macular edema (CME) in the macula; and/or specific patient complaints such as light sensitivity, blurred vision, or aching).

As we gradually increased the TA dose, we saw fewer eyes requiring postoperative steroid; from 45% at the lowest dose to 2% at the 1.8 to 2.1 mg level. No eye receiving 2.8 mg or more required additional steroid treatment. Similarly, we saw a decrease in the rate of clinical CME as the TA dose increased. At the 1.8 mg level or higher, there was no occurrence of CME.

With intravitreal injections of TA, elevated intraocular pressure (IOP) has been noted in the first 3 months. In these studies, higher doses of 4 to 25 mg of TA were administered. We used much lower doses of TA injected into the AC and vitreous than seen with postoperative drops. At 2 weeks postoperatively, 6% had an increase of 5 mm Hg or more and 1%, an increase of 10 mm Hg or more. At the same time, 15% had a decrease of 5 mm Hg or more and 3 cases (0.5%), a decrease of 10 mm Hg or more.

There was no uniformity in the way the TA cleared from the eye. In younger patients, it cleared faster; in older patients, glaucoma patients, and hyperopes, it remained for days, sometimes weeks. The TA crystals spread throughout the eye, the iris, the wound sites, the capsular bag, and into the vitreous. In some cases, the TA may pool in the AC, resembling a hypopyon. Much of the TA may progress through different channels of access to the AC such as the trabecular meshwork and the iris itself. We did not perform gonioscopy in each patient to check for the deposition of TA crystals on the trabecular meshwork, but when we did perform it, especially early on with the pseudohypopyon, the gonioscopy revealed TA in the trabecular meshwork, especially inferiorly. However, that so few particles are seen at 1 week suggests there is an embodiment of the TA in the tissues of the eye or there is drainage through the trabecular meshwork or areas of pseudofacility of aqueous outflow.

Some studies of vitreally injected TA report noninfectious endophthalmitis or presumed endophthalmitis. In more than 10 000 cases, we have had no incidence of endophthalmitis or other infection. We have had 3 cases of pseudoadiphthalmitis. It is possible that leakage of the TA into the AC, which caused the snow-globe appearance that we observed, can be mistaken for endophthalmitis. In these cases, however, the patient is asymptomatic. Intravitreal injections by retinal surgeons use a higher dose (up to 25 mg) and a different technique, which may account for the difference. Our prophylactic use of antibiotic and antiinflammatory agents in the injection solution may also have prevented an infection.

Triamcinolone may help with patient compliance and the use of postoperative drops and also prevent the side effects of corneal melts, conjunctival irritation, and dry eyes that are seen with the use of local drops. Injection of TA is more economical as patients are spared the cost of postoperative medications. Patients, especially those who had TA in 1 eye and drops in the other, appreciated the increased comfort and convenience when postoperative drops were not used.

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REFERENCES


Improved precision with the millimeter caliper for limbal relaxing incisions

Limbal relaxing incisions (LRI s) are a simple and effective method to correct preexisting keratometric astigmatism during cataract surgery. Precision and reproducibility are important for consistent outcomes. Several commercial degree gauges and markers exist for surgeons working with nomograms in degrees, but they can be costly. Serendipitously, we found that every 10 degrees of arc on a 12.0 mm circle has a chord length closely approximating 1.0 mm (Figure 1 and Table 1). Limbal relaxing incisions placed in the

Figure 1. Schematic illustrating an enlargement of the cornea, showing the relationships between LRI dce of angle 2θ, chord length cd for θ, and corneal radius (r).
intralimbal zone from 10.5 to 12.0 mm therefore create an intimate relationship between the incision chord length and the angle of arc subtended. The mathematical relationships are shown in Figure 1. Using gentian violet, we routinely mark the steep axis angle of arc subtended. The mathematical relationships are shown in Table 1. This corresponds to an error of –5% with a 12.0 mm circle (negative sign indicates angle measured is smaller than intended) and an error of +10% with a 10.5 mm circle (Table 1).

<table>
<thead>
<tr>
<th>LRI Angle (Degree)</th>
<th>Half LRI Angle, θ (Degree)</th>
<th>Millimeter Chord Length, Set on Caliper</th>
<th>Chord length of θ for 12 mm Circle (mm)</th>
<th>Angle Corresponding to Millimeter Chord Length Set on Caliper (Degree)$^*$</th>
<th>Angle Corresponding to Millimeter Chord Length Set (Degree)$^+$</th>
<th>Difference Between $\theta$ and Actual Angle Set on Caliper (Degree)$^+$</th>
<th>Difference Between $\theta$ and Actual Angle Set on Caliper (Degree)$^+$</th>
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</table>

LRI = limbal relaxing incision

$^*$To nearest 0.5 degree for 10.5 mm circle

$^+$To nearest 0.5 degree for 12.0 mm circle

$^\dagger$For 10.0 mm circle, %

$^\ddagger$For 12.0 mm circle, %

This may be useful for surgeons who wish to use LRs but are hesitant because of the expense of instrumentation. The inherent error may be less than when the angle is approximated visually in reference to a degree gauge, where the error may be variable. We think this technique is sufficiently useful, reproducible, and accurate to justify its adoption into the surgical routine by busy surgeons performing LRs.

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REFERENCES