# GYN- Glandular Cytology

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1

## Bethesda 2014: Adequacy

- Conventional Smears: 8000-12000 well preserved well visualized squamous or squamous metaplastic cells.
- 5000 squamous cells minimum for LBC.
- 2000 squamous cells is the minimum for vaginal or s/p XRT/Rx smears

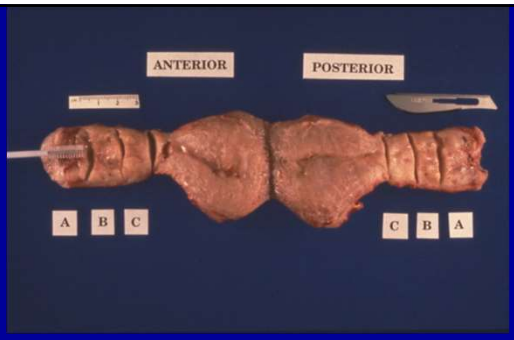
2

## TBS 2014: Overview of Glandular Abnormalities

- The Pap test was not designed to screen for glandular lesions of the cervix, and these abnormalities are more difficult to sample and interpret compared to their squamous counterparts.
- Because of improvement in sampling devices and the increase in endocervical adenocarcinoma relative to squamous cell carcinoma over the past 2 decades, cytologists currently encounter more challenging presentations of glandular lesions and their mimics in cervical cytology specimens.

Nayar R and Wilbur D. JASC 2015;4:170-180.

3




Sampling Experiment – Normal Uterus/Cervix

4

## Glandular Cells: Introduction

- Pap tests with atypical glandular cells are rare (<0.5% of interpretations in most series)
- Women with atypical glandular cells have clinically significant disease (HSIL, AIS, or cancer) in up to 38% of cases
- 3-17% of patients with AGC have invasive carcinoma
- While cervical squamous lesions have decreased in incidence, cervical adenocarcinomas are increasing

5

## TBS 2014: Epithelial Cell Abnormalities- Glandular cell

- **Atypical**
  - Endocervical cells (NOS or specify in comments)
    - Endocervical cells, favor neoplastic
  - Endometrial cells (NOS or specify in comments)
  - Glandular cells ( NOS or specify in comments)
    - Glandular cells, favor neoplastic
- **Endocervical adenocarcinoma *in situ***
- **Adenocarcinoma**
  - Endocervical
  - Endometrial
  - Extra-uterine
  - Not otherwise specified (NOS)

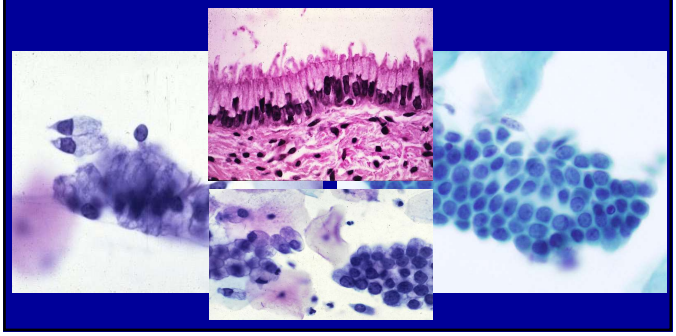
6

**TBS: BIRST-2:**
**Least Reproducible**

- Glandular lesions
- Reparative problems
- HSIL
- ASC-US/ASC-H

7

**Normal Endocervical Cells**



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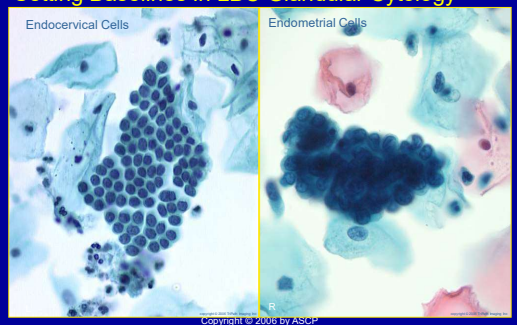
Setting Baselines In LBC Glandular Cytology

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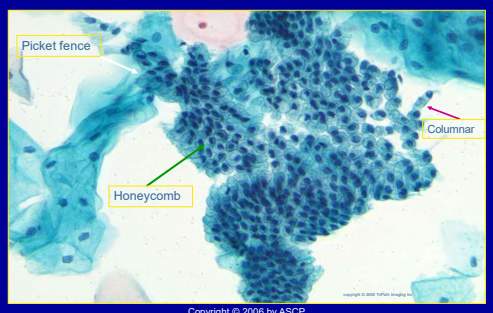
9

## Features of Normal Endocervical Cells

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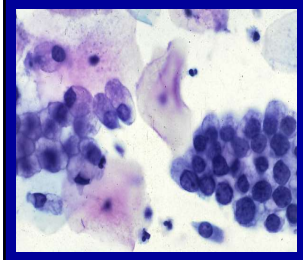
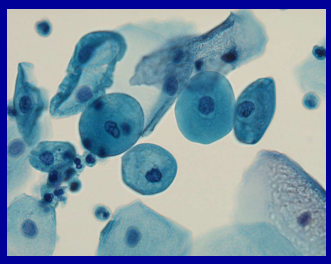
## Endocervical/TZ component:

**10 well-preserved endocervical or squamous metaplastic cells singly or in clusters**

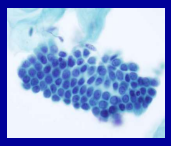


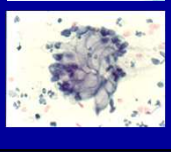


11

## Reasons for Normal Glandular Cells Post-Hysterectomy

- Supra-cervical hyterectomy
- Vaginal vault metaplasia
- Tubal prolapse
- Vaginal adenosis
- Endometriosis
- Can be an artefact in atrophic Pap
- Fistula-Colonic epithelium
- Sometimes reason not known
- Recurrence of a very well differentiated adenocarcinoma

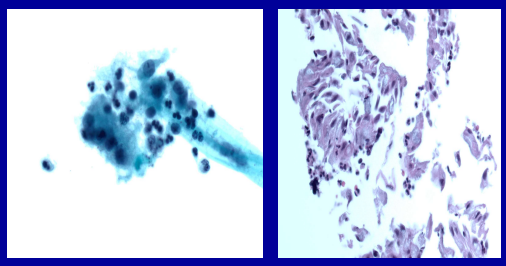




12

## Glandular Cells Post Hysterectomy

History of FIGO 1, I B, Endometrial Cancer. S/P XRT



13

## Glandular cells in Vaginal cytology Pap in After Hysterectomy for Endometrial Adenocarcinoma

- <1% of asymptomatic vaginal recurrences are detected by routine vaginal cytology alone.
- Most of the cells called Atypical Glandular, in the absence of a visible lesion on exam were not glandular on histopathology- Atrophic or Post-XRT cells mimicking glandular cells.

