Use of Virtual Reality to Improve Patient Care for Diverticular Disease

Michael L. Horsey MD, Salini Hota, Matthew Ng, MD, Vincent Obias MD

Walter Reed National Military Medical Center

THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, DC

Introduction/Objective

The decision to manage complicated diverticulitis surgically is dependent on severity of disease as well as patient factors.

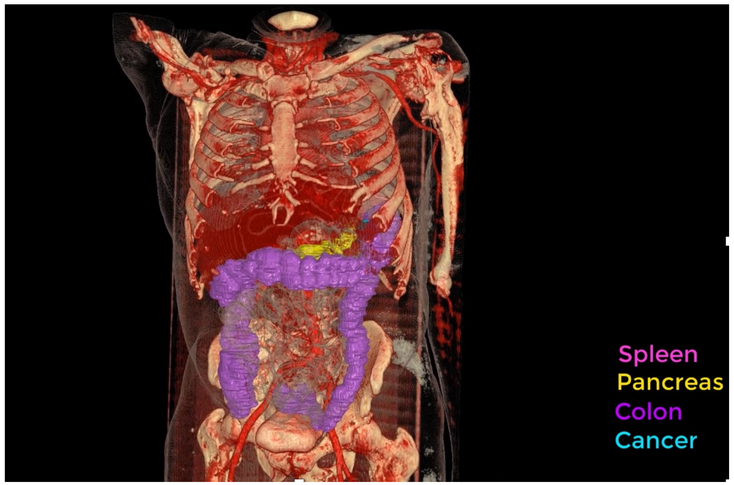
Patient literacy is varied and the gap in understanding could be bridged with focused educational efforts.

The virtual reality interface opens up the option to create a personalized and interactive demonstration that can be utilized in an office-based setting.

The objective of using virtual reality software to depict patient conditions is to improve anatomic as well as physiologic understanding of the disease process.

Methods

- Patients with complicated diverticulitis that presented to a colorectal clinic between September 2019 and April 2021 with either CT or MRI showing complicated diverticular disease
- Application of virtual reality software to the 2-dimensional imaging allowed us to create 3-dimensional reconstructions that are more intuitive and user-friendly to share with patients that is interactive and personalized to each patient
- The clinician then used 3d imaging in the office to show patient's their pathology as well as describe the approach to treatment strategies such as percutaneous drain placement or bowel resection.



Results

- A total of 25 patients participated and the virtual reality software was used to highlight pathology on their personal scans. The patients completed a brief survey at the conclusion of the visit.
- Patients ages ranged from 42 to 71 years with an average age of 53 years.
- After working with the software, the patients reported an overall increase in understanding regarding their disease process and anatomy, averaging 4.3 and 4.6 points higher (on a 10 point scale with one being the lowest and 10 being the highest) than their pre-intervention scores, respectively.
- These differences were statistically significant with p-values of 0.003 (for disease process) and 0.001 (for anatomy).

Conclusions

- Virtual reality software can be applied to patient imaging to improve patient literacy on their disease process and anatomy.
- For diverticular disease, our preliminary results indicate an overall improvement in patient literacy with the use of this software.
- This can be implemented in a clinic-based setting and is a personalized approach to patient education.