European Journal of Ophthalmology / Vol. 15 no. 1, 2005 / pp. 102-108

Patient satisfaction and vision improvement after multiple surgery for recurrent retinal detachment

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PURPOSE. *To assess patient satisfaction and functional status improvement after multiple surgery for recurrent retinal detachment (RRD) with proliferative vitreoretinopathy (PVR) grade C. Main outcome measures included visual acuity (VA), anatomic outcome, and patients' answers to a standardized multiple-choice questionnaire.*
METHODS. *The authors retrospectively reviewed records of patients undergoing pars plana vitrectomy (PPV) for RRD with PVR grade C operated between 1997 and 1999. All included patients underwent a standardized telephone interview aimed at assessing the patients' visual performance and satisfaction. Statistical analysis used Wilcoxon signed-rank test, Mann-Whitney rank sum test, and Spearman rank correlation coefficient. p Values less than 0.05 were considered statistically significant.*
RESULTS. *The population study included 62 patients with an average 19 ± 4.1 months follow-up. The average number of operations was 2.9 ± 0.7 with 1.45 ± 0.50 recurrences. At the end of the study, 40/62 eyes had better than 5/400 vision and 14/62 better than 20/200; 2 patients had no light perception and 5 eyes still had RRD. Questionnaire answers yielded the following results: 61% believed their VA was better than before surgery, 13% the same, and 26% worse. Fifty-two percent noticed an improvement in binocular vision versus 35% stable and 13% worse: 84% thought their result had been worth the operation, 15% did not, and 2% did not know. Ninety percent believed the information they received before surgery was accurate. Results exceeded expectations in 35% of cases and matched them in 26%. Increase in binocular visual performance after intervention was significant for clothing, bathing, and home deambulation, climbing steps, watching TV, and reading, but not for car driving. The difference in VA improvement in satisfied and unsatisfied patients was significant. There was no significant correlation between patients' satisfaction and fellow-eye vision.*
CONCLUSIONS. *The sample population showed a high rate of satisfaction and significant subjective improvement on four out of five tested activities, despite multiple surgeries and overall poor outcome, even in patients with a good VA in fellow eye. Many other factors such as visual field and contrast sensitivity improvement, not investigated by the authors, can play an important role in the visual functional status. Correct and extensive patient information remains critical in such settings. (Eur J Ophthalmol 2005; 15: 102-8)*

KEY WORDS. *Outcome measures, Patient satisfaction, Proliferative vitreoretinopathy, PVR surgery, Visual outcome, Visual performance, VF-14, Vitrectomy*

Accepted: September 13, 2004

1120-6721/102-07$15.00/0

Presented in part at the Jules Gonin Club Meeting, Taormina, Italy, September 2000

INTRODUCTION

Outcome research is a relatively new field of interest in ophthalmology, although increasingly scrutinized due to extensive application of cost-benefit evaluation in healthcare management (i). Outcome studies typically assess patients' perceptions of how medical procedures affect quality of life and correlate them to objective measures and/or biomedical indicators (ii). Not surprisingly, most available studies in ophthalmology address visual outcome after cataract surgery (iii), although a number of good studies regarding vitreoretinal surgery have been published (iv-v). Despite success rate improvement in recent times, recurrent retinal detachment (RRD) surgery still represents a significant cause of morbidity, often frustrating because of the need for multiple surgery and at times ending with a disappointing visual outcome.

PVR is the most common cause of RD surgery failure, occurring in about 7% of cases (vi), with 1600 new cases diagnosed in the United States every year. Anatomic and functional results of severe PVR surgery remarkably improved in the last decade; today pars plana vitrectomy (PPV) for severe proliferative vitreoretinopathy (PVR) has a 90% to 94% success rate, as opposed to 14% in 1981 (vii). In spite of continuing refinement of surgical techniques, vitreoretinal surgery for RRD when compared to

TABLE I – TELEPHONE QUESTIONNAIRE ADMINISTERED BY THE REGISTERED NURSE

1. ***Using only the operated eye, how is your vision now, compared with the vision you had before the intervention?***

1. much better
2. better
3. same
4. worse
5. much worse

2. ***Using both eyes, how is your vision now, compared with the vision you had before the intervention?***

1. much better
2. better
3. same
4. worse
5. much worse

3. ***Do you think surgery had been worthwhile?***

1. yes certainly
2. yes maybe
3. don't know
4. maybe not
5. not really

4. ***Do you think you received accurate pre-operative info?***

1. yes certainly
2. yes maybe
3. don't know
4. maybe not
5. not really

5. ***How is the intervention result compared to expectations?***

1. much better
2. better
3. same
4. worse
5. much worse

6. ***How difficult WERE daily activities (at home)?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

