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Quality of life in Turkish Patients with Trauma-Related Phthisis Bulbi

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Abstract

Purpose: Losing an eye due to trauma is a challenging situation that reduces the quality of life by causing physical, cosmetic, and serious psychological problems. This study aimed to evaluate the effect of aesthetic rehabilitation on the change in psychological status and quality of life of patients with eye loss resulting in phthisis bulbi. **Materials and Methods:** The files of 25 males and 15 females with an average age of 27.5 years who had trauma-related phthisic eye and had applied to the Department of Ophthalmology at the Dr. Lütfi Kırdar Kartal Education and Research Hospital, Istanbul, Turkey, for aesthetic rehabilitation during the years 2015–2019 were retrospectively analyzed. The Beck Depression Inventory (BDI), Beck Anxiety Scale (BAS), and the 36-item Short Form Health Survey questionnaire (SF-36) were used to collect data on admission and 1-year follow-up. **Results:** Of the patients reviewed, 65% stated that eye loss had caused their avoidance of family and social environments; 30% had moderate anxiety and depression. The postoperative sub-dimension scores of general health, emotional role function, and physical and social functions were statistically significant ($P = 0.001$; $P < 0.01$), but the variations in the sub-dimension scores of vitality, mental health, and total physical health were not ($P > 0.05$). **Conclusion:** Losing an eye is a traumatic event that can affect all aspects of a person's social and professional life. A patient who has suffered from the psychological damage of physical loss of eye needs a prosthesis that can give the desired function and appearance in different aspects of life

Keywords: Eye loss, phthisis bulbi, psychological trauma, quality of life

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INTRODUCTION

The eyes are an essential organ in the body and a crucial structure in facial aesthetics, so their physical loss can have devastating psychological effects. Some people who lose one or both eyes may be afraid to engage with new people and environments, which will reduce their quality of life.[1-6] This physical and mental stress can lead to emotional instability and a reduced ability to tolerate stress. Many external factors are thought to influence adjustment, including age, gender, and informal and formal support systems as well as internal factors, like personality.[5,6] The adjustment may not start immediately after eye loss. People generally pass through a cycle of emotions that might include denial, anger, and depression before accepting the loss and moving into grief in the process of coming to terms with the new situation.[4,7,8]

The length of time that this process and these emotions last varies from person to person. Anxiety is likely to be experienced throughout the process and can have devastating health effects. It may limit daily activities, damage mental and physical health, cause sleep problems and obesity and lead to an increased tendency to use tobacco and alcohol, all of which negatively impact quality of life.[1,9-11] Although the difficulties resulting from facial disfigurement are known, little is known about the associated emotional problems and the effects these people face, such as disruption of social activities, issues with interpersonal relationships, and problems in the workplace, each of which can increase anxiety and exacerbate depression.[1,2,11-14]

Even if an eye has healed after a traumatic event, it is not possible to regain lost function, and severe injuries to the eye, can lead to phthisis bulbi, an end-stage eye disease characterized by diminution and irregularity of the eye. Social anxiety and social avoidance behavior caused by this condition can be reduced by performing evisceration surgery to provide cosmetic rehabilitation.

\This surgery involves removal of the ocular content and replacement of an orbital implant to complete the reduced orbital volume. After the socket heals, they start to use an ocular prosthesis and better adapt to their psychologically devastating condition. This study aims to examine how the mental health of patients with acquired permanent vision loss has changed with evisceration surgery and the use of a prosthesis.

MATERIALS AND METHODS

The files of 40 patients who agreed to participate in the study out of 100 phthisis bulbi patients who had applied to the Department of Ophthalmology at the Dr. Lütfi Kirdar Kartal Education and Research Hospital in Istanbul for prosthetic rehabilitation between January 2008 and December 2019 were retrospectively reviewed. Patients with traumatic vision loss and aged between 7 and 60 years were included in the study. The exclusion criteria were intraocular malignancies, other serious ocular diseases, and psychiatric disorders. Medical records were reviewed for demographic and clinical data and self-reports of various emotions.