- Steele E, Abdul-Karim FW. Diagn Cytopathol. 2012 Feb;40(2):138-40

14

## TBS 2014: Epithelial Cell Abnormalities- Glandular cell

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15

## Epithelial Cell Abnormalities- Glandular cell

Range 0.11 – 2.1% (mean = 0.48, median = 0.27)

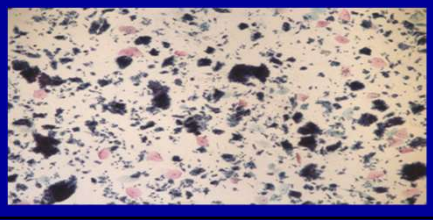
CAP Data - mean = 0.35%, median = 0.3%

Rule of thumb < 1%

16

## Hyperchromatic Crowded Groups

Any cellular grouping with features that impede the ability of the cytologist to see the individual cells in the middle



17

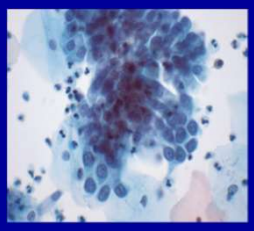
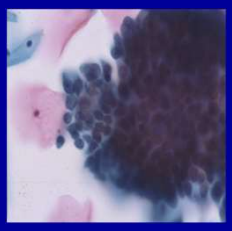
## Hyperchromatic Crowded Groups

- Sampling Device
- Voracity of the Sampler
- Anatomic Considerations
- Physiologic Processes
- Neoplastic Processes

3-D groups of darkly staining cells easily detectable at a low magnification
Frequent finding – over ¾ or the specimens
Usually benign but can be derived from clinically significant lesions such as carcinoma (5% of cases)

18

## Normal Endocervical Cells: Brush Artifact

TBS (*SP*): Vigorous sampling with an endocervical "broom" device. The endocervical cells show uniform, evenly distributed, finely granular chromatin, and well- defined cytoplasmic boundaries consistent with a benign etiology

19

## Hyperchromatic Crowded Groups

- **Benign**
  - Endocervical cells
  - Endometrial cells
  - LUS
  - Atrophy
  - Tubal metaplasia
  - Micro-glandular hyperplasia
  - Clusters of inflammatory cells
- **Neoplastic/Preneoplastic**
  - HSIL
  - AIS
  - Squamous cell carcinoma.
  - Adenocarcinomas

20

## Endocervical Adenocarcinoma in Situ: AIS

21

## AIS: Quadrants and Multifocality

- Usually begins as a single focus
- Often extensive horizontal or lateral spread
- Multiple quadrants involved in more than 50% of cases
- True skip lesions are rare
- Nearly 100% HPV +. Type 18>16
- Precursor lesion of endocervical Adenocarcinoma

22

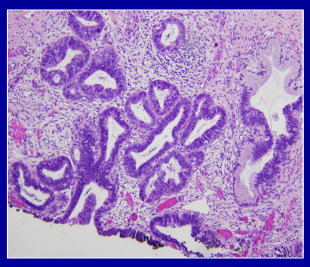
## AIS: General Features

- 50% have associated SIL or invasive Squamous cell carcinoma
- Colposcopy usually normal or SIL related changes
- Cytologic diagnosis based on architecture and nuclear features

23

## AIS: Histopathologic Features

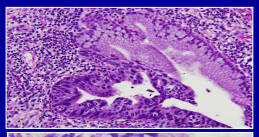
- Preservation of normal glandular architecture
- Coupled with an alteration involving part or all of the epithelium lining glands or forming the surface

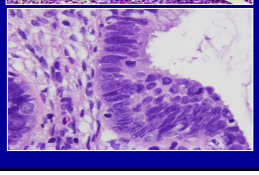


24

## AIS: Histopathologic Features

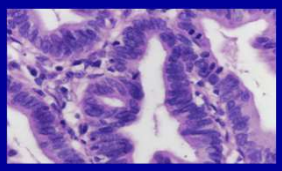
- Nuclear enlargement, coarse chromatin, small single or multiple nucleoli
- Increased mitotic activity
- Variable stratification of nuclei
- Cytoplasmic mucin may be either reduced in quantity or abundant
- An intraglandular papillary architecture may be present

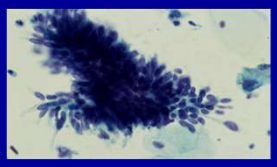


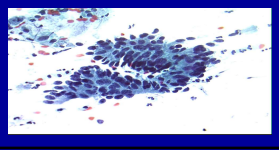


25

## AIS: Cytologic Features



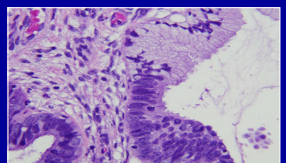


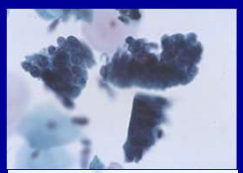


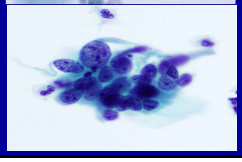
Hyperchromatic crowded groups.
Single cells rare.
Feathering, rosettes, strips
Pseudostratification
Amphophilic granular cytoplasm
Clean /inflammatory background

26

## AIS: Cytologic Features







Columnar monomorphous cells
Uniform nuclei. Increased N/C ratio
Nuclei large-elongated/ovoid (75 um2)
Dark even chromatin coarse granularity
Mitosis, apoptotic bodies
Micronucleoli

27

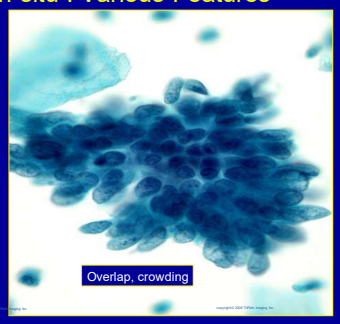
## Features of Adenocarcinoma in-situ

- Rosette
- Feathering
- Elongate nuclei
- Chromatin pattern

- Pseudostratificaiton
- Strips

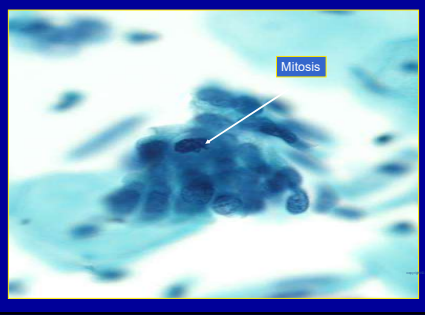
28

## Adenocarcinoma in-situ : Various Features


29

## Adenocarcinoma in-situ




30

## AIS: Histopathologic Subtypes

- Endocervical
- Intestinal
- Endometrioid
- Mixed adenosquamous
- Tubal (tentative)

31

## AIS: Intestinal Type

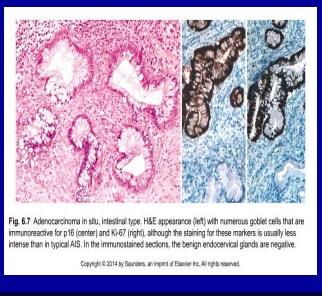
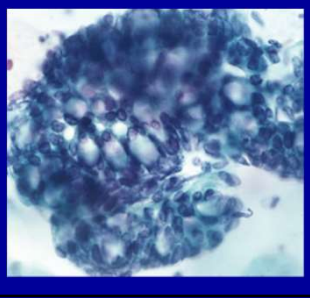


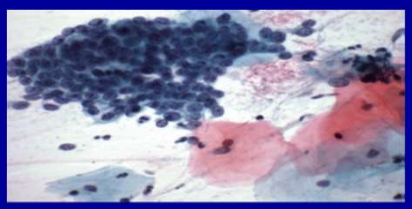
Fig. 6.7 Adenocarcinoma in situ, intestinal type. H&E appearance (left) with numerous goblet cells that are immunoreactive for p16 (center) and Ki-67 (right), although the staining for these markers is usually less intense than in typical AIS. In the immunostained sections, the benign endocervical glands are negative.





