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Colposcopy: a closer look into its past, present and future

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Colposcopy, first described by Hans Hinselmann in 1925, revolutionised the screening and treatment of premalignant conditions of the cervix. Although colposcopy became common in gynaecological practice across Europe, Southern America and Australia by the 1950s, its uptake in the Anglo-Saxon community was slow. This may have been partly because British gynaecologists ostracised the controversial Hinselmann for his wartime activities; however, the lack of instructive material at that time may have also contributed (Fusco et al. *JPM* 2008;2:19–23). The first publication on colposcopy in *BJOG* was by AF Youssef (*J Obstet Gynae Br Emp* 1957;64:801–14) who conducted an extensive study in Egypt, describing the equipment (Figure 1), results and value of colposcopy in the recognition of cervical pathology. It was only in the 1960s, more than 30 years after its invention, that colposcopy was practiced in the British Isles and shortly thereafter colposcopy became widely accepted as a diagnostic aid in cervical cancer screening programmes worldwide.

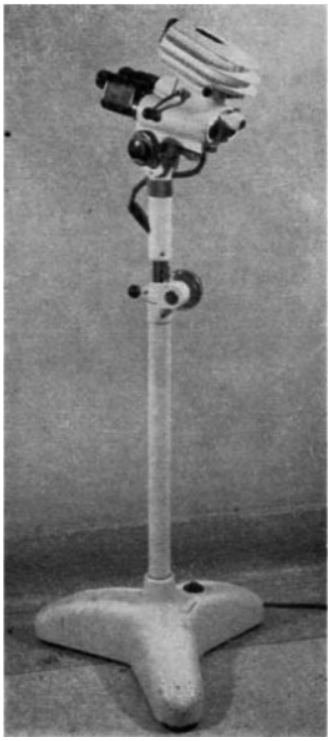

Figure 1. The colposcope as described by AF Youssef. The machine was described as a modern development of the original apparatus invented by Hinselmann. It allowed binocular examination of the cervix under magnification with the attachment of an ultraviolet light source and camera to allow colpophotography (reproduced from *J Obstet Gynae Br Emp* 1957;64:801–14).

As colposcopy is a visual diagnostic tool, it is unsurprising that the method has recognised limitations, especially inter-observer variability. The Reid's Colposcopic Index in the late 1980s provided an objective score to evaluate the severity of cervical lesions and is currently the most widely accepted scoring. The Swede score, developed only a decade ago, recognises lesion size as a further parameter and, in comparison to the former, may be more useful in low-resource settings (Ranga et al. *J Low Genit Tract Dis* 2017;21:55–8). Additionally, the subjectivity of colposcopy calls for advances in technology and qualitative measurement. Digital colposcopy is an example of this advancement, encompassing traditional colposcopy equipment with any form of digital enhancement. Louwers et al. (*BJOG* 2010;118:309–18) studied dynamic spectral imaging colposcopy, which quantified visual features of cervical intraepithelial neoplasia after application of acetic acid. This showed increased sensitivity in the detection of high-grade cervical lesions both as a stand-alone investigation and in combination with conventional colposcopy. However, this study used the dynamic spectral imaging colposcopy machine for standard colposcopy examination, again relying on a trained colposcopist's observation. Furthermore, these technologies have only been used on a small scale with limited study, so their role in current practice is not well defined.

So, what next for colposcopy and cervical cancer screening? The current context of cervical cancer screening is focused on two concurrent developments: human papillomavirus (HPV) DNA testing and HPV vaccination. Cruickshank et al. (*BJOG* 2017;124:1386–93) conducted an observational study across colposcopy clinics in Scotland that showed a reduction in the prevalence of high-risk HPV-16 and significant cervical intraepithelial neoplasia (CIN2+) in immunised women. Interestingly, there was also a reduction in the positive predictive value of colposcopy in the vaccinated group, highlighting a possible need for reassessment of the screening guidelines to account for HPV vaccination, which would be a consideration for similar guidelines worldwide. Still a visual diagnostic tool after more than 60 years of use, colposcopy remains integral to cervical cancer screening and it is hoped that future technological advances will reduce the reliance of the human eye for pattern recognition of cervical pathology.

Disclosure of interests

None declared. Complete disclosure of interests form available as supporting information. ■