Letters to the Editor

Inferior trabeculotomy and trabeculectomy for refractory pediatric glaucomas

Dear Editor,

We read the article by Mandal et al., with interest. [1] We have successfully practiced Mandal’s technique of trabeculotomy and trabeculectomy (T and T) since 5 years. However, the problem comes when there is a failure. Mandal has chosen mitomycin-C (MMC)-augmented trabeculectomy over Ahmed glaucoma valve. In our experience, even when MMC is used for a short duration at a low concentration, blanching of the conjunctiva and the resultant avascular bleb is common in children [Fig. 1]. Use of a “ring Figure 1: Diffuse illumination digital photograph of the left eye showing an avascular, thin-walled, cystic bleb after mitomycin C-augmented trabeculotomy and trabeculectomy in a child with infantile glaucoma of steel technique” or an inferior T and T [Fig. 2] could be useful alternatives.

There are several studies where MMC or 5-fluorouracil were used with inferior trabeculectomy in adults resulting in a high incidence of bleb-related infections. [3,4] Vesti et al. [5] have reported inferior trabeculectomy without antifibrotics to be a safe and effective procedure in adults. However, the follow-up was short (<12 months). We want to know from Mandal, between the MMC-augmented trabeculectomy at superior limbus and an inferior T and T procedure without antifibrotics, which would be a lesser evil and which one has a higher efficacy?

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Effect of the single-drop mydriatic combination of 0.8% tropicamide with 5% phenylephrine with multiple applications of the same drop: A randomized controlled trial

Dear Editor,

We read with interest the article by Trinavarat et al.[1] The authors have pointed out the use of a mixture of 0.75% tropicamide and...
2.5% phenylephrine as a superior dilating mixture compared to the alternate application of 1% tropicamide and 10% phenylephrine. In India, most of the commercially available drops have around 0.8% tropicamide and 5% phenylephrine.

The whole idea of reducing the concentration is to reduce the systemic side effects which may be seen with these drops. We believe that the authors should have tried to see the result of a single-drop application of this mixture. Apt and coworkers have demonstrated the efficacy of single-eye-drop mydriatic combinations.[2] However, such a study in Indian population has not been reported to the best of our knowledge.

Keeping this in mind, we designed a randomized control trial to find out whether a single drop of a commercially available mydriatic mixture (0.8% tropicamide + 5% phenylephrine) (Tropicacyl plus, Sunways Pharma) was effective in producing a dilatation of pupil to 7 mm when compared to multiple application (10 min apart) of the same mixture (a total of three drops).

The patients were examined for baseline pupil size, blood pressure, and pulse. The patients were examined every 10 min after using the drops in both single-drop application and multiple application groups. The total time taken to reach the 7-mm pupil size was calculated and recorded.

All the patients were in the 20- to 55-year age group. All patients with any history of ocular surgery, uveitis, posterior synechiae, usage of miotic drugs, narrow angles, being treated for any infectious disease were excluded. Patients with any history of arterial hypertension, cardiac disease, and diabetes mellitus were also excluded.

The sequence of patient allocation was prepared by a computer program and sealed in envelopes. The patients were allocated by one of the authors (HS). The drops were then put by another investigator. After the drops were put, the pupil diameter was vertically measured with a pupil gauge (AN) under bright light without magnification as used in the study by Trinavarat et al.[3]

The total number of patients participating in the study was 30. The mean age in the single-application group was 36.8 ± 12.4 years and in the multiple application group was 37.13 ± 12 years.

Baseline data of these patients are shown in Table 1. The data regarding the dilatation of pupil and the changes in the blood pressure and pulse rate are shown in Tables 2 and 3, respectively.

There was not much change in pulse and blood pressure (systolic and diastolic) in both the groups.

The mean total time taken in the single-drop group was 34.6 ± 10.5 min whereas it was 30.5 ± 7.1 min in the multiple application group. However, this result should be taken with caution since the mean baseline pupil size in the single-drop application group was 2.1 ± 0.4 mm and in the multiple application group it was 2.5 ± 0.5 mm. On calculating the net increase in the size of the pupil (that is the difference between the pupil sizes at 30 min – baseline pupil size), the mean increase (at 30 min) in the single-drop application was 4.6 ± 1.2 mm and in the multiple-drop group was 4.4 ± 1.1 mm. A student t-test was done and the P-value was 0.581 (not significant). The progression in the increase in the size of the pupil is shown in Fig. 1. As seen in the graph, the increase in the size of the pupil is almost similar on single application and on multiple applications. Apt et al.[2] have compared instillation of

