


140 Harley Street
London

# New Imaging Technology for simultaneous Multiwavelength Ultra widefield (MW-UWF) fundus fluorescein angiography (FFA) and indocyanine green (ICG) angiography with navigated central and peripheral SS-OCT

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## Introduction

The development of retinal imaging technologies has led to a better understanding and management of retinal and choroidal diseases.

## Purpose

**Assess central and peripheral retinal and choroidal diseases using novel simultaneous MW-UWF FFA/ICGA with navigated central and peripheral SS-OCT technology.**

## Methods

- Retrospective observational study of 30 patients (60 eyes) who were imaged between July 2022 and October 2022.
- The procedures used conformed to the tenets of the Declaration of Helsinki.

- **Vitreoretinal Examination** using **Optos Silverstone (Optos PLC; Dunfermline, Scotland, U.K.) :**
  - UWF red/green (RG)
  - UWF infrared (IR)
  - UWF FFA
    2.5 ml of Anatera™
    (500 mg/5ml)
  - UWF ICG angiography
    2.5 ml Verdye™ (5 mg/ml)
    + Simultaneous navigated SS-OCT

## Results

- A total of 60 eyes (30 patients) were imaged and assessed. Mean age was 60.43 ± 16.26 years (range 27-89).
- Simultaneous FFA with navigated SS-OCT performed in 60 eyes (100%), while FFA and ICG angiography with navigated SS-OCT performed in nine patients, 18 eyes (30%).
- **FFA/ICG angiographic findings with corresponding cross-sectional changes in the choroid, retina and vitreoretinal interface.**

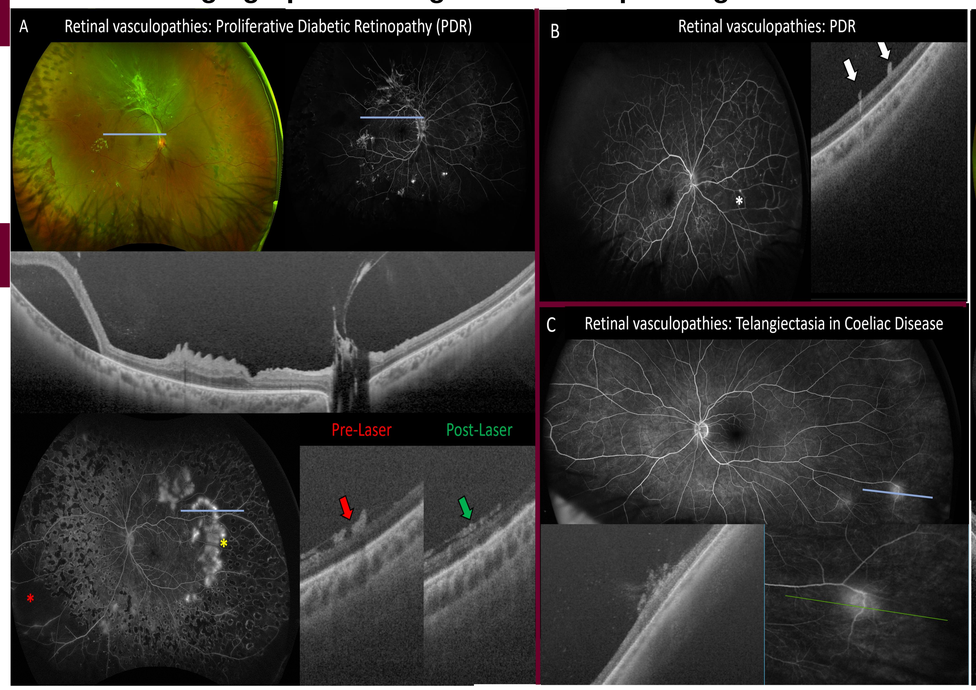



**Fig. 1A**. **Proliferative Diabetic Retinopathy (PDR).** FFA confirmed ischemia (red asterisk) & multiple neovascularization elsewhere (NVE) with leakage (yellow asterisk). Preretinal neovascularization (red arrow) became fibrotic after the Targeted Retinal Photocoagulation (green arrow).
**1B. Proliferative Diabetic Retinopathy (PDR).** Navigated SS-OCT (white arrows) allowed to detected new vessels at an earlier stage compared to UWF FFA imaging (white asterisk).
**1C. Celiac Disease and Telangiectasia.** UWF FFA with simultaneous navigated peripheral SS-OCT clearly shows its preretinal location and activity (leakage).

