Quality of Life and Social Support Following Distal Arterial Bypass in Elderly Patients*

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Abstract

Background: The chronic progressive course of peripheral arterial occlusive disease with its limb-threatening and life-threatening potential is associated with physical, psychological and social distress for elderly patients and their families.

Objective: To evaluate the influence of infra-inguinal bypass surgery for limb salvage, and social support, on quality of life in elderly patients (over 60 years old).

Methods: Sixty patients aged 60 years and above diagnosed with limb-threatening ischemia were evaluated using the SF-36 generic questionnaire for quality of life, and the MOS-SS questionnaire for social support. Thirty patients (group I) were evaluated in the hospital prior to reconstructive surgery and 30 postoperative patients (group II) were evaluated at home at least 6 months after infra-inguinal bypass operations. Both groups were comparable in terms of age, gender, prevalence of ischemic heart disease, diabetes, and other atherosclerosis risk factors.

Results: All quality of life parameters were higher among patients who underwent limb salvage surgery (group II) as compared to preoperative patients (group I), yet the obtained values were lower than those in the general population. Patients in the surgical intervention group had higher levels of function, lower pain levels, and higher emotional and social well-being and, in addition, were spared limb amputation. The findings also indicate that the social support dimensions (emotional support, receipt of information, affection and positive social interaction), as measured in terms of perceived availability, do not operate as one entity. Different types of social support were more beneficial along different stages of the disease.

Conclusion: Peripheral arterial occlusive disease causes severe impairment of the quality of life in elderly patients. Arterial reconstructive surgery improves the quality of life though it still remains low compared to the general population. Social support is beneficial in the treatment of these patients, and the social worker in the vascular surgery department has a key role in identifying the various needs of the patients along the path of their chronic illness.

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The 20th century is characterized by the relative growth in the elderly population, 95% of whom live in the community compared to 5% in institutional settings [1]. In this patient population chronic diseases became increasingly prevalent, among them peripheral arterial occlusive disease [2]. PAOD is a chronic, progressive disease often expressed as arterial insufficiency of the lower extremities. Its symptoms and signs are related to the degree of blood flow restriction. In its severe form PAOD can impair independence, endanger the limb, and eventually endanger life.

The advanced techniques in vascular surgery require more holistic measures to assess medical outcome rather than the traditional calculation of rates of limb salvage and graft patency [3]. The patient's subjective point of view – quality of life – should be considered as an outcome of the medical intervention [4] and should be measured in terms of promoting physical functioning and well-being rather than complete recovery and prolongation of life [5–7]. Moreover, the subjective rating of QOL has been found to be a strong predictor of disability and even mortality [7].

The trend to limit institutionalization of older people highlights the importance of promoting distal arterial bypass of the lower extremities. Comparison of patients who underwent arterial reconstructive surgery with those who underwent amputation of their lower limbs shows that only 5% of the amputees functioned independently [8]. Furthermore, patients who underwent arterial bypass reported significantly higher QOL than did the amputees [9–12]. These data demonstrate the advantages of the surgical intervention to save the limb that, in turn, preserves the elderly patients' sense of control and autonomy and enables them to choose between alternatives [13].

Interest in the concept of social support has increased dramatically over the last few years, given the growing body of evidence that the availability of support may impact favorably on a person's health and emotional well-being [14]. Numerous studies indicate that social support plays a major role as a coping resource

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PAOD = peripheral arterial occlusive disease
QOL = quality of life

in chronic illness [15,16]. The chronic progressive course of the disease is associated with physical, psychological and social distress for elderly patients. Therefore, we would expect that perceived availability of various types of social support should moderate stressful events that characterize the course of the disease, and advance the patients' QOL. However, only limited information is available concerning the impact of vascular reconstruction on QOL, and even less exists regarding the role of social support in this situation. The current study aims to fill this gap in the body of knowledge.

