COMPARISON OF THE QUALITY OF PATIENTS’ LIFE AFTER THE CLASSICAL AND LAPAROSCOPIC CHolecystECTOMIES

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In Poland cholecystolithiasis is the most frequent cause of surgical treatment and a significant growth in the number of cholecystectomies has been observed since the laparoscopic method was introduced. Recently there has been noted an increased interest in such issues as the quality of life connected with health and the impact of particular therapeutic methods on the quality of patients’ lives.

In order to measure the quality of life, the instruments (forms) – or so-called health profiles are used. In respect of this quality of life, one of the forms mostly acknowledged in the world is the questionnaire SF36, which is also applied in the field of the gall-bladder surgery.

The aim of the study was to compare the quality of patients’ lives before and after the surgical treatment of cholecystolithiasis with the use of the classical and the laparoscopic methods by means of the SF36 form.

Material and methods. The research was conducted among patients treated in the Surgery Department of the Hospital in Mielec from June 2005 to June 2006.

The patients were divided into two groups: A – 42 people are the patients treated by the classical method of cholecystectomy, B – 46 people are the patients subjected to the laparoscopic method of cholecystectomy. Both groups of patients fulfilled the questionnaire twice: first, before the surgical procedure, and then three months after the operation. Additionally, during the second survey, the patients estimated subjective alteration of the quality of life three months after the surgery.

Results. A statistically significant increase in the physical and mental components as well as in a total quality of life was stated in both groups. A higher increase in the general quality of life was estimated in the group of patients treated by the laparoscopic method of cholecystectomy. In the subjective estimation of the alteration of the quality of life three months after surgery, there was also recognized the growth of it in both groups of patients.

Conclusions. An increase in the life quality of the patients with diagnosed cholecystolithiasis has been observed after both methods of cholecystectomy respectively. A greater increase of this quality analyzed by means of the questionnaire SF36® has been noticed in case of the laparoscopic method especially in the physical component.

Key words: cholecystectomy, laparoscopic cholecystectomy, the quality of life, SF36 form

In Poland cholecystolithiasis constitutes the most frequent cause of surgical treatment (1, 2). Owing to the dissemination of the diagnostic methods and the introduction of the laparoscopic method, there has been a noticeable growth of the number of cholecystectomies in the recent time. According to some reports the quantity of cholecystectomies in the years 2003-2005 raised by about 63% compared to years 1993-1995 (3).

The interest in the issue of the quality of life (Quality of life – QoL) is dated back to the
beginning of the 1960s. The pioneer research concerning the subjective aspect of the Americans’ quality of life was conducted by Campbell who defined psychological well-being and its determinants based on the subjective opinion of the examined patients and their life experience (4, 5). The term Health Related Quality of Life HRQL was introduced by Schipper in 1999, who acknowledged that health condition might significantly influence not only human life and his functioning, but, as a result, also the estimation of quality of this life (6, 7). To evaluate the quality of life such instruments as questionnaires are used, which are to fulfill two aims (8, 9). The former gives the possibility of dividing patients into two groups on the basis of their current fitness or prognosis, for example according to NYHA classification (8). The latter aims at measuring alterations occurring under the treatment, where the effect of the treatment is indicated by the change of the number of points in a given questionnaire (8).

One of the best-known and the most popular is the questionnaire SF36® (Medical Outcomes Study 36-Item Short Form Health Survey). It consists of 36 questions divided into eight categories (physical fitness, social functioning, mental health, general perception of health etc.). The particular categories are assembled into collective components of physical and emotional efficiency (8, 10, 11). The questionnaire SF36® was used, among other things, in the research concerning spine surgery, hip joint plastics, excision of varicose veins of lower limbs, claudication intermittent, or the surgery of the gall bladder (8). It has been recommended by the European Association for Endoscopic Surgery to examine the quality of life in the field of the diseases of alimentary canal with regard to gall-bladder diseases (12).

The main aim of the thesis was the comparison of the quality of patients’ life before and three months after the surgical treatment of cholecystolithiasis by means of the classical and laparoscopic methods.

