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Life is about so much more: Patients' experiences of health, well-being, and recovery after operation of abdominal aortic aneurysm with open and endovascular treatment—A prospective study

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Different surgical treatments for abdominal aortic aneurysm can lead to different perceptions of health and well-being. The aim of this study was to describe patients' well-being, sense of coherence (SOC), and experiences of surgery after open and endovascular treatment one month and one and 2 years after the procedure. Seventy six patients participated (40 open repair; 36 endovascular aneurysm repair). The study was conducted using the SOC questionnaire, and specific questions about patients' experiences of the surgical treatment and well-being. After 2 years, no patient regretted the operation or considered it to be the most difficult experience they had ever had. Twenty percent of the patients were worried about complications one month after the operation. Both groups experienced difficulty in returning to normal activity after surgery at one month. At one and 2 years after the surgery, patients in both groups stated that it was other things in life that affected their well-being. The endovascular aneurysm repair group reported a significant decrease in SOC from baseline until one year (P = .012) and 2 years (P = .033). The open repair group reported a significant decrease after one year (0.033). The operation did not affect patients' way of thinking about the disease. Patients in both groups stated that it was other circumstances in life that affected their well-being one and 2 years after the treatment, which could indicate that long-term follow-up would not be necessary from a patient perspective. The operation affects patients' well-being a short time after the operation. (J Vasc Nurs 2019;37:160-168)

INTRODUCTION

Abdominal aortic aneurysm (AAA) is a condition that is usually asymptomatic until rupture occurs or it may be incidentally discovered during a physical examination for other conditions or identified through routine screening for AAA.[1] Factors that may affect the course of the disease are age, smoking, family history and gender (male), and hypertension.[2] The prevalence of AAA is 4%–8%.[3] However, recent figures among 65-year-old men in Europe indicate that prevalence could be as low as 2.2%.[1] In most cases, the aneurysm will be surgically treated when it reaches a diameter of about 55 mm.[4,5] The overall mortality due to rupture of an AAA is about 80%.[6,7] Two different surgical methods are used: Open repair (OR) and endovascular aneurysm repair (EVAR). In 2008, approximately 37% of patients in Sweden were treated with the endovascular method compared with 91% in 2015.[8,9] Both patients treated with EVAR and OR rated their health-related quality of life (HRQoL)as significantly lower in the domain of mental health in relation to a matched reference population before surgery.[10] Both OR and EVAR were associated with similar initial declines and comparable postoperative trajectories, suggesting that less-invasive "EVAR was not associated with improved functional preservation compared with OR and hospital length of stay was higher than expected in the frail elderly after EVAR."[11] The main aim of this study was to describe ADL scores of nursing home residents before and after hospitalization for elective AAA.[11]

A review article demonstrated that the results after surgery are not consistent and there are variations in benefits between OR and EVAR.[12] Complications occurring after open aortic

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aneurysm repair may include pulmonary complications, kidney injury, cardiovascular complications, and surgical reintervention.[13] Such complications can be reduced by using the enhanced recovery program after open surgery (ERAS) for AAA repair, which can affect recovery in a positive manner.[14] The ERAS program includes a multidisciplinary treatment with the purpose of reducing stress, that is, preoperative information, reduced fasting time, less-invasive surgical procedures, better strategy for postoperative pain control, use of short-acting anesthetics, ileus control, invasive monitoring, and intensive care treatment.[14]

Research on the AAA has been mainly medically oriented, but follow-ups of patients' HRQoL based on quality of life instruments have also been made.[15–22] Studies using various HRQoL instruments postoperatively have shown that patients suffer more physical problems and pain after OR than after EVAR one month after surgery.[10,23,24] However, after one and 2 years, the patients subjected to OR have better HRQoL than EVAR patients compared to their baseline values in both Physical Component Score and Mental Component Score in SF36.[10] Previous studies[16,18,19] have shown differences in physical discomforts in relation to the surgical procedure one month after surgery. However, it is also important to gain insight into patients' reports of recovery from a long-term perspective, and therefore, it is important to investigate if discomfort and a feeling of not having recovered also existed after one and 2 years. Such knowledge is important for providing adequate nursing and caring activities to alleviate suffering in terms of worries and existential life-limiting issues and to preserve or restore health in relation to the surgical intervention. Moreover, such knowledge may also concern each person's values and beliefs, that is, what is meaningful and valuable in life for their well-being, indicating that many factors may influence experienced health. These issues regarding patients' perceptions and thoughts about life are also important for creating a caring relationship.[25] The aim of this study was to describe patients' well-being, sense of coherence (SOC), and experiences of surgery after open and endovascular treatment one month and one and 2 years after the procedure.

