Predicting refractive aniseikonia after cataract surgery in anisometropia .
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Purpose

To propose a comprehensive classification of anisometropia, a method to calculate the theoretical related aniseikonia (objective aniseikonia) and a purpose-designed eikonometer to measure aniseikonia psychophysically (subjective aniseikonia).

Setting

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methods

The occurrence of anisometropia was evaluated in 263 patients scheduled for cataract surgery. Subjective aniseikonia was evaluated in 77 healthy patients. The theoretical model was validated to calculate objective aniseikonia by implementing data from the literature. Ultimately, an aniseikogram was developed and its practical use illustrated by 4 clinical cases of anisometropia.

Results

In a population of 263 patients, the total incidence of anisometropia was 7.6%, with a dominance of axial anisometropia. Subjective aniseikonia between 2% and 4% was found in 3.0% to 7.5% of the cases, depending on the refractive error. The correlation coefficient between objective and subjective aniseikonia was good (R2 = 0.82). Analysis of 4 clinical cases illustrated the calculated preoperative and postoperative aniseikonia in 4 types of anisometropia planned for lens removal.

Conclusions

Anisometropia is not a rare condition and should be assessed before cataract surgery. A comprehensive method to calculate the objective aniseikonia and to measure the subjective aniseikonia in anisometropia was proposed. If cataract surgery is considered in anisometropic patients, a postoperative aniseikonia of 4% or more may be induced in the case of emmetropization. A method to calculate the intraocular lens power resulting in an acceptable postoperative aniseikonia, especially in axial anisometropic patients, is also proposed.