



# Rhegmatogenous Retinal Detachment (RRD) Management to Locate Retinal Breaks Through Scleral Buckling (SB)

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

In this study, we wanted to know about the expert's choice in scleral buckling via a questionnaire. The key to successful rhegmatogenous retinal detachment (RRD) management is to locate and seal all of the retinal breaks, which can be accomplished through scleral buckling (SB) or pars

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plana vitrectomy (PPV). We surveyed drainage of subretinal fluid in scleral buckling, the material of exoplanet used, and the success rate of scleral buckling. The use of cryotherapy, the spot number, and the subretinal fluid drainage did not affect the anatomical and visual outcomes. The existence of multiple retinal breaks was the only preoperative predictor linked to inferior anatomical outcomes. In the pars plana vitrectomy (PPV) group, there were fewer cases of retinal redetachment than in the scleral buckling group. Cryotherapy around the break is preferred to laser around the break as the success rate is 80% more compared with laser.

*Keywords: Rhegmatogenous retinal detachment; laser; cryotherapy; visual outcomes.*

## 1. INTRODUCTION

Rhegmatogenous retinal detachment (RRD) occurs when the structural integrity of the retinal layers is compromised, resulting in the separation of the neurosensory retina from the retinal pigment epithelium. The key to successful rhegmatogenous retinal detachment (RRD) management is to locate and seal all of the retinal breaks, which can be accomplished through scleral buckling (SB) or pars plana vitrectomy (PPV). Pars plana vitrectomy (PPV) is a more modern and evolving procedure that offers a more satisfactory solution to complications that were often difficult to manage with scleral buckling (SB) alone. Scleral buckling is an old procedure that has remained unchanged for over 60 years. It has been compared to vitrectomy in several clinical trials. Clinical outcomes of scleral buckling are better in phakic eyes with uncomplicated retinal detachment, yielding better anatomical and functional results when compared to vitrectomy. However, there is a declining trend towards scleral buckling these days due to its difficulty to teach and execute, as well as its serious side effects, some of which could be vision-threatening. Over that time, vitrectomy procedures and instruments have advanced significantly, resulting in a higher success rate for types and configurations of retinal detachments that are unsuitable or difficult to handle with buckling alone [1-3].

Vitrectomy is a versatile procedure, although there are times when scleral buckling is a preferable option, such as when the vitreous is still attached to the retina. Another disadvantage of vitrectomy is the difficulty of lifting the hyaloid face from the retina. Leaving considerable volumes of vitreous or hyaloid in the eye can lead to proliferative vitreoretinopathy (PVR), which can lead to redetachment and/or poor vision. In these situations, scleral buckling is a great method. The potential to employ the vitreous itself as a tamponade to seal the breaks is another advantage of a scleral buckle in an

eye with a formed vitreous without considerable liquefaction. This may eliminate the need for external drainage or intraocular gas, allowing for a quicker visual recovery. Scleral buckling also does not necessitate precise head placement, which is beneficial in the case of debilitating comorbidities such as rheumatoid arthritis [4,5].

In this study, we wanted to know about the expert's choice in scleral buckling via a questionnaire.

## 2. MATERIALS AND METHODS

We surveyed drainage of subretinal fluid in scleral buckling, the material of exoplanet used, and the success rate of scleral buckling. We gave a questionnaire to 109 retinal surgeons from 18 different countries like Europe, America, Asia, etc.

## 3. RESULTS

The questionnaire had the following questions.

1. Do you drain subretinal fluid in all scleral buckling? 57.8% of retinal surgeons do not drain subretinal fluid in scleral buckling and 33.9% do drain.
2. I drain subretinal fluid in scleral buckling when it is required. 80 % said yes to this question and 17% said no
3. I do not drain subretinal fluid in scleral buckling. 10% said yes and 88% said no
4. Whether complications of subretinal fluid drainage in scleral buckling are worth draining subretinal fluid? 67% said yes and 25% said no
5. What is your preference for exoplanet material during scleral buckling? 48% of retinal surgeons said that it depends on type of break, 29% use tire and 7% use sponge
6. Do you prefer the application of cryotherapy to break during scleral buckling or later on laser around the break

in the post-operative period? 88% of retinal surgeons do cryotherapy and 11 % do laser

7. What is your success rate in scleral buckling in cases of retinal detachment for those who fit the criteria of scleral buckling? 80% retinal surgeons said that the success rate of scleral buckling is 80% and above and 14% of retinal surgeons said that the success rate is less than 80%
8. How many fellows have you trained in scleral buckling? 29% of retinal surgeons said that they have trained 5 or more fellows while 26% had trained 5 or fewer fellows.

#### 4. DISCUSSION

Ljobu Zonur examined the success rates of pars plana vitrectomy (PPV) and scleral buckling (SB) in patients with phakia, pseudophakia, and aphakia in research. Another goal of this study was to assess post-surgery quality of life. The proportion of patients in the pars plana vitrectomy (PPV) group who achieved retinal reattachment at least 3 months after the operation compared to those in the scleral buckling group was similar. Participants in the pars plana vitrectomy (PPV) group had no significant difference in postoperative visual acuity as compared to those in the scleral buckling group. The end anatomical success of participants in the pars plana vitrectomy (PPV) group and the scleral buckling group was nearly identical. With the buckling approach, the anatomical and visual results were comparable. The use of cryotherapy, the spot number, and the subretinal fluid drainage did not affect the anatomical and visual outcomes. The existence of multiple retinal breaks was the only preoperative predictor linked to inferior anatomical outcomes. In the pars plana vitrectomy (PPV) group, there were fewer cases of retinal redetachment than in the scleral buckling group. On average, pars plana vitrectomy (PPV) patients required fewer treatments to achieve anatomical success, although the difference was modest and the findings were biased [6-10].

Evidence on quality of life with a high level of uncertainty revealed that more participants in the pars plana vitrectomy (PPV) group were "happy with eyesight". Cataract development or advancement was more common in the pars plana vitrectomy (PPV) group, the choroidal detachment was more common in the scleral buckling group, and only the pars plana

vitrectomy (PPV) group had new or iatrogenic retinal breaks. Low- or very low-certainty evidence indicates that there may be little or no difference between pars plana vitrectomy (PPV) and scleral buckling in terms of primary success rate, visual acuity gain, and final anatomical success in treating primary retinal detachment. Low-certainty evidence suggests that there may be less retinal redetachment in the pars plana vitrectomy (PPV) group. Some adverse events appeared to be more common in the pars plana vitrectomy (PPV) group, such as cataract progression and new iatrogenic breaks, whereas others were more commonly seen in the scleral buckling group such as choroidal detachment [11-16].

#### 5. CONCLUSION

In this study, we concluded that most retinal surgeons do not drain subretinal fluid in scleral buckling and only drain it when it is required. Most surgeons select material for scleral buckling depending on the location of the break. Cryotherapy around the break is preferred to laser around the break as the success rate is 80% more compared with laser.

#### CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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