

EARLY CLINICAL IMPRESSIONS OF THE TRITON2 AND IMAGENET7®

Understanding the value of swept-source OCT combined with high quality colour fundus imaging



By Kelvin Teo, MBBS, FAMS, PhD

Imaging with optical coherence tomography (OCT) has revolutionised the diagnosis and management of retinal diseases, and its value for enhancing clinical care has increased over time with ongoing innovations in hardware and software. Currently, the most advanced commercially available OCT systems use swept-source (SS) technology.

In my practice, I routinely use the DRI Triton SS-OCT from Topcon Healthcare alongside spectral-domain OCT/OCT angiography (SD-OCT/OCTA) and colour fundus photography/fundus autofluorescence systems from other manufacturers. This arrangement met my needs as each of the individual devices served their purpose. Each modality provides complementary information and continues to play a role in multimodal retinal imaging.

However, completing a full multimodal assessment meant that patients often had to move from machine to machine. This was inefficient and slowed workflow. Furthermore, having a fragmented imaging ecosystem across different devices sometimes made image correlation difficult. In addition, the SD-OCT devices that we were sometimes using had restricted visualisation of the choroid and deep structures and suffer from relatively slow, less forgiving acquisition, which is a particular limitation when imaging elderly patients with age-related macular degeneration (AMD).

In September 2025, Topcon introduced Triton2, its next-generation device for retinal imaging. Triton2 is a multimodal imaging device powered by IMAGENet7 that provides the speed

and penetration benefits of SS-OCT, a true colour fundus camera, and advanced diagnostic capabilities along with SS-OCT angiography (SS OCT Angio™), wide-field OCT and OCT angiography (WF OCTA), and anterior segment imaging as additional options.

Because I have time-tested, extensive experience with the original Triton and the broader Topcon imaging ecosystem both in clinical work and research collaborations, I had a clear understanding of what Triton2 could deliver in terms of image quality, reliability, workflow efficiency, and multimodal capabilities. Therefore, I felt confident that the Triton2 could enhance our clinical efficiency and support us in continuing to deliver care for our patients that is supported by the best technology.

Notably, the SS-OCT technology in Triton2 uses a long wavelength (1,050 nm), fast scanning speed (100,000 A-scans/sec), and low signal roll-off. With these features, it provides deep penetration and generates high quality images, even in eyes with cataract or other media opacities. Both the invisible 1,050 nm wavelength light, which helps patients concentrate on the fixation target, and the fast scanning speed help to reduce artifacts from involuntary eye movements, enabling capture of clear images even in patients with unstable fixation and reducing the likelihood of needing to rescan. Fast scan time combined with flexible positioning also makes the system highly patient-friendly.

Detailing the Benefits and Performance of Triton2

When considering new imaging equipment for my practice, I focus on three main factors. First is diagnostic value, specifically the quality of the imaging

and whether the technology can reveal pathology that genuinely influences clinical decision-making. Second is ease of use and imaging speed, given their direct impact on workflow and the ability to obtain reliable images in elderly patients. Third is reliability. Beyond these fundamentals, true multimodal capability is a major advantage, both for improving efficiency and for reducing the physical footprint within the clinic. It was clear from early on that the Triton2 met all these criteria and would be a valuable addition to my practice.

As a Triton user, I found the transition to Triton2 seamless. Importantly, it was accomplished without any loss of data, which is a critical consideration for technology that is being used for long-term follow-up of patients with glaucoma and other chronic ocular conditions. Once installed, Triton2 with IMAGENet7 quickly became a welcome addition to our clinic. Now, nearly all my retina patients, including those with age-related macular degeneration (AMD), diabetic eye disease, and retinal vascular occlusion (RVO), can complete all their necessary imaging with the Triton2. This quickly added a benefit to the efficiency of the workflow in my clinic but also delivered the additional benefit of making the imaging process quicker for my patients.

