium may contain sparse neutrophils and lymphocytes.
- These findings must be interpreted in their menstrual-cycle context.
- Stromal plasma cells as the critical chronic-endometritis finding.
- Do not diagnose chronic endometritis from lymphocytes alone.

Why uterine infection is comparatively uncommon



Chronic inflammation of the cervix is common; In the endometrium it is more concerning.

Inflammation: Acute versus chronic

Acute pattern

- Usually occurs after childbirth or miscarriage
- Retained gestational products often predispose
- Predominant acute inflammatory response

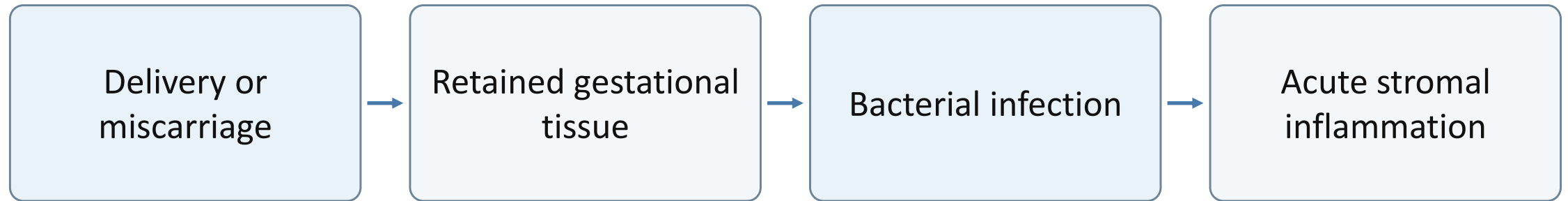
Chronic pattern

- Occurs with several persistent clinical settings
- Stromal plasma cells establish the diagnosis
- Symptoms may be subtle or absent

Acute endometritis: Clinical setting

- An uncommon bacterial infection after delivery or miscarriage.
- Retained products of conception are a usual predisposing factor.
- Group A hemolytic streptococci, staphylococci and other bacteria.
- Important as a comparator—not the same entity as chronic endometritis.

Acute endometritis: Underlying sequence



Acute endometritis: Microscopic emphasis

- The response occurs mainly in the endometrial stroma.
- Inflammation is nonspecific; Correlate with recent pregnancy events.
- Acute inflammatory cells alone do not establish chronic endometritis.
- Assess whether retained gestational tissue is also represented.

Acute endometritis: Treatment principle



Curettage plus antibiotic therapy in the typical retained-products setting.

Chronic endometritis: Diagnostic definition

- An inflammatory disorder of the endometrial lining.
- The histologic diagnosis depends on stromal plasma cells.
- A clinical syndrome alone is not equivalent to tissue-confirmed disease.
- Identify clinical associations without assuming a single pathogen.

The principal associations

Pelvic inflammatory disease

Retained gestational tissue

Intrauterine contraceptive device

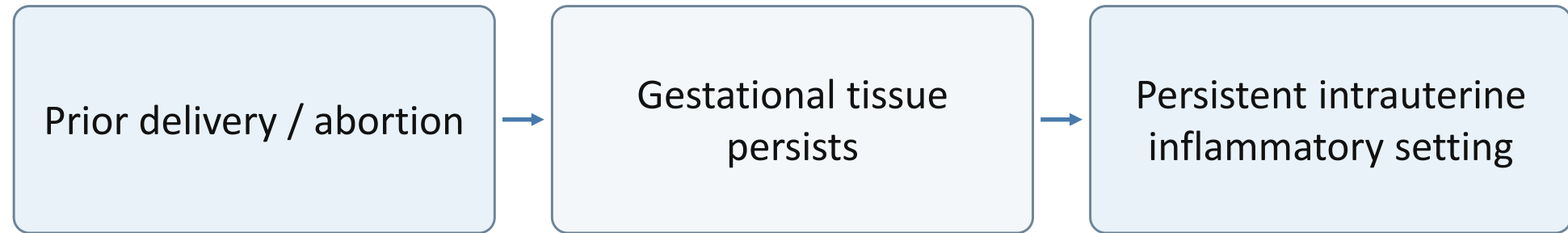
Tuberculosis

Associations, not evidence that every case has the same causal mechanism.

