

4. Rhegmatogenous retinal detachment – variation of preoperative findings

4.1. Introduction

RRD can present in many different stages from a single break with little surrounding subretinal fluid to a total detachment with advanced PVR. As the choice of operating method is related to the complexity of the preoperative situation, an analysis of the frequency and impact of different preoperative findings is of importance concerning the indications for PPPV. Only few publications have examined the variation of preoperative findings, most of which have been published several decades ago. Through the increasing number of pseudophakic patients with RRD, a shift in preoperative findings can be seen in recent years [2]. Therefore, an updated overview of preoperative findings is imperative as a foundation for the debate about the choice of appropriate operating methods and their estimated proportions. In this section, the current literature is reviewed and the analysis of the “Recruitment Study” within the SPR Study [28] is presented.

4.2. Review of the literature

Many different preoperative morphological details and their possible association with the postoperative outcome have been analysed in the literature [3, 35, 96]. However, significant variations in the assessment of these findings exist. Therefore, no common classification system or grading of RRD is used to date. This hinders the interpretation and comparison of different studies on the treatment of RRD. Regarding preoperative characteristics published in the literature, it can be summarized that (Table 1):

- At least one retinal break can be detected in > 90% of RRD
- A single break is present in more than half of the cases
- About one third of patients have multiple breaks
- On average, two retinal quadrants are detached

- The temporal and upper quadrants are most commonly involved
- In about two thirds, the macula is detached
- A significant vitreous haemorrhage is present in less than 5%
- About a third of patients has a history of cataract surgery
- PVR grade B or higher is present in about 10% of cases

Author, year	Series	n	No. of detached quadrants (mean) or total detachment (%)	Macula on/off (%)	PVR [‡]	Cataract surgery (%)	Vitreous haemorrhage
Cowley 1989 ^{††} [21]	Consecutive single surgeon series	390	2,4 mean	32/68%	18%	45%	2%
Sharma 1994 [86]	Consecutive single surgeon series without PPPV		36% total	15/85%	11%		8%
Algvere 1999 [3]	Epidemiological study at 12 centres	1116		40/60%	10%	31%	
Hooymans 2000 [49]	Consecutive series of one centre	186		45/55%	5%	30%	4%
Kon 2000 [52]	Consecutive series of one center, PPPV only	140	2,7 mean 35% total	28/72%	39%	29%	14%
Johnson 2002 ^{††} [50]	Consecutive series of one centre	142	1,7 mean	48/62%		25%	

Table 1: Preoperative characteristics of RRD. (‡ Different classifications, †† including redetachments † including trauma)

4.3. Results of the “Recruitment Study”

4.3.1. Background

The SPR Study is a randomised prospective multicenter trial comparing SBS and PPPV in patients with RRD (a detailed description of the study is presented in chapter 8). A first analysis of the recruitment figures for the SPR study in 1999 indicated lower than expected recruitment figures during the first months of the study. To analyze the reasons for exclusion of patients from the study, a recruitment list was forwarded to all

participating centres in 1999 (Figure 1). In this list, all patients presenting with a RRD were to be recorded with fundus drawings and an attached questionnaire regarding the possible reasons of study-exclusion. The aim of the recruitment list was to identify cases that would have been eligible but for different reasons were not recruited. As a result of the recruitment study, an amendment was added to the study design and recruitment figures improved soon after. In addition to the preoperative fundus situation, the intended type of operating method was noted. Thus, as a spin-off of the recruitment study, valuable information regarding preoperative findings in a comprehensive and representative sample of RRD patients from different centres was achieved (Chapter 4.3) as well as details regarding the current choice of operating methods in different institutions (Chapter 5.5).

The preliminary results of the first draft of the recruitment data are presented here and in chapter 5.5. The final number of included patients and definitive numbers may vary following verification of all records. A manuscript providing the final data set is in preparation for publication [28].

Overall, 1302 patients were documented in the records for the year 2000. Recruitment lists from 13 centres (1122 patients) provided consistent data for analysis regarding the choice of operating methods. The preoperative characteristics are displayed in Table 2. The classifications of fundus drawings by three different vitreoretinal surgeons (N. Feltgen, Freiburg, S. Wolff, Berne and the applicant) are listed in Table 3.

33164

SPR Patient Recruitment PR - 1

Investigator _____ Patient Initials B.E. Date of Birth 26/10/55
Day Month Year

Location of Eye right left Sex male female

Eye is aphakic/pseudophakic phakic Patient included yes no

If excluded, please fully specify reason(s) for not including the patient into the study. Please check all answers possible – more than one reason for exclusion might be present and should be ticked accordingly. Note that only primary detachments, no redetachments, are to be recorded in this Recruitment List (previous cryo-/laser coagulation acceptable).

