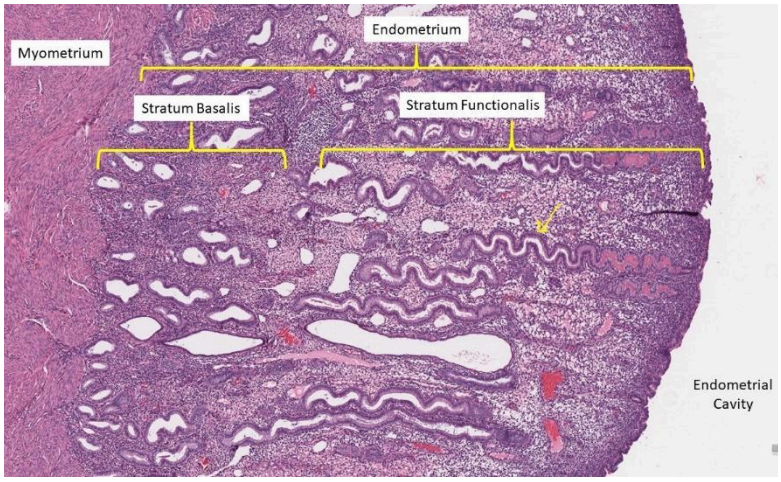
Benign Endometrium Summary – PathElective (K Devins, MD)

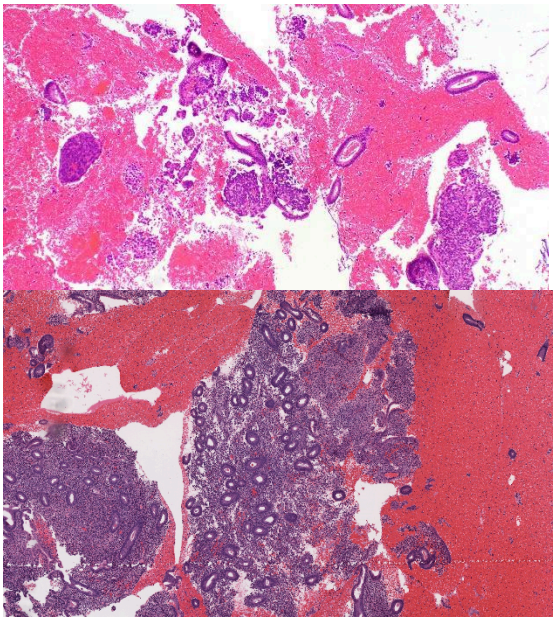
Basic Histology



Endometrium – Mucosal layer lining the uterine cavity composed of endometrial glands and stroma

- **Stratum functionalis –** Superficial layer. Hormone responsive and undergoes functional and morphologic changes throughout the menstrual cycle before being shed during menses.
- **Stratum Basalis –** Deep layer. Proliferates to replenish stratum functionalis after menses.

Average 28-Day Cycle

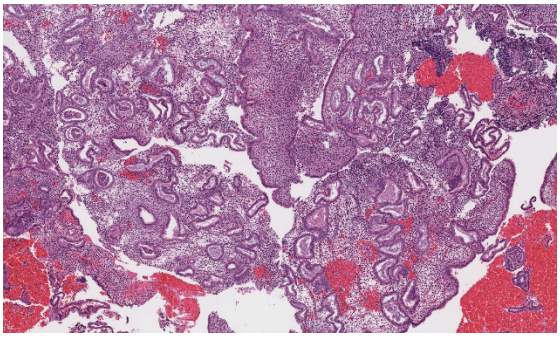


Menstrual Phase (Days 0 – 5)

- Estrogen and progestin levels fall, causing breakdown of endometrial stroma
- Stromal breakdown = dense round “balls” of endometrial stroma

Proliferative Phase (Days 6 – 14)