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### Table 1: The baseline data of all the patients in both the groups

|                          | Single application | Multiple application |
|--------------------------|--------------------|----------------------|
| Number of patients       | 15 (30 eyes)       | 15 (30 eyes)         |
| Male/Female              | 6/9                | 4/11                 |
| Age, years, mean ± SD    | 36.8 ± 12.4        | 37.13 ± 12           |
| Pupil size mean ± SD (mm)| 2.13 ± 0.4         | 2.53 ± 0.5           |
| Pulse                    | 69.1 ± 8.7/min     | 70.7 ± 8.1/min       |
| Blood pressure           | 109 ± 10.4 mmHg    | 112.8 ± 11.8 mmHg    |

### Table 2: The effect on the pupillary size in each group at various time intervals

|                          | Pupil size mean ± SD (mm) |
|--------------------------|---------------------------|
|                          | Single application | Multiple application |
| Baseline                 | 2.1 ± 0.4             | 2.5 ± 0.5             |
| 10 min                   | 2.7 ± 0.8             | 3.2 ± 0.7             |
| 20 min                   | 4.8 ± 1.2             | 5.4 ± 0.9             |
| 30 min                   | 6.8 ± 1.2             | 7 ± 0.9               |
| Effective increase in the pupil size at 30 min (final pupil size at 30 min – baseline pupil size) | 4.6 ± 1.2 | 4.4 ± 1.1 |
| 7 mm pupil (time, min)   | 34.6 ± 10.5           | 30.5 ± 7.1            |

### Table 3: The effect on the blood pressure, both systolic and diastolic, and on the pulse rate at various intervals

|                          | Blood pressure (mmHg) | Pulse (per min) |
|--------------------------|-----------------------|-----------------|
|                          | Systolic | Diastolic | Systolic | Diastolic |
| Single application       |          |          |          |          |
| 10 min                   | 111.3 ± 12.2 | 75.5 ± 8.3 | 77.3 ± 7.7 |
| 20 min                   | 114.7 ± 12.2 | 75.3 ± 8  | 74.4 ± 6 |
| 30 min                   | 113.7 ± 10.7 | 75.2 ± 7.4 | 75.7 ± 7.3 |
| 40 min                   | 113.9 ± 10.6 | 75.4 ± 7.6 | 75.6 ± 7.2 |

|                          | Blood pressure (mmHg) | Pulse (per min) |
|--------------------------|-----------------------|-----------------|
|                          | Systolic | Diastolic | Systolic | Diastolic |
| Multiple application     |          |          |          |          |
| 10 min                   | 109.9 ± 10 | 72.4 ± 8.6 | 73.5 ± 9.7 |
| 20 min                   | 109.5 ± 10 | 72.7 ± 8.8 | 73.6 ± 9.5 |
| 30 min                   | 110.4 ± 9.6 | 72.6 ± 8.6 | 73.6 ± 9.5 |
| 40 min                   | 109.9 ± 10 | 72.4 ± 8.6 | 73.5 ± 9.7 |
Figure 1: The progressive increase in the size of the pupil at various time intervals in single-application and multiple application groups

A combination of cyclopentolate HCL 0.5% with phenylephrine 2.5% (solution A), tropicamide 0.5% with phenylephrine 2.5% (solution B) with and without the usage of proparacaine 0.5%. They found that at the end of 30 minutes, solution A without and with proparacaine had a mean dilation of 6.6 and 7.4 mm and solution B without and with proparacaine had a mean dilation of 6.9 and 7.5 mm respectively. The effect was measured following a single application of these solutions which was similar to our study. Dubois et al. [3] did a randomized trial for conventional versus depot drug delivery. The study had used multiple applications (at 15-min intervals, total four applications) versus a single depot. The mean size of pupil in depot and multiple applications was 8.19 ± 1.2 and 7.96 ± 0.87 mm at 60 min and the difference between the two was not significant.

We believe that apart from the systemic side effects of these drugs, using two drops less for one eye can save a large financial burden especially in an average eye hospital with a daily out-patient number of around 150 patients (8 bottles per day, 2400 bottles per year, Rs 120,000 per year) apart from the need for manpower for dilatation of pupils. Importantly, all the patients in our study were asked to keep their eyes closed which prevent the dilution of the drug as it reduces the lacrimal pump mechanism.

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