Image 1

Endometrial cytology has been around for decades and a variety of devices have been used to collect endometrium. The Tao Brush™ is an endometrial sampler manufactured by Cook Ob/Gyn® (Spencer, IN, USA). In many cases, the brush sampler affords tissue fragments in addition to cells and microbiopsies. It is designed for use by office practitioners, is easy to use, and is generally well tolerated by women whose cervix is patent. Cervical dilators may be required to sample endometrium from women whose cervix is stenotic.

Image 2

Dr. Tao recommends that for best results, specimens should be collected and processed using the CytoRich® Fixative (AutoCyte, Inc., Elon College, NC, USA) system. It is convenient to concentrate specimens by conventional centrifugation in a nipple-bottom (FisherBrand UriSystem) test tube that protects the cell sediment through the initial stages of processing. Details of specimen processing are presented by Maksem, et. al. (Diagnostic Cyto-pathology, 1997, 17:339).

Image 3

The advocated preparatory method is cytocentrifugation using the Hettich Universal cytocentrifuge. Alternate methods include direct application of a specimen concentrated from CytoRich® Yellow onto poly-L-lysine coated glass slides. Alternate transfer techniques are not optimal for pauci-cellular specimens and are not encouraged.

Image 4

This histology specimen shows 3 of the 5 features of benign endometrium that may be "translated" into cytology preparations: regular tubular glands, banal nuclei, and homogeneous stroma.

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Image 5

This histology specimen shows 2 of the 5 features of benign endometrium that may be "translated" into cytology preparations: homogeneous stroma and vessels.

Image 6

This cytology microbiopsy specimen shows 3 of the 5 features of benign endometrium: regular tubular glands, banal nuclei (in this case, the nuclei are pseudostratified and show active mitosis), and homogeneous stroma.

Image 7

This cytology microbiopsy specimen shows 2 of the 5 features of benign endometrium: homogeneous stroma and vessels.

Image 8

A feature of benign endometrial cytology is homogeneous, flat epithelial sheets with banal nuclei. Proliferative endometrium shows nuclear pseudostratification and mitoses.

Image 9

A feature of benign endometrial cytology is homogeneous, flat epithelial sheets with banal nuclei. Proliferative endometrium shows nuclear pseudostratification and mitoses.

Image 10

Like flat epithelial sheets, tubular glands may be stripped of their stroma and present as isolated tubules. Proliferative endometrium shows nuclear pseudo-stratification and mitoses.

Image 11

Proliferative endometrium shows nuclear pseudostratification and mitosis. This is mid to late proliferative endometrial surface epithelium. The degree of epithelial anisopoikilo-nucleosis seen here is similar to that seen with atypical hyperplasias and low grade adenocarcinomas. Both Zaino (Cancer, 1995, 75:81) and Hachisuga (Gynecologic Oncology, 1997, 65:115) have described nuclei with similar features as "grade 1" in reference to endometrial adenocarcinoma.

Image 12

Interval and early secretory endometrium show subnuclear vacuolation that is complete at postovulatory day 3. The stroma of early secretory endometrium is similar to the stroma of proliferative endometrium.

Image 13

Interval and early secretory endometrium show subnuclear vacuolation that is complete at postovulatory day 3.

Image 14

Interval and early secretory endometrium show subnuclear vacuolation that is complete at postovulatory day 3.

Image 15

The surface epithelial sheets of early and mid secretory endometrium are distinct from those of proliferative endometrium in lacking nuclear pseudostratification and mitosis. This reflects a shift from nucleocentric activity to cytoplasmic secretory activity. Nuclei separate from one another and crisp cytoplasmic borders are seen.

Image 16

The surface epithelial sheets of early and mid secretory endometrium are distinct from those of proliferative endometrium in lacking nuclear pseudostratification and mitosis. This reflects a shift from nucleocentric activity to cytoplasmic secretory activity. Nuclei separate from one another and crisp cytoplasmic borders are seen. The nuclei appear uniform because their position is at the same level within in the epithelial cell axis and their DNA content reflects non-mitotic, resting cells. Cell borders are parallel to one another and optical interference allows them to appear as distinct lines creating a chicken-wire arrangement about the uniform nuclei. Slight perinuclear clearing is evident in this preparation.