32

## AIS: Endometrioid Type

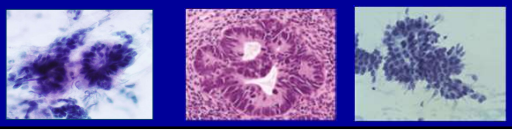


Similar features to the usual type of AIS but shows much smaller average nuclear area. Because of this size difference, endometrioid AIS can be mistaken for directly sampled benign endometrium. Attention to overall architecture and lack of stromal cells can be helpful in differentiation

33

## AIS on Pap Sensitivity

- AIS 55-70%
- Endocervical adenocarcinoma 72%
- HSIL 73%
- Squamous cell carcinoma 75%



34

## AIS: False Negative Interpretation

- 11,337 responses in Pap Education Program (CAP).
- 10,509 (92%) HSIL positive, 5667 (50.0%) AIS, 4842 (42.7%) HSIL positive, 44 (0.4%) LSIL.
- **FN 6.9%: 482/784: NILM, 189 (24.1%) repair, 60 (7.7%) Atrophy.**
- Higher false negative rate for pathologists than cytotechnology
- No significant difference between TP, SP, CP

Zhao C et al Arch Pathol Lab Med 2017; 14: 666 - 670

35

## ATYPICAL ENDOCERVICAL CELLS, Favor Neoplastic: Definition

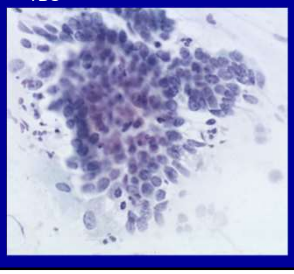
- Cells showing endocervical differentiation that QUALITATIVELY OR QUANTITATIVELY fall short of an interpretation of invasive endocervical adenocarcinoma or adenocarcinoma in situ

36

## Atypical Endocervical Cells (AEC), Favor Neoplastic

- Sheets or strips of cells with crowding and nuclear overlap.
- Ill defined cell boarders.
- Rare groups with rosettes or feathering
- Nuclear enlargement with increased nuclear/cytoplasmic ratios
- Nuclear hyperchromasia
- Occasional mitoses
- Clean or slightly bloody background

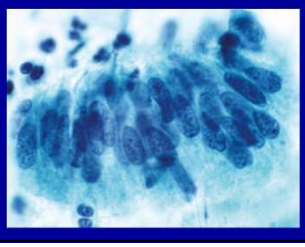
- TBS

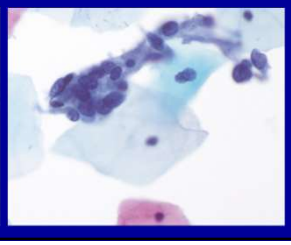


37

## TBS: Atypical endocervical cells, favor neoplastic

*(CP )* Pseudostratified strip of endocervical cells with enlarged, elongated nuclei and evenly distributed chromatin granularity
*(TP).* AEC characterized by round or oval nuclei with nuclear enlargement, crowding, disordered arrangement, and occasional nucleoli. A rosette-like cellular arrangement is present. Follow-up showed endocervical AIS





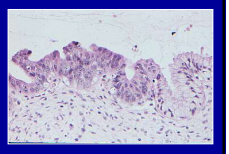
38

## "Endocervical Glandular dysplasia"

The diagnostic criteria remain largely subjective.

- A numerical scoring system was proposed but not applied.
- The biologic and clinical significance of GD remains to be determined.

* Imprudent to make an unqualified diagnosis of GD.



39

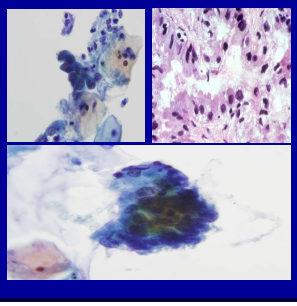
## ATYPICAL GLANDULAR CELLS (AGC): Definition

- Cells showing either endometrial or endocervical differentiation displaying nuclear atypia that exceeds obvious reactive or reparative changes but lacks unequivocal features of invasive adenocarcinoma or adenocarcinoma in situ

40

## Atypical Endocervical Cells (AEC)

- Sheets and strips of crowded endocervical cells with crowding and overlap/Occasional rosettes-feathering
- Distinct cell borders
- Enlarged nuclei (3-5x > normal) with increased nuclear/cytoplasmic ratios
- Nuclear hyperchromasia and nucleoli
- Occasional mitosis



41

## Atypical Glandular/Endocervical Cells

**Follow Up Studies – "Rule of Thumb"**

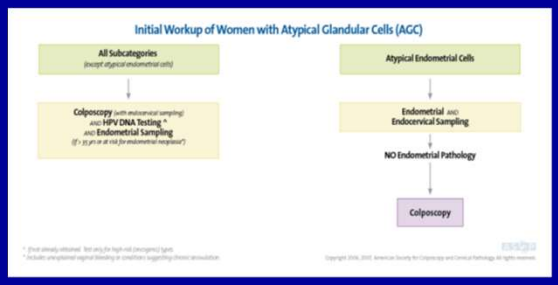
| | |
|---|---|
| Benign | 20- 40% |
| Squamous Neoplasia | 40-80% |
| Endocervical Neoplasia | 0-10% |

Clinical importance variable but > ASC-US

Poor reproducibility

42

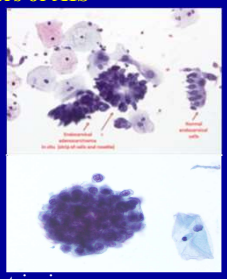
## AGC - Management




43

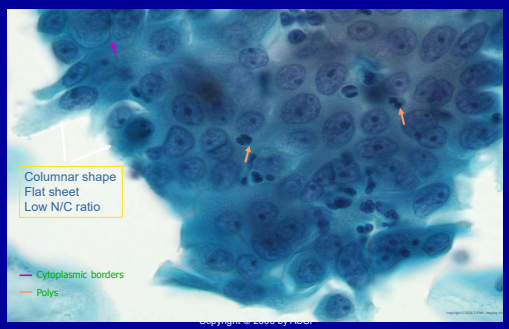
## Atypical Endocervical Cells
## Differential Diagnoses and Mimickers of AIS

- Abundant normal endocervical cells
- Reactive changes/Repair
- Radiation therapy
- Tubal metaplasia
- Endocervical polyps
- Microglandular hyperplasia
- Intrauterine device effect (IUD)
- Squmous neoplastic mimickers
- Directly sampled endometrium/Endometriosis



44

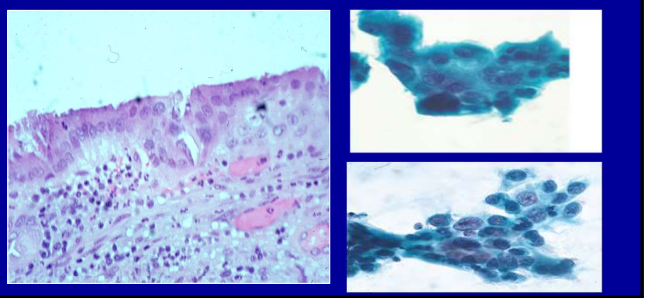
## Cytologic Criteria: NILM - Reactive Endocervical Cells




