

Recurrent Retinal Detachment: Does Initial Treatment Matter?

A study found that patients with unsuccessful primary scleral buckle required fewer secondary procedures than those with unsuccessful initial vitrectomy.

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There are many options for repair of retinal detachment, including pneumatic retinopexy, scleral buckle, primary vitrectomy, and combined scleral buckle and vitrectomy. The pre-operative factors used in determining how to proceed include the extent of retinal detachment, the location of the retinal breaks, lens status, myopia, lattice degeneration, status of the fellow eye, and the surgeon's training.

The Medicare database shows a shift in the type of procedures performed for retinal detachment repair, with a significant increase in both vitrectomy and combined vitrectomy and scleral buckle. The numbers of scleral buckle procedures and pneumatic retinopexies have declined continuously from the years 2000 to 2010. This is also reflected in reimbursement from insurance carriers, with about \$45 million paid in 2010 for vitrectomy vs about \$2.5 million for scleral buckles.

The American Society of Retina Specialists' Preferences and Trends (PAT) Survey shows that phakic inferior retinal detachments, phakic superior retinal detachments, and pseudophakic inferior retinal detachments all showed a decrease in the number of cases treated with scleral buckling surgery compared with vitrectomy from the years 2006 to 2011.

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The medical literature also reflects a decrease in scleral buckle procedures. Over the past 5 years there have been approximately 3000 papers on vitrectomy and approximately 400 on scleral buckles. In retrospective case series documenting the success rate of these procedures, there are numerous studies showing similar outcomes in terms of scleral buckle vs vitrectomy. In a prospective series, Heimann et al¹ found that in pseudophakic patients, combined vitrectomy and scleral buckle seemed to do better than scleral buckle alone.

INITIAL TREATMENT FAILURE

Despite the use of these procedures, there are still failures, typically due to proliferative vitreoretinopa-

thy (PVR). The number of PVR cases is slightly higher in the vitrectomy group than the scleral buckle group, although these cases aren't always identified in studies. A certain selection bias is noted in retrospective case series, but looking at prospective case series, the number of cases involving PVR is slightly higher in the scleral buckle groups than in the vitrectomy groups.

There are different theories why PVR occurs during a scleral buckle procedure. These include macrophage recruitment, disruption of blood-vitreous barrier, and liberation of the RPE and astrocytes in metaplasia. In a vitrectomized eye, the vitreous normally inhibits cellular proliferation and migration. Hyaluronic acid has been shown to inhibit lymphocyte stimulation in phagocytosis, and an alteration in milieu of cytokines has been noted.² Ricker et al³ looked at subretinal fluid in vitrectomy vs scleral buckle and found differences in eyes with PVR. Hollborn et al⁴ looked at how vitrectomy induces oxidative stress, which increases expression of heparin-binding epidermal growth factor, shown to be elevated in eyes with PVR. Kirchoff⁵ showed that the physical separation in the cytokine-rich environment of an eye that has had a scleral buckle procedure may be more localized compared with a vitrectomized eye.

A RETROSPECTIVE SERIES

To identify the differences among eyes in which initial surgical repair of retinal detachment was unsuccessful, we examined 286 consecutive cases in which treatment was determined by surgeon preference, consistent with their treatment patterns.⁶ Sixty-three eyes underwent scleral buckling surgery, 88 eyes had primary vitrectomy, and 135 eyes underwent combined vitrectomy and scleral buckle. Looking at age, sex, pseudophakic status, macula status, the size of the retinal detachment, the location of breaks, lattice degeneration, and myopia, the only variable that was significant was that the patients undergoing scleral buckling were slightly younger than patients in the other 2 groups. The single operation success rate was 82% in the combined procedure, 83% in the primary vitrectomy group, and 86% in the buckle group, with phakic eyes doing better in the scleral buckle group.

Final visual acuity in this series was consistent with what has been noted in the literature. Patients who had vision of 20/50 or better comprised 44% of the combined vitrectomy and scleral buckle group, 73% of the scleral buckle group, and 64% of the primary vitrectomy group.

Failures of scleral buckle procedures were typically noted earlier than failures of vitrectomy, at about 27 days. The extent of the initial retinal detachment in clock hours was similar in each group. The average number of procedures per patient (including primary

and secondary) was 1.1 in the scleral buckle group, 1.47 in the vitrectomy group, and 1.5 in the combined vitrectomy and scleral buckle group.

A total of 30 eyes required the insertion of silicone oil. Only 2 of these were in the scleral buckle group; the other 28 were in the vitrectomy or combined vitrectomy and scleral buckle group. The number of lensectomies in the secondary procedures was also higher in eyes that underwent vitrectomy compared with those that had scleral buckles.

CONCLUSION

Retinal detachment continues to evolve, with increasing use of vitrectomy and vitrectomy combined with scleral buckle. These are all good procedures, but failures do occur. In our study, patients in whom a primary scleral buckle was unsuccessful required fewer secondary procedures, by about 30%, than those in whom an initial vitrectomy was unsuccessful, and were 3 times as likely to require silicone oil for their secondary repair. ■

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