Journal of Surgery
[Jurnalul de Chirurgie]

Research Article Open Access

Quality of Life and Level of Anxiety in Patients after Gallbladder Surgery

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Abstract

Introduction: Cholelithiasis involves the presence of gallstones that form in the biliary tract, usually in the gallbladder. Symptomatic cholelithiasis is an indication for surgical treatment. Quality of life and patient satisfaction following surgery is an important aspect in predicting treatment outcomes.

Aim: Measurement of quality of life, including the level of anxiety state and dynamics of changes of individual components (physical, mental, social, and environmental) over time (from qualifying for operations and the postoperative period, up to 6 months after surgery) in patients undergoing open and laparoscopy cholecystectomy.

Material and methods: The study group consisted of 105 people at the Clinical Department of Surgery, County Hospital in Tychy. The patients were divided into two groups, laparoscopic surgery (n = 83) and classical (n = 22). Tests on selected patients have been carried out before the operation, 1 month after and 6 months after surgery with the "quality of life questionnaire WHOQOL BREF" and "Inventory status and the guild anxiety STAI X1". The results were compared using statistical methods.

Results: In the group treated by laparoscopy better quality of life and lower levels of anxiety were observed after 6 months of treatment. Before surgery and one month after the procedure, significantly lower values of physical and mental disciplines were reported in the group operated laparoscopically than in patients operated by the classical method.

Conclusion: In patients undergoing laparoscopic surgery higher quality of life and lower levels of anxiety in the 6 month follow-up were observed, compared to patients operated conventionally.

Keywords: Laparoscopy; Anxiety; Cholecystectomy; Gallbladder; Life quality

Introduction

Cholelithiasis involves the presence of gallstones, which are concretions of cholesterol, bilirubin, calcium salts, and other ingredients that form in the biliary tract, usually in the gallbladder [1]. Symptomatic cholelithiasis is an indication for surgical treatment. The presence of gallstones is not an indication for surgery. Almost half of the population over age 60 has gallstones, but only a small part suffers from pain related to the condition. Cholecystectomy for asymptomatic gallstones may be indicated in patients with diabetes mellitus, cardiac transplant recipients, oncologic patients and ones who require immunosuppressive and cytostatic therapy [1-3].

Cholecystitis may present differently in special populations, as follows: Elderly – may present with vague symptoms and without many key historical and physical findings (e.g., pain and fever), with localized tenderness the only presenting sign; may progress to complicated cholecystitis rapidly and without warning; Children – May present without many of the classic findings; those at higher risk for cholecystitis include those who have sickle cell disease, serious illness, a requirement for prolonged total parenteral nutrition (TPN), haemolytic conditions, or congenital and biliary anomalies.

Diagnosis

Laboratory tests are not always reliable, but the following findings may be diagnostically useful: leukocytosis with a left shift may be observed, alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels may be elevated in cholecystitis or with common bile duct (CBD) obstruction, bilirubin and alkaline phosphatase assays may reveal evidence of CBD obstruction, amylase/lipase assays are used to assess for pancreatitis; amylase may also be mildly elevated in cholecystitis, alkaline phosphatase level may be elevated (25% of patients with cholecystitis). All females of childbearing age should undergo pregnancy testing Diagnostic imaging modalities that may be considered include the following: Radiography, ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI), hepatobiliary scintigraphy, Endoscopic retrograde cholangiopancreatography (ERCP).

When choosing a method of treatment, we pay attention to interfere with the function and efficiency of the organism as little as possible and where possible to restore the body to its original state of health. Quality of life and patient satisfaction following surgery is an important aspect in predicting treatment outcomes. Quality of life as a concept is intuitively easy to understand, but it has proven difficult to define. In medicine we evaluate quality of life basing on health-related factors, and the approach determines the impact of the disease on physical, psychological and social aspects of life and well-being [2].

To fully assess a patient's quality of life we should determine his or her mood, depending on the severity of symptoms of a disease or treatment, mental and physical health, and social functioning of the patient. Anxiety accompanies human beings throughout their lives and it is defined as a negative emotion connected with the anticipation of danger coming from outside or inside of the body.

