Patient-oriented pathology reporting

Thoughts on practices designed to support the patient

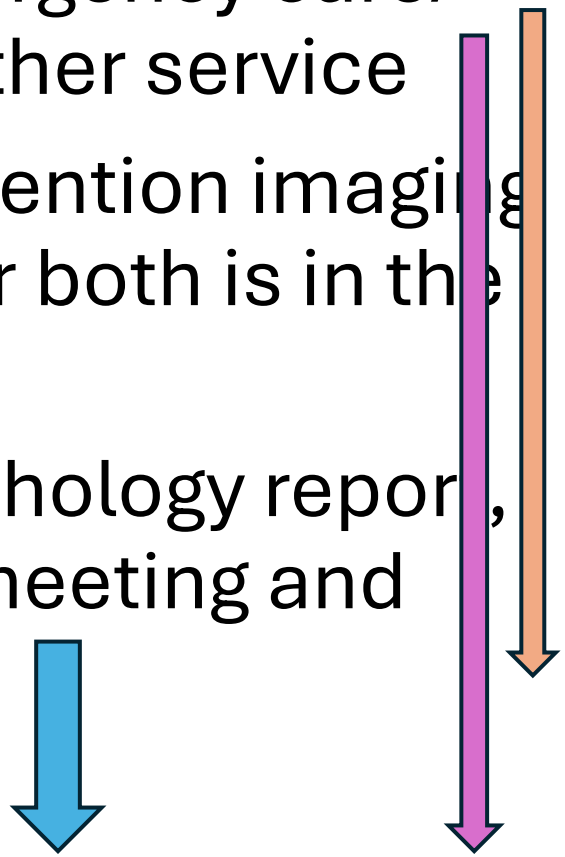
Professor Raji Ganesan

Birmingham Women's Hospital

United Kingdom

Patient Pathway

- Onset of symptoms
- Primary care / Emergency care/ Referred from another service
- First point of intervention imaging or tissue sample or both is in the hospital
- Imaging and/or pathology report, multidisciplinary meeting and decision to treat
- Start of treatment



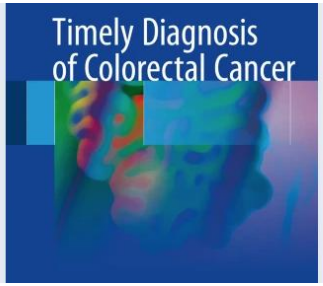
28-day faster diagnosis (75% of patients diagnosed or cancer ruled out within 28 days of urgent referral)

62-day referral to treatment (85% of patients to start treatment within 62 days of referral)

31-day treatment (96% of patients starting treatment within 31 days of a decision to treat)

'Between the telling and the actual surgery, there was a three-week period of agony and involuntary re-organisation of my entire life.'
Audre Lorde 1977

The Psychological Implications of Diagnostic Delay in Colorectal Cancer Patients



Gen Psychiatr. 2022 Oct 6;35(5):e100871. doi: 10.1136/gpsych-2022-100871

Are Diagnostic Delays Associated with Distress in Breast Cancer Patients?

Jerry H Yang [a], Victoria Huynh [a], Laura D Leonard [a,✉], Alexandra Kovar [a], Michael Bronsert [b], Abigail Ludwigson [c], Dulcy Wolverton [d], Ka [e], Nicole Christian [a], Simon P Kim [a], Gretchen Ahrendt [a], David W Mathes [a], Sarah E Tevis [a]

Cancer-related psychosocial challenges

Youyang Wang [1,2], Wei Feng [1,2,✉]

The High Cost of Delays in Cancer Care: Increased Mortality, Patient Stress, Complications, and Financial Burden



Adil Akhtar
CEO at Michigan Palliative and Hospice Care. MS (Harvard University)

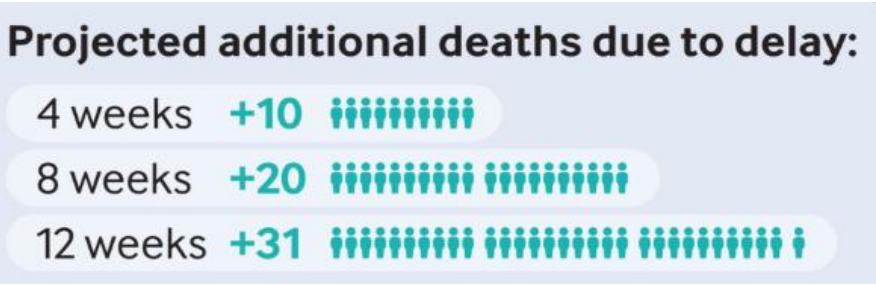


Mortality due to cancer treatment delay: systematic review and meta-analysis

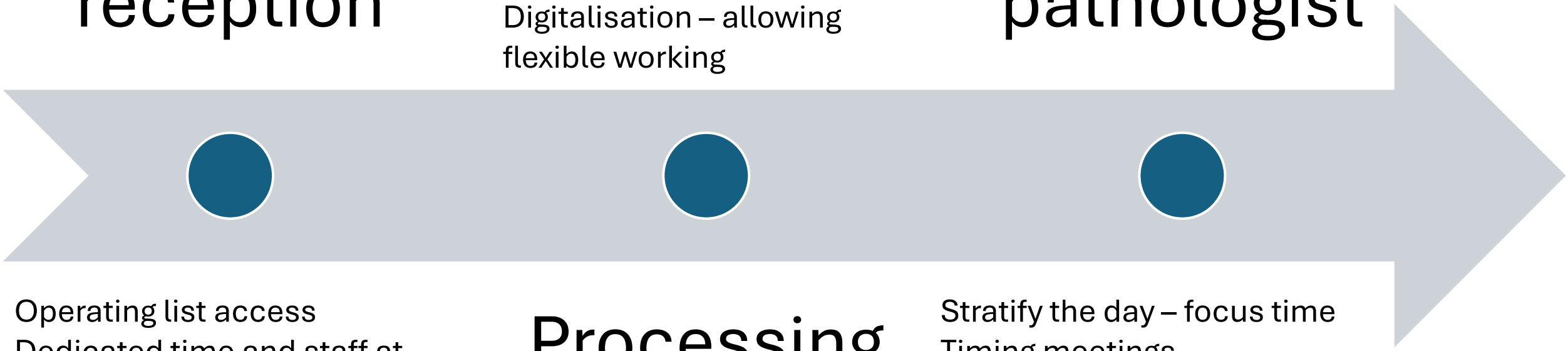
BMJ 2020 ; 371 doi: https://doi.org/10.1136/bmj.m4087 (Published 04 November 2020)

Across 7 common cancers
6-8% increase in the risk of death for every four week delay in surgery.

Modelled 17% increase in risk of death by eight week delay in breast cancer surgery
9% increased risk of death for four week delay in definitive head and neck radiotherapy
13% increased risk of death for four week delay in adjuvant systemic treatment for colorectal cancer



Did not take account of the impact of treatment delay on
local control rates
functional outcomes (eg, continence, swallowing)
complications from more extensive treatments because of progression during delays
quality of life



Specimen reception

Operating list access
Dedicated time and staff at trimming/grossing
Specimen stratification
Request form marking
- Urgent
- Suspicious sample

Processing in laboratory

Staggered working pattern
Diagnostic samples prioritized
Known cancer (staging), suspected cancer, urgent specimens prioritized
Digitalisation – allowing flexible working

With the pathologist

Stratify the day – focus time
Timing meetings
Stratify the work
Diagnostic work first – order IHC
Sentinel nodes
Additional tests – POLE, HRD – reflex and early

Report

Standard terminology
Use of synoptic reporting when appropriate
Preliminary reports
Not pushed to make a diagnosis on suboptimal samples
Collaboration/ consultation

MDT

Be a part of the MDT
Remember we are clinicians – we understand the differential diagnosis and the impact on management

Patient portal

Patient friendly language
Uniform nomenclature
Uniform recommendations
Patient summaries
Pathology explanation clinic