MATERIAL AND METHODS

The research was conducted from June 2005 to June 2006 among the patients treated in the Surgery Ward of the Hospital in Mielec. The patients were to fulfill subsequent criteria:

1) cholecystolithiasis diagnosed by means of the ultrasound examination,
2) a patient’s written permission,
3) the age between 18 and 82,
4) ASA Scale 1-3(American Society of Anesthesiologists Scale).

Excluded diseases: choledocholithiasis, tumor, active gastric ulcer, cirrhosis and chronic pancreatitis.

The patients were divided into two groups:
- group A – 42 patients subjected to the classical method of cholecystectomy,
- group B – 46 patients treated by the laparoscopic method of cholecystectomy.

The survey was conducted twice: before the surgical treatment and three months after the operation. It comprised filling in “the quality of life” questionnaire SF36® and a form created purposefully for the research.

RESULTS

Eighty eight patients suffering from cholecystolithiasis were treated surgically. The average age of the first group treated with the classical method was 56.9; while the average age for the second group was 50.

In group A before the surgical treatment abdominal pains were reported by 41 patients (97.6%), vomiting by 22 patients (52.4%), flatulence by 22 patients (52.4%). In group B abdominal pains were reported by 40 patients (87%), vomiting by 15 patients (32.6%), flatulence – 26 (56.5%). The statistic analysis did not confirm any essential differences between groups A and B in the estimation of the symptoms: abdominal pains (p=0.15), vomiting (p=0.06) and flatulence (p=0.7).

In group A after the surgical treatment abdominal pains were reported by 8 patients, no patients reported vomiting (0%), flatulence – 0 patients (0%). Wound suppuration appeared in 2 patients (4.8%), and other complications appeared in 6 patients (14.3%) and comprised: shoulder pains – 1 patient, belching – 4 patients, cholangitis – 1 patient.

In group B after operation 10 patients reported abdominal pains (21.7%), vomiting – 0 patients (0%), flatulence 3 patients (6.5%). Wound suppuration appeared in 3 patients (6.5%), and other complications appeared in 7 patients (15.2%) and comprised: shoulder pains – 6 patients, umbilical hernia – 1 patient. The statistic analysis did not confirm any cru-
The growth in value of both physical and mental components as well as of general quality of life was ascertained after the laparoscopic surgical procedure $\Delta PCS_{A}=10.3$; $\Delta MCS_{A}=2.9$; $\Delta QOL_{A}=13.3$ (fig. 1 and 2).

In group B involving patients operated on by means of the laparoscopic method – analyzed questionnaire SF36 results filled in before and after the surgery are presented in the tab. 2.

Subjective comparative evaluation of the quality of life – expressed directly by the patients three months after surgery

The growth in value of both physical and mental components as well as of general quality of life was ascertained after the laparoscopic surgical procedure $\Delta PCS_{B}=10.9$; $\Delta MCS_{B}=4.7$; $\Delta QOL_{B}=15.7$ (fig. 3 and 4).

Comparison of the quality of patients’ life after the classical and laparoscopic cholecystectomies

Table 1. The results of the questionnaire SF36 completed by patients in group A

<table>
<thead>
<tr>
<th>Categories and components of the form SF36</th>
<th>The median before surgery</th>
<th>Range</th>
<th>The median after surgery</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>PF</td>
<td>77.6</td>
<td>0-100</td>
<td>89.1</td>
</tr>
<tr>
<td>Role physical</td>
<td>RP</td>
<td>45.8</td>
<td>0-100</td>
<td>72</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>BP</td>
<td>33.4</td>
<td>0-80</td>
<td>78.4</td>
</tr>
<tr>
<td>General health</td>
<td>GH</td>
<td>57.2</td>
<td>20-97</td>
<td>65.5</td>
</tr>
<tr>
<td>Vitality</td>
<td>VT</td>
<td>55.4</td>
<td>10-95</td>
<td>66.5</td>
</tr>
<tr>
<td>Social functioning</td>
<td>SF</td>
<td>58</td>
<td>25-100</td>
<td>78.9</td>
</tr>
<tr>
<td>Role emotional</td>
<td>RE</td>
<td>83.3</td>
<td>0-100</td>
<td>90.5</td>
</tr>
<tr>
<td>Mental health</td>
<td>MH</td>
<td>65.1</td>
<td>16-100</td>
<td>73.2</td>
</tr>
<tr>
<td>Physical component summary</td>
<td>PCS</td>
<td>40.7</td>
<td>26.8-56.6</td>
<td>51</td>
</tr>
<tr>
<td>Mental component summary</td>
<td>MCS</td>
<td>47.4</td>
<td>24.2-63.9</td>
<td>50.3</td>
</tr>
<tr>
<td>General quality of life</td>
<td>QoL</td>
<td>88</td>
<td>57.6-113.1</td>
<td>101.3</td>
</tr>
</tbody>
</table>

