Colposcopy of Invasive Squamous Cell Carcinoma of the Uterine Cervix

Haberal Ali, MD
<table>
<thead>
<tr>
<th>GENERAL ASSESSMENT</th>
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<tbody>
<tr>
<td>Adequate/inadequate for the reason... (i.e.: cervix obscured by inflammation, bleeding, scar)</td>
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<tr>
<td>Squamo-columnar Junction visibility: completely visible, partially visible, not visible</td>
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<tr>
<td>Transformation zone types 1, 2, 3</td>
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NORMAL COLPOSCOPIC FINDINGS

- Original squamous epithelium:
  - Mature
  - Atrophic
- Columnar epithelium:
  - Ectopy
- Metaplastic squamous epithelium:
  - Nabothian cysts
  - Crypt (gland) openings
- Deciduosis in pregnancy

ABNORMAL COLPOSCOPIC FINDINGS

<table>
<thead>
<tr>
<th>GRADE</th>
<th>GENERAL PRINCIPLES</th>
<th>LOCATION OF THE LESION</th>
<th>SIZE OF THE LESION</th>
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<tbody>
<tr>
<td>Grade 1 (Minor)</td>
<td>Thin aceto-white epithelium, Irregular, geographic border</td>
<td>Inside or outside the T-zone, Location of the lesion by clock position</td>
<td>Number of cervical quadrants the lesion covers, Size of the lesion in percentage of cervix,</td>
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<tr>
<td>Grade 2 (Major)</td>
<td>Dense aceto-white epithelium, Rapid appearance of acetowhiteness, Cuffed crypt (gland) openings</td>
<td>Coarse mosaic, Coarse punctuation, Sharp border, Inner border sign, Ridge sign</td>
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<tr>
<td>Non specific</td>
<td>Leukoplakia (keratosis, hyperkeratosis), Erosion Lugol’s staining (Schiller’s test): stained/non-stained</td>
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SUSPICIOUS FOR INVASION

- Atypical vessels
  - Additional signs: Fragile vessels, Irregular surface, Exophytic lesion, Necrosis, Ulceration (necrotic), tumor/gross neoplasm

MISCELLANEOUS FINDING

- Congenital transformation zone, Condyloma, Polyp (Ectocervical/endocervical) Inflammation,
- Stenosis, Congenital anomaly, Post treatment consequence, Endometriosis
### Features suggestive of cancer

- Raised surface contour
- Atypical vessels
- Dense acetowhite epithelium
- Friability
- Ulceration
- Yellow color
Surface contour

- Irregular surfaces
- Erosions
- Granular appearances
- Necrosis

A large squamous cell cancer of the anterior cervical lip with an irregular ulcerative surface. A high-grade squamous intraepithelial lesion is noted peripherally from 7 o'clock to 12 o'clock.
Surface contour

Example of necrosis and yellow appearance of the cervical epithelium

Large cancer with ulceration of the anterior lip of the cervix; overall yellow, necrotic appearance, and friability
Dense acetowhiteness; indicates presence of high grade lesion or keratin

The degree of whiteness in neoplasia is a reflection of the amount of nuclear activity

Squamous cancers can be yellowish, a characteristic associated with necrosis

A red color reflects marked vascularity
Large, fungating mass on the posterior lip of the cervix with dense acetowhite epithelium and atypical vessels

Nonbranching atypical vessels on the surface of a raised, acetowhite mass on the posterior lip of the cervix
A large squamous cell cancer producing an enlarged cervix. It is dense white due to keratin and increased nuclear activity.

A large squamous cell cancer with necrosis, demonstrating a yellow hue.
This very large squamous cell cancer appears red due to the abundance of long irregular angioarchitecture.
Atypical vessels are the hallmark and the first sign of invasion. However, they may also be seen in other conditions where there may be aberrant vessel growth including:

- Inflammation
- Healing granulation tissue
- Post-radiation changes
- Exophytic condyloma accuminata
Atypical vessels

Abnormality of angioarchitecture is an expression of stage of disease

Mosaicism and puctation,

- Regular
- Irregular
- Fine
- Coarse
Atypical vessels

These formations are commonly referred

- Corkscrew
- Spaghetti
- Irregular coarse
- Irregular parallel
- Comma
- Tendril
- Waste-thread
Atypical vessels