Association: Chronic pelvic inflammatory disease

- Chronic pelvic inflammatory disease is listed as an associated condition.
- An ascending genital-tract process provides important clinical context.
- Consider the cervix, uterus and fallopian tubes as connected sites.
- Pelvic symptoms or infertility warrant clinical correlation.

Association: Retained gestational tissue

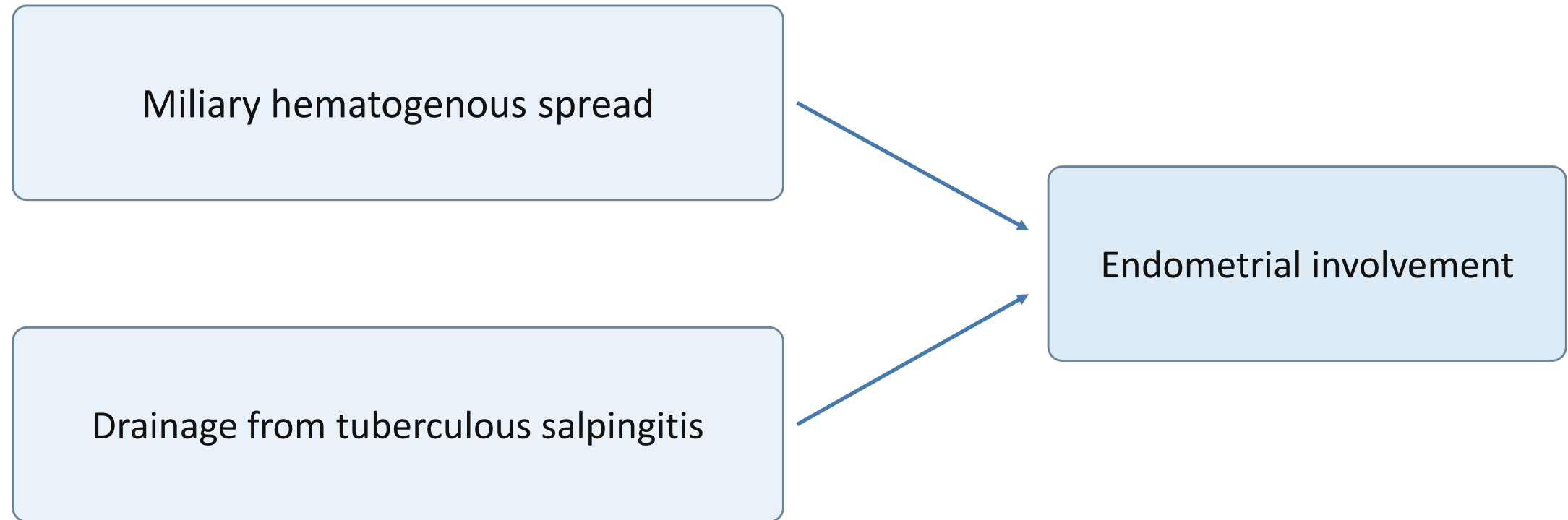


Differentiate prolonged chronic inflammation from an acute postpartum infection.

Association: Intrauterine contraceptive devices

- Intrauterine contraceptive devices among associations.
- Document device use in the pathology request and clinical history.
- Presence of a device is not by itself a histologic diagnosis.
- Do not infer a particular causative organism from device use alone.

Tuberculous endometritis: Routes to the uterus



The route from tuberculous salpingitis as more frequent.

Tuberculosis: Interpret local epidemiology

- An important specific infectious cause of chronic endometritis.
- Endometrial tuberculosis is rare in high-resource countries.
- Epidemiology and tubal disease affect the differential diagnosis.
- Specific microbiologic evaluation belongs to the clinical workup.

No cause apparent in some cases

- No apparent cause in approximately 15% of cases.
- The term “nonspecific” describes this clinical situation.
- A negative etiologic assessment does not negate stromal plasma cells.
- Separate diagnostic certainty from certainty about the cause.