Data were collected on age, gender, level of education, marital status, and cause of eye loss. Social and psychological problems, such as trying not to show their face or negative feelings about their appearance, were noted. As the main complaint was an unpleasant facial appearance, evisceration surgery had been performed under general anesthesia, and patients began using ocular prosthesis in the 4th postoperative week. Controls had been performed on the 1st day and 2nd and 4th week after the operation and followed up for 1 year at 3-month intervals. The power of the study is expressed as $1 - \beta$ (β = probability of Type II error).

In general, studies should have 80% power. In our study, the number of cases to be included was determined as 36 to obtain 80% power at the $\alpha = 0.05$ level by simple random sampling method ($P = 0.04$; $q = 0.96$) out of 100 cases. Considering the nature of the loss of an eye due to trauma, we predicted that it would be more appropriate to raise this number to 40.

The psychological assessment was based on the Beck Depression Inventory (BDI), Beck Anxiety Scale (BAS), and Short Form 36 quality-of-life survey (SF-36). The study participants received a questionnaire form and the validated Turkish version of the BAS, BDI, and SF-36 on admission. Patients were given full explanations about the process and purpose of the study and were assured of the confidentiality of their personal information at all stages of the study.[15]

The BDI test is a 21-item, self-report rating inventory that evaluates characteristic attitudes and attitudes of depression (sadness, pessimism, past failure, self-dislike, self-criticalness, suicidal thoughts or wishes, and loss of interest). Each item is scored on a scale of 0 (absent) to 3 (severe), to give the sum of seven questions, from which is gained a total score of 0–3 (minimal depression symptoms), 4–6 (mild), 7–9 (moderate), and 10–21 (severe depression). The cut-off score indicating no depression is 11; scores from 12 to 19 indicate mild depression, scores from 20 to 35 indicate moderate depression, and scores from 36 to 63 indicate severe depression.

The BAS has 21 questions, with each answer scored between 0 and 3. Items with a score of 3 indicate higher respondent anxiety. The BAS focuses predominantly on the psychological aspect of anxiety. Of these 21 items, 3 are related to respondents' fears, 4 to moods, the remainder to anxiety and panic issues. A total score of 0–7 is interpreted as a minimal level of anxiety; 8–15 as mild, 16–25 as moderate, and 26–63 as severe. The self-administrated SF-36A is a general health questionnaire that is suitable for use in clinical practice and research. It consists of 36 items evaluating 3 main topics and 8 health concepts.

The first 4 items measure physical health and the next 4 mental health. Each dimension can take inputs from the worst (0) to the best (100) possible health state. According to the BAS, BDI, and SF-36 psychological assessment, those patients with severe test scores were excluded from the study.

Statistical analysis

The Number Cruncher Statistical System 2007 (Kaysville, Utah, USA) program was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used. The Shapiro–Wilk test and graphical analysis were used to test the suitability of the quantitative data to normal distribution. The Mann–Whitney U-test was used to compare quantitative variables with no normal distribution. Wilcoxon signed-rank test was used for intragroup comparisons of quantitative variables with no normal distribution. Statistical significance was accepted as $P < 0.05$.

The study protocol adhered to the tenets of the Declaration of Helsinki and was approved by the Ethics Committee of the Dr. Lütfi Kirdar Kartal Education and Research Hospital (Decision number: 2020/514/177/40). A fully informed written consent form was taken from the patients or parents.

RESULTS

A total of 40 patients comprising 25 males (62.5%) and 15 females (37.5%) were included in the study. The mean age was 27.53 ± 16.24 years, with 62.5% (n = 25) under 30-year old. Ocular defects were primarily the result of trauma. A majority (62.5%) of the patients had lost their left eye, the remainder (37.5%) their right eye

Table 1 shows the sociodemographic and clinical characteristics of the patients. Regarding relationship status, 22 (55%) of the patients were married, 18 (45%) were students, 18 (45%) were working, and 4 (10%) were retired. Regarding education, all the patients were literate, 8 (20%) were attending primary/ junior school, and 18 (45%) secondary school. All patients expressed dissatisfaction with their facial appearance. A total of 34 (85%) patients reported difficulties with depth perception and peripheral vision defect, and 33 (82.5%) reported tiredness in the eye during reading; 18 (45%) of the patients complained of driving problems. Most (32 [80%]) of the patients stated that vision loss had caused a change in their lifestyle and that they no longer participate in physical activities; 23 (57.5%) had lost their job.

