



Quality of Life after Reconstructive Surgery for Intestinal Fistulas

Milan Kaška^{1,*}, Milan Chobola², Hana Skalská², Jan Maňák³, Luboš Sobotka³

ABSTRACT

Background: This retrospective clinical study would like to objectively denote a quality of life of persons afflicted by an abdominal catastrophe and managed by an extensive surgery can be almost as well conformable as those of healthy people in a similar age group. **Methods:** A set of eighteen patients who were successfully surgically treated and cured enjoyed a relatively good convalescence after their surgery and returned to a satisfactory standard of life from the point of view of organ function and psychosomatic state. Statistical analysis of the data collected over a period of 1 to 6 years after this complex therapy using special questionnaire for QOL assessment SF-36 was performed. **Results:** Almost half of the patients evaluated their state similarly to the rest of the population of comparable age and general health status. The remainder of the patients declared significantly worse evaluations in the majority of the observed domains of the questionnaire. **Conclusion:** Therapy of these patients was and must be complex: it included preparation for surgery at a special metabolic internal site, careful diagnostics of the digestive tract state, suitable surgery and good quality care after the surgery.

KEYWORDS

intestinal fistulas; reconstructive bowel surgery; quality of life; questionnaire SF-36

AUTHOR AFFILIATIONS

¹ Department of Surgery, Teaching Hospital, Hradec Králové and Academic Department of Surgery, Charles University, Faculty of Medicine in Hradec Králové, Hradec Králové, Czech Republic

² Department of Informatics and Quantitative Methods, University of Hradec Králové, Czech Republic

³ Department of Gerontology and Metabolism, Teaching Hospital Hradec Králové, Charles University, Faculty of Medicine in Hradec Králové, Hradec Králové, Czech Republic

* Corresponding author: Academic Department of Surgery, Medical Faculty Hradec Králové, Teaching Hospital Hradec Králové, Sokolská 581, 500 05 Hradec Králové; e-mail: kaskam@lfhk.cuni.cz

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INTRODUCTION

Disintegration of the surgical wound or intestinal anastomoses complicated by intestinal fistulas can be classified as so-called abdominal catastrophe. These conditions are encountered as postoperative complications of elective as well as of urgent abdominal operations (1-3) or as a result of abdominal traumas (4). Although these surgical problems occur relatively less frequently, they endanger the life of the patient, their solution is very expensive and they always significantly influence the quality of life of the affected person. In addition to that, the treatment itself of abdominal catastrophes is associated with high morbidity and mortality. It takes a long time, is complex, and consists of several stages: stabilization of the patient, therapy of septic complications, optimisation of nutrition, special local care of the wound, diagnosis of the intestinal tract state, repair of the bowel itself and postoperative care (1, 5, 6).

Even after successful bowel repair following abdominal catastrophe, patients struggle with many problems which significantly influence the quality of their future lives. In the past, published papers concerning quality of life (QOL) in various fields of medicine have used special questionnaires, indices and scales which seek to quantify QOL in such a way that comparison can be made with other sets of patients or with healthy people. Methodology in chiropractic can be cited as an example: visual analogous scale, Oswestry pain/disability Index, Roland-Morris Low Back Pain, Disability Questionnaire, SF-36 (7). For surgical and non-surgical obesity treatment IWQOL is cited (8). The status of patients after kidney transplant or requiring dialysis due to kidney lesion has been evaluated through the perceived health status (PHS) with the use of SF-36 and SSLDQ (9, 10). For anorectal malformations paediatricians use PedsQLI (11). For analysis of the status of patients suffering inflammatory diseases of the gastrointestinal tract following radiotherapy in the pelvic area, IBDQ, SOMA, etc. have been used (12).

The quality of life of patients following surgery for entero-cutaneous fistula is determined largely by the extent of loss of intestine, with problems of metabolism and an uncomfortable personal life for the patient. There is significant weakening of the abdominal wall as a result of repeated operations prior to the actual bowel repair itself. The patients can suffer weight loss, frequent diarrhoeic stool, disorders of intestinal passage and the possibility of large ventral ruptures. All this significantly influences the quality of life in terms of physical and organ function, resulting in emotional, social and psychological difficulties.