Patient-Oriented Pathology Practice

Joe Rabban MD MPH
Professor
UCSF Pathology Department

University of California
San Francisco

UCSF PATHOLOGY

Goal of this Session



Microscope-Oriented Practice

Microscopic Findings

Pathology Report

Patient-Oriented Practice

Clinical Context

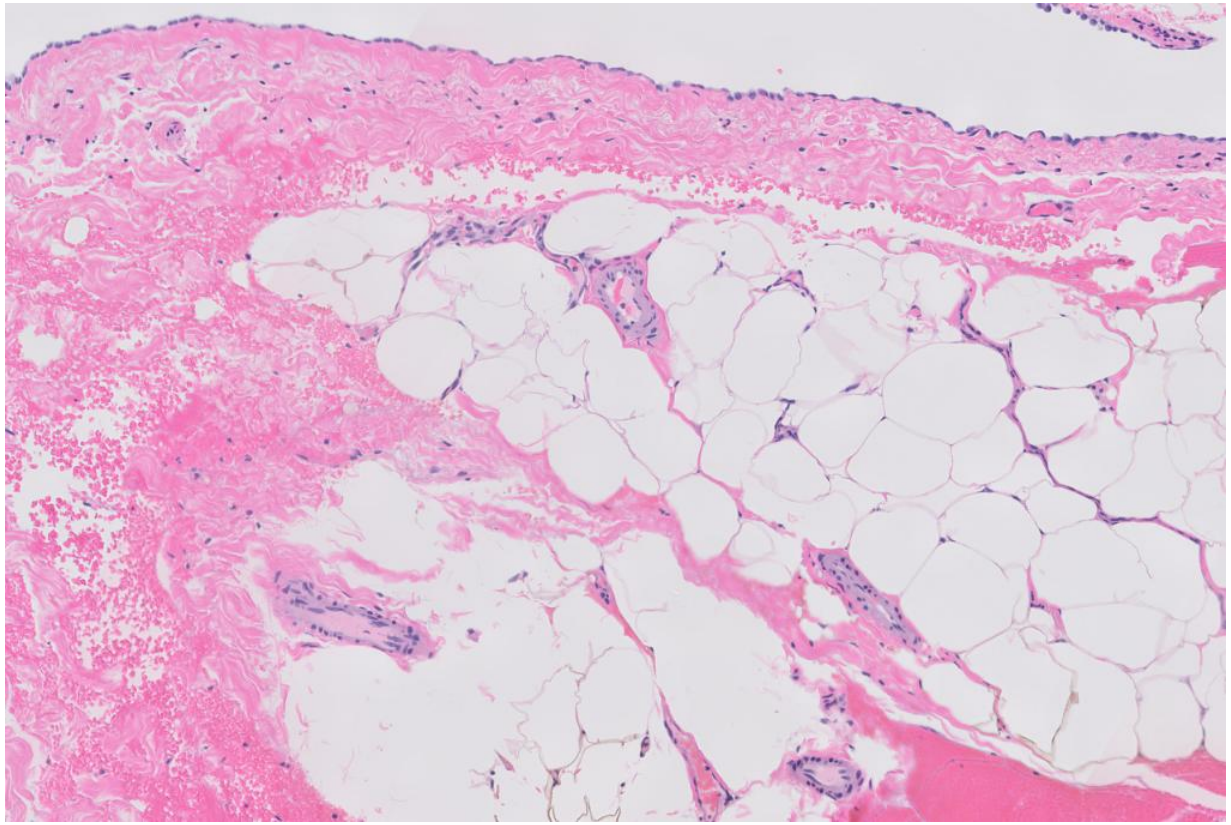
Macroscopic Findings

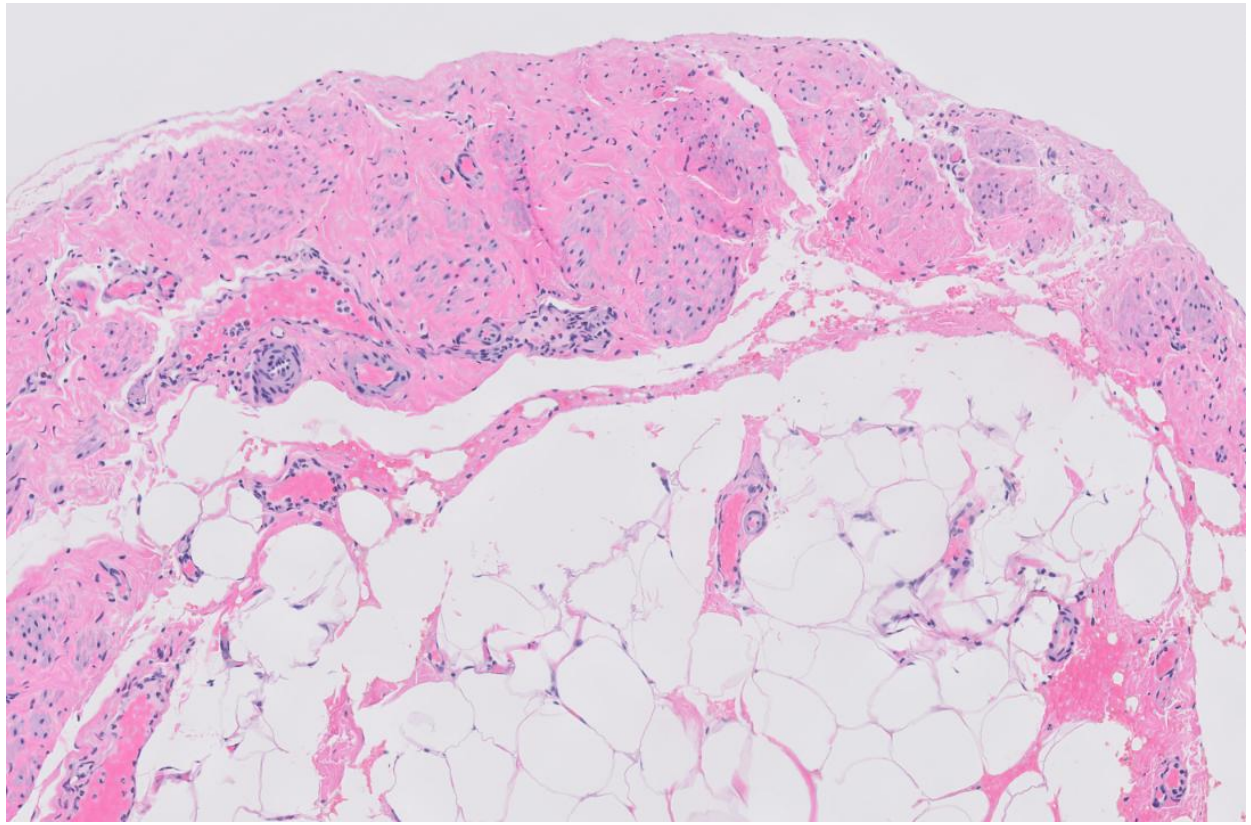
Microscopic Findings

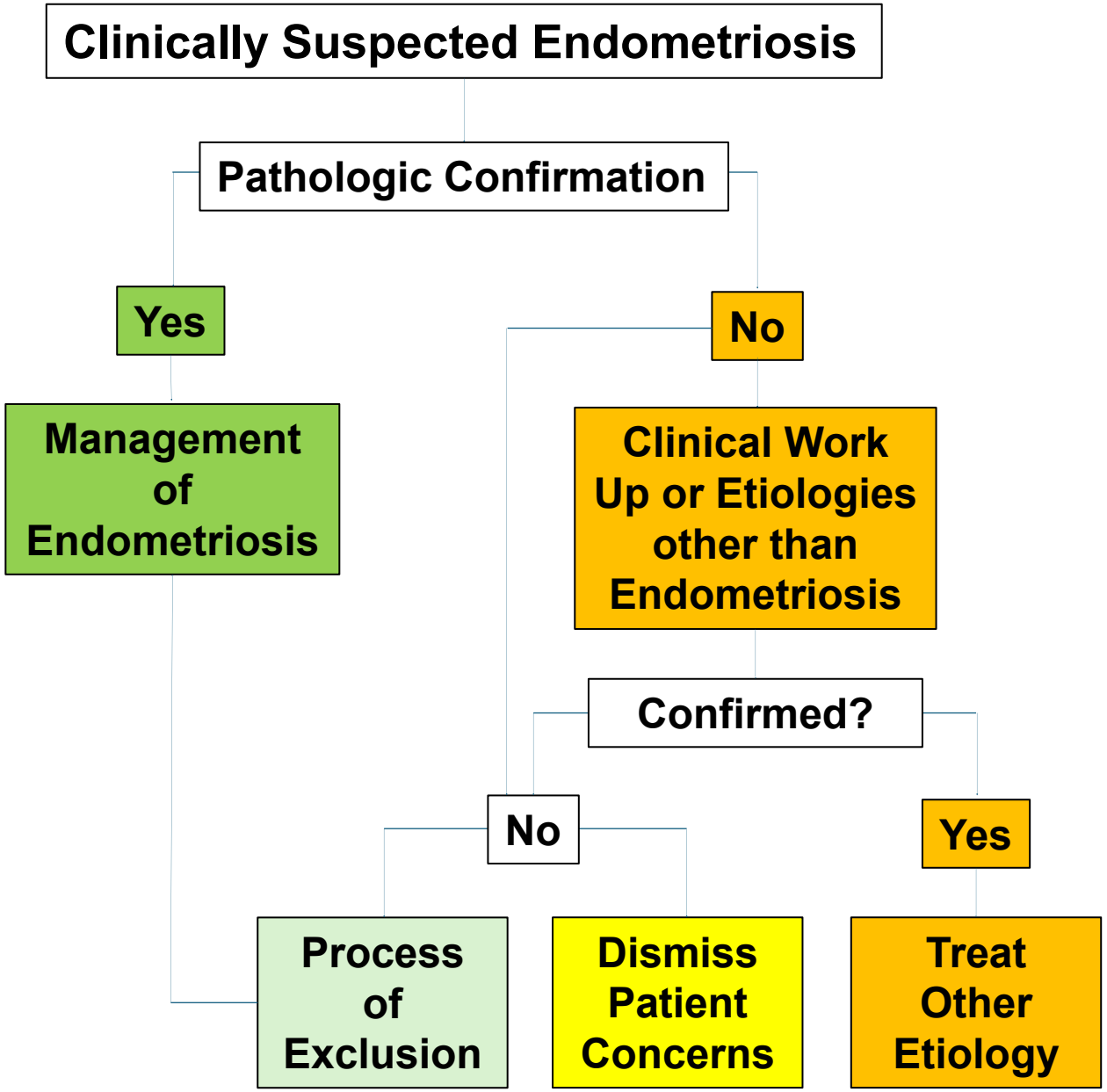
Pathology Report

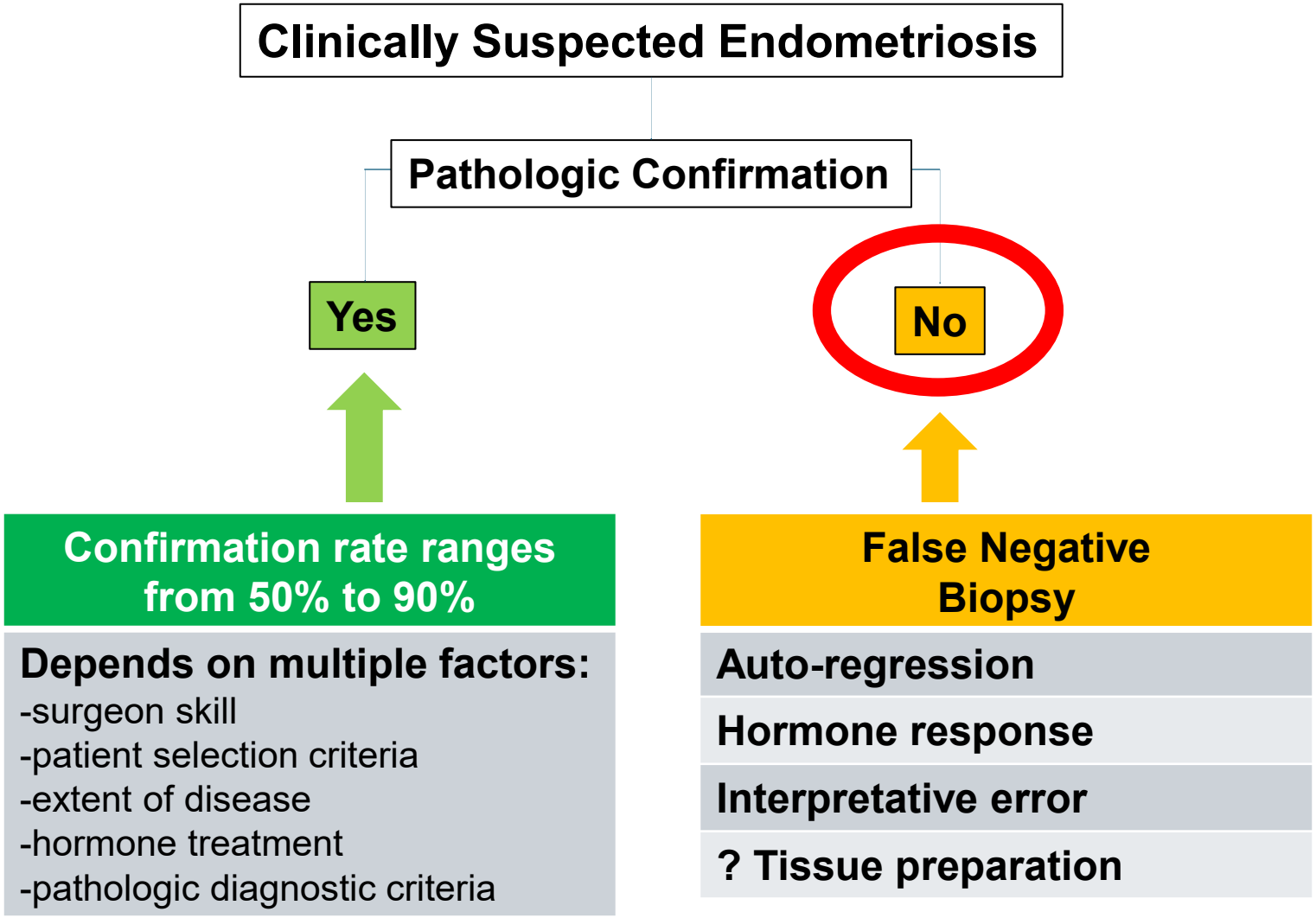
- **Unresolved questions**
- **Unresolved barriers**

Peritoneal biopsies in a 30 y with clinically suspected endometriosis



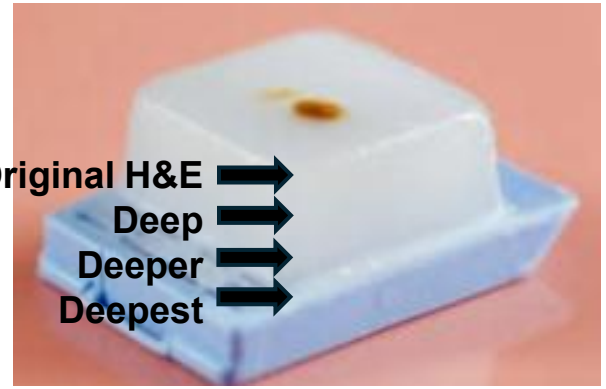



Clinically Suspected Endometriosis
Pathologic Confirmation
Yes
No
Management of Endometriosis
Clinical Work Up or Etiologies other than Endometriosis
Confirmed?
No
Yes
Process of Exclusion
Dismiss Patient Concerns
Treat Other Etiology

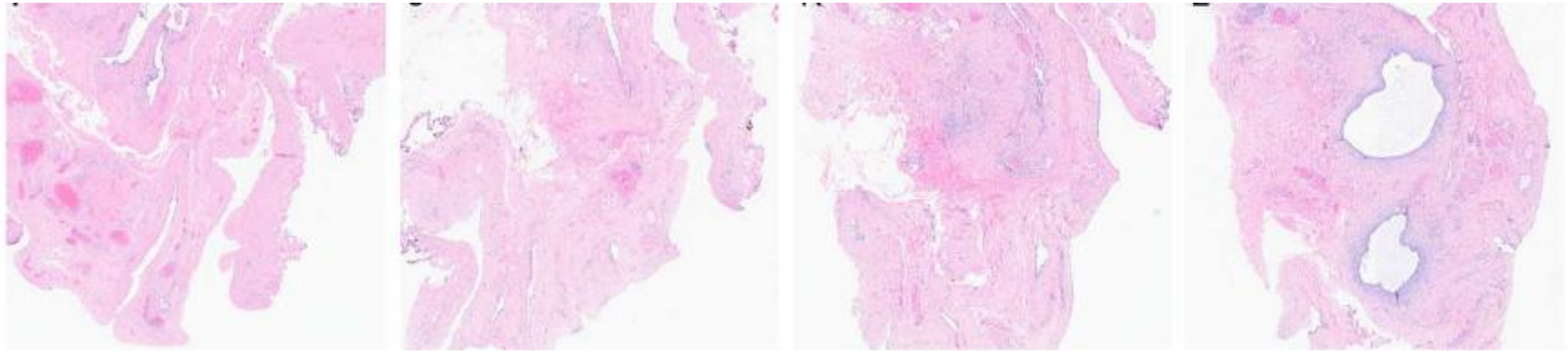

Clinically Suspected Endometriosis
Pathologic Confirmation
Yes
No
Confirmation rate ranges from 50% to 90%
Depends on multiple factors:
-surgeon skill
-patient selection criteria
-extent of disease
-hormone treatment
-pathologic diagnostic criteria
False Negative Biopsy
Auto-regression
Hormone response
Interpretative error
? Tissue preparation

“False negative” endometriosis biopsies due to tissue block sampling error

- **Additional deeper level sections convert up to 25% of <u>negative</u> biopsies to <u>positive</u> for endometriosis**



Original H&E **Level #1** **Level #2** **Level #3**



Diagnostic Utility of Deeper Level Tissue Sections of Negative Peritoneal Biopsies for Clinically Suspected Endometriosis

Constance V. Chen, MD, Megan S. Orlando, MD,† Mary Kathryn Abel, MD, MAS,† Jessica Opoku-Anane, MD,† and Joseph T. Rabban, MD, MPH**

Int J Gyn Pathol. 2024

PMID: 39475364

“False negative” endometriosis biopsies due to tissue block sampling error

- *Unresolved practice question*:

Is it reasonable from a resource-utilization perspective to set a policy to order deeper level sections for “negative” biopsies?

