

Quality of life after suture repair for incisional hernia: long-term postoperative and retrospective preoperative evaluations

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Abstract

Purpose: The aim of this observational study was to examine postoperative and retrospective preoperative evaluations of multiple dimensions of patient quality of life after a three-layered closure repair for incisional hernia.

Methods: After suture repair of an incisional hernia (mean follow-up of 4.6 years), 72 patients (32 female, 40 male, mean age 63.6 years) completed the SF-36 Health Survey Questionnaire to evaluate their current postoperative as well as their past preoperative quality of life.

Results: All domains improved significantly after the operation. Relative to age-matched controls, the preoperative quality of life was evaluated negatively in seven domains, while the postoperative quality of life was evaluated negatively for only two domains.

Conclusions: In this study, patients retrospectively evaluated their physical and mental health as poor before an incisional hernia repair. After the operation, patient quality of life improved, but the perceived quality of life did not completely normalize. Further prospective studies will be useful to examine the quality of life before and after ventral hernia repairs.

Introduction

Incisional hernias, ventral hernias that manifest themselves through an operation scar, are a serious common complication of abdominal surgery. In the literature, quality of life is seldom examined as an outcome parameter in studies of surgical repair for incisional hernias [Korenkov et al, 2002; Mussack et al, 2006]. Korenkov et al. (2002) used the Gastrointestinal Quality of Life Index (GIQL) one year postoperatively in a randomized controlled trial comparing suture repair, polypropylene mesh or autodermal skin graft for incisional hernias. These authors found no differences in GIQL scores at one year among the different groups, although pain visual analogue scores at one year were different, but not statistically significant. Preoperative GIQL scores were not reported. Mussack, et al. (2006) compared open with laparoscopic incisional hernia repair using the Medical Outcome Study SF-36 Health Survey (SF-36). Pre- and postoperative scores were compared with the age-stratified mean scores of the German population. Preoperatively, all eight domain scores of the SF-36 were significantly lower than the mean scores. After open and laparoscopic incisional hernia repair, all eight scores increased significantly, but remained lower than the mean scores. Our clinic has developed a method of three-layered closure repair in combination with extensive adhesiolysis for primary or recurrent incisional hernias. Rates of recurrence were low, and complication rates were acceptable (den Hartog et al, 2002). The aim of this observational study was to examine postoperative and retrospective preoperative evaluations of multiple dimensions of the quality of life (SF-36) in patients with incisional hernia after three-layered closure repair.

Patients and methods

We conducted a retrospective study of incisional hernias repaired with our three-layered closure method at the Red Cross Hospital, Beverwijk, Netherlands. These patients were operated on between 1997 and 2006. The hospital information system was used to identify all patients who had undergone an operation for primary or recurrent incisional hernia. All information was retrieved from the hospital and outpatient medical records, resulting in a total of 77 identified cases.

To measure the quality of life, the Dutch version of the SF-36 was employed (van der Zee et al, 1996). This questionnaire contains eight different health-quality domains: physical and social functioning (PF and SF), body pain (BP), general health perception (GH), physical and emotional role limitations (RP and RE), vitality (VT), and mental health (MH). The scores for

each domain can range from 0 to 100, with higher scores indicating a better quality of life. Additionally, the SF-36 Physical Component Summary (PCS) and the Mental Component Summary (MCS) scales were applied, with scores ranging from zero (lowest well-being) to 100 (highest well-being).

All patients were requested to complete two SF-36 questionnaires. The first was intended to represent the current point of view (called the postoperative evaluation). The second was rephrased in order to make a retrospective evaluation of the preoperative quality of life possible (called the retrospective preoperative evaluation).

Statistical analysis

The statistical analysis was performed with SPSS (version 11.0) software. Demographic and clinical data and SF-36 scores are presented as means and standard deviations.

The paired t-test was used to compare the pre- and postoperative scores. The age-stratified norm scores from the Dutch population were subtracted from the pre- and postoperative patient scores. The differences were used in the one-sample t-test to compare whether they deviated significantly from zero.