Evaluation of patient status after bowel repair following abdominal catastrophes can be carried out tentatively by personal questionnaires according to the capabilities of the therapeutic institution, or by quantification of the overall state of the patient with the help of special methods for measuring quality of life. This can be done using techniques which quantify subjective information in various fields of life for individual patients. One such questionnaire in which the answers can be quantified is the previously-mentioned SF-36, which was used for evaluation of the general status of our patients. Several sets

of patients have been processed (5, 13-15), and these can be used as a standard for comparison with findings in our patients.

The aim of this paper is to judge whether and how the states of patients affected by abdominal catastrophes followed by bowel repair differ in the main fields of quality of life from those in the general population of corresponding age and regular health state (HRQOL).

PATIENTS AND METHODS

20 patients with extensive defects of the abdominal wall with the complication of one or more intestinal fistulas underwent surgery. In all cases there was a fistula of the small intestine in the area of an abdominal wall defect. Three cases were complicated by a vast loss of intestine: in two cases the ileum together with about half of the jejunum was removed, leading to short bowel syndrome. In one case there was resection with jejunum-rectal anastomosis. The majority of patients had previously undergone surgery at other abdominal sites including repeated surgical revisions for intra-abdominal septic complications.

Therapy of these serious cases was carried out according to our internal standards and in compliance with recommended procedures. With the patients transferred to our hospital, therapy was initiated at the 3rd Department of Internal Medicine – Metabolic Care and Gerontology. The therapy was carried out in the stages described above, with emphasis on solving septic complications, improvement of the nutritional status of the patient, stabilization of the internal state and special care of the wound. Prior to each operation a detailed examination of the gastrointestinal tract had been carried out to localize the fistula precisely within the frame of the intestinal tract (x-ray using contrast medium, plus endoscopy). Bowel repair was always carried out at least three months after the occurrence of the fistula or the previous operation. Immediately after the operation the patients were returned to the 3rd Department of Internal Medicine – Metabolic Care and Gerontology, where intensive postoperative therapy was delivered in cooperation with the surgeon. It also included special care for the wound in cases of laparostoma. General rehabilitation of the patient was an integral part of the therapy.

One to six years after the surgery – the above-mentioned group of 20 patients was sent questionnaire SF-36. The set of 18 of these patients who had been examined and answered all the questions (1 patient died, 1 patient did not answer) comprised 12 men and 6 women. The average age of the patients was 58.3 years with median of 56.5 years (interval 40 to 82 years). The answers of these patients were processed according to the appropriate methodology for the SF-36 questionnaire. The questionnaire consists of 36 questions divided into 8 fields (health domains): 10 questions on PF (physical function), 4 questions on RP (role – physical), 2 questions on BP (bodily pain), 5 questions on GH (general health), 4 questions on VT (vitality), 2 questions on SF (social functioning), 3 questions on RE (role – emotional) and 5 questions on MH (mental health).

The final question is aimed at the perceived change of the state of general health, and in the evaluation is included as the 6th question in the field of GH. Answers to individual questions are translated into a score achieved in each particular domain. The worst possible score in each domain is zero, and the best is 100 points (15). As a reference group the specific age group 55–64 from sample according to Jenkinson et al. (14) was used. Means and standard deviations (men and women together) were compared with our set of patients in individual dimensions of SF-36.

The results of the questionnaire were processed by statistical methods. Clusters were identified by a cluster analysis (k-cluster), with test of the equality of their means by a multidimensional Hotelling test. Comparison with the reference group was carried out by unpaired t-test, which was preceded by a Levene’s test of equality of variances. Statistically significant results are based on Bonferroni correction and family wise error rate 0.05. Confidence limits (CL) for estimate of the proportions of patients in both categories (clusters differing in their health perception) were settled as exact 95 per cent confidence limits for parameter p of the binomial distribution. The results are presented in the form of figures and tables.