7. ***How difficult ARE daily activities (at home)?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

8. ***How difficult WERE outdoor walking and steps?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

9. ***How difficult ARE outdoor walking and steps?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

10. ***How difficult WAS watching TV?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

11. ***How difficult IS watching TV?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

12. ***How difficult WAS reading & writing?***

1. not at all
2. just a little
3. bit
4. a lot
5. impossible

13. ***How difficult IS reading & writing?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

14. ***How difficult WAS driving a car?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

15. ***How difficult IS driving a car?***

1. not at all
2. just a little
3. a bit
4. a lot
5. impossible

Fig. 1 - *Bar chart illustrating visual acuity line shift as compared before and after last surgery.*

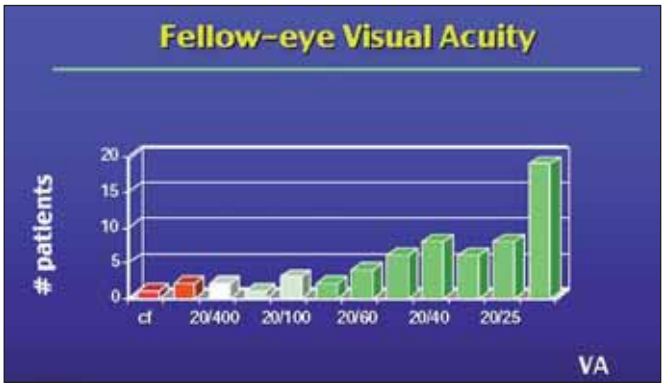

Fig. 2 - *Bar chart illustrating fellow eye visual acuity.*

Fig. 3 - (A) *Patients' answer to question 1: "Using only the operated eye, how is your vision now, compared with the vision you had before the intervention?" Reported p value represents bivariate correlation between visual acuity (VA) line improvement and answers to question 1.*

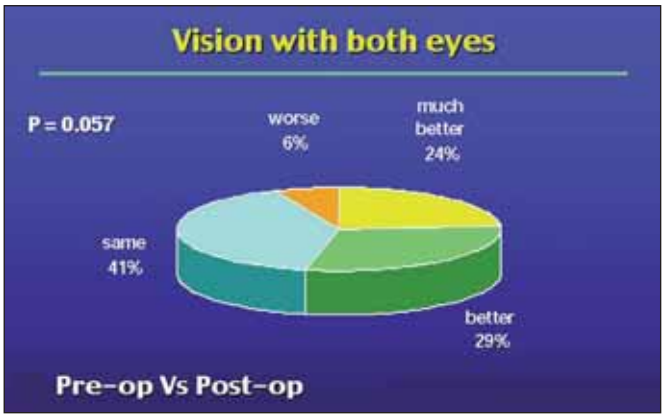

Fig. 3 - (B) *Patients' answer to question 2: "Using both eyes, how is your vision now, compared with the vision you had before the intervention?" Reported p value represents bivariate correlation between VA line improvement and answers to question 2.*

TABLE II - ANSWERS TO QUESTIONNAIRE

Question	Answer 1		Answer 2		Answer 3		Answer 4		Answer 5		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Q1	12	19	21	34	14	23	8	13	7	11	62	100
Q2	15	24	18	29	25	41	4	6	0	0	62	100
Q3	34	55	11	18	9	15	6	10	1	2	62	100
Q4	27	44	24	39	6	10	3	5	1	2	62	100
Q5	5	8	12	19	17	27	22	35	7	11	62	100
Q6	31	50	13	21	11	18	5	8	2	3	62	100
Q7	38	62	14	23	7	11	1	2	1	2	62	100
Q8	11	18	28	45	12	19	10	16	1	2	62	100
Q9	29	46	25	40	4	6	5	8	0	0	62	100
Q10	13	21	16	26	11	18	15	24	7	11	62	100
Q11	24	38	24	39	5	8	6	10	3	5	62	100
Q12	11	18	21	34	11	18	9	15	9	15	62	100
Q13	17	27	20	33	11	18	4	6	10	16	62	100
Q14	4	6	8	13	15	24	5	8	30	49	62	100
Q15	10	16	20	32	7	11	0	0	25	41	62	100

Fig. 4 - *Patients' answer to question 3: "Do you think surgery was worthwhile?" Reported p value represents bivariate correlation between visual acuity line improvement and answers to question 3.*

