

Small-incision triple procedure for cataract and glaucoma

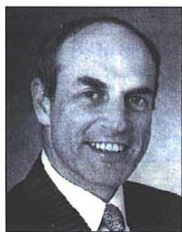
by Noel Alpines, MD
Special to OCULAR SURGERY NEWS

A triple procedure combining trabeculectomy with small-incision cataract surgery enables surgeons to perform routine cataract and implant surgery, right up to and including the time of lens implantation.

The surgeon does not need to alter his or her cataract technique to accommodate its combination with glaucoma surgery. Furthermore, only a small amount of tissue need be removed using this technique, compared with common practice.

Operating on glaucomatous eyes presents a greater surgical challenge; many have had prolonged miotic therapy, and some consequently have smaller pupils. These eyes also tend to be more ischemic and have a higher inflammatory reaction to surgery.

I originally performed this small-incision triple procedure on patients suffering more severe, uncontrolled



Noel Alpines

The triple procedure is proving to be the most accommodating to both the surgeon and the patient on glaucomatous eyes.

glaucoma (usually greater than 21 mm Hg IOP). However, I have found it to be such an effective and satisfactory operation that, since early 1991, I have been performing the procedure on all consenting glaucomatous patients undergoing cataract surgery, even if the glaucoma is controlled by topical therapy.

Standard technique

The cataract surgery incision is a 5.1-mm scleral pocket made to a depth of 375 μ m, 2 mm behind the surgical limbus. After capsulorhexis, hydrodissection, hydrodelineation and removal of the cataract are performed, employing endolenticular phacoemulsification and Gimbel-style nuclear cracking. Cortical material is removed, the posterior capsule is polished and the posterior chamber lens is implanted in the capsular bag.

A 0.75-mm-wide and 2-mm-long block of tissue is removed using a 15° Sharpoint blade to initiate the dissection, which is completed with Vannas scissors, with an assistant gently retracting the outer flap of the scleral pocket. Under the microscope, the surgeon can see the pigmented trabeculum on the everted undersurface of the sclera.

The final cut is made along the line of the scleral spur, to ensure that the trabecular meshwork is included in the dissected specimen for removal. It is unnecessary to make two relaxing incisions in the outer scleral layer, thus avoiding opening the scleral pocket.

In patients who manifest a drainage bleb, it is small and circumscribed. The presence of a bleb is a favorable sign, but is not essential for effective IOP control.

Some surgeons argue that cataract and implant surgery by itself lessens the pressure in the glaucomatous eye, so that trabeculectomy becomes an unnecessary interference. This theory was tested by computer analysis of a series of cataract patients who had primary open-angle

glaucoma (Caucasian, mean age 77 years, females outnumbering males 2:1). Forty-eight patients had undergone the triple procedure; 45 had undergone cataract and implant surgery without trabeculectomy. The patients were not randomly assigned.

The mean preoperative IOP was 19.5 mm Hg for both groups. For two months following surgery, patients who had undergone trabeculectomy experienced lower IOP than those who had not. After two months, the results were not significantly different.

Superficially, these results appear unimpressive. However, pressure drop is really a compressed index of success, because true preoperative IOP is suppressed by medication. One can imagine that if patients were to be taken off medication immediately prior to surgery, they could well show pressure up to 50 mm Hg and consequently would show greater lowering of pressure following surgery. Results would therefore give the appearance of greater success. Lowering of pressure is one index of success, but it is not the only one.

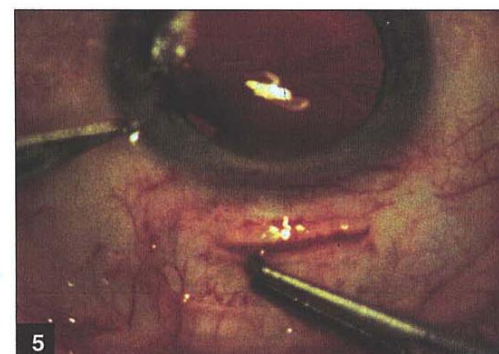
Another measure of success can be found in comparing preoperative and postoperative medication level requirements for controlling IOP.