This published research and its methodology comply with the guidelines for human studies and animal welfare regulations.

RESULTS

A cluster analysis on the set of patients identified two internally homogeneous groups of patients (Table 1) which were statistically significantly different in the mean values of domains investigated by the SF-36 questionnaire ($p < 0.05$). The group with the more favourable evaluation (Cluster 1) consisted of 8 patients, 44.4 per cent of the total set, with 95 per cent confidence limits from 21.5 to 69.2 per cent of patients. The second group (Cluster 2) consisted of the remaining 10 patients. The processed questionnaire data and their statistical interpretation proved that patients included in Cluster 1 did not differ statistically significantly in quality of life from the reference set according to Jenkinson et al. (14). They differed only in the GH domain which for these patients was significantly lower (worse). The patients of Cluster 2 achieved significantly lower (worse) values than the reference set in all 8 measured domains (Table 2, Figure 2).

The analysis of the set of patients as a whole can be summarized (Table 2):

a) Perception of PF ($p < 0.01$), RP ($p < 0.01$), SF ($p < 0.01$) and GH ($p < 0.01$) was significantly worse within the framework of the observed indices.

b) RE, MH, VT and BP did not differ statistically significant from the same indices in the population of men

Tab. 1 Domains of SF-36 in two groups of patients identified by cluster analysis.

	Patients: Cluster 1				Patients: Cluster 2			
	Mean	n	SD	SE	Mean	n	SD	SE
PF	69.4	8	28.84	10.20	52.0	10	29.27	9.26
RP	84.4	8	26.52	9.38	2.5	10	2.50	0.79
RE	91.6	8	23.58	8.34	49.9	10	45.14	14.27
VT	62.5	8	18.71	6.61	39.0	10	11.74	3.71
MH	81.0	8	9.26	3.27	54.8	10	13.73	4.34
SF	79.6	8	21.06	7.45	46.1	10	17.73	5.61
BP	83.1	8	23.29	8.23	56.2	10	28.61	9.05
GH	55.0	8	21.55	7.62	27.8	10	12.56	3.97

n = size of the sample, SD = standard deviation, SE = standard error of mean

Tab. 2 Domains of SF-36 in patients compared with the set of reference values according to Jenkinson (14).

	Patients HK					Reference set – Jenkinson 55–64				p-value
	Mean	n	SD	SE		Mean	n	SD	SE	
PF	59.7	18	29.58	6.97	PF	77.4	1365	22.98	0.62	0.0013
RP	38.9	18	38.00	8.96	RP	77.7	1474	36.55	0.95	0.0000
RE	68.4	18	41.97	9.89	RE	84.5	1470	31.31	0.82	0.0321
VT	49.4	18	17.74	4.18	VT	60.9	1470	20.98	0.55	0.0215
MH	66.4	18	21.61	5.09	MH	76.1	1439	18.03	0.48	0.0238
SF	61.0	18	25.32	5.97	SF	86.4	1512	22.62	0.58	0.0000
BP	68.2	18	29.02	6.84	BP	76.8	1503	24.48	0.63	0.1443
GH	39.9	18	19.01	4.48	GH	68.0	1456	22.46	0.59	0.0000

n = size of the sample, SD = standard deviation, SE = standard error of mean

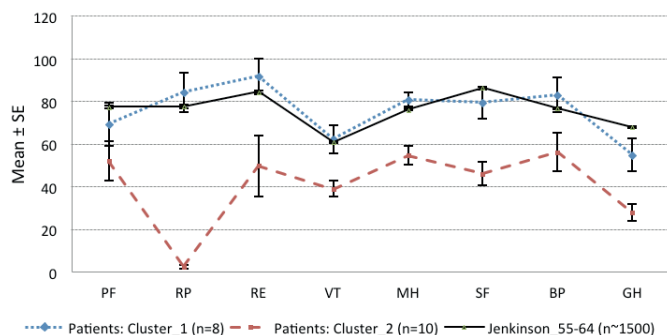


Fig. 1 SF-36: Comparison of Jenkinson's sample characteristics with identified clusters of patients.

and women of comparable age without serious morbidity ($p < 0.01$) as shown in Table 1 and Figure 1.