45

45

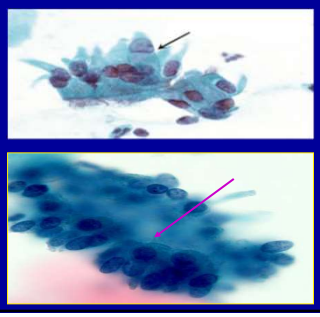
## TBS Endocervical Cells Radiation Effect



46

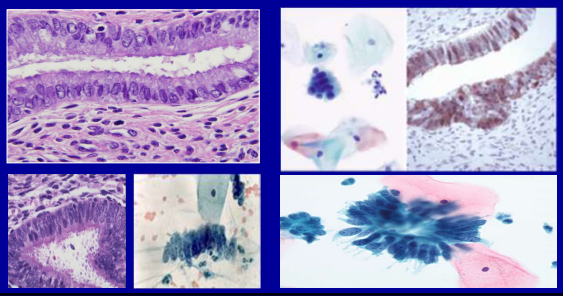
## Tubal Metaplasia

- Incomplete features of AIS
- Chromatin (texture/distribution)
- Nuclei "washed-out"
- Nuclear pleomorphism
- N/C increased
- Mitoses/rare apoptosis
- Large stripped nuclei
- Cilia/terminal bars



47

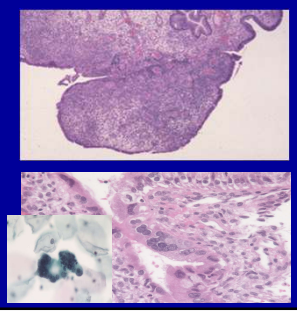
## Tubal Metaplasia



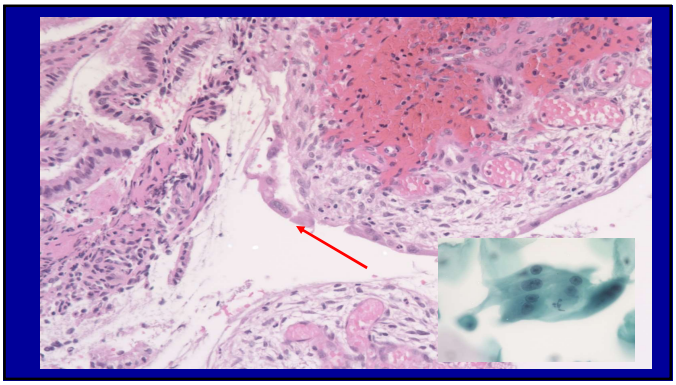
48

## Endocervical Polyps

- Common
- Bleeding
- Surface ulceration
- EC proliferation - abundant cellularity - HCG's
- Reactive changes - enlargement, nucleoli, mitoses
- Inflammation - reparative changes
- Can mimic either EC or EM neoplasia



49



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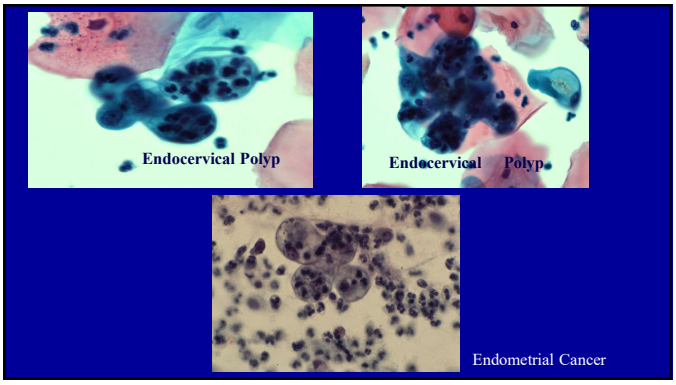
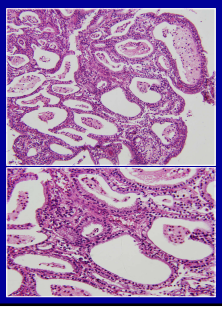



51

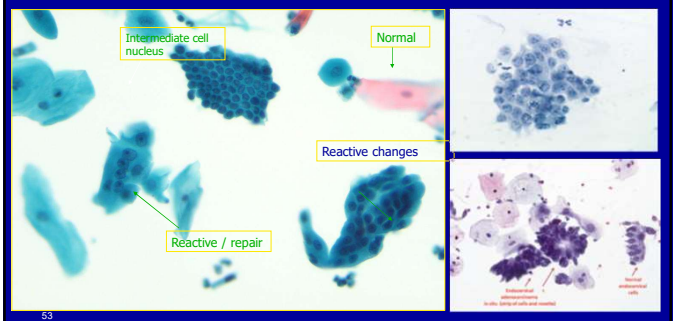
## Microglandular Hyperplasia

- Most look like normal endocervicals
- Repair like configuration
- Full spectrum of cell sizes within group
- Nuclei normal or increased in size. Nucleoli may be present and prominent. No mitosis.
- Normal or slight hyperchromasia. Rarely pyknosis.
- Cytoplasm abundant, fine, vacuolated
- Pseudoparakeratosis



52

## Endocervical Cells (EC): Spectrum of NILM

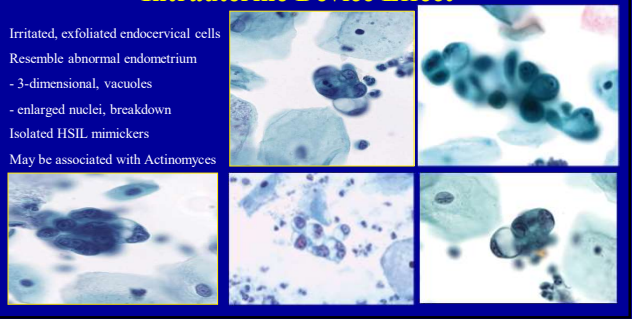



53

53

## Intrauterine Device Effect

- Irritated, exfoliated endocervical cells
- Resemble abnormal endometrium
- - 3-dimensional, vacuoles
- - enlarged nuclei, breakdown
- Isolated HSIL mimickers
- May be associated with Actinomyces



54

## TBS: Arias Stella.

Groups of stimulated endometrial glandular epithelium that could be mistaken for a glandular epithelial abnormality.

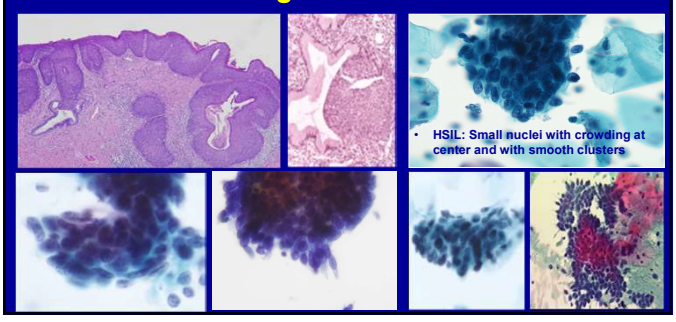
55

## Squamous Neoplastic Mimickers

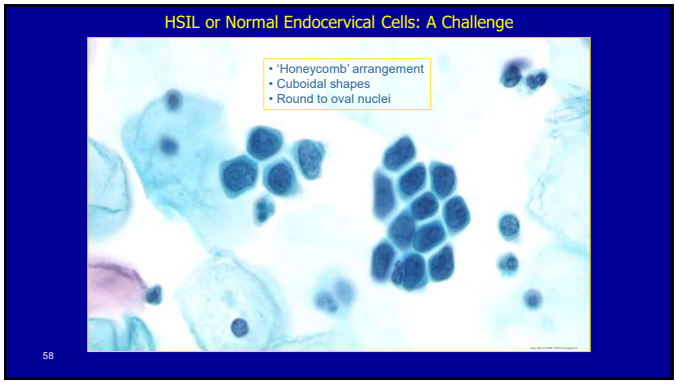
- Most common cause of "EC" atypia
- Most common with broom/brush
- Involvement of EC gland necks
- "Learning curve"