Preoperatively, patients had received topical therapy of up to four medications—timolol maleate, dipivefrin, pilocarpine and acetazolamide—in varying combinations and strengths, according to the severity of their glaucoma. In general, patients who underwent trabeculectomy suffered from a more severe glaucoma than those who did not undergo the triple procedure (average 1.8 medications, compared with 1, respectively, regardless of strength).

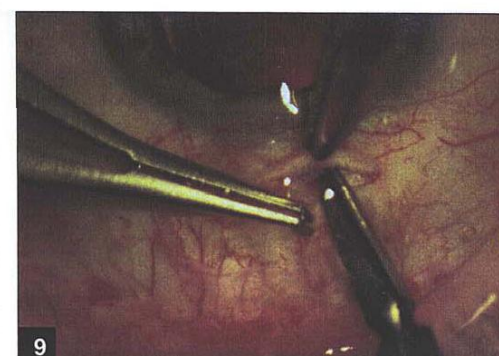
Computer analysis showed a sta-



Incision 5-mm-long to a depth of 375 μ m using guarded diamond blade.

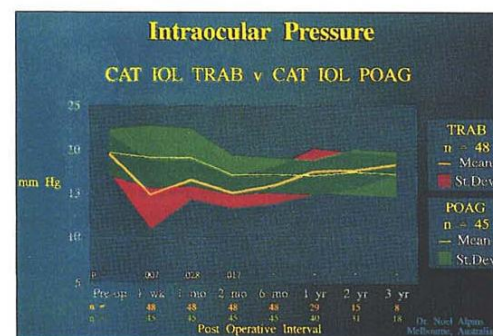


Side-port entry made at 2 o'clock for second instrument access.

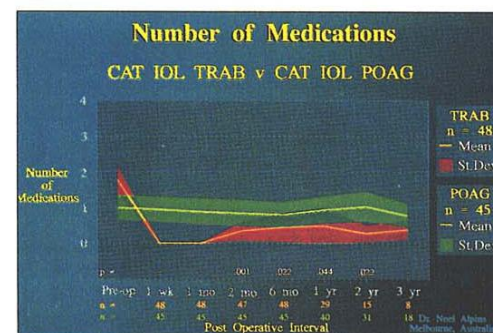


Scissors complete incision to anterior lip of floor of scleral pocket and second incision in opposite direction.

Author information: Noel Alpines, MD, is in group practice and specializes in cataract, RK and excimer-laser surgery; with offices at 7 Chesterville Road, Cheltenham 3192, Melbourne, Australia.



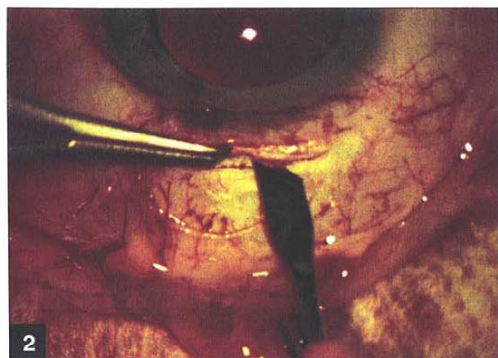
Mean preoperative IOP was 19.5 mm for both groups.



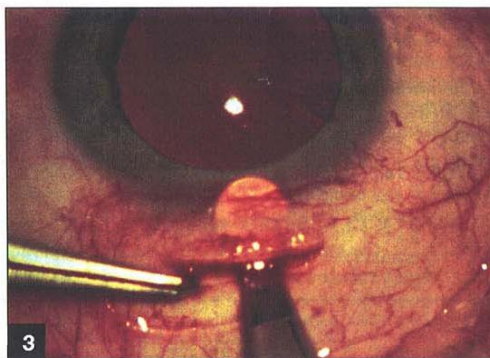
Computer analysis showed statistically significant difference in medication requirements of the two groups at all postoperative intervals.

tistically significant difference in medication requirements of the two groups at all postoperative intervals. Those patients who had undergone cataract and implant surgery without trabeculectomy did not have their treatment regimen changed immediately after surgery, and maintained almost the same topical therapy requirements for two years.

