Colposcopy Telemedicine: Live Swede score versus Static Swede score and accuracy in detecting CIN2+

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Disclosures

One of our authors invented the colposcopic device used in the study

Telemedicine

- Increased access to specialized care
- Decreased costs to patient
- Decreased treatment costs at earlier stage of disease
- Overall increased socioeconomic returns

Nelson 2015

Is successfully used in other areas of medicine.

Toten 2016

Aim

To evaluate the diagnostic accuracy of live colposcopy Swede score assessment versus static image Swede score assessment in detecting CIN2+ lesions on the cervix

Methods:

94 VIA or HPV positive women

Assessed with mobile colposcope

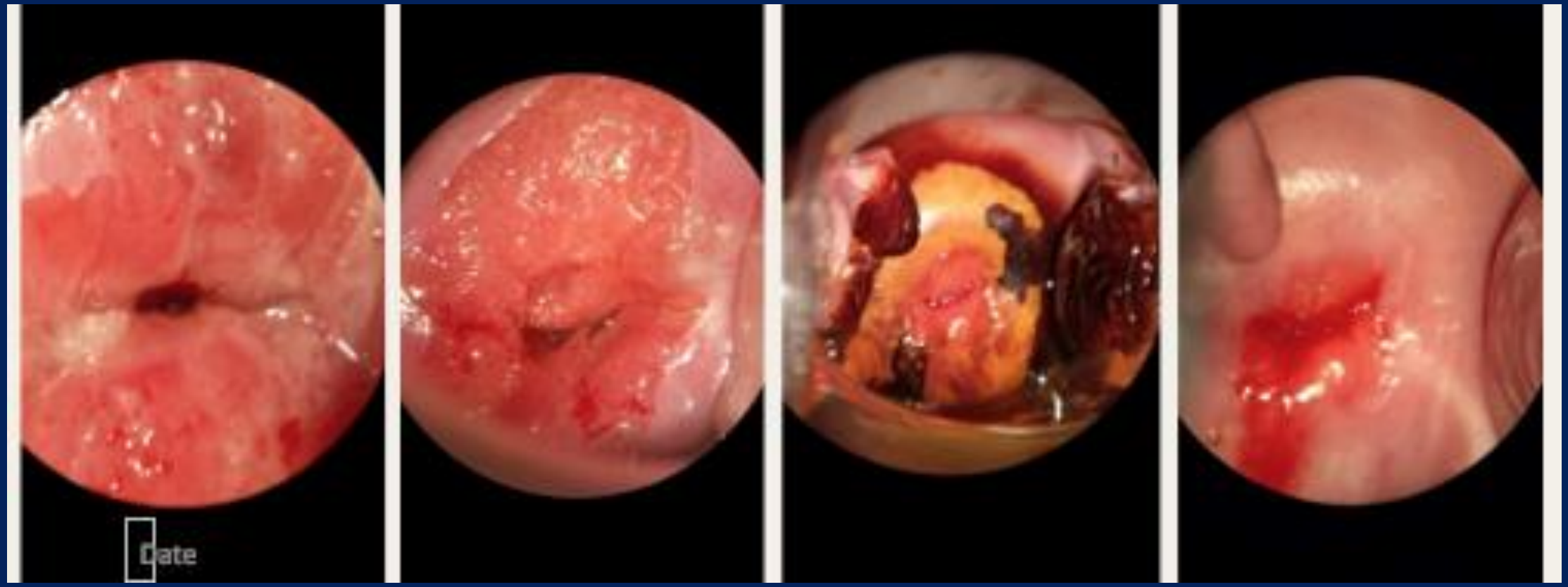
Images captured smartphone Samsung Galaxy S3

