

31

QUESTION

How Do I DETERMINE MY SURGICALLY INDUCED ASTIGMATISM?

Alex Mammen, MD and Deepinder K. Dhaliwal, MD, LAc

An understanding of one's aggregate surgically induced astigmatism (SIA) helps in the quest for refractive predictability after cataract surgery. Free online calculators simplify the calculations involved in this vector analysis, but require reliable input data to yield accurate and meaningful results.

As cataract surgery has become increasingly refined, both the desire and achievability of spectacle independence have correspondingly increased. Hitting the target refraction cannot be reliably achieved, however, without a quantitative understanding of the astigmatism that is induced by the surgical incision.

The definition of SIA is the difference between postoperative and preoperative corneal astigmatism. However, because astigmatism is a vector quantity with both magnitude (power) and direction (axis), this difference is not just a matter of simple subtraction. Rather, geometric vector analysis or a trigonometric conversion of vectors into mathematical equations is necessary. There have been various methods published with varying levels of ease and efficacy.¹ Fortunately, you do not have to worry about brushing up on your mathematical skills due to the availability of free online programs that will perform the calculations for you (www.doctor-hill.com/physicians/sia_calculator.htm or www.insighteyeclinic.in/SIA_calculator.php).

The integrity of these calculations, of course, depends on the quality of the data entered. The measurement of preoperative and postoperative astigmatism should be accurate and stable. Commonly used methods to measure astigmatism include manual keratometry, optical biometry with the Haag-Streit Lenstar or Zeiss IOLMaster, autokeratometry, and topography. We rely more heavily on manual keratometry and Lenstar measurements in our practice. Preoperatively, stability is mainly influenced by contact lens wear. Similar to refractive surgery guidelines, soft nontoric contact lens wearers should ideally stay out of their contacts for 2 weeks, with a 3-week