Chlamydia: A possible contributor

- Chlamydia may be involved.
- Acute neutrophilic inflammation may coexist with a chronic infiltrate.
- The chronic component includes lymphocytes and plasma cells.
- Histology alone does not speciate an organism.

Inflammatory cell types carry different meanings

Cell type	Diagnostic interpretation
Neutrophil	Acute inflammatory component; Context matters
Lymphocyte	May be present in chronic or physiologic settings
Plasma cell	Key diagnostic finding in endometrial stroma
Mixed population	May occur with Chlamydia-associated inflammation

Why negative cultures cannot settle the diagnosis

- Responsible organisms may not be cultured.
- Culture negativity does not exclude clinically suspected infection.
- Distinguish pathogen detection from diagnosis of tissue inflammation.
- Therapeutic decisions require clinical rather than histologic context alone.

Clinical spectrum of chronic endometritis

Abnormal uterine bleeding

Pelvic or uterine pain

Genital-tract discharge

Infertility

Abnormal uterine bleeding: A structural differential

- Chronic endometritis among causes of abnormal bleeding.
- Polyps, submucosal leiomyomas and endometrial neoplasms are alternatives.
- Hormonal/anovulatory bleeding may mimic the presentation.
- Pathology and clinical features must be considered together.

Abnormal bleeding: Competing mechanisms

Possible cause	Primary diagnostic clue
Chronic endometritis	Stromal plasma cells
Endometrial polyp	Localized endometrial lesion
Submucosal leiomyoma	Smooth muscle mass encroaching on cavity
Anovulatory bleeding	Proliferative pattern / stromal breakdown
Endometrial neoplasm	Atypical neoplastic glandular or stromal lesion

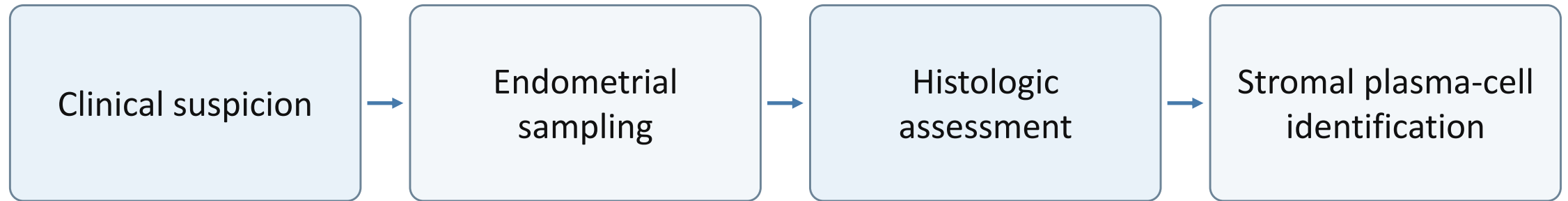
Pain and discharge: Clinically relevant, not specific

- Some patients with nonspecific chronic endometritis report pain.
- Discharge is another possible presentation.
- Neither symptom identifies plasma cells or determines an organism.
- Evaluate the whole genital tract and appropriate clinical context.

