## 4. Results

### 4.1 Patients

#### 4.1.1 Age and gender

Of the 488 patients with RRD, 174 (36%) were female, 314 (64%) were male. The median age was 60 years (range, 12-94).

#### 4.1.2 Preoperative ocular characteristics

Because 24 (4.9%) of the 488 patients suffered from RRD in both eyes, 512 eyes were included in study. The preoperative ocular characteristics of the 512 eyes are summarized in Table 4.1-1. At study entry, 67 (13%) eyes had a history of peripheral retinal breaks, which had been treated with laser- or cryocoagulation before the operation. Fourty (7.8%) eyes had amblyopia, 28 (5.5%) glaucoma and 11 (2.1%) strabismus.

Nine (0.8%) and 127 (24.8%) eyes were aphakic and pseudophakic; 84 (16.4%) eyes were myopic greater than -10 dpt; 75 (14.6%) eyes were found to have vitreous haemorrhage, 298 (58.2%) eyes were operated with a macular detached; 89 (17.4%) eyes had a total retinal detachment. 63 (12.3%) eyes had a retinal hole posterior to the equator; 118 (23%) eyes had 4 or more breaks; a further 117 (22.8%) had a break ≥ 2 clock hours and/or an unusual break; 35 (6.8%) had a retinal tear. Of 77 (15%) eyes without breaks detected before operation, in 54 (70.1%) eyes the breaks were found during operation.

Table 4.1 Preoperative ocular characteristics (n=512)

| Variable | Cases | Percent |
| --- | --- | --- |
| Age (years) | | |
| Median | 60 | |
| Range | 12~94 | |
| 12~39 | 49 | 9.6 |

| | | |
|---|---|---|
| 40~59 | 192 | 37.5 |
| 60~79 | 252 | 49.2 |
| 80~94 | 19 | 3.7 |
| Operated eye | | |
| Right | 264 | 52 |
| Left | 248 | 48 |
| Duration of symptoms | | |
| 1 day | 85 | 16.6 |
| 2~7 days | 269 | 52.5 |
| 8~29 days | 108 | 21.1 |
| ≥ 30 days | 50 | 9.8 |
| Status of lens | | |
| Phakic | 376 | 74.4 |
| IOL | 127 | 24.8 |
| Aphakic | 9 | 0.8 |
| Refraction | | |
| Mean±SD | -4.3±6.0 | |
| Emmetropia/hyperopia (> -1D) | 169 | 33.0 |
| -1.0~ <-5D | 155 | 30.3 |
| -5.0~ -10D | 104 | 20.3 |
| >-10D | 84 | 16.4 |
| Visual acuity | | |
| Median | 0.1 | |
| Range | LP-0.8 | |
| NLP~0.05 (< 0.1) | 252 | 49.2 |
| 0.1~0.3 | 102 | 19.9 |
| 0.4~1.0 | 158 | 30.9 |
| Astigmatism | 143 | 27.9 |
| Amblyopia | 40 | 7.8 |
| IOP | | |
| <22mmHg | 471 | 92 |

| | | |
|---|---|---|
| ≥22mmHg | 32 | 6.3 |
| Unknown | 9 | 1.8 |
| PVR | | |
| Yes | 102 | 19.9 |
| No | 410 | 80.1 |
| Vitreous haemorrhage | | |
| No | 437 | 85.4 |
| Yes | 75 | 14.6 |
| Minor | 26 | 5.1 |
| Moderate | 37 | 7.2 |
| Severe | 12 | 2.3 |
| History of coagulation | | |
| Yes | 67 | 13.1 |
| No | 445 | 86.9 |
| Other eye diseases | | |
| Glaucoma | 28 | 5.5 |
| Strabismus | 11 | 2.1 |
| Extent of RD | | |
| 1 quadrant | 63 | 12.3 |
| 2 quadrants | 239 | 46.7 |
| 3 quadrants | 121 | 23.6 |
| 4 quadrants | 89 | 17.4 |
| Location of RD | | |
| Superotemporal | 402 | 78.5 |
| Inferotemporal | 328 | 64.1 |
| Superonasal | 306 | 59.8 |
| Inferonasal | 224 | 43.8 |
| Bullous detachment | | |
| Yes | 60 | 11.9 |
| No | 452 | 88.1 |
| Status of macular | | |

| | | |
|---|---|---|
| Macular-on | 214 | 41.8 |
| Macular-off | 298 | 58.2 |
| Macular diseases | | |
| Macular hole | 13 | 2.5 |
| Macular pucker | 11 | 2.1 |
| Macular degeneration | 4 | 0.8 |
| Macular haemorrhage | 1 | 0.2 |
| Retinal breaks | | |
| Number | | |
| Median | 2 | |
| Range | 0-19 | |
| 0 break | 23 | 4.5 |
| 1 break | 187 | 36.5 |
| 2 breaks | 104 | 20.3 |
| 3 breaks | 80 | 15.6 |
| > 3breaks | 118 | 23 |
| Location | | |
| Anterior | 426 | 83.2 |
| Posterior | 63 | 12.3 |
| Size | | |
| Small or normal | 372 | 72.7 |
| Large or giant | 80 | 15.6 |
| Unusual | 11 | 2.1 |
| Both | 26 | 5.1 |
| No break seen | 77 | 15 |
| Retinal tear | | |
| Yes | 35 | 6.8 |
| No | 477 | 93.2 |

NLP = no light perception; LP = light perception; IOP = intraocular pressure; IOL = intraocular lens; SD = standard deviation; PVR = proliferative vitreoretinopathy; RD = retinal detachment;

## 4.2 Surgical details

Intraoperative data are summarized in Table 4.1-2. A segmental scleral buckling procedure was performed in 8 (1.6%) eyes, and an encircling band was used in 133 (26%) eyes. Silicone oil was used as a tamponade in 81 (15.8%) eyes. PFCL was used in 355 (69.3%) eyes. The flap of the break was removed in 363 (70.9%). An internal drainage or relaxing retinotomy was performed in 41 (8.0%) eyes. Iatrogenic retinal breaks and lens touch were noted in 42 (7%) and 33 (5.1%) of 78 eyes (15.2%) with complications. Cataract operation was simultaneously performed in 49 (9.6%) eyes.

Table 4.2 Intraoperative Data (n=512)

| Variable | Cases | Percent |
|---|---|---|
| Surgeon | | |
| 1 | 33 | 6.4 |
| 2 | 82 | 16.0 |
| 3 | 37 | 7.2 |
| 4 | 151 | 29.5 |
| 5 | 97 | 18.9 |
| 7 | 40 | 7.8 |
| 8 | 1 | 0.2 |
| 9 | 7 | 1.4 |
| 10 | 30 | 5.9 |
| 11 | 34 | 6.6 |
| Specialist | | |
| Beginner | 150 | 29.3 |
| Non-beginner | 150 | 29.3 |
| Specialist | 212 | 41.4 |
| Tamponade | | |
| Silicone oil | 81 | 15.8 |
| SF6 | 431 | 84.2 |
| Density of SF6 | | |

| | | |
|---|---|---|
| 20% | 17 | 3.3 |
| 25% | 162 | 31.6 |
| 30% | 183 | 35.7 |
| 35% | 43 | 8.4 |
| 40% | 26 | 5.1 |
| Retinopexy | | |
| Endo | 148 | 28.9 |
| Exo | 270 | 52.7 |
| Both | 94 | 18.4 |
| Scleral buckle | | |
| Segmental | 8 | 1.6 |
| Encircling | 133 | 26.0 |
| No buckle | 371 | 72.4 |
| Remove of flap | | |
| Yes | 363 | 70.9 |
| No | 149 | 29.1 |
| Drainage | | |
| Internal | 491 | 95.9 |
| External | 4 | 0.8 |
| Mixed | 17 | 3.3 |
| PFCL | | |
| Yes | 355 | 69.3 |
| No | 157 | 30.7 |
| Retinotomy | | |
| Yes | 41 | 8.0 |
| No | 471 | 92.0 |
| Situation of breaks | | |
| Same as preoperative | 211 | 41.2 |
| Different from preoperative | 278 | 54.3 |
| No break seen | 23 | 4.5 |
| Complications | | |

| | | |
|---|---|---|
| Iatrogenic hole | 36 | 7.0 |
| Lens touch | 26 | 5.1 |
| Subretinal bleeding | 6 | 1.2 |
| Choroidal bleeding | 1 | 0.2 |
| Both or more | 9 | 1.7 |
| No complications | 434 | 84.8 |
| Cataract surgery | | |
| No | 463 | 90.4 |
| Yes | 49 | 9.6 |
| Phako+IOL | 22 | 4.3 |
| Lensectomy | 13 | 2.5 |
| Posterior capsulotomy | 10 | 2.0 |
| Intraocular lens removal | 1 | 0.2 |
| IOL reposition | 3 | 0.6 |

SF6 = sulfur hexafluoride; PCFL = perfluorocarbon liquuid; IOL = intraocular lens

Phako = phakoemulsification;

## 4.3 Postoperative outcomes

### 4.3.1 General postoperative outcomes

General postoperative outcomes are displayed by follow-up in Table 4.3-1. The postoperative follow-up period ranged from 3 to 108 months (median, 14.8 months). More than 1 and 2 years follow-up was obtained for 312(60.9%) and 148(28.9%) eyes. Throughout follow-up, silicone oil as intraocular tamponade was noted in 153 (29.9%) eyes, at the last follow-up time, silicone oil was left in 42 (8.2%) of 153 eyes. Of the 42 eyes primary retinal reattachment was achieved in 20 (47.6%) eyes, final success rate was 88.1% (37/42), only one eye (2.4%) had a final visual acuity of 0.4 or better and 21 (50%) less than 0.1, 17 eyes had (40.5%) PVR and 5 (11.9%) macular pucker respectively.

The relationship between follow-up period and various postoperative outcomes was evaluated. No statistically significant associations were found among any of the anatomic and

functional outcomes, PVR and macular pucker analyzed. However, initial success rate and percentage of eyes with visual acuity of 0.4 or more gradually increased by follow-up period.

Table 4.3-1 General postoperative outcomes by follow-up

| Variable | ≥ 3months n = 512 | > 6months n = 461 | > 12months n = 312 | > 24months n = 148 |
|---|---|---|---|---|
| Anatomic outcomes | | | | |
|   Initial success rate | 362(70.7%) | 329(71.4%) | 222(71.2%) | 110(74.3%) |
|   Final success rate | 499(97.5%) | 451(97.8%) | 305(97.8%) | 143(96.6%) |
| Functional outcomes | | | | |
| Best VA (median=0.4) | | | | |
|   NLP~0.05 | 53(10.4%) | 42(9.1%) | 30(9.7%) | 11(8.5%) |
|   0.1~0.3 | 149(29.1%) | 130(28.2%) | 75(24%) | 31(20.9%) |
|   0.4~1.0 | 310(60.5%) | 289(62.7%) | 207(66.3%) | 106(71.6%) |
| Final VA (median=0.3) | | | | |
|   NLP~0.05 | 88(17.2%) | 76(16.5%) | 54(17.4%) | 24(16.2%) |
|   0.1~0.3 | 177(34.6%) | 153(33.2%) | 90(28.8%) | 36(24.3%) |
|   0.4~1.0 | 247(48.2%) | 232(50.3%) | 168(53.8%) | 88(59.5%) |
| PVR | 86(16.8%) | 76(16.5%) | 57(18.3%) | 20(13.5%) |
| Macular pucker | 113(22.1%) | 103(22.3%) | 72(23.1%) | 32(21.6%) |
| Cataract surgery | 218(42.8%) | 210(45.6%) | 158(50.6%) | 77(51.7%) |

NLP = no light perception; PVR = proliferative vitreoretinopathy

## 4.3.2 Anatomic outcomes

## 4.3.2.1 Primary and final success rate

The retina was reattached in 362 (70.7%) eyes at three or more months follow-up after single operation and 499 (97.5%) after one or more operations; 222 (71.2%) and 110 (74.3%), and 305 (97.8%) and 143(96.6%) at more than 12 and 24 months follow-up respectively. In 150 (29.3%) eyes the retina redetached after one procedure, in 126 of them (84%) the redetachment occurred during three or less months after the initial operation.