Answer may depend on:

- **Local histolab tissue processing practices.**
- **Local practice economics (**small private practice versus national system) **?**
- **Local surgeon expectations** (e.g. endometriosis specialty center)

Diagnostic Utility of Deeper Level Tissue Sections of Negative Peritoneal Biopsies for Clinically Suspected Endometriosis

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Int J Gyn Pathol. 2024

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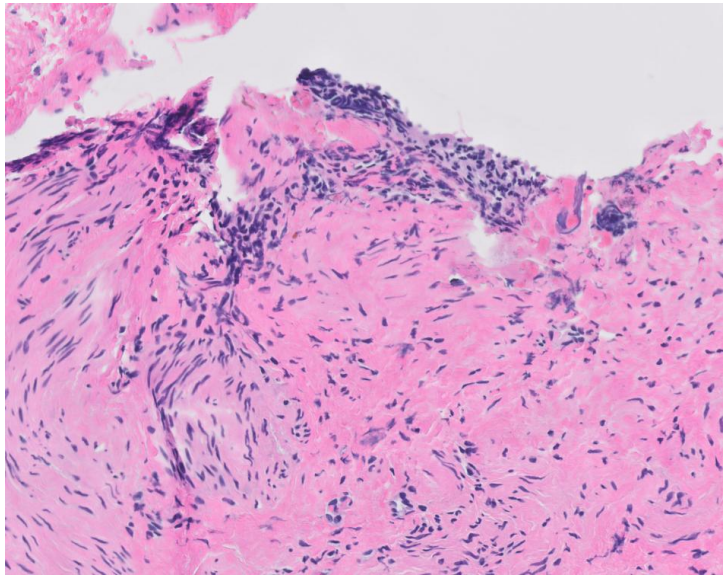
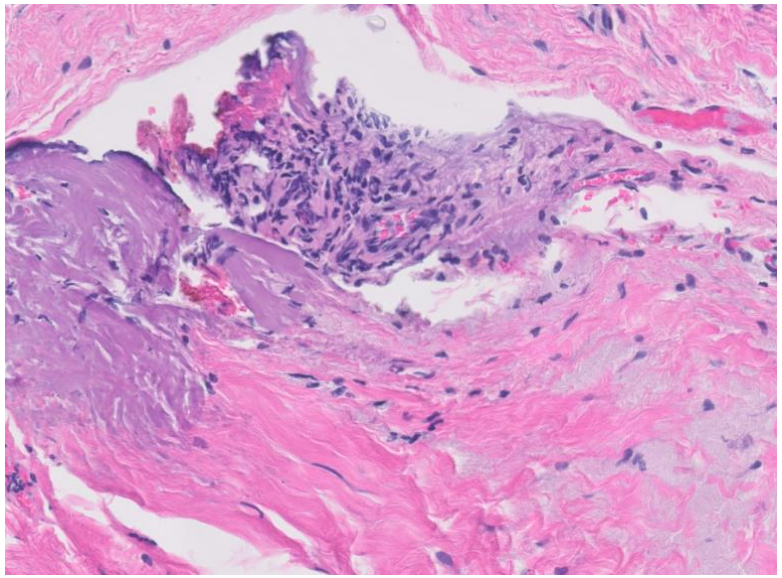
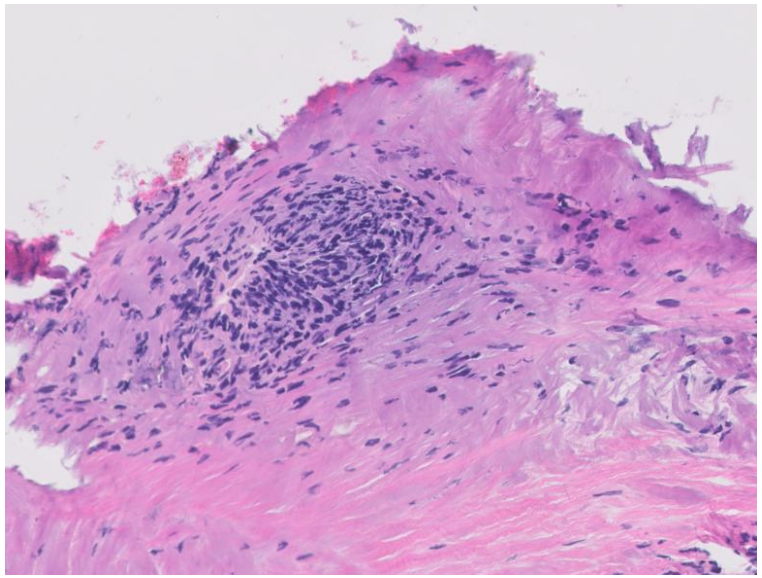
“Equivocal” endometriosis biopsies: suspicious findings







Morphologic Features Suggestive of Endometriosis in Nondiagnostic Peritoneal Biopsies

Beth T. Harrison, M.D. and Khush Mittal, M.D.

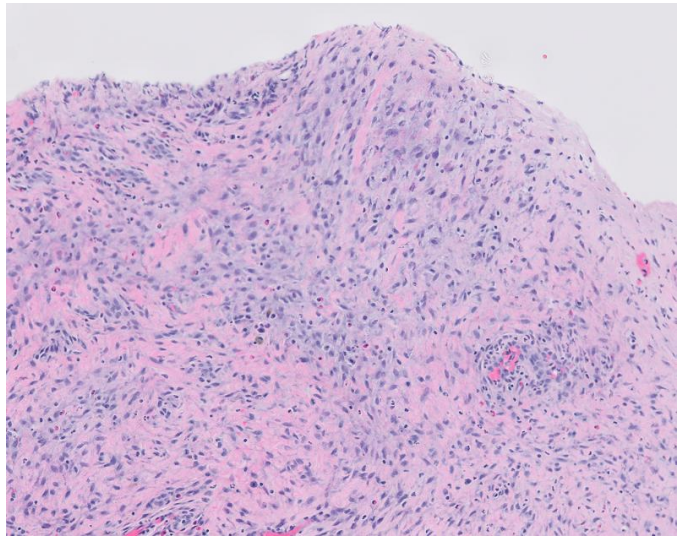
PMID: 26444251

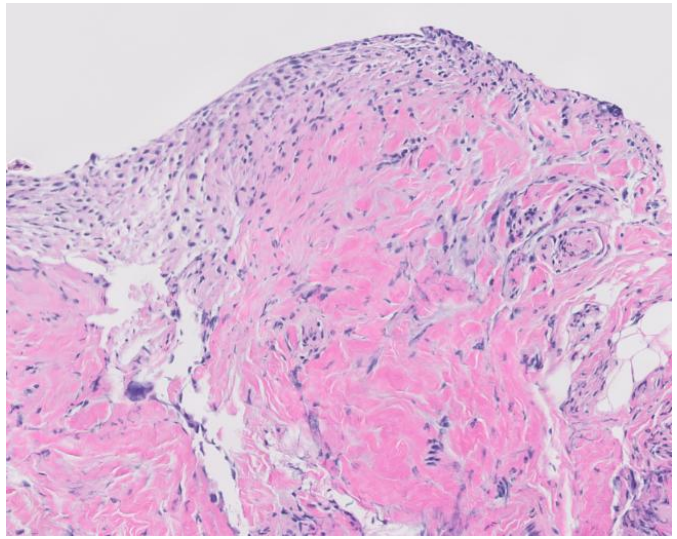
A Clinical and Pathologic Exploration of Suspected Peritoneal Endometriotic Lesions

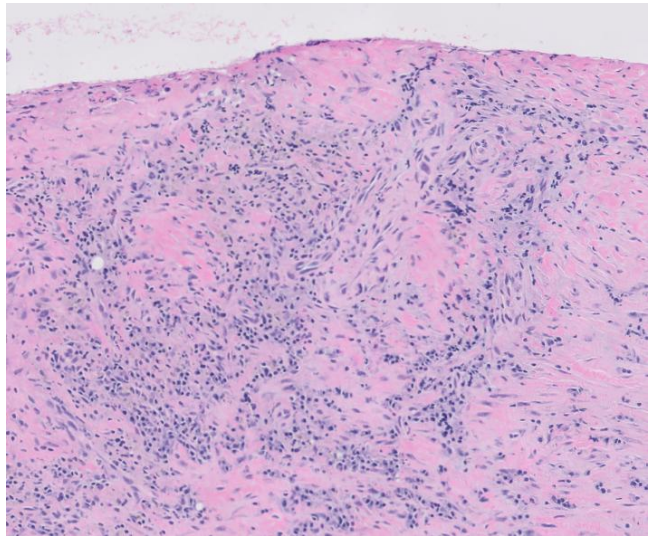
Jaclyn C. Watkins, M.D., M.S., Amy D. DiVasta, M.D., M.M.Sc., Allison F. Vitonis, M.S., Christopher P. Crum, M.D., Marc R. Laufer, M.D., Kathryn L. Terry, Sc.D., Brooke E. Howitt, M.D., and Stacey A. Missmer, Sc.D.

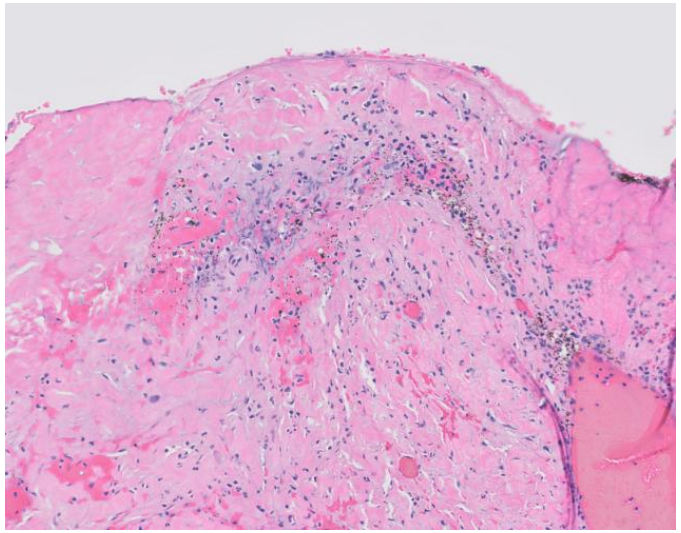
PMID: 33323857

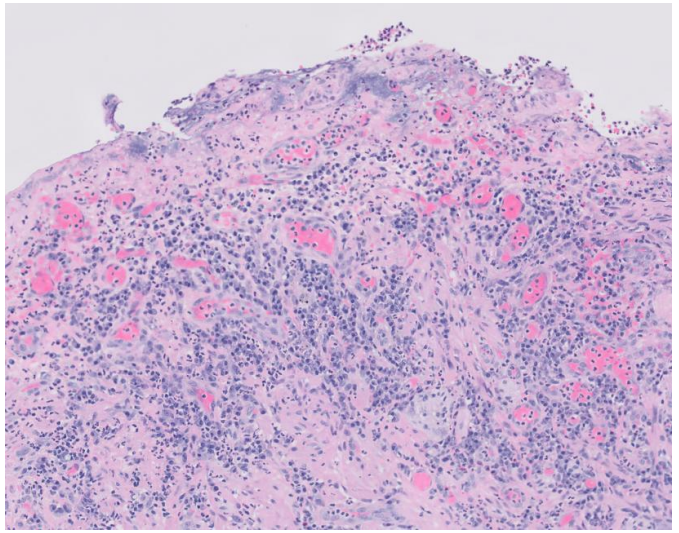
Peritoneal biopsies: inflammation/wound healing changes











“Equivocal” endometriosis biopsies due to suspicious but incomplete findings

- **5th edition WHO requires endometrial glands + endometrial stroma to diagnose endometriosis**
- **Some authors suggest permitting less restrictive** (but less specific) **criteria**

