

Virtual Reality After Surgery (VRAS)

A Qualitative Analysis

Caroline Buse, MM; Brian Specht, MD; Janey Phelps, MD; Concetta Lupa, MD

Introduction

- Many child life services and post-anesthesia care units (PACU) offer iPads to patients perioperatively to manage anxiety and pain through distraction (1-3)
- Virtual reality (VR) has also been shown to safely and effectively distract patients from minor procedural pain

Aim

- To establish the:



safety



feasibility



acceptability

of VR as a complement to pharmacological analgesia in a PACU, and compare it to a current standard distractive device (SD)

Methods

- Ongoing single-blinded randomized controlled study comparing VR to iPad use in the PACU.
- 150, 7-18 yo pediatric patients at study completion [currently enrolled, n = 99; interim analysis, n =78]
- Randomized into two arms by surgery type and stratified by age and gender.

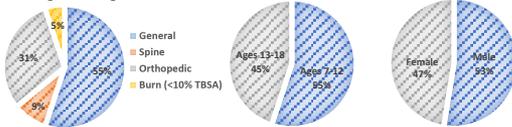


Fig 1-3. Enrollment by Surgery Type, Age, and Gender (n=78)

- **Exclusion Criteria:** Seizures, developmental delay, head or neck surgery, vision/hearing loss, regular opioid use, or administered ketamine
- **VR Arm:** headsets with preselected, immersive, and exploratory virtual environment
- **Control Arm:** iPads with variety of popular games

VRAS may be a feasible alternative to standard distraction therapy without serious adverse events in the immediate postoperative period.

Both patients and parents find it to be effective in managing pain.



Fig 4. Participant playing with VR in PACU post-procedure



Fig 5. Nature Treks VR (Greener Games) VR application used in VRAS

Guardians: "Before the VR, she was squirming and talking about pain; however, immediately as she started playing she was relaxed and laughing and didn't talk about her pain at all."

"She was shaking- her arms, lip quivering, teeth chattering, until she put on the VR device."

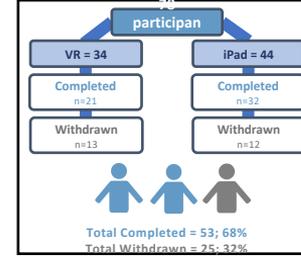
"She loved participating in the study and it was an integral part of creating a positive surgical experience. She...wished she could've had the game more throughout her stay at the hospital and to also take it home when recovery was... hardest.

Patient: "The VR really did take my mind off of it ...I was crying a lot after the surgery and it helped distract me a lot even though I was emotional."

References:

1. PMID 29053848
2. PMID 29737632
3. PMID 29155488

Results



- No reported adverse reactions such as dizziness, nausea, or vomiting
- Withdrawal due to disinterest was equal in both groups (n=2)
- 60% of withdrawals occurred due to post-anesthesia fatigue

Fig 6. Description of Cohort

Feedback given post-intervention was positive for both groups, but guardians went into greater depth when speaking about the VR (average word count: VR=26, SD=8).

Conclusions

- Although both iPad and VR distraction methods were well tolerated and received, qualitative measures of device acceptability, such as unstructured feedback, may suggest that patients and their guardians found the VR more beneficial as a distraction method.

Next Steps

- If VR continues to be well tolerated through study completion (n=150), the study team will work towards integrating this technology as a standard distractive device for postsurgical pain management.
- In order to further explore the clinical impact of this technology in a PACU setting, the study team will build upon initial findings of safety, feasibility, and acceptability through a secondary clinical trial with more rigorous inclusion criteria that enable standardization of analgesia and direct, quantitative comparison between two arms.