56

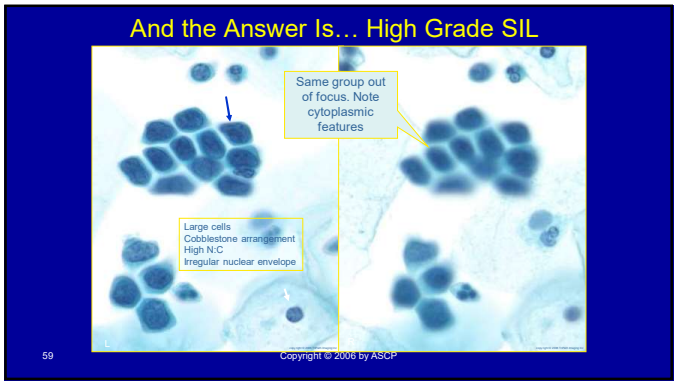
## HSIL Involving Endocervical Glands



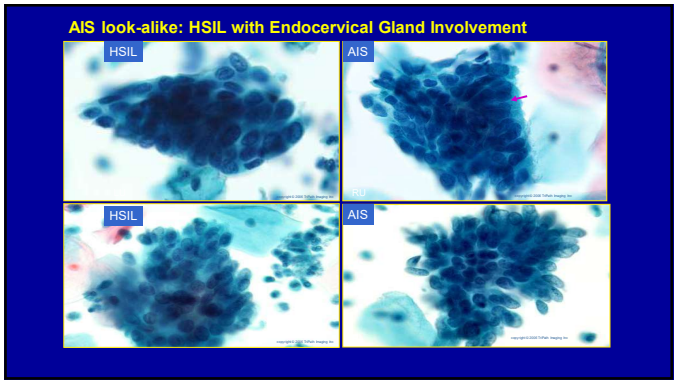

57


HSIL or Normal Endocervical Cells: A Challenge
• 'Honeycomb' arrangement
• Cuboidal shapes
• Round to oval nuclei
58

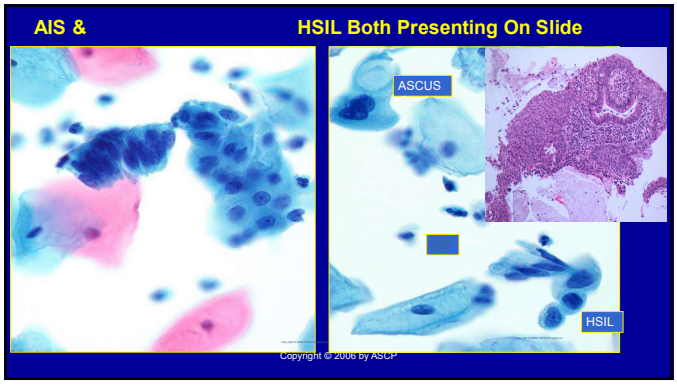
58


And the Answer Is… High Grade SIL
Same group out of focus. Note cytoplasmic features
Large cells
Cobblestone arrangement
High N:C
Irregular nuclear envelope
59
Copyright © 2006 by ASCP

59


AIS look-alike: HSIL with Endocervical Gland Involvement
HSIL
AIS
HSIL
AIS

60



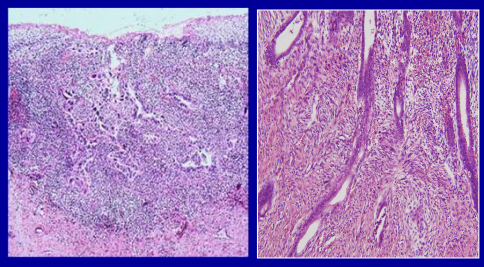

61

## Invasive Endocervical Adenocarcinoma

- 16 – 25% of cervical cancers
- 29% increase in incidence in recent years
  - 1970: Adenocarcinoma 12% and sq ca 88%
  - 2000: Adenocarcinoma 29% and sq ca 69%
- Earlier detection: ? New sampling devices
- Gross: variable
- Prognosis: ? Worse than squamous carcinoma

62

## Invasive Endocervical Adenocarcinoma

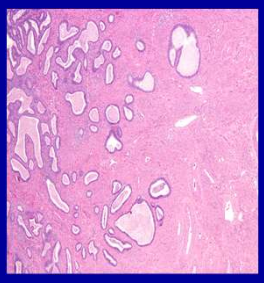


63

Risk Stratification System Invasive Endocervical Adenocarcinomas Based on Pattern of Invasion

**Pattern A**

- Well-demarcated glands with rounded contours, frequently forming groups
- No destructive stromal invasion
- No single cells or cell detachment
- No lymphovascular invasion
- Complex intraglandular growth acceptable, i.e. cribriform, papillae
- Lack of solid growth, i.e. architecture well-moderately

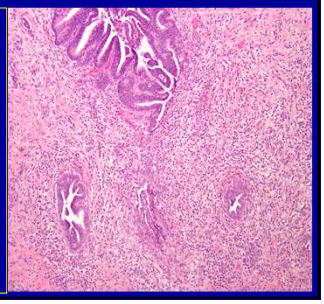


64

Risk Stratification System Invasive Endocervical Adenocarcinomas Based on Pattern of Invasion

**Pattern B**

- Localized (limited, early) destructive stromal invasion arising from pattern A glands (well-demarcated glands)
- Individual or small groups of tumor cells, separated from the rounded gland, often in a focally desmoplastic or inflamed stroma
- Foci may be single, multiple, or linear at tumor base
- Lymphovascular invasion +/-
- Lack of solid growth, i.e. architecturally well-moderately differentiated



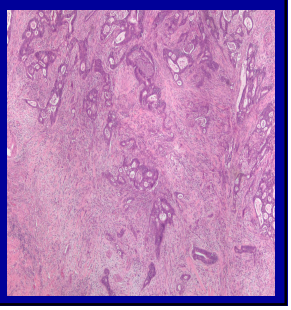
65

Risk Stratification System Invasive Endocervical Adenocarcinomas Based on Pattern of Invasion

**Pattern C**

- Diffuse destructive stromal invasion characterized by
  - Diffusely infiltrative glands, with associated extensive desmoplastic response
  - Glands often angulated or with a canalicular pattern, with interspersed open glands

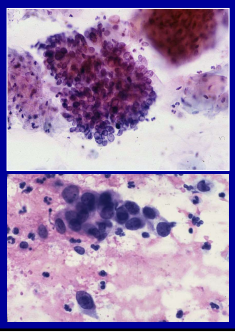
- Confluent growth filling a 4x field (5 mm)
- Solid, poorly differentiated component
- Lymphovascular invasion +/-