Materials and Methods

The study was carried out between January and July 2001. Sixty patients aged 60 years and above who were diagnosed with limb-threatening ischemia were evaluated using the SF-36 questionnaire for QOL [17] (Hebrew [18] and Russian [19] versions) – a generic multidimensional instrument designed for use in clinical practice and research, health policy evaluation and general population survey. The SF-36 contains 36 items that measure 8 QOL dimensions or domains: physical functioning, role limitation due to physical problems (role physical), pain, general health (physical component), vitality, social functioning, role limitations due to emotional problems (role emotional), mental health (psychological component), and a single question about change in general health state. Responses on each subscale are summed and scored on a scale ranging from 0 to 100, where 100 indicates optimal quality of life. Internal consistency of the subscales ranged from $\alpha = 0.75$ to $\alpha = 0.98$. Social support was evaluated using the MOS-SS questionnaire [14] (Hebrew [20] and Russian [21] versions) – a multidimensional self-administered social support survey that was developed for patients with chronic conditions. This questionnaire measures five dimensions of social support: emotional and informational support, tangible support, affectionate support, positive social interaction, and a single-item structural indicator of social support. Internal consistency of the subscales ranged from $\alpha = 0.89$ to $\alpha = 0.97$. All patients were treated in the Department of Vascular Surgery at Assaf Harofeh Medical Center. All patients suffered from critical limb ischemia: i.e., rest pain, ulceration, or gangrene. All arterial reconstructions were bypasses to the below-knee popliteal or tibial arteries, utilizing either autologous vein grafts (85%) or polytetrafluoroethylene synthetic conduits, whenever an appropriate autologous vein was not available (15%). Thirty consecutive postoperative patients (group II) who underwent infra-inguinal bypass surgery were evaluated at home 6 months or more after the operation. Remarkably, patients who required major amputations and patients requiring secondary vascular interventions were excluded from this study group. Thirty consecutive preoperative patients, candidates for infra-inguinal bypass surgery (group I), were evaluated in the hospital while awaiting surgery and served as the control. Both groups were comparable in terms of age, gender, prevalence of ischemic heart disease, diabetes, and other atherosclerosis risk factors. Results obtained from the two groups were compared with published data obtained for the general elderly population [18].

Results

There were no significant differences in the background variables of the patients in the two groups. In group I the age ranged between 60 and 82 years with a mean of 73.0 (SD 6.9), and in group II between 64 and 87 with a mean of 75.8 (SD 5.8). Twenty percent of the patients lived alone. Thirty percent of all patients had immigrated to Israel in the last 10 years.

Bivariate analysis showed a significant negative relationship between the number of co-morbid conditions and both the physical and psychological components of QOL ($P < 0.05$), mainly the general health status ($P < 0.001$).

Quality of life

Patients who underwent bypass surgery reported significantly higher QOL than patients waiting for surgery [Table 1]. This was

Table 1. Comparison of quality of life dimensions between preoperative patients (group I), postoperative patients (group II) and the general elderly population

Quality of life – dimensions[a]	Group I (n=30) Mean (SD)	Group II (n=30) Mean (SD)	Group I vs. group II *t*-test	GEP (n=1,015) Mean (SD)	Group I vs. GEP *t*-test	Group II vs. GEP *t*-test
Physical functioning	18.0 (20.5)	32.8 (29.3)	2.27*	68.7 (28.9)	13.2***	6.6***
Role – physical	10.8 (30.6)	56.7 (48.7)	4.37***	59.5 (43.6)	8.5***	NS
Bodily pain	12.0 (21.3)	47.7 (33.8)	4.89***	63.0 (30.4)	12.8***	2.5**
General health	30.0 (17.0)	40.5 (18.3)	2.30*	57.3 (22.6)	8.6***	4.9***
Vitality	23.2 (15.7)	33.7 (27.3)	1.83	54.2 (23.3)	10.5***	4.1***
Social functioning	21.2 (25.9)	51.3 (32.2)	3.98***	74.4 (28.9)	11.1***	3.9***
Role – emotional	18.9 (36.8)	58.9 (49.3)	3.56***	72.3 (41.6)	7.8***	n/s
Mental health	32.1 (21.3)	55.7 (27.1)	3.75***	65.0 (21.8)	8.3***	1.9*
Change in general health state	11.7 (19.4)	56.7 (34.1)	6.29***	NA	NA	NA
Physical component	18.9 (18.4)	40.6 (25.3)	3.78***	NA	NA	NA
Psychological component	25.2 (19.5)	49.5 (28.6)	3.94***	NA	NA	NA

[a] Significance for one-tailed test.

* $P < 0.05$

** $P < 0.01$

*** $P < 0.001$

GEP = general elderly population, NS = not significant, NA = not available.

consistent across all of the subscales except vitality. They reported much better role functioning due to physical health, lower pain, and higher mental and social well-being. The largest difference was found in the single item comparing their present health with that of one year previously.

Patients waiting for surgery reported significantly lower QOL than the general population. This was consistent across all subscales ($P < 0.001$). The largest difference was found in physical functioning. The smallest, yet significant, difference was found in the psychological role limitation. The group that underwent bypass surgery reported better QOL than the group waiting for surgery across all subscales. However, their scores were significantly lower in most dimensions than those of the general population.