Fig. 5 - *Patients' answer to question 4: "Do you think you received accurate preoperative information?" Reported p value represents bivariate correlation between visual acuity line improvement and answers to question 4.*

most eye surgery is still considered expensive and often minimally rewarding. The purpose of the present article is to selectively evaluate satisfaction and functional improvement of patients undergoing multiple surgery for RRD with PVR grade C (viii). We tried to evaluate whether the patients judged their own visual result and level of functional improvement significant and, consequently, worth the effort. We furthermore sought to correlate the patients' perception to visual acuity (VA) and anatomic condition since sometimes even eventually successful repeated surgery can deeply affect quality of life and psychological status.

Fig. 6 - *Patients' answer to question 5: "How is the intervention result compared to expectations?" Reported p value represents bivariate correlation between visual acuity line improvement and answers to question 5.*

MATERIALS AND METHODS

The authors retrospectively reviewed charts of 97 patients undergoing PPV for RRD with PVR grade C operated on at their institution from 1997 to 1999. Patients with less than 6 months follow-up after latest intervention were excluded. An overall 62 out of 97 patients met follow-up requirements and agreed to answer the telephone interview and were included in the study.

The following preoperative data were considered: age, surgical procedure (oil or gas tamponade, membrane peeling, membrane localization), number of surgeries, concomitant ophthalmic pathologies, VA of the operated and fellow eye, ocular pressure, and follow-up duration. Postoperative data included anatomic condition of the retina and the macula, presence of tamponade, and VA of the operated and fellow eye. The telephone interview consisted of 15 multiple-choice questions administered by a registered nurse grading answers according to a predetermined scale (Tab. I). Questions 1 to 5 were based on a model published by Sullivan et al (5) (modified from the Southampton District Health Authority questions model) and investigated postoperative general satisfaction of the patients. Questions 6 to 15 were based on the Visual Function Index (VF-14 [ix]; modified from the Sickness Impact Profile [SIP], adapted to ophthalmology) adapted by Steinberg and Machemer and the Cataract Patient Outcome Research Team (8). The latter questions have been used for postoperative functional evaluation of specific daily activities of patients undergoing cataract surgery and have been used in the literature for vitreoretinal surgery (4).

Statistical analysis run under SPSS 10.0 (Chicago, IL) used Wilcoxon rank sum test, Mann-Whitney signed rank

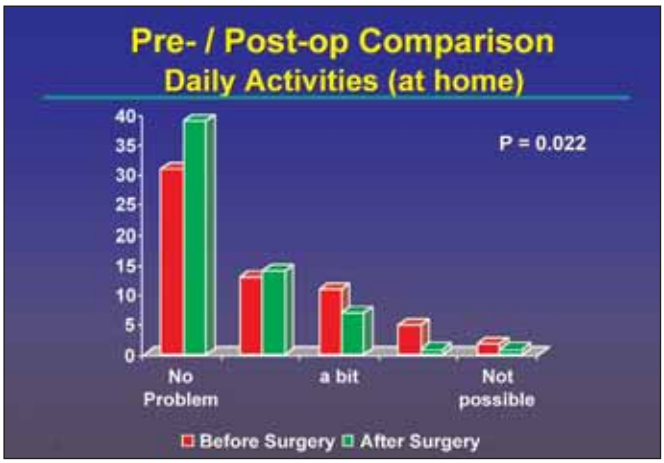

Fig. 7 - *Bar chart comparing patients' answers to question 6 and question 7: "How difficult were/are daily activities (bathing, clothing, indoor walking)?" Reported p value represents Wilcoxon test result when comparing pre- and postoperative answers.*

Fig. 8 - *Bar chart comparing patients' answers to question 8 and question 9: "How difficult were/are outdoor walking and steps?" Reported p value represents Wilcoxon test result when comparing pre- and postoperative answers.*

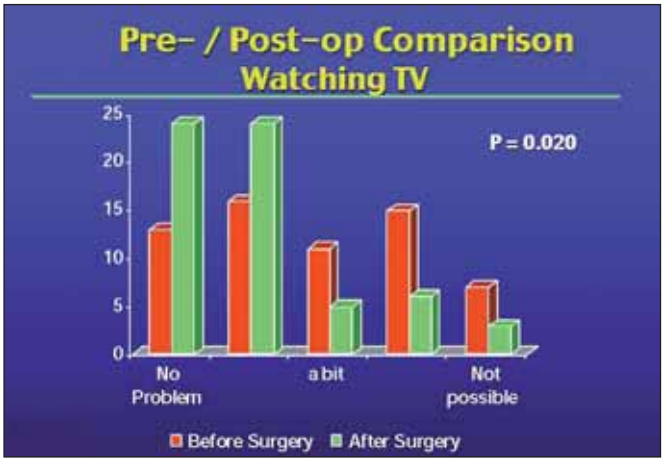

Fig. 9 - *Bar chart comparing patients' answers to question 10 and question 11: "How difficult was/is watching TV?" Reported p value represents Wilcoxon test result when comparing pre- and postoperative answers.*