In order to detect a possible response shift, the questionnaires were divided into two equal groups on the basis of the median follow-up time, and were denoted as short-term and long term postoperative evaluations. The SF-36 domain scores of the two groups were compared using the two sample t-test. Statistical significance was set at $p < 0.05$.

For every item of the SF-36 the effect size was calculated by dividing the mean difference between the postoperative and preoperative score by the standard deviation. An effect size greater than 0.5 was recognized as a medium and important effect.

Results

From 1997 to 2006, a three-layered closure repair was performed in 77 patients. These 77 patients were sent postoperative and well as retrospective preoperative SF-36 questionnaires by mail, and a return envelope was included. Seventy-two patients returned the questionnaires, 32 women and 40 men (56 %). The mean age was 63.6 years (SD = Standard deviation = 12.7). The mean follow-up duration was 4.6 years (SD = 2.8). The scores of the eight domains and the summary scores are reported in table 1. Significant differences between pre- and postoperative scores were observed for all dimensions and both summary scores. In table 2, comparisons with age-stratified mean Dutch scores are reported. The scores are expressed as differences from these mean scores. Significant negative differences were

observed for the preoperative scores versus the mean Dutch scores for all domains except physical functioning and change in health. Significant negative difference was found between the postoperative and mean Dutch score for social functioning and a significant negative trend for role limitations due to physical and emotional problems, and a significant positive difference was found for physical functioning, mental health and change in health.

A significant difference ($p=.039$) was observed for the retrospective preoperative pain scores between the short-term (mean follow-up 2.4 years, mean 67.1, SD=30.2) and long-term (mean follow-up 6.8 years, mean 52.9, SD=26.8) preoperative evaluations and a trend for a difference ($p=.099$) was observed for the retrospective preoperative physical component summary scores between the short-term (mean 64.9, SD=22.4) and long-term (mean 55.0, SD=21.6) evaluations and a trend ($p=.061$) for a difference for the preoperative general health perceptions scores between the short-term (mean 63.0, SD=22.7) and long-term (mean 52.8, SD=20.5) evaluations.

A significant difference ($p=.011$) was observed for the postoperative general health perceptions scores between the short-term (mean follow-up 2.4 years, mean 70.8, SD=22.8) and long-term (mean follow-up 6.8 years, mean 57.6, SD=19.1) postoperative evaluations and a trend for pain ($p=.061$) between the short-term (mean 78.8, SD=25.2) and long-term (mean 66.9, SD=28.0) postoperative evaluations.

Medium positive effect sizes ($>.50$) between the postoperative and retrospective preoperative score were found for the following items of the SF-36: general health; actual health at this moment; pain during last week; how much did pain interfere with normal work; vigorous activities; bending, kneeling or stooping; climbing one flight of stairs; spending less time on labour; did you feel satisfied; did you feel tired and did you feel worn out?

Table 1. Mean scores of the retrospective preoperative and postoperative evaluations of quality of life (SF-36). The p values compare retrospective pre- and post-operative scores.

SF-36	Retrospective preoperative scores (SD)	Postoperative scores (SD)	P value
Physical functioning	66.4 (26.0)	80.9 (25.2)	.000
Social functioning	67.1 (27.8)	79.0 (21.8)	.001
Role limitations due to physical problems	39.9 (45.8)	65.7 (42.5)	.000
Role limitations due to emotional problems	56.9 (45.2)	79.0 (34.6)	.000
Mental health	71.0 (20.8)	82.2 (15.9)	.000
Vitality	57.0 (23.1)	67.5 (20.8)	.000
Pain	60.1 (29.3)	72.5 (27.1)	.000
General health	58.2 (21.7)	65.0 (21.9)	.000
Change in health	48.3 (27.6)	70.1 (26.7)	.000
Physical component summary	59.5 (22.5)	79.6 (22.1)	.000
Mental component summary	64.2 (21.1)	77.2 (16.2)	.000

SD: standard deviations

Table 2. Retrospective preoperative and postoperative scores of quality of life (SF-36) dimensions expressed as differences from the mean scores of the age referenced group from the general Dutch population. P values compare pre- and postoperative difference scores with zero.

