LETTERS TO THE EDITOR

Sir,

We read with interest the paper by Mackie *et al.*[1] looking at how much blame can be placed on laser photocoagulation for failure to attain driving standards. We agree it is an important question to ask but would like to draw attention to the fact that no assessment was made of pre-existing field loss prior to any laser treatment. In addition no account was taken of the effect of the intensity of the burns on post-treatment field loss. Without taking these considerations into account it is not possible to recommend that a particular rationale for laser treatment is going to cause less field loss.

It has been shown that even with just mild to moderate retinopathy, peripheral field loss can occur, presumably from microangiopathic changes. Areas of reduced retinal sensitivity in the visual field may sometimes be mapped to areas of retinal non-perfusion.[2] Unless visual field testing is performed before panretinal photocoagulation is undertaken,[3] the effect of the treatment is unknown.

In a retrospective study on laser treatment, unless there are accurate records there are probably too many badly documented variables to allow an assessment of whether power used or burn size is important in field loss. Data from retrospective studies have produced statements with no statistical backing regarding field loss being preserved if smaller spot sizes are used in the laser treatment.[1,4]

The destructive power of the laser has been demonstrated in histopathological studies on rabbits and humans.[5,6] Moderate burns with argon cause destruction in the retinal pigment epithelial and photoreceptor layers, but high-power burns will in addition cause destruction of the overlying inner nerve fibre layer.[5,6] This will then cause not only a local field defect from the burn but also an extended visual field scotoma from the nerve field layer damage.

Prospective studies have shown that there may be a tendency for smaller spot size (200–400 μm) to cause less field loss than larger spot size (600–800 μm), but any difference is not statistically significant.[7] However, if one eye is coagulated with small intense spots of approximately double the power used in the other eye, then even though there is a better response of the retinopathy to treatment, visual field loss is more prevalent.[8]

The total surface area treated rather than the number of laser burns may be the important factor in the regression of proliferative retinopathy. Studies have indicated that field loss may be related to total burn area,[4] and so we would agree that it is important to treat early and place burns carefully on the retina. However, we would like to emphasise that the intensity of the burns is probably essential in preventing field loss. In previous years our centre adopted the then normal practice of lasering with the 'definite white spot' as the end point, and 15 of 30 patients treated in this way were unable to fulfil DVLC recommendations for driving.[9] Currently our centre practises 'just retinal whitening' as the end point for deciding the power of the burn. Using this criterion, we applied an average of 2000 burns of 500 μm to 15 eyes of 15 patients to achieve regression of diabetic retinopathy with visual fields before and after treatment. Overall there was an average 11.7% decrease in retinal sensitivity to field testing, but only 1.7% of the visual field lost in absolute scotomas.[3]

We used 500 μm burns, which are larger than the 200 μm recommended by two retrospective studies,[1,4] but the results in terms of field loss and regression of retinopathy are excellent. So whilst there is nothing to be argued against using smaller burns to try and preserve visual field, it is the power used that should be recognised as the most likely culprit in exacerbating visual field loss. Perhaps because ophthalmologists in the UK are now more aware of the dangers of field loss, the change in practice which may have caused less field loss in the last few years[1] is lasering with less intense whitening of the retina, rather than using smaller spots of 200 μm.

Sally A. Buckley, FRCOphth
Sally M. Wheatcroft, FRCOphth
Larry Benjamin, FRCOphth
Lyn Jenkins, MRCOphth

Eye Unit
Stoke Mandeville Hospital
Aylesbury
Bucks HP21 8AL
UK

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Sir,

We thank Buckley *et al.* for their comments regarding our paper entitled 'How much blame can be placed on laser photocoagulation for failure to attain driving standards?'[1]

We agree that pre-existing visual field loss can occur prior to laser treatment in patients with diabetes; however, the degree of any loss will depend on the degree of binocular enhancement and the sensitivity of the test employed.

Absolute or relative scotomas in one eye[2] can be cancelled by areas of normal sensitivity in the other eye. In addition, the binocular visual field is often enhanced such that the score is greater than that of both monocular visual fields when merged.[3]

Trick *et al.*[4] employed a visual field program which has a standard stimulus size parameter III, which at a stimulus-to-background ratio of 20 dB converts to Goldmann III 2e equivalent. The Esterman test which we employed uses a Goldmann III 4e equivalent which corresponds to 10 dB – a target of twice the contrast. If the Esterman test was performed pre-operatively, we would suggest that any field losses recorded would most likely be minimal.

With regard to intensity of burns, the first 25 consecutive patients had fully documented records of laser treatment. Intensity was individually applied to produce a greyish/white 200 μm burn and averaged 350 mW. This initial treatment protocol for panretinal photocoagulation was adopted for all subsequent patients and is similar to burns of moderate intensity used in the Seiberth study.[5]

We agree with Buckley *et al.* that deducing the optimum strategies which combine effective treatment with a wide functional visual field are complex and have yet to be established. However, we feel we have achieved the aims of our study to determine the prevalence of failure to attain driving standards and to determine the contribution of field loss solely attributable to treatment. We utilised a newly approved Esterman visual field test and gave guidelines relating to its score output.

S. W. Mackie

Glasgow Caledonian University
City Campus
Cowcaddens Road
Glasgow G4 0BA
UK

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Sir,

In their paper entitled 'A novel conjunctival incision for horizontal strabismus surgery' (*Eye* 1995;9:282–4), Callear and Eagling recommended routinely performing conjunctival peritomy in standard strabismus procedures from 2 o'clock to 10 o'clock inferiorly, to allow access to the horizontal rectus muscles from below, the main advantages of this procedure over conventional surgery being a reduction in time taken to perform surgery and decreased discomfort in the post-operative period, with apparently no alteration in the long-term cosmetic effect. This technique, however, abandons the use of limbal stay sutures during the procedure. We would, there-