MATERIALS AND METHODS

Participants and selection

All patients who were consecutively admitted to the vascular surgery department in a University hospital in Sweden for a planned surgery and who met the inclusion criteria were invited to participate by answering 3 questionnaires up to 2 years postoperatively. The patients were also informed about their rights to decline participation during the whole study period. Once the patients had agreed to participate, the researcher obtained their informed consent. The inclusion criteria were planned operation for AAA with open surgery or endovascular treatment and patients who were able to speak and understand Swedish. The exclusions criteria were patients with ruptured AAA and mentally not clear enough to be able to answer questionnaires.

Ethical approval and consent to participate

The study was approved by the Ethical Research Committee at the Sahlgrenska Academy, University of Gothenburg; Sweden (S 712–02). Patients received oral and written verification of their participation.

Data collection

Data were collected using the following instruments and questionnaires: 1) Malina's[16] 5 specific questions concerning experiences of the surgery, 2) six specific questions about patients' experiences of going through surgery (6ESQ) and recovery after surgery, developed by the author, 3) the SOC questionnaire and clinical data from the Swedish vascular register, Swedvasc (Table 1). Participants

TABLE 1

AGE, GENDER, HOSPITAL STAY, DISEASES, AND RISK FACTORS

Age, gender, hospital stay, diseases, and risk factors in percent	*EVAR n = 36*	*OR n = 40*
Age	75 (65–85)	68 (52–80)
Gender	32 male/4 female	31 male/9 female
Hospital stay (mean, range)	6 (3–15)	10 (5–7)
Disease and risk factors		
Cerebral vascular disease	6	7
Cardiovascular disease	13	22
Renal disease	4	7
Hyper tension	19	25
Previous vascular operations	7	15
Pulmonary disease	6	3
Diabetes	4	3

EVAR = endovascular aneurysm repair; OR = open repair.

answered Malina's[16] questions, 6ESQ, and SOC at one month and one year and 2 years after surgery. However, the SOC instrument was also answered by the participants on the day before surgery.

Measures

Malina's five specific questions. Malina[16] developed 5 specific questions in relation to the surgical procedures in connection with EVAR and open surgery. These questions have been used in several previous studies.[16] The statements to which patients had to respond were as follows:

- I regret the operation;
- The operation was my hardest experience ever;
- I feel worse now than before surgery;
- I still worry about complications;
- I find the follow-up after surgery troublesome.

The response alternatives were yes/no.

6ESQ measured by using a visual analog scale. Six specific questions about patients' experiences of undergoing surgery and recovery after surgery were developed by the author. These questions are based on previous research of patients' experiences of undergoing surgery due to AAA. The statements have not been psychometrically validated but were read by 20 patients who had undergone surgery for AAA. These patients were asked whether the questions were comprehensible and relevant in relation to their AAA surgery. As can be seen in the following, these questions do not measure a certain recovery or health phenomenon but are of interest in relation to undergoing surgery and returning to daily life. The statements to which patients had to respond were as follows:

- I have found it difficult to return to my normal activity after surgery;
- I often think about what happened to me and the surgery I have experienced;
- The operation has affected me and my way of thinking;
- I often talk about what has happened to me;
- I think I feel good now;
- There are other things in life than the disease affecting my well-being.

