

Increased detection of cervical intraepithelial neoplasia (CIN) by electrical impedance spectroscopy (EIS - ZedScan) to improve clinic capacity by reducing the need for return visits

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Introduction

As the prevalence of cervical disease (CIN2+) falls, it reduces the performance of colposcopy. Adjuvant technologies may help with increased detection of CIN2+. The move to primary HPV (human papillomavirus) screening will lead to new pathways in colposcopy, with the sensitivity of HPV testing increasing referrals to colposcopy, thus affecting clinic capacity.

Objective

To establish the performance of colposcopy with EIS (ZedScan) in women referred to colposcopy.

Methods

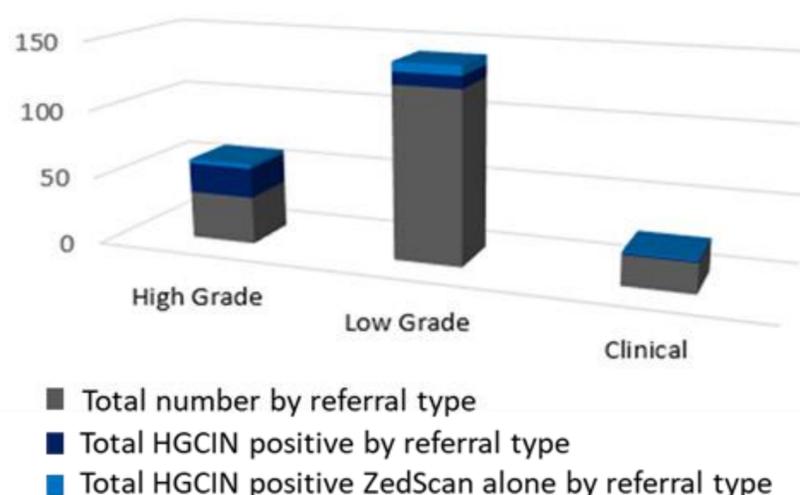
A prospective cohort study of women undergoing both colposcopic and ZedScan examination at a single colposcopy clinic. ZedScan detects changes in tissue impedance indicative of dysplasia which are independent of aceto-white change.

Results

- 183 patients underwent both colposcopic and ZedScan examinations. The referral population included High Grade cytology 35 (19%), Low Grade cytology 126 (69%) and clinical referrals 22 (12%)
- 32 (18%) cases of HG disease (CIN2+, HGCGIN) were found, 22 cases associated with HG cytology, 9 with LG cytology, 1 with no cytology. ZedScan detected 29/32: sensitivity 91%.
- Colposcopic Impression detected 18/32 as high grade: sensitivity 56%.
- An additional 11 cases of high-grade disease were identified as positive by ZedScan where colposcopic impression was low grade or normal.
- Use of ZedScan increased detection of CIN2+ from 18 to 29 (61%).
- All cases of high-grade disease were detected by standard colposcopic practice plus ZedScan: sensitivity 100%.

Referral Types	% of Study Cohort
High Grade cytology	19% (35)
Low Grade cytology	69% (126)
Clinical	12% (22)

Detection of High-Grade CIN by Referral Type



The use of ZedScan in routine colposcopy practice increases the detection of CIN2+. ZedScan can detect more high-grade disease, reduce unnecessary biopsies and improve health economics. Colposcopy and ZedScan combined increases sensitivity so disease can be confidently ruled out and women can be returned to routine surveillance/screening.

Figure 1: The ZedScan handset, used to make the EIS measurements.



Results	183 Patient Study
Increase in high grade disease detected with ZedScan	61% (18-29)
Additional disease detected in low grade and non-cytology referrals with ZedScan	400% (2-10)
Missed HG disease – ZedScan	3
Missed HG disease – Colposcopic Impression	14
Total biopsy-proven high-grade disease	32
Prevalence of disease	18%

Conclusions

ZedScan identified additional cases of disease in all referrals which may have been missed by colposcopy alone. ZedScan increased detection in low grade referrals from 2 to 9. No women in the study population underwent see and treat but 12 women who were identified as suitable for treatment at first visit by ZedScan had CIN2+ on biopsy. Reduction in follow up appointments increases capacity for new referrals from primary hrHPV screening.