Infertility is an association, not a histologic marker

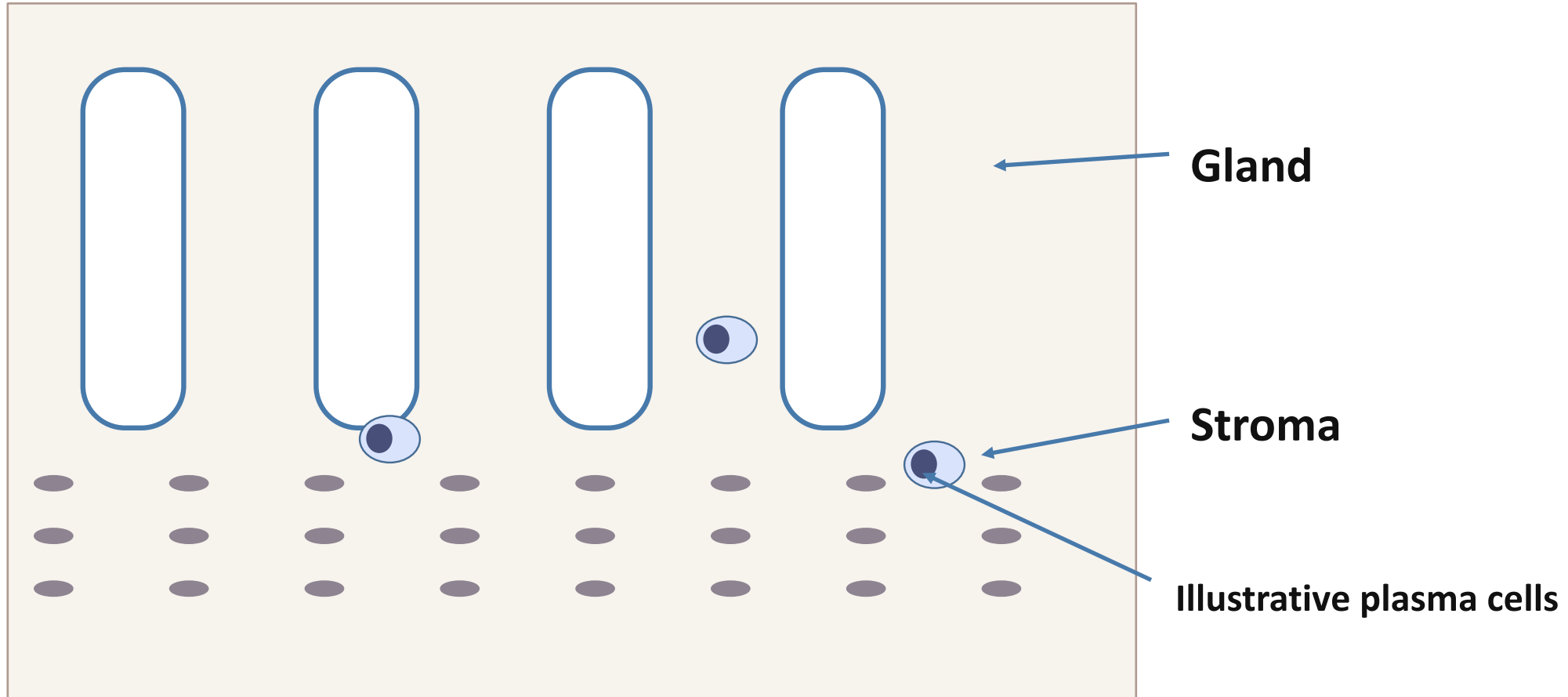
- Infertility among possible clinical manifestations.
- Other gynecologic factors may independently affect fertility.
- Do not diagnose chronic endometritis from infertility alone.
- Interpret any biopsy finding within the full fertility evaluation.

Clinical question → tissue-based diagnosis



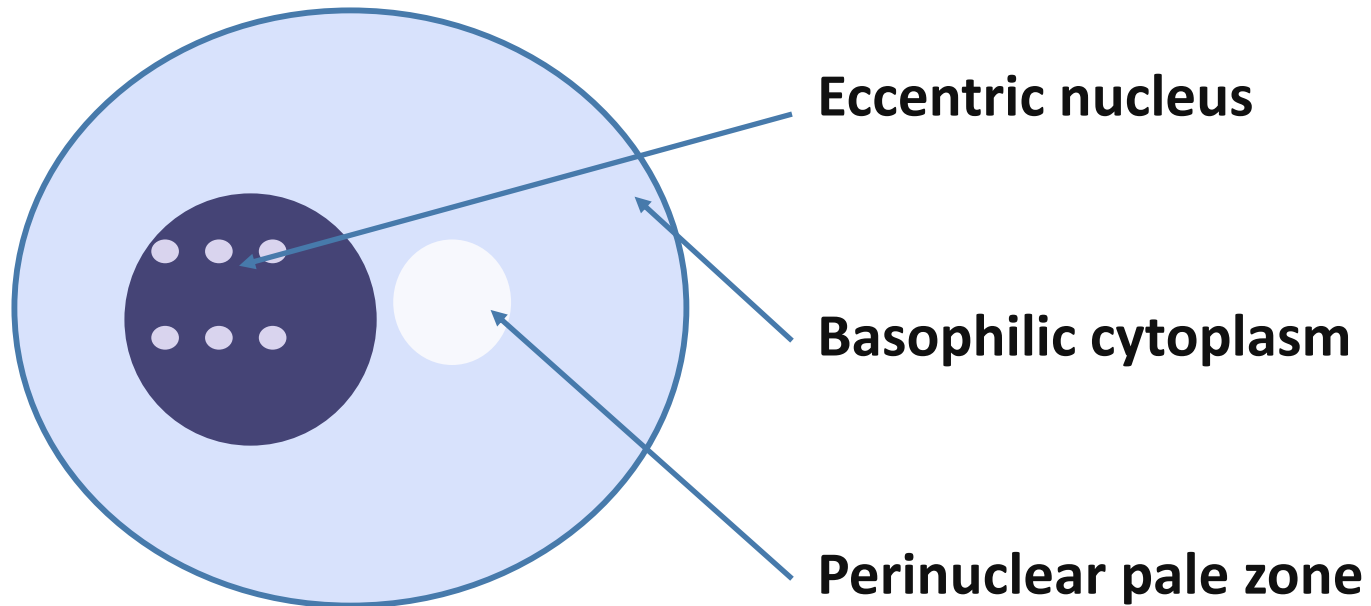
The diagnosis rests on the stroma, not on the presenting symptom.