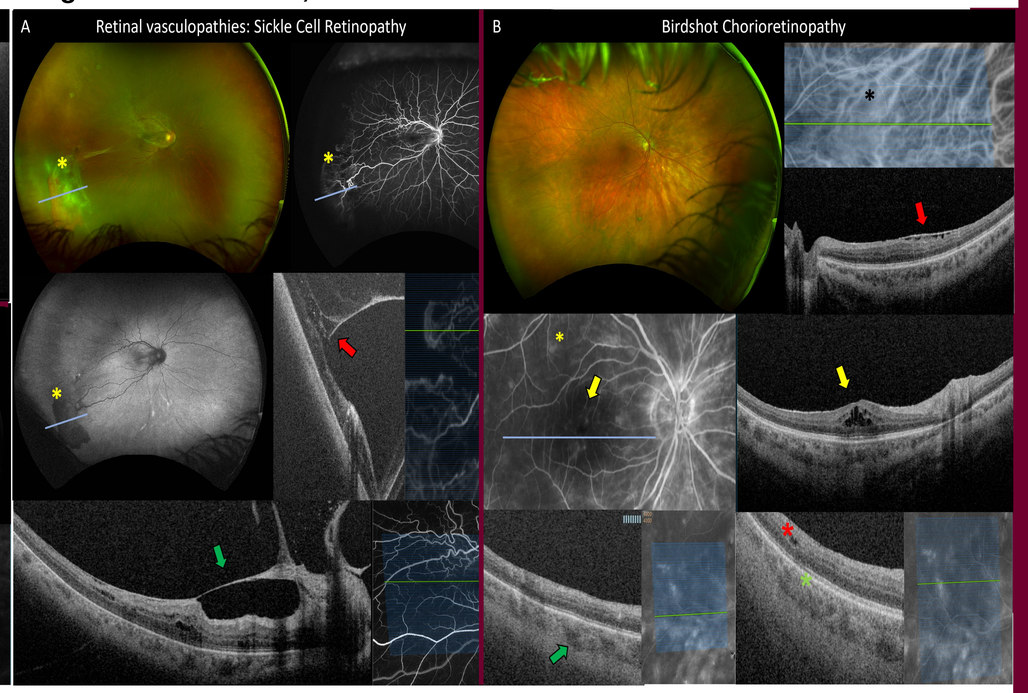



**Fig. 2A Sickle Cell Retinopathy (SCR).** A typical sea-fan neovascularization observed with UWF RG/FFA/AF. Peripheral SS-OCT over UWF FFA demonstrated vitreoretinal traction with intraretinal fluid and schitic changes as well as traction-induced vascular distortion (red arrow). Vitreomacular traction and intraretinal fluid were also observed using macular SS-OCT scans over UWF FFA (green arrow).
**2B Birdshot Chorioretinopathy (BCR).** Choroidal hypofluorescent lesions (black asterisk) and ERM (red arrow). Macular petaloid oedema (yellow arrow). Choroidal granuloma (green arrow). IRF (red asterisk) and chorioretinal atrophy (green asterisk).

## Conclusions

- **New imaging technology comprising of UWF RG/FFA/ICG angiography with simultaneous navigated central and peripheral SS-OCT.**
- **This new technology can change the clinical assessment and management of retinal and choroidal vasculopathies, trigger patient referrals and recommend treatment. It is also an ideal technology to be used in combination with telemedicine and Artificial Intelligence (AI).**



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