With regard to the psychological evaluation, 28 (70%) of the patients had low anxiety and 12 (30%) had moderate anxiety, while 5 (12.5%) had no depression, 22 (55%) had mild, and 12 (30%) had moderate depression. Three months after surgery for ocular prosthesis, the state of anxiety had decreased in all patients; just 10 (25%) patients now had mild depression and 5 (12.5%) had moderate depression.

When the SF-36 quality-of-life scale subdimension scores were evaluated before and after surgery, changes in the scores for physical, social, and emotional role functions, general health, and total mental health were found to be statistically significant ($P = 0.001$, $P < 0.01$), but the changes in the scores for vitality and mental health, and total physical health were statistically insignificant ($P > 0.05$) [Figure 1 and Table 2].

According to the age groups, the preoperative SF-36 scores of the patients under 30 years of age were significantly higher than those over 30-year old ($P = 0.025$, $P < 0.05$). When the subdimension scores of change in the postoperative physical function of patients under 30 years were compared to their preoperative scores, they were significantly lower than the equivalent comparisons for patients above the age of 30 ($P = 0.025$, $P < 0.05$). The scores for emotional role function and for the change in the postoperative emotional role function of patients under 30 years were found significantly lower than for those over 30-year old ($P = 0.008$, $P < 0.01$)

The preoperative vitality scores of the patients under 30 were significantly higher than they were for those over 30-year old ($P = 0.003$, $P < 0.01$). No statistically significant differences were found between the postoperative vitality scores according to age or for the pre- and postoperative scores for mental health ($P > 0.05$). The social function scores of the patients under 30 years were significantly higher than for those over 30-year old ($P = 0.007$, $P < 0.01$). No statistically significant differences were found between the pre- and postoperative social function, total physical health, or total mental health scores according to age ($P > 0.05$) [Table 3]. When the pre- and postoperative results according to gender were analyzed, the postoperative physical function scores of women compared to before surgery were found to be significantly lower than those of men ($P = 0.001$, $P< 0.01$).

The change in the pre- and postoperative emotional role function subdimension scores of women was found as statistically significantly lower than that of men ($P = 0.001$; $P < 0.01$). No statistically significant difference was found between the pre- and postoperative vitality subdimension scores according to $P > 0.05$. The change in the pre- and postoperative mental health score of women was significantly higher than that of men ($P = 0.011$,

P < 0.05). The change in the postoperative social function subdimension score of women was significantly lower than that of men (P = 0.015, P < 0.05). No statistically significant difference was found between the changes in the general health and total physical health scores according to gender (P > 0.05) [Table 4].

Table 1: The sociodemographic and clinicalcharacteristics of the patients

Characteristics	**Patients, *n* (%)**
Age	
7-30	25 (62.5)
30-60	15 (37.5)
Gender	
Male	25 (62.5)
Female	15 (37.5)
Cause of eye loss	
Trauma	40 (100)
Duration of visual loss (years)	3.12±1.36
Socioeconomic position	
Employed	18 (45)
Student	18 (45)
Retired	4 (10)
Education level	
Primary school	8 (20)
Graduated high school	10 (25)
Only read and write	22 (55)
Marital status	
Married	22 (55)
Complaints	
Peripheral vision or distance judgment	34 (85)
Tiredness in the eye during reading	33 (82.5)
Driving	18 (45)
Daily activities	32 (80)
Changed lifestyle	32 (80)
Lost job	23 (57.5)