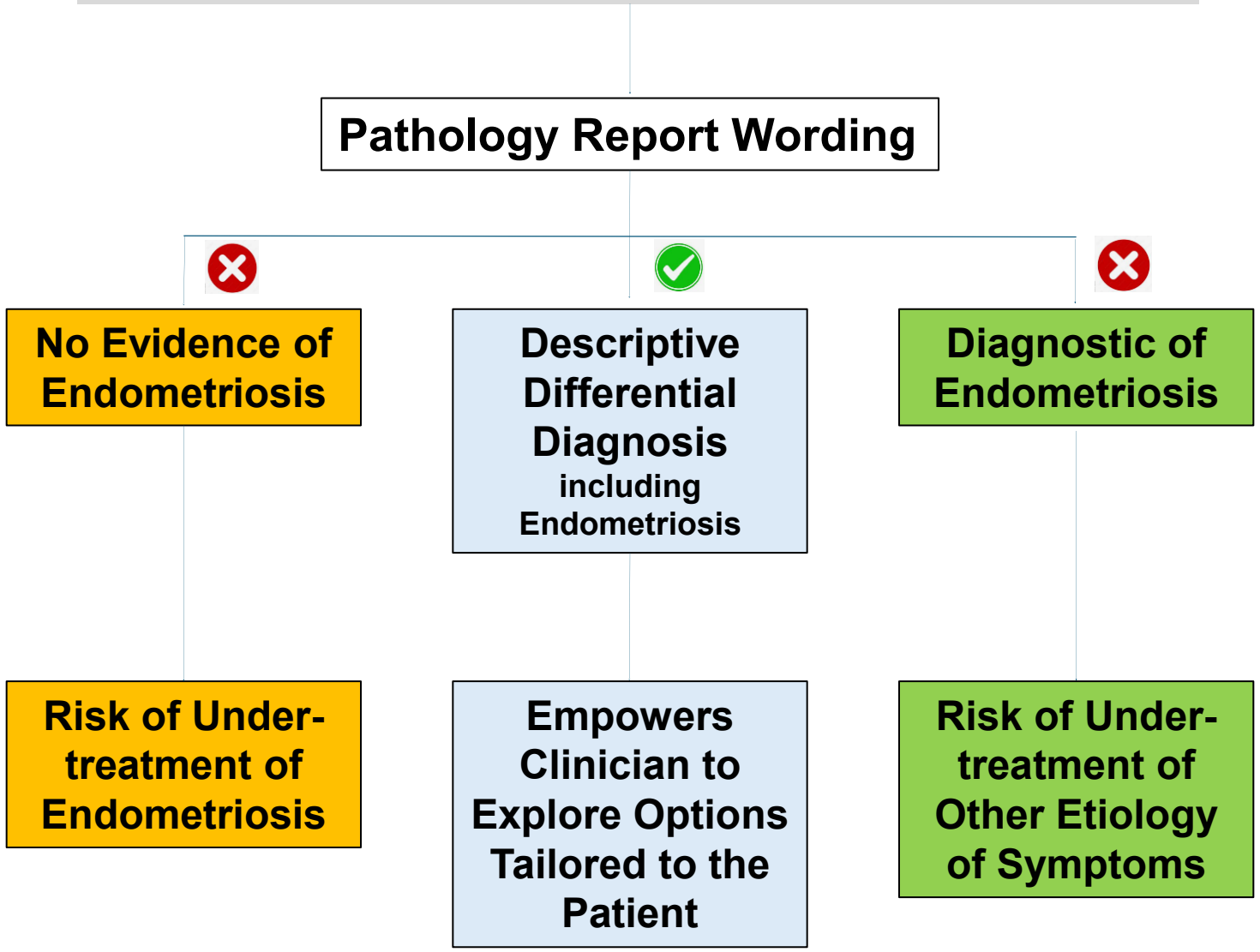
PMID: 26444251

PMID: 33323857

  - **Subserosal “stroma”**
  - **Foamy histiocytes**
  - **Hemorrhage**
  - **Granulation tissue**

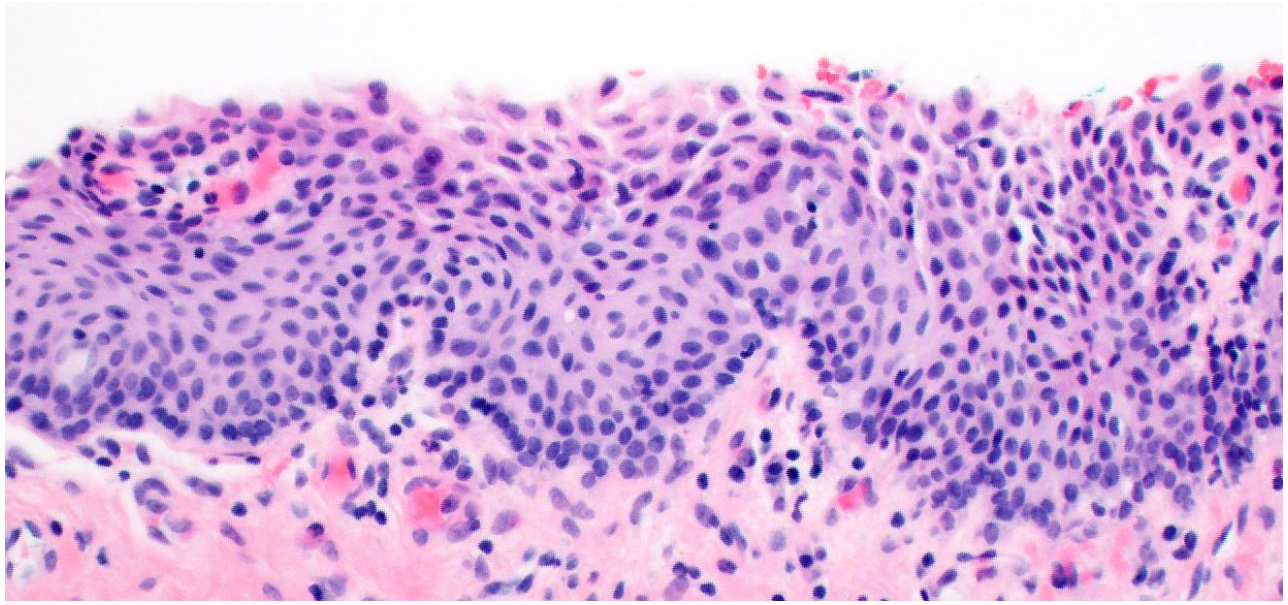
- *Unresolved practice question:*
  - **Should the diagnostic criteria for endometriosis be less rigid?**
    - **Answer ideally should be outcome-based**

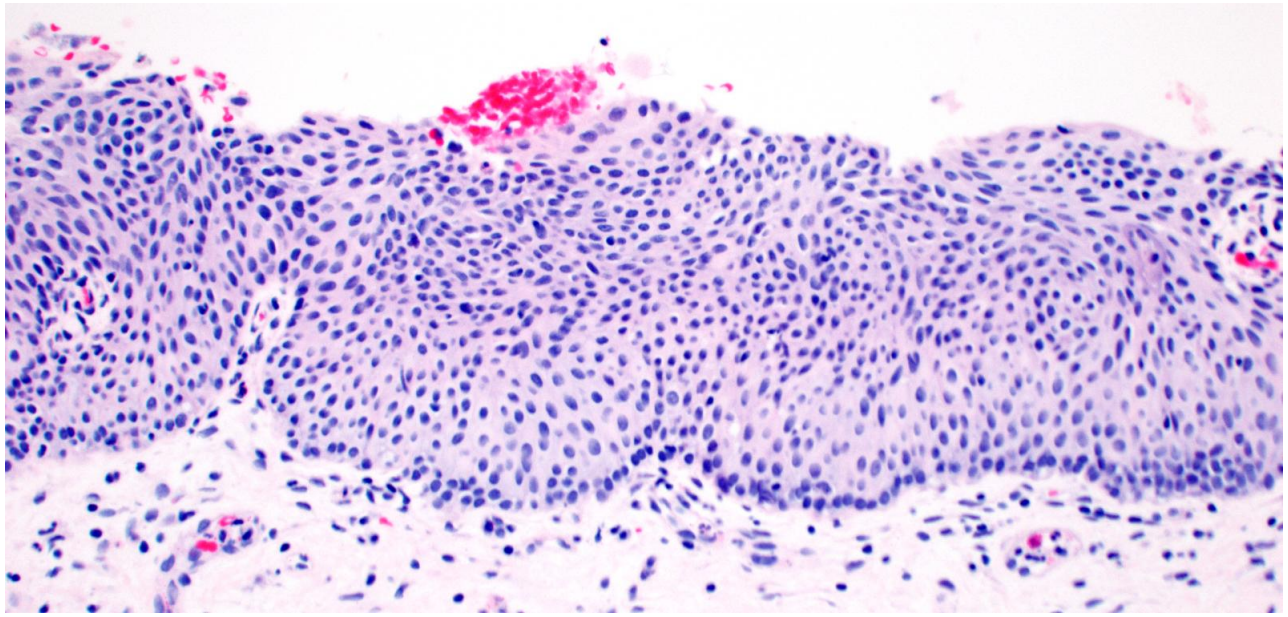
Endometriosis biopsies with “equivocal” findings

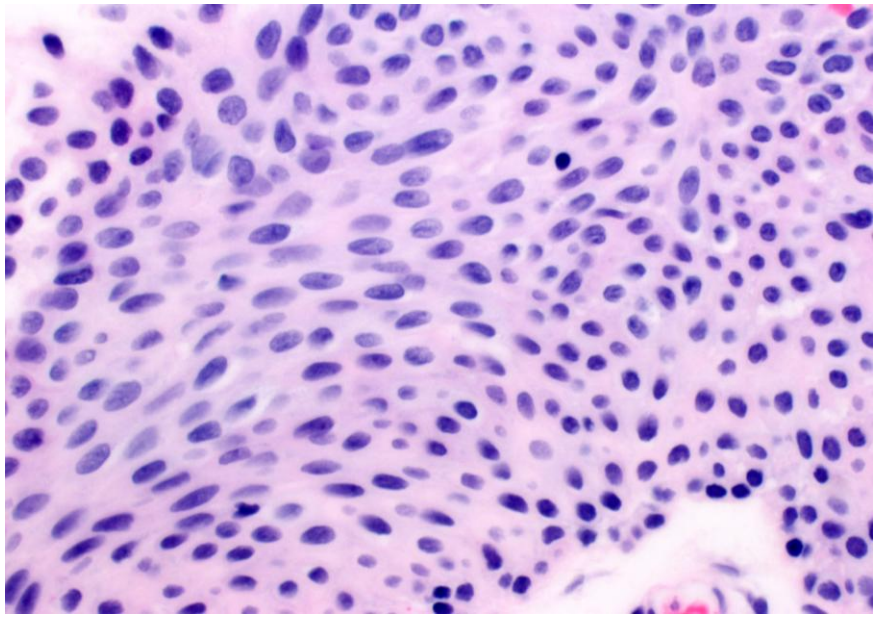


Case 2

- Referral case: **Cervical biopsy in a 30 y M with ASC-US cervical cytology, HPV Negative**
- Original diagnosis: **HSIL (CIN2)**







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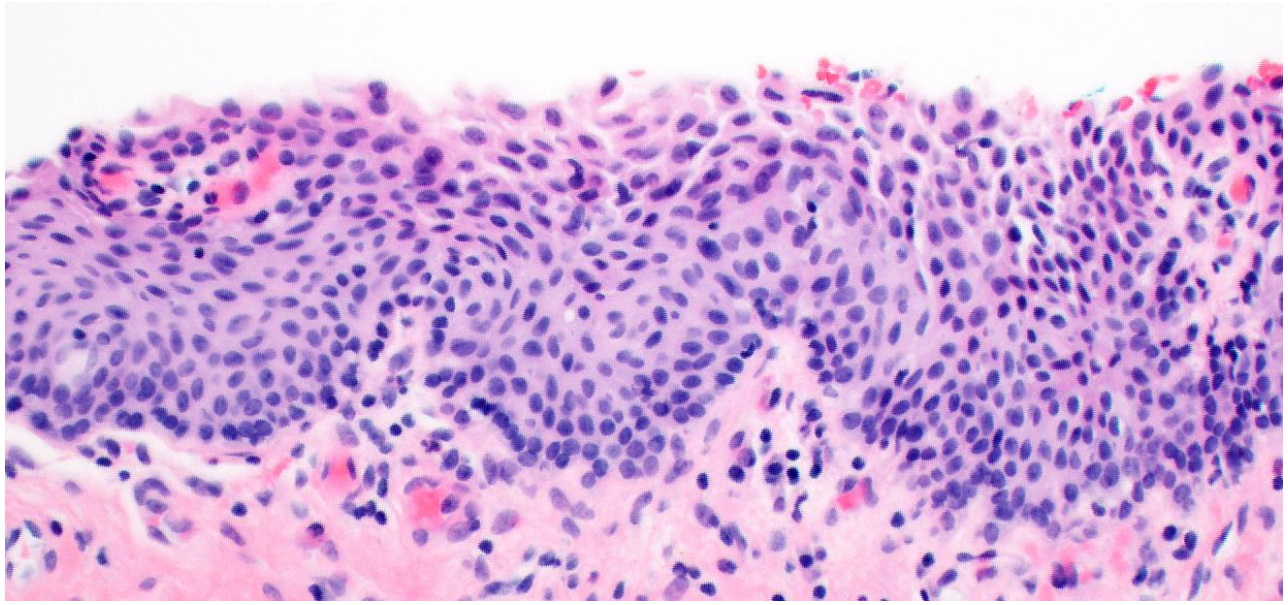
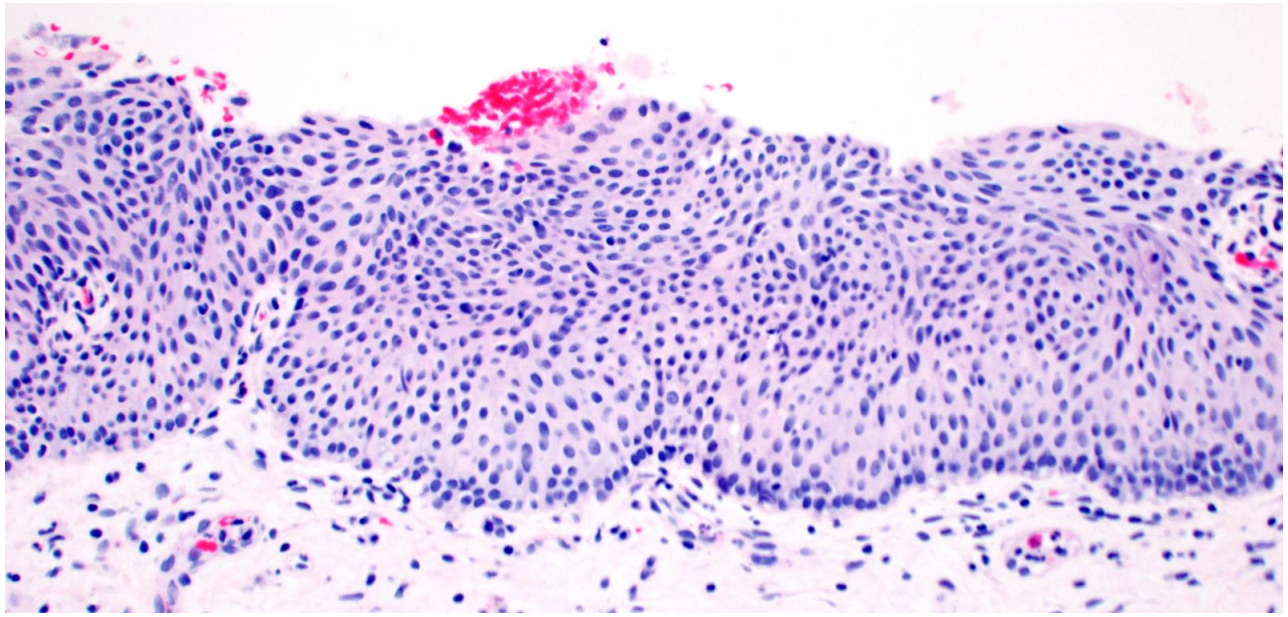
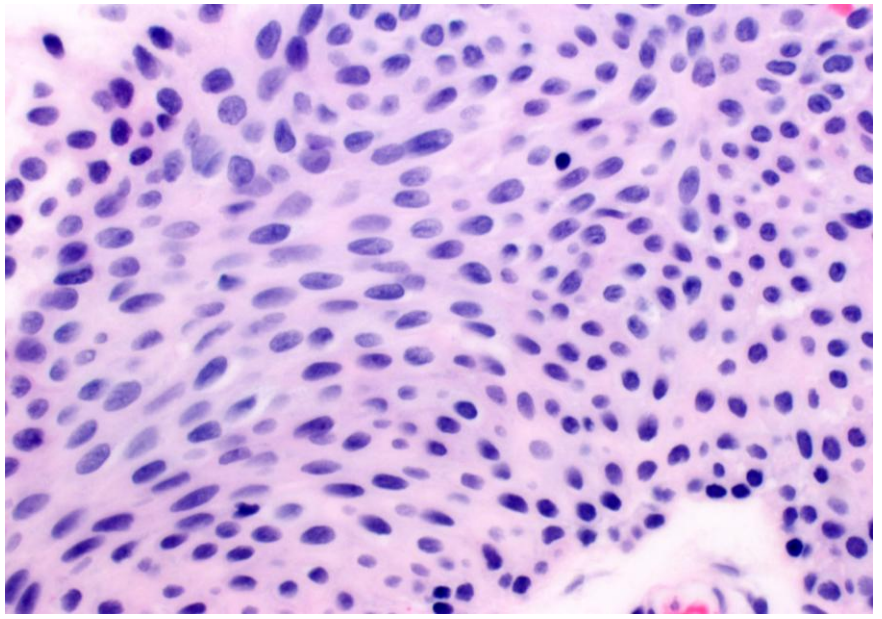