Social support

Tables 2 and 3 show the relationship between the social support dimensions and the physical and psychological components of QOL in both groups. In group I a strong positive correlation was found between three dimensions of social support (tangible, emotional/informational, and positive interaction support) and the psychological component of QOL [Table 2]. In group II, only two dimensions of social support (emotional/informational and affection support) correlated with the psychological component of QOL [Table 3]. Contrary to our hypothesis, social support was not related to the physical component of QOL in either group.

In the final stage of the analysis all the sociodemographic and co-morbid conditions, social support and surgery variables that were significantly related to QOL at the bivariate level were entered into linear regression equations for the physical and psychological components of QOL. For the psychological component only three variables met the criteria: co-morbid conditions, emotional and informational support, and surgery.

The most important predictor of psychological QOL was the surgery, which explained 19% of the variance in QOL [Table 4]. As for the physical component, only the surgery variable was significantly related to QOL.

Table 2. Correlation of social support dimensions with quality of life among preoperative patients (group I)

	Quality of life dimensions [a]	
Social support dimensions	Physical component	Psychological component
Tangible support	0.15	0.32*
Emotional/informational support	0.23	0.45**
Affection support	0.05	0.23
Positive interaction	0.04	0.35*
Structural network support	-0.06	-0.03

[a] High score indicates higher quality of life
* $P < 0.05$
** $P < 0.01$

Table 3. Correlation of social support dimensions with quality of life among postoperative patients (group II)

	Quality of life dimensions [a]	
Social support dimensions	Physical component	Psychological component
Tangible support	0.03	0.07
Emotional/informational support	0.11	0.34*
Affection support	0.18	0.40*
Positive interaction	0.16	0.25
Structural network support	0.11	0.12

[a] High score indicates higher quality of life
* $P < 0.05$

Table 4. Psychological component

Variable	Beta	Difference in R^2
Origin	0.18	0.08
Number of co-morbid conditions	-.0.26*	0.06
Emotional and informational support	0.29**	0.09
Surgery	0.19**	0.19
$F(4,55) = 9.9$, $P < 0.001$; $R^2 = 0.42$		

* $P < 0.05$
** $P < 0.01$

Discussion

Our results show that quality of life among elderly patients with limb-threatening ischemia who underwent vascular surgery was higher in all dimensions, as compared with the control group. It was demonstrated that the surgical intervention not only saved the limb but was also associated with lower pain, more functional independence, and higher levels of emotional and social well-being in the elderly patients. These findings highlight the important contribution of surgery to the overall QOL of this patient population.

Yet, the obtained values of QOL in both groups were lower than those of the general elderly population. This emphasizes the impact of the chronic and progressive course of the illness, even in cases of successful surgical interventions.

The findings also indicate that social support dimensions (tangible, emotional support, as well as providing of information, and affectionate, positive social interaction support), as measured in terms of perceived availability of social support, do not operate as one entity. Social support dimensions have an important contribution in advancing the psychological dimensions of the QOL in elderly patients suffering from PAOD. In the postoperative group of patients, affectionate, emotional and informative support correlated with the psychological dimensions of QOL. Among those waiting for surgery (control group), a correlation was found between the tangible, emotional, informative, and positive social interaction aspects of social support, and the psychological dimensions of QOL. The physical dimensions of QOL did not correlate with the social support. The structural aspects of the social network did not correlate with any of the QOL dimensions.

Along the different stages of the illness, different types of social support were found to be more beneficial. Among the patients waiting for surgery, the number of social support dimensions that correlated with QOL was higher compared to the study group. It seems likely that the stage just preceding surgery is characterized by numerous stressful events, such as uncertainty, the hospitaliza-

tion itself, lack of control, and severe symptoms. This high level of distress calls for mobilization of resources; therefore there are more dimensions of social support that correlate with emotional aspects of QOL. By contrast, among members of the postoperative group, who still experience physical limitations but whose physical, emotional and social functioning has improved, there is a smaller number of social support dimensions that correlate with QOL.

It is important to note that elderly people suffering from PAOD are seriously ill patients who generally have numerous co-morbid conditions. These diseases strongly correlate with general health perception, a parameter that predicts life expectancy as documented in the literature. Our findings support these assumptions and point to this variable as being negatively correlated with QOL.

In conclusion, our findings show severe damage to the quality of life of elderly patients suffering from PAOD and emphasize the importance of promoting vascular surgery to save the limb. Provision of social support to these patients may substantially contribute to the preservation of their QOL. The social worker has an important role in identifying those individuals who need professional multidisciplinary intervention and in mobilizing both formal and informal support in order to advance the QOL of the elderly in the community.

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