Microscopic map: Locate the cells that count



Original schematic — cell distribution is illustrative, not diagnostic evidence.

Plasma cell: Core recognition features



Schematic plasma cell morphology; Confirm against authentic H&E in routine practice.

Where should plasma cells be identified?

- Within the endometrial stromal compartment.
- Not merely as positive staining within glandular epithelium.
- Recognize the gland–stroma boundary before interpreting cells.
- Preserve the tissue architecture in the diagnostic assessment.

Plasma cells compared with other inflammatory cells

Cell	Useful cytologic distinction
Plasma cell	Eccentric nucleus, basophilic cytoplasm, pale hof
Small lymphocyte	Scant cytoplasm, round dense nucleus
Neutrophil	Segmented nucleus; Acute inflammatory pattern
Stromal fibroblast	Elongated or spindle-shaped nucleus

Why plasma cells may be overlooked on H&E

- Scattered stromal plasma cells can be sparse and subtle.
- They may resemble stromal fibroblasts or mononuclear leukocytes.
- Secretory change increases background cellular complexity.
- Review suspicious regions carefully before excluding disease.

A structured biopsy review

Check tissue representation



Orient glands and stroma



Assess cycle-related changes



Search for stromal plasma cells



Report findings with limitations

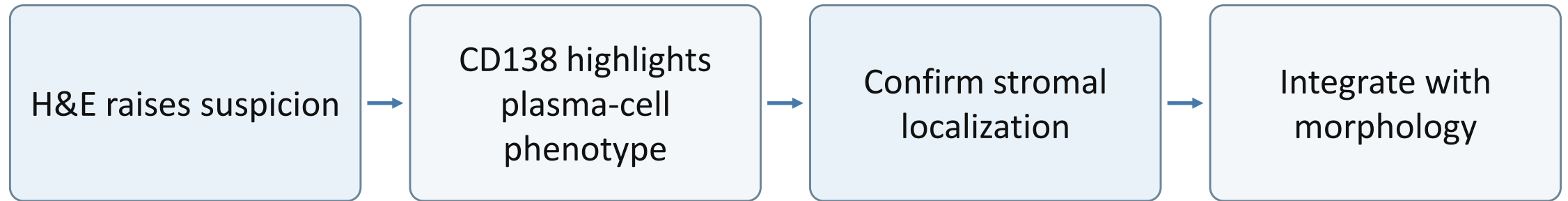
Focality: A negative fragment has limitations

- Plasma-cell involvement may be patchy rather than diffuse.
- A small sample can miss a focal stromal infiltrate.
- An inadequate biopsy cannot confidently rule out disease.
- Record sample adequacy and interpret clinical discordance cautiously.

H&E: Establish morphology before ancillary testing

- Locate endometrial epithelium, glands and stroma.
- Search for eccentric nuclei and perinuclear clearing.
- Review areas with disproportionate stromal cellularity.
- Use ancillary staining to clarify equivocal findings when appropriate.