Clinical Context of Cervix Biopsy Defines Pre-test Probability of HSIL

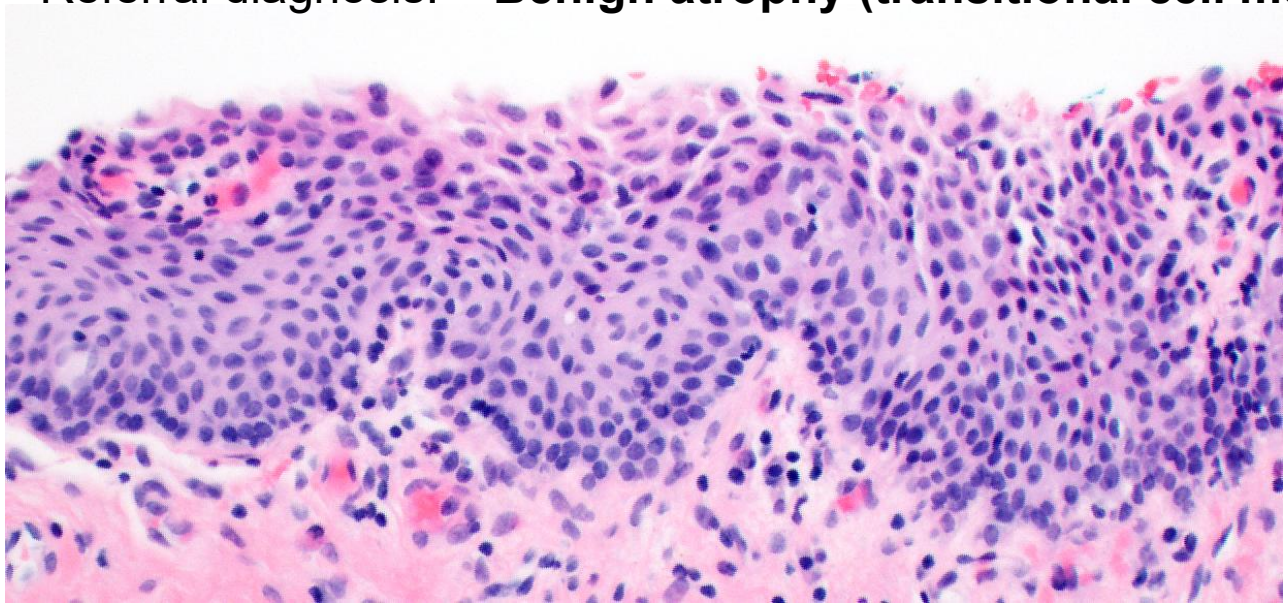
TABLE 1A. Immediate and 5-Year Risks of CIN 3+ for Abnormal Screening Results, When There Are No Known Prior HPV Test Results

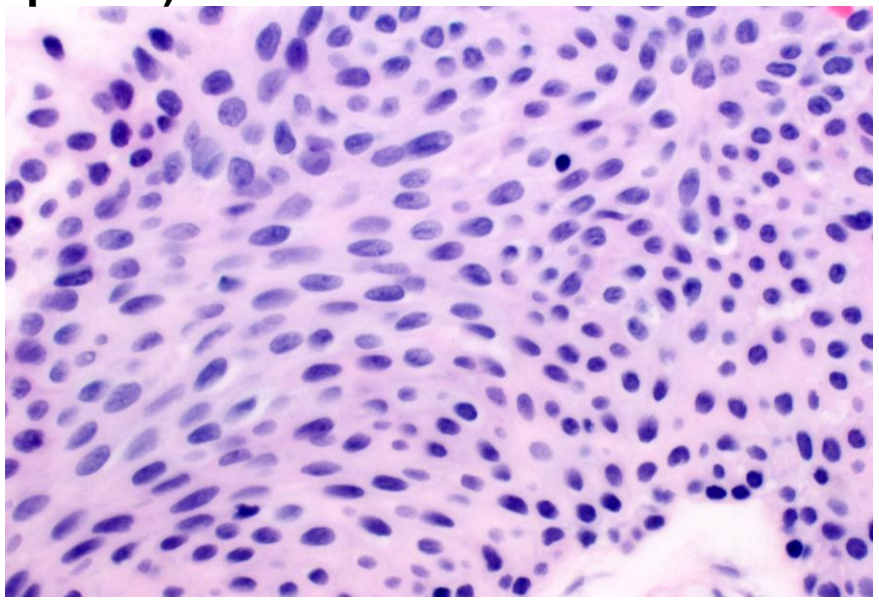
History	Current HPV result	Current cytology result	*n*	%	CIN 3+ cases	CIN 3+ immediate risk, %	CIN 3+ 5-year risk, %	Recommended Management	Recommendation confidence score, %
Unknown	HPV-negative	NILM	1,388,153	90	1,246	0.00	**0.12**	5-y follow-up	100
Unknown	HPV-negative	ASC-US	25,331	1.6	83	0.04	**0.40**	3-y follow-up	100
Unknown	HPV-negative	LSIL	3,300	0.21	47	1.1	**2.0**	1-y follow-up	100
Unknown	HPV-negative	ASC-H	791	0.05	26	3.4	3.8	Colposcopy[a]	Special situation
Unknown	HPV-negative	AGC	2,275	0.15	27	1.1	1.5	Colposcopy[a]	Special situation
Unknown	HPV-negative	HSIL+	183	0.01	43	**25**	27	Colposcopy/treatment	53
Unknown	HPV-negative	ALL[b]	1,420,033	92	1,472	0.01	**0.14**	5-y follow-up	95
Unknown	HPV-positive	NILM	63,541	4.1	1,798	**2.1**	**4.8**	1-y follow-up	100
Unknown	HPV-positive	ASC-US	30,506	2.0	1,378	**4.4**	7.3	Colposcopy	100
Unknown	HPV-positive	LSIL	23,659	1.5	1,008	**4.3**	6.9	Colposcopy	96
Unknown	HPV-positive	ASC-H	3,766	0.24	863	**26**	33	Colposcopy/treatment	82
Unknown	HPV-positive	AGC	977	0.06	254	26	35	Colposcopy/treatment[a]	80
Unknown	HPV-positive	HSIL+	3,980	0.26	1,700	**49**	53	Colposcopy/treatment	100
Unknown	HPV-positive	ALL[b]	126,429	8	7,001				
		Total[c]	1,546,462	100	8,473				

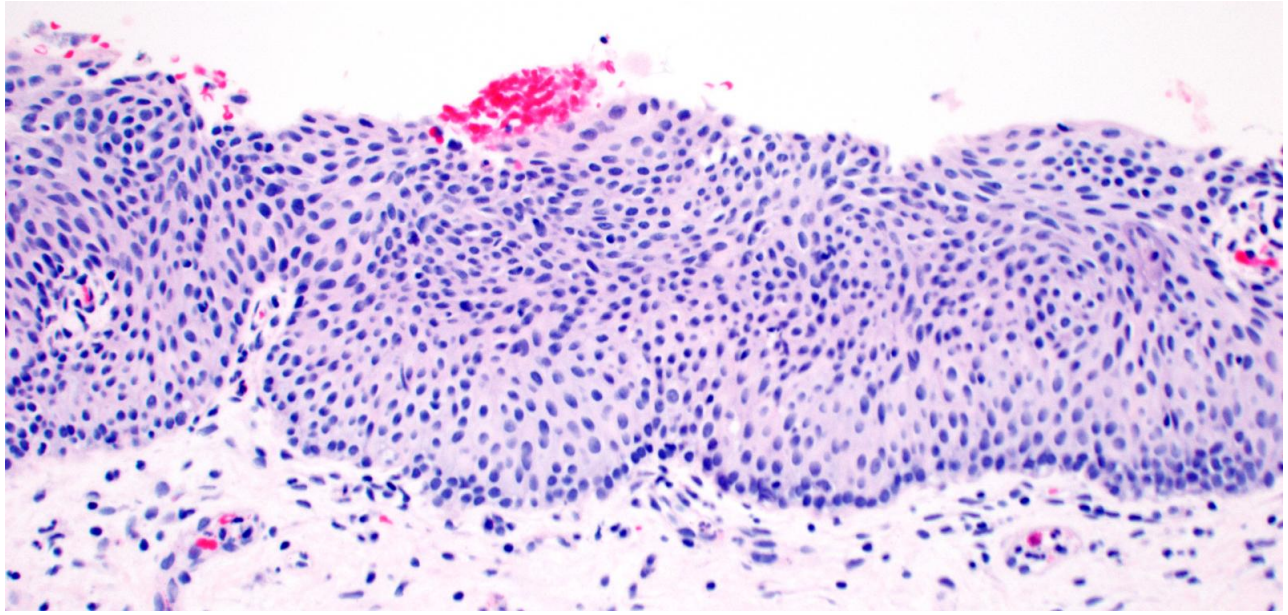
J Low Genit Tract Dis. 2020 Apr;24(2):132-143

PMID: 32243308

- Referral case: **Cervical biopsy in a 30 y M with ASC-US cervical cytology, HPV Negative**
- Original diagnosis: **HSIL (CIN2)**
- Referral diagnosis: **Benign atrophy (transitional cell metaplasia)**







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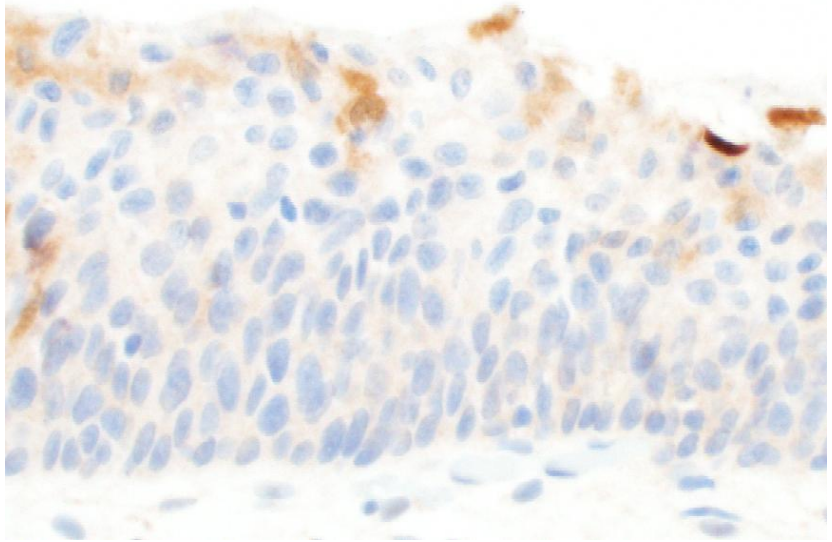