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Image 17

Glands are coiled and have smooth borders. Nuclei are separated from one another, and the stroma resembles proliferative stroma.

Image 18

Although they appear to have complex borders with epithelial infoldings, the tubular glands of mid-secretory endometrium are uniformly coiled. Nuclei are separated from one another, and the stroma resembles proliferative stroma.

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Image 19

Glands are larger than those of proliferative endometrium and nuclei are separated from one another. The gland contours are relatively regular.

Image 20

The tubular glands of mid-secretory endometrium are much larger than those of proliferative endometrium. Although the glands are uniform, their contours are complex with infoldings (hills and valleys or concertina pleats). Nuclei are separated from one another.

Image 21

The tubular glands of mid-secretory endometrium are much larger than those of proliferative endometrium. Although the glands are uniform, their contours are complex with infoldings (hills and valleys or concertina pleats). Nuclei are separated from one another.

Image 22

Epithelial secretory activity is extinguished and epithelial sheets are collapsed. Nuclei are compacted, one against another; but, they do not overlap. In this epithelial sheet, dense apoptotic-like nuclei are admixed with more vesicular banal nuclei.

Image 23

Epithelial secretory activity is extinguished and tubular glands are collapsed. Nuclei are compacted, one against another; but, they do not overlap. The background shows stromal pre-decidual change. Stromal cells in this preparation are plump and have epithelioid characteristics.

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Image 24

The plump epithelioid stromal cells are clearly seen in apposition to stromal vessels.

Image 25

Tubular gland collapse and epithelial and stromal breakdown are features of menstrual endometrium. The background of cytology preparations from menstrual endometrium includes PMN neutrophils, deciduoid stromal cells, and cell debris.

Image 26

Tubular gland collapse, dissolution, and epithelial and stromal breakdown are features of menstrual endometrium. This preparation shows how gland breakdown can eventuate in dyshesion. Nuclei are banal. The background of cytology preparations from menstrual endometrium includes PMN neutrophils, deciduoid stromal cells, and cell debris.

Image 27

Cell strips derived from surface epithelium can have degenerative features that can be confused with epithelial abnormalities of neoplastic processes. The background of cytology preparations from menstrual endometrium includes PMN neutrophils, deciduoid stromal cells, and cell debris.

Image 28

Degenerated stromal fragments may be seen and should not be confused with three-dimensional aggregates of neoplastic cells. The background of cytology preparations from menstrual endometrium includes PMN neutrophils, deciduoid stromal cells, and cell debris.

Image 29

Lower uterine segment samples may include the transitional region between endocervix and endometrium; therefore, there may be an admixture of endocervical mucous-producing epithelial cells and hormonally refractory endometrial cells.

Image 30

Lower uterine segment samples may include the transitional region between endocervix and endometrium; therefore, there may be an admixture of endocervical mucous-producing epithelial cells and hormonally refractory endometrial cells.

Image 31

Lower uterine segment endometrium is relatively refractory to the hormones that modulate functional endometrium. Its stroma is fibrous and brush sampling does not readily dislodge its abbreviated glands. Its appearance is similar to late postmenopausal endometrium.

Back

Image 32

Lower uterine segment endometrium is relatively refractory to the hormones that modulate functional endometrium. Its stroma is fibrous and brush sampling does not readily dislodge its abbreviated glands. Its appearance is similar to late postmenopausal endometrium.

Back

Image 33

The endometrium of the early postmenopause looks like proliferative endometrium except that its nuclei are small and round to oval but not pseudo-stratified and mitoses are infrequent.

Image 34

The endometrium of the early postmenopause looks like proliferative endometrium except that its nuclei are small and round to oval but not pseudostratified and mitoses are infrequent. Early postmenopausal endometrial stroma is as compliant as that of early or weakly proliferative endometrium; therefore, uniform narrow glands are readily collected in brush samplings.