Reference standard: cervical biopsy

1 Live examiner: expert colposcopist

6 Static images: expert and junior colposcopists

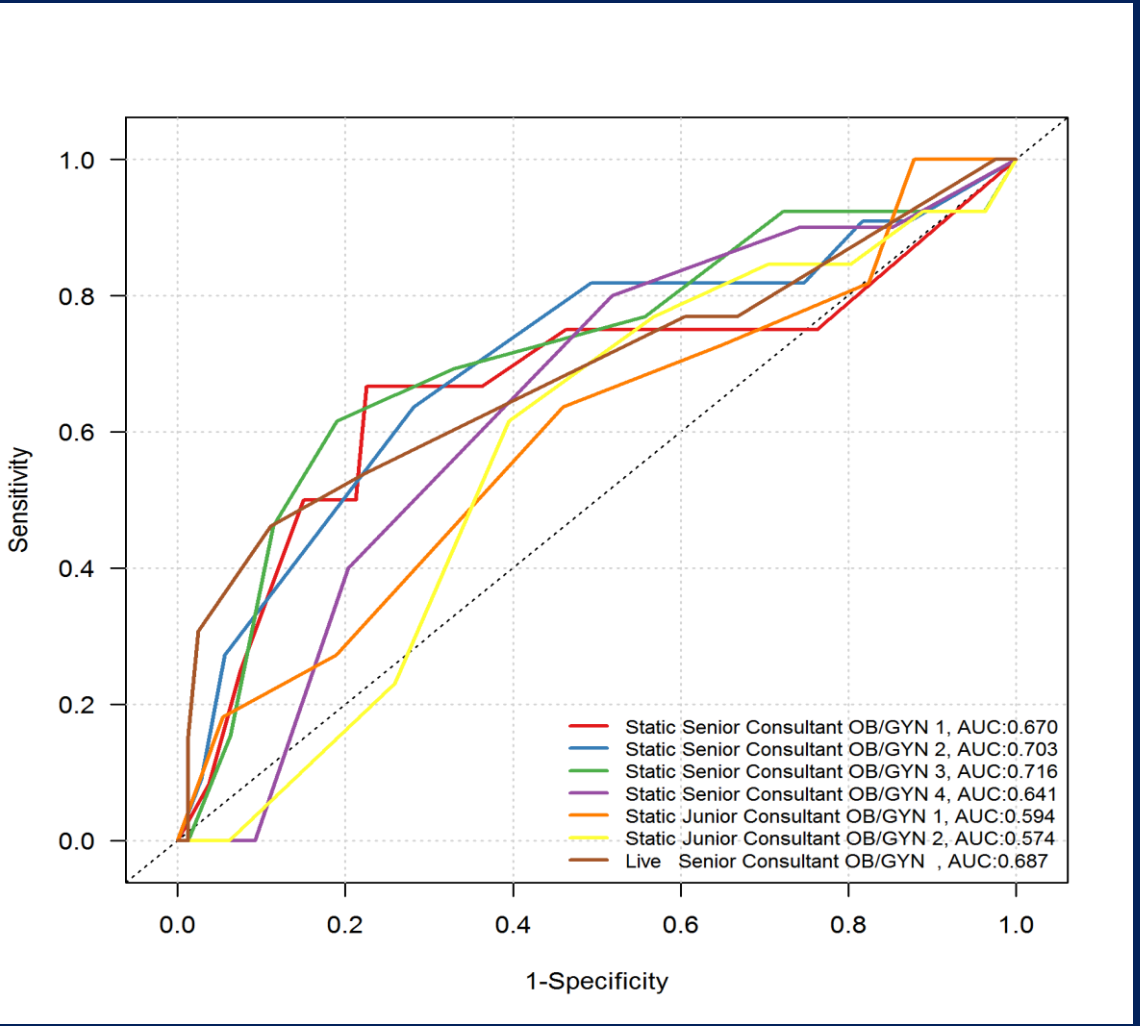
Telecolposcopy images



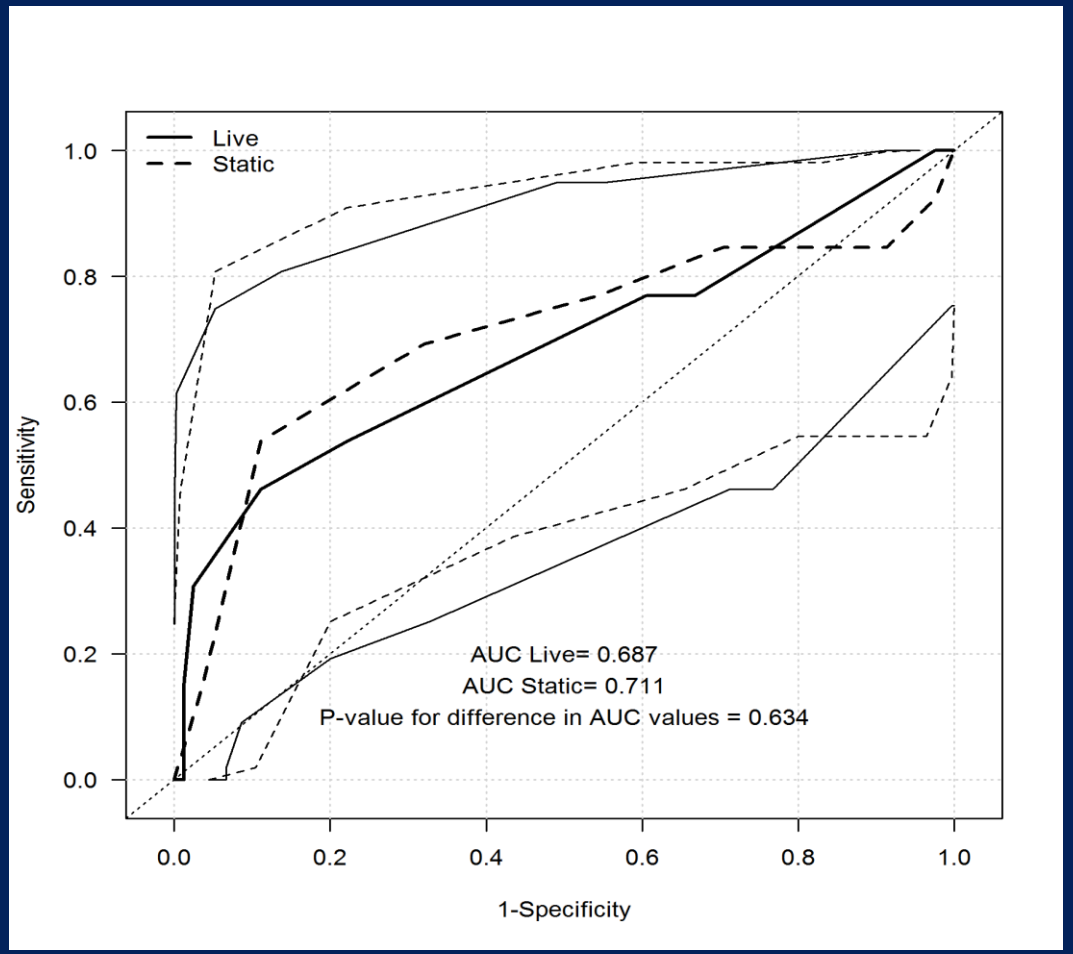
Clinical findings

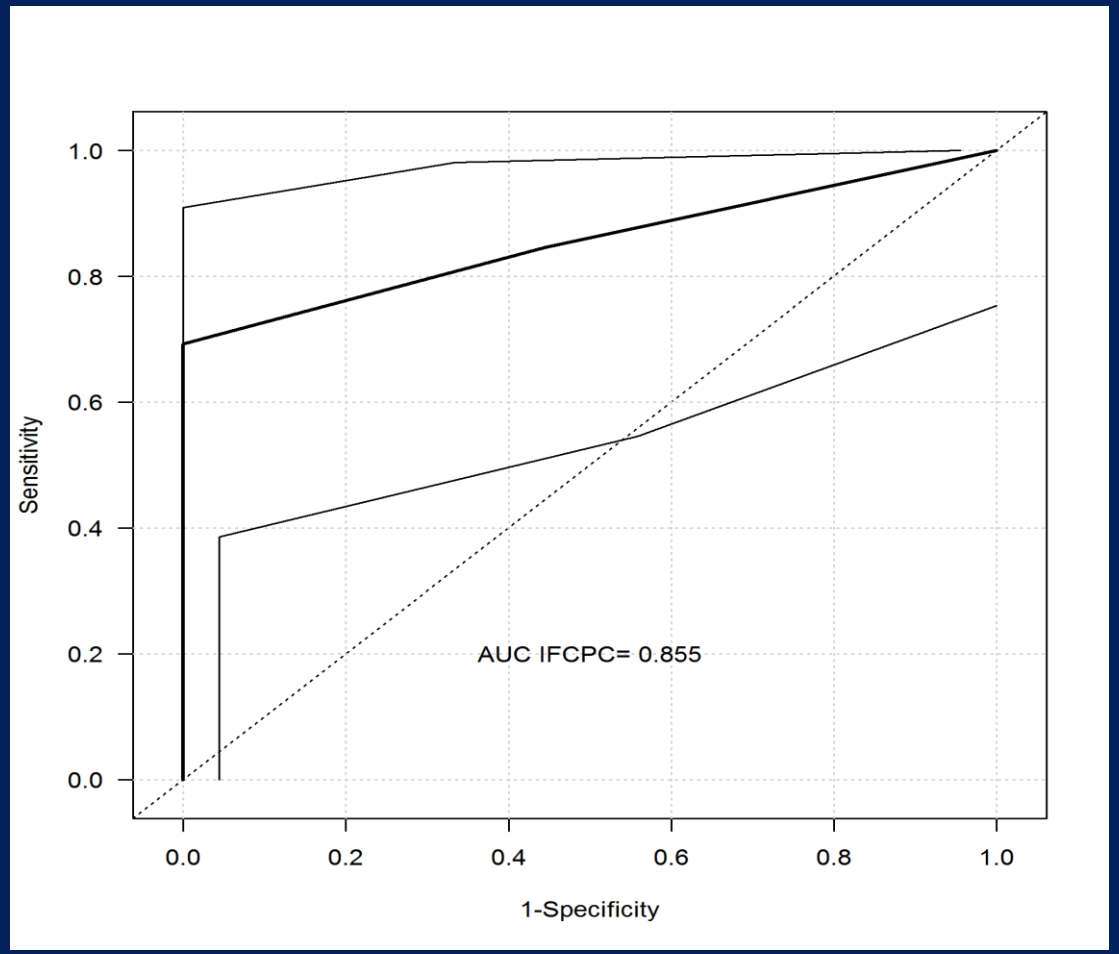
	VIA negative n=28	VIA positive n=66	Total n=94
Age, mean (sd)	41.1 (7.8)	35.0 (5.7)	36.8 (6.9)
HPV positive	24 (92.3%)	10 (23.8%)	34 (50.0%)
Biopsy			
Benign	22 (78.6)	40 (60.6)	62 (66.0)
CIN1	5 (17.9)	14 (21.2)	19 (20.2)
CIN2	1 (3.6)	7 (10.6)	8 (8.5)
CIN3	0 (0.0)	4 (6.1)	4 (4.3)
ICC	0 (0.0)	1 (1.5)	1 (1.1)
IFCPC			
Normal	21 (75.0)	26 (39.4)	47 (50.0)
Minor	6 (21.4)	32 (48.5)	38 (40.4)
Major	1 (3.6)	8 (12.1)	9 (9.6)

