

# Results of the SPR Study: Scleral Buckling vs Primary Vitrectomy in Retinal Detachment

In patients with rhegmatogenous retinal detachment, the most appropriate operating method is often controversial, with surgeons using different techniques.

BY CONNI BERGMANN KOURY, EDITOR-IN-CHIEF

**P** rimary vitrectomy combined with scleral buckling surgery is recommended for the treatment of rhegmatogenous retinal detachment in pseudophakic and aphakic patients. In phakic patients, scleral buckling alone is recommended, due to the fewer number of secondary cataract surgeries.

These were the findings from the Scleral Buckling versus Primary Vitrectomy in Rhegmatogenous Retinal Detachment Study (SPR) presented at the Association for Research in Vision and Ophthalmology 2006 Annual Meeting in Fort Lauderdale, Fla. Heinrich Heimann, MD, consultant ophthalmic surgeon at St Paul's Eye Unit, Royal Liverpool Hospital, Liverpool, UK, presented the results. He told RETINA TODAY that the main results of the study will soon be published in a peer-reviewed journal.

## SURGERIES COMPARED IN TWO SUBTRIALS

Dr. Heimann and colleagues compared scleral buckling surgery and primary vitrectomy in the treatment of rhegmatogenous retinal detachment of medium complexity. Dr. Heimann noted that, on the easy side, all cases that could be treated with a single episcleral sponge had to be excluded. On the difficult side, patients with proliferative vitreoretinopathy (PVR) grade B or higher and giant tears were not allowed to enter the study.

The prospective, randomized, multicenter trial consisted of two subtrials. A pseudophakic/aphakic group of

The main endpoint of the SPR study was defined as change in visual acuity at 12-month follow-up.

265 patients and a phakic group of 416 patients each compared treatment arms with scleral buckling and primary vitrectomy. Forty-six surgeons from 25 centers in five countries took part in the study.

The main endpoint was defined as change in visual acuity at 12-month follow-up, Dr. Heimann said. The secondary endpoints were primary success without retina-affecting reoperations, number of reoperations and cataract surgeries (phakic group), PVR rate and final anatomical success rates.

## VISUAL ACUITY CHANGES

In the pseudophakic/aphakic subtrial, the mean changes in visual acuity were -0.557 (SD 0.783) LogMAR for scleral buckling and -0.646 (SD 0.686) for primary vitrectomy, according to the SPR abstract. In the phakic subtrial, the mean changes in visual acuity were -0.705 (SD 0.670) for scleral buckling and -0.571 (SD 0.759) for primary vitrectomy. There was no statistically significant difference

(pseudophakic/aphakic,  $P=.2814$ ; phakic,  $P=.1147$ ).

The researchers found that the redetachment rates in the pseudophakic/aphakic subtrial were 38.4% (48 of 125 scleral buckle surgeries) and 21.6% (24 of 111 primary vitrectomies). Redetachment rates were 26.3% in the phakic subtrial (51 of 194 scleral buckles) and 27.6% (53 of 192 primary vitrectomy surgeries).

In the phakic subtrial, patients who were treated with scleral buckling surgery had significantly fewer cataract operations during follow-up.

Dr. Heimann reported that in the pseudophakic/aphakic subtrial, primary success rates and the number of retina-affecting reoperations,  $P=.0167$  and  $P=.0161$  respectively, demonstrated an advantage for primary vitrectomy, especially when combined with buckling elements.

#### FEWER CATARACT OPERATIONS

In the phakic subtrial, the researchers found that patients who were treated with scleral buckling surgery had significantly fewer cataract operations during follow-up ( $P<.00005$ ). No significant differences were found within the pseudophakic/aphakic subtrial for final anatomical success ( $P=.9078$ ) and PVR Grade B or C ( $P=.1879$ ), Dr. Heimann said. In the phakic subtrial, comparison of primary as well as final anatomical success did not show significant difference ( $P=.9137$  and  $P=.8634$ , respectively), nor did comparison of PVR rates ( $P=.1938$ ) or number of retina-affecting reoperations ( $P=.1269$ ).

The SPR research group found no difference between scleral buckling surgery and primary vitrectomy regarding the main endpoint in pseudophakic as well as phakic patients. They note that, based on the analysis of secondary endpoints, primary vitrectomy combined with scleral buckling is recommended in pseudophakic/aphakic patients. Scleral buckling is recommended in phakic patients, however, due to the fewer number of secondary cataract surgeries. It should be noted that these results do not apply to localized detachments with a single break. ■

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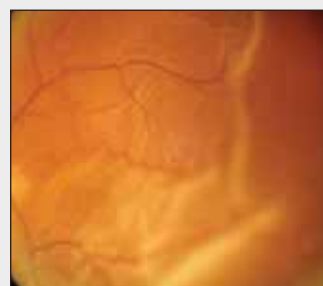
Heimann H, Bartz-Schmidt KU, Bornfeld N, et al. Results of the Scleral buckling versus Primary vitrectomy in rhegmatogenous Retinal detachment study (SPR Study). #2690. Presented at the Association for Research in Vision and Ophthalmology 2006 Annual Meeting, May 2, 2006, Fort Lauderdale, Fla.

#### MORE ON RETINAL DETACHMENTS

**Background:** Along with central retinal artery occlusion and chemical burns to the eye, retinal detachment (Figure 1A and 1B) is one of the most time-critical eye emergencies encountered in the emergency department.

**Pathophysiology:** Retinal detachment occurs when the inner layers of the retina separate from the underlying retinal pigment epithelium (RPE). This occurs:

- when separation of the sensory retina from the underlying RPE occurs by a hole, tear or break in the neuronal layer allowing fluid from the vitreous cavity to seep in between and separate sensory and RPE layers (ie, rhegmatogenous RD);
- traction from inflammatory or vascular fibrous membranes on the surface of the retina, which tether to the vitreous; or
- exudation of material into the subretinal space from retinal vessels such as in hypertension, central retinal venous occlusion, vasculitis, or papilledema.



Photos courtesy of UT Southwestern Medical School, Department of Ophthalmology

**Frequency:** Although 6% of the general US population have retinal breaks, most are benign atrophic holes, which do not lead to retinal detachment. Incidence of retinal detachment is 1 in 15,000 population, with a prevalence of 0.3% in the US. The annual incidence is approximately one in 10,000 or about 1 in 300 over a lifetime. Patients with high myopia, those with aphakia, and cataract extraction complicated by vitreous loss during surgery has all increase the risk of retinal detachment.

**Figure 1. Retinal detachment is the third most time-sensitive ocular emergency encountered by surgeons.**

**Mortality/Morbidity:** Estimates have found that 15% of people with retinal detachments in one eye develop detachment in the other eye. Risk of bilateral detachment is increased in patients who have had bilateral cataract extraction.

**Age:** As the population ages, retinal detachments are becoming more common. Retinal detachment usually occurs in people aged 40 to 70 years.

Source: eMedicine, accessed on June 26, 2006, [www.emedicine.com/emerg/topic504.htm](http://www.emedicine.com/emerg/topic504.htm)