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Image 35

The endometrium of the late post-menopause looks like lower uterine segment endometrium. Nuclei are small, densely packed, banal. They may appear "regularly irregular."

Image 36

Surface epithelial fragments predominate in endometrial collections from the late postmenopause because, like the endometrium of the lower uterine segment, its stroma is fibrous and its abbreviated glands are not readily dislodged by brush sampling. Nuclei are small, densely packed, and banal.

Image 37

Rare mitoses may be seen in late postmenopausal epithelium, but they are few and far between. Rather than representing proliferation, they indicate physiologic replacement of epithelial cells that slough. Mitoses are generally seen in glands rather than in surface epithelial sheets.

Image 38

Small cystic glands can be seen in postmenopausal endometrium. A single layer of uniform cells whose banal nuclei do not pseudostratify lines these glands. In this preparation, the nuclei are "regularly irregular."

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Image 39

Small cystic or bulbous glands can be seen in postmenopausal endometrium. A single layer of uniform cells whose banal nuclei do not pseudostratify lines these glands.

Back

Image 40

Small cystic or bulbous glands can be seen in postmenopausal endometrium. A single layer of uniform cells whose banal nuclei do not pseudostratify lines these glands.

Image 41

Chronic exogenous progesterone administration can induce epithelial atrophy and stromal decidualization (pseudopregnancy).

Image 42

Chronic exogenous progesterone administration can induce epithelial atrophy and stromal decidualization (pseudopregnancy). In this preparation a narrow, attenuated gland is seen in the presence of an epithelioid deciduoid stromal syncytium.

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Image 43

Chronic exogenous progesterone administration can induce epithelial atrophy and stromal decidualization (pseudopregnancy). Decidual cells may simulate epithelial sheets.

Back

Image 44

Chronic exogenous progesterone administration can induce epithelial atrophy and stromal decidualization (pseudopregnancy). Decidual cells may simulate epithelioid syncytia.

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Image 45

Papillary syncytial change or metaplasia is an injury/repair phenomenon of endometrial epithelium. It is commonly seen where there is irregular endometrial shedding. It typically occurs along the uterine surface, but it may be seen in apical glands. It is characterized by syncytial aggregates of irregularly stratified endometrial cells along with debris, neutrophils, and associated glandular and stromal breakdown. The cells' nuclei are bland and regular, or, if increased in size, support fine chromatin. This preparation shows regular surface epithelial tufting.

Image 46

Papillary syncytial change typically occurs along the uterine surface. It is characterized by syncytial aggregates of irregularly stratified endometrial cells along with debris, neutrophils, and associated glandular and stromal breakdown. The cells' nuclei are bland and regular, or, if increased in size, support fine chromatin. This preparation shows a tiny focus of regular surface epithelial cell tufting.

Image 47

Papillary syncytial change is characterized by syncytial aggregates of irregularly stratified endometrial cells along with debris, neutrophils, and associated glandular and stromal breakdown. The cells' nuclei are bland and regular, or, if increased in size, support fine chromatin. This preparation shows highly irregular surface epithelial tufting which may be confused with neoplasm.

Image 48

Papillary syncytial change is characterized by syncytial aggregates of irregularly stratified endometrial cells along with debris, neutrophils, and associated glandular and stromal breakdown. The cells' nuclei are bland and regular, or, if increased in size, support fine chromatin. This preparation shows highly irregular surface epithelial tufting which may be confused with neoplasm. The nuclei of this preparation are mostly grade 1, but a few vesicular nuclei are also seen (grade 2).

Image 49

Papillary syncytial change is characterized by syncytial aggregates of irregularly stratified endometrial cells along with debris, neutrophils, and associated glandular and stromal breakdown. The cells' nuclei are bland and regular, or, if increased in size, support fine chromatin. This preparation shows highly irregular surface epithelial tufting which may be confused with neoplasm.