Myopia of more than -7.0 diopters (if not available: axial length > 27.0 mm)

Patient is already participating in a clinical trial, whatsoever

PVR stage B (except holes with irregular edges) or C according to Machemer

Written consent not given

Not willing or able to participate in the study

Age less than 18 years

No study surgeon available for surgery

Pregnancy

Breaks at or central to the vessel arcades

Intraocular operations other than cataract surgery with intracapsular intraocular lens

Complicated cataract surgery

Other

Other eye diseases

Glaucoma

Macular hole

Amblyopia

Vitreous hemorrhage/-opacity

Other

Severe systemic diseases

Asthma

Diabetes

Heart disease

Hypertension

Other

Medications

Marcumar (Warfarin)

Diamox (Acetazolamide) preoperatively

Other

Hole situation

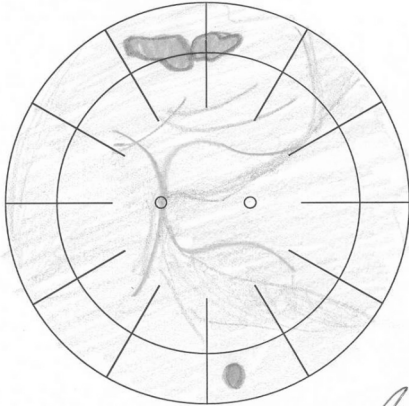
Single sponge possible

Tear size > 2 clock-hours

Unclear situation

Other

Fundus drawing (required for each patient)



Operation (to be) performed

Episcleral sponge

Multiple sponges

Encircling band

Vitrectomy

Tamponade

Silicone oil

SF6 gas

Other Kryo

Raba, 11.08.00
Place, Date

Signature of Investigator

Recruitment List Version 2.2 © SPR-Study 1999

Figure 1: Documentation of the recruitment list, SPR study

4.3.2. Results

Several outcomes of this recruitment study are of crucial interest regarding the current standing and discussion of PPPV for RRD:

- A “single sponge possible” type of preoperative situation is only given in 40% of patients. Consequently, about 60% of patients have situations in which at least more than one scleral buckle have to be used; these situations have to be classified as more demanding cases of RRD surgery (and in which PPPV presents a potential alternative to SBS).
- Thirty-two percent of documented patients fulfilled the inclusion criteria for the SPR Study judged by evaluation of the fundus drawings only (neglecting additional exclusion criteria, e.g. systemic disease, high myopia etc.). This underlines that the group of “more complicated” RRD in which there currently is a large variety in the selection of operating methods comprises a significant proportion of primary RRD presenting to tertiary centres and highlights the clinical meaning of this work and the SPR Study. In consequence, it is to be expected that the results of the SPR study will have a significant impact on the surgical treatment of RRD.
- RRD in pseudophakic patients (in which PPPV seems to be particularly successful) currently comprise about one third of all detachments. This underlines that, through the increasing age of the population and the increasing number of cataract surgeries, the proportion of pseudophakic patients has increased in recent years and, compared to several other recently studies, seems to have reached a plateau at about 30% of all detachments (Chapter 4.2, Table 1).

Pseudophakia	32% (419/1302)
Phakia	67% (871/1302)
Missing values	1% (12/1302)
Right eye	53% (694/1302)
Left eye	47% (608/1302)
Male	56% (725/1302)
Female	44% (568/1302)
Missing values	0.7% (9/1302)
Inclusion into the SPR Study	20% (261/1302)
Not included	79% (1033/1302)
Missing values	0.6% (8/1302)
Age < 18 years	0.8% (11/1302)
Glaucoma	4% (48/1302)
Amblyopia	3% (41/1302)
Severe systemic disease	25% (319/1302)
Asthma	2% (23/1302)
Diabetes	5% (72/1302)
Heart disease	8% (102/1302)
Hypertension	14% (184/1302)
Myopia > -7.0 dpt	11% (141/1302)
PVR grade B or C	11% (138/1302)
Macular hole	2% (33/1302)
Vitreous haemorrhage	6% (76/1302)
Breaks > 2 clock hours	2% (31/1302)
Unclear hole situation (all patients)	8% (104/1302)
Unclear hole situation (pseudophakia)	13% (53/419)
Unclear hole situation (phakia)	6% (50/821)
Single sponge possible	40% (513/1302)
Warfarin therapy	2% (25/1302)

Table 2: Preoperative characteristics of 1302 patients with RRD in the year 2000 documented in the SPR Stud recruitment list

Sufficient quality of fundus drawing	99% (1268/1302)
SPR inclusion possible by fundus drawing	32% (418/1302)
Macular hole	2% (33/1302)
Vitreous haemorrhage	6% (76/1302)
Breaks > 2 clock hours	2% (31/1302)
Unclear hole situation (all patients)	8% (104/1302)
Unclear hole situation (pseudophakia)	13% (53/419)
Unclear hole situation (phakia)	6% (50/821)
Single sponge possible	40% (513/1302)
Number of breaks – no break	15% (201/1302)
1 break	44% (564/1302)
2 breaks	18% (224/1302)
>2 breaks	24% (313 /1302)
Nasal upper quadrant involved	55% (714/1302)
Nasal lower quadrant involved	46% (603/1302)
Temporal upper quadrant involved	78% (1004/1302)
Temporal inferior quadrant involved	67% (864/1302)
Macula detached	42% (541/1302)
Macula attached	47% (599/1302)
Partly detached	5% (70/1302)
Not examinable	3% (44/1302)
Missing values	2% /31(1302)
Bullous detachment	17% (221/1302)

Table 3: Classification of fundus drawings of 1302 patients in the SPR Study recruitment list

4.4. Summary

In summary, a review of the current literature and the results of the recruitment lists of the SPR Study show that a significant proportion of patients with RRD initially have more complex preoperative situations. About 40% of patients have more than one break, 30% of patients are pseudophakic, about 10% are highly myopic and about 10% have preoperative PVR grade B or C. A single sponge is sufficient in only approximately 40% of patients and, classifying the preoperative fundus drawings of the SPR recruitment list, about one third of patients would be eligible for the SPR Study. These findings underline the clinical importance of the subject of this work and the likely impact of the results of the SPR Study on clinical practice.