

Trypan-blue assisted internal limiting membrane removal in diabetic macular edema

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Purpose:

To evaluate the anatomic and functional results of pars plana vitrectomy with trypan blue-assisted internal limiting membrane(ILM) removal in diabetic macular edema.

Methods:

7 patients with long standing diffuse or cystoid macular edema secondary to diabetic retinopathy were included in the study. 4 patients were male, aged 57(32-71). After pars plana vitrectomy and removal of the posterior hyaloid, total air-fluid exchange was performed and trypan blue was injected into the vitreous cavity under air. Following a waiting period for one minute, trypan blue was removed and the vitreous cavity was filled with fluid again. Finally, the stained ILM was peeled using the Tano diamond dusted scrapper and forceps. Patients underwent visual acuity examination, dilated ophthalmoscopy, fluorescein angiography and optical coherence tomography(OCT) before treatment and during follow-up. Intraoperatively, the hyaloid was attached or partially attached in all 7 eyes. An epiretinal membrane was present in 2 eyes. Mean follow-up was 10+/- 3.8 months.

Results:

Trypan blue staining of the ILM was efficient to differentiate it from the non stained area, and made the peeling more easy and safe. Complete edema resolution was achieved in 5 patients(71%), partial in 1 patient(14%); no change was seen in 1 patient(14%). The average improvement in OCT was from 420 μ to 223 μ . The visual acuity improved in 5 patients(71%)(at least 2 Snellen lines in 57%); unchanged in 2 eyes(28%). No ILM related complications were encountered. No evidence of retinal pigment epithelium or retinal changes due to surgery were recorded and none of the patients complained of scotoma after vitrectomy. No other complications were observed. There was no recurrence of epiretinal membrane formation during the follow-up period.

Conclusion:

Although the follow-up period and number of patients in this pilot study are limited we found that vitrectomy with trypan blue-assisted removal of the ILM leads to resolution of diabetic macular edema and improvement of visual acuity. It also prevents subsequent epiretinal membrane formation. It appears to offer a longer lasting effect than intravitreal triamcinolone. A larger randomized study is necessary to confirm these preliminary findings.