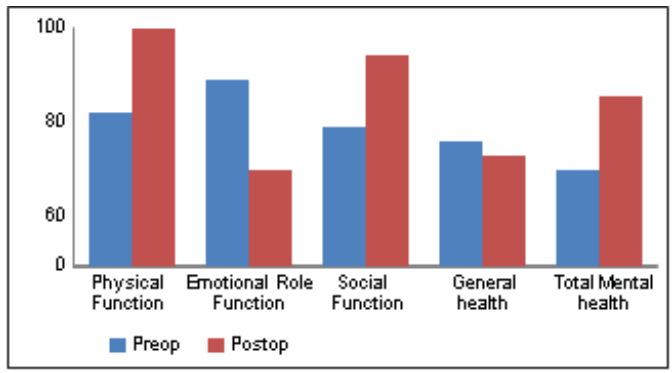

Figure 1: SF-36 subscale scores according to the group's distribution

Table 2: Evaluation of short form-36 Quality of Life Scale subdimension life scores of patients in the pre- (phytis bulbi)and post (evisceration + prosthesis) operative period

	Minimum–maximum (median), mean±SD		Difference	*P**
	Phytisic eye	Evisseration + prosthesis		
Physical function	50-85 (65), 64.38±8.18	100-100 (100), 100±0	35.63±8.18	0.001**
Physical role function	0-0 (0), 0±0	0-0 (0), 0±0		-
Emotional role	51-100 (84), 78.45±15.09	40-40 (40), 40±0	38.45±15.09	0.001**
Vitality	40-52 (47), 45.45±3.75	37-57 (47), 46.73±6.21	1.28±7.38	0.480
Mental health	35-70 (50), 50.5±8.83	45-55 (50), 49.38±3.79	−1.13±6.55	0.294
Social function	50-75 (50), 58.75±10.67	75-100 (87.5), 88.75±8.86	30.00±14.38	0.001**
Pain	0-0 (0), 0±0	100-100 (100), 100±0		-
General health	48-64 (52), 52.3±3.06	40-60 (44), 46.5±6.58	−5.80±6.78	0.001**
Total physical health	41-53.75 (46), 47.07±3.2	44.3-49.3 (46.8), 46.68±1.55	−0.39±3.98	0.687
Total mental health	34.4-49.3 (38.8), 40.39±4.24	65-74.8 (71.4), 71.16±3.35	30.77±5.52	0.001**

*P<0.05 was regarded as statistically significant, **Wilcoxon Signed Ranks Test, SD: Standard deviation

Table 3: Average distribution of short form-36 scores according to age groups pre- and postoperatively

	Age , (median), Mean and SD		
	<30 (*n*=25)	**>30 (*n*=15)**	
Physical function			
Preoperative	50-85 (65), 66.6±8.98	55-70 (60), 60.67±4.95	0.025*
Postoperative	100-100 (100), 100±0	100-100 (100), 100±0	-
Difference	33.40±8.98	39.33±4.95	0.025*
*P*b	0.001**	0.001**	
Physical role function			
Preoperative	0-0 (0), 0±0	0-0 (0), 0±0	-
Postoperative	0-0 (0), 0±0	0-0 (0), 0±0	-
Emotional role			
Preoperative	51-100 (62), 73.76±16.03	74-100 (84), 86.27±9.44	0.008**
Postoperative	40-40 (40), 40±0	40-40 (40), 40±0	-
Difference	−33.76±16.03	−46.27±9.44	0.008**
*P*b	0.001**	0.001**	
Vitality			
Preoperative	40-52 (47), 46.56±3.04	40-52 (45), 43.6±4.17	0.003**
Postoperative	37-57 (47), 46.52±4.69	37-57 (47), 47.07±8.34	0.763
Difference	−0.04±5.68	3.47±9.39	0.308
*P*b	0.834	0.233	
Mental health			
Preoperative	35-70 (50), 51.8±10.3	40-55 (50), 48.33±5.23	0.534
Postoperative	45-55 (50), 49.8±3.95	45-55 (50), 48.67±3.52	0.377
Difference	−2.00±7.64	0.33±3.99	0.701
*P*b	0.171	0.739	
Social function			
Preoperative	50-75 (62.5), 62±10.51	50-75 (50), 53.33±8.8	0.007**
Postoperative	75-100 (87.5), 88.5±8	75-100 (87.5), 89.17±10.42	0.761
Difference	26.50±12.67	35.83±15.57	0.034*
*P*b	0.001**	0.001**	
Pain			
Preoperative	0-0 (0), 0±0	0-0 (0), 0±0	-
Postoperative	100-100 (100), 100±0	100-100 (100), 100±0	-
General health			
Preoperative	48-64 (52), 52±3.27	48-56 (52), 52.8±2.7	0.190
Postoperative	40-60 (44), 46.4±6.53	40-60 (44), 46.67±6.87	0.908
Difference	−5.60±6.83	−6.13±6.91	0.732
*P*b	0.001**	0.006**	
Total physical health			
Preoperative	41-53.8 (45.75), 46.73±3.35	43.5-52.5 (46), 47.63±2.96	0.191
Postoperative	44.3-49.3 (46.8), 46.63±1.17	44.3-49.3 (46.8), 46.77±2.08	0.763
Difference	−0.10±3.96	−0.87±4.12	0.449
*P*b	0.808	0.426	
Total mental health			
Preoperative	34.3-49.3 (39.9), 41.45±4.68	35.5-45.3 (38), 38.62±2.64	0.058
Postoperative	65-74.8 (70.63), 71.18±3.05	65-74.8 (73.5), 71.13±3.92	0.888
Difference	29.73±5.74	32.51±4.82	0.158
*P*b	0.001**	0.001**	

