Adjuvant methods in macular hole surgery: intraoperative plasma-thrombin mixture and postoperative fluid-gas exchange.

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Abstract:

BACKGROUND AND OBJECTIVE: The optimal method for surgical management of idiopathic macular holes remains unknown. Adjuvant methods including intraoperative cytokines and postoperative fluid-gas exchange with and without laser have been described. We report on the safety and final results of routine intraoperative autologous plasma-thrombin mixture and postoperative fluid-gas exchange when necessary as an adjunct to the surgical therapy of this disease.

PATIENTS AND METHODS: A consecutive series of 114 patients (mean age 66.9 years) with primary idiopathic full thickness Stage II, III, and IV macular holes were primarily treated by vitrectomy, fluid/perfluorocarbon gas exchange, and application of autologous plasma-thrombin mixture to the macular hole. Visible epiretinal membranes were peeled but the normal appearing internal limiting membrane was not routinely stripped. Outcome measures included final Snellen visual acuity, rate of macular hole closure, complications, and number of supplemental procedures performed.

RESULTS: Closed at one month, were 110 of 121 (91%) macular holes, including two that underwent repeat fluid/gas exchange and laser within the first two weeks after surgery. At the time of final follow-up (mean: 10.9 months), 110 of 121 (91%) macular holes were closed. This included 8 of 9 eyes that had reopening of the macular hole between one and 21 months successfully treated

by repeat fluid-gas exchange and 2 eyes that underwent a second successful pars plana vitrectomy, membrane peeling, and repeat fluid-gas exchange. Overall, 98 of 121 eyes overall (81%) were successfully treated by a single surgery; 94 of 121 (78%) achieved two lines or greater of visual improvement; 83 of 121 (69%) achieved 20/70 or better vision; and 47 eyes (39%) achieved 20/40 or better vision. Complications in this series included infectious endophthalmitis (1 eye), intraoperative retinal break (2 eyes), late retinal detachment (5 eyes), transient mild intraocular pressure elevation (46 eyes), inflammatory response (six eyes), epiretinal membrane (6 eyes), intraretinal hemorrhages (1 eye), and cataract (33 of 99 phakic eyes underwent cataract extraction during the follow-up).

CONCLUSION: A combination of intravitreal perfluorocarbon gas and autologous plasma-thrombin mixture (tissue glue) was well tolerated in most patients and did not result in any specific long-term complications. The use of supplemental fluid-gas exchange when necessary improved the final success rate. Further well-controlled and randomized studies will be required to determine the efficacy of this as an adjunct or alternative to other methods of treatment for macular holes.