Image 50

Papillary syncytial change is characterized by syncytial aggregates of irregularly stratified endometrial cells along with debris, neutrophils, and associated glandular and stromal breakdown. The cells' nuclei are bland and regular, or, if increased in size, support fine chromatin. This preparation shows highly irregular surface epithelial tufting which may be confused with neoplasm. Note the banal, regular appearance of most of the epithelial nuclei. The epithelium is infused with PMN neutrophils, and any nuclear atypia appears commensurate with the degree of inflammation.

Image 51

Non-cyclical endometrial patterns associated with cystic endometrium comprise disordered proliferation, endometrial polyp, and simple hyperplasia. The epithelial cysts of these conditions show proliferative-like epithelial features; whereas, senile cystic endometrium shows flattened glands with well spaced-out (not pseudo-stratified) nuclei.

Image 52

Non-cyclical endometrial patterns associated with cystic endometrium comprise disordered proliferation, endometrial polyp, and simple hyperplasia. The epithelial cysts of these conditions show proliferative-like epithelial features; whereas, senile cystic endometrium shows flattened glands with well spaced-out (not pseudo-stratified) nuclei. These cystic glands are large, easily fractured, and are difficult to represent in a single image.

Image 53

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Image 54

Non-cyclical endometrial patterns associated with cystic endometrium comprise disordered proliferation, endometrial polyp, and simple hyperplasia. The epithelial cysts of these conditions show proliferative-like epithelial features; whereas, senile cystic endometrium shows flattened glands with well spaced-out (not pseudo-stratified) nuclei. Note the similarity between the appearance and distribution of these nuclei and those of proliferative endometrium.

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Image 55

Proliferative-like nuclei are arranged in a pseudostratified fashion along the contours of an irregular-shaped gland.

Image 56

Proliferative-like nuclei are arranged in a pseudostratified fashion along the contours of an irregular-shaped gland.

Image 57

Proliferative-like nuclei are arranged in a pseudostratified fashion along the contours of several irregular-shaped glands.

Image 58

Irregularly shaped (complex) dilated gland with proliferative epithelial features: non-atypical complex hyperplasia. Proliferative-like nuclei are arranged in a pseudostratified fashion along the contours of a highly complex irregular-shaped gland. Numerous bulbous glands bud from a "mother" gland.

Image 59

Cystic glands with atypical nuclear features are classified as atypical hyperplasia. Nuclear anaplasia of glandular cells is the most important criterion for predicting the likelihood of hyperplasia progressing to carcinoma.

Image 60

Cystic glands with atypical nuclear features are classified as atypical hyperplasia. Nuclear anaplasia of glandular cells is the most important criterion for predicting the likelihood of hyperplasia progressing to carcinoma.

Image 61

Cystic glands with atypical nuclear features are classified as atypical hyperplasia. The internal complexities of this preparation comprise epithelial bridging and tufting. Similar changes are seen in atypical hyperplasias and in situ carcinomas of breast ducts. Nuclear anaplasia of glandular cells is the most important criterion for predicting the likelihood of hyperplasia progressing to carcinoma.

Image 62

Cystic glands with atypical nuclear features are classified as atypical hyperplasia. The internal complexities of this preparation comprise epithelial bridging and tufting. Analogous changes are seen in atypical hyperplasias and in situ carcinomas of breast ducts. Nuclear anaplasia of glandular cells is the most important criterion for predicting the likelihood of hyperplasia progressing to carcinoma.

Image 64

In well-differentiated lesions, neither histology nor cytology reliably separates atypical hyperplasia from carcinoma. Our lexicon, "Atypical hyperplasia/ low-grade adenocarcinoma," supports the opinions of Gusberg and Kaplan (Obstetrics and Gynecology, 1963, 87:662) that atypical hyperplasia is stage 0 adenocarcinoma. This preparation shows tightly packed tubuloacinar glands; and, out of context, it would be impossible to distinguish between atypical hyperplasia and adenocarcinoma. Note the banal nuclei of this histologically confirmed endometrial cancer.