- Corresponds to follicular phase in ovary
- Primarily estrogen-driven
- Cellular “blue” appearance at low power
- Round tubular glands
- Pseudostratified columnar epithelial cells
- Mitoses in epithelium and stroma

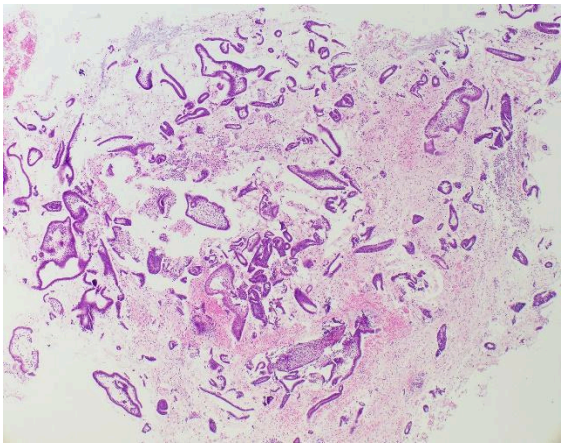


Secretory Phase (Days 15 – 28)

- Corresponds to luteal phase in ovary
- Primarily progestin-driven
- Irregular-shaped glands

- Single layer of columnar to cuboidal cells
- **Early:** Subnuclear vacuoles in glandular cells
- **Mid:** Intraluminal secretions in glands, stromal edema
- **Late:** Predecidua (plump, pink stromal cells)

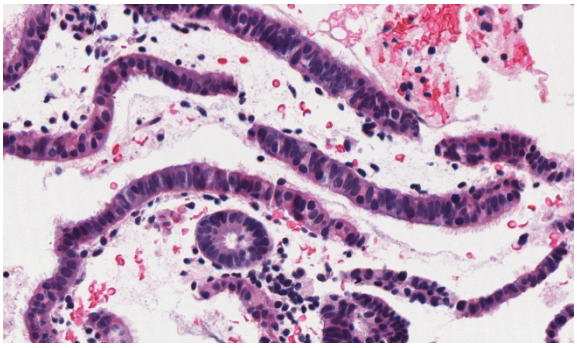
Postmenopausal Endometrium



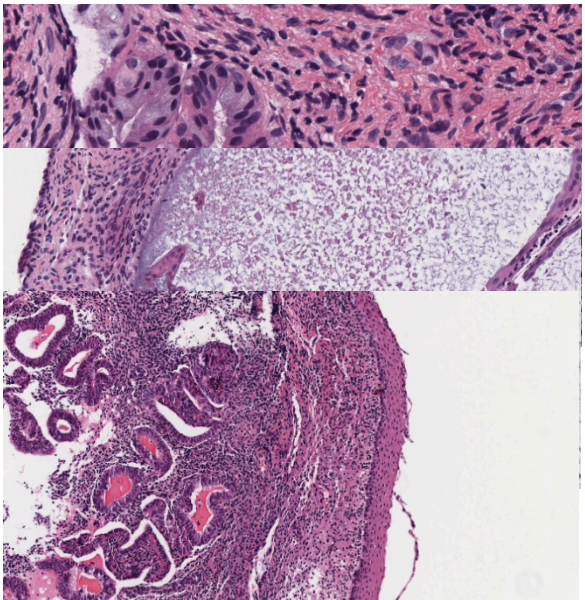
Atrophy

- Due to long-term withdrawal of estrogen
- Inactive low columnar to cuboidal cells
- May form cystic structures
- Glands often detach from stroma in biopsies, causing "hairpin" structures

Endometrial Metaplasia: Many types of metaplasia are possible in benign endometrium. Keep in mind that many types of metaplasia (mucinous, eosinophilic, squamous, etc.) may occur in both benign endometrium and endometrial neoplasia (atypical hyperplasia/EIN and endometrioid adenocarcinoma). Squamous morular metaplasia is unique in that it is almost always seen in association with glandular neoplasia. A neoplastic process can be ruled out by the lack of architectural complexity, glandular crowding, and nuclear atypia. See the separate section on endometrial neoplasia for more information.