DISCUSSION

Processing of data from postoperative answers to the SF-36 questionnaire can provide certain information about the general health state of our patients in comparison with a similar population group of comparable age and without significant co-morbidity (14). It is without doubt difficult to obtain an objective view of the whole problem since questionnaires cannot be structured to elicit feelings across the whole spectrum of quality of life, nor can measurement and interpretation of responses be made entirely consistent. As discussed in the Introduction section of this paper, objective evaluation of quality of life is usually achieved through questionnaires which use direct or multiple-choice questions to assess personal perception in various fields of life.

For assessment of the quality of life of our patients we used the SF-36 questionnaire, which is widely used in various branches of medicine and is highly regarded for its ability to capture also the social dimension of life (15). Based on currently published information it is obvious that the quality of life of surgical patients can be quantified for the purpose of objective evaluation of the work of the surgeon. However, it is a matter of discussion with which subset of the population the results should be compared. There are published findings for young and healthy groups (13), or for groups suffering from certain co-morbidities (9), and the results can be also compared to the subset of population of similar age without significant co-morbidity. Such a subset has been selected for our clinical study (14).

When using statistical tests to compare individual domains of health between patients and a reference set it is desirable to reduce the level of significance of the individual tests so that the overall (familywise) level of significance (α) of the whole presentation is 0.05 (Table 2). Then, according to the Bonferroni correction in each test a p -level of 0.00625 should be considered, and according to the Sidak test a p -level of 0.006391 should be considered. Using these criteria the probability is below these values in domains PF, RP, SF and GH, and hence there are significant differences between the compared groups in

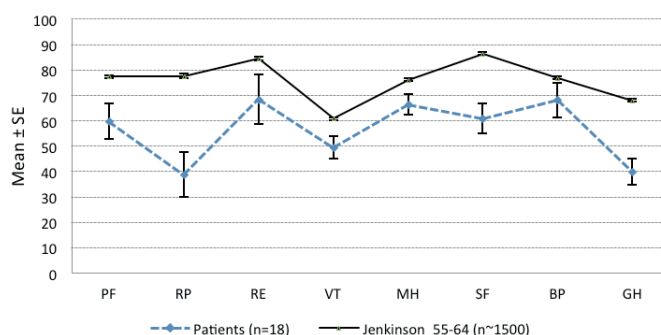


Fig. 2 SF-36: Comparison of Jenkinson's sample characteristics with patients.

these domains; in the other domains there is no significant difference.

Cluster analysis identified two clusters of patients with different mean characteristics as measured by the SF-36 questionnaire, and their proportions were estimated. Cluster 1 comprised 44.4 per cent (21.5–69.2 per cent) of the patients; with the exception of the GH domain their characteristics were wholly comparable with our reference set of persons of similar age and without co-morbidity. However, in the GH domain this group does score significantly worse. The remainder of the patients could all be assigned to Cluster 2, which in general differs significantly from Cluster 1 as well as from the reference set; it comprised 55.6 per cent of the total patients with interval of reliability between 30.8 and 78.5 per cent.

Several other papers have dealt in a similar way with evaluation of the quality of life of patients: obese patients looking or not looking for surgical solutions, patients with anorectal malformations (11), patients with gastrointestinal symptoms after irradiation (12), those with permanent ileostomy, and patients after operation for Crohn disease (6). It is the task of the authors to make objective assessment of both comfortable and uncomfortable phases in the life of a patient in a particular pathological state, and to search for the causes of problems; the task is thereafter to apply the results of such analyses of treated patients in order for example to show whether an amended therapeutic methodology leads to improvement in the quality of life.

CONCLUSIONS

From the surgical point of view we can claim that the functional states of the repaired bowels and abdominal walls were fully satisfactory in all 18 patients. The cosmetic impact of the operation is certainly significant, but with respect to the patient's return to a relatively active life it is less important.