Triton2's integrated multimodal capability has also expanded my diagnostic reach. OCT angiography provides rapid, non-invasive visualisation of retinal and choroidal microvasculature, enabling detection of neovascularisation and capillary abnormalities without the need for dye-based angiography. The improved depth penetration and acquisition speed of swept-source OCTA allow reliable imaging even in elderly patients, and I now use OCTA

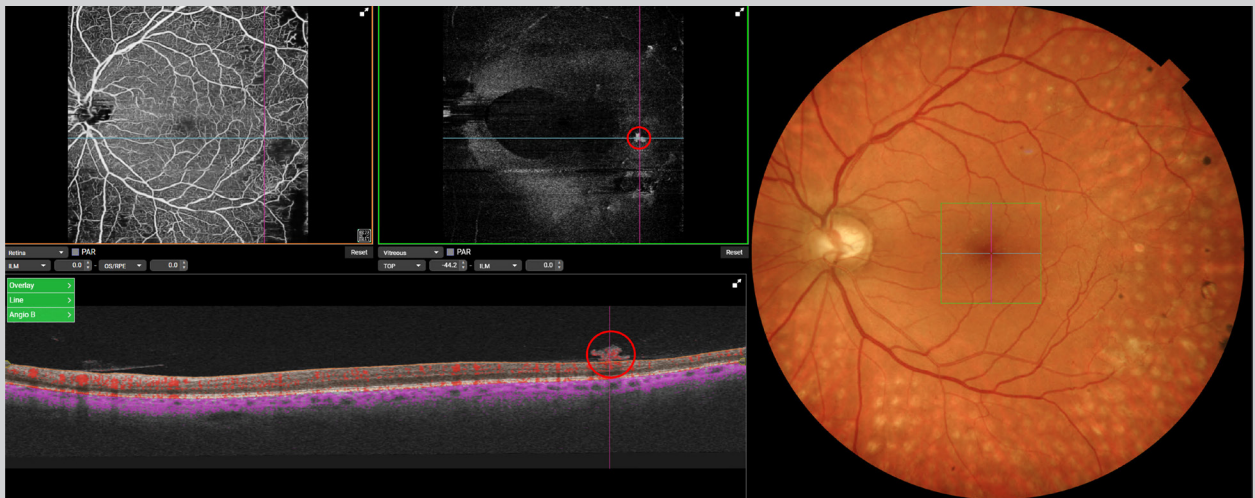


Figure 1. 12x12 mm OCTA scan (left) and colour fundus image (right). Diabetic eye disease.

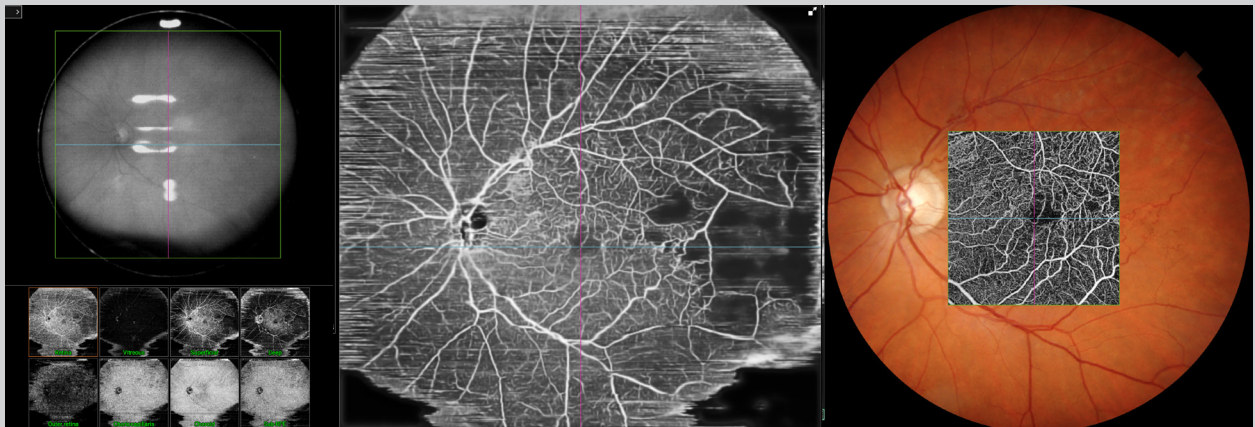


Figure 2. Wide-field OCTA image (21x21mm) and colour fundus image with OCTA (6x6) overlay.

routinely in patients with AMD, diabetic retinopathy, diabetic macular oedema and retinal vein occlusion, tailoring the field of view to each disease.