**4.3.2.2 Survival analysis of retinal redetachment**

A retinal redetachment was detected 4 days to 28.1 months (mean±SD, 2.8±4.8 months, median, 36 days). A retinal survival time was 4 days to 108 months (mean±SE, 74.2±2.4 months, 95% CI, 69.5~78.9). A Kaplan- Meier retinal reattachment survival curve is played in Fig. 1. Postoperative macular pucker (p <0.001), cataract surgery (p <0.001) and time of cataract surgery (p <0.001) significantly associated with retinal survival time by Kaplan-Meier survival analysis, the retinal survival time distinctly declined in patients with postoperative macular pucker and cataract surgery (Fig. 4 and 6). The retinal survival time distinctly changed by time of cataract surgery, the lowest survival time was present in eyes that the cataract was operated in 3~6 months after PPV operation, as followed, in 6~12 months and 1~2 years (Fig. 5).
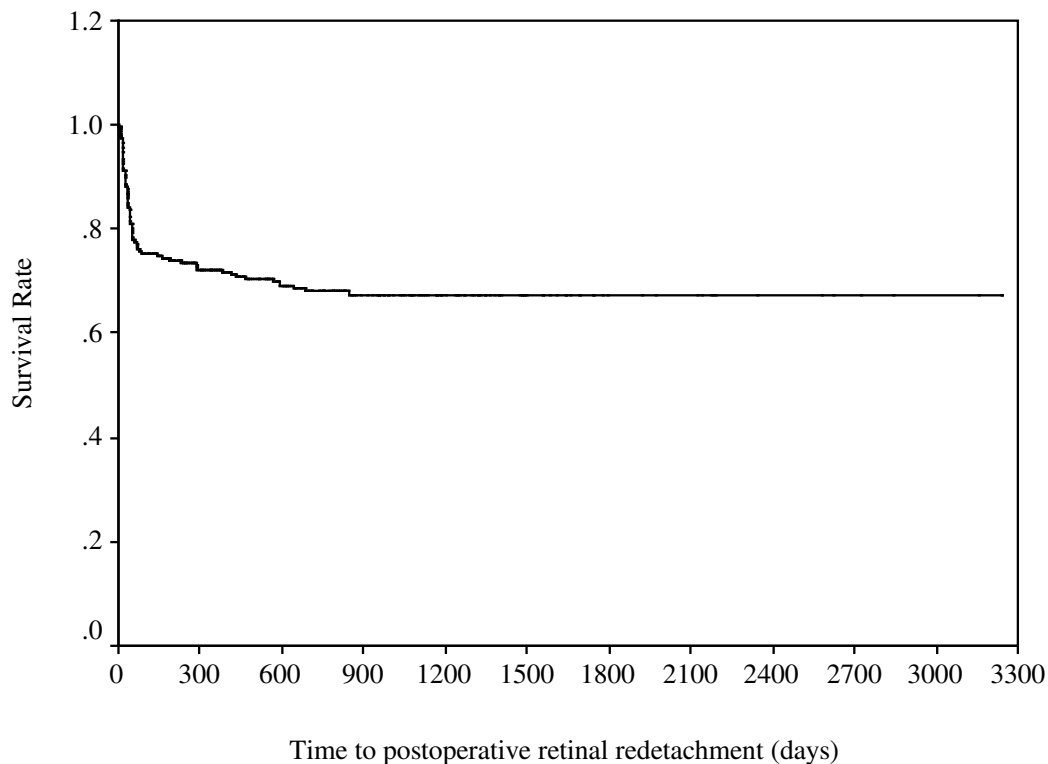


Time to postoperative retinal redetachment (days)

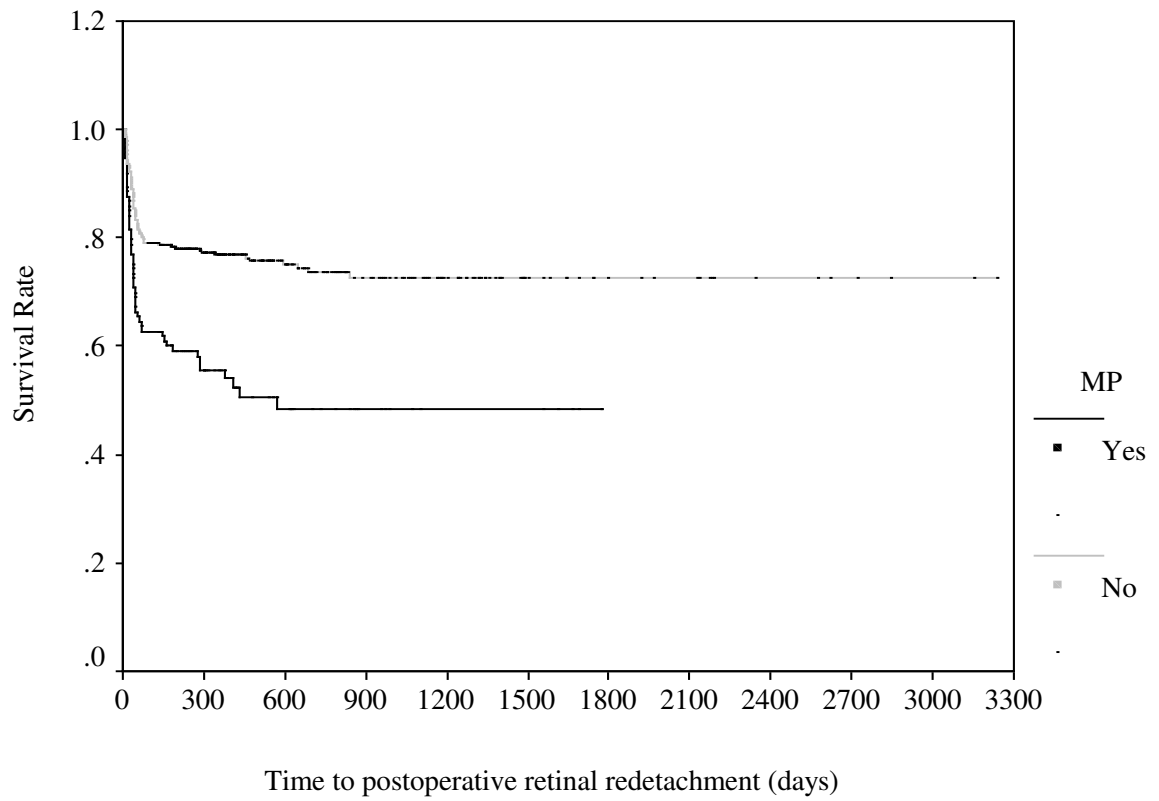Fig. 1 Postoperative retinal survival curve

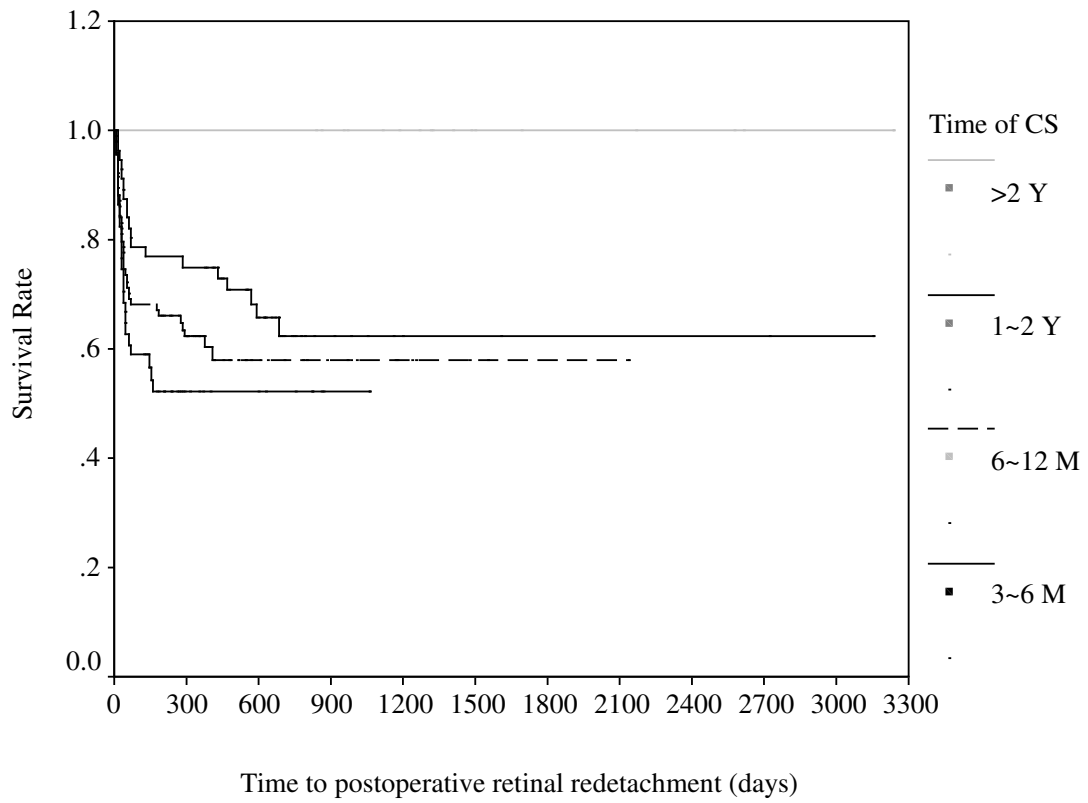Fig. 4 Survival curve with regard to macular pucker (MP)