Table 2. The results of the questionnaire SF36 completed by patients in group B

<table>
<thead>
<tr>
<th>Categories and components of the form SF36</th>
<th>The median before surgery</th>
<th>Range</th>
<th>The median after surgery</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>PF</td>
<td>78.5</td>
<td>0-100</td>
<td>94</td>
</tr>
<tr>
<td>Role physical</td>
<td>RP</td>
<td>53.3</td>
<td>0-100</td>
<td>78.3</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>BP</td>
<td>36.8</td>
<td>0-93.3</td>
<td>85.4</td>
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<tr>
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<td>GH</td>
<td>58.7</td>
<td>10-92</td>
<td>70.3</td>
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<tr>
<td>Vitality</td>
<td>VT</td>
<td>52.6</td>
<td>20-80</td>
<td>67.1</td>
</tr>
<tr>
<td>Social functioning</td>
<td>SF</td>
<td>64.9</td>
<td>0-100</td>
<td>82.3</td>
</tr>
<tr>
<td>Role emotional</td>
<td>RE</td>
<td>69.6</td>
<td>0-100</td>
<td>92.7</td>
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<td>Mental health</td>
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<td>62.3</td>
<td>16-100</td>
<td>70.9</td>
</tr>
<tr>
<td>Physical component summary</td>
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<td>27.9-49.4</td>
<td>54.2</td>
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<tr>
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<td>17.2-63.8</td>
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</tr>
<tr>
<td>General quality of life</td>
<td>QoL</td>
<td>87.9</td>
<td>52.6-108.1</td>
<td>103.6</td>
</tr>
</tbody>
</table>
ted better quality of life (21.7%), 9 patients – no change in the quality (19.6%), and one patient reported worse quality of life (2.2%) (fig. 5).

**DISCUSSION**

As it was mentioned in the introduction, cholecystectomy is one of the surgeries most often executed not only in Poland but also in the world. In 2006 it constituted almost 20% of all operations and was the most commonly performed surgery in our country (13). In Poland 2.8 million people suffer from cholecystolithiasis, and 80 thousand operations are carried out annually (13, 14). In 2006 in our country 29 257 cholecystectomies were executed using classical methods, and 52 788 cholecystectomies were performed with the use of laparoscope, which makes altogether 82 045 surgical interventions of the gall-bladder removal. In comparison to the previous years a constant inclination to the growth of percentage of laparoscopic surgeries can be observed and gradual decrease in the number of classical surgeries (13).

The evaluation of the quality of life of patients after cholecystectomies was the main issue of this thesis. A statistically significant increase in the quality of life among patients treated by either method was affirmed. The rise was noted in all components that is in physical (PCS) and mental (MCS) and in general quality of life (QoL). What is more, this growth was observed not only in the results of the question-
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naire SF36 but it was also statistically confirmed in a subjective opinion about the quality of life expressed directly by the patients. After analyzing the outcomes of the questionnaire SF36, the largest growth of value was affirmed in the category of Bodily Pain (BP).

In literature there are many publications concerning this issue, however, the authors have not encountered any reports based on the population of Polish patients. In the available publications concerning the quality of life in case of cholecystolithiasis, researchers focus on and analyze such aspects as influence of the conservative treatment and different methods of surgical treatment.

In his research Vetrhus et al. compared the occurrence of bodily pains and the quality of life of patients with cholecystitis treated conservatively and surgically. He did not affirm any statistically significant differences in estimating bodily pains as well as the quality of life in both groups of patients (15). The researchers received similar results comparing the quality of life of patients with symptomatic uncomplicated cholecystolithiasis (16). Quintany and co-workers made an important observation by analyzing the impact of age and gender on the quality of life after cholecystectomy. Having assessed the influence of age, the authors stated that the growth of the quality of life after cholecystectomy was smaller among the older people than among the group of younger patients. Both among women and men a lower level of the quality of life was observed before surgery, while after the surgical treatment of cholecystolithiasis, the level of it increased (17).