For example, I typically acquire 3 × 3 mm scans centred on the lesions in AMD, whereas wide-field 12 × 12 mm OCTA scans are especially useful for assessing retinal non-perfusion in retinal vein occlusion and diabetic retinopathy. Figure 1 shows a 12x12 mm OCTA scan in a patient with diabetic eye disease. Note the ability to detect new vessels on OCT that have proliferated above the retina into the subhyaloid space. This is best visualised with the vitreous slab and with cross section OCTA with flow signal (highlighted in red).

Wide-field scanning is valuable

for detecting peripheral pathology, and with the addition of the optional wide-field OCTA lens, imaging can be extended to capture up to 21 mm without compromising speed or stability. Although there is some reduction in image quality, this does not limit its clinical utility in most cases as areas of non-perfusion remain clearly identifiable. Figure 2 presents a 21 mm OCTA (left and middle) of a patient with diabetic retinopathy showing areas of non perfusion in the temporal retina that would otherwise be missed on smaller fields of view. The right image shows a 6x6 OCTA overlaying the colour fundus image. Here one can see the disrupted fovea avascular zone and surrounding capillary plex-

us with better clarity. While there is some reduction in image quality, there is sufficient information to identify the areas of nonperfusion. The high speed of acquisition with Triton2 means that most patients are able to tolerate and complete this wide-field scan.

Triton2 also provides true colour fundus photography. By using slit-scan illumination in combination with a rolling shutter mechanism, the fundus camera consistently captures high-quality images across a wide range of lighting conditions* and through pupils as small as 2.0 mm**. This technology reduces flare and shadowing while filtering scattered light, resulting in clear, reliable images. Figure 3 shows images acquired from a