A visual analog scale (VAS) score was used where patients were encouraged to grade each statement on a scale of 0–10 from "0, strongly agree" to 10, strongly disagree". The VAS score was originally developed for measuring pain and has shown good construct validity and reliability.[26,27]

Questionnaire sense of coherence scale. The SOC questionnaire was developed by Antonovsky[28] and measures SOC. SOC is designed to assess 3 components and includes 29 items: comprehensibility (11 items), manageability (10 items), and meaningfulness (8 items). We used the SOC questionnaire as we wanted to investigate the patients' life situation in terms of comprehensibility, manageability, and meaningfulness in their experience of the surgical methods.

The scales range from 1 to 7, representing opposite statements, for example, never and very often. A high score means a strong SOC. The 29 items are scored from 1 to 7, from which a total SOC score is derived for each respondent. The Swedish version has been tested and was found to discriminate validity and be psychometrically sound.[29]

Statistical analysis

Descriptive and analytical statistics were used to analyze data from the questionnaire and the specific follow-up questions. The results are reported in terms of percentage for Malina's 5 specific questions and mean, range, and standard deviations for 6ESQ after one month and one and 2 years after treatment. Total score (mean) on SOC is presented from baseline to one month, one year, and 2 years after treatment. Fisher's test for paired comparisons was used to calculate significant changes of variables over time within each group in the 6ESQ and SOC questionnaires. Two-sided P value, $P < .05$, was considered significant. Statistical analyses were performed using the computer program SPSS, version 12.0.

Nonparametric tests were used to detect significance between groups (EVAR and OR) and within the groups, as assessed by qualitative variables.[30] As age differences between the groups were found, that is, patients in the OR group were significantly younger than patients in the EVAR group ($P < .001$, Table 1), the measurement values from the questionnaires were calculated within each group from baseline, that is, before surgery until 2 years after the intervention. Fisher's exact test for paired comparisons was used to calculate significant changes of variables over time within each group. The 2-sided P value, $P < .05$, was considered significant. Statistical analyses were performed using the computer program SPSS.

RESULTS

A total of 76 patients, 63 men and 13 women, agreed to participate in the study. No significant differences were found between the 2 groups, concerning their risk factors at baseline. The mean age of the 76 patients was 72.5 (range, 52–85 years) (Table 1). Fourteen patients declined participation (6 planned for EVAR and 8 OR); see Figure 1, flowchart. Forty patients treated with OR and 36 with EVAR participated and were followed up by answering questionnaires. No patient had participated in an ERAS program.

On average, the hospital stay for the OR group was 10 days and for the EVAR group, 6 days (Table 1).The mean aneurysmal size before the operation was 61.5 mm for OR and 61.2 mm for EVAR.

Patients' experiences of the surgical treatment

After one month, patients who had undergone OR reported open surgery was a difficult experience compared with patients in the EVAR group (see Table 2). However, only about 4% of patients in the OR group regretted the operation after one month and after 2 years, whereas no patients in the EVAR group did. After 1 year, 3% of the patients in the EVAR group still found the surgery a difficult experience, whereas no patients in the OR group reported this.

Three percent of the OR group still regretted the operation after one year, whereas no patients in the EVAR group reported this. After one year, 5.5% of 38 patients in the OR group and 19.5% of the patients in the EVAR group (n = 31) feared complications related to the operation. There was an increase in the number of patients in the EVAR group who experienced it as troublesome, whereas a decrease was found in the OR group. After one year, 8% of the patients in the OR group found it troublesome, whereas 16% in the EVAR group reported this. After one month, 20% of the OR group compared with 6.5% in the EVAR group were concerned about postoperative complications and encountered difficulties with postoperative follow-up. After 2 years, about 13% of the patients in each group were worried about complications. Among patients in the OR group, it was

