The Figure is a schematic representation of actual posterior vitreous chamber shape (continuous line) and its equivalent spherical shell (dotted line) to show how the equivalent spherical shell was constructed and how posterior chamber distances were calculated using the x-y MRI coordinate system used in Figure 1 of the paper.

**SUPPLEMENTARY MATERIAL CALCULATIONS**

**Reference key for Figure**

- **AE** = designated visual axis
- **B** = nominal 2nd Nodal Point (NP2)
- **FHEG** = schematic representation of actual posterior vitreous chamber shape generated by MRI data
- **C** = centre of equivalent spherical shell satisfying chords FG and BE generated by MRI data
- **FIKELG** = contour of equivalent spherical shell
- **CI** = radius of equivalent spherical shell = AC and = (AB+BE)/2
- **AB+BE** = diameter of equivalent spherical shell;
  
  - BE = MRI y-coordinate for fovea – MRI y-coordinate for B (NP2)
- **H** = point on contour of actual eye selected to be approximately 72.50% along the visual axis
  
  - (Θ = 49.72° subtense from B) to match approximately the sample data point in Figure 1
- **HD** = orthogonal distance from x-axis (visual axis) to the actual eye for MRI y-coordinate D
- **KD** = orthogonal distance from x-axis (visual axis) to the equivalent spherical shell
  
  for MRI y-coordinate D
- **BD** = [MRI y-coordinate for point D – MRI y-coordinate for B (NP2)]
  
  - MRI y-coordinate for B (NP2) = ACD+ standardised lens thickness of 3.75mm
BE = MRI axial length – MRI y-coordinate for NP2
F = intersection of actual eye and equivalent spherical shell for MRI y-coordinate at B (NP2)
FB = orthogonal distance from x-axis to actual eye and equivalent spherical shell for MRI y-coordinate B (NP2)
FB = BG = FG/2
BH = posterior vitreous chamber distance from B (NP2) to actual eye for angle Θ
BI = posterior vitreous chamber distance from B (NP2) to equivalent spherical shell for angle Θ

A: To calculate distance KD for the equivalent spherical shell corresponding to the MRI y-coordinate for point D

\[ KD \times DL = AD \times DE \]  from general property of intersecting chords within a circle

therefore

\[ KD = \frac{AD \times DE}{DL} \]

but

\[ KD = DL \]

therefore

\[ KD = \sqrt{AD \times DE} \]

but

\[ AD = AB + BD \]

and

\[ AB \times BE = FB \times BG \]  from general property of intersecting chords within a circle

therefore

\[ AB = \frac{(FB \times BG)}{BE} \]

where \( BE = MRI \ \text{axial length} - MRI \ \text{y-coordinate for B (NP2)} \)

\[ FG = BG = FG/2 = x\text{-coordinate corresponding to y-coordinate for B (NP2)} \]

and

\[ BD = MRI \ \text{y-coordinate for point D} - MRI \ \text{y-coordinate for NP2} \]

\[ DE = BE - BD \]

both \( BE \) and \( BD \) are known from MRI y-coordinates (see above)

which allows the calculation of

\[ KD = \sqrt{AD \times DE} \]

Distances equivalent to KD are plotted for MRI y-coordinates corresponding to 32.5%, 37.5% et seq of MRI axial length (Figures 1 and 4) and 57.5%, 62.5% et seq of MRI axial length (Figures 3 and 7).

B: To calculate, for angle Θ, vitreous chamber depth (VCD) for the actual eye and its equivalent spherical shell and the Actual:Sphere VCD ratio

VCD from B (NP2) for the actual eye (distance BH)

Calculation of BH
\[ \text{BH} = \sqrt{(HD)^2 + (BD)^2} \] by pythagorean;

MRI x- and y-coordinates give distances HD and BD respectively

Distances equivalent to BH are plotted for angles from NP2 corresponding to 32.5%, 37.5% et seq of MRI axial length in Figures 2A, 5A & 5B and 6A & 6B.

VCD from B (NP2) for the equivalent spherical shell (distance BI)

\[ \text{BI} = \text{BJ} + \text{JI} \]

\textit{Calculation of BJ}

\[ \text{BJ} = \cos \Theta \cdot \text{BC} \]

and

\[ \text{BC} = [(AB + BE)/2] - AB \] where \((AB + BE)/2 = AC = CI = \text{radius of equivalent spherical shell}\)

therefore

\[ \text{BJ} = \cos \Theta \cdot [(AB + BE)/2] - AB \]

\textit{Calculation of JI}

\[ \text{JI} = \sqrt{[(CI)^2 - (CJ)^2]} \] by pythagorean

where

\[ \text{CJ} = \sqrt{[(BC)^2 - (BJ)^2]} \] by pythagorean

and

\[ \text{CI} = [(AB + BE)/2] \]

therefore

\[ \text{JI} = \sqrt{\left[(AB + BE)/2\right]^2 - \left[\sqrt{[(BC)^2 - (BJ)^2]}\right]^2} \]

\[ \text{hence} \]

\[ \text{BI} = \cos \Theta \cdot \text{BC} + \sqrt{\left[(AB + BE)/2\right]^2 - \left[\sqrt{[(BC)^2 - (BJ)^2]}\right]^2} \]

where

\[ \Theta = \text{DEGREES} \left[\text{ATAN} \left(\frac{HD}{BD}\right)\right] \]

as

\[ \tan \Theta = \frac{HD}{BD} \] MRI x- and y-coordinates give distances HD and BD respectively

which allows calculation of

\[ \text{BI} = \text{BJ} + \text{JI} \]

Distances equivalent to BI for angles from NP2 corresponding to 32.5%, 37.5% et seq of MRI axial length are plotted as filled grey circles in Figure 1 and continuous dashed lines in Figures 2A, 4, 5A & 5B and 6A & 6B.

\textit{Actual:Sphere VCD ratio}

\[ \text{Ratio} = \frac{\text{BH}}{\text{BI}} \] see above for calculation of BH and BI

\textit{Actual:Sphere ratios for angles from NP2 corresponding to 32.5%, 37.5% et seq of MRI axial length are plotted in Figures 2B, 5C & 5D and 6C & 6D.}