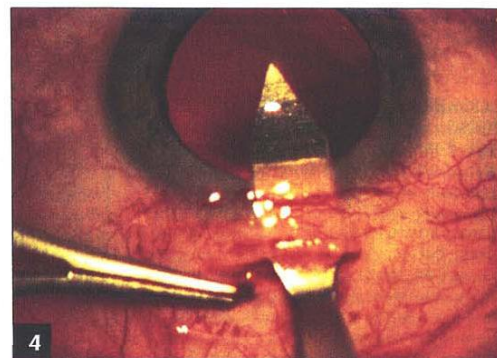
However, for those patients who had undergone the triple procedure, topical therapy was ceased immediately following surgery. After two years, the average medication for the group had fallen from 1.8 to 0.3 per patient. In practical terms, only 11 of the 48 patients in the group required any medication in the long term. Therefore, combining cataract and implant surgery with trabeculectomy had achieved a significant drop in medication, as well as a



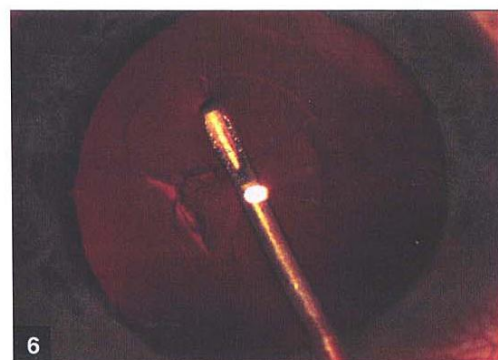
2 Scleral pocket begun with 45° steel blade.



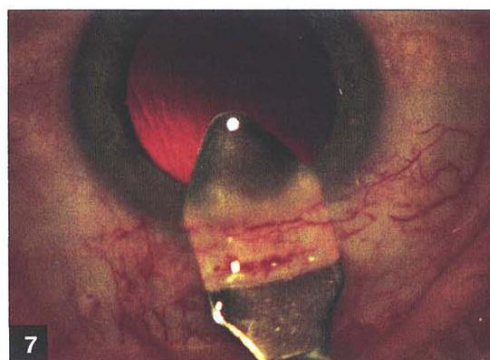
3 Scleral pocket completed to width of incision into clear cornea.



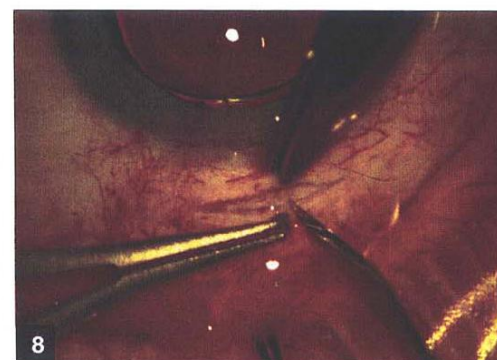
4 Slit blade enters anterior chamber parallel to iris plane at apex of scleral pocket.



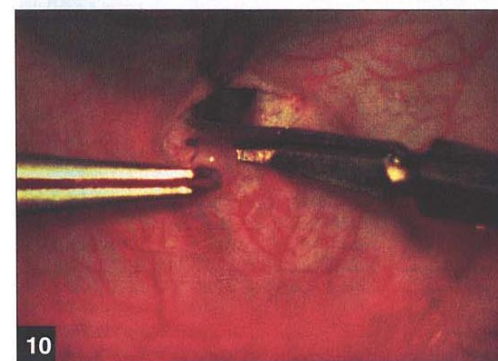
6 Capsulorhexis under viscoelastic using 25-ga needle with pre-bent tip; hydrodissection, hydrodelineation and emulsification follow.