66

## Endocervical Adenocarcinoma Features of AIS and….

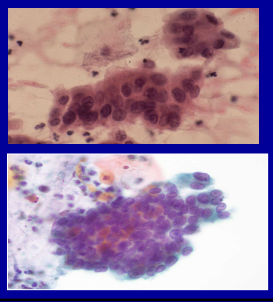
- Hypercellular, sheets, clusters, syncytial aggregates
- Single cells ( lack cohesion)
- Finely granular, vacuolated cytoplasm
- Large pleomorphic nuclei/Increased N/C ratio
- Nuclear membrane irregularity ,
- Uneven chromatin.
- Macro-nucleoli
- Tumor diathesis ( bloody, necrotic, proteinaceous)



67

## Invasive Endocervical Adenocarcinoma: Cytologic Features

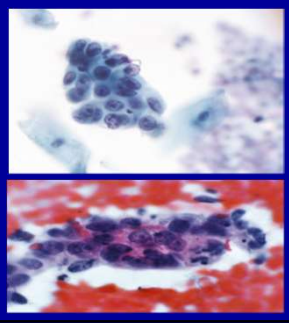
- Abundant Cellularity
- Flat or three Dimensional Sheets
- Many Features of AIS
- Discohesion More Common- Single cells
- Frequent macro nucleoli
- Decreased, finely vacuolated cytoplasm



68

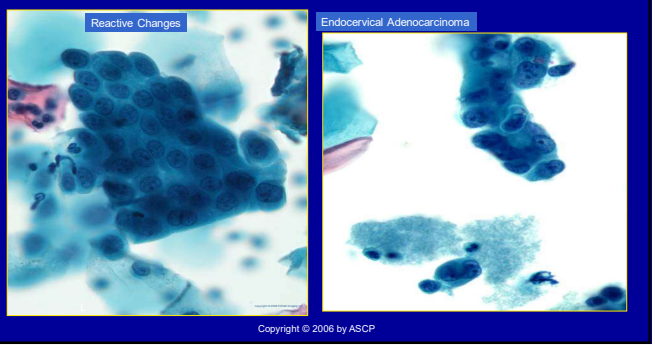
## Invasive Endocervical Adenocarcinoma: TBS Cytologic Features

- Increasing N:C
- Enlarged pleomorphic nuclei, nuclear irregularity unevenly distributed chrom. Chromatin clearing.
- Necrotic tumor diathesis LBC: may have "clinging diathesis"



69

## Reactive versus Endocervical Adenocarcinoma






70

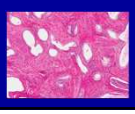
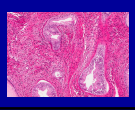
## 1- Tumor Histology (WHO classification 2014) or IECC

- Endocervical Carcinoma, usual type
- Mucinous carcinoma, NOS
  - Gastric type
  - Intestinal type
  - Signet-ring cell type
- Villoglandular carcinoma
- Endometrioid carcinoma
- Clear cell carcinoma
- Serous carcinoma
- Mesonephric carcinoma
- Adenocarcinoma admixed with neuroendocrine carcinoma

71

## Endocervical Glandular Lesions Exhibiting Gastric Differentiation

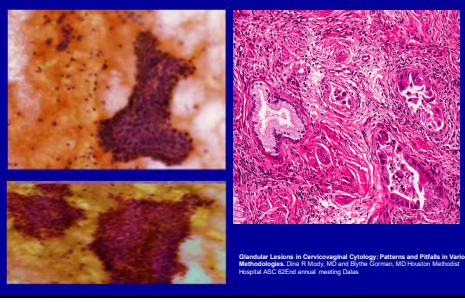
- Unrelated to HPV
- Contain neutral mucin (stain predominantly red with combined Alcian-blue/PAS)
- Immunohistochemically positive with HIK1083 or other antibodies that react against pyloric-type gastric mucins

72

72

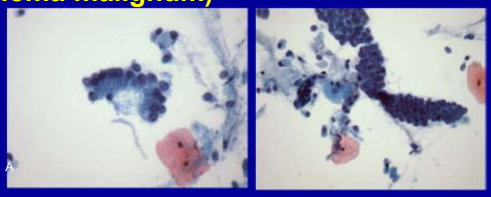
## TBS: Adenoma malignum



Glandular Lesions in Cervicovaginal Cytology: Patterns and Pitfalls in Various Methodologies. Dina R Mody, MD and Blythe Gorman, MD Houston Methodist Hospital ASC 62End annual meeting Dalas

73

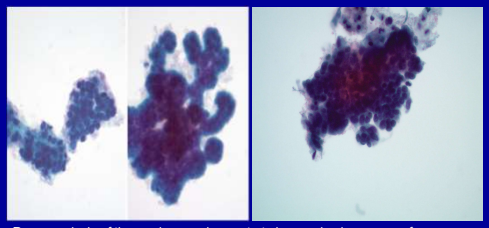
## TBS: Mucinous Carcinoma, Gastric Type (adenoma malignum)



Abundant mucinous cytoplasm and occasional goblet cells are present. Note bland nuclear morphology similar to what is noted in the histology
Mucinous carcinoma, gastric type (adenoma malignum) -*SurePath* . Note the centrally located goblet cells with typical brown/yellow hue to the mucin, consistent with pyloric differentiation

74

## TBS Adenocarcinoma, endocervical villoglandular



Rare neoplasia of the cervix, may demonstrate large cohesive groups of endocervical cells with nuclear crowding and loss of normal honeycomb pattern, with true papillary clusters being characteristic. Cytologic atypia is often minimal, emphasizing the importance of appreciating the low-power architectural abnormalities of this neoplasm

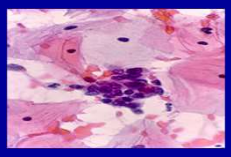
75

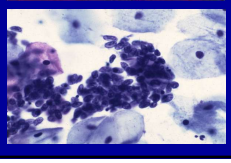
## Endometrium

76

## TBS 2001: Endometrial Cells

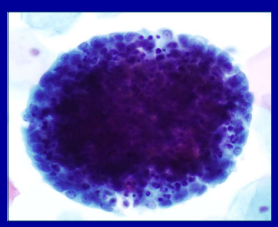
- Report in all women 40 or older ( 0.5% to 1.8% of Paps)
- Tight 3-D clusters, loose clusters, or single cells
- Bean-shaped nuclei
- Nucleoli and chromatin pattern more apparent
- Cytoplasmic vacuoles

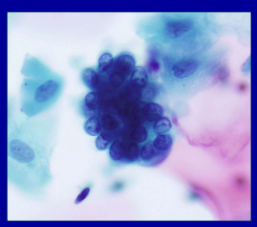




77

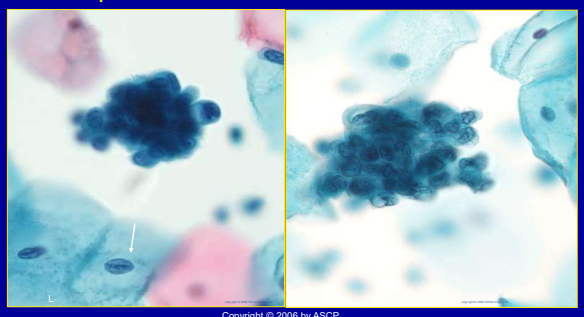
## Benign Endometrial Cells





78

## Examples of Normal Endometrial Cells



79



79

## TBS 2014: What has changed

- Report benign-appearing endometrial cells for women ≥ 45 years
- TBS-2001
  - Because menopausal status is often unclear, inaccurate, or unknown to the laboratory, suggested reporting in women aged 40 years to maximize the likelihood of including all postmenopausal women and that clinical correlation should be left to the ordering physician's discretion
- TBS-2014
  - To increase the predictive value of this category, cytologically "benign-appearing" endometrial cells should be reported in women aged 45 years, and the suggested educational note should specify that endometrial evaluation be done only in postmenopausal women.