Image 65

Tubuloacinar glands are small and complexly shaped; therefore, when they are traumatically extracted by brush sampling, they fragment. This irregularly shaped gland from a case of grade I adenocarcinoma has banal (grade I of Zaino/Hachisuga) nuclei.

Image 66

Tubuloacinar glands are small and complexly shaped; therefore, when they are traumatically extracted by brush sampling, they fragment. These highly fragmented glands from a case of grade I adenocarcinoma have banal (grade I of Zaino/Hachisuga) nuclei.

Image 67

In well-differentiated lesions, neither histology nor cytology reliably separates atypical hyperplasia from carcinoma. In these cases, our lexicon, "Atypical hyperplasia/low-grade adenocarcinoma," supports the opinions of Gusberg and Kaplan (Obstetrics and Gynecology, 1963, 87:662) that atypical hyperplasia is stage 0 adenocarcinoma. This preparation shows tightly packed tubuloacinar glands; and, out of context, it would be impossible to distinguish between atypical hyperplasia and adenocarcinoma. Note the moderate nuclear anaplasia present in this endometrial cancer.

Image 68

Tubuloacinar glands are small and complexly shaped; therefore, when they are traumatically extracted by brush sampling, they fragment. These highly fragmented glands from a case of grade I adenocarcinoma have moderately anaplastic (grade II of Zaino/Hachisuga) nuclei.

Image 69

Tubuloacinar glands are small and complexly shaped; therefore, when they are traumatically extracted by brush sampling, they fragment. These highly fragmented glands from a case of grade I adenocarcinoma have moderately anaplastic (grade II of Zaino/Hachisuga) nuclei.

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Image 75

Note the banal nuclei.

Image 79

Note the banal (grade I of Zaino/ Hachisuga) nuclei that predominate in this image.

Image 80

Note the moderately anaplastic (grade II of Zaino/Hachisuga) nuclei.

Image 81

In both histologic biopsy and direct endometrial cytology sampling, the most reproducible indicator of cancer is a frank cribriform pattern or solid neoplastic cell masses, even in the absence of substantial nuclear atypia.

Image 82

In both histologic biopsy and direct endometrial cytology sampling, the most reproducible indicator of cancer is a frank cribriform pattern or solid neoplastic cell masses, even in the absence of substantial nuclear atypia.

Image 83

In both histologic biopsy and direct endometrial cytology sampling, the most reproducible indicator of cancer is a frank cribriform pattern or solid neoplastic cell masses, even in the absence of substantial nuclear atypia. Note the banal (grade I of Zaino/ Hachisuga) nuclei. This detail shows how PMN neutrophils are infused throughout the epithelial aggregate resembling papillary syncytial change.

Image 85

Note the moderately anaplastic (grade II of Zaino/Hachisuga) nuclei.

Image 86

Note the moderately anaplastic (grade II of Zaino/Hachisuga) nuclei.

Image 88

Note the moderately anaplastic (grade II of Zaino/Hachisuga) nuclei.

Image 89

In secretory carcinoma, the neoplastic epithelium resembles that of post-ovulatory day 3-5. Secretory carcinomas are generally well differentiated.

Image 90

In secretory carcinoma, the neoplastic epithelium resembles that of post-ovulatory day 3-5 and in this preparation, neoplastic nuclei are separated from one another in a fashion akin to that seen in early secretory endometrium. A few distinct cytoplasmic borders are seen.

Image 91

In secretory carcinoma, the neoplastic epithelium resembles that of post-ovulatory day 3-5 and in this preparation, neoplastic nuclei are separated from one another in a fashion akin to that seen in early secretory endometrium. This neoplastic gland fragment shows some perinuclear clearing and a few distinct cytoplasmic borders are seen.

Image 92

Mucinous adenocarcinoma probably arises from a replacement of the endometrial epithelium by metaplastic cells of endocervical type. It resembles mucinous adenocarcinoma of the endocervix, ovary or appendix; and, simultaneous mucinous neoplasms of these sites may occur. Endometrial mucinous adenocarcinomas are generally low grade and show no difference in clinical behavior from low-grade endometrioid tumors.