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Received December 12, 2015; **Accepted** February 27, 2016; **Published** March 04, 2016

Citation: Sedlak B, Lorenc Z, Zaniewski M, Krawczyk W, Majewski E. Quality of Life and Level of Anxiety in Patients after Gallbladder Surgery. Journal of Surgery [Jurnalul de chirurgie]. 2016; 12(1): 13-18 DOI:10.7438/1584-9341-12-1-4

Anxiety is the fear of anticipated threats, unpleasant for an individual, it is a negative emotion induced by a factor (situation or object), subjectively considered as threatening [4-6]. Symptoms of anxiety are divided into physiological, psychological and behavioural. The physiological include tachycardia, rapid breathing, high blood pressure, increased muscle tension, abdominal pain, and urinary incontinence. The mental symptoms are: fatigue, insecurity, low self-esteem, disengagement from interpersonal relations, cognitive disorders. Behavioural symptoms include restlessness, pointless activities, frequent position changes, twitches. In addition to those, we observe speech disorders and insomnia. In the medical literature there are no studies on the levels of anxiety in patients treated surgically for cholelithiasis [6,7].

Aims of the Study

1. Assessment of quality of life in all its components (physical, mental, social, environmental) in patients undergoing cholecystectomy by laparoscopic and classical method.

2. Appraisal of the dynamics of changes in individual components of quality of life over time (from qualifying to operations and the postoperative period, up to 6 months after surgery).

3. Examining the factors that may affect quality of life, the treatment effect, and levels of anxiety (measured according to the STAI scale) in the period of time which was the subject of the analysis.

Material and Methods

The research was conducted in years 2006-2012. The study group consisted of 205 patients who underwent cholecystectomy. 105 people were enrolled for the research analysis, including 77 women and 28 men aged 27 to 72. Patient characteristics are listed in (Table I). The research study enrolled people treated at the Clinical Department of Surgery, County Hospital in Tychy. In the study patients operated on gallstone disease, cholecystitis (acute and chronic) and cholecystitis complications (for example pancreatitis) were included. Patients with metabolic disorders (hypercholesterolemia, obesity, diabetes) were also allowed. The analysis excluded patients with chronic diseases (e.g. stomach and bowel disorders, musculoskeletal disorders, mental illnesses, gallbladder cancer, other cancers), and pregnant women. Tests on selected patients were carried out before the operation, one month after surgery, and six months after the operation. The data obtained from the World Health Organization Quality of Life questionnaire WHOQOL BREF (Table II) and the Stare-Trait Anxiety Inventory STA1 was compared and evaluated using statistical methods (Table III).

The statistical analysis was carried out using Statistica 7.0. Calculations included the mean values, standard deviations, and medians of the studied parameters. The normality of the distribution was evaluated with the Kolmogorov–Smirnov test. In the case of normal distributions, the student's t-test for unpaired variables was used for comparisons between groups. In order to compare the results between time points the Wilcoxon test was used. The frequency of the studied traits was calculated. The statistical significance *level* was $p<0.05$.

Statements included in the scale are formulated in such a way that sometimes the highest anxiety level is indicated by 4, other time by 1. This prevents the participants from providing automatic answers and minimizes the impact of the *acquiescence* variable. The WHOQOL questionnaire makes it possible to obtain a profile of the quality of life in four domains (physical, psychological, social relationships, and environment). The scores reflect the individual's perception of the quality of life in these four areas. The greater the number of points on the scale, better the quality of life. The questionnaire contains 26 questions.