SF-36	Retrospective preoperative scores (SD)	P value	Postoperative scores (SD)	P value
Physical functioning	-5.0 (26.6)	.143	6.8 (26.9)	.046
Social functioning	-17.4 (27.6)	.000	-5.5 (21.5)	.036
Role limitations due to physical problems	-33.6 (45.2)	.000	-9.7 (42.9)	.072
Role limitations due to emotional problems	-28.0 (45.5)	.000	-7.4 (35.9)	.092
Mental health	-6.2 (21.2)	.017	5.2 (15.8)	.008
Vitality	-8.9 (23.7)	.002	1.9 (20.8)	.440
Pain	-15.7 (29.3)	.000	-3.0 (27.4)	.362
General health	-6.4 (21.6)	.019	-.15 (21.3)	.955
Change in health	-.26 (28.0)	.936	21.6 (27.2)	.000

SD: standard deviations

Discussion

A recent review noted a relative paucity of randomized clinical trials comparing different repairs of incisional hernias (Cassar and Munro, 2002). This shortage necessitates a careful evaluation of the different procedures. For this reason, and because of the lack of quality of life studies, we examined postoperative and retrospective preoperative evaluations of multiple

dimensions of quality of life (SF-36) in patients with incisional hernia after open three-layered closure repair. The SF-36 is a well validated generic instrument. In our study, all domains except physical functioning and change in health of the retrospective preoperative SF-36 were significantly lower than the mean scores of the age-stratified Dutch population.

Postoperatively, all domains showed significant improvement, mental health and change in health were higher than the mean scores of the age-stratified Dutch population, but scores remained lower than the mean for social functioning and role limitations due to physical and emotional problems. These findings are partly in agreement with those of Mussack et al (2006), who also found an improvement in scores, but an incomplete normalisation after the operation.

Studying the effect sizes of the different items of the SF-36 marked improvement was seen for pain, labour, vitality items and physical activities such as bending, kneeling or stooping. This specific improvement is not only interesting but also important because little is known of the natural course of incisional hernias (Nieuwenhuizen et al, 2007).

The difference between the actual and retrospective evaluations of preoperative quality of life is called a response shift, and refers to changes in the meaning of a self-evaluation of the quality of life. For instance, this shift could be the result of a change in the respondent's internal norms (i.e., recalibration) (Schwartz et al, 2007). In a study of quality of life after gastric banding, a response shift was observed. The preoperative quality of life tended to be perceived to improve over time (Schok et al, 2000). In comparing early postoperative (mean follow-up 2.4 years) and late postoperative responders (mean follow-up 6.8 years), we found a response shift in the opposite direction for the preoperative score for pain, which was evaluated worse by the late postoperative responders. Thus with passage of time patients evaluated their preoperative pain as poorer. This unexpected worsening could be due to comorbidity which deteriorated in the long postoperative period. However most of the scores were not subject to a response shift. This could be due to our long mean follow-up period of 4.6 years, since the response shift could have occurred in the early postoperative years. It is remarkable that patients can still evaluate their quality of life retrospectively after such a long period. The retrospective evaluation of the quality of life may not necessarily be a reliable perception. This perception could be altered over time because of changes in internal standards, values and conceptualization. However, our long follow-up period could also have influenced the postoperative scores negatively, as a result of the postoperative occurrence of chronic disease. The worsening for postoperative general health perceptions might be

indicative for this, because with passage of time patients evaluated their postoperative general health perceptions as poorer.

The SF-36 is a useful generic instrument to evaluate the quality of life after incisional hernia repair. Specific instruments are not currently available to examine the quality of life of incisional hernia patients.

In this study, patients retrospectively evaluated their physical and mental health as poor before an incisional hernia repair. After the operation, patient quality of life improved, but the perceived quality of life did not completely normalize. Further prospective studies will be useful to examine the quality of life before and after ventral hernia repairs.

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