*P<0.05, **P<0.01, [a]Mann–Whitney U test, [b]Wilcoxon signed-rank test. SD: Standard deviation

Table 4: Distribution of short form-36 scores of the groups according to gender

	Gender, minimum–maximum (median), mean±SD		P[a]
	Female (n=15)	Male (n=25)	
Physical function			
Preoperative	55-85 (70), 69.67±7.9	50-80 (60), 61.2±6.66	0.001**
Postoperative	100-100 (100), 100±0	100-100 (100), 100±0	
Difference	30.33±7.90	38.80±6.66	0.001**
P[b]	0.001**	0.001**	
Physical role function			
Preoperative	0-0 (0), 0±0	0-0 (0), 0±0	
Postoperative	0-0 (0), 0±0	0-0 (0), 0±0	
Emotional role			
Preoperative	51-72 (62), 62.27±4.82	74-100 (84), 88.16±9.73	0.001**
Postoperative	40-40 (40), 40±0	40-40 (40), 40±0	
Difference	−22.27±4.82	−48.16±9.73	0.001**
P[b]	0.001**	0.001**	
Vitality			
Preoperative	47-52 (47), 47.33±1.29	40-52 (45), 44.32±4.28	0.001**
Postoperative	42-57 (47), 46.67±3.99	37-57 (47), 46.76±7.3	0.796
Difference	−0.67±4.17	2.44±8.63	0.169
P[b]	0.527	0.248	
Mental health			
Preoperative	45-70 (55), 56.67±10.29	35-55 (45), 46.8±5.18	0.003**
Postoperative	45-55 (50), 51.33±3.52	45-55 (50), 48.2±3.5	0.011*
Difference	−5.33±7.90	1.40±3.96	0.011*
P[b]	0.022*	0.088	
Social function			
Preoperative	62.5-75 (62.5), 68.33±6.45	50-75 (50), 53±8.29	0.001**
Postoperative	87.5-100 (87.5), 91.67±6.1	75-100 (87.5), 87±9.87	0.128
Difference	23.33±11.44	34.00±14.67	0.015*
P[b]	0.001**	0.001**	
Pain			
Preoperative	0-0 (0), 0±0	0-0 (0), 0±0	
Postoperative	100-100 (100), 100±0	100-100 (100), 100±0	
General health			
Preoperative	48-64 (52), 51.47±3.96	48-56 (52), 52.8±2.31	0.029*
Postoperative	40-52 (44), 44.8±4.59	40-60 (44), 47.52±7.42	0.388
Difference	−6.67±5.98	−5.28±7.28	1.000
P[b]	0.001**	0.002**	
Total physical health			
Preoperative	41-49.75 (44.8), 44.82±2.14	43.5-53.8 (48.5), 48.42±2.98	0.001**
Postoperative	45.5-49.3 (46.8), 46.67±1.00	44.3-49.3 (46.8), 46.69±1.83	0.796
Difference	1.85±2.77	−1.73±4.04	0.004**
P[b]	0.026*	0.039*	
Total mental health			
Preoperative	39.9-49.3 (42.6), 44.12±3.78	34.3-45.3 (37.8), 38.15±2.63	0.001**
Postoperative	70.4-74.5 (70.6), 71.95±1.82	65-74.75 (72.1), 70.68±3.96	0.565
Difference	27.83±5.37	32.53±4.91	0.008**
P[b]	0.001**	0.001**	