Image 93

Mucinous adenocarcinoma probably arises from a replacement of the endometrial epithelium by metaplastic cells of endocervical type. It resembles mucinous adenocarcinoma of the endocervix, ovary or appendix; and, simultaneous mucinous neoplasms of these sites may occur. To qualify as mucinous adenocarcinoma, at least 50% of the cells must contain intra-cytoplasmic mucin. Tumor cells possess clear, bubbly cytoplasm that stains with most mucin stains and is generally immunoreactive for carcinomembryonic antigen — which is negative in most other endometrial adenocarcinomas. This preparation shows neoplastic nuclei regularly distributed among cells that closely resemble endocervical epithelium.

Image 94

In normal cycling endometria, ciliated cells accumulate throughout the proliferative phase and represent about 25% of surface epithelial cells just prior to ovulation. Cilia are commonly found with hyperplasia; and, their presence does not preclude the diagnosis of carcinoma. These neoplastic cells demonstrate an apical border with ciliary basal bodies and long, delicate cilia.

Image 95

Adenocarcinomas with squamous elements can be divided into those with benign and, as in this preparation, malignant appearing squamous epithelium. The tumors are graded according to their adenocarcinomatous component. When they are stratified by grade, the death rate for adeno-carcinoma with squamous elements is half that of pure adenocarcinoma — squamous differentiation is a good prognostic feature.

Image 96

Adenocarcinomas with squamous elements can be divided into those with benign and, as in this preparation, malignant appearing squamous epithelium. The tumors are graded according to their adenocarcinomatous component. When they are stratified by grade, the death rate for adeno-carcinoma with squamous elements is half that of pure adenocarcinoma — squamous differentiation is a good prognostic feature.

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Image 97

Clear cell and serous carcinomas should be specifically designated because of their worse prognosis. Stage I patients with serous carcinoma require aggressive treatment. Complete surgical staging is essential, regardless the depth of myometrial invasion.

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Image 98

Clear cell and serous carcinoma should be specifically designated because of their worse prognosis. Stage I patients with these tumors require aggressive treatment. Complete surgical staging is essential, regardless the depth of myometrial invasion. In this preparation, the tumor cells progressively replace surface endometrial glands. This may be intraepithelial extension or may be a focus of intraepithelial carcinoma.

Image 99

In cytology preparations, the cells of serous carcinoma show stratification, atypism, pleomorphism, increased mitoses, and bizarre cytomorphology. Serous carcinomas are estrogen independent tumors of elderly women that together with clear cell carcinoma represent less than 10% of all endometrial cancers.

Image 100

In cytology preparations, the cells of clear cell carcinoma show bizarre cytomorphology. Clear cell carcinomas are estrogen independent tumors of elderly women that together with serous carcinoma represent less than 10% of all endometrial cancers.

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Image 101

Atrophic endometrium of the advanced postmenopause is grossly thin and smooth and usually affords hypocellular brush preparations.

Image 102

Unlike cycling endometrium, atrophic endometrium of the advanced postmenopause contains flattened glands with reduced to absent mitoses. Its glands comprise a single layer of flattened to cuboidal cells embedded in a relatively fibrous stroma which usually does not shed well. Some isolated cystic glands may be seen.

Image 103

The endometrium of the postmenopause varies from proliferative-like to frankly senile appearing. This preparation looks like proliferative endometrium except that the nuclei are small and round to oval but not pseudostratified and mitoses are infrequent.

Image 104

The endometrium of the late post-menopause may look like lower uterine segment endometrium. In this preparation, nuclei are small, densely packed, and banal. They appear "regularly irregular."

Image 105

Cilia are normally present in the cervix, endometrium, and uterine tube. Sometimes they may be seen in palisaded epithelial arrays. Most endometrial proliferations composed predominantly of ciliated cells are benign, although there are ciliated adenocarcinomas of the endometrium. Estrogen may be responsible for ciliogenesis in both normal and pathological states. In the advanced postmenopause, cilia may be the consequence of prior unopposed estradiol.