Results

During the study there was a statistically significant difference between the group of patients after laparoscopic cholecystectomy, and the group of patients who underwent classic treatment. The difference observed before the treatments in the areas of physical and mental characteristics was favourable to the patients operated on in the classical way. Similar relationships between groups in the areas of physical and mental characteristics were observed one month after surgery. However, 6 months after the operation there were no statistically significant differences in these areas between the two groups of patients. Patients who were treated by open cholecystectomy, just before surgery, declared a slightly higher quality of life in physical and mental areas, and this trend was evident even after a month. Table IV presents the results of the questionnaire WHOQOL-BREF, evaluating quality of life. Before surgery, and one month after, in the group operated on laparoscopically there were significantly lower values of quality of life, both physical and psychological, than in patients operated on by the open method. However, after 6 months, a statistically significant difference was observed in social relations for the benefit of patients operated on by the open method. In the areas of physical and mental health in the whole study group a statistically significant increase of quality of life was seen after 6 months, compared to the values before and one month after surgery. In the areas of physical and mental characteristics in the laparoscopic surgery group we observed a statistically significant increase in value after 6 months, compared to the state before and one month after surgery (Figure 1). In the group of patients operated on by the classical method a statistically significant increase in the quality of life was found in the scale of social relations only, after 6 months, compared to values obtained before and one month after surgery. Furthermore, it is noticeable that in this group no difference in the physical, psychological and environmental fields in all the surveyed points in time was observed (Figure 2).

In the physical and mental areas in the laparoscopic surgery group we have observed a statistically significant increase in value after 6 months compared to the state before and one month after (Figure 1). In the group of patients operated on by the open method a statistically significant increase in the quality of life was found only in the scale of social relations after 6 months compared to values obtained before and one month after surgery. Furthermore, it is worth noting that in this group no difference in the physical, psychological or environmental fields was observed in any of the periods researched (Figure 2).

To measure the level of anxiety in patients the STAI questionnaire was used and the results are given in Table V. After 6 months of treatment in the laparoscopic surgery group significantly lower anxiety symptoms were observed than in the group operated on by open cholecystectomy. Despite the lapse of six months almost half of the patients treated by open cholecystectomy felt anxiety (Figure 3). Higher levels of anxiety in patients 6 months after open cholecystectomy could be the result of persistent abdominal symptoms in the type of ZPC, concerns about the onset of late complications of laparotomy (ileus), scars, and illness recurrence.

Table I: Characteristics of patients.

		Altogether (n = 105)		Laparoscopy (n = 83)		Open cholecystectomy (n = 22)	
		N	%	N	%	N	%
Śex	Female	77	72.7 %	61	73.5%	16	72.7 %
	Male	28	26.3 %	22	26.5%	6	26.3 %
Age [years]		56.8 ± 11.8		55.9 ± 12.5		60.5 ± 8.7	
Comorbidities	YES	67	63.8%	55	66.3%	12	63.8 %

Table II: World Health Organization Quality of Life questionnaire WHOQOL

1. How satisfied are you with the quality of your life?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2. How happy you are for your health?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
The following questions relate to what extent or how you felt certain things in the past 2 weeks. **3. To what extent do you feel that physical pain restricts you in doing what you want?**				
At all	Little	Quite strongly	Very strongly	Extremely strongly
4. To what extent lead a normal, everyday life depend on any treatment?				
At all	Little	Quite strongly	Very strongly	Extremely strongly
5. How much do you enjoy life?				
At all	Little	Quite strongly	Very strongly	Extremely strongly
6. To what extent do you feel that your life has meaning, significance?				
At all	Little	Quite strongly	Very strongly	Extremely strongly
7. How easily can you focus on?				
At all	Little	Quite easy	Very easy	Extremely easy
8. Do you feel safe in your daily life?				
At all	Little	Average	Very safe	Extremely safe
9. How healthy you feel the area in which you live?				
At All	Little health	Quite healthy	Very healthy	Extremely healthy
The following questions relate to the extent to which you were able to perform things in the past 2 weeks. **10. Do you have enough forces - "energy" to lead a normal life?**				
At All	Little	Average	Almost enough	Enough
11. Are you ableto accept your appearance?				
At all	Little	Average	Mostly	Completely
12. Do you have enough money for Your needs?				
At all	Little	Average	Almost enough	Enough
13. To what extent are available to you the information you need for everyday life?				
At all	Little	Average	Mostly	Completley
14. To what extent you have the possibility of such leisure activities as you wanted to?				
At all	Little	Average	Almost enough	Enough
15. To what extent can you move?				
Very bad	Bad	Neither good nor bad	Good	Very good
The following questions relate to how satisfied and happy you felt in relation to the various spheres of life in the past 2 weeks. **16. How satisfied are you with your sleep?**				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
17. How satisfied are you with their ability to lead a normal daily life?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
18. How satisfied are you with your ability to work (paid or unpaid, at home)?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
19. How satisfied are you with yourself?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
20. How satisfied are you with your personal relationships?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
21. How satisfied are you with your sex life?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
22. How satisfied are you with the support you receive from your friends?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
23. How satisfied are you with the conditions in which you live?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
24. How satisfied are you with access to medical care?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
25. How satisfied are you with its ability to move up?				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Very dissatisfied	Dissatisfied
The following question refers to how often during the last 2 weeks you felt some conditions. **26. How often are You going through the unpleasant feelings such as sadness, dejection, anxiety, depression?**				
Never	Rarely	quite often	Very often	Always

