

# Refractive Surgery in Eyes With Congested Anterior Chambers

Which procedure is appropriate in eyes with diminished anterior segment dimensions?

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Ophthalmic surgeons who offer laser vision correction know that their reputations grow by word of mouth, as an effect of the miraculous results of the services they provide. Patients sometimes have a sense that the laser can correct anything. Soon, older patients will seek solutions for presbyopia and other visual conditions with laser vision correction.

Among patients aged 45 to 60 years, a disproportionate number of hyperopes have experienced a decrease in distance vision. Most of these individuals have taken pride in their excellent distance vision in years gone by. They are looking for the freedom that laser vision correction promises and desire a life free of spectacles.

Many of these patients are ideal LASIK candidates, provided they have excellent corneal topographies and pachymetries. Aside from the hyperopia, their eyes are otherwise healthy, and LASIK monovision can provide an excellent outcome if they are suited to this treatment. In addition to LASIK monovision, other forms of the treatment including minimonovision and blended monovision can be performed depending on the patient's needs.

I want to discuss the patient group in which the Pentacam (Oculus Optikgeräte) reveals the presence of diminished anterior segment dimensions. Surgeons routinely use the Pentacam to evaluate the anterior chamber dimensions of volume, depth, and angles. Values are typically around 200 mm<sup>3</sup> or more for volume, approximately 2.8 mm or more for depth, and greater than 30° to 35° for angles. In this group of low to moderate hyperopes, however, the dimensions sometimes tell a different story. The volume quite often approaches the 100-mm<sup>3</sup> mark, the depth is around 2.2 mm, and the angle is about 28° or less (Figures 1-3). The literature

*(Continued on page 105)*

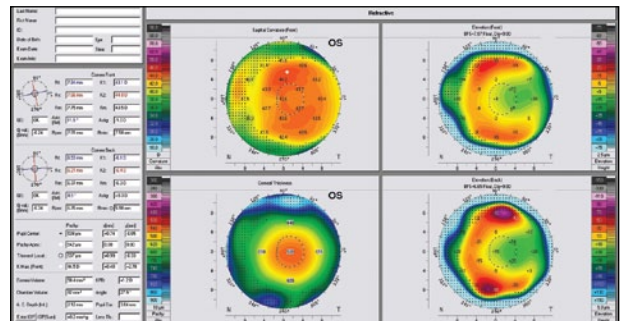


Figure 1. Anterior chamber dimensions are located on the bottom left of this Pentacam screen.

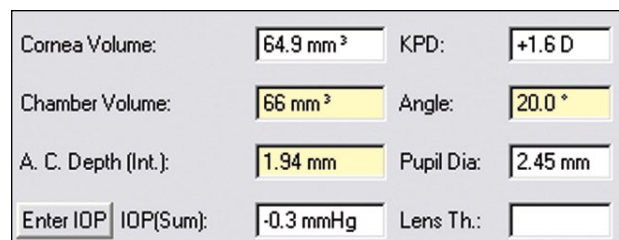


Figure 2. In this eye, all three anterior chamber dimensions (yellow) are below the critical levels. Peripheral iridotomy followed by laser vision correction or a lens exchange must be performed. In the author's view, lens extraction is the superior option.

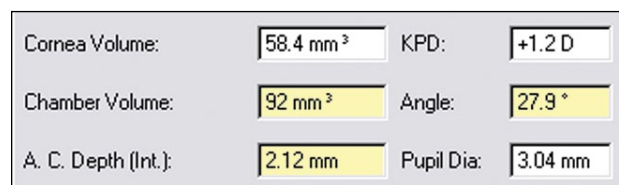


Figure 3. Anterior chamber dimensions (yellow) in this eye are: volume 92 mm<sup>3</sup>, angle 27.9°, and depth 2.12 mm. Only one of the three critical values (volume) has been breached, but the other parameters are close to the critical values.

## Weigh in on this topic now!



Direct link: <https://www.surveymonkey.com/s/CRST18>

1. With regard to anterior chamber dimensions, at what values do you opt for lens replacement rather than LASIK?

- Volume, 100 mm<sup>3</sup>; depth <2.1 mm; angles, <26°  
 Volume, 110 mm<sup>3</sup>; depth, 2 mm; angles, 28°  
 Volume, 100 mm<sup>3</sup>; depth, 2.5 mm; angles, 26°

2. Is refractive lens exchange a viable solution in eyes with congested anterior chambers?

- Yes  
 No  
 Unsure

3. Would you perform a peripheral iridotomy before LASIK instead of a lens replacement procedure in these types of eyes?

- Yes  
 No  
 Unsure

4. Would you perform laser vision correction in an eye in which future anterior chamber congestion is anticipated?

- Yes  
 No  
 Unsure

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informs us that, with a volume of 100 mm<sup>3</sup> or less, depth of 2.1 mm or less, and angles of less than 26°, the risk of angle closure in the next 6 to 12 months is 50%.<sup>1</sup>

The lens has its embryologic background from surface ectoderm, and that implies that the natural lens never stops growing, both in thickness and in equatorial dimensions. We can therefore expect in ensuing years that the anterior chamber dimensions in eyes like these will further diminish. LASIK does not significantly alter these dimensions, although, if there is some latent hyperopia that is corrected by LASIK, the lens thickness may temporarily decrease due to reduced accommodative effort.

In these eyes with reduced dimensions, lens replacement surgery achieves a number of targets in one swoop: refractive correction, the management of presbyopia by monovision or multifocality, the preven-

## Online Survey Results February 2014

If money were not a concern, and if you could purchase one piece of equipment to improve your cataract outcomes, which technology would it be?

A new biometry and topography machine	57%
Intraoperative aberrometer and biometer	14%
A femtosecond laser	14%
An advanced phaco unit	14%

For those of you who have already purchased new technologies, which one has had the most profound effect on patients' outcomes?

A new biometry and topography machine	33%
Intraoperative aberrometer and biometer	33%
A femtosecond laser	33%
An advanced phaco unit	0

tion of future cataracts, and the decongestion of the anterior chamber. Lenstar (Haag-Streit) measurements show that the average crystalline lens in patients 45 to 55 years of age is approximately 4 mm thick, whereas a replacement IOL is typically less than 1 mm thick. With the thinner lens in place, decongestion of the anterior chamber is relieved and the issue of narrow angles is permanently resolved.

### THE QUESTIONS I POSE ARE THESE:

With regard to anterior chamber dimensions, at what values do you opt for lens replacement rather than LASIK? Would refractive lens exchange be a viable solution in eyes with congested anterior chambers? Would you perform a peripheral iridotomy before LASIK instead of a lens replacement procedure? Furthermore, would you perform laser vision correction in an eye in which future anterior chamber congestion is anticipated? ■

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1. Pakravan M, Sharifpour F, Yazdani S, et al. Scheimpflug imaging criteria for identifying eyes at high risk of acute angle closure. *J Ophthalmic Vis Res.* 2012;7(2):111-117.