* A brightness of 623 lux or less

** Confirmed with model eye

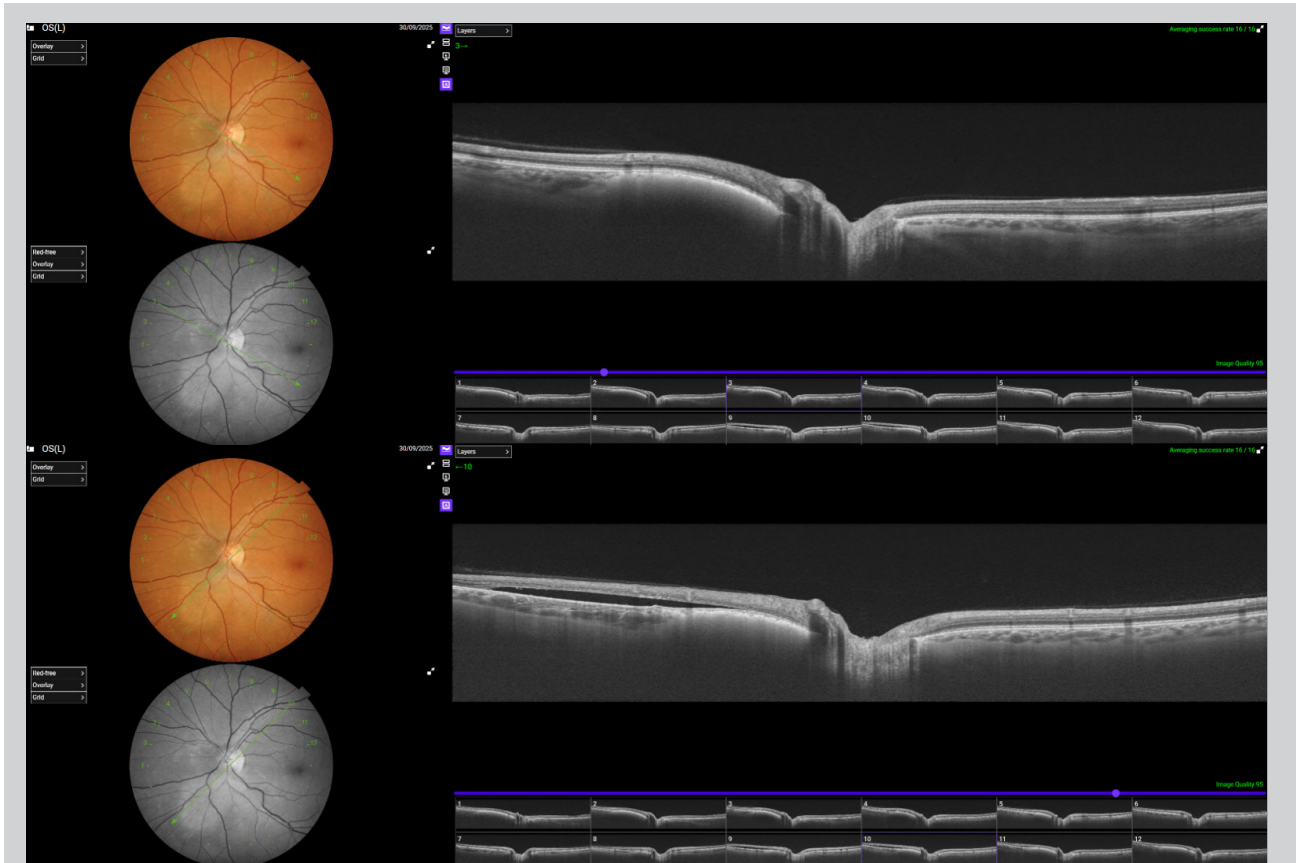


Figure 3. 12mm radial scan centered on the disc of a patient with a choroidal hemangioma.

patient with a choroidal haemangioma close to the optic nerve head. Having the opportunity to clearly assess the haemangioma with colour fundus, infra-red images and the OCT B-scan is valuable because I am quickly able to correlate the extent of the lesion and the areas of neurosensory detachment across different imaging modalities, which is essential in guiding my further management for the patient. The quality of the colour fundus photographs is a key advantage of the Triton2 system, particularly when compared with older multimodal platforms that often produced unusable images because of small pupils or some opacities and occasionally required a separate colour fundus camera to complete diagnostic imaging.

Beyond image quality alone, the integration of fundus imaging within a single acquisition on Triton2 enables true multimodal assessment of the retina, something that is frequently limited with other systems. Topcon's

proprietary PinPoint Registration® technology automatically aligns and overlays OCT data with the corresponding fundus images, allowing precise localisation and correlation of pathology across modalities. In my experience, the ability to overlay OCTA onto en face colour fundus images is especially valuable as it allows rapid and accurate identification of retinal pathology, and it has become a feature I rely on routinely. Figure 4 details images from a patient with polypoidal choroidal vasculopathy and submacular haemorrhage. It shows how PinPoint Registration is used to overlay colour fundus imaging with OCTA to show the correlation of the orange nodule with flow signal captured on OCTA (bottom right, red circle). Note the ability of the SS-OCT to image structures under the blood (top right).

Powered by IMAGENet7

IMAGENet7 is the newest version of Topcon's data review software. Its

integration with Triton2 represents another significant advance because it further modernises the entire workflow process and data analytics. Both the device's graphic user interface and workflow in IMAGENet7 are very user friendly, and so our technical staff became adept at using the new platform after completing only minimal training. IMAGENet7 provides advanced analysis of imaging data, generates comprehensive reports, and integrates scans from multiple viewers. Outputs include timeline views and graphs for key metrics, such as retinal nerve fiber layer thickness, ganglion cell layer thickness, and more, that support accurate diagnoses and informed clinical decisions.

IMAGENet7 has also greatly streamlined the tasks of image sorting and comparison. In particular, I find that its display of various OCTA flow segments on a single page is very useful for obtaining a global overview. The review and assessment of a par-