Table III: The questionnaire STA1

		Definitely not	Rather not	Rather yes	Definitely yes
1.	I am calm	1	2	3	4
2.	I feel safe	1	2	3	4
3.	I am tight	1	2	3	4
4.	I am resentful	1	2	3	4
5.	I feel at ease	1	2	3	4
6.	I am depressed	1	2	3	4
7.	I worry if something bad happens	1	2	3	4
8.	I feel rested	1	2	3	4
9.	I feel anxiety	1	2	3	4
10.	I am comfortable	1	2	3	4
11.	I feel confident	1	2	3	4
12.	I'm nervous	1	2	3	4
13.	I'm jittery	1	2	3	4
14.	I am "undermined"	1	2	3	4
15.	I am relaxed	1	2	3	4
16.	I'm happy	1	2	3	4
17.	I'm worry	1	2	3	4
18.	I feel overly excited	1	2	3	4
19.	I am joyful	1	2	3	4
20.	I am pleasant	1	2	3	4

Table IV: Quality of Life questionnaire WHOQOL

		Totally (n=105)			Laparoscopic surgery (n=83)			Open surgery (n=22)			Comparison of methods
		śr	mediana	SD	śr	mediana	SD	śr	mediana	SD	
Przed operacją	**Physical sphere**	67	64	13	65	64	13	73	78	13	**0.0033**
	Mental sphere	65	62	13	63	62	13	71	75	12	**0.0105**
	Social relations	76	75	13	76	75	13	77	75	12	NS
	Environment	70	71	13	69	71	14	70	71	10	NS
1 miesiąc po operacji	**Physical sphere**	65	67	14	63	64	13	76	78	14	**<0.001**
	Mental sphere	64	62	14	62	62	14	72	75	12	**0.0038**
	Social relations	74	75	14	73	75	14	77	75	13	NS
	Environment	68	70	15	67	68	15	71	71	12	NS
6 miesiący po operacji	**Physical sphere**	71	71	15	70	71	15	76	78	14	NS
	Mental sphere	69	70	15	68	70	16	72	75	13	NS
	Social relations	75	75	15	74	75	16	82	83	12	**0.0366**
	Environment	71	75	14	71	75	15	73	74	12	NS

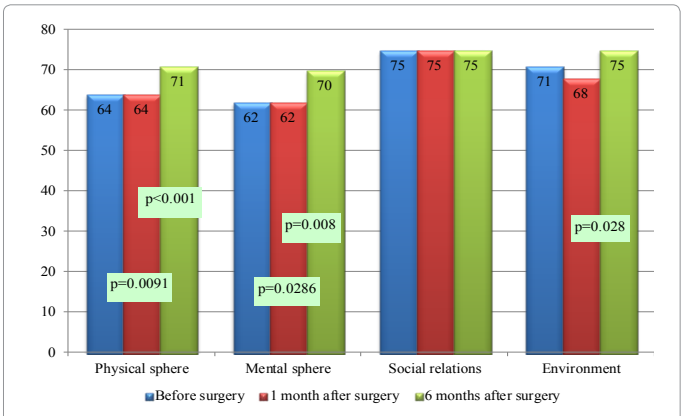

Figure 1: Comparison of quality of life in questionnaire WHOQOL – BREF in a group after laparoscopic surgery in the studied time points.

