

Introduction

Manometry is a procedure that examines coordinated muscle movements of the esophageal (EM) or anal (AM) and rectal muscles. EM may be appropriate in patients complaining of heartburn, dysphagia, or regurgitation to help determine causality. Similarly, AM may be appropriate in patients complaining of constipation or fecal incontinence. The use of virtual reality (VR) is largely unexplored in manometry, but similar studies have shown benefit to patient perception and pain scores in pre-surgical patients, or those undergoing colonoscopy or MRI.

Methods

- Patients scheduled for EM or AM with a local gastroenterologist were the target population of our research.
- Participating patients were randomized via Google's RNG into control group (1) or VR group (2).
- Patients in the VR group observed intraprocedural calming, oceanic imagery. Those in the control group underwent the current standard of care.
- Both groups answered two pre-procedural and five post-procedural questions over the phone.
- Data was analyzed by an online statistical calculator to run an unpaired t-test.



Figure 1: Pico G2 4K Headset



Figure 2: Calming oceanic imagery seen by patients

Results

Characteristics	Control Group	VR Group
N	19	18
Age	55 ± 14	53 ± 17
Female Sex	14 (74%)	14 (78%)
Esophageal Manometry	13 (68%)	9 (50%)
Anorectal Manometry	6 (32%)	9 (50%)

Table 1: Patient demographics by grouping

Data Point	Control	VR	95% CI	p-value
Q1: Pre-Anxiety	6.5	2.5	1.88 - 5.73	0.0003
Q2: Pre-Time	5.1	4.6	-1.72 - 2.71	0.6538
Q3: Post-Time	5.0	3.7	-1.29 - 3.96	0.31
Q4: Post-Unpleasant	6.0	3.9	0.10 - 4.12	0.0403
Q5: Post-Intensity	5.7	4.0	-0.44 - 3.81	0.1164
Q6: Post-Avg.	4.4	2.7	-0.01 - 3.52	0.0514
Q7: Post-Anxiety	4.9	5.9	-2.54 - 2.45	0.968

Table 2: Results of numeric rating scale responses by grouping
 Values reported are based on a scale of 0-10

- For various reasons, 10 of the 18 patients (55%) in the VR group did not start/complete the procedure with the use of a headset.
- Four patients in the VR-group reported instances in which the VR-headset lost focus from the image.
- Pre-procedural anxiety scores were statistically higher in the control group when compared to those of the VR group.
- No other measured data was statistically significant between the two groups.

Discussion

- Our data shows no significant benefit to using calming imagery via VR headsets in manometry, a finding similar studies did not observe.
- There were many concerns from the nursing staff regarding the use of a VR headset in EM due to its impact on the ability to insert the manometry catheter.
- Nursing staff also verbalized displeasure with the extra burden of placing a headset on the patient.
- Average scores were generally lower for the VR group, although not statistically significant.
- When comparing control data to patients who were able to use the VR (although for some blurry), the results were the unchanged.

References

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