Fig. 5 Survival curve with regard to time of cataract surgery (CS)
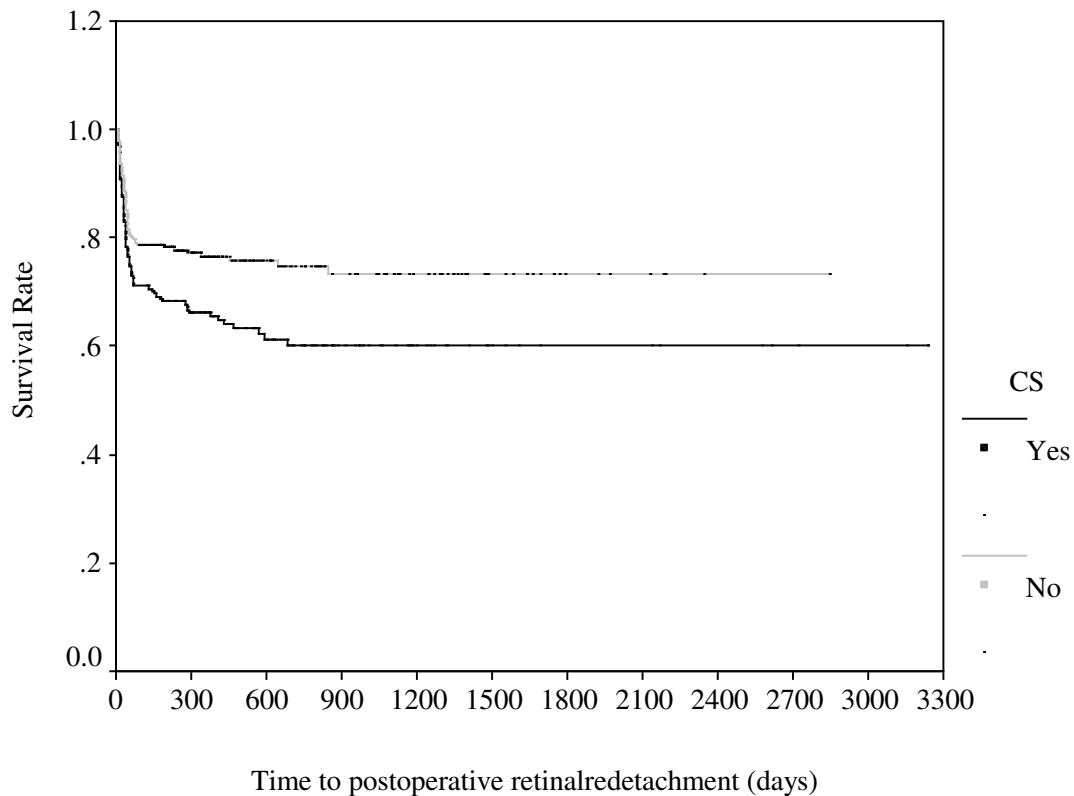
(M = months, Y = year)

Fig. 6 Survival curve with regard to postopaerative cataract surgery(CS)

### 4.3.2.3 Analysis of risk factors for retinal redetachment

Preoperative and intraoperative characteristics associated with primary and final success rate are shown in Tables 4.3-2 and 4.3-3. Preoperative and intraoperative characteristics significantly associated with primary success rate included high intraocular pressure, no inferotemporal RD and exocryoretinopexy. In multivariate analysis, non-specialist, besides high intraocular pressure and no inferotemporal RD, was a statistically significant factor.

Preoperative and intraoperative characteristics significantly associated with final success rate included refraction, preoperative visual acuity, amblyopia, macular disease, extent of RD, inferotemporal and inferonasal RD, number and location of break, no break seen and cataract surgery. After multivariate regression analysis, besides four of these variables: refraction, amblyopia, existence of break and macular disease, scleral buckle procedure was a statistically significant factor.

Inclusion of preoperative factors in the multivariate logistic regression model for anatomic outcomes removed eyes without break seen (22 eyes, because one eye was excluded due to no tension note), the preoperative and intraoperative factors associated with anatomic outcomes changed. Besides high intraocular pressure and no inferotemporal RD, large and unusual break was a significant factor associated with primary success rate; and only three variables: amblyopia, macular disease and number of retinal break were significantly associated with the final success rate.

Table 4.3-2 Preoperative characteristics associated with anatomic outcomes

| Variable | Primary reattachment | *P* value | | Final reattachment | *P* value | |
| --- | --- | --- | --- | --- | --- | --- |
| | n (%) | Uni. | Multi. | n (%) | Uni. | Multi. |
| Gender | | 0.086 | 0.052 | | 0.559 | 0.838 |
| Male | 224 (68.1) | | | 322 (97.9) | | |
| Female | 138 (75.4) | | | 177 (96.7) | | |
| Age (years) | | 0.201 | 0.985 | | 0.984 | 0.386 |
| 12~39 | 30 (61.2) | | | 47 (95.9) | | |
| 40~59 | 142 (74) | | | 188 (97.9) | | |
| 60~79 | 179 (71) | | | 247 (98) | | |
| 80~94 | 11 (5.8) | | | 17 (89.5) | | |
| Eyes | | 0.208 | 0.286 | | 0.579 | 0.896 |
| Right | 181 (68.2) | | | 256 (97) | | |
| Left | 181 (73.4) | | | 243 (98) | | |
| Symptom | | 0.376 | 0.817 | | 0.819 | 0.991 |
| 1 day | 57 (67.1) | | | 85 (100) | | |
| 2~7 days | 195 (72.5) | | | 261 (97) | | |
| 8~29 days | 79 (73.1) | | | 106 (98.1) | | |
| ≥ 30 days | 31 (62) | | | 47 (94) | | |
| Status of lens | | 0.510 | 0.417 | | 0.774 | 0.680 |
| Phakic | 269 (71.5) | | | 366 (97.3) | | |
| IOL/aphkic | 93 (68.4) | | | 133 (97.8) | | |
| Refraction | | 0.078 | 0.166 | | 0.035 | 0.015 |

| | | | | | | |
|---|---|---|---|---|---|---|
| >-1.0 | 126 (74.6) | | | 165 (97.6) | | |
| -1.0~<-5D | 111 (71.6) | | | 154 (99.4) | | |
| -5.0~-10D | 63 (60.6) | | | 103 (99) | | |
| >-10D | 62 (73.8) | | | 77 (91.7) | | |
| Visual acuity | | 0.678 | 0.690 | | 0.031 | 0.181 |
| NLP~0.05 | 174 (69) | | | 241 (95.6) | | |
| 0.1~0.3 | 75 (73.5) | | | 101 (99) | | |
| 0.4~1.0 | 113 (71.5) | | | 157 (99.4) | | |
| Astigmatism | | 0.914 | 0.818 | | 0.396 | 0.526 |
| Yes | 102 (71.3) | | | 138 (96.5) | | |
| No | 260 (70.5) | | | 361 (97.8) | | |
| Amblyopia | | 0.277 | 0.195 | | <0.001 | 0.001 |
| Yes | 25 (62.5) | | | 34 (85) | | |
| No | 337 (71.4) | | | 465 (98.5) | | |
| IOP | | 0.028 | 0.035 | | 0.795 | 0.541 |
| <22 mmHg | 327 (69.4) | | | 459 (97.5) | | |
| ≥22 mmHg | 28 (87.5) | | | 32 (100) | | |
| PVR | | 0.146 | 0.221 | | 0.328 | 0.549 |
| Yes | 66 (64.7) | | | 98 (96.1) | | |
| No | 296 (72.2) | | | 401 (97.8) | | |
| VH | | 0.493 | 0.465 | | 0.855 | 0.863 |
| Yes | 56 (74.7) | | | 73 (97.3) | | |
| No | 306 (70) | | | 426 (97.5) | | |
| HOC | | 0.773 | 0.719 | | 0.289 | 0.236 |
| Yes | 48 (71.6) | | | 64 (95.5) | | |
| No | 314 (70.6) | | | 435 (97.8) | | |
| Macular | | 0.377 | 0.892 | | 0.084 | 0.340 |
| On | 155 (72.4) | | | 212 (99.1) | | |
| Off | 207 (69.5) | | | 287 (96.3) | | |
| Macular diseases | | 0.429 | 0.431 | | 0.024 | 0.039 |
| No | 341 (71.2) | | | 469 (97.9) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Yes | 21 (63.6) | | | 30 (90.9) | | |
| RD | | | | | | |
| Extent | | 0.196 | 0.913 | | 0.004 | 0.224 |
| 1 quadrant | 49 (77.8) | | | 63 (100) | | |
| 2 quadrants | 172 (72) | | | 235 (98.3) | | |
| 3 quadrants | 77 (74.6) | | | 119 (98.3) | | |
| 4 quadrants | 64 (71.9) | | | 82 (92.1) | | |
| Location | | | | | | |
| Superotemporal | | 1.000 | 0.978 | | 1.000 | 0.986 |
| No | 78 (70.9) | | | 107 (97.3) | | |
| Yes | 284 (70.6) | | | 392 (97.5) | | |
| Infreotemporal | | 0.033 | 0.027 | | 0.038 | 0.450 |
| No | 141 (76.6) | | | 183 (99.5) | | |
| Yes | 221 (67.4) | | | 316 (96.3) | | |
| Superonasal | | 0.374 | 0.681 | | 0.259 | 0.266 |
| No | 141 (68.4) | | | 203 (98.5) | | |
| Yes | 221 (72.2) | | | 296 (96.7) | | |
| Inferonasal | | 0.434 | 0.563 | | 0.021 | 0.491 |
| No | 208 (72.2) | | | 285 (99) | | |
| Yes | 154 (68.8) | | | 214 (95.5) | | |
| Bullous RD | 40 (66.7) | 0.454 | 0.337 | 60 (100) | 0.753 | 0.155 |
| Yes | 40 (66.7) | | | 60 (100) | | |
| No | 322 (71.2) | | | 439 (97.1) | | |
| Retinal break | | | | | | |
| Number | | 0.391 | 0.296 | | 0.030 | 0.003 |
| 0 break | 15 (65.2) | | | 20 (87) | | |
| 1 break | 141 (75.4) | | | 182 (97.3) | | |
| 2 breaks | 72 (69.2) | | | 100 (96.2) | | |
| 3 breaks | 54 (67.5) | | | 80 (100) | | |
| >3 breaks | 79 (66.9) | | | 117 (99.2) | | |
| Location | | 0.181 | 0.336[#] | | 0.018 | 0.659[#] |

| | | | | | | |
|---|---|---|---|---|---|---|
| Anterior | 307 (72) | | | 420 (98.6) | | |
| Posterior | 40 (63.5) | | | 59 (93.7) | | |
| Size | | 0.108 | 0.009[#] | | 0.183 | 0.063[#] |
| Small/normal | 261 (72.8) | | | 365 (98.1) | | |
| Large/giant | 55 (68.7) | | | 79 (98.8) | | |
| Unusual break | 8 (72.7) | | | 11 (100) | | |
| Both | 13 (50) | | | 24 (92.3) | | |
| Unseen break | | 0.174 | 0.403 | | 0.004 | 0.167 |
| No | 313 (72) | | | 428 (98.4) | | |
| Yes | 49 (63.6) | | | 71 (92.2) | | |
| Retinal tear | | 0.704 | 0.469 | | 0.606 | 0.891 |
| Yes | 26 (74.3) | | | 34 (97.1) | | |
| No | 336 (70.4) | | | 465 (97.5) | | |

Uni. = univariate; Multi. = multivariate; LP = light perception; IOP = intraocular pressure; PVR = proliferative vitreoretinopathy; IOL = intraocular lens; HOC = history of coagulation; RD = retinal detachment

Univariate P values by Pearson's chi-square or Fisher's exact test and multivariate P values from forward stepwise logistic regression.

[#] Mutivariate logistic regression analysis, preoperative factors removed eyes without break seen.