Fig. 10 - *Bar chart comparing patients' answers to question 12 and question 13: "How difficult was/is reading and writing?" Reported p value represents Wilcoxon test result when comparing pre- and postoperative answers.*

test, and Spearman rank correlation coefficient. p Values less than 0.05 were considered statistically significant.

RESULTS

The sample population included 62 patients (31 male and 31 female). Mean age was 56±4.3 years, mean follow-up duration was 19±4.1 months, and each patient underwent an average 2.9±0.7 surgical procedures, with 1.45±0.50 RRDs. At latest follow-up, 47/62 (75.8%) eyes had 5/200 vision or better and 13/62 (20.9%) had 20/200 or better; 2 patients had no light perception. Postoperative VA line shift is reported in Figure 1 and improved after surgery in 46/62 patients, with 35/62 patients (56.5%) gaining 2 lines or more while 7/62 (11.3%) did not change and 9/62 (14.5%) worsened. Fellow eye VA varied between counting fingers and 20/20 and is shown in detail in Figure 2.

Average intraocular pressure at latest visit was 15.5 ± 4.7 mmHg. Five patients (5/62; 8%) still had a RD and three of them were macula off. Twenty-one patients retained silicone oil tamponade, while 32 had it removed during previous surgery and 9 had been treated with gas tamponade. The telephone interview questions are reported in Table I and patient answers in Table II.

Telephone interview yielded the following results: 53% believed VA in the operated eye was better than before

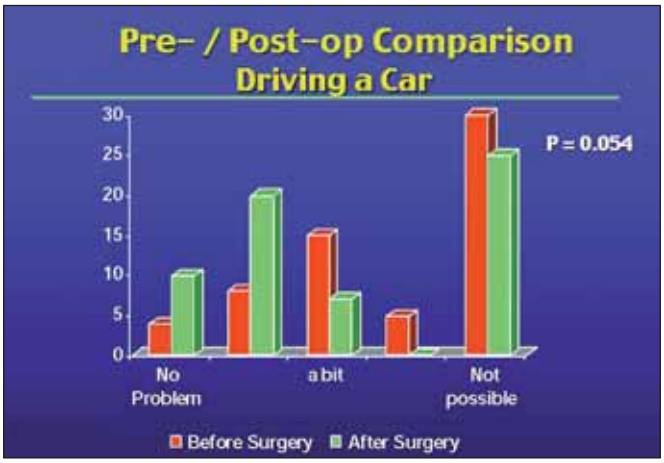

Fig. 11 - *Bar chart comparing patients' answers to question 14 and question 15: "How difficult was/is driving a car?" Reported p value represents Wilcoxon test result when comparing pre- and postoperative answers.*

the operation, 23% unchanged, and 24% worse (Fig. 3A); 53% noticed an improvement in binocular vision versus 41% stable and 6% worse (Fig. 3B). Interview answers regarding whether surgery had been worthwhile, preoperative information accuracy, and comparison between results and expectations are shown in pie charts (Figs. 4, 5, 6). Answers to questions 6 to 15, regarding patient's functioning in daily activity, outdoor walking, watching TV, reading and writing, and driving a car, are summarized in Figures 7 to 11, as bar charts reporting the five possible answers into two consecutive series: pre- and post-surgery. The difference in binocular visual performance, comparing pre- and postoperation questionnaire answers, was significant for daily activities (clothing, bathing, and home deambulation) (Wilcoxon test; p=0.022), climbing steps (p=0.022), watching TV (p=0.020), barely for reading (p=0.048), but not for car driving (p=0.054).

Bivariate correlation showed a significant correlation between VA line improvement and respectively: vision of the operated eye, as perceived by the patient (p=0.001), result compared to expectation (p=0.015), outdoor walking and steps (p=0.01), watching TV (p=0.017), but not for vision with both eyes (p=0.057), accuracy of preoperative information (p=0.077), home daily activity (p=0.854), reading and writing (p=0.424), driving a car (p=0.831). The difference in VA improvement between patients answering question 3 as "satisfied" and "not satisfied" was significant (p=0.001). There was no significant correlation between patient satisfaction and fellow eye vision or between VA improvement and the accuracy of preoperative information.