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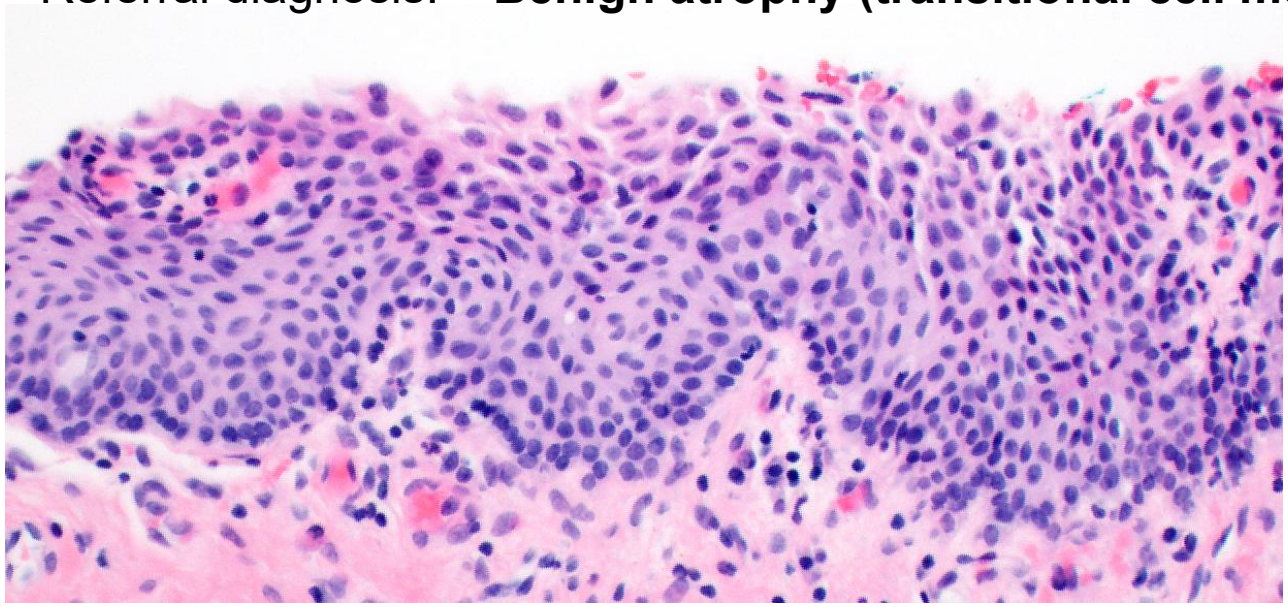

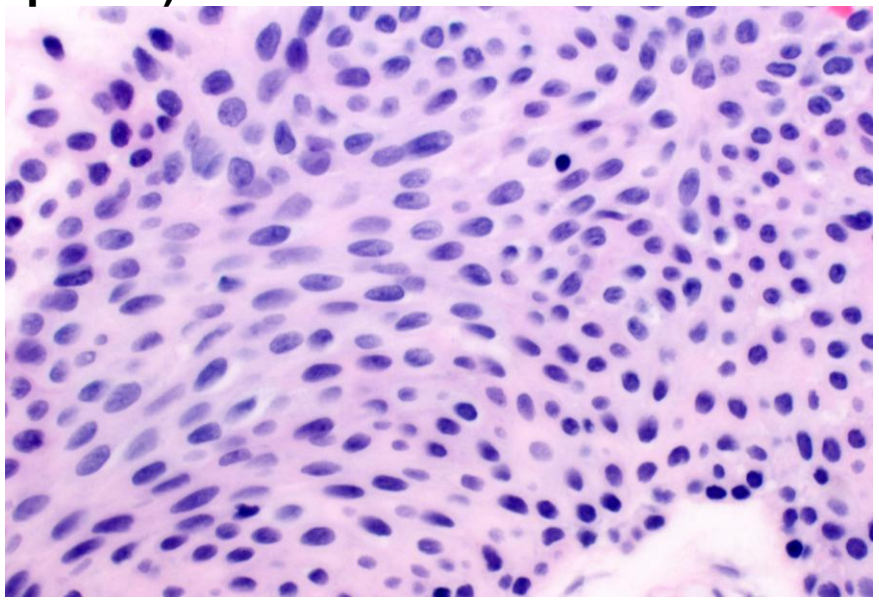

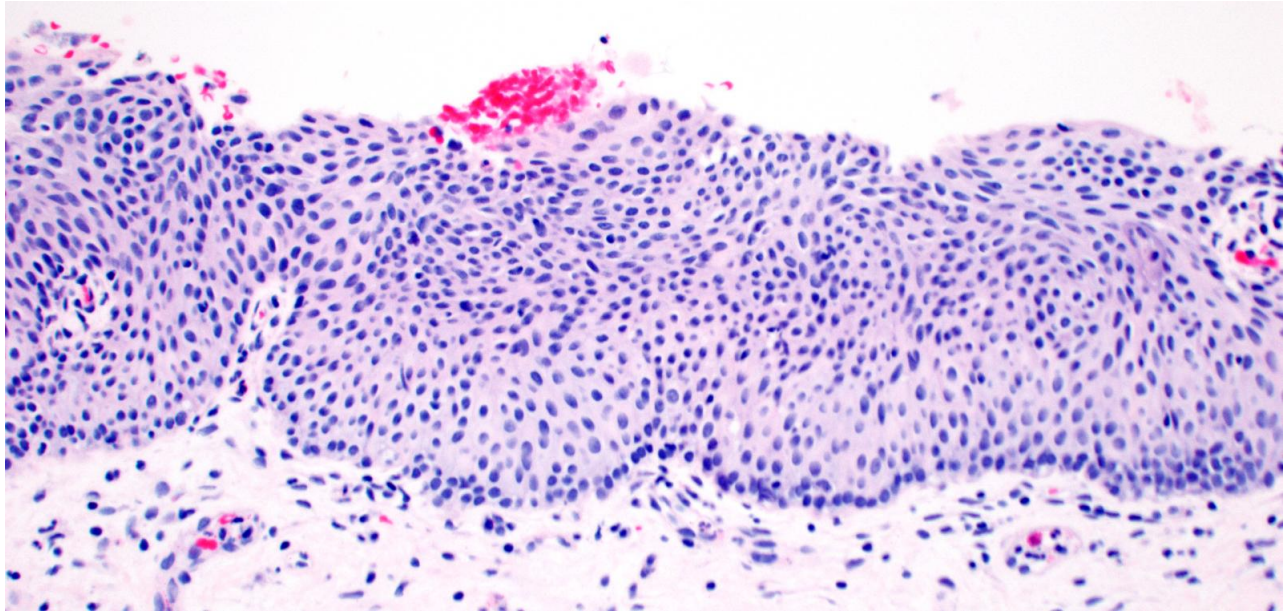

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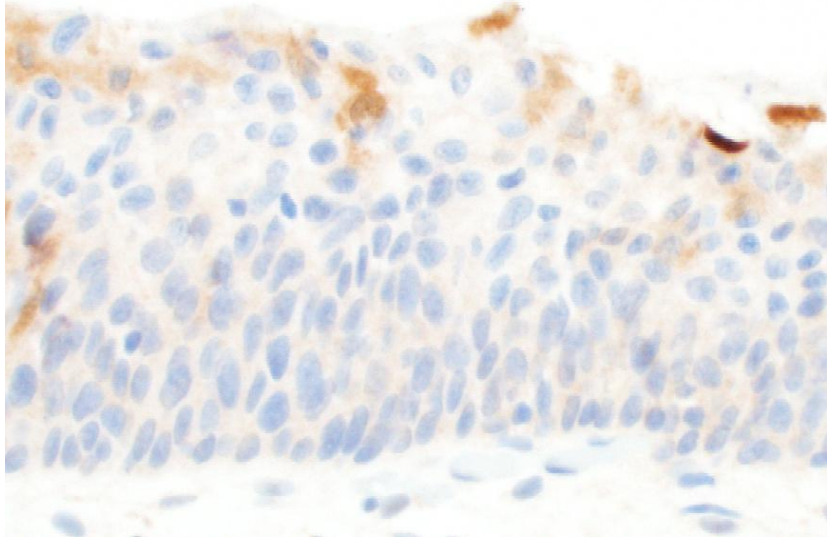
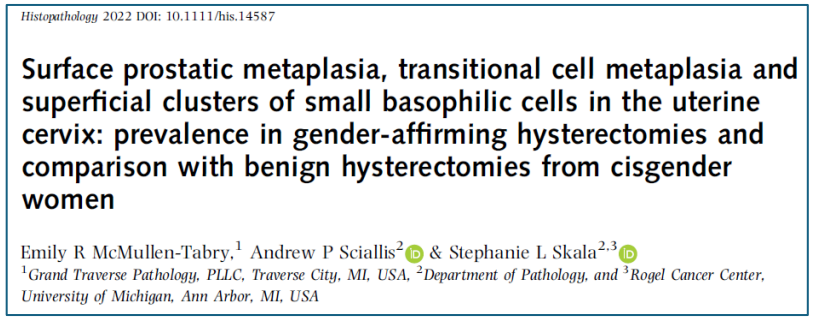


Androgen Effects on Gynecological Tissues and Potential Diagnostic Errors

	Androgen-related Changes	Diagnostic Error
Cervix	**Transitional cell metaplasia**	**HSIL**
	Prostatic metaplasia	**Endocervical adenocarcinoma**
Vagina	**Transitional cell metaplasia**	**HSIL**
	Prostatic metaplasia	**Adenocarcinoma in situ**
Ovary	**Multiple follicle cysts**	
Endometrium	**Atrophy**	
Myometrium	None	
Fallopian tube	None	



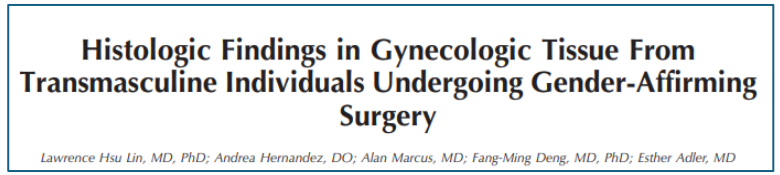
Histopathology 2022 DOI: 10.1111/his.14587

Surface prostatic metaplasia, transitional cell metaplasia and superficial clusters of small basophilic cells in the uterine cervix: prevalence in gender-affirming hysterectomies and comparison with benign hysterectomies from cisgender women

Emily R McMullen-Tabry,[1] Andrew P Sciallis[2] & Stephanie L Skala[2,3]

[1]*Grand Traverse Pathology, PLLC, Traverse City, MI, USA,* [2]*Department of Pathology, and* [3]*Rogel Cancer Center, University of Michigan, Ann Arbor, MI, USA*

PMID: 34664289



Histologic Findings in Gynecologic Tissue From Transmasculine Individuals Undergoing Gender-Affirming Surgery

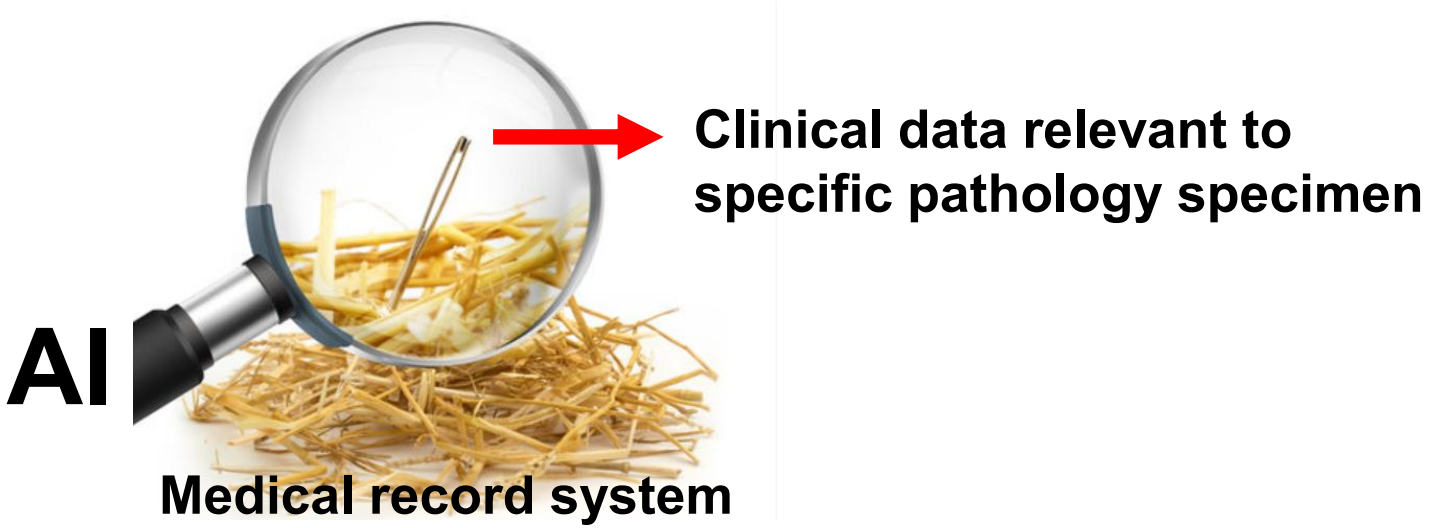
Lawrence Hsu Lin, MD, PhD; Andrea Hernandez, DO; Alan Marcus, MD; Fang-Ming Deng, MD, PhD; Esther Adler, MD