Table 4.3-3 Intraoperative characteristics associated with anatomic outcomes

| Variable | Primary Reattachment | P value | | Final reattachment | P value | |
|---|---|---|---|---|---|---|
| | n (%) | Uni. | Multi. | n (%) | Uni. | Multi. |
| Surgeon | | 0.071 | 0.312 | | 0.441 | 0.867 |
| 1 | 25 (75.8) | | | 32 (97) | | |
| 2 | 59 (72) | | | 82 (100) | | |
| 3 | 29 (78.4) | | | 36 (97.3) | | |
| 4 | 103 (68.2) | | | 143 (94.7) | | |
| 5 | 57 (58.8) | | | 95 (97.9) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7 | 32 (80.0) | | | 40 (100) | | |
| 8 | 1 (100) | | | 1 (100) | | |
| 9 | 5 (71.4) | | | 7 (100) | | |
| 10 | 21 (70.0) | | | 30 (100) | | |
| 11 | 30 (88.2) | | | 33 (97.1) | | |
| Specialist | | 0.176 | 0.033 | | 0.303 | 0.619 |
| Beginner | 113 (75.3) | | | 144 (96) | | |
| Non-beginner | 108 (72) | | | 146 (97.3) | | |
| Specialist | 141 (66.5) | | | 209 (98.6) | | |
| Tamponade | | 0.692 | 0.667 | | 0.147 | 0.695 |
| Silicone | 59 (72.8) | | | 77 (95.1) | | |
| SF6 | 303 (70.3) | | | 422 (97.9) | | |
| SF6 | | 0.650 | NA | | 0.740 | NA |
| 20% | 12 (70.6) | | | 16 (94.1) | | |
| 25% | 116 (71.6) | | | 159 (98.1) | | |
| 30% | 128 (69.9) | | | 180 (98.4) | | |
| 35% | 32 (74.4) | | | 41 (95.3) | | |
| 40% | 15 (57.7) | | | 26 (100) | | |
| Retinopexy | | 0.007 | 0.669 | | 0.031 | 0.169 |
| Endo | 94 (63.5) | | | 146 (98.6) | | |
| Exo | 207 (76.7) | | | 265 (98.1) | | |
| Both | 61 (64.9) | | | 88 (93.6) | | |
| Scleral buckle | | 0.249 | 0.241 | | 0.138 | 0.011 |
| Yes | 105 (74.5) | | | 135 (95.7) | | |
| No | 257 (69.3) | | | 364 (98.1) | | |
| Remove of flap | | 0.456 | 0.188 | | 0.214 | 0.603 |
| Yes | 253 (69.7) | | | 356 (98.1) | | |
| No | 109 (73.2) | | | 143 (96) | | |
| Drainage | | 0.219 | 0.085 | | 0.979 | 0.192 |
| Internal | 350 (71.3) | | | 479 (97.6) | | |
| External | 1 (25.0) | | | 3 (75) | | |

| | | Uni. | Multi. | | Uni. | Multi. |
|---|---|---|---|---|---|---|
| Mixed | 11(64.7) | | | 17 (100) | | |
| PFCL | | 0.171 | 0.300 | | 0.550 | 0.460 |
|   Yes | 244 (68.7) | | | 345 (97.2) | | |
|   No | 118 (75.2) | | | 154 (98.1) | | |
| Retinotomy | | 1.000 | 0.976 | | 0.057 | 0.632 |
|   Yes | 30 (73.2) | | | 38 (92.7) | | |
|   No | 332 (70.5) | | | 461 (97.9) | | |
| Complications | | 0.590 | 0.394 | | 0.430 | 0.871 |
|   No | 308 (71) | | | 424 (97.7) | | |
|   Yes | 54 (69.2) | | | 75 (96.2) | | |
| Cataract surgery | | 0.410 | 0.514 | | 0.016 | 0.182 |
|   Yes | 32 (65.3) | | | 45 (91.8) | | |
|   No | 330 (71.3) | | | 454 (98.1) | | |

Uni. = univariate; Multi. = multivariate; SF6 = sulfur hexafluoride;

PCFL = perfluorocarbon liquid

Univariate P values by Pearson's chi-square or Fisher's exact test and multivariate P values from forward stepwise logistic regression.

NA = not applicable; this variable was not included in the forward stepwise model

## 4.3.2.4 Causes of postoperative initial retinal redetachment

Causes of postoperative initial retinal redetachment are shown in Table 4.3-4. New retinal breaks were the most important causes of initial retinal redetachment, percentages were 32% (48/150), as followed new break and PVR (28.7%), PVR (16%), and old break reopened (11.3%).

Table 4.3-4 Causes of postoperative initial retinal redetachment

| Cause | Frequency | Percent (n=150) |
| --- | --- | --- |
| New break | 48 | 32% |
| PVR | 24 | 16% |
| Old break reopened | 17 | 11.3% |
| Persistent break | 1 | 0.7% |
| Unknown | 13 | 8.7% |
| New break and PVR | 43 | 28.7% |
| PVR and old break reopened | 4 | 2.7% |
| PVR = proliferative vitreoretinopathy | | |

## 4.3.3 Functional outcomes

## 4.3.3.1 Postoperative best and final visual acuity

Postoperative visual acuity was between no light perception and 1.0. A visual acuity of 0.1 or better was measured in 260 (50.8%) eyes pre-operatively, 459 (89.6%) and 424 (82.8%) eyes at any and final visit postoperatively; 0.4 or better in 158 (30.9%) eyes preoperatively, 310 (60.5%) and 247 (48.2%) eyes at any and final visit postoperatively (Fig. 2). Compared with the preoperative visual acuity, postoperative best visual acuity improved in 271 (52.9%) eyes, remained unchanged in 211 (41.2%), and worsened in 30 (5.9%) eyes; final visual acuity in 236 (46.1%), 211 (41.2%) and 65 (12.7%) eyes respectively. Of the 252 (49.2%) eyes with visual acuity of 0.05 or less preoperatively, 203 (80.6%) and 182 (72.2%), 110 (43.7%) and 87 (34.5%) improved to 0.1 or better and 0.4 or better at any and final visit postoperatively.
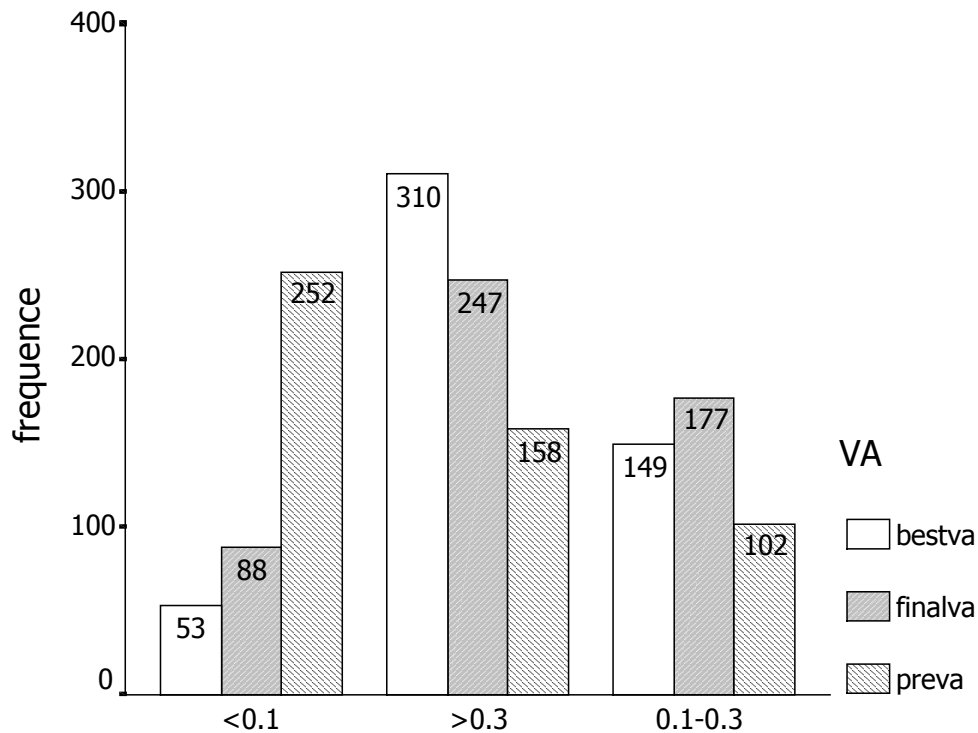
Fig.2  Preoperative and postoperative visual acuity

**4.3.3.2 Prognostic factors of best and final visual acuity**

The relationships between preoperative and intraoperative variables and the three groups of best and final visual acuity postoperatively were evaluated. Preoperative and intraoperative significant characteristics included duration of symptoms, visual acuity, refraction, amblyopia, status of macula, PVR, extent of retinal detachment, location of break, no break seen, surgeon, use of scleral buckle, vitreous tamponade, PFCL, removal of flap, cataract surgery, retinotomy and surgical complications. Number of breaks and drainage of subretinal fluid were two significant factors that were only associated with best visual acuity. After multivariate logistic regression analysis (in 503 eyes), only three of these variables remained significant: duration of symptoms, amblyopia and vitreous tamponade; otherwise, vitreous haemorrhage significantly associated with best visual acuity, and age of patients and status of lens with final visual acuity respectively.

Preoperative and intraoperative factors associated with higher rates of good vision (≥ 0.4) and lower rates of poor vision (< 0.1) are displayed in Tables 4.3-4 and 4.3-5. The same variables significantly associated with 0.4 or more of best and final visual acuity by univariate analysis include short duration of symptoms, better preoperative visual acuity (≥ 0.1), no amblyopia, macular on, no PVR, presence of vitreous haemorrhage, small extent of RD, no inferotemporal and inferonasal detachment, breaks detected preoperatively, surgeon, specialist, no use of scleral buckling, SF6 retinal tamponade, no use of PFCL and no additional cataract surgery. The different factors are presence of break, no superotemporal detachment, no need for retinotomy and no intraoperative complication that significantly associated with best visual acuity, and patients with age less than 80 years, a history of coagulation, use of exocryocoagulation and removal of flap significantly associated with final visual acuity. After multivariate regression analysis, only eight of these variables significantly associated with 0.4 or more of best visual acuity were remained: short duration of symptoms, better preoperative visual acuity (≥ 0.1), no amblyopia, macular on, presence of vitreous haemorrhage, no use of scleral buckling, SF6 retinal tamponade and no intraoperative complication. Seven variables with final visual acuity: pseudophakic or aphakic eyes, short duration of symptoms, better preoperative visual acuity (≥ 0.1), no amblyopia, presence of vitreous haemorrhage, no use of scleral buckling and SF6 retinal tamponade.

The same variables significantly associated with less than 0.1 of best and final visual acuity by univariate analysis include long duration of symptoms, bad preoperative visual acuity (< 0.1), refraction more than −10D, presence of amblyopia, macular off, existence of PVR, large extent of RD, inferotemporal and inferonasal detachment, posterior retinal break, surgeon, use of scleral buckling procedure, silicone oil retinal tamponade, removal of flap, need for retinotomy, an additional cataract surgery, macular diseases and occurrence of complications. The only different factors are presence of astigmatism and specialist that significantly associated with best and final visual acuity respectively. After multivariate regression analysis, only seven of these variables significantly associated with less than 0.1 of best visual acuity remained: bad preoperative visual acuity (<0.1), presence of astigmatism and amblyopia, silicone oil retinal tamponade, need for retinotomy and an additional cataract surgery, and macular disease. Only six of these variables were associated with less than 0.1 of final visual acuity: refraction more

than –10D, bad preoperative visual acuity (<0.1), presence of amblyopia, silicone oil tamponade, use of scleral buckling procedure and occurrence of complications.

