Establishing pain scales for gynecologic procedures using a novel cVAS app

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Introduction

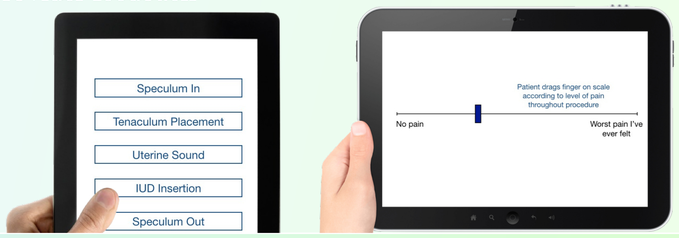
- Office-based gynecologic procedures are more convenient and cost-effective, but pose issues for pain management[2]
- Research on pain interventions disagrees, so there is no consensus for most effective method[1]
- Disagreement may be due to inconsistent implementation of pain measure tools that cannot consider pain duration
- The cVAS app measures pain continuously, and produces an AUC score to capture pain more comprehensively
- Use of the cVAS app in clinical research will allow for better pain management options, improving patient comfort and reducing barriers to care[3]

Objectives

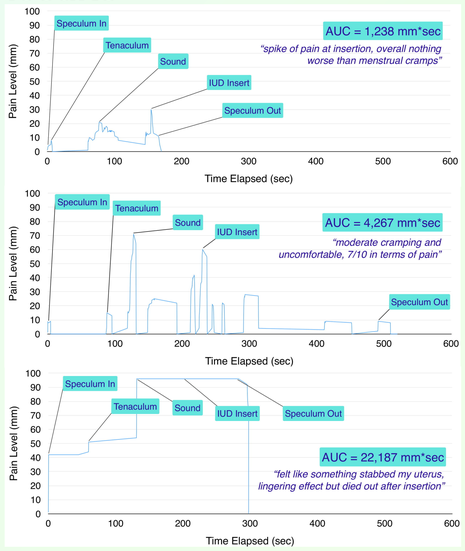
- Assess accuracy of cVAS thru comparison to pain measures
- Assess feasibility and acceptability of cVAS tool in research
- Obtain suggestions for app improvement from patients

Materials & Methods

- IUD insertion, EMB, & surgical abortion patients
- Pre-procedure: demographics, medical history, pain-related information, learning cVAS app
- Procedure: 2 synchronized tablets recording pain on 100-mm scale as function of time
- Post-procedure: additional pain measures, patient and provider feedback



Results



Figures 1-3. Individual IUD patients' AUC scores, qualitative patient pain descriptions, and cVAS graphs with procedural milestones mapped

Table 1. Demographic Characteristics of IUD patients (n=11)

Characteristic		Mean (SD) n (%)
Age (years)		28.7 (4.8)
Ethnicity	Hispanic/Latino	2 (18.2)
	Not Hispanic/Latino	9 (81.8)
Race	White/Caucasian	2 (18.2)
	Asian	5 (45.5)
	Native Hawaiian/Pacific Islander	2 (18.2)
	Other	1 (9.1)
	Multiracial	1 (9.1)
Marital Status	Single, no partner	2 (18.2)
	Single, with a partner	4 (36.4)
	Married	5 (45.5)
Education	graduate high school or high school equivalency	1 (9.1)
	some college	4 (36.4)
	graduated college	4 (36.4)
	post-graduate degree	2 (18.2)
Parity	0	6 (54.5)
	1	2 (18.2)
	2+	3 (27.3)
BMI* (kg/m		24.7 (6.7)