Tubal – Ciliated tall columnar cells without cytologic atypia.

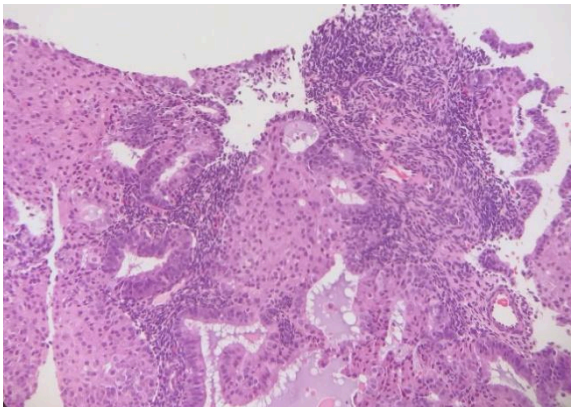


Mucinous – Cytoplasmic mucin globules. Typically resembles endocervix, but a range of appearances are possible. Lacks cytologic atypia.

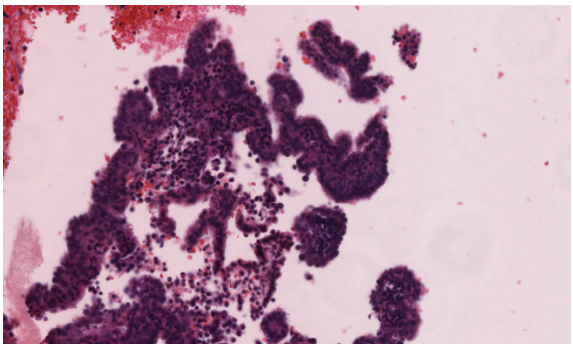
Eosinophilic (oxyphilic) – Dense eosinophilic cytoplasm without cytologic atypia.

Non-morular squamous metaplasia – May be keratinizing or non-keratinizing. Does not form morules (see below). Typically associated with chronic

irritation or infection, but sometimes can be seen in association with atypical hyperplasia/EIN or endometrioid adenocarcinoma.

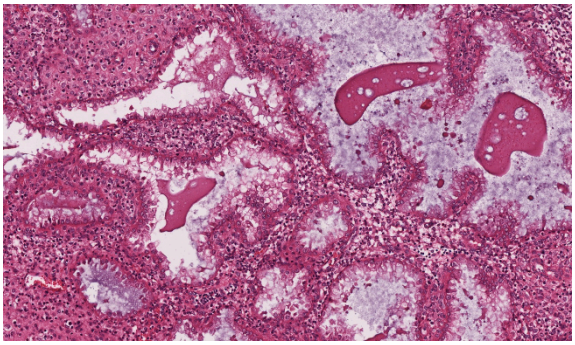


Squamous morular metaplasia – Whorls of non-keratinizing squamoid cells. Unlike non-morular metaplasia, squamous morular metaplasia is almost always associated with atypical hyperplasia/EIN or endometrioid adenocarcinoma. This association is so strong, that even if a neoplastic glandular process is not seen, many pathologists will suggest additional sampling to rule out a neoplastic process.



Papillary Syncytial Metaplasia – Cuboidal or low columnar cells in papillary arrangement. Form a syncytium, meaning you can't identify borders between individual cells. Occurs in the setting of endometrial stromal breakdown. Lacks cytologic atypia.

<u>Gestational Effects</u>



Arias Stella Reaction – Enlargement of endometrial cells with abundant pink cytoplasm. Famous benign mimic of glandular neoplasia. Nuclear:cytoplasmic ratio remains low. Cytologic response to progestins typically occurring during pregnancy. Stromal decidualization (stromal cells with abundant pink cytoplasm) can often be seen in the background.