Inclusion of preoperative factors in the multivariate logistic regression model for functional outcomes removed eyes without break seen (22 eyes, because one eye was excluded due to no tension note), the preoperative and intraoperative factors associated with 0.4 or more of final visual acuity did not otherwise change. However, variables with less than 0.1 of visual acuity changed, besides bad preoperative visual acuity (<0.1), presence of amblyopia, silicone oil retinal tamponade, use of scleral buckling procedure and occurrence of complication, location of break was a significant factor. The variables with 0.4 or more and less than 0.1 of best visual acuity changed, for less than 0.1, only five variables were remained: bad preoperative visual acuity (<0.1), presence of amblyopia, macular disease, silicone oil retinal tamponade and an additional cataract surgery. For 0.4 or more, besides six same variables: short duration of symptoms, better preoperative visual acuity ($\geq 0.1$), no amblyopia, macular on, no use of scleral buckling and SF6 tamponade, no macular disease too.

Table 4.3-4 Risk factors associated with best visual acuity by univariate and multivariate analysis

| Variable | Best VA $\geq$ 0.4 | P value | | Best VA< 0.1 | P value | |
|---|---|---|---|---|---|---|
| | n (%) | Uni. | Multi. | n (%) | Uni. | Multi. |
| Gender | | 0.707 | 0.908 | | 0.880 | 0.544 |
| Male | 197 (59.9) | | | 35 (10.6) | | |
| Female | 113 (61.7) | | | 18 (9.8) | | |
| Age | | 0.059 | 0.098 | | 0.810 | 0.791 |
| 12~39 | 29 (59.2) | | | 5 (10.2) | | |
| 40~59 | 122 (63.5) | | | 22 (11.5) | | |
| 60~79 | 153 (60.7) | | | 22 (8.7) | | |
| 80~94 | 6 (31.6) | | | 4 (21.1) | | |
| Eyes | | 0.240 | 0.537 | | 0.111 | 0.794 |
| Right | 153 (58.0) | | | 33 (12.5) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Left | 157 (63.3) | | | 20 (8.1) | | |
| Symptom | | 0.001 | 0.007 | | 0.001 | 0.709 |
| 1 day | 58 (68.2) | | | 11 (12.9) | | |
| 2~7 days | 175 (65.1) | | | 20 (7.4) | | |
| 8~29 days | 57 (52.8) | | | 9 (8.3) | | |
| ≥ 30 days | 20 (40.0) | | | 37 (74) | | |
| Visual acuity | | <0.001 | 0.007 | | <0.001 | <0.001 |
| NLP~0.05 | 110 (43.7) | | | 49 (19.4) | | |
| 0.1~0.3 | 68 (66.7) | | | 4 (3.9) | | |
| 0.4~1.0 | 132 (83.5) | | | 0 (0) | | |
| Refraction | | 0.087 | 0.615 | | <0.001 | 0.156 |
| >-1.0D | 95 (56.2) | | | 21 (12.4) | | |
| -1.0~-5.0D | 105 (67.7) | | | 5 (3.2) | | |
| -5.0~-10.0D | 65 (62.5) | | | 8 (7.7) | | |
| >-10.0D | 45 (53.6) | | | 19 (22.6) | | |
| IOP | | 0.709 | 0.864 | | 0.361 | 0.798 |
| <22 mmHg | 286 (60.7) | | | 47 (10) | | |
| ≥22 mmHg | 18 (56.3) | | | 5 (15.6) | | |
| Lens status | | 0.682 | 0.716 | | 0.329 | 0.317 |
| Phakic | 230 (61.2) | | | 36 (9.6) | | |
| IOL/aphakic | 80 (58.8) | | | 17 (12.5) | | |
| Astigmatism | | 0.420 | 0.758 | | 0.034 | 0.049 |
| No | 219 (59.3) | | | 45 (12.2) | | |
| Yes | 91 (63.6) | | | 8 (5.6) | | |
| Amblyopia | | <0.001 | <0.001 | | <0.001 | <0.001 |
| No | 305 (64.6) | | | 36 (7.6) | | |
| Yes | 5 (12.5) | | | 17 (42.5) | | |
| Macular | | <0.001 | 0.002 | | <0.001 | 0.138 |
| On | 176 (82.2) | | | 5 (2.3) | | |
| Off | 134 (45.0) | | | 48 (16.1) | | |
| Macular diseases | | <0.001 | 0.071 | | <0.001 | 0.019 |

| | | | | | | |
|---|---|---|---|---|---|---|
| No | 300 (62.6) | | | 42 (8.8) | | |
| Yes | 10 (30.3) | | | 11 (33.3) | | |
| PVR | | 0.001 | 0.188 | | 0.028 | 0.469 |
| No | 263 (64.1) | | | 36 (8.8) | | |
| Yes | 47 (46.1) | | | 17 (16.7) | | |
| VH | | 0.030 | 0.035 | | 1.000 | 0.889 |
| No | 256 (58.6) | | | 46 (10.5) | | |
| Yes | 54 (72.0) | | | 7 (9.3) | | |
| HOC | | 0.180 | 0.899 | | 0.129 | 0.870 |
| No | 264 (59.3) | | | 50 (11.2) | | |
| Yes | 46 (68.7) | | | 3 (4.5) | | |
| Extent of RD | | <0.001 | 0.373 | | <0.001 | 0.622 |
| One quadrant | 53 (84.1) | | | 2 (3.2) | | |
| Two quadrants | 161 (67.4) | | | 17 (7.1) | | |
| Three quadrants | 71 (58.7) | | | 9 (7.4) | | |
| Four quadrants | 25 (28.1) | | | 25 (28.1) | | |
| Location of RD | | | | | | |
| Superotemporal | | 0.015 | 0.310 | | 0.076 | 0.395 |
| No | 78 (70.9) | | | 6 (5.5) | | |
| Yes | 232 (57.7) | | | 47 (11.7) | | |
| Infreotemporal | | <0.001 | 0.521 | | 0.006 | 0.656 |
| No | 140 (76.1) | | | 10 (5.4) | | |
| Yes | 170 (51.8) | | | 43 (13.1) | | |
| Superonasal | | 0.461 | 0.393 | | 0.139 | 0.971 |
| No | 129 (62.6) | | | 16 (7.8) | | |
| Yes | 181 (59.2) | | | 37 (12.1) | | |
| Inferonasal | | <0.001 | 0.288 | | <0.001 | 0.492 |
| No | 205 (71.2) | | | 17 (5.9) | | |
| Yes | 105 (46.9) | | | 36 (16.1) | | |
| Bullous RD | | 0.160 | 0.134 | | 0.256 | 0.412 |
| No | 279 (61.7) | | | 44 (9.7) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Yes | 31 (51.7) | | | 9 (15.0) | | |
| **Retinal breaks** | | | | | | |
| Number | | 0.006 | 0.242 | | 0.145 | 0.866 |
| No | 6 (26.1) | | | 6 (26.1) | | |
| One | 111 (59.4) | | | 20 (10.7) | | |
| Two | 63 (60.6) | | | 9 (8.7) | | |
| Three | 50 (62.5) | | | 7 (8.8) | | |
| ≥Four | 80 (67.8) | | | 11 (9.3) | | |
| Location | | 0.405 | 0.682[#] | | 0.001 | 0.074[#] |
| Anterior | 268 (62.9) | | | 33 (7.7) | | |
| Posterior | 36 (57.1) | | | 14 (22.2) | | |
| Size | | 0.690 | 0.508[#] | | 0.723 | 0.680[#] |
| Normal | 229 (61.6) | | | 37 (9.9) | | |
| Large | 53 (66.3) | | | 5 (6.5) | | |
| Unusual | 8 (72.7) | | | 1 (9.1) | | |
| Both | 14 (53.8) | | | 4 (15.4) | | |
| No break seen | | 0.016 | 0.352 | | 0.065 | 0.903 |
| No | 273 (62.8) | | | 40 (9.2) | | |
| Yes | 37 (48.1) | | | 13 (16.9) | | |
| Retinal tear | | 0.721 | 0.993 | | 0.564 | 0.312 |
| No | 290 (60.8) | | | 51 (10.7) | | |
| Yes | 20 (57.1) | | | 2 (5.7) | | |
| Surgeon | | 0.001 | 0.192 | | 0.002 | 0.303 |
| 1 | 21 (63.6) | | | 3 (9.1) | | |
| 2 | 65 (79.3) | | | 1 (1.2) | | |
| 3 | 23 (62.2) | | | 5 (13.5) | | |
| 4 | 86 (57.0) | | | 18 (11.9) | | |
| 5 | 61 (62.9) | | | 10 (10.3) | | |
| 7 | 24 (60.0) | | | 2 (5.0) | | |
| 8 | 0 (0) | | | 0 (0) | | |
| 9 | 5 (71.4) | | | 3 (42.9) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | 9 (30.0) | | | 4 (13.3) | | |
| 11 | 16 (47.1) | | | 7 (20.6) | | |
| Specialist | | 0.001 | 0.134 | | 0.055 | 0.643 |
| Beginner | 75 (50) | | | 21 (14) | | |
| Non-beginner | 88 (58.7) | | | 18 (12) | | |
| Specialist | 147 (69.3) | | | 14 (6.6) | | |
| Sclear buckle | | <0.001 | 0.003 | | 0.002 | 0.194 |
| No | 252 (67.9) | | | 28 (7.5) | | |
| Yes | 58 (41.1) | | | 25 (17.7) | | |
| Tamponade | | <0.001 | <0.001 | | 0.001 | 0.001 |
| SF6 | 296 (68.7) | | | 26 (6.0) | | |
| Silicone | 14 (17.3) | | | 27 (33.3) | | |
| SF6 (%) | | 0.256 | NA | | 0.880 | NA |
| 20 | 11 (64.7) | | | 2 (11.8) | | |
| 25 | 102 (63.0) | | | 10 (6.2) | | |
| 30 | 136 (74.3) | | | 10 (5.5) | | |
| 35 | 29 (67.4) | | | 2 (4.7) | | |
| 40 | 18 (69.2) | | | 2 (7.7) | | |
| Coagulation | | 0.328 | 0.453 | | 0.212 | 0.867 |
| Endo | 89 (60.1) | | | 16 (10.8) | | |
| Exo | 170 (63) | | | 23 (8.5) | | |
| Both | 51 (54.3) | | | 14 (14.9) | | |
| PFCL | | 0.001 | 0.301 | | 0.442 | 0.067 |
| No | 112 (71.3) | | | 15 (9.6) | | |
| Yes | 198 (55.8) | | | 38 (10.7) | | |
| Drain | | 0.256 | 0.672 | | 0.151 | 0.092 |
| Internal | 300 (61.1) | | | 53 (10.8) | | |
| Others | 10 (47.6) | | | 0 (0.0) | | |
| Remove of flap | | 0.073 | 0.803 | | 0.010 | 0.725 |
| No | 81 (54.4) | | | 24 (16.1) | | |
| Yes | 229 (63.1) | | | 29 (8.0) | | |

| | | 0.004 | 0.291 | | <0.001 | 0.007 |
|---|---|---|---|---|---|---|
| Cataract surgery | | 0.004 | 0.291 | | <0.001 | 0.007 |
| No | 290 (62.6) | | | 38 (8.2) | | |
| Yes | 20(40.8) | | | 15 (30.6) | | |
| Retinotomy | | 0.004 | 0.426 | | <0.001 | 0.042 |
| No | 294(62.4) | | | 41 (8.7) | | |
| Yes | 16(39.0) | | | 12 (29.3) | | |
| Complications | | 0.012 | 0.049 | | 0.004 | 0.100 |
| No | 273(62.9) | | | 37 (8.5) | | |
| Yes | 37(47.4) | | | 16 (20.5) | | |

Uni. = univariate; Multi. = multivariate; LP = light perception; IOP = intraocular pressure; PVR = proliferative vitreoretinopathy; IOL = intraocular lens; HOC = history of coagulation; RD = retinal detachment

Univariate P values by Pearson's chi-square or Fisher's exact test and multivariate P values from forward stepwise logistic regression.