DISCUSSION

The assessment of patients' satisfaction and visual functioning improvement represents a meaningful way to address the problem of risk/benefit ratio, especially in an era when social costs and healthcare expenditure issues raise the question as to whether this surgery is justifiable. Although at the end of the study 75% of patients had ambulatory vision (VA>20/200) in the operated eye and 56% gained 2 or more lines, an overall 25% remained unchanged or worsened. Interestingly, patients seemed aware of this, given the significant correlation between VA improvement as measured by the ophthalmologist and the patients' perceptions (Tab. I and Fig. 3A). A similar interpretation is suggested by the correlation between VA improvement and answers to question 3 (Do you think surgery was worthwhile?) (Fig. 4). The correlation between vision with both eyes (question 2) and VA line improvement was not significant (Fig. 3B) and is partially inconsistent with the patients' answers to the following questions that reach statistical significance for most inquired visual tasks. A slight improvement in visual field width and even a very minimal change in VA could perhaps help patients perform those tasks although their perception of the operated eye usefulness may remain low when compared to the better eye. Our success rate and VA line improvement match results reported by Scott et al (6), who observed 53% of patients gaining 2 or more lines and 80% of patients with an attached retina, although their study regarded a little more mixed population, including RRD, epiretinal membranes, and so-called "complex RD." Seventy percent of Scott et al's patients perceived surgery as "very worthwhile" versus 55% of our patients answering "yes, certainly" and another 18% "yes, maybe." The accuracy of preoperative information could play a role, since although an overall 83% of our patients thought preoperative information was accurate (Fig. 5), 46% felt the result was "worse" or "much worse" than expected (Fig. 6). This latter figure is similar to 47% of Sullivan et al's study group (5) stating that preoperative vision was "worse than expected." Within an ideally properly informed patient group, results should match expectations in virtually 100% of cases and hence answers to questions 4 and 5 (Figs. 5, 6) should theoretically overlap. This gap is either due to inaccuracy of information per se or, alternatively, represents a hope of patients to fall within the successful postoperative group no matter how realistically the surgeon presents likely postoperative scenarios.

Questions 6 to 15 (Tab. I) regarded increasingly difficult tasks performed by the patient as perceived before and after surgical treatment. While all activities under scrutiny showed a trend towards increased level of functioning, four out of five showed significant improvement (questions 6 and 7: bathing and indoor walking (Fig. 7); questions 8 and 9: outdoor walking and steps (Fig. 8); questions 10 and 11: TV watching (Fig. 9); questions 12 and 13: reading and writing (Fig. 10)), while car driving performance (questions 14 and 15 (Fig. 11)) did not improve significantly. There may be different explanations for this fact: VA improvement, although present, could be insufficient to impact more complex visual activities such as driving a car or, alternatively, VA improvement could have affected a subgroup of patients whose lower VA does not meet law requirements for driving license and therefore cannot be perceived when examining this specific task. Most likely, other factors such as fellow eye VA and visual field played a significant role in more complex visual tasks as well. Improvement reported by the patients in performing complex visual tasks, despite already having a good VA in the fellow eye, is consistent with most literature documenting improved vision after second eye cataract extraction (x) and may be explained with better stereopsis and/or improved visual field width.

This study reports tertiary referral center data collected from retrospective chart review and telephone interviews; pitfalls include failure to systematically examine visual field and contrast sensitivity and the relatively limited number of patients included. Moreover, when examining patients' satisfaction compared to expectation, preoperative counseling and patient information acquire great importance and can substantially influence satisfaction outcome and patient perception. Since at the time of preoperative patient counseling the surgeon was not aware data would be used for study purposes, no attempt at standardizing the information provided to the patients was made. Inclusion criteria could have introduced a selection bias as well, if unsatisfied patients refused to participate in our telephone interviews or, on the contrary, if answering patients reached by our nurse and not an anonymous or independent party felt bound to please the institution or the surgeon.

Overall, our sample population clearly expressed satisfaction and visual performance improvement despite being confronted with a severe prognosis, a long, tiring convalescence, and, often, the need for multiple surgery. The data show that meticulous, clear, and thorough preoperative information and continuous counseling are important to the patient.

ACKNOWLEDGEMENTS

The authors wish to thank Walter Rinaldi PhD for his precious counseling.

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