Figure Captions

Figure 1. Definition and calculation of Bruch's Membrane Opening Horizontal Rim Area, as used to Estimate the Amount of Neuroretinal Rim Tissue in Glaucoma. (Top) Within each of the 24 radial scans, Bruch's Membrane Opening was delineated, shown by yellow arrows. (Second Panel) A plane was then fit to these 48 points, shown in red. Its intersection with the inner limiting membrane within each B-scan was marked (green circles). (Third Row, from left) Bruch's Membrane Opening (red) and Inner Limiting Membrane (green) intersection points were fit using B-splines and projected onto the plane. 48 radial interpolated horizontal rim widths (green lines) were interpolated from the Bruch's Membrane Opening centroid (red cross) at 7.5º intervals. For each 7.5° degree interval, the sectoral rim are a (purple) was calculated as the difference between areas of two circular sectors. (Bottom Row) Bruch's Membrane Opening Horizontal Rim Area was generated by summing these 48 sectoral areas.

Figure 2. Definition and calculation of Bruch's Membrane Opening Minimum Rim Width and Minimum Rim Area, as used to Estimate the Amount of Neuroretinal Rim Tissue in Glaucoma. (Top) Within each of the 24 radial scans, Bruch's Membrane Opening was delineated (red circles). The minimum rim width within that sector was defined as the shortest distance from this point to the Inner Limiting Membrane (yellow arrow, at angle θ above the Bruch's Membrane Opening plane). These were averaged across sectors to give the global measure Bruch's Membrane Opening Minimum Rim Width. (Middle Panel) Within each sector, rim areas (yellow trapezoids) were calculated as the areas of trapezia at varying angles above Bruch's Membrane Opening plane. The height of each trapezium equals the rim width at this angle, referred to as RW_θ. The base equals the circumference within that sector, $2\pi r/48$, where r represents the distance from Bruch's Membrane Opening centroid (red cross). The top then has length $2\pi r / 48 \times (r - RW_\theta * \cos(\theta))$. (Bottom Panel) Within each sector the smallest such area was found, at angle φ, and its area calculated as (top+bottom)$\times RW_\varphi/2$. Note that RWφ will not always be the minimum rim width within this sector, as illustrated in Supplementary Figure S1. The global measure BMO-MRA is generated by summing the areas of these 48 trapeziums.

Figure 3: Relations between Two Estimates of the Amount of Neuroretinal Rim Tissue in Glaucoma and Either Mean Deviation from Perimetry or Retinal Nerve Fiber Layer Thickness. Mean Deviation (in dB) and RNFL thickness (from an SD-OCT peripapillary circle scan, in µm) are plotted against the Rim Area (in mm^2) as measured by Confocal Scanning Laser Ophthalmoscopy (CSLO), or the Bruch's Membrane Opening Minimum Rim Area from spectral domain optical coherence tomography (SD-OCT) based on the minimum distance between inner limiting membrane and Bruch's Membrane Opening.

Supplemental Figure S1. Schematic demonstrating the difference in angle between Bruch's Membrane Opening Minimum Rim Width and Minimum Rim Area. Minimum Rim Width is based on minimizing the distance from Bruch's Membrane Opening to the Inner Limiting Membrane within each radial scan. This occurs at angle θ above the BMO plane. Minimum Rim Area is based on minimizing the area of a trapezium extending from Bruch's Membrane Opening to the Inner Limiting Membrane, and occurs at angle φ above the BMO plane. As this example shows, these may not be equal. In this sector, the distance from BMO to the Inner Limiting Membrane is smaller in the left-hand panel, but the resulting area is smaller in the right-hand panel.

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A Method to Estimate the Amount of Neuroretinal Rim Tissue in Glaucoma: Comparison with Current Methods for Measuring Rim Area

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