These presentations are to help you identify basic histopathological features. They do not contain the additional factual information that you need to learn about these topics.

This presentation contains images of basic histopathological features of cervical HPV, dysplasia and carcinoma.

Before viewing this presentation you are advised to review relevant histology, relevant sections on cervical pathology in a pathology textbook, relevant lecture notes, the histopathology power point presentation on neoplasia and relevant sections of a histopathology atlas.

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Low power view of normal endocervix and part of ectocervix. Note the endocervical glands (black stars) lined by simple mucus secreting columnar epithelium and the non-keratinizing stratified squamous epithelium (yellow stars) of the ectocervix. The black arrows mark the approx. site of the squamocolumnar junction. The red star indicates the endocervical canal.
Simple columnar mucus secreting epithelium of endocervix and endocervical glands.
Normal non-keratinising stratified squamous epithelium of the ectocervix. Note the change in morphology of cells from the basal to superficial layers. The basal cells are cuboidal/columnar and as they mature, cells become more polygonal in the intermediate layers and flattened at the surface. Their nuclei also become smaller.
Squamocolumnar junction: black arrow.
Endocervical glands: black star
Non-keratinising stratified squamous epithelium: red arrow
Simple columnar epithelium: blue arrow
Low power view of a small portion of a cervical smear. Note the thousands of blue and pink squamous cells that need to be screened. Papanicolou and Giemsa stains (not H&E) are commonly used in cytology. The papanicolou stain stains the more superficial squamous cells pink and the deeper squamous cells blue.
Papanicolou stain of cervical smear (high power). Normal squamous cells with small nuclei and abundant cytoplasm.
Left image: Histology: normal endocervical epithelium.
Right image: Cytology: simple columnar endocervical cells (black arrows) in a cervical smear, papanicolou stain. Some are cross cut, others are viewed from the side.
Left image: Normal squamous epithelium of cervix
Right image: Koilocytosis/HPV effect: note the cytoplasmic clearing and large irregular nuclei in squamous cells in the upper 2/3 of the epithelium
Koilocytes (black arrows) in cervical smear. Papanicolaou stain.
Mild dysplasia (CIN1) and HPV effect in cervical biopsy. There is slight disorganization of squamous cells in the basal third of the epithelium. Koilocytes are present in the upper epithelium.
Squamous cells showing features of low grade squamous intraepithelial lesion (LSIL) (black arrows) in cervical smear. The cells have larger more irregular nuclei than normal squamous cells (yellow arrows). Papanicolou stain.
Left image: normal stratified squamous epithelium of cervix. The lower N:C ratio of these normal cells means that the epithelium appears pink as the cytoplasmic staining with eosin predominates over the nuclear staining with haematoxylin.

Right image: severe squamous dysplasia (CINIII). The cells have larger nuclei that don’t become smaller as the cells become more superficial. The cells also don’t flatten much as they become more superficial i.e. they are not undergoing normal squamous differentiation/maturation. The higher N:C ratio of these severely dysplastic cells means that the epithelium appears blue as the nuclear staining with haematoxylin predominates over the cytoplasmic staining with eosin.
Squamous cells showing features of high grade squamous intraepithelial lesion (HSIL) (black arrows) in cervical smear. The cells have larger more irregular nuclei and a higher N:C ratio than normal squamous cells (yellow arrow). Papanicolou stain. The cytology result of HSIL will generally correlate with a histopathological result of CIN2 or CIN3 or more significant lesion, however, sometimes the smear result of ‘HSIL’ represents a ‘false positive’, hence the need for colposcopy and biopsy before definitive management.
Moderate squamous dysplasia (CIN2). The epithelial cells generally have large nuclei, though there is some decrease in nuclear size in the upper one third of the epithelium and flattening of cells superficially.
High power view of squamous cell carcinoma (tumour cells only - their invasive nature cannot be seen here). The tumour cells show cytological features of malignancy: large pleomorphic nuclei and prominent nucleoli (black arrows).

The tumour cells show features of squamous differentiation: keratin pearl (blue star) formation, intercellular bridges (yellow arrows) but still many have relatively abundant eosinophilic cytoplasm.

B. High power view of invasive adenocarcinoma of the cervix.
Medium power view of a focus of adenocarcinoma in situ (black star) adjacent to normal endocervical epithelium (red star). Note high N:C ratio and crowding of the dysplastic cells.