Statistical processing of SF-36 questionnaire results has revealed that the general state of the patients after extensive surgery and demanding complex therapy following abdominal catastrophes endangering their lives may be either quite satisfactory or worse (see the division of the set into clusters) in comparison with the population without significant chronic disease. Physical functions and their restrictions, mental state and general health

evaluated for the whole set of patients are statistically significantly worse than for the reference set of the population of similar age without significant health difficulties. In the fields of emotional state, vitality, psychological state and pain state there is either no significant difference from the same-age group or are insignificantly worse. Within the set of patients was identified a subset of 44.4 per cent (21.5–69.2 per cent) whose mean values differ from the reference set only in the domain of GH; in the other domains there was no significant difference from the reference population of comparable age. However, a second subset of patients (55.6 per cent) (30.8–78.5 per cent) exhibited significantly worse characteristics in all measured domains than those in the reference set.

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REFERENCES

1. Draus JM, Huss SA, Harty NJ, Cheadle WG, Larson GM. Enterocutaneous fistula. Are treatments improving? *Surgery* 2006; 140(4): 570–6.
2. Evenson AR, Fischer JE. Current management of enterocutaneous fistula. *J Gastrointest Surg* 2006; 10(3): 455–64.
3. Visschers RGJ, Olde Damink SWM, Winkens B, Soeters PB, van Gemert WG. Treatment strategies in 135 consecutive patients with enterocutaneous fistulas. *World J Surg* 2008; 32: 445–53.
4. Fischer PE, Fabian TC, Magnotti LJ, et al. A ten-year review of enterocutaneous fistulas after laparotomy for trauma. *J Trauma - Injury Infect and Crit Care* 2009; 65(7): 924–8.
5. Sobotka L, Manak J, Vyroubal P, et al. Successful treatment of surgical abdominal wounds complicated by multiple bowel fistulas with a combination of total parenteral nutrition, hyaluronan-iodine complex and delayed surgery: results of a monocentric experience. *Nutritional Therapy & Metabolism* 2008; 26: 1–7.
6. Sobotka L, Maňák J, Vyroubal P, et al. Komplexní léčba abdominálních katastrof. *Interní Med* 2008; 10: 291–4.
7. Khorsan R, Coulter ID, Hawk C, Choate CG. Measures in chiropractic research: Choosing patient-based outcome assessments. *J Manipulative Physiol Therapeut* 2008; 31(5): 355–75.
8. van Nunen AMA, Wouters EJM, Vingerhoets JJM, Hox JJ, Geenen R. The health-related quality of life of obese persons seeking or not seeking surgical or not-surgical treatment: a meta-analysis. *Obesity Surgery* 2007; 17: 1357–66.
9. Rosenberger J, Van Dijk JP, Nagyova I, et al. Predictors of perceived health status in patients after kidney transplantation. *Transplantation* 2006; 81(9): 1306–10.
10. Rosenberger J, van Dijk JP, Nagyova I, et al. Do dialysis- and transplantation-related medical factors affect perceived health status? *Nephrology Dialysis Transplantation* 2005; 20(10): 2153–8.
11. Goyal A, Williams JM, Kenny SE, et al. Functional outcome and quality of life in anorectal malformations. *J Pediatr Surg* 2006; 41: 318–22.
12. Olopade FA, Norman A, Blake P, et al. A modified inflammatory bowel disease questionnaire and the Vaizey incontinence questionnaire are simple ways to identify patients with significant gastrointestinal symptoms after pelvic radiotherapy. *Br J Cancer* 2005; 92(9): 1663–70.
13. Skalská H, Sobotík Z, Jezberová D, Mareš J. Use and evaluation of the Czech version of the SF-36 questionnaire self-reported health status of medical students. *Cent Eur J Publ Health* 2000; 2: 88–93.
14. Jenkinson C, Coulter A, Wright L. Short form 36 (SF 36) health survey questionnaire: normative data for adults of working age. *BMJ* 1993; 306: 1437–40.
15. Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36) 1: conceptual framework and item selection. *Medical Care* 1992; 3: 473–83.