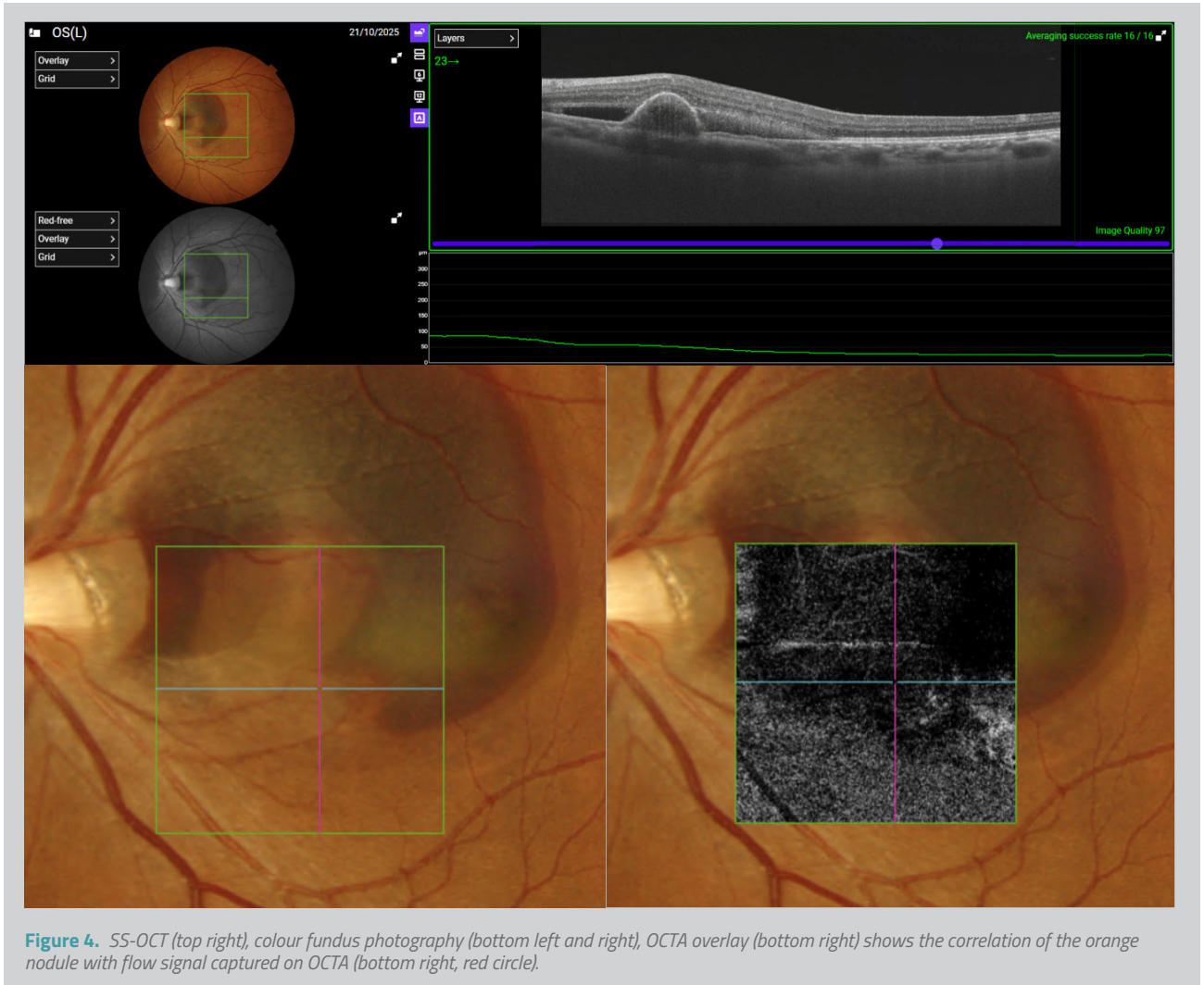


Figure 4. SS-OCT (top right), colour fundus photography (bottom left and right), OCTA overlay (bottom right) shows the correlation of the orange nodule with flow signal captured on OCTA (bottom right, red circle).

ticular layer of interest is also very intuitive. As a DICOM compliant system, IMAGeNet7 also allows for seamless integration of the imaging results with our practice’s electronic medical record program.

Delivering on Efficiency

Triton2 has certainly had a positive impact on improving our workflow efficiency, and this benefit can be tied to two key features – the device’s impressive acquisition speed, and its ability to perform multimodal imaging with a single platform. We have observed a substantial improvement in clinical workflow by eliminating the need to have patients move from instrument to instrument to complete their necessary imaging. Acquisition time using Triton2

is significantly faster than that associated with my previous instruments, and because Triton2 is more forgiving in cases where patients have small pupils or poor fixation, my staff report needing to get fewer repeat scans than with previous instruments, even in patients with unstable fixation.

Conclusion

Triton2 is truly an “all-in-one” platform providing tried and tested SS-OCT/OCTA technology that allows for better and deeper imaging, excellent colour fundus photographs that are useful for correlation across imaging modalities, and continued improvements with wide-field capability and post-acquisition processing for improved visualisation.

If asked to describe the benefits of Triton2 and IMAGeNet7 using just three words, I would say, “fast, integrated, and complete”. Other imaging platforms may boast better image quality or field of view, but their use can come with the downsides of slower acquisition time or lack of true multimodal imaging capability. Using Triton2 coupled with IMAGeNet7 provides a single powerful solution for completing a comprehensive diagnostic evaluation of patients across the entire spectrum of retinal disease.

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