Some authors draw attention to much bigger growth of the quality of life after cholecystectomy in case of patients with symptomatic cholecystolithiasis compared to asymptomatic cholecystolithiasis (18).

Finan and co-workers carried out research evaluating the quality of life after laparoscopic cholecystectomy and its influence on symptoms of alimentary canal. It was affirmed that after the laparoscopic cholecystectomy symptoms of the alimentary canal diminish and general quality of life increases (19).

Other authors presented similar results and they also approved a significant increase in the quality of life after laparoscopic cholecystectomy six weeks after operation (20).

After analyzing the quality of life of patients with chronic cholecystitis with or without calculosis, a statistically significant increase of the quality of life in both groups of patients after the laparoscopic cholecystectomy was confirmed (21).

Whereas, Chen and co-workers carried out the analysis of the quality of life in different periods after cholecystectomy with regard to the method of surgical intervention (classical or laparoscopic). In the group of patients treated in a laparoscopic way, they observed diminishing of the quality of life during the second week after the surgery, and subsequently a meaningful increase from the fifth to the sixteenth week after the operation. In the group of patients treated with the use of classical surgery some decrease of the QoL was also observed in the second week after the operation. A recovery to the level before surgical intervention was noticed in the tenth week after it, and subsequently a significant increase in the quality of life in the sixteenth week after the operation. In general, greater and faster increase in the QoL was observed after the laparoscopic cholecystectomy compared to the classical method (22).

This conclusion has been confirmed by the results of our research in which we also observed a larger increase in general quality of life after the laparoscopic surgery compared to the classical surgery. The difference was much

Fig. 5. Comparison of the results of Subjective Quality of Life between groups A and B
more visible in the physical component rather than in the mental component.

In a consensus published in 2004, the European Association for Endoscopic Surgery recognized the laparoscopic method as the one which improves life much more than the classical cholecystectomy (12). Researches by other authors approve this opinion, especially Topcu’s work, in which he proved superiority of the laparoscopic surgical intervention in relation to the quality of life in long-term observation (23, 24).

Velanovich compared the change of the quality of life after the classical and laparoscopic surgeries using the questionnaire SF36. In the group of patients who underwent the laparoscopic cholecystectomy, he affirmed better results in the following categories of the questionnaire SF36: physical functioning, vitality and bodily pain. Whereas, in the group of people exposed to the classical method he did not observe any statistically significant difference in post-operative values of individual categories. Additionally, the group of patients treated by the laparoscopic method received much better results in the category of bodily pains (25).

Barkun et al. confirms the improvement of the quality of life among patients after both methods of cholecystectomies and he notices a faster increase of it after the laparoscopic surgery and observes higher acceptance of this method among patients (26).

However, not in all publications authors express a similar opinion. Analyzing the impact of surgical methods on the quality of life, Quintana states similar growth of the quality of life after each method respectively three months after the surgery (27).

Ludvig and co-workers acknowledged a quicker return to physical activity after the laparoscopic cholecystectomy than after the classical cholecystectomy, however, they did not prove any statistically important differences in either group (28). Whereas, Mallon and co-workers, comparing post-operative quality of life among patients after the classical and the laparoscopic surgical interventions in their research, also did not observe any statistically significant differences in the general quality of life (29).

A separate important problem is analyzing the quality of life among patients with disability of bile ducts after cholecystectomy. Among patients participating in the research there was no case of damaging bile ducts. Using the laparoscopic method entails the risk of complications in this area thus every surgeon applying this method has to take it into account. The frequency of this complication is estimated between 1 to 3 in one thousand cases (30).

In literature one can encounter numerous publications concerning this issue. Most authors unanimously notice that as a result of disability of bile ducts the rate of morbidity and mortality grows, and they draw attention to the necessity of quick diagnosis and proper treatment in an experienced health centre (31-34).

Sarmiento and co-workers conducted another research of the quality of life among patients after the reconstruction of bile ducts due to intra-operation damage during laparoscopic cholecystectomy five years after surgery. They admitted that the level of the QoL was comparable to a control group consisted of people after uncomplicated laparoscopic cholecystectomy (35).