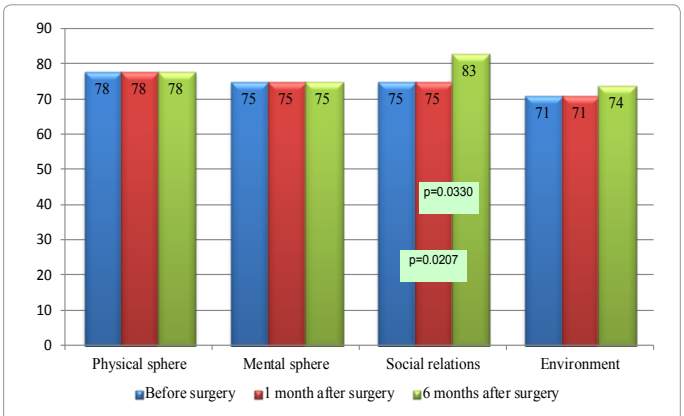

Figure 2: Comparison of quality of life in questionnaire WHOQOL – BREF in a group after open surgery in the studied time points.

Table V: Stare-Trait Anxiety Inventory STA1

	Totally (n=105)			Laparoscopic surgery (n=83)			Open surgery (n=22)			Comparison of methods
	śr	mediana	SD	śr	mediana	SD	śr	mediana	SD	
Before surgery	47	47	9	46	47	10	48	48	6	NS
1 month after surgery	45	47	9	44	45	10	48	49	6	NS
6 months after surgery	44	47	9	42	45	9	49	50	4	**0.0059**

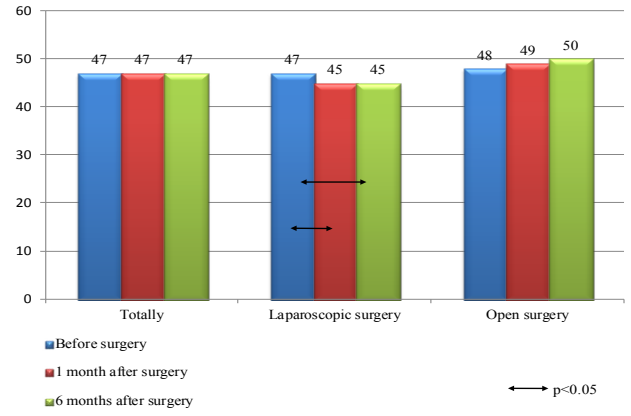

Figure 3: The level of anxiety in the studied time points.