Image 106

Cilia are normally present in the cervix, endometrium, and uterine tube. Ciliary processes are not always apparent in endometrial brushings because of the en face orientation of the endometrial epithelium. In atrophic endometrium, ciliated cells appear more columnar and orangophilic than the surrounding endometrial epithelial cells.

Image 107

A minority of cells within this epithelial sheet contains enlarged, clear nuclei with nuclear notches and grooves resembling papillary thyroid cancer. Slight shifts from otherwise usual morphology are seen in a significant minority (5%-15%) of postmenopausal epithelial preparations. The immediate biological significance of this finding is uncertain.

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Image 108

EIC is characterized by the replacement of endometrial surface epithelium and glands by malignant cells that resemble invasive high-grade endometrial cancer. Also see image 109.

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Image 109

EIC is characterized by the replacement of endometrial surface epithelium and glands by malignant cells that resemble invasive high-grade endometrial cancer. Also see image 108.

Image 110

In brush preparations, EIC shows marked nuclear enlargement with greater than 4-fold variation in nuclear size, loss of nuclear polarity within epithelial sheets, nuclear hyper-chromasia, and macronucleoli.

Image 111

In brush preparations, EIC features marked nuclear enlargement with greater than 4-fold variation in nuclear size, loss of nuclear polarity within epithelial sheets, nuclear hyper-chromasia, and macronucleoli.

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Image 112

Sherman, et. al. (Human Pathology, 1995, 26:1268) have reported a high concordance between P53 immuno-staining in EIC and associated serous cancers and suggest that there is an estrogen independent pathway of endometrial carcinogenesis in which the P53 mutation plays a central role. Mutant P53 protein accumulates as a poorly degradable nuclear product and is strongly decorated in this preparation of EIC.

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Image 113

MIB1 is a proliferative nuclear antigen and it strongly decorates the nuclei in this preparation of EIC.

Image 114

Isolated atypical glands with morphological and immunohistochemical features of atypical hyperplasia or type I endometrial adenocarcinoma may be found in grossly normal advanced postmenopausal endometrium of asymptomatic patients. This atypical epithelium is readily apparent in endometrial brush preparations but not in endometrial biopsies, requiring serial sectioning of the endometrium in order to be demonstrated histologically. Also see images 115 and 116.

Image 115

Tissue sections from this case showed rare, isolated, irregular glands and clusters of back-to-back glands with nuclear features equivalent to this cytology preparation. Unlike the nuclei of endometrial intraepithelial carcinoma, the epithelial cell nuclei from this case showed no P53 immunoreactivity in tissue sections; however, like the glands of atypical hyperplasia, this epithelium lacked bcl-2 immunoreactivity while adjacent normal-appearing epithelium stained positively. Also see images 114 and 116.

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Image 116

Tissue sections from this case showed rare, isolated, irregular glands and clusters of back-to-back glands with equivalent nuclear features. Also see images 114 and 115.

Image 117

Microfoci of atypical epithelium may be found in atrophic uteri in the absence of gross endometrial thickening and may be related either to de novo intra-epithelial dysplasia in a non-cycling endometrium or to hyperplasia that has partly regressed with estradiol withdrawal. Note the fibrous nature of the stroma between these abnormal glands. Also see image 118.

Image 118

Tissue sections from this case showed rare, isolated, irregular glands and clusters of back-to-back glands with equivalent nuclear features. Note the loss of polarity, anisonucleosis, and prominent nucleoli in this preparation. Also see image 117.

Image 119

Microfoci of atypical epithelium may be found in atrophic uteri in the absence of gross endometrial thickening and may be related either to de novo intra-epithelial dysplasia in a non-cycling endometrium or to hyperplasia that has partly regressed with estradiol withdrawal. Note the tight crowding among these atypical glands. Also see image 120.

Image 120

Tissue sections from this case showed rare, isolated, irregular glands and clusters of back-to-back glands with equivalent nuclear features. Note the loss of polarity, anisonucleosis, and prominent nucleoli in this preparation. Also see image 119.