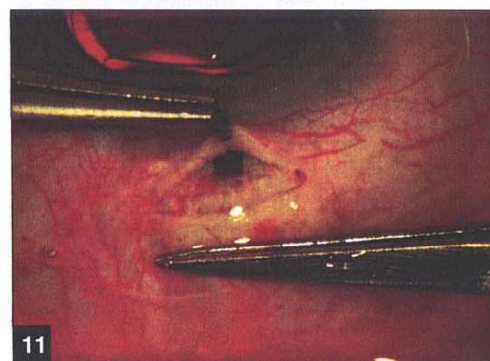
7 Incision enlarged to 5.1 mm prior to lens implantation.



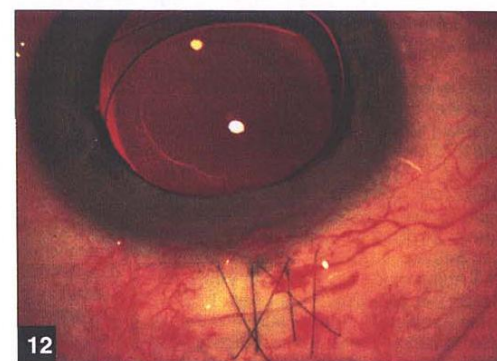
8 Trabeculotomy excision begun after injection of viscoelastic and insertion of implant.



10 Scissors divide fourth side of everted rectangular sclera to complete excision.



11 Peripheral iridectomy follows completed excision.



12 Wound closure completed followed by four conjunctival sutures apposing edges.

material drop in IOP.

One short-term effect of the triple procedure was the creation of significantly more with-the-rule astigmatism during the first six months than for those patients who did not undergo trabeculectomy, due to the greater suturing required to maintain stability of the excision site. However, with the recent trend toward less suturing, such extensive "belt and braces" suturing may not be necessary, and therefore this effect could be lessened. Single-stitch surgery is not recommended, because it would tend to close the drainage site.

Incision size

Of the 48 patients who underwent combined cataract, implant and trabeculectomy, 35 patients earlier in the series had 6.5-mm incisions; 13 had 5.1-mm incisions. The incision

size made no statistically significant difference in the reduction of IOP, probably because made to the size of the tissue excision.

Complications of the trabeculectomy procedure included the presence of a shallow anterior chamber in two eyes of the same patient. This manifestation was possibly peculiar to that patient. Nine patients suffered macroscopic hyphema, which resolved spontaneously. Inflammatory reaction was evident in 12 patients who had some

fibrinous deposit on their lens implant, removable by YAG laser polishing. Four patients required posterior capsulotomy.

The surgeon should consider performing the triple procedure on any patient with preexisting glaucoma having cataract and implant surgery, even if the glaucoma is controlled by medical therapy.

Topical therapy bears its own risks and side effects, such as toxicity. Drops are also an inconvenient means of pressure control. The surgeon should not forgo a surgical opportunity of achieving a real reduction in IOP. Topical therapy only controls existing pressure. If glaucoma in later years, a greater reserve will be available

within which to control IOP with the addition of topical therapy in the future. Furthermore, when trabeculectomy is combined with cataract and implant surgery, little tissue needs to be excised.

The surgeon should consider performing the triple procedure on any patient with preexisting glaucoma having cataract and implant surgery, even if the glaucoma is controlled by medical therapy. Any surgeon who employs the standard triplanar scleral-pocket incision does not need to alter his technique for cataract and implant surgery right up to and including the time of lens implantation, after which trabeculectomy is performed. The surgeon should not forgo the surgical opportunity to obtain a reduction of IOP and topical therapy in all glaucomatous patients undergoing cataract and implant surgery. ■