*P<0.05, **P<0.01, [a]Mann–Whitney U test, bWilcoxon signed-rank test. SD: Standard deviation

DISCUSSION

Vision is one of the most important of the five human senses, and the social and psychological effect that develops with the loss of vision causes anxiety and depression and a change in the quality of life.[12,16] Adjustment to vision loss often occurs within the context of family members and friends and is affected by intercommunication across multiple underlying circumstances, social situations, and cultural conditions.[4,16-20] Age, gender, educational status, family income, informal and formal care systems, and personal characteristics may affect adaptation to blindness.[4,5]

It is stated that the level of anxiety around vision loss is associated with age.[21] Studies have shown that the passage of time and aging can reduce people's susceptibility to anxiety, increase their control of emotions and give them higher psychological resistance to stressful experiences.[21.22] Here, the scores of the patients below the age of 30 gained from the SF-36 emotional role function sub-dimension were found to be statistically significantly lower than the patients over 30-year old. Another relevant factor is the education level. Reports have shown that as the level of education decreases, the levels of depression, appearance concerns, vision-related quality of life, and anger in individuals increase.[21,23,24] In a study investigating the quality of life of patients who had received eye amputation, it was found that they experienced significant changes in their business lives; for example, 25% of the patients had retired or changed to part-time jobs due to eye disease and 39.5% had stopped participating in leisure activities.[8,25]

The psychosocial and psychological effects created by eye loss and affecting a patient's life can be improved with the use of prostheses, as these can help patients regain their identity and revitalize their social connections.[1,26] Studies have shown that reducing the interval from surgery to rehabilitation can diminish the psychological effects of eye loss.[1,27] In addition to this physiological healing, the similarity of prostheses to the normal eye affects emotional aspects as patients become depressed after the loss of ocular content and feel better with prosthetic restoration due to the improved appearance.[1,14]
All the patients in our study wanted to use ocular prostheses for cosmetic purposes. Patients between the ages of 7 and 20 avoided making eye contact during the examination. Patients below the age of 14 years had got used to monocular vision, but after that, as they matured into adulthood, they wanted to use an ocular prosthesis for psychosocial reasons. Emotional status was the most affected subscale among the 40 patients investigated here, and adaptation to daily activities was also observed to take a long time.

All the patients in our study were very sensitive about their diagnosis and treatment. The clinical anxiety analysis revealed that 28 (70%) had low anxiety and 12 (30%) had moderate anxiety, while the BDI showed minimal-to-mild changes. Three months after surgery, the scores showed that the state of anxiety had decreased in all patients, while the state of moderate depression was maintained in 5 (12.5%).

When the SF-36 values before and after the surgery of individuals under the age of 30 were compared with those over 30, we observed statistically significant differences in the postoperative scores for the subdimensions physical function and emotional role function.

According to gender, the changes in the pre- and postoperative scores for physical, social, and emotional role functions for women were found to be significantly lower than for men, yet the pre to postoperative mental health subdimension score change was significantly higher among women; no difference was found for the vitality score. One limitation of this study was that the sample size was small.

Furthermore, the patients did not want to receive any psychiatric support or medication, so severe cases were not evaluated. This study has identified factors associated with mood state changes in participants who had lost their eyesight. This major trauma can be improved by surgical removal of eye content and wearing a cosmetically acceptable prosthesis.

CONCLUSION

Trauma-Related Phthisis Bulbi can cause depression, anxiety symptoms, and impaired quality of life. Ocular prostheses, should be provided to help patients to regain their selfconfidence and revitalize their social bonds.

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Conflicts of interest
There are no conflicts of interest.

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