THE ABNORMAL-LOOKING CERVIX

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Introduction

Anomalies in the appearance of the uterine cervix are a common reason for referral to the gynaecologist. Most of these referred cases are assessed by colposcopy under stereoscopic binocular magnification to determine if there are indeed abnormalities which may require treatment. This article addresses some of the more common findings in cases referred for an 'abnormal-looking cervix' and suggests a rational approach to the problem.

What is normal?

The surface epithelium of the cervix consists centrally of columnar tissue, which is in continuity with the endometrium, and peripherally of squamous tissue which is in continuity with the vagina. Columnar epithelium originates from Mullerian tissue embryologically while squamous epithelium develops from the vaginal plate. In fetal life, the two types of epithelia are joined at a fixed point which is the original squamocolumnar junction. During puberty, as the uterus and vagina enlarge and the endocervix everts, the original squamocolumnar junction becomes visible on the ectocervix and columnar epithelium is exposed to the vagina. This process is further developed during pregnancy with the rapid expansion of the uterus (Fig 1). The reverse occurs after the menopause when the uterus shrinks and the original squamocolumnar junction retracts out of view into the endocervix (Fig 3).

When columnar epithelium becomes exposed to the vagina, metaplasia occurs, whereby the exposed columnar epithelium is gradually transformed to squamous epithelium (Fig 2). This is an irreversible process stimulated by the acidic environment of the vagina.

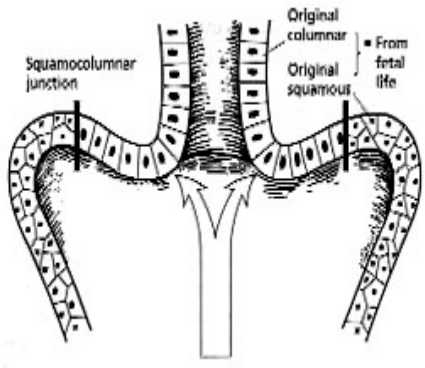

Fig 1: Movement of the original squamocolumnar junction from its endocervical position onto the ectocervix during puberty and pregnancy..

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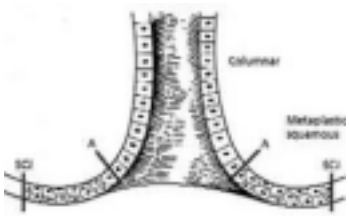

Fig 2a: The cervix before and after the menopause, showing the squamocolumnar junction (SCJ) and exposed columnar epithelium which undergoes metaplasia.

Fig 2b: Premenopausal cervix showing exposed columnar epithelium. The columnar epithelium appears on the ectocervix and is composed of small villous like structures whereas the squamous epithelium at the periphery is generally smooth and featureless.

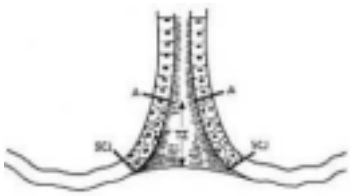

Fig 3: The cervix after the menopause, showing the squamocolumnar junction retracted into the endocervix.

Fig 3b: The menopausal cervix. The squamocolumnar junction has retracted into the endocervical canal. In addition, the squamous epithelium looks visibly pale due to the relative estrogen lack.

The appearance of the cervix can vary widely from individual to individual and is altered, among other things, by parity and the estrogenic milieu of the vagina. A nulliparous cervix will have a circular os (Fig 4) whereas the os in a parous cervix will generally appear as a horizontal slit (Fig 5).

Another common appearance of the cervix is one in which a significant proportion of the endocervical glandular epithelium is visible, giving the appearance of an erosion, or more appropriately referred to as an ectropion. This is seen as a central area of velvety redness surrounding the os. Because the glandular epithelium is more fragile than squamous epithelium, it bleeds more easily on contact, e.g. after a pap smear, or if the blades of a speculum scrape against it on insertion.

Fig 4: Nulliparous cervix.

Fig 5: Parous cervix with slit shaped os.

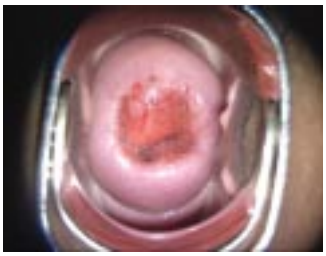

Fig 6: An ectropion.

Fig 7: Ectropion with contact bleeding and IUCD thread in situ.

An approach to the abnormal looking cervix

A simple approach towards an abnormal looking cervix would be to consider the possible aetiological mechanisms.

- **Is it Physiological?**
  - *Nabothian Cyst, Atrophy, Ectropion (Erosion)*
    Consider patient's age, parity, pregnant or breastfeeding
- **Is it an Infection?**
  - *Candida, Chlamydia,Trichomonas, Bacterial Vaginosis, Herpes Simplex*
    Look for discharge, contact bleeding, strawberry spots, pain, itch
- **Is it a Growth?**
  - *Polyp, wart, fibroid, cancer*
    Consider pap smear history, symptoms of inter/postcoital bleeding, presence of warts on the external genitalia
- **Is it Iatrogenic?**
  - *Stenosis, endometriosis*
    Has the patient had surgery or cervical cerclage?