PMID: 34591101

Androgen Effects on Gynecological Tissues and Potential Diagnostic Errors

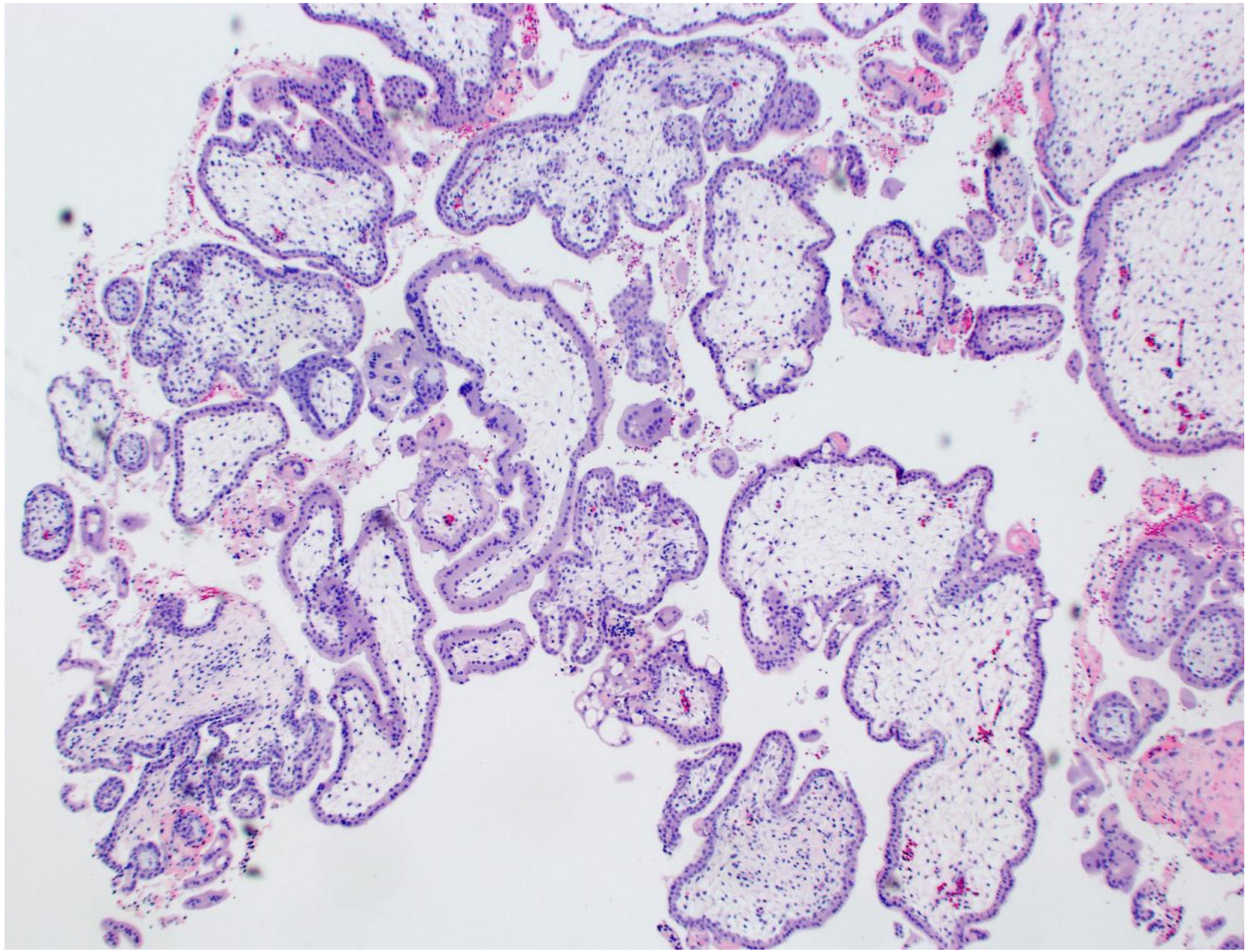
Practical Implications:

- **Learn if your medical record system uses "sex assigned at birth" or self-identified "gender"**
- **If gender is listed as "Male" and specimens are gynecological tissues, determine if androgens are in use**
  - Clinician may not always mention androgen use in the pathology requisition form
  - *<u>Unresolved practice issue:</u>*
    - how do we optimize the medical record system to show clinical context relevant to pathology
    - ? role for AI to highlight relevant clinical context based on the pathology specimen?

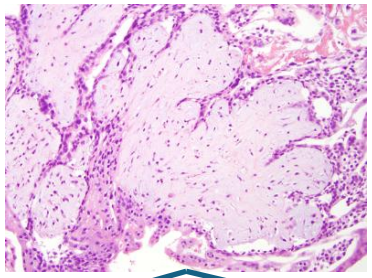


Case 3

Miscarriage specimen in 42 y F with prenatal fetal test result of triploidy



Morphology of Chorionic Villi



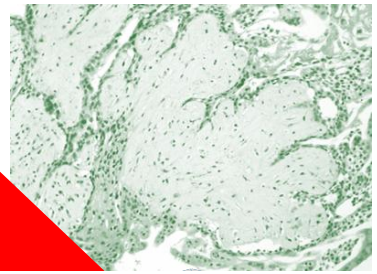
Normal

Abnormal

Use morphology alone
or
Order p57 / STR genotype test

Non-molar Pregnancy

Molar Pregnancy



If Fetal Triploidy
Then This Does Not Apply

Abnorma

Molar
Pregnancy

Fetal Triploidy:

- **Half of fetal triploidy cases are diandric** (partial mole)
- **Morphology is not reliable, especially in first trimester**

Type of Triploidy	First Trimester Pitfall	Consequence of Incorrect Diagnosis
Diandric (partial mole)	**May look nearly-normal**	▪ **Delay fertility planning** ▪ **Surveillance burden** ▪ **Psychological burden**
Digynic (non-molar)	**May mimic partial mole**	▪ **Untreated risk of GTD**

- **<u>Solution:</u>** perform genotype testing on all fetal triploid POC even if normal looking

Prevalence of Partial Hydatidiform Mole in Products of Conception From Gestations With Fetal Triploidy Merits Reflex Genotype Testing Independent of the Morphologic Appearance of the Chorionic Villi

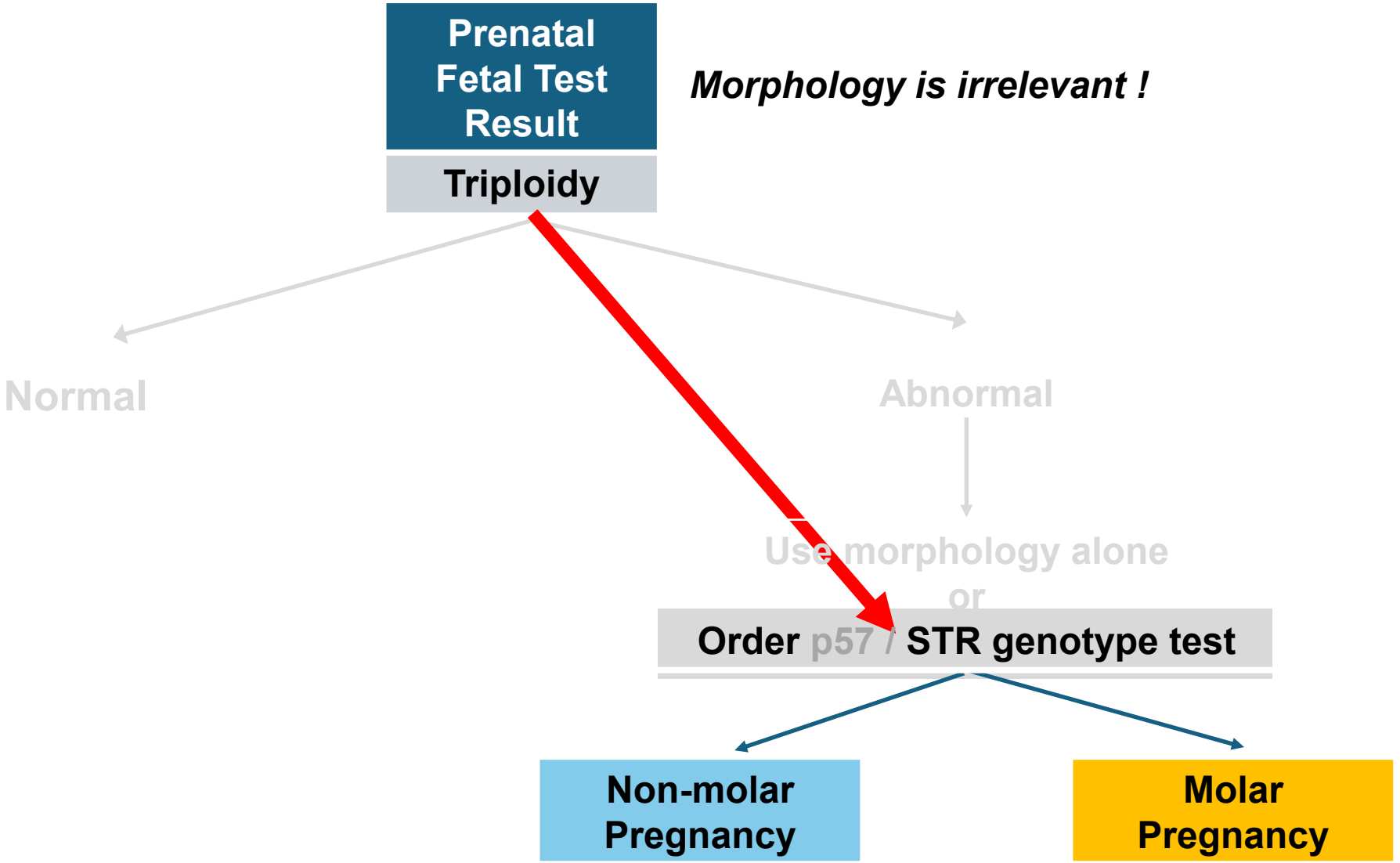
Lucy M. Han, MD, James P. Grenert, MD, PhD,† Arun P. Wiita, MD, PhD,‡ Molly Quinn, MD,§ Victor Y. Fujimoto, MD,§ and Joseph T. Rabban, MD, MPH**

Am J Surg Path 2020
PMID: 32205485

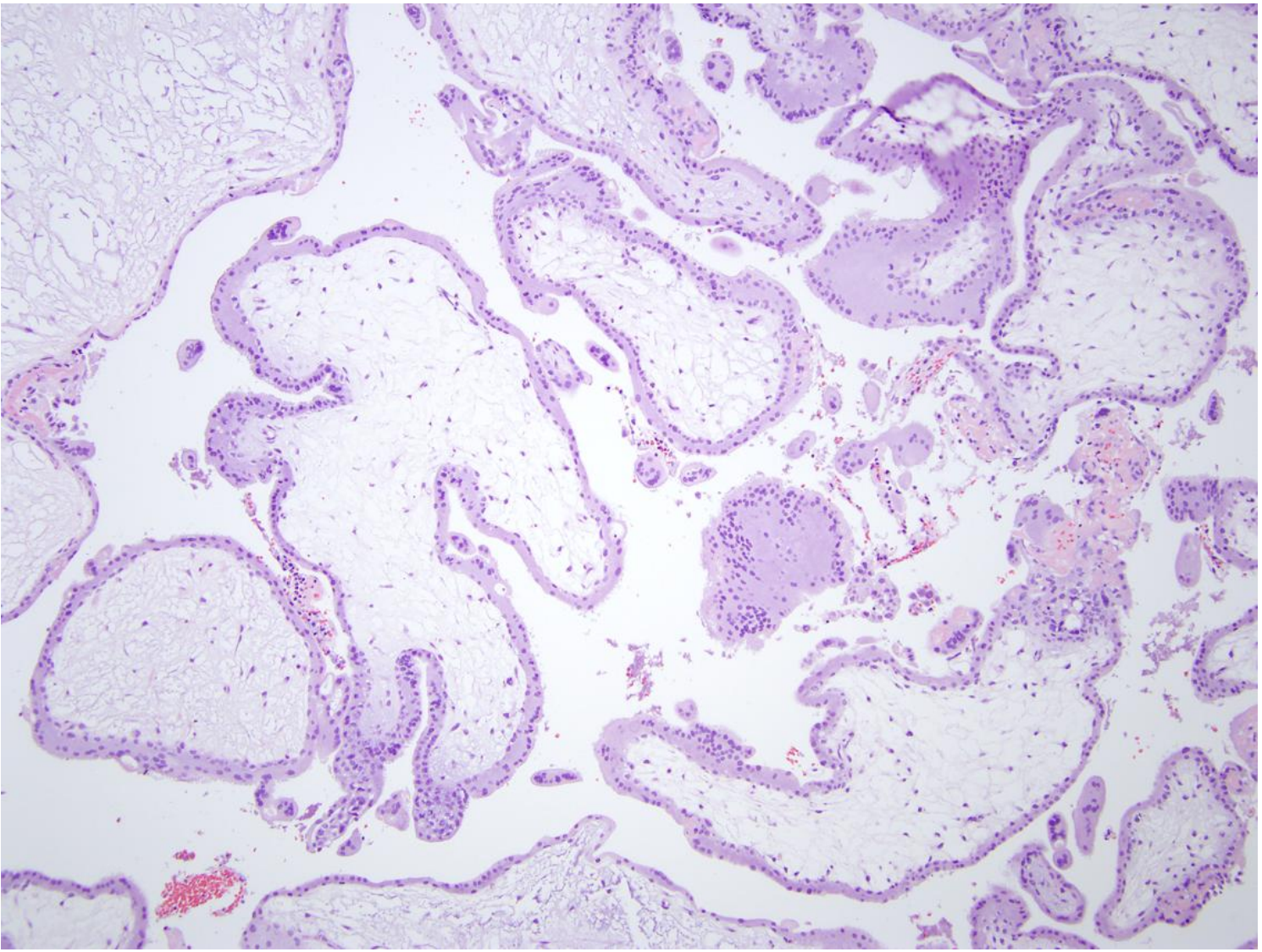
Diandric triploid partial mole versus digynic nonmolar triploidy: is morphological assessment sufficient for the diagnostic distinction?