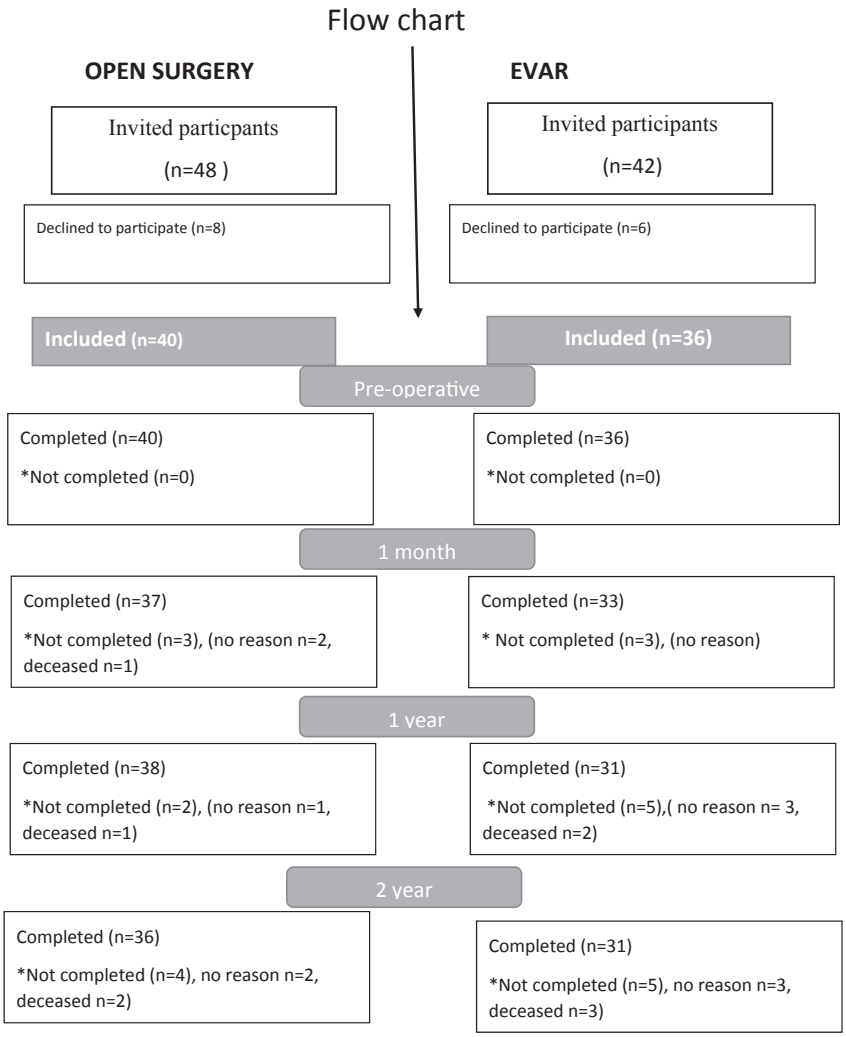

Figure 1. *Flowchart. EVAR = endovascular aneurysm repair.*

found that patient concern about complications increased from 5.3% at one year to 13.5% at 2 years after surgery, whereas a decrease was found in the EVAR group. Moreover, in the OR group, there was a very small increase in the number of patients who reported feelings of troublesome follow-up from one to 2 years postoperatively (Table 2).

TABLE 2

ANSWERS TO MALINA'S[16] QUESTIONS ABOUT EXPERIENCES OF THE SURGERY

Patients answered yes in percent	*EVAR/OR 1M*	*EVAR/OR 1 Y*	*EVAR/OR 2 Y*
I regret the operation	(n = 0/1) 0%/3%	(n = 0/1) 0%/3%	(n = 0/0) 0%/0%
The operation was my hardest experience ever	(n = 5/14) 15%/39%	(n = 1/0) 3%/0%	(n = 0/0) 0%/0%
I feel worse now than before surgery	(n = 6/14) 18%/39%	(n = 3/3) 10%/8%	(n = 4/3) 13.5%/8%
I still worry about complications	(n = 7/7) 21%/19.5%	(n = 6/2) 19.4%/5.3%	(n = 4/5) 13%/13.5%
I find the follow-up after surgery troublesome	(n = 2/6) 6.5%/19%	(n = 5/3) 16%/8%	(n = 3/4) 10%/11%

Patients' reported recovery: VAS score

Both groups experienced difficulty in returning to normal activity after surgery at one month compared with after one and 2 years (Figure 2).