1) Is it Physiological?

Nabothian Follicles

Apart from the ectropion, another common appearance on the cervix is the nabothian follicle. This is a benign mucous retention cyst that develops on the cervix as a result of the metaplastic process. As metaplasia occurs, the surface of the exposed columnar epithelium becomes covered over by squamous epithelium. The mucous secretions of the underlying islands of active columnar tissue become entrapped and form retention cysts (Fig 8a). These can become very large and occur either singly or in clusters, distorting the appearance of the cervix (Fig 8c). These follicles may appear translucent or take on a more opaque whitish or yellowish hue (Fig 8b). It is quite common to see fine blood vessels running over their surface.

Fig 8a: Nabothian follicle. Note the prominent blood vessels on the surface showing a normal regular branching pattern.

Fig 8b: Nabothian follicle with typical branching vessels on the surface. This one has a more opaque yellow/white appearance.

Fig 8c: Cluster of nabothian follicles distorting the cervix.

Fig 9: A large nabothian follicle on the right of picture with several small ones on the posterior lip on the left.

Atrophic cervicitis

During the perimenopausal and the post-menopausal period, the relative lack of estrogen causes the thinning of the epithelium of the vagina and cervix. In addition, the vaginal pH rises and becomes less acidic. These changes result in a condition known as atrophic cervicitis/vaginitis. The vagina and cervix take on a pale appearance and becomes prone to petechial haemorrhages and contact bleeding, often with very little trauma e.g. the insertion of a speculum or the taking of a pap smear (Figs 10 a & b). A two to three month course of local estrogens in the form of creams or pessaries should reverse these changes.

Fig 10a: Atrophic cervicitis, showing petechial haemorrages and contact bleeding.

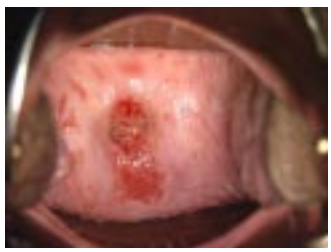

Fig 10b: Atrophic small cervix with petechiae on the vagina as well.

2) Is it an infection?

There are a number of infections that can result in cervicitis. These are common in sexually active women but are not necessarily sexually transmitted in all cases.

Candidiasis

Candidiasis is characterized by intense pruritis, discomfort and a lumpy or curdy white discharge which can be seen to coat the surface of the cervix and vagina.

Trichomonas

Trichomonas infection results in a cervicitis that characteristically gives the appearance of a 'strawberry cervix' (Fig 12). The cervix and vagina appears to be covered with red spots, which when examined under magnification are seen to be congested blood vessels, the overlying epithelium having

desquamated. The application of Schiller's iodine gives rise to the typical 'leopard skin' appearance (Fig 13). Trichomonas infection gives a copious watery, sometimes frothy discharge which typically begins or worsens at the time of menstruation.

Bacterial Vaginosis

Another infection is bacterial vaginosis, which gives rise to a thin grey-white vaginal discharge with a typical fishy odour. This is exacerbated immediately after intercourse. Both Trichomonas and bacterial vaginosis respond well to metronidazole.

Fig 11: Cervico-vaginal candidiasis.

Fig 12: Strawberry cervix – characteristic of trichomonas cervicitis.

Fig 13: Leopard skin appearance after application of Schiller's Iodine.

Herpes Simplex

Herpes Simplex infection gives rise to extremely painful cervico-vaginal ulcers (Fig 14). The cervix, if affected, can look extremely abnormal and may be mistaken for frank invasive cancer. However, locally invasive cancer of the cervix very rarely gives rise to pain. The ulceration is usually covered with a necrotic membrane and resolves almost completely after a few weeks (Fig 15).

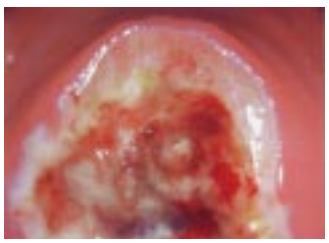

Fig 14: Herpes Simplex ulcer of the cervix.

Fig 15: Healing Herpes Simplex Ulcer.

Warts or Condylomata

Condylomata or warts on the cervix are not as common as their vulval counterparts and they sometimes co-exist. The aetiological agent is the human papillomavirus, usually types 6 and 11. They can appear either as flat warts or large florid growths on the cervix, and are more common in immuno-compromised patients. They usually appear as soft growths on the cervix (Figs16a & b) but may sometimes be hyperkeratotoic and can mimic invasive tumours. Therefore, a biopsy under colposcopic vision is essential for histological confirmation.

Fig 16a: Wart or condyloma on the cervix.

Fig 16b: Magnified view of the wart seen in Fig 16a. Note the typical papilliform changes..

3) Is it a growth?

A lump on the cervix should give rise to the suspicion of a growth of some sort. The most commonly found lumps are caused by nabothian follicles which have been discussed previously. Other growths on the cervix include polyps, fibroids and invasive tumours.

