Lasers have been an important part of ophthalmic practice almost since the time of their invention, and indications for their use only keeps growing. Although there has been some controversy over the value of laser-assisted cataract surgery (LACS) in general practice, we have found that the use of a femtosecond laser can be valuable in certain specific situations. One of these is most certainly in eyes with shallow anterior chambers.

To understand the value of LACS in these cases, it is important to understand the difficulties that shallow chambers pose to a surgeon without the benefit of femtosecond laser technology. Let us imagine a routine day for a surgeon doing cataract surgery in an eye with a shallow chamber, first without this technology, then with it. These two scenarios are detailed on page 48 in Surgery in a Shallow Anterior Chamber, Two Ways.

RESTRICTIONS, INNOVATIONS

There are a few situations in which surgeons may find the use of femtosecond laser technology in cataract surgery more challenging. These include white cataracts, subluxated cataracts, eyes with small pupils, and eyes with hazy corneas. Additionally, there can be a learning curve with this technology in certain situations. With regard to pupil dilatation, some surgeons have proposed changes to address poorly dilating pupils: for example, applying a Malyugin Ring (MicroSurgical Technology) prior to commencement of the laser. In white cataracts, some users have begun setting safer controls, such as a depth limit to the posterior part of the cataract so that the laser does not pass too deep. As surgeons amass more experience with the technology, there are sure to be other innovative approaches suggested.

LACS is helping surgeons achieve more reproducible results. At the same time, it makes procedures easier by eliminating the fear of running into trouble in challenging situations such as a shallow anterior chamber.
Surgery in a Shallow Anterior Chamber, Two Ways

Without LACS Technology

The minute the surgeon learns that he or she has a case with a shallow chamber, there is anxiety in the mind of the surgeon, and the minute the assistants find out, that same anxiety spreads to the whole operating room. To begin with, most eyes with shallow chambers also have a smaller than normal pupil (although this need not always be the case). Aside from that issue, the surgeon faces the following in eyes with shallow chamber:

• With a blade or a needle, entry into the eye is tougher than normal. This is because, as soon as the posterior cornea is breached, the needle or blade hits the iris tissue, prohibiting further entry without dragging the iris tissue.
• After making space using an OVD, the next step of the procedure would be to increase the pupil size, if required, using adjuvants—whether simply with the use of adrenaline or with a device such as the Malyugin Ring (MicroSurgical Technology)—and then proceed with capsulorrhexis, which is where the surgeon faces two problems, described below.
• The first problem encountered is that the cystotome or capsulorrhexis forceps do not have space to move in the anterior chamber because the chamber is shallow and/or the OVD keeps leaking through the main wound.
• The second problem is that the rhexis has a tendency to run to the periphery, as the tension on the capsular bag is greater than in routine cases.
• The next time fear sets in is when the phaco probe is introduced into the eye, due to the proximity of the phaco energy to the endothelium; this is even more worrisome in hard cataracts or eyes with low endothelial cell counts.
• Without femtosecond laser technology, the rest of the procedure could go fine, although a bit of caution would be needed at each stage when introducing instruments and maneuvering them inside the eye.

With LACS Technology

The use of LACS technology changes tough situations such as shallow chambers into more manageable ones in the ways listed below. It is worth noting that this list pertains only to the aspects of the procedure that are aided by the technology, and not the procedure as a whole.

• The entry into the eye with femtosecond laser technology is less scary, as there is never a need for a sharp instrument to enter the eye. It is also easier to create space once the eye is entered.
• The fear encountered during capsulorrhexis is completely obviated, as the procedure has already been done by the laser. This brings relief to the surgeon’s mind, as the fear of endothelial touch with any instrumentation is removed.
• The fear of the rhexis running away is also absent; the whole capsulorrhexis procedure occurs within a closed space, so there are no vector forces to pull the rhexis toward the side, thereby preventing any rhexis run or extension.
• The dependence on phaco energy to chop and emulsify the cataract nucleus is greatly reduced. Laser fragmentation helps create lines of separation within the nucleus no matter how hard the nucleus be.