

Fundus imaging through lenticular media opacities using broad line fundus imaging

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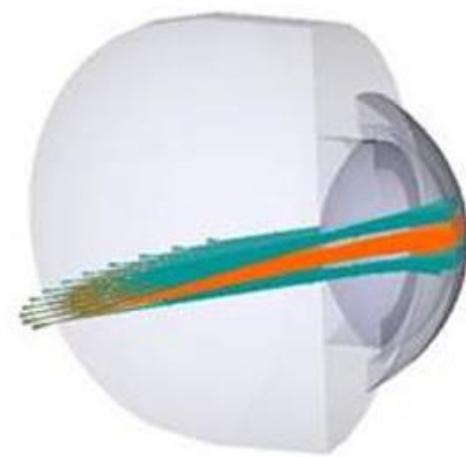
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PURPOSE

Broad line fundus imaging (BLFI) is a technique that aims to reduce artifacts in wide field fundus images. The illumination and imaging paths are separated in the patient pupil. By illuminating only a narrow strip of the retina at any instant, the illumination is separated from the imaging path, keeping haze and fluorescence from the anterior segment out of the retinal image (refer to Figure 1). The purpose of this study is to characterize the performance of a commercially available BLFI system for imaging through varying levels of media opacity.

Figure 1 Path of illumination



METHODS

- Dilated subjects with cataracts
- Cataracts graded at the slit lamp
- Eyes images on a CLARUS™ 500 (ZEISS, Dublin, CA).
- Acquired a wide field color image with central fixation
- Graded each image on a 1-5 grade scale where 5 exhibits an image that a clinician can assess and diagnose with complete confidence

CONCLUSION

In this group of subjects, in the majority of cases BLFI produced clinically usable images in the presence of a variety of media opacities. Further studies would be useful to compare the performance of BLFI vs traditional full-field fundus cameras or scanning laser ophthalmoscopes.

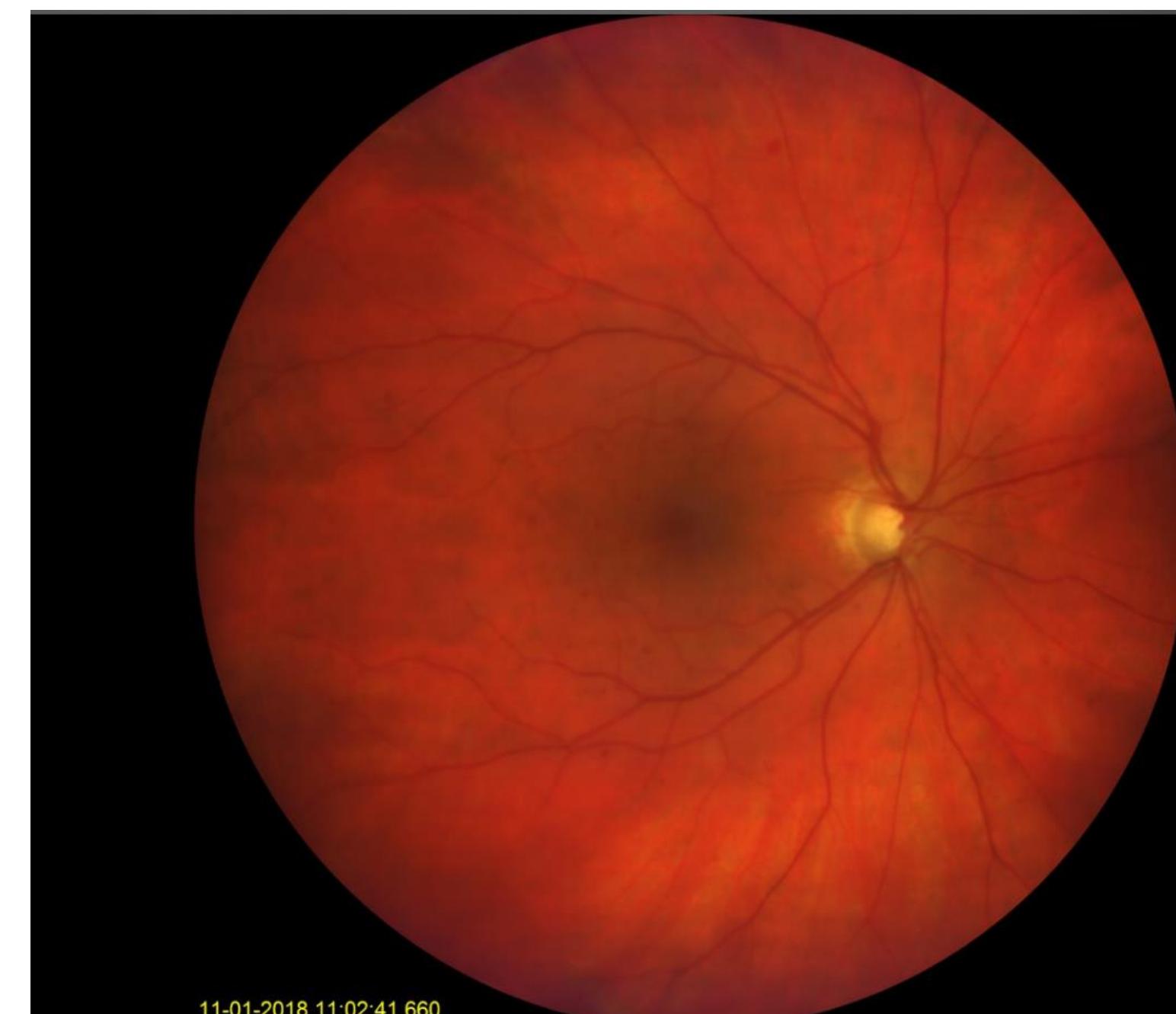
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RESULTS

61 eyes of 32 subjects with an age range of 55-95, (mean 68, SD=19), were imaged as part of this study. 61 images were acquired and graded. Types of cataract included cortical sclerotic (CS), nuclear sclerotic (NS) and posterior subcapsular cataract is (PSC). The percentage in Figure 3 indicates the passing grade (\geq Grade 3). The majority of images had a passing grade or better.

Figure 2: 3+PCO 2+NS



No cataract



Figure 3: Amount of passing images out of the total image count of each cataract type and grade

Cataract grade	CS	NS	PSC
TR	4/4 (100%)	n/a	n/a
1	6/6 (100%)	8/8 (100%)	2/2 (100%)
2	6/6 (100%)	20/20 (100%)	5/5 (100%)
3	2/2 (100%)	4/5 (80%)	n/a
4	n/a	2/4 (50%)	n/a