ROC: prediction of CIN2+



Live Vs Static





Results

No difference in the detection of CIN2+ lesions between live and static assessors

(AUC= 0.69 and 0.71, p=0.63)

Different thresholds:

Swede score		Sensitivity	Specificity	PPV	NPV
4	LIVE	76.9% (46.2-95.0%)	37.0% (26.6-48.5%)	90.9% (75.7-98.1%)	16.4% (8.2-28.1%)
8	LIVE	30.8% (9.1-61.4%)	97.5% (91.4-99.7%)	89.8% (81.5-95.2%)	66.7% (22.3-95.7%)
4	STATIC	84.6% (54.6-98.1%)	29.6% (20.0-40.8%)	92.3% (74.9-99.1%)	16.2% (8.4-27.1%)
8	STATIC	15.4% (1.9-45.4%)	96.3% (89.6-99.2%)	87.6% (79.0-93.7%)	40.0% (5.3-85.3%)

Closer correlation observed by expert static evaluators

Discussion

Smartphones as an adjunct to colposcopy

Ricard-Gauthier *J Low Genit Tract Dis.* 2015

Interobserver agreement (or *dis*-agreement!!)

Massad *Obstet Gynecol* 2008

Acetowhite: real Vs static

Lui *J Low Genit Tract Dis.* 2015

Scoring tools: Swede score Vs Ried score

(Threshold 4: sensitivity: 100% vs 96.9%, specificity: 88.4% vs 95.3%)

Ranga *J Low Genit Tract Dis.* 2016

Conclusion

Live colposcopy and static images were equally sensitive and specific for detecting significant precancerous lesions.

Interobserver disagreement exists but it doesn't impact ability to diagnose significant lesions

Larger studies are needed, however telemedicine may help to improve capacity for colpscopy in areas where the service has not been available.