CD138 immunohistochemistry: Useful adjunct



CD138 is an aid to recognition; It does not independently identify etiology.

CD138 is not confined to plasma cells

- Endometrial glandular and surface epithelial cells can stain.
- Epithelial CD138 positivity must not be counted as stromal plasma cells.
- Evaluate cell position and cytomorphology on the stained section.
- Misreading epithelial signal may produce overdiagnosis.

CD138 interpretation: Two very different signals

Stromal signal

- Cell located between endometrial glands
- Plasmacytoid morphology supports interpretation
- Potential evidence of chronic endometritis

Epithelial signal

- Surface or glandular lining is immunoreactive
- Expected expression in epithelial compartments
- Not proof of stromal plasma-cell infiltration

Thresholds: An important standardization gap

- No universally accepted plasma-cell density threshold exists.
- Studies use differing field counts and positivity rules.
- Do not teach a single numerical cutoff as a universal requirement.
- Specify the laboratory approach when interpreting reports.

Sampling timing may affect detection

- Endometrial cycle phase changes the stromal background.
- Published studies report higher plasma-cell detection in proliferative biopsies.
- Sampling site and tissue amount also influence sensitivity.
- Interpret small discordant specimens without overconfidence.

Inflammatory infiltrate $\neq$ organism identification

- The stromal plasma-cell criterion defines the histologic lesion.
- Chlamydia is a possibility, not a microscopic certainty.
- Tuberculosis requires additional clinicomicrobiologic correlation.
- Culture may fail to recover the responsible organism.

Diagnostic cautions: Avoid both false positives and negatives

Pitfall	Safer interpretation
Lymphocytes mistaken for plasma cells	Evaluate cytology; Use stain when appropriate
Epithelial CD138 miscounted	Verify stromal location
Focal plasma cells missed	Consider representativeness
Single cutoff treated as universal	State local or study-specific criteria

Histologic chronic endometritis versus endometriosis

- Endometritis is inflammation of the uterine endometrial lining.
- Endometriosis is endometrial-type tissue at ectopic sites.
- Stromal plasma cells support endometritis—not endometriosis.
- The names are similar but the defining pathology differs.

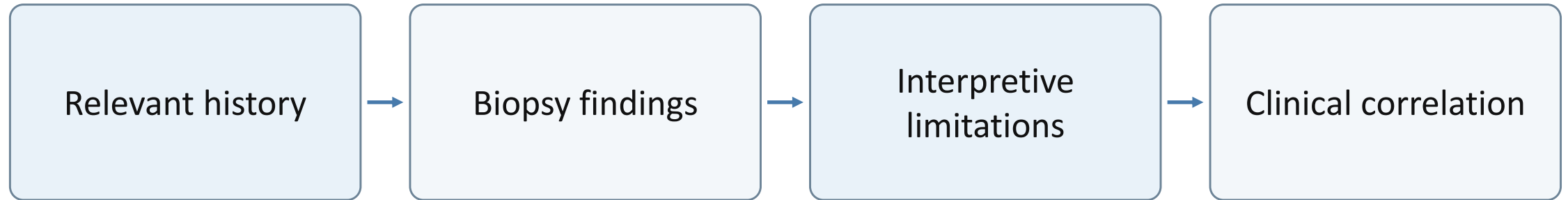
Related disorders: Location and key finding

Entity	Anatomic setting	Core pathology
Chronic endometritis	Uterine endometrium	Stromal plasma cells
Acute endometritis	Uterine endometrium	Acute stromal inflammation
Endometriosis	Extrauterine sites	Ectopic endometrial-type tissue
Endometrial polyp	Focal uterine lining	Polypoid structural lesion

Acute versus chronic endometritis: Integrated comparison

Feature	Acute	Chronic
Typical context	After delivery / miscarriage	PID, retained tissue, IUD, TB
Diagnostic inflammation	Acute, nonspecific	Stromal plasma cells
Clinical interpretation	Recent gestational event	Bleeding, discharge, pain, infertility
Etiologic uncertainty	Bacterial infection	May be nonspecific / culture-negative

Clinicopathologic integration: Rational reporting



If no organism is identified, avoid naming a pathogen from morphology alone.