The average changes to the 6ESQ questions between one month and one and 2 years, respectively, for the patients in the EVAR and OR groups are shown in Tables 3 and 4. OR patients stated that they had mainly returned to their normal activities after one year ($P < .001$) and 2 years ($P < .001$) compared with their reporting at one month after surgery. Patients who had undergone EVAR showed similar results but significant differences could not be found (Tables 3 and 4).

On average, both OR and EVAR patients scored no differences over time in regard to how the operation affected their thoughts about the disease. Patients in the OR group reported significantly higher figures after one year ($P = .0047$) and 2 years ($P = .0043$) when asked whether they often talk about what happened to them in relation to after 1 month. Significantly more patients in the OR group reported feeling well after one year compared with the number at one month (<0.001) and also at 2 years compared with the number at one month ($P < .001$, Table 4). Concerning patients' answers to these questions, no differences could be found between the 2 groups. Patients in both groups stated that it was other circumstances and things in life that affected their well-being one and 2 years after the surgical treatment in relation to their situation one month postoperatively (see Tables 3,4 and Figure 2).

Patients in both groups reported that they did not talk much about what happened to them at one and 2 years after surgery. Both EVAR and OR patients had VAS scores of 3 after 2 years when asked if they felt "they're doing well now." After 2 years, patients scored 2 VAS degrees lower on the question of whether there are other things in life that affect health in relation to the score after 1 month. Both EVAR and OR patients scored on average > 4, which means that it is mainly other things than the aortic aneurysms surgery that affects their health. In Figure 2, the answers to the 6 specific VAS questions at one month and one and 2 years are illustrated.

Reported recovery and SOC

There were no significant differences in SOC score at baseline between the 2 groups.

The SOC score decreased from baseline to one month and to one year and to 2 years in all patients (both EVAR and OR), Figure 3. This decrease is significant from baseline to 1 month ($P = .045$), to 1 year ($P = .001$) and to 2 years ($P = .025$) in all patients. The EVAR group reported a significant decrease from baseline up to one year ($P = .012$) and 2 years ($P = .033$). The