Polyps

These lesions on the cervix originate from columnar epithelium which has a tendency to form polyps. They begin as an expansion of the gland crypts and the trapped mucous forms cysts which expand and become polypoid and elongated. Eventually, the mucous elements reduce as the stroma expands and polyps are formed. Polyps are usually pedunculated (Fig 17) but may also be broad-based (Fig 18).

Fig 17: Pedunculated cervical polyp.

Fig 18: Broad based polyp.

Cervical fibroids

Fibroids may arise within the cervix itself (Figs 19, 20a & b), or a submucosal one in the endometrial cavity may elongate and prolapse through the cervical os. They have a smooth surface and feel firm on palpation. The patient may be asymptomatic or present with dysmenorrhoea and menorrhagia.

Fig 19: Cervical fibroid on anterior lip. Note the cervicitis on the posterior lip as well.

Fig 20a: Large fibroid on the posterior lip. Patient has a flap of cervical tissue on the anterior lip probably from trauma at childbirth.

Fig 20b: Same cervix as in Fig 21a. The anterior lip has been deviated to expose the large fibroid occupying the entire posterior lip.

A useful approach to lumps on the cervix is to consider their surface morphology. Generally, smooth lumps e.g. nabothian follicles, polyps and fibroids tend to be benign; whereas lumps with a rough or eroded surface that bleeds easily tend to be more worrying.

Cancer of the cervix

Locally advanced cancer of the cervix generally appears as an irregular tumour mass with eroded surfaces and contact bleeding. Pre-malignant disease (cervical intraepithelial neoplasia or CIN) on the other hand is generally not visible to the naked eye and is detected by pap smears or other screening

methods. A suspicious lesion on the cervix *i.e.* one that is irregular with surface ulceration and bleeds easily on contact should be referred urgently to the gynaecologist.

Fig 21: Early cancer of the cervix. Note the eroded surface and contact bleeding.

Fig 22a: Cancer of the cervix. Note the irregular surface and abnormal blood vessels.

Fig 22b: Magnified view of the same cervix shown in Figure 23a. Note the marked surface irregularity and tortuous blood vessels, in this case, visible to the naked eye.

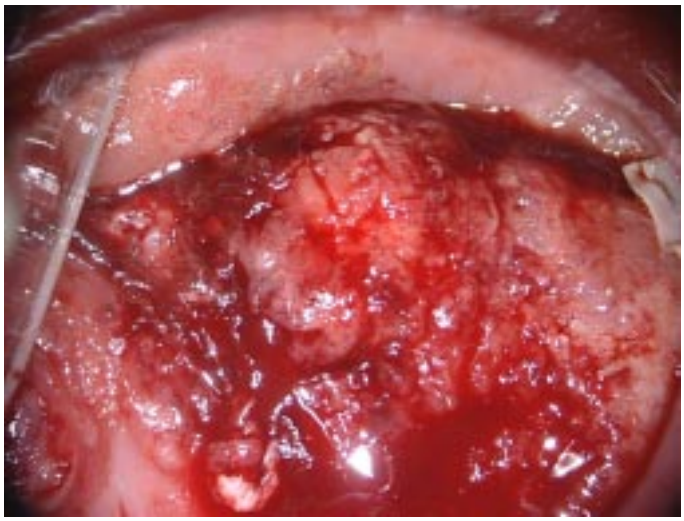

Fig 23. Advanced cancer of the cervix occupying the entire cervix and extending to the vagina.

4) Is it iatrogenic?

Previous treatment to the cervix can result in scarring of the cervix. In most cases, this scarring is minimal and the cervix and all that may be visible is a circumferential rim of slightly raised pale tissue around the os (Fig 24a). In cases where larger amounts of tissue have been removed or ablated, more distortion may occur (Fig 24b). However in about 1%-2% of patients, the cervix may become stenotic and disrupt menstrual flow, causing dysmenorrhoea and in some cases of complete stenosis, a haematometra. Endometriosis of the cervix is another recognized complication (Fig 25). Cervical stenosis tends to occur more often in patients who are amenorrhoeic e.g. polycystic ovarian disease, breastfeeding or postmenopausal.

Figure 24a: Appearance of the cervix 6 weeks after a diathermy loop excision procedure for CIN. There is a pale raised area of scar tissue surrounding the cervical os.

Figure 24b: Distortion of the ectocervix after a large cone biopsy for CIN3.

Figure 25: A stenotic cervix following treatment for CIN. The os is marked (1). There are a few visible endometriotic spots marked (2).

SUMMARY

The appearance of the cervix can vary widely, depending on the age, parity and estrogen status of the patient. In many cases, the seemingly abnormal looking cervix may be due to benign conditions such as an ectropion or nabothian follicles. Infective processes such as candidiasis, trichomonas, bacterial vaginosis and herpes simplex are another cause and generally respond well to appropriate treatment. Smooth lumps on the cervix e.g. polyps, nabothian follicles and cervical fibroids tend to be benign whereas irregular lumps, especially if there is surface erosion and contact bleeding, should raise the suspicion of malignancy.