Antibiotic treatment: Robbins' conditional principle

- When infection is clinically suspected, antibiotic treatment is indicated.
- A negative culture does not necessarily prevent treatment.
- The rationale includes prevention of sequelae such as salpingitis.
- Drug choice and regimen are not specified by this textbook passage.

Avoid claiming certainty about fertility benefit

- Infertility is a relevant clinical association.
- Evidence on whether eliminating plasma cells improves live birth remains uncertain.
- Published studies vary in diagnostic criteria and patient selection.
- Do not infer a quantified therapeutic benefit from histology alone.

Case 1: Inflammation after miscarriage

A patient develops fever and uterine symptoms after miscarriage. Ultrasound raises concern for retained gestational products.

Interpretation question

Which inflammatory pattern is most consistent with this clinical setting?

Case 1: Acute endometritis is the primary concern

Acute postabortion endometritis

- Retained gestational tissue is the classic predisposing factor.
- The acute response predominates in the endometrial stroma.
- Management with evacuation and antibiotics.

Case 2: Infertility and a subtle infiltrate

An endometrial biopsy obtained during an infertility assessment contains scattered stromal mononuclear cells. Plasma-cell morphology is uncertain.

Interpretation question

What finding would establish the histologic diagnosis?

Case 2: Prioritize stromal plasma cells

Demonstrate plasma cells in the endometrial stroma

- CD138 may clarify equivocal cells but is not specific for their location.
- Do not count positively stained endometrial epithelium.
- Interpret the result with the laboratory's diagnostic framework.

Case 3: Bleeding with an intrauterine device

A patient using an intrauterine contraceptive device reports intermittent abnormal uterine bleeding. Biopsy shows a possible inflammatory infiltrate.

Interpretation question

Does device history alone establish chronic endometritis?

Case 3: Association does not equal diagnosis

No—look for stromal plasma cells

- Intrauterine devices are a recognized clinical association.
- Stromal plasma cells determine the histologic diagnosis.
- Consider other causes of abnormal bleeding concurrently.

Case 4: Genital tuberculosis context

A patient undergoing investigation for possible tubal tuberculosis has an endometrial biopsy. The clinical team asks whether the uterine cavity may be involved.

Interpretation question

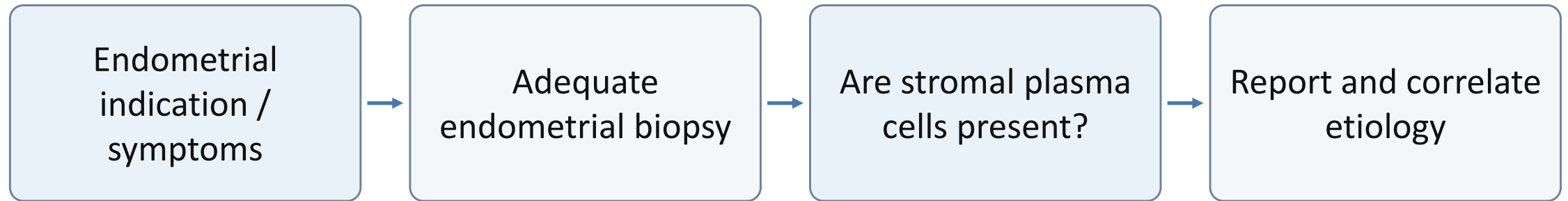
What route of spread does Robbins emphasize?

Case 4: Anatomic route informs suspicion

Spread from tuberculous salpingitis

- Endometrial tuberculosis may also occur after miliary spread.
- The route from the tube is described as more frequent.
- The tissue and clinical data must be linked before assigning etiology.

Diagnostic decision: A compact conceptual algorithm



Absence on limited sampling and absence of a proven pathogen are different questions.

High-yield clinicopathologic synthesis

- The chronic lesion is identified by stromal plasma cells.
- Classic associations include PID, retained tissue, devices and tuberculosis.
- Nonspecific cases and negative cultures are recognized.
- Cycle-related cells and CD138 epithelial staining are important pitfalls.
- Clinical decisions integrate histology, history and microbiology.

Selected references

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