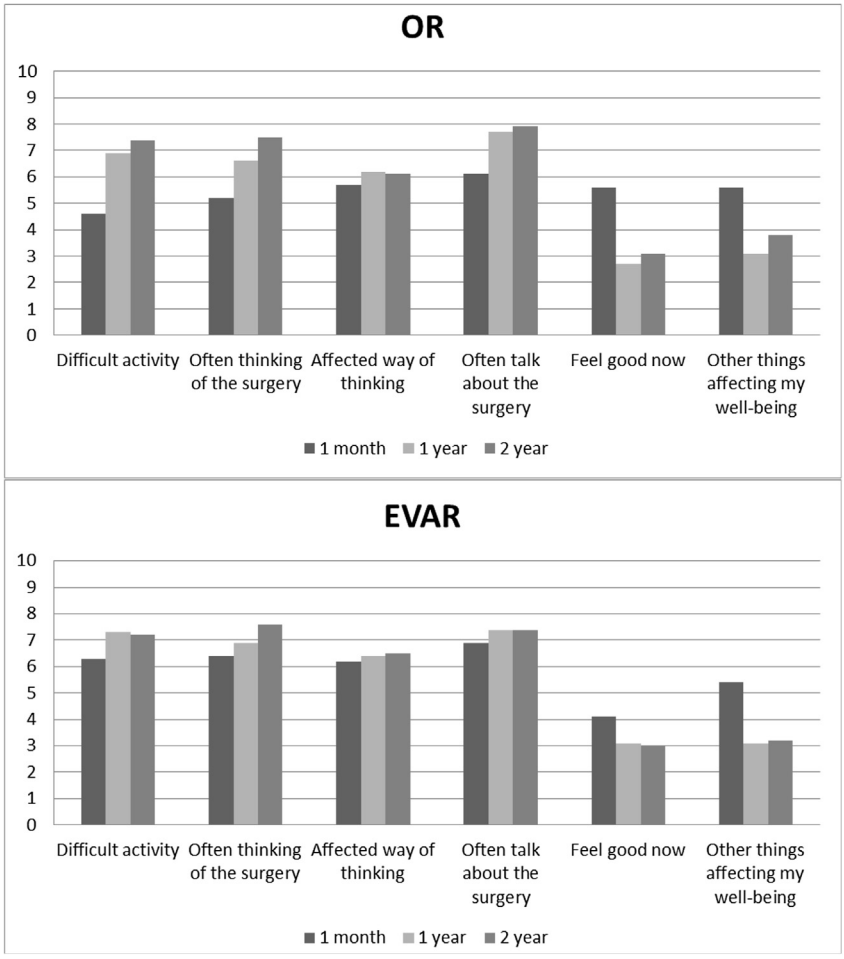

Figure 2. *Patients' experiences of recovery and well-being. Mean VAS score–specific questions 1–6, score 1–10, 0 = strongly agree, 10 = strongly disagree. VAS = visual analog scale.*

TABLE 3

PATIENTS' REPORTED ANSWERS TO QUESTIONS IN 6ESQ, ONE MONTH AND ONE AND 2 YEARS IN VAS POINTS (1 = AGREE; 10 = DISAGREE) AFTER EVAR (MEAN, SD, *P*-VALUE)

Patients' reported answers to questions in 6ESQ after EVAR	*N*	*Mean*	*SD*	P *Value*
1. I have found it difficult to return to my normal activity after surgery from 1 month to 1 year	31	1.13	4.34	.17
1 month -> 2 years	31	1.06	3.96	.16
2. I often think about what happened to me and about the surgery I have experienced from 1 month to 1 year	31	0.68	4.58	>.30
From 1 month to 2 years	29	0.93	3.69	.20
3. The operation has affected me and my way of thinking From 1 month to 1 year	30	0.10	4.39	>.30
From 1 month to 2 years	30	0.30	3.22	>.30
4. I often talk about what has happened to me From 1 month to 1 year	30	0.60	3.77	>.30
From 1 Month to 2 Year	29	0.62	3.76	>.30
5. I think I feel good now 1 month->1 year	29	−1.14	3.96	.15
From 1 month to 2 years	30	−1.17	3.45	.084
6. There are other things in life than the disease affecting my well-being From 1 month to 1 year	30	−2.60	3.54	<.001*
From 1 month to 2 years	30	−2.17	3.96	.0066*

*Significant differences.

OR group reported a significant decrease after one year (0.033) compared with baseline, but no significant difference between baseline and after 2 years were found. This finding indicates a mental recovery after the treatment in the OR group after 2 years. The same result was not found in the EVAR group.

DISCUSSION

The concept of postoperative recovery is not clearly defined but Alvin et al[31] described it as an energy-requiring process for returning back to normality and gaining control over physical, psychological, social, and habitual functions. This study shows that no patients who had undergone OR or EVAR because of AAA reported that they regretted their operation 2 years after surgery, regardless of surgical method. Nevertheless, approximately half of the patients undergoing OR described the experience as the worst life event they had undergone one month after surgery. The experiences of recovery after AAA surgery have been described in more detail in a qualitative study where OR was experienced as a more difficult treatment to undergo than EVAR.[32] However, after 2 years after the OR, the patients did not report such an opinion any more.

This result also agrees with previous studies measuring HRQoL, where the results showed better HRQoL one and 2 years after surgery for patients who were operated with OR.[10,20] In our study, both groups reported similar percentages of patients who continued to be worried about complications such as graft infection and rupture a short time after the operation. However, after one year after the operation, EVAR patients were more worried than patients treated for OR. Previously, it has been reported that patients who had undergone EVAR were worried about the tenability and strength of the stent.[32] The results may be explained by the fact that EVAR patients have regular follow-ups and are assigned visits to the outpatient clinic for several years after surgery, meaning they are confronted with the disease and surgery again. However, after 2 years, both groups had similar experiences. Further studies that focus on the types of complications that patients are worried about are needed, as this is important for preparing the patient for the surgery and postoperative period.

