Enhanced Preoperative Pancreatoduodenectomy Patient Education Using Mixed Reality Technology: A Randomized Controlled Trial

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INTRODUCTION

- HoloAnatomy (Case Western Reserve), an extended reality (XR) software, allows visualization of a customized, 3D human model and presentation while the user's surroundings remain visible
- HoloAnatomy allows for interactive learning for multiple simultaneous users and has been shown to increase long-term information retention among medical students[1]

AIM Explore the effectiveness of XR during informed consent discussions

METHODS

Population
- Presented with a resectable pancreatic head mass between February and May of 2023
- >18 years old, ≥ English proficiency, no significant hearing/visual impairments

Treatment Arms
- Controls: standardized pancreatoduodenectomy discussion with physician-drawn diagrams
- Intervention: the same standardized discussion while using and XR device with HoloAnatomy (Figure 1)

Measures
- All patients completed pre- and post-discussion 5-point Likert scales evaluating their perceived understanding regarding their diagnosis and treatment plan

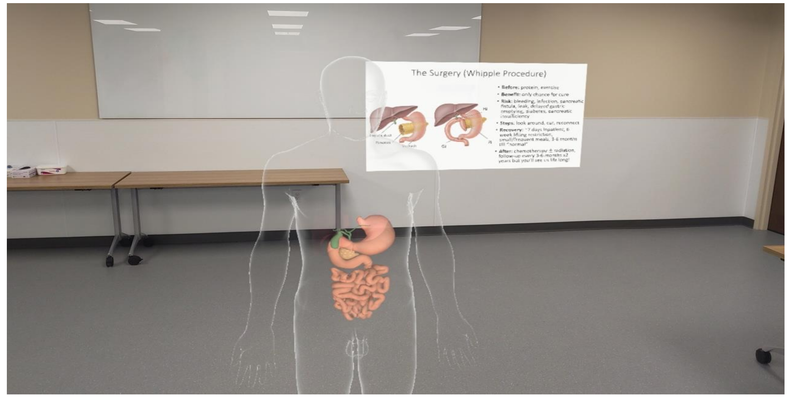


Figure 1. An example of the HoloAnatomy visual experience

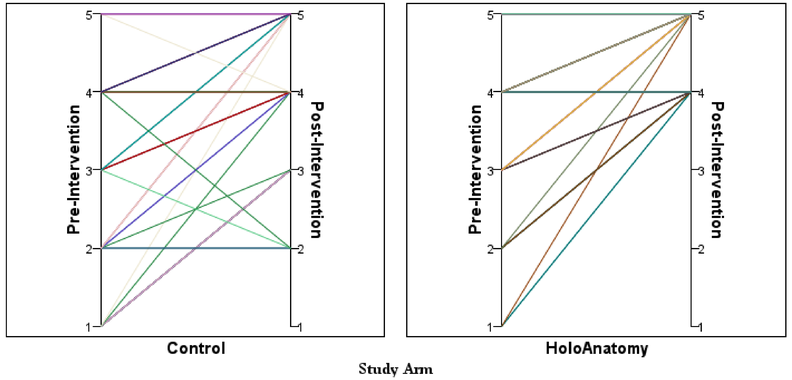


Figure 2. Parallel graph displaying the pre- and post-intervention survey question responses of participants

RESULTS

- Ten patient were included (83% participation); 6 within the XR arm
- Median age and education level was 65.5 years and a college degree, respectively
- Figure 2 displays the survey results
- The overall median survey response value improved from 3 to 4 amongst controls and from 4 to 5 within the XR cohort
- A post-intervention response of 4 was 2.5x more likely to be associated with XR use ($p < 0.001$)
- XR users reported a higher degree comfort with surgery ($p = 0.114$)

CONCLUSIONS

- HoloLens may be associated with an improved level of patient understanding and comfort with surgery compared to the standard discussion with physician-drawn diagrams
- Patients expressed a high-degree of general satisfaction with XR technology use



REFERENCES

Stojanovska M, Tingle G, Tan L, et al. (2020) Mixed Reality Anatomy Using Microsoft HoloLens and Cadaveric Dissection: A Comparative Effectiveness Study. Med Sci Educ 30:173–178. https://doi.org/10.1007/s40670-019-00834-x