THE EFFICACY OF ULTRA WIDE FIELD IMAGING IN DETECTING RETINAL BREAKS IN RHEGMATOGENOUS RETINAL DETACHMENT PATIENTS

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Introduction

Retinal breaks are a well-known complication that If left untreated can cause RD in 30-50% of eyes, leading to blindness.

RRD is the most common form of RD. which develops when there is a "break" in the NSR, which allows fluid from the vitreous cavity to enter the sub retinal space, leading to separation of the NSR from the RPE.

DFE is the gold standard for diagnosing breaks in RRD. However, this method is time-consuming, so there are new methods of examination have been used to detect breaks in RRD patients such as color fundus photographic and UWF imaging.

UWF allows for a wider field of view than traditional retinal imaging, the field of view can range from 105° to 200° when taking central images. When four gaze-steered images are obtained with central image, a field of view up to 220° means that 97% of the retina is visible.

Aim of the work

The aim of this study is to detect the efficacy of non-mydriatic ultra-wide field imaging in detecting retinal break's location in rhegmatogenous retinal detachment patients in comparison with the dilated fundus exam (DFE) using slit lamp bio microscopy.

Subjects and Methods

The study was conducted as a prospective observational study in AMUH. Adult patients only presented with acute primary RRD and clear media were included. All patients underwent pre-operative BCVA testing using old glasses, and DFE.

An Optos 200Tx UWF 200º retinal camera using green (532 nm) and red (633 nm) lasers was used to obtain fundus images in the PPG by a single photographer without pupil dilation prior to surgery and four gaze-steered images were taken during the UWF imaging examination.

A trained retina specialist masked to the clinical data independently analyzed the UWF fundus images for RRD quadrant location (nasal, temporal, superior, and inferior), macula on/off, and the presence and location of retinal breaks.

Comparison between clinical examination by slit lamp biomicroscopy and UWF imaging, in detecting numbers and sites of retinal breaks were made and results were documented.

Results

Table 1 investigates if the mean number of detected breaks is significantly higher using OPTOS compared to clinical assessment. Via means of the two-sample t-test, it appears that OPTOS indeed appears to outperform the clinical assessment and detect a significantly higher number of breaks per eye (p-value: 0.01)

Table 1: Comparing mean number of successfully detected breaks

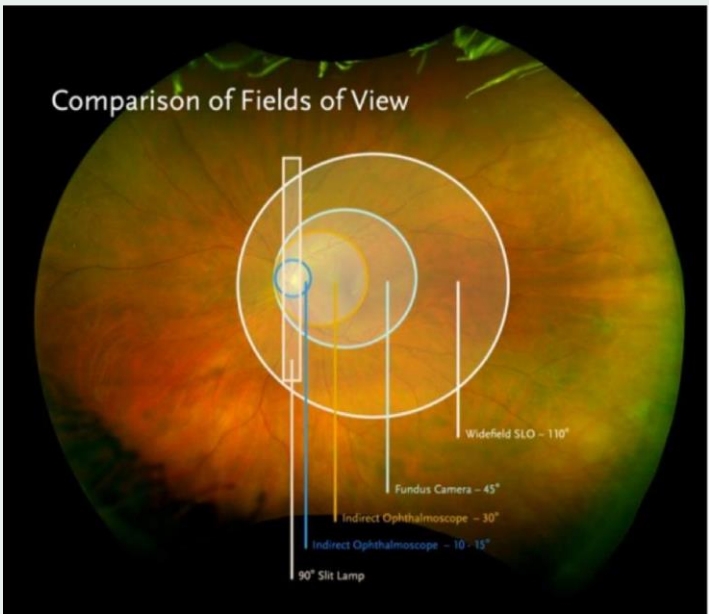| Term	Overall	Clinical	OPTOS	p-value
Number	Avg (SD) 1.3 (1.3)	1.1 (1)	1.5 (1.4)	t: 0.0109*
α = 0.05. p < 0.05*, p < 0.01, p < 0.001***				
P-values obtained from two-sample t-test (t) or Mann-Whitney test (U)				

Figure 1: comparison between field of view of 90 D lens, indirect ophthalmoscopy 10-15º, indirect ophthalmoscopy 30º, Fundus camera 45º and UWF camera 110º.

Conclusion

Optos imaging is better than DFE by slit lamp biomicroscopyin detecting retinal break's location in rhegmatogenous retinal detachment patients.