<table>
<thead>
<tr>
<th>Non-malignant</th>
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<tbody>
<tr>
<td>Network-like (NV-1)</td>
<td>Red dotted (NV-2)</td>
<td>Red spotted (NV-3)</td>
<td>Branch-like (NV-4)</td>
<td>Linear (NV-5)</td>
<td>Loop-like (NV-6)</td>
</tr>
<tr>
<td><img src="image1" alt="Network-like" /></td>
<td><img src="image2" alt="Red dotted" /></td>
<td><img src="image3" alt="Red spotted" /></td>
<td><img src="image4" alt="Branch-like" /></td>
<td><img src="image5" alt="Linear" /></td>
<td><img src="image6" alt="Loop-like" /></td>
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</tbody>
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<table>
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<th>Malignant</th>
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<tbody>
<tr>
<td><img src="image7" alt="Glomeruloid hairpin-like" /></td>
<td><img src="image8" alt="Corkscrew-like" /></td>
<td><img src="image9" alt="Mosaic" /></td>
<td><img src="image10" alt="Tendril-like" /></td>
<td><img src="image11" alt="Waste-thread-like" /></td>
<td><img src="image12" alt="Willow-branch-like" /></td>
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Atypical vessels

Schematics of the mosaic pattern breaking up, as seen in the beginning stages of squamous cell invasion.

Schematics of irregular blood vessels of an invasive squamous cell carcinoma demonstrating corkscrew-like.
Atypical vessels

On the anterior of the cervix, there is a dense, raised, acetowhite lesion with atypical vessels, including comma shapes and curlies.
Atypical vessels

The mosaic pattern is becoming degraded and disorganized, a finding seen in early invasive squamous cell cancer.

A microinvasive squamous cell cancer in which the punctate pattern is becoming disorderly and irregular elongated vessels are seen.
Atypical vessels

Irregular blood vessel formations over the surface of an invasive squamous cell cancer

Irregular dilated (corkscrew) blood vessels of a squamous cell cancer
Numerous different blood vessel formations seen in squamous cell cancer

Atypical vessels

A high-power colposcopic view of irregular angioarchitecture seen in squamous cancer
Atypical vessels

*Advanced tumor growth and proliferation of blood vessels with bleeding associated with trauma*
A. Superficial necrosis
B. Dense acetowhite epithelium with atypical blood vessels
C. Histology reveals squamous cell cancer. The basement membrane of the epithelium is breeched, and abnormal cells extend into the stroma
Large, raised cancer, yellow in appearance, on the posterior lip of the cervix. There is an ulcer at 6 o’clock and atypical vessels throughout the mass.
Fungating cancer with obliteration of the os and multiple atypical vessels
Mass on the anterior lip of cervix with atypical vessels and yellow appearance
Papillary tumor of the cervix
Large, fungating, nodular cancer that completely distorts the normal cervical anatomy, accompanied by bleeding.
Irregular surface contour of a cancer involving primarily the central, posterior portion of the cervix
Cervical cancer with an encephaloid appearance and scattered atypical vessels
Cancer with encephaloid appearance and scattered atypical vessels
Invasive cancer with bleeding, dense acetowhite epithelium and superficial spread on the anterior aspect of the cervix
Cancer with an irregular, papillary surface, dense acetowhite epithelium, and atypical vessels
Cancer with irregular, yellow papillary surface
(A) Invasive cervical cancer, abnormal branching blood vessels.
(B) Invasive cervical cancer, abnormal loop blood vessels.
Colposcopic mimics

Colposcopic mimics of malignancy relate to surface contours and atypical vessels

• Condyloma
• Post-radiation changes
• Polyps
• Decidual tissue
• Fibroids
Colposcopic mimics

The angioarchitecture seen in normal cervical squamous epithelium after radiation for cancer of the cervix. The spatial distribution and corkscrew-like formations are characteristic.

A prolapsed endocervical fibroid
Colposcopic mimics

The irregular vascularity of a cervical condyloma resembling the angioarchitecture of malignancy

The characteristic distribution of blood vessels coursing over the surface of a large mass of decidual tissue, as seen in pregnancy
Colposcopic mimics

A large endocervical polypoid mass. Removal is necessary to exclude malignancy
Thank you for your attention!