As health care professionals, it is important to prepare the patient for possible complications and provide support so the person can better manage their situation after an operation. Preparedness may be characterized as building capabilities to handle possible future problems and challenges.[33,34] The patients' need to reflect on bodily and emotional reactions to the diagnosis and treatment of AAA should be recognized by both nurses and physicians to help patients have realistic expectations of the consequences of treatment.[35] This is in line with Berg et al, who reported that it is important for the patients to have knowledge about the normal range in recovery after outpatient surgery.[36]

Both groups experienced difficulty in returning to normal activity one month after surgery, but the OR patients more strongly agreed with this statement than the EVAR patients.

TABLE 4

PATIENTS' REPORTED ANSWERS TO QUESTION IN 6ESQ, ONE MONTH AND ONE AND 2 YEARS IN VAS POINTS (1 = AGREE; 10 = DISAGREE) AFTER OR SURGERY (MEAN, SD, *P*-VALUE)

Patients' reported answers to questions in 6ESQ after open surgery	*N*	*Mean*	*SD*	P *value*
1. I have found it difficult to return my normal activity after surgery				
From one 1 month to 1 year				
From 1 month to 2 years	34	3.06	3.25	<.001*
2. I often think about what happened to me and about the surgery I have experienced	34	0.91	4.08	.22
From 1 month to 1 year				
From 1 month to 2 years	34	2.09	3.59	.0021*
3. The operation has affected me and my way of thinking	33	0.24	3.76	>.30
From 1 month to 1 year				
From 1 month to 2 years	34	0.56	3.54	>.30
4. I often talk about what has happened to me	33	1.61	3.00	.0047*
From 1 month to 1 year				
From one 1 month to year	34	1.85	3.47	.0043*
5. I think I feel good now	33	−2.88	3.52	<.001*
From 1 month to 1 year				
From 1 Month to 2 Year	34	−2.38	3.46	<.001*
6. There are other things in life than the disease affecting my well-being	33	−2.48	4.37	.0033*
From 1 month to 1 year				
From 1 month to 2 years	34	−2.82	3.97	<.001*

*Significant differences.

Consequently, a care approach that inspires people to believe and hope that their suffering can be alleviated and that a sense of well-being can be achieved[37] is needed. During the recovery process, which can be understood as a movement between darkness and light,[38] patients probably need support from a number of sources, including nurses, other professionals, and their next of kin, but this has to be investigated in further studies. To be able to provide such support, the relationship between patients and professionals is important.[39]

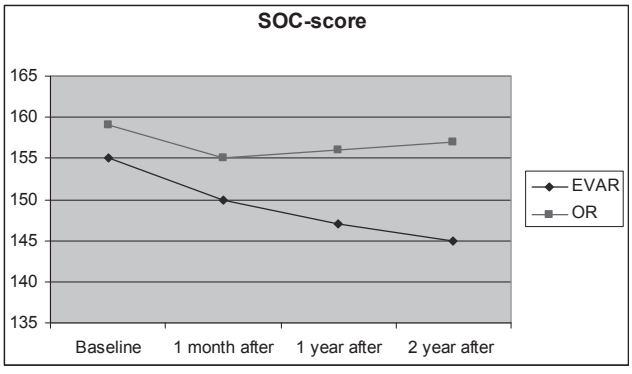

Figure 3. *Mean of total points for sense of coherence (SOC) score from baseline to 1 mo and 1 y and 2 y after surgery, (minimum 29 and maximum 203 points).*

There were no significant differences in SOC score at baseline between the patients in the 2 treatment groups, indicating that this should not affect the results. However, patients in the OR group were significantly younger, but there are no significant differences in risk factors between the groups at baseline, which may indicate that the groups are similar. However, when age differences between the groups were found, each group's values were calculated as its own group from baseline until 2 years after the intervention to examine changes over time for each group.

In theory, SOC can be seen as a stable characteristic in adults. However, in our study, SOC decreased from baseline to one month and to one and 2 years for both EVAR and OR patients, but a slight increase was seen from one to 2 years after surgery in the OR group. This may indicate that thoughts about the disease and the OR surgery is of less importance in life after 2 years. Moreover, in another study, the authors reported that SOC changed over time after coronary artery bypass surgery.[40] According to Antonovsky,[28] manageability, meaningfulness, and comprehensibility of a life event affects the entire experience, which was supported by our findings that factors and circumstances other than the surgery affected the patients' lives.