Table 2. Pain ratings of IUD subjects n=11

Age (years), Parity	Procedure Duration (m:ss)	Max Pain (mm)	IUD Insert Pain (mm)	Paper VAS Score (mm)	Likert Score	Description of Worst Pain	Most Painful Step	Provider-Rated Pain (mm)	AUC* (mm*sec)
24, nullip	2:19	12	9	6	2/5	"was tolerable, not too bad, period cramps are worse"	Tenaculum	35	633
25, nullip	2:47	30	30	7	2/5	"spike of pain during insertion, overall nothing worse than menstrual cramps"	IUD insertion	39	1,238
28, multip	3:25	66	66	78	4/5	no response	Tenaculum	72	12,903
32, multip	4:26	38	29	22	2/5	"just a little pressure"	Tenaculum	19	7,980
19, nullip	3:47	73	73	38	2/5	"worst felt like bad period cramps, like having to poop, no stinging, but sore for a second during the uterine sound, actual IUD wasn't bad"	Uterine sound	27	7,915
28, multip	3:13	23	18	17	2/5	"worst pain was tenaculum 3/10, felt like something pinching inside"	Tenaculum	46	2,377
34, multip	2:21	56	56	55	2/5	"a little scary, but you get used to the pain, worst felt like a bee sting"	Uterine sound and IUD insertion, same	34	5,600
28, nullip	4:58	96	96	63	2/5	"felt like something stabbed my uterus, lingering effect but died out after the insertion"	Uterine sound	36	22,187
35, multip	2:36	41	41	35	2/5	"worst pain was the IUD insertion, cramping like normal period"	IUD insertion	31	3,704
31, nullip	2:30	66	47	38	2/5	"never felt pain like that before, worst felt like all my pelvic muscles contracted at once"	Speculum removal	35	2,523
31, nullip	8:40	71	60	38.6	2/5	"moderate cramping and uncomfortable, in terms of pain 7/10"	Uterine sound (2nd was tenaculum)	53	4,267

Figure 4. Paper-based overall pain, maximum pain, IUD insert pain, and AUC pain scores of IUD patients, by increasing AUC (n=11)

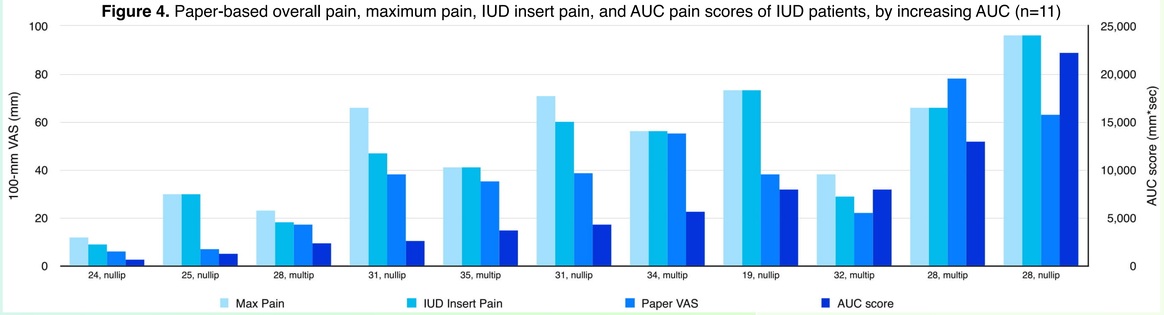


Table 3. Feedback on cVAS app feasibility and acceptability

Feedback prompt	Participant response	n (%)
ease of learning: Likert	"very easy to learn"	11(1.00)
ease of learning:	"simple/easy/straightforward"	5 (0.45)
Open-ended	"helpful"	2 (0.18)
ease of use:	"simple/easy/straightforward"	6 (0.55)
Open-ended	technical glitch occurred	3 (0.27)
	awkward/hard to hold tablet	4 (0.36)
	keeps pain relative, "not psych yourself out"	2 (0.18)
	(good) distraction (1 provider recorded)	1 (0.09)
disruptiveness: Likert	"not at all disruptive"	11 (1.00)

Conclusions & Discussion

- Comparing the cVAS AUCs to the traditional VAS and other pain measures support the new tool's accuracy
- Both patients and providers highly rated the app's feasibility
  - easy to learn, easy to use, and not disruptive
- However, the subject population was small, < 35, and educated
- We encountered some issues during procedure: technological glitches, difficulty holding tablet, forgetting to mark pain
- Internet connectivity prevented multiple participants from completing cVAS data collection
- Raw data requires extra reformatting, and AUC data interpretation may be difficult for providers and researchers
- Surprisingly, the app may function as pain management, since patients report the app is a good distraction from pain
- Overall, preliminary findings are positive for successful use and implementation of cVAS app for gynecologic procedures

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