

## 10. Summary

In the past decade, PPPV has evolved as an established alternative in the treatment of RRD uncomplicated by PVR. In some tertiary referral centres, including the Department of Ophthalmology at the CCBF, PPPV in the meantime has become the most popular first line treatment of RRD. However, this trend towards PPPV has been encountered with different degrees of approval. Therefore, tremendous variations in the choice of operating methods and the technical details of the operations in theoretically identical retinal detachments exist at present.

The subject of this work is the critical assessment of techniques and results of PPPV in the treatment of RRD; it consists of several sub-studies focussing on the variation of preoperative findings of RRD, the dissimilarities in choice of operating methods, the varied technical details of PPPV, the results of PPPV published in the literature as well as the results of PPPV at the CCBF. Consequently, the current advantages, disadvantages and unsolved issues of PPPV and the design of the SPR Study, a multicentre trial comparing PPPV and SBS, are assessed and described.

Regarding the current discussion about the arguments for or against PPPV, it is of importance to know whether the situations at question resemble a major proportion of RRD cases or are confined to a small and insignificant subgroup. In the Recruitment Study (which is part of the SPR Study), we could demonstrate that no more than 40% of all RRD can be treated with a single buckle only. About 40% of patients have more than one break, 30% of patients are pseudophakic, 10% are highly myopic and 10% have preoperative PVR grade B or C. Leaving out accepted indications for PPPV (PVR, giant tears, media opacities) and scleral buckles (single breaks with localised detachment), about one third of all patients with RRD can be sorted into the group of “more complex RRD” that currently is in the focus of the discussion. This underlines the impact of this work and the results of the SPR Study regarding daily clinical practice in vitreoretinal surgery.

The diversity of opinions regarding the “right” choice of operating method is reflected in our analysis of contemporary operating methods for RRD in Germany as a result of the Recruitment Study. In the year 2000, the percentage of PPPV as the first operating method varied between 13% and 73% in 10 different tertiary referral centres with SBS still being the method of choice in a majority of 61% of all patients. In the literature, this value differed from 0% to 63% in different series. There also is a definite trend towards PPPV, as demonstrated by the increase of PPPV from 0% to 32-63% in the past decade in different departments. In the CCBF, the percentage of PPPV increased from 25% in 1993 to 60% in 2003. These results further emphasize the great variation in the choice of operating method today and stress the impression that the choice of operating method currently is more based on personal preferences of the surgeon rather than resembling a stage-related and more differentiated approach. In addition, the obvious trend towards PPPV has not been followed by all departments alike. In the majority of centres, SBS still is the preferred method for the greater part of RRD.

Summarizing the published results of 25 series of PPPV, primary reattachments can be achieved in 85% and final reattachments in 95% of patients. PPPV seems to be particularly successful in pseudophakic patients with reattachment rates of 91% after one surgery and 98% after one or more operations. The intraoperative complication rate is low with iatrogenic breaks and lens touch being the most important problems encountered. The functional results following PPPV seem to be better than those achieved with SBS in these more complex cases of RRD with 63% of patients achieving 0.4 or better at final follow-up. An additional interesting finding of this review is the immense diversity in technical details of PPPV. Additional scleral buckling has been employed in 43% of cases and the possible advantages or harmful effects of it have not been defined as yet. Further, five different tamponades with dissimilar durations of their tamponading effect have been used. Right after the definition of the indications of PPPV, the appropriate choice of intraoperative details await better definition.

PPPV has been used as a treatment option for RRD in the Department of Ophthalmology at the CCBF since 1992. The first published series of PPPV in Germany as well as the largest published series of PPPV worldwide have been realised as part of

this work within the CCBF. The primary success rate (70.7%) was lower but the final success rate (97.5%) higher than those of other published series. Regarding the functional outcome, 48% achieved a visual acuity of 0.4 or better, which is comparable to other series of PPPV and compares favourably to results of SBS against the background that more complicated situations of RRD were included in our series. Most risk factors associated with an unfavourable postoperative outcome matched those associated with failure following SBS, e.g. duration of symptoms, number of quadrants detached, level of myopia etc.. However, the association of the use of endocryotherapy with postoperative failure was for the first time demonstrated in this work. Another finding of interest was that beginning surgeons achieved results comparable to those of more experienced surgeons using PPPV for more complex RRD. This is a strong argument and an explanation for the increased use of PPPV in more complex situations by the “new generation” of vitreoretinal surgeons.

A critical evaluation of the published results of PPPV and its proposed benefits leads to a sorting of arguments into definite advantages of PPV, presumed advantages, disadvantages and unsolved issues:

- Definite advantages of PPPV are the better and easier intraoperative control in difficult cases of RRD, the removal of media opacities, the avoidance of severe problems associated with SBS, the better intraoperative visualisation of the retinal periphery and lower postoperative incidences of refractive changes, double vision and choroidal detachments
- Presumed advantages of PPPV are better anatomical and functional results in more complex situations of RRD
- Definite disadvantages of PPPV are a high rate of postoperative cataract progression, iatrogenic breaks, new breaks and pressure rise in addition to the more expensive equipment.
- Unsolved issues in comparison to SBS are the true rates of redetachments, PVR and functional failures in a matched cohort of cases; concerning the technical details of PPPV, the need for additional scleral buckling and the choice of tamponade are currently not clearly defined

Finally, the SPR Study has been designed in part on the basis of the contents of this thesis with the author of this thesis being co-author of the study design, the Recruitment Study and a current member of the endpoint committee. The SPR Study is the first prospective multicenter and randomised trial comparing PPPV against SBS in more complex situations of RRD in phakic and aphakic/pseudophakic patients. In total, 45 surgeons in 25 centres of 5 European countries enrolled 664 patients (407 phakic and 257 aphakic/pseudophakic) between 1998 and 2003. The results of the study are to be expected in June 2005.