80

## TBS 2014: Sample Report

- Endometrial cells are present in a women 45 years and older
- Negative for squamous intraepithelial lesion

Or

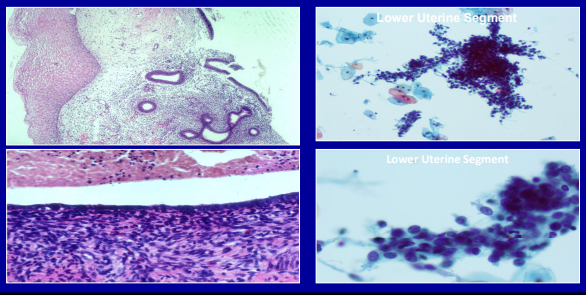
- Endometrial cells correlate with menstrual history

Note: Endometrial cells in women 45 years or older may be associated with benign endometrium, hormonal alterations, and less commonly endometrial uterine abnormalities. Endometrial evaluation is recommended for post menopausal women.

Note: Menopausal status is often unclear, inaccurate, or unknown to the Lab. Mean age in USA 51 years but the coefficient variation is large.

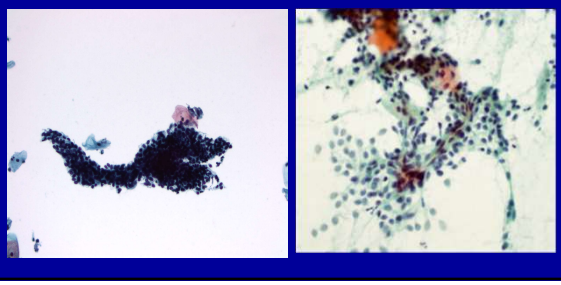
81

## LUS /Endometrial cells




82

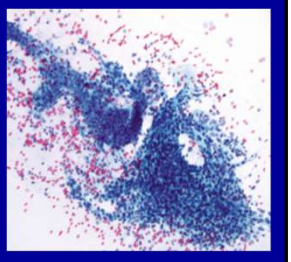
## Lower Uterine Segment Endometrium



83

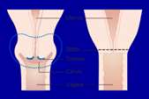
## Negative for Intraepithelial Lesion or Malignancy - Lower Uterine Segment

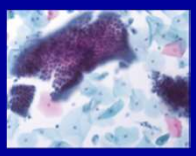
- Biphasic appearance (glandular and stromal)
- Liquid-based preps – smaller branching cell fragments
- Stromal cells have matrix and penetrating capillaries
- Disordered bland, oval to elongated nuclei
- Glandular cells are slightly oval and crowded with small nuclei and bland chromatin.
- Occasional mitotic figures and peripheral nuclear palisading



84

## Cytologic Findings After Fertility-sparing Radical Trachelectomy





Frequently contain glandular cells from the lower uterine segment epithelium or endometrial stromal cells, which can lead to a misdiagnosis of atypical glandular cells of undetermined significance.

Tubal metaplasia is also a potential pitfall in these specimens.

Pathologists and gynecologic oncologists should be aware of the potential pitfalls in the surveillance of smears after trachelectomy.

Feratovic R Cancer 2008 25;114(1):1-6

85

## Epithelial Cell Abnormality
## Atypical Endometrial Cells

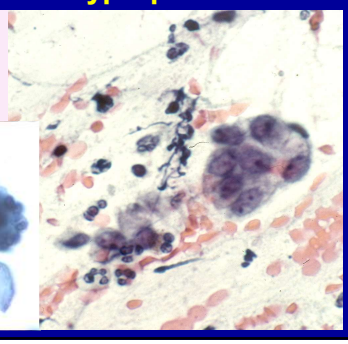
- Glandular cells are in small groups (5-10 cells per cluster) with vacuolated cytoplasm
- Nuclei are slightly larger than normal endometrial cells (>intermediate squamous cell nucleus)
- Ill-defined cell borders
- Small nucleoli
- It can be difficult to distinguish atypia of atypical hyperplasia from a well-differentiated endometrial adenocarcinoma

86

## Atypical Endometrial Hyperplasia

(conventional & LBP)

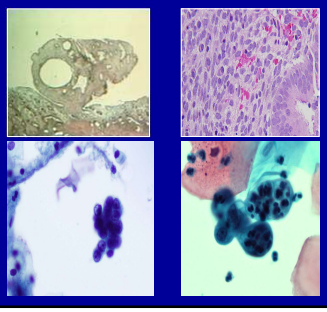
- *3-D clusters*
- *Slight nuclear enlargement*
- *Mild hyperchromasia*
- *Presence of nucleoli*
- *Vacuoles*



87

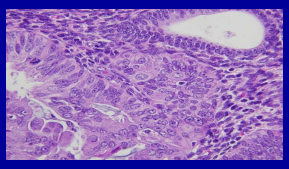
## Atypical Endometrial Cells: Differential

- Endometrial polyps
- Chronic endometritis
- Intrauterine device changes
- Endometrial hyperplasia
- Adenocarcinoma



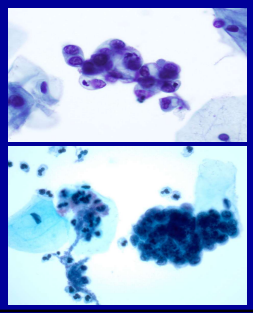
88

## Atypical Endometrial Cells



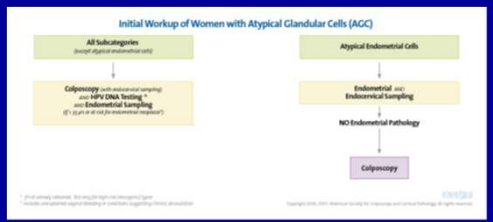
Small groups (5-10 cells)
Ill-defined cell borders
Enlarged nuclei (>ICN)

- Slight nuclear hyperchromasia
- Small nucleoli
- Cytoplasm occasionally vacuolated



89

## Atypical Endometrial Cells: Management




90

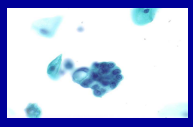
## Endometrial Adenocarcinoma

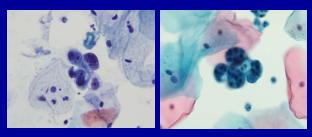
- Most common invasive carcinoma of female genital tract
- Detection dependent on spontaneous exfoliation of cells or extension into LUS or endocervix
- Conventional and liquid-based preparations detect ~ 38 - 65%

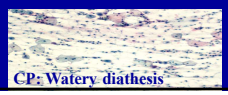
91

## Endometrial Adenocarcinoma

- Single or small loose or tight clusters – HCD
- Pleomorphism in size and shape
- Nuclear size increase with FIGO grade.
- Anisonucleois with unevenly distributed chromatin.
- Prominent nucleoli
- Small amount of vacuolated cytoplasm/intra-cytoplasmic neutrophils
- May have watery diathesis