[#] Mutivariate logistic regression analysis, preoperative factors removed eyes without break seen.

NA = not applicable; this variable was not included in the forward stepwise model

Table 4.3-5 Risk factors associated with final visual acuity by univariate and multivariate analysis

| Variable | Final VA ≥ 0.4 | P value | | Final VA < 0.1 | P value | |
|---|---|---|---|---|---|---|
| | n (%) | Uni. | Multi. | n (%) | Uni. | Multi. |
| Gender | | 0.927 | 0.924 | | 0.462 | 0.907 |
| Male | 158 (48) | | | 60 (18.2) | | |
| Female | 89 (48.6) | | | 28 (15.3) | | |
| Age | | 0.016 | 0.100 | | 0.417 | 0.795 |
| 12~39 | 20 (40.8) | | | 10 (20.4) | | |
| 40~59 | 100 (52.1) | | | 37 (19.3) | | |
| 60~79 | 124 (49.2) | | | 35 (13.9) | | |
| 80~94 | 3 (15.8) | | | 6 (31.6) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Eyes | | 0.216 | 0.538 | | 0.129 | 0.196 |
| Right | 120 (45.5) | | | 52 (19.7) | | |
| Left | 127 (51.2) | | | 36 (14.5) | | |
| Symptom | | 0.008 | 0.014 | | 0.001 | 0.364 |
| 1 day | 49 (57.6) | | | 16 (18.8) | | |
| 2~7 days | 138 (51.3) | | | 32 (11.9) | | |
| 8~29 days | 44 (40.7) | | | 23 (21.3) | | |
| ≥ 30 days | 16 (32) | | | 17 (34.0) | | |
| Visual acuity | | <0.001 | <0.001 | | <0.001 | <0.001 |
| NLP~0.05 | 87 (34.5) | | | 70 (27.8) | | |
| 0.1~0.3 | 54 (52.9) | | | 13 (12.7) | | |
| 0.4~1.0 | 106 (67.1) | | | 5 (3.2) | | |
| Refraction | | 0.123 | 0.429 | | 0.003 | 0.034 |
| >-1.0D | 77 (45.6) | | | 33 (19.5) | | |
| -1.0~-5.0 | 86 (55.5) | | | 16 (10.3) | | |
| -5.0~-10.0 | 50 (48.1) | | | 15 (14.4) | | |
| >-10.0D | 34 (40.5) | | | 24 (28.6) | | |
| IOP | | 0.715 | 0.770 | | 0.046 | 0.129 |
| <22 mmHg | 228 (48.4) | | | 75 (15.9) | | |
| ≥22 mmHg | 14 (43.8) | | | 10 (31.3) | | |
| Lens status | | 0.161 | 0.024 | | 0.354 | 0.346 |
| Phakic | 174 (46.3) | | | 61 (16.2) | | |
| Aphakic | 73 (53.7) | | | 27 (19.9) | | |
| Astigmatism | | 1.000 | 0.361 | | 0.602 | 0.585 |
| No | 178 (48.2) | | | 66 (17.9) | | |
| Yes | 69 (48.3) | | | 22 (15.4) | | |
| Amblyopia | | <0.001 | 0.001 | | <0.001 | <0.001 |
| No | 244 (51.7) | | | 65 (13.8) | | |
| Yes | 3 (7.5) | | | 23 (57.5) | | |
| Macular | | <0.001 | 0.143 | | <0.001 | 0.625 |
| On | 139 (65) | | | 15 (7) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Off | 108 (36.2) | | | 73 (24.5) | | |
| Macular disease | | 0.006 | 0.165 | | 0.001 | 0.090 |
| No | 239 (49.9) | | | 75 (15.7) | | |
| Yes | 8 (24.2) | | | 13 (5.7) | | |
| PVR | | <0.001 | 0.830 | | <0.001 | 0.702 |
| No | 214 (52.2) | | | 57 (13.9) | | |
| Yes | 33 (32.4) | | | 31 (30.4) | | |
| VH | | 0.033 | 0.010 | | 0.621 | 0.465 |
| No | 202 (46.2) | | | 77 (17.6) | | |
| Yes | 45 (60) | | | 11 (14.7) | | |
| HOC | | 0.049 | 0.384 | | 0.057 | 0.086 |
| No | 207 (46.5) | | | 82 (18.4) | | |
| Yes | 40 (59.7) | | | 6 (9) | | |
| Extent of RD | | <0.001 | 0.556 | | <0.001 | 0.998 |
| One | 40 (63.5) | | | 3 (4.8) | | |
| Two | 131 (54.8) | | | 31 (13) | | |
| Three | 54 (44.6) | | | 20 (16.5) | | |
| Four | 22 (24.7) | | | 34 (38.2) | | |
| Location of RD | | | | | | |
| Superotemporal | | 0.106 | 0.670 | | 0.319 | 0.870 |
| No | 61 (55.5) | | | 15 (13.6) | | |
| Yes | 186 (46.3) | | | 73 (18.2) | | |
| Infreotemporal | | <0.001 | 0.059 | | <0.001 | 0.946 |
| No | 115 (62.5) | | | 17 (9.2) | | |
| Yes | 132 (40.2) | | | 71 (21.6) | | |
| Superonasal | | 0.928 | 0.160 | | 0.152 | 0.949 |
| No | 129 (48.5) | | | 29 (14.1) | | |
| Yes | 147 (48) | | | 59 (19.3) | | |
| Inferonasal | | <0.001 | 0.810 | | <0.001 | 0.896 |
| No | 160 (55.6) | | | 30 (10.4) | | |
| Yes | 87 (38.8) | | | 58 (25.9) | | |

| | n (%) | p | p | n (%) | p | p |
|---|---|---|---|---|---|---|
| Bullous RD | | 0.492 | 0.562 | | 0.584 | 0.546 |
| No | 221 (48.9) | | | 76 (16.8) | | |
| Yes | 26 (48.2) | | | 12 (17.2) | | |
| Retinal breaks | | | | | | |
| Number | | 0.069 | 0.935 | | 0.096 | 0.103 |
| No | 5 (21.7) | | | 8 (34.8) | | |
| One | 94 (50.3) | | | 37 (19.8) | | |
| Two | 53 (51.0) | | | 16 (15.4) | | |
| Three | 34 (42.5) | | | 11 (13.8) | | |
| ≥Four | 61 (51.7) | | | 16 (13.6) | | |
| Location | | 0.420 | 0.739[#] | | <0.001 | 0.006[#] |
| Anterior | 214 (50.2) | | | 59 (13.8) | | |
| Posterior | 28 (44.4) | | | 21 (33.3) | | |
| Size | | 0.185 | 0.286[#] | | 0.783 | 0.611[#] |
| Normal | 185 (49.5) | | | 63 (16.9) | | |
| Large | 42 (52.5) | | | 11 (13.8) | | |
| Unusual | 7 (63.6) | | | 1 (9.1) | | |
| Both | 8 (30.8) | | | 5 (19.2) | | |
| No break seen | | 0.026 | 0.098 | | 0.071 | 0.534 |
| No | 219 (50.3) | | | 69 (15) | | |
| Yes | 28 (36.4) | | | 19 (24.7) | | |
| Retinal tear | | 0.382 | 0.748 | | 0.817 | 0.230 |
| No | 233 (48.8) | | | 83 (17.4) | | |
| Yes | 14 (40.0) | | | 5 (14.3) | | |
| Surgeon | | 0.007 | 0.224 | | 0.002 | 0.642 |
| 1 | 16 (48.5) | | | 6 (18.2) | | |
| 2 | 53 (64.6) | | | 3 (3.7) | | |
| 3 | 19 (51.4) | | | 8 (21.6) | | |
| 4 | 65 (43.0) | | | 35 (23.2) | | |
| 5 | 49 (50.5) | | | 13 (13.4) | | |
| 7 | 3 (7.5) | | | 16 (40.0) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | 0 (0) | | | 0 (0) | | |
| 9 | 1 (14.3) | | | 3 (42.9) | | |
| 10 | 7 (23.3) | | | 7 (23.3) | | |
| 11 | 16 (47.1) | | | 10 (29.4) | | |
| Specialist | | 0.016 | 0.499 | | 0.003 | 0.818 |
| Beginner | 62 (41.3) | | | 33 (22) | | |
| Non-beginner | 67 (44.7) | | | 33 (22) | | |
| Specialist | 118 (55.7) | | | 22 (10.4) | | |
| Scleral buckle | | 0.002 | 0.013 | | <0.001 | <0.001 |
| No | 200 (53.9) | | | 43 (11.6) | | |
| Yes | 47 (33.3) | | | 45 (31.9) | | |
| Tamponade | | <0.001 | <0.001 | | <0.001 | <0.001 |
| SF6 | 238 (55.2) | | | 48 (11.1) | | |
| Silicone | 9 (11.1) | | | 40 (49.4) | | |
| SF6 (%) | | 0.815 | NA | | 0.730 | NA |
| 20 | 8 (47.1) | | | 2 (11.8) | | |
| 25 | 85 (52.5) | | | 19 (11.7) | | |
| 30 | 106 (57.9) | | | 18 (9.8) | | |
| 35 | 24 (55.8) | | | 7 (16.3) | | |
| 40 | 15 (57.7) | | | 2 (7.7) | | |
| Coagulation | | 0.043 | 0.748 | | 0.101 | 0.833 |
| Endo | 71 (48.0) | | | 25 (16.9) | | |
| Exo | 141 (52.2) | | | 40 (14.8) | | |
| Both | 35 (37.2) | | | 23 (24.5) | | |
| PFCL | | 0.007 | 0.197 | | 0.374 | 0.110 |
| No | 90 (57.3) | | | 23 (18.3) | | |
| Yes | 157 (44.2) | | | 65 (18.3) | | |
| Drain | | 0.380 | 0.516 | | 0.231 | 0.201 |
| Internal | 239 (48.7) | | | 82 (16.7) | | |
| Others | 8 (38.1) | | | 6 (28.6) | | |
| Remove of flap | | 0.041 | 0.657 | | 0.010 | 0.233 |

| Variable | | Uni. P | Multi. P | | Uni. P | Multi. P |
|---|---|---|---|---|---|---|
| No | 61 (40.9) | | | 36 (24.2) | | |
| Yes | 186 (51.2) | | | 52 (14.3) | | |
| Cataract surgery | | 0.024 | 0.294 | | 0.001 | 0.198 |
| No | 231 (49.9) | | | 70 (15.1) | | |
| Yes | 16 (32.7) | | | 18 (36.7) | | |
| Retinotomy | | 0.034 | 0.802 | | <0.001 | 0.113 |
| No | 234 (49.7) | | | 72 (15.3) | | |
| Yes | 13 (31.7) | | | 16 (39.0) | | |
| Complications | | 0.066 | 0.181 | | 0.002 | 0.005 |
| No | 217 (50.0) | | | 64 (14.7) | | |
| Yes | 30 (38.5) | | | 24 (30.8) | | |

Uni. = univariate; multi. = multivariate; NLP = no light perception; IOP = intraocular pressure; PVR = proliferative vitreoretinopathy; IOL = intraocular lens; HOC = history of coagulation

Univariate P values by Pearson's chi-square or Fisher's exact test and multivariate P values from forward stepwise logistic regression.