Discussion

The analysis of quality of life in the studied groups has shown that patients undergoing laparoscopic treatment show higher quality of life 6 months after surgery. The explanation of this fact can be the lesser surgical trauma they suffer, shorter hospitalization, and faster recovery. The fact that these patients presented less symptoms of ZPC is also significant. Better quality of life in the field of social relationships in patients operated on by the classical method after 6 months of treatment, compared to those treated by the laparoscopic method is intriguing. It seems that the sum of unpleasant experiences related to the operation, greater physical and mental suffering caused by prolonged hospital stays, and consequently subsequent return to full health, increase the patients' endurance. The patients in question could re-evaluate their social relationships and see them in a slightly better light than before the operation. Budzynski notes that the quality of life of patients after laparoscopic cholecystectomy improves sooner than after classical surgery. Laparoscopic cholecystectomy allows for a shorter hospital stay, faster return to full activity and less pain in the postoperative period than classical cholecystectomy [8]. Carraro shows higher quality of life in patients after laparoscopic cholecystectomy, as compared to the classical method. The development of the laparoscopic technique radically changed the treatment of cholelithiasis and cholecystitis. The result is obviously clinically beneficial to patients. Over the years the implementation of laparoscopic cholecystectomy has reduced the number of complications and mortality rates of patients undergoing surgery. The collected data confirms the positive assessment of the quality of life after laparoscopic cholecystectomy is performed. The increasing rate of quality of life after laparoscopic cholecystectomy is higher than in open surgery. Higher satisfaction rate for surgical scars after surgery has also been conformed [9]. Matovic confirms the results implicating that the quality of life in patients treated by laparoscopic cholecystectomy is higher than the quality of life in patients operated on by open cholecystectomy. Fitness, emotional state, and social activity, are much better in patients treated by laparoscopic cholecystectomy. Comparative study between laparoscopic cholecystectomy and open surgery, depending on the aspects of quality of life, confirms the advantage of laparoscopy as compared to the open cholecystectomy method [10]. Kaska conducted a review of the available databases, Medline and PubMed, for medical literature describing the quality of life after surgery and classic laparoscopic treatment. Based on 30 items which implement a standardized questionnaire, he concludes that the quality of life questionnaire does not appear to be the most appropriate tool which can be used for comparing, in this case, not even two operational procedures, but only two accesses per open and laparoscopy procedure. He writes that the Quality of Life Survey is a research instrument especially important in chronic diseases, such as chronic pain, chronic pancreatitis, and cancer. Finally, the author stresses that in the majority of patients video scope procedures provide favourable postoperative quality of life compared to the open surgery [11]. Lachiński et al. [12] present the position that the assessment of quality of life after several years of treatment is not critical for differentiating the results of treatment using open and minimally invasive methods. Quality of life in that period of time is affected by many factors independent from the operation, such as comorbidities, socioeconomic status, and life problems. Quintana et al. [13] analysed clinical material of 6 large hospitals in Spain, where the quality of life parameters were studied before and three months after surgery in groups with clear indications for cholecystectomy. In the group of symptomatic cholelithiasis, after surgery, there was a significant improvement in all parameters in assessing the quality of life. In patients after cholecystectomy, who before surgery did not report pain, quality of life has not changed. This allows the reader to conclude that asymptomatic patients are not good candidates for cholecystectomy, by any method [14].

Nilsson and Ros compared the quality of life in a group of 724 patients treated with cholecystectomy by mini laparotomy with 362 treated laparoscopically. Quality of life was significantly lower in the mini-laparoscopy group in a week after surgery, while after one month and one year after the procedure there were no differences in both groups. Li et al. [15] monitored quality of life 2, 5, 10 and 16 weeks after surgery. The patients were treated for uncomplicated cholelithiasis, 25 were treated laparoscopically and 26 by open surgery. The authors demonstrated that quality of life before surgery in the group operated on laparoscopically was low. Then the patients' emotional state and physical fitness were significantly increased after 2, 5, and 10 weeks after surgery. In the group of patients operated on by the classical method, improvement in quality of life was not observed. 16 weeks after surgery there was no apparent difference in quality of life between the groups [16].

Räsänen assesses the quality of life 4, 6 and 12 months after surgery, stating that an increase was observed in just four months. It shows that in order to assess the full effect of gastroenterological surgery by measuring quality of life we need 12 months [17].

Topçy Ö and Karakaya studied the patients' quality of life for more than three years after the procedure, concluding a better quality of life after laparoscopic cholecystectomy than the classical. The study, however, has met with criticism due to the fact that during a longer observation period a patient's state of health may change due to new illnesses occurring at the time [18].

In some studies of quality of life there was no statistical difference between laparoscopic and open cholecystectomy [18].

Conclusion

The percentage of continuing abdominal symptoms and their severity during the half-year period after the laparoscopic procedure is comparable with the percentage of symptoms continuing after classical technique treatments. During the postoperative period, better

comfort and higher quality of life are observed in comparison with the preoperational period, especially concerning the patients' physical and mental performance. Despite treatments applied, dyspeptic symptoms continue in some of the patients. Post cholecystectomy syndrome has been observed in 37.2% of the patients following gallbladder removal. PC symptoms were significantly less commonly observed in patients treated with the laparoscopic method. The symptoms of PC were more frequently observed in women than in men.

In patients undergoing laparoscopic surgery higher quality of life was observed after a 6 months follow-up, compared to patients who underwent classic surgery. The level of anxiety of patients after laparoscopic cholecystectomy is lower. After 6 months, patients undergoing laparoscopic surgery were significantly less likely to feel anxious, which was indicated in the STA questionnaire. Patients in the open cholecystectomy group declared, after 6 months, higher quality of life only in the field of social relations.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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