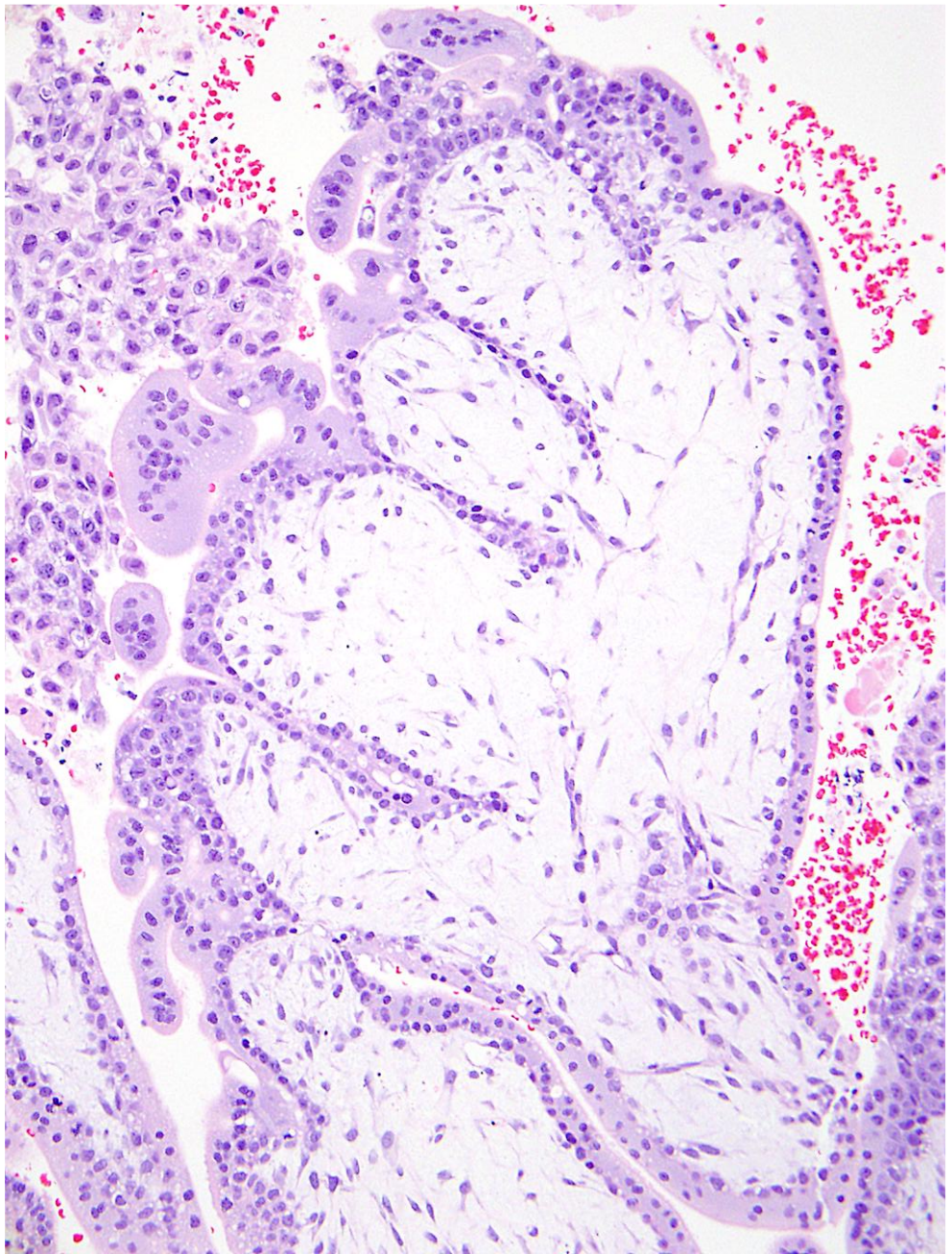
Agnes Nagy,[1] Na Niu,[2,3] Tong Sun,[2] Natalia Buza[2,3] & Pei Hui[2,3]

Histopath 2024
PMID: 39031756


Prenatal Fetal Test Result
Morphology is irrelevant !
Triploidy
Normal
Abnormal
Use morphology alone
or
Order p57 / STR genotype test
Non-molar Pregnancy
Molar Pregnancy

Miscarriage specimen in 42 y F with prenatal fetal test result of trisomy 21

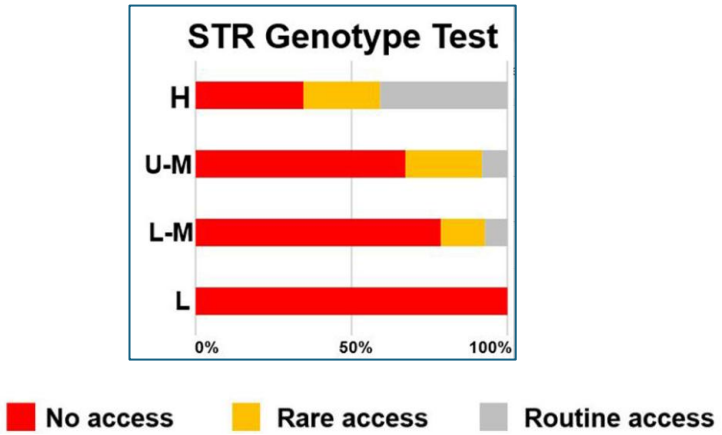




Genotype testing is the gold standard to exclude molar pregnancy

Unresolved practice issue:

- How to triage cases if you have limited access to this test?
- How to manage cases if you no access?



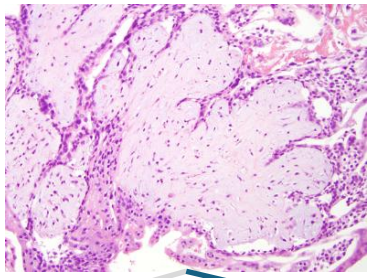
MODERN PATHOLOGY

RESEARCH ARTICLE · Articles in Press, 100798, May 25, 2025 Download Full Issue

International Feasibility of Applying Diagnostic Essential Criteria of the 5th Edition World Health Organization Classification of Female Genital Tumors: Evidence for a Global Gap in Health Care Equity

Joseph T. Rabban, MD MPH [1] · Reubina Wadee, MD [2] · Anna Plotkin, MD [3] · ... · Gustavo Focchi [7] · Matthew A. Price, PhD [8] · Marisa R. Nucci, MD [9] ... Show more

Morphology of Chorionic Villi



Normal

Abnormal

Prenatal Fetal Test Result

Non-molar Aneuploidy (trisomy 21, etc.)

Use morphology alone or Order p57 / STR genotype test

no fetal RBC

yes fetal RBC

Non-molar Pregnancy

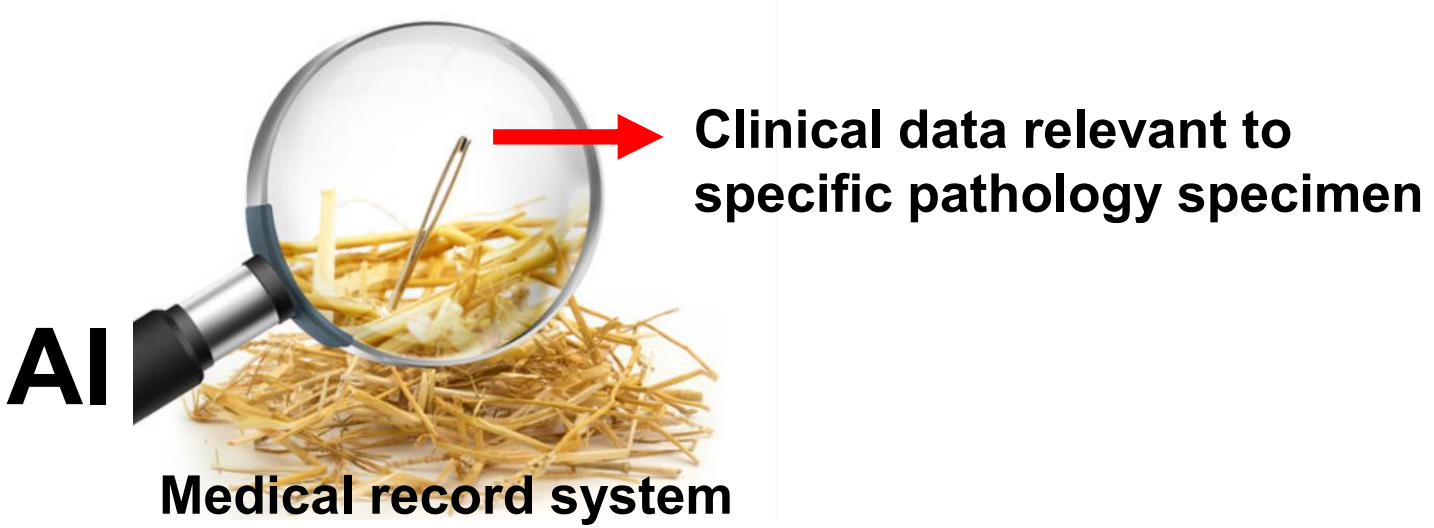
Molar Pregnancy

Products of Conception Specimens

- **Leverage prenatal fetal test results or concurrent cytogenetic tests to triage concern for mole**

Clinical context	Concern for mole	Level of evidence
Fetal triploidy	Escalate	Strong
Fetal non-molar aneuploidy	De-escalate	Needs more research

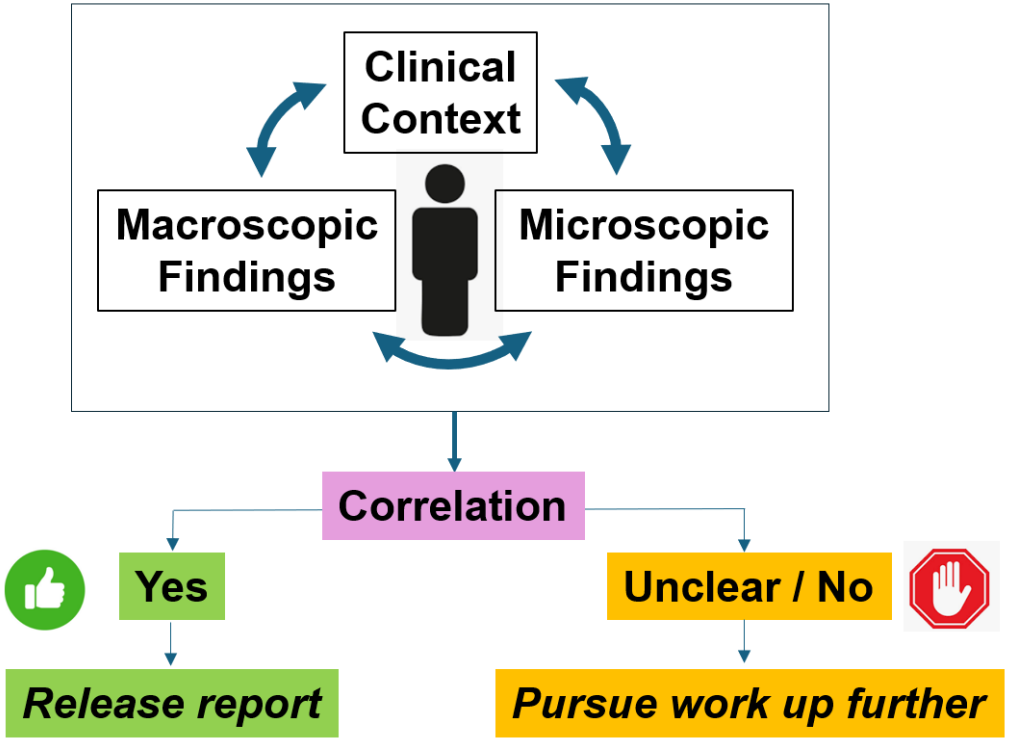
- *Unresolved practice issue:* **how to get easy access to prenatal test results for POC specimens**



Patient-Oriented Pathology Practice

Summary

"Best Practices" Strategy



Limitations / Barriers

- More time/effort required by pathologist
- More resources/cost required by lab
- Sub-optimal medical records system

Possible Solutions

- Surgeon education about data sharing
- Improved medical records system
- ? Role of AI and medical records system
- More research into this area