

Impact of portable artificial vision device (OrCam Read) on vision-related quality-of-life in patients with low vision due to TBI

Laurel Barrios, MSII
University of California Davis

Introduction

A traumatic brain injury (TBI) is an injury to the head that disrupts the function of the brain. Visual dysfunction occurs in over 70% of patients following a TBI. The commonly reported symptoms include photophobia, blurred vision, and visual field defect. Very limited evidence of vision-related rehabilitation is available.

OrCam Read is a handheld artificial vision device comprised of a “smart” camera that reads texts from both printed surfaces and digital screens. It uses a laser to indicate reading and a camera captures an image and converts the text into audio, which is transmitted through the device’s speaker or Bluetooth devices.

Hypothesis

A one month trial with a portable artificial device will provide patients with low vision and or a visual field defect secondary to a TBI improvement in their quality of life.

Methods

- Prospective observational study
- Cohort of UCD TBI clinic patients followed for one month
- Data collected by ETDRS, daily function task tests, NEI-VFQ-25 and 10-item neuro-ophthalmic questionnaires

Main Finding:
In a cohort of patients following traumatic brain injury (TBI) OrCam Read may provide improvement in the quality of life for patients with low vision and or visual field defect secondary to TBI.

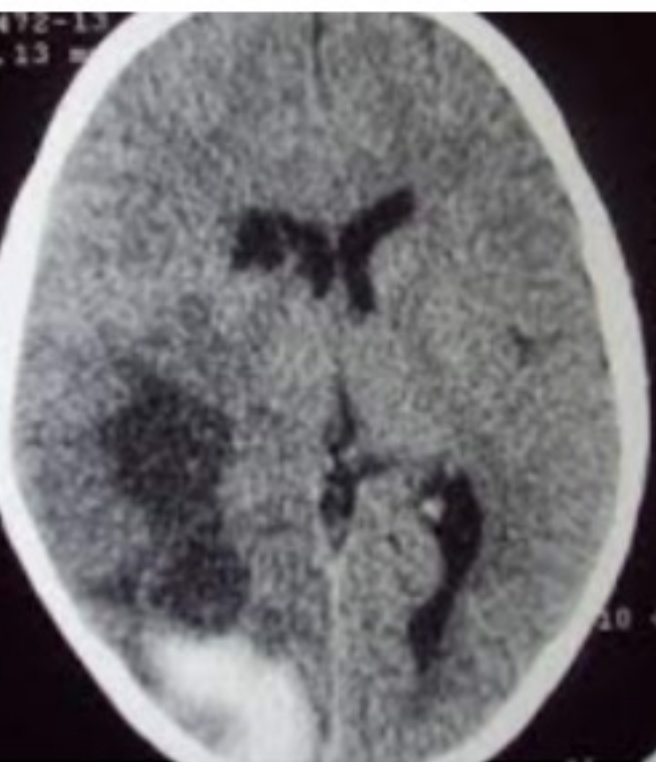
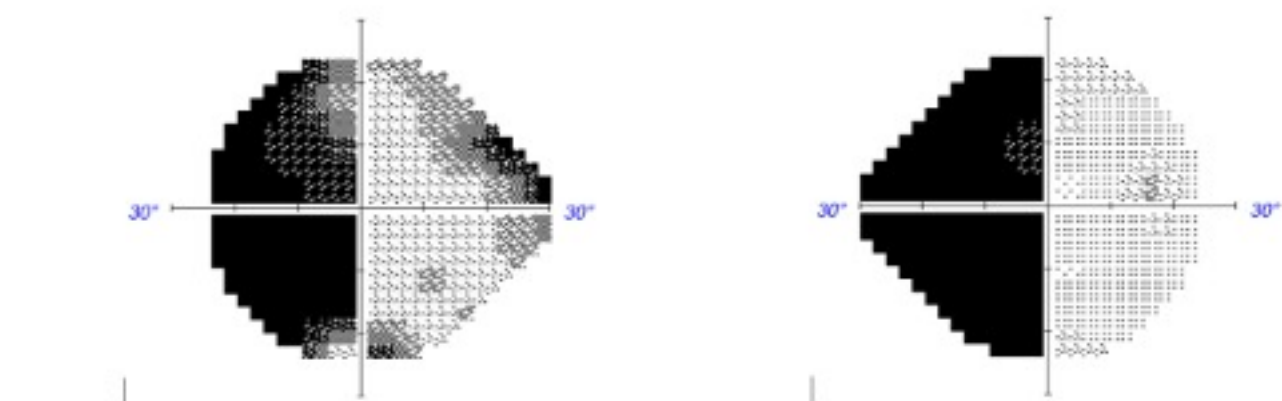
Results

NEI-VFQ-25 and function tests, a measure of quality of life, revealed improvement from baseline after a one month trial with the portable artificial device.

Item No.	Description	Subject 1	
		Study 1	Study 2
1	Reading a printed letter. Patients are given an envelope with a single-page letter enclosed and asked to read it aloud.	0	1
2	Reading a menu. Patients are given a menu from a local restaurant and asked to read it aloud and make a selection.	1	1
3	Reading a newspaper article. Patients are given a piece of newspaper and asked to read aloud a specific article.	0	1
4	Reading an email message displayed on an electronic device. Patients are handed a device and asked to read aloud the content of the email.	1	1
5	Reading a text message on the mobile phone. Patients are handed a smartphone and asked to read aloud a text message displayed on it.	0	1
6	Reading signs on the wall. Patients are asked to find a specific room in a hallway by using the room number signs by the doors.	1	1

Task Rating
Difficult/Incomplete= 0
Completed= 1

- 2018 right parieto-occipital hemorrhage (etiology uncertain)
- L homonymous hemianopia
- OD 20/25 (68 letters)
- OS 20/80 (47 letters)



Discussion

OrCam Read may provide improvement in the quality of life for patients with low vision secondary to traumatic brain injury. Further recruitment is needed to determine its overall impact for patients within this defined cohort.