[#] Mutivariate logistic regression analysis, preoperative factors removed eyes without break seen.

NA = not applicable; this variable was not included in the forward stepwise model

## 4.3.3.3 Postoperative characteristics of patients with best and final visual acuity

The correlation between the postoperative factors (retinal redetachment, PVR, macular pucker and cataract surgery) and functional outcomes was evaluated. There was significant difference in best and final visual acuity between patients with or without postoperative retinal redetachment, PVR, macular pucker and cataract surgery (Table 4.3-6).

Table 4.3-6 Postoperative characteristics of patients with best vision and final vision

| Variable | % with Best visual acutiy | | | P value | % with Final visual acuity | | | P value |
|---|---|---|---|---|---|---|---|---|
| | < 0.1 | 0.1~0.3 | 0.4~1.0 | | < 0.1 | 0.1~0.3 | 0.4~1.0 | |
| Redetachment | | | | <0.001 | | | | <0.001 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No | 7.7 | 24.3 | 68 | | 13 | 28.2 | 58.8 | |
| Yes | 16.7 | 40.7 | 42.7 | | 27.3 | 50 | 22.7 | |
| PVR | | | | <0.001 | | | | <0.001 |
| No | 8.2 | 27 | 64.8 | | 14.1 | 31.9 | 54 | |
| Yes | 20.9 | 39.5 | 39.5 | | 32.6 | 47.7 | 19.8 | |
| MP | | | | 0.036 | | | | 0.005 |
| No | 10 | 26.6 | 63.4 | | 16.8 | 31.3 | 51.9 | |
| Yes | 11.5 | 38.1 | 50.4 | | 18.6 | 46 | 35.4 | |
| CS | | | | 0.038 | | | | 0.019 |
| No | 13.3 | 28.9 | 57.8 | | 21.1 | 31.6 | 47.3 | |
| Yes | 6.4 | 29.4 | 64.2 | | 11.9 | 38.5 | 49.5 | |

PVR = proliferative vtreoretinopathy; MP = macular pucker; CS = cataract surgery

P values by Pearson's chi-square test

### 4.3.3.4 Reasons of poor final visual acuity (< 0.1)

Final visual acuity of less than 0.1 occurred in 88 (17.2%) of all eyes. The reasons are listed in Table 4.3-7. Presumed macular dysfunction, occurring in 28 (31.8%) of 88 eyes, was the most common reason. Postoperative optic nerve head atrophy was noted in 10 (11.4%) of 88 eyes. In addition, silicone oil as ocular tamponade was used in 57 (64.8%) and left 21 (23.9%) of 88 eyes, and primary retinal redetachment occurred in 41 (46.6%) eyes.

Table 4.3-7 Reasons for postoperative final visual acuity less than 0.1

| Reasons | Frequency | Percent (n=88) |
|---|---|---|
| Final unsuccessful reattachment | 13 | 14.8% |
| Macular dysfunction | 21 | 23.9% |
| Dense cataract | 5 | 5.7% |
| Combination of cataract and macular dysfunction | 7 | 8% |
| Pre-existing amblyopia | 9 | 10.2% |
| Optic nerve atrophy | 10 | 11.4% |
| Unknown | 3 | 3.4% |

| | | |
|---|---|---|
| Macular pucker | 9 | 10.2% |
| Keratopathy* | 4 | 4.5% |
| Endophthalmitis | 1 | 1.1% |
| Age-related maculopathy | 2 | 2.3% |
| Myopia –20D or more | 2 | 2.3% |
| Macular hole | 2 | 2.3% |

*An enucleation of eyeball was performed in one eye because of keratopathy and phthisis bulbi.

## 4.4 Postoperative complications

### 4.4.1 Postoperative PVR and macular pucker

### 4.4.1.1 Incidences of postoperative macular pucker and PVR

Macular pucker was present in 11 eyes (2.1%) preoperatively and 113 (22.1%) postoperatively. PVR in 102 (19.9%) and 86 (16.8%) eyes pre- and postoperatively respectively. Of 102 eyes with PVR preoperatively, 25 (24.5%) developed of PVR postoperatively. This percentage was significantly higher ($p = 0.026$) compared to eyes without PVR preoperatively.

### 4.4.1.2 Risk factors analysis of postoperative PVR and macular pucker

Preoperative and intraoperative variables that correlated with macular pucker and PVR by univariate (by Pearson chi-square or Fisher two-tail exact test) and multivariate (by logistic regression) analysis are shown in Table 4.3-7 and 4.3-8. The significant variables correlated with macular pucker postoperatively by univariate analysis included emmetropia or hyperopia, no amblyopia, extent of RD, surgeon, use of scleral buckling, endocoagulation, use of PFCL and intraoperative complication. Only four of these variables (emmetropia or hyperopia, no amblyopia, use of PFCL and endocoagulation) and existence of retinal breaks by multivariate logistic regression analysis respectively.

The significant variables correlated with postoperative PVR by univariate analysis included macular off, preoperative PVR, coagulation and use of PFCL. Only two of these variables (preoperative PVR and use of PFCL) and specialist by multivariate logistic regression analysis respectively.

Inclusion of preoperative factors in the multivariate logistic regression model for postoperative macular pucker and PVR removed eyes without break seen (22 eyes, because one eye was excluded due to no IOP record), the preoperative and intraoperative factors associated with them changed. For postoperative macular pucker, only three variables: use of scleral buckling, no amblyopia and endocoagulation; for postoperative PVR, besides one same variable (use of PFCL), retinal tear and size of retinal break.

Table 4.3-7 Preoperative variables correlated with postoperative macular pucker and PVR by univariate and multivariate analysis

| Variable | Macular pucker n (%) | P value Uni. | P value Multi. | PVR n (%) | P value Uni. | P value Multi. |
|---|---|---|---|---|---|---|
| Gender | | 0.824 | 0.936 | | 0.268 | 0.410 |
| Male | 74 (22.5) | | | 60 (18.2) | | |
| Female | 39 (21.3) | | | 26 (14.2) | | |
| Age (years) | | 0.115 | 0.852 | | 0.597 | 0.660 |
| 12~39 | 9 (18.4) | | | 10 (20.4) | | |
| 40~59 | 34 (17.7) | | | 27 (14.1) | | |
| 60~79 | 67 (26.6) | | | 46 (18.3) | | |
| 80~94 | 3 (15.8) | | | 3 (15.8) | | |
| Eyes | | 0.831 | 0.800 | | 0.409 | 0.215 |
| Right | 57 (21.6) | | | 48 (18.2) | | |
| Left | 56 (22.6) | | | 38 (15.3) | | |
| Symptom | | 0.250 | 0.988 | | 0.407 | 0.753 |
| 1 day | 24 (28.2) | | | 18 (21.2) | | |
| 2~7 days | 52 (19.3) | | | 41 (15.2) | | |
| 8~29 days | 23 (21.3) | | | 16 (14.8) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ≥ 30 days | 14 (28.0) | | | 11 (22) | | |
| IOP | | 0.665 | 0.525 | | 0.331 | 0.350 |
| <22 mmHg | 104 (22.1) | | | 83 (17.6) | | |
| ≥22 mmHg | 8 (25) | | | 3 (9.4) | | |
| Visual acuity | | 0.616 | 0.426 | | 0.193 | 0.136 |
| NLP~0.05 | 59 (23.4) | | | 50 (19.8) | | |
| 0.1~0.3 | 19 (18.6) | | | 14 (13.7) | | |
| 0.4~1.0 | 35 (22.2) | | | 22 (13.9) | | |
| Refraction | | 0.020 | 0.006 | | 0.860 | 0.323 |
| >-1.0D | 47 (27.8) | | | 25 (14.8) | | |
| -1.0~-5.0 | 36 (23.2) | | | 27 (17.4) | | |
| -5.0~-10.0 | 21 (20.2) | | | 19 (18.3) | | |
| >-10.0D | 9 (10.7) | | | 15 (17.9) | | |
| Lens status | | 0.810 | 0.810 | | 0.894 | 0.881 |
| Phakic | 82 (21.8) | | | 64 (17.0) | | |
| IOL/aphakic | 31 (22.8) | | | 22 (16.2) | | |
| Astigmatism | | 0.476 | 0.993 | | 0.895 | 0.881 |
| No | 85 (23.0) | | | 63 (17.1) | | |
| Yes | 28 (19.6) | | | 23 (16.1) | | |
| Amblyopia | | 0.001 | 0.029 | | 0.376 | 0.204 |
| No | 112 (23.7) | | | 77 (16.3) | | |
| Yes | 1 (2.5) | | | 9 (22.5) | | |
| Macular | | 0.052 | 0.150 | | 0.022 | 0.106 |
| On | 38 (17.8) | | | 26 (12.1) | | |
| Off | 75 (25.2) | | | 60 (20.1) | | |
| Macular diseases | | 0.276 | 0.074 | | 0.144 | 0.160 |
| No | 103 (21.5) | | | 77 (16.1) | | |
| Yes | 10 (30.3) | | | 9 (27.3) | | |
| PVR | | 0.690 | 0.717 | | 0.026 | 0.041 |
| No | 89 (21.7) | | | 61 (14.9) | | |
| Yes | 24 (23.5) | | | 25 (24.5) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| VH | | 0.547 | 0.825 | | 0.135 | 0.230 |
| No | 99 (22.7) | | | 78 (17.8) | | |
| Yes | 14 (18.7) | | | 8 (10.7) | | |
| HOC | | 0.752 | 0.565 | | 0.296 | 0.239 |
| No | 97 (21.8) | | | 78 (17.5) | | |
| Yes | 16 (23.9) | | | 8 (11.9) | | |
| Extent of RD | | 0.031 | 0.530 | | 0.684 | 0.833 |
| One | 16 (25.4) | | | 9 (14.3) | | |
| Two | 41 (17.2) | | | 37 (15.5) | | |
| Three | 37 (30.6) | | | 22 (18.2) | | |
| Four | 19 (21.3) | | | 18 (20.2) | | |
| Location of RD | | | | | | |
| Superotemporal | | 0.069 | 0.187 | | 0.565 | 0.649 |
| No | 17 (15.5) | | | 16 (14.5) | | |
| Yes | 96 (23.9) | | | 70 (17.4) | | |
| Inferotemporal | | 0.320 | 0.400 | | 0.109 | 0.332 |
| No | 36 (19.6) | | | 24 (13) | | |
| Yes | 77 (23.5) | | | 62 (18.9) | | |
| Superonasal | | 0.589 | 0.487 | | 0.810 | 0.664 |
| No | 48 (23.3) | | | 36 (17.5) | | |
| Yes | 65 (21.2) | | | 50 (16.3) | | |
| Inferonasal | | 0.668 | 0.957 | | 0.812 | 0.626 |
| No | 66 (22.9) | | | 47 (16.3) | | |
| Yes | 47 (21) | | | 39 (17.4) | | |
| Bullous RD | | 1.000 | 0.768 | | 0.196 | 0.153 |
| No | 100 (22.1) | | | 72 (15.9) | | |
| Yes | 13 (21.7) | | | 14 (23.3) | | |
| Retinal breaks | | | | | | |
| Number | | 0.194 | 0.018 | | 0.391 | 0.589 |
| No | 2 (8.7) | | | 4 (12.4) | | |
| One | 38 (20.3) | | | 24 (12.8) | | |