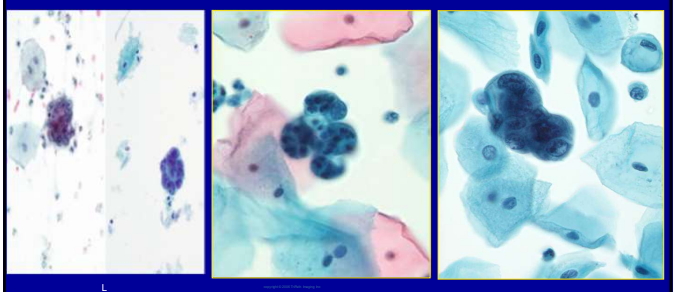







92

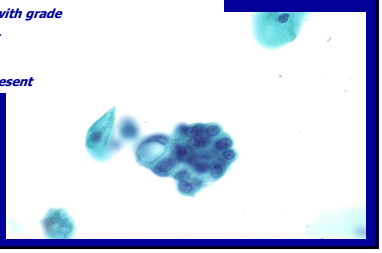
## Examples of Endometrial Adenocarcinoma



93

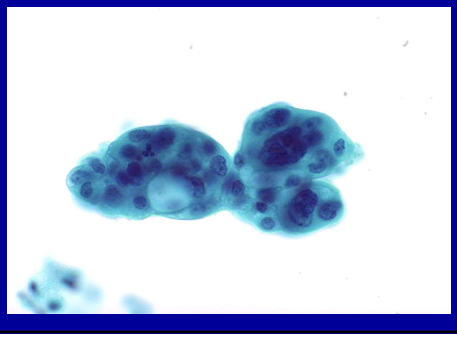
## Well-differentiated Endometrial Adenocarcinoma (LBC)

- *Cell may be single or in small loose clusters*
- *Slight increase in nuclear size >ing with grade*
- *Variation in nuclear size and polarity*
- *Nucleoli present*
- *Scant cytoplasm, vacuoles maybe present*



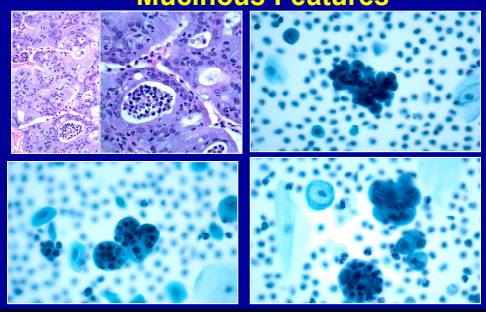
94

## Endometrial adenocarcinoma (LBC)



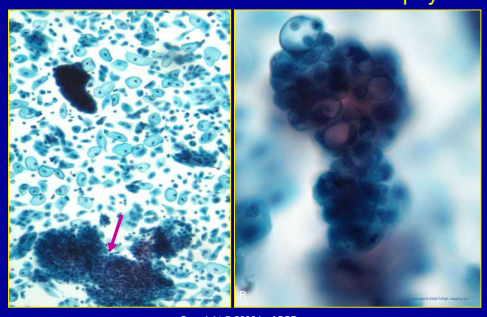
95

## Endometrial Adenocarcinoma with Mucinous Features



96

## Endometrial Adenocarcinoma in Atrophy



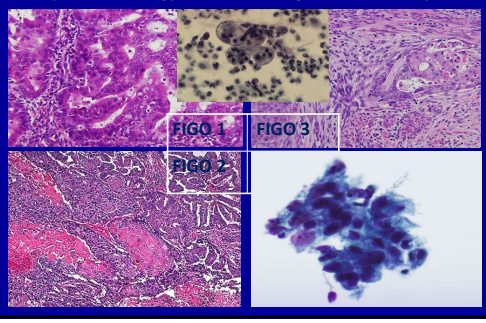
97



97

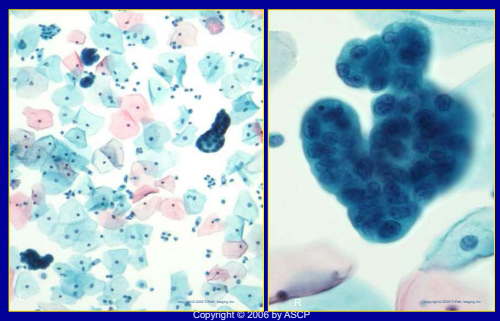
## Endometrial Adenocarcinoma:

Cytomorphology depends on grade and subtype




98

## Papillary Serous Endometrial Adenocarcinoma

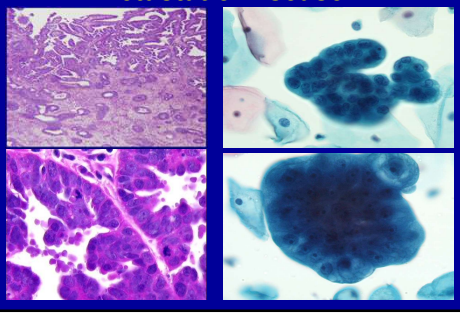


99



99

## Endometrial Serous Adenocarcinoma and Metastatic Disease



100

## Extrauterine Malignancies

- Secondary spread from rectum or bladder
- Metastases – no diathesis
- Exfoliated cells from ovarian or fallopian tube through uterine cavity

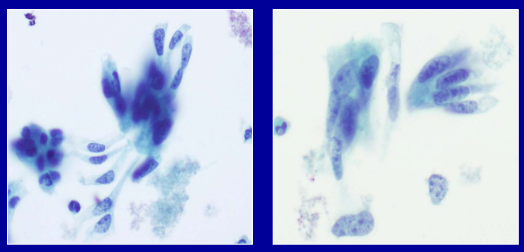
101

## Extrauterine Malignancies

- Breast Carcinoma
- Colonic Adenocarcinoma – Look for dirty necrosis and columnar-shaped cells
- Gastric Carcinoma
- Melanoma
- Ovarian
- Fallopian Tube

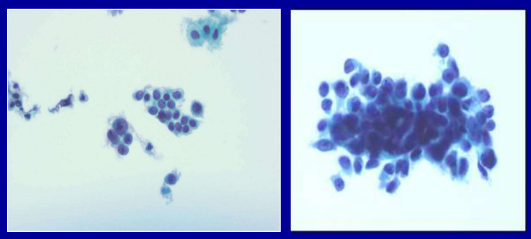
102

## Metastatic Colorectal Adenocarcinoma



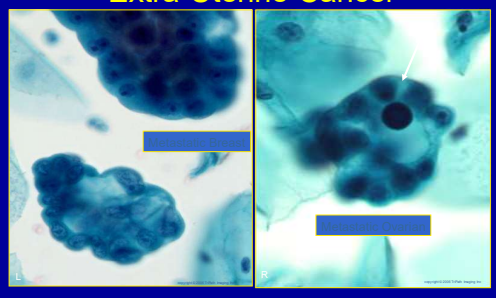
103

## Metastatic Breast Carcinoma



104

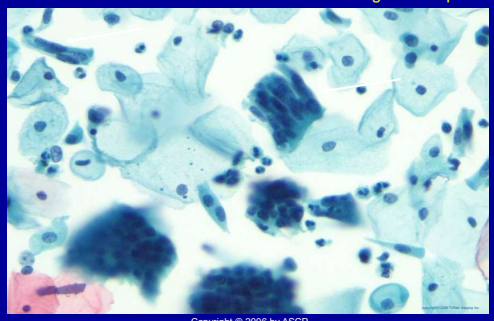
## Extra-Uterine Cancer



105

105

Recurrent Endometrial Adenocarcinoma – Vaginal Scrape



106



106