

## **Comparison of Swept Source and Spectral Domain Optical Coherence Tomography Agreement to assess the insertion distance and thickness of extraocular rectus muscles.**

Lucía De-Pablo-Gómez-de-Liaño M.D

Department of Ophthalmology. Hospital Universitario 12 de Octubre. Madrid, Spain

Néstor-Ventura Abreu M.D; Rosario Gómez-de-Liaño M.D Ph.D

Department of Ophthalmology. Hospital Universitario Clínico San Carlos. Instituto de Investigación

José Ángel Fernández-Vigo M.D Ph.D,

Centro Internacional de Oftalmología Avanzada. Madrid, Spain.

José Ignacio Fernández-Vigo M.D Ph.D<sub>2</sub>

Department of Ophthalmology. Hospital Universitario Clínico San Carlos. Instituto de Investigación; Centro Internacional de Oftalmología Avanzada. Madrid, Spain.

### **Purpose**

To assess the agreement between one swept source (SS-OCT) and two different spectral domain optical coherence tomography (SD-OCT) devices to measure the insertion distance and the thickness of the horizontal rectus muscles.

### **Methods**

Cross sectional study of 70 eyes from 35 healthy subjects were studied. Three OCT instruments – Triton (Topcon), Spectralis (Heidelberg), and Cirrus 5000 (Carl Zeiss) – were used to measure the limbus-insertion distance and the thickness of the lateral rectus (LR) and medial rectus (MR). The intraclass correlation coefficient (ICC) was calculated to determine the reproducibility and the agreement between the three methods.

### **Results**

Measurement of the limbus-insertion distance was possible in 100% of cases with the three OCT devices (Figure 1). The thickness could be measured in  $\geq 78\%$  with Triton,  $\geq 75\%$  with Spectralis and  $\geq 74\%$  with Cirrus. The reproducibility of each device was good and was higher for insertion distance ( $ICC \geq 0.880$ ) than for muscle thickness ( $ICC \geq 0.736$ ). The highest reproducibility values were obtained with Triton ( $ICC \geq 0.798$ ). The agreement of the insertion distance measurements between the three devices ranged from  $ICC \geq 0.629$  to 0.887; for the muscle thickness, the ICC ranged from  $\geq 0.495$  to 0.854. The best agreement existed between the Triton and Spectralis devices for insertion distance ( $ICC = 0.715$  to 0.887) and for muscle thickness ( $ICC = 0.641$  to 0.854).

### **Conclusions**

The three OCT devices permitted accurate and reproducible measurements of the limbus insertion distance and the thickness of the horizontal rectus muscles, showing moderate to good agreement between the SS and the two SD-OCT instruments. The highest reproducibility values were obtained with Triton.

Financial disclosure: none

Figure 1

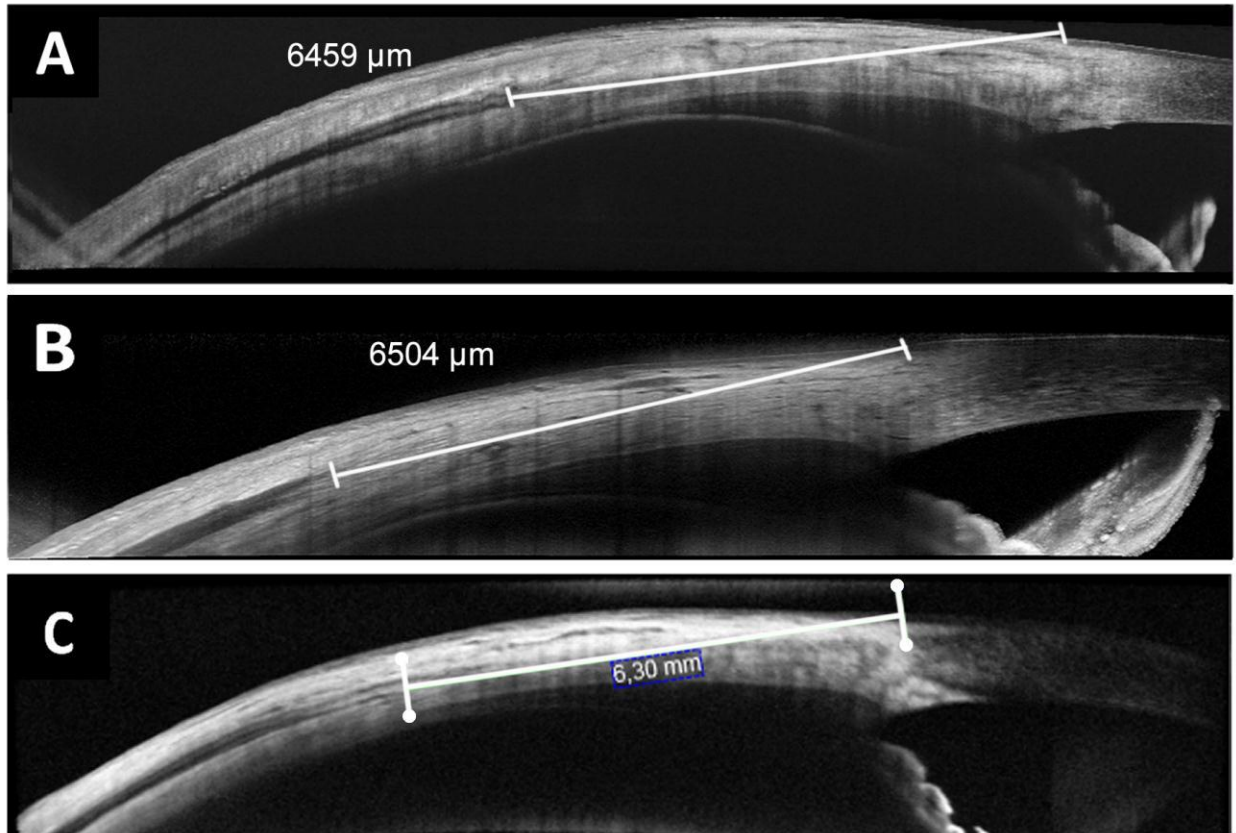


Figure 1. Measurements of the limbus-insertion distance with the three optical coherence tomography devices. Image of the lateral rectus muscle of the same patient. A: Image obtained with Triton. B: Image obtained with Spectralis. C: Image obtained with Cirrus.