| Variable | Macular pucker n (%) | Uni. | Multi. | PVR n (%) | Uni. | Multi. |
|---|---|---|---|---|---|---|
| Two | 21 (35.6) | | | 22 (21.2) | | |
| Three | 18 (22.5) | | | 16 (20.0) | | |
| ≥Four | 34 (20.9) | | | 20 (16.9) | | |
| Location | | 0.052 | 0.198[#] | | 0.370 | 0.100[#] |
| Anterior | 103 (24.2) | | | 69 (16.2) | | |
| Posterior | 8 (12.7) | | | 13 (20.6) | | |
| Size | | 0.796 | 0.750[#] | | 0.215 | 0.003[#] |
| Small/normal | 89 (22.5) | | | 60 (16.1) | | |
| Large/giant | 16 (17.7) | | | 12 (15.0) | | |
| Unusual/ Both | 8 (21.6) | | | 10 (27.0) | | |
| No break seen | | 0.655 | 0.963 | | 0.509 | 0.856 |
| No | 98 (22.5) | | | 71 (16.3) | | |
| Yes | 15 (19.5) | | | 15 (19.5) | | |
| Retinal tear | | 0.672 | 0.648 | | 0.242 | 0.101 |
| No | 104 (21.8) | | | 83 (17.4) | | |
| Yes | 9 (25.7) | | | 3 (8.6) | | |

Uni. = univariate; Multi. = multivariate; LP = light perception; IOP = intraocular pressure; PVR = proliferative vitreoretinopathy; IOL = intraocular lens; RD = retinal detachment; HOC = history of coagulation

Univariate P values by Pearson's chi-square or Fisher's exact test.

Multivariate P values from forward stepwise logistic regression.

[#] Mutivariate logistic regression analysis, preoperative factors removed eyes without break seen.

Table 4.3-8 Intraoperative variables correlated with postoperative macular pucker and PVR by univariate and multivariate analysis

| Variable | Macular pucker n (%) | *P* value Uni. | *P* value Multi. | PVR n (%) | *P* value Uni. | *P* value Multi. |
|---|---|---|---|---|---|---|
| Surgeon | | 0.001 | 0.105 | | 0.193 | 0.455 |
| 1 | 1 (3) | | | 4 (12.1) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 20 (24.4) | | | 13 (15.9) | | |
| 3 | 2 (5.4) | | | 5 (13.5) | | |
| 4 | 31 (20.5) | | | 28 (18.5) | | |
| 5 | 33 (34.0) | | | 25 (25.8) | | |
| 7 | 8 (20.0) | | | 3 (7.5) | | |
| 8 | 0 (0) | | | 0 (0) | | |
| 9 | 3 (42.9) | | | 1 (14.3) | | |
| 10 | 10 (33.3) | | | 5 (16.7) | | |
| 11 | 5 (14.7) | | | 2 (5.9) | | |
| Specialist | | 0.033 | 0.185 | | 0.303 | 0.033 |
| Beginner | 22 (14.7) | | | 20 (13.3) | | |
| Non-beginner | 37 (24.7) | | | 24 (16) | | |
| Specialist | 54 (25.5) | | | 42 (19.8) | | |
| Sclear buckle | | 0.023 | 0.284 | | 0.791 | 0.641 |
| No | 72 (19.4) | | | 61 (16.4) | | |
| Yes | 47 (32.0) | | | 24 (17.7) | | |
| Tamponade | | 0.663 | 0.820 | | 0.630 | 0.851 |
| SF6 | 97 (22.5) | | | 71 (16.5) | | |
| Silicone | 16 (19.8) | | | 15 (18.5) | | |
| SF6 (%) | | 0.516 | NA | | 0.860 | NA |
| 20 | 1 (5.9) | | | 2 (11.8) | | |
| 25 | 41 (25.3) | | | 25 (14.5) | | |
| 30 | 41 (22.4) | | | 31 (16.9) | | |
| 35 | 6 (14.0) | | | 7 (16.3) | | |
| 40 | 8 (30.8) | | | 6 (23.1) | | |
| Coagulation | | 0.018 | 0.004 | | 0.014 | 0.157 |
| Endo | 43 (29.1) | | | 35 (23.6) | | |
| Exo | 57 (21.1) | | | 34 (12.6) | | |
| Both | 13 (13.8) | | | 17 (18.1) | | |
| PFCL | | 0.028 | 0.044 | | 0.020 | 0.020 |
| No | 25 (15.9) | | | 17 (10.8) | | |

| | | Uni. | Multi. | | Uni. | Multi. |
|---|---|---|---|---|---|---|
| Yes | 88 (24.8) | | | 69 (19.4) | | |
| Drainage | | 0.590 | 0.414 | | 0.142 | 0.189 |
| Internal | 110 (22.4) | | | 80 (16.3) | | |
| Others | 3 (14.3) | | | 6 (28.6) | | |
| Remove of flap | | 0.127 | 0.543 | | 0.696 | 0.494 |
| No | 26 (17.4) | | | 23 (15.4) | | |
| Yes | 87 (24.0) | | | 63 (17.4) | | |
| Cataract surgery | | 0.206 | 0.266 | | 0.157 | 0.250 |
| No | 106 (23.1) | | | 74 (16) | | |
| Yes | 7 (14.3) | | | 12 (24.5) | | |
| Retinotomy | | 0.556 | 0.966 | | 0.663 | 0.869 |
| No | 106 (22.5) | | | 78 (16.6) | | |
| Yes | 7 (17.1) | | | 8 (19.5) | | |
| Complications | | 0.017 | 0.057 | | 0.744 | 0.799 |
| No | 104 (24.0) | | | 72 (16.6) | | |
| Yes | 9 (11.5) | | | 14 (12.9) | | |

Uni. = univariate; Multi. = multivariate; SF6 = sulfur hexafluoride;

PCFL = perfluorocarbon liquid

Univariate P values by Pearson's chi-square or Fisher's exact test and multivariate P values from forward stepwise logistic regression.

NA = not applicable; this variable was not included in the forward stepwise model

### 4.4.1.3 Relationship between postoperative macular pucker and retinal redetachment

Eleven (2.1%) and 113 (22.1%) eyes had macular pucker preoperatively and postoperatively. Postoperative macular pucker (p<0.001) was demonstrated to be significantly correlated with primary retinal redetachment. A surgery for postoperative macular pucker was performed in 44 (38.9%) of 113 eyes. A retinal redetachment occurred in 23 (52.3%) of 44 eyes, no statistically significant correlation (p = 0.440) was found compared with eyes without surgery.

The retinal redetachment was present in 14 (60.9%) of 23 eyes before the operation for macular pucker, 4 (17.4%) eyes after the operation and 5 (21.7%) eyes before and after it,

respectively. For retinal redetachment a significant difference (p = 0.008) was present for macular pucker surgery  before or , after the operation and both, this indicated that a macular pucker operation had no effect on occurrence of retinal redetachment. The occurrence of postoperative macular pucker had no significant association with the follow-up period (Table 4.3-9).

Table 4.3-9 Postoperative macular pucker data and in patients with redetachment

| Variable | Frequency n (%) | Redetachment n (%) | P value |
|---|---|---|---|
| Macular pucker | | | <0.001 |
| Yes | 113 (22.1) | 53 (46.9) | |
| No | 399 (77.9) | 97 (24.3) | |
| Surgery of macular pucker | | | 0.440 |
| No | 69 (61.1) | 30 (43.5) | |
| Yes | 44 (38.9) | 23 (52.3) | |
| Time of redetachment | | | 0.008 |
| Before surgery for Macular pucker | | 14 (31.8) | |
| Following surgery for Macular pucker | | 4 (9.1)* | |
| Both | | 5 (11.4) | |
| Follow-up | | | 0.690 |
| ≥ 3 months | 113 (22.1) | 53 (46.9) | |
| > 1 year | 72 (23.1) | 36 (50.0) | |
| > 2 year | 32 (21.6) | 16 (50.0) | |

 * In one eye macular pucker operation combined with silicone oil removal was performed.

## 4.4.2 Postoperative cataract surgery

Of the 376 phakic eyes preoperatively, 22(5.9%) and 10(2.7%) eyes underwent phacoemulsification and IOL implantation and lentectomy during operation, 218 (58%) eyes underwent cataract surgery during the study follow-up interval postoperatively, 126(33.5%)

eyes had lens at final visit. A retinal redetachment occurred in 80 (36.7%) of 218 eyes, 58 eyes (72.5%) before the cataract surgery, 9 (11.3%) after it and 13 (16.3%) before and after it, respectively. There was a statistically significant association in that postoperative retinal redetachment was not influenced by cataract surgery. No significant association was detected between retinal redetachment of eyes with cataract surgery and the follow-up period, however, it significantly associated with the timing of cataract surgery (Table 4.3-10).

Table 4.3-10 Postoperative cataract surgery data of 376 phakic eyes  preoperative and in patients with redetachment

| Variable | Frequency n (%) | Redetachment n (%) | P value |
|---|---|---|---|
| Cataract surgery | 218 (58) | 80 (36.7) | <0.001 |
| Preoperation | | 58 (26.6) | |
| Postoperation | | 9 (4.1)* | |
| Both | | 13 (6.0)* | |
| Follow-up | | | 0.397 |
| > 6 months | 210 (55.9) | 77 (36.7) | |
| > 1 year | 158 (42) | 63 (39.9) | |
| > 2 years | 77 (20.5) | 27 (35.1) | |
| Time of cataract surgery | | | <0.001 |
| 3~ 6 months | 48 (12.8) | 23 (49.0) | |
| > 6 months | 170 (45.2) | 57 (33.5) | |
| >12 months | 75 (19.9) | 21 (28.0) | |
| >18 months | 39 (10.4) | 5 (12.8) | |
| >24 months | 17 (4.5) | 0 (0.0) | |

* In 4 and 5 eyes cataract operation combined with silicone oil removal was performed.