Our study indicated that life as a whole has a greater impact on recovery, health, and well-being up to 2 years after surgery, which may indicate that "normal" life takes over or an adaptation to the

"new" life has been made. On average, both OR and EVAR patients scored no difference after one month and one year and 2 years in terms of how the operation affected their thoughts about the AAA, but OR patients talked less about what they had gone through after 2 years than patients in the EVAR group. However, the higher score at one month for patients treated with EVAR might explain why there was no apparent improvement in the VAS score question, apart from in the questions "there are other things in life than the disease affecting my well-being".

The higher values at one month after surgery in relation to the lower values after one and 2 years show that the experience of illness and treatment/surgery can be viewed as a timeline of recovery, where the surgery mainly affects health for a period of one year. This is in line with a study revealing that patients did not see the hospital as a place for recovery and claimed they were used to taking care of themselves within the limits of their strength and energy.[41]

Most patients did not perceive a change of thinking about their condition after the operation and indicated that there were other things in life that affected well-being in a long-term perspective. Thus, AAA operations seem to affect patients in the short term in regard to physical distress and anxiety about complications but do not affect their thoughts about the disease. AAA is a condition that may be affected by lifestyle factors, but this study did not reveal how the patients reflected on lifestyle changes, and more research is needed in this area in the future.

Limitations

There are several methodological issues that should be taken into consideration. First, it has to be questioned if the sample size is representative for the population. The number of participants (36 and 40, respectively) may be seen as small, and only patients from one hospital were recruited, which is a weakness. However, 31 of 36 and 36 of 40 patients, respectively, participated in the 2-year follow-up, which may be assessed as satisfactory, considering that the purpose was to investigate their experiences of the surgery, health, and well-being from a time perspective after surgery. Patients were consecutively invited to participate in the study and no randomization was performed, which in future studies is recommended. Moreover, no measurement of patients' health status was made before surgery, implying that several unaccounted for factors may have influenced their experience of the surgery and postoperative well-being in the period up to 2 years. Despite these methodological weaknesses, the findings point to the fact that the surgery is seen as an occasion, and as time and life move on, other things become more important.

As a significant difference was found concerning age, no comparisons were made between the 2 groups in regard to the 6 specific VAS questions or the questions by Malina[16] or SOC. Instead, comparisons of the answers were made within each group in relation to time. Second, the 6 specific VAS questions were constructed by the author based on previous interviews with patients who had undergone AAA surgery. The questions are therefore assessed as adequate in relation to the subject of interest, that is, validity of content. However, tests such as face and expert validity would have strengthened the content and relevance of the questions. To handle this weakness, another questionnaire used in a vascular context[15] was used and answered by the patients on the same occasion, and all questionnaires were answered by the patients one and 2 years after surgery.

The answers to the questions could therefore be compared, that is, in terms of similarities. The average age in this study emerged from the consecutive inclusion. It is possible that the results of this study would have been different for the SOC score if the study population had been younger, but each group was its own reference in some statistical calculations, and the results are based on this comparison.

CONCLUSIONS AND IMPLICATIONS

It was presupposed that there would be a difference in the reporting of postoperative experiences in relation to the surgical method used. However, our results showed no relationship between surgical method and its effect on patients' thoughts about their AAA condition after surgery. Patients in both groups stated that it was other circumstances in life that affected their well-being one and 2 years after the treatment, indicating that long-term follow-up might not be necessary from a patient perspective. Nevertheless, it was found that patients are worried about complications up to one year after treatment, which would instead motivate extended periods of follow-up. However, EVAR scores were higher at 1 month, which likely prevented these patients from improving as much as those in the OR group. As the operation affects patient health and well-being, a short time after the operation, it is important that the nurse supports the patient and creates a trustful and caring relationship, which in turn may help patients feel well and secure.

There is also a lack of any AAA condition-specific or treatment-specific instruments/questionnaires that measure the health, quality of life, and recovery after these surgical interventions. Such knowledge would further improve the development of nursing care strategies in relation to preoperative and postoperative care and recovery from a long-term perspective.

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