Appendix A

To align the IOP-elevated volume and the baseline volume, we employed the following equation -

$$\begin{bmatrix} x' \\ y' \\ 1 \end{bmatrix} = \begin{bmatrix} \cos\theta & -\sin\theta & h \\ \sin\theta & \cos\theta & k \\ 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ 1 \end{bmatrix} \text{ eq.1}$$

where (x, y) represents the baseline coordinates, (x', y') represents the deformed (IOP elevated) coordinates, θ is the rotational angle about the origin, and (h, k) is the translation vector. Therefore, there were three unknowns to be solved for, namely h, k, and θ.

These unknowns were solved using a MATLAB function called ABSOR (version 2018a, The MathWorks, Inc., Natick, Massachusetts, USA), which employs least squares estimation for rotation and translation based on the source and target coordinates.

The averaged outputs, which are h, k, and θ derived from the vessel bifurcation coordinates of two observers, were then utilized to transform the IOP-elevated volume to align with the baseline volume using AMIRA (version 2020.3, Waltham, Massachusetts: Thermo Fisher Scientific), similar to our previous work.

To assess the agreement between observers, we calculated the percentage difference between h, k, and θ (from the two observers) for each eye. We observed good agreement among observers, with average differences in h of 5% ± 3%, k of 4% ± 3%, and θ of 5% ± 4% across all eyes.