Other authors observed a lower quality of life only in the category of emotional health, whilst, social and physical functioning were comparable to a control group also consisting of patients after uncomplicated laparoscopic cholecystectomy (36).

A bit different results were presented by Boerma and co-workers, who claimed that despite perfect patient’s functioning after successful surgical reconstruction of bile ducts, their disability had a great impact on both mental and physical components of the quality of life even in long-term observations (37).

On the other hand, in some publications, authors observed unfavorable impact of bile ducts damage on the quality of patients’ life evaluated with the help of the following forms: Karnofsky Performance Scale, SF 36, and Psychosocial Adjustment to Illness Scale (38).

In recent years interest in the quality of life in evaluating the effects of different methods of treatment has increased. The present thesis is one of few in Poland, analyzing QoL with the use of the questionnaire SF36. As it was mentioned above, the quality of life raises both after the laparoscopic as well as the classical cholecystectomy, therefore it seems that this surgical procedure ought to be performed in case of people having any symptoms connected with cholecystolithiasis. However, the laparoscopic method is more preferred.
CONCLUSIONS

1. An increase in the life quality of patients with diagnosed cholecystolithiasis has been observed after both methods of cholecystectomy.

2. A greater increase in the quality of life analyzed by means of the questionnaire SF36® has been noted in case of the laparoscopic method especially in the physical component.

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Since 1987, i.e. since Phillipe Mouret introduced laparoscopic technique in the surgery of the gallbladder, many investigators attempted to assess quality of life after laparoscopic procedures, especially versus conventional operations. The drawback of majority of these studies was lack of randomization. The same situation occurs in the present paper. Authors compare two groups of patients – after conventional and laparoscopic cholecystectomy. They did not provide reasons why some patients underwent laparoscopic while others conventional surgery. They did not provide the time period when these procedures were performed. I do mention it here because currently patients who, for any reason, cannot undergo laparoscopic surgery, undergo conventional cholecystectomy. This creates selection bias from the very beginning. If we disregard these concerns, we must conclude what we all know or feel – laparoscopic technique provides better quality of life after the surgery.

The problem that we face is qualification of patients to this procedure. The diagnosis is based on ultrasound examination which is simple and cheap. However, it is associated with some risk. Authors do not describe a case in which some other disease was missed, cholelithiasis was diagnosed and cholecystectomy was performed. However, they did not clarify the problem of few patients who evaluated their quality of life as worse after conventional and laparoscopic procedures than before the surgery. I can only assume that such situation was present in these cases when a surgeon focused on the cholelithiasis and proceeded to cholecystectomy while the essence of disease was different.

My other concern is injury of the biliary tract during cholecystectomy. I think that this parameter should not be included in such assessment since this is a serious complication, with paramount consequences.

In summary I can say that I share the opinion of the Authors – laparoscopic procedures provide better quality of life. This applies both to cholecystectomy, which was documented by the authors, as well as other procedures such as reflux esophagitis, large intestine resection, laparoscopic liver procedures (cysts, tumors) as well as adrenalectomy and splenectomy.

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**COMMENTARY**

During the recent years we have witnessed growing interest in studies of quality of life as a criterion of analysis of treatment effects. These studies indicate that a method of treatment and satisfaction with therapy are one of the significant factors affecting assessment of treatment by the patient. Concurrently, widespread of surgical procedures using visual track and predominantly laparoscopic cholecystectomy, led to the situation that procedures of this type are currently performed commonly all over the world. This technique is more and more perceived by patients as safe and commonly considered less invasive than conventional procedures. Most of the authors consider it a first line treatment of cholecystolithiasis. Thus it may seem a little strange to qualify patients to undergo conventional cholecystectomy.

After reading this paper, I have several comments and notes. This study is interesting because it touches on a currently in vogue subject of assessment of quality of life in patients before and after a surgical procedure, basing on American, commonly known questionnaire (SF-36). The advantage of this and similar questionnaires (e.g. SF-12, NHP-Nottingham Health Profile, SIP-Sickness Impact Profile) is their comparability. Their drawback is risk of missing some aspects of quality of life, related to a particular medical condition. These are general, universal questionnaires intended for overall assessment of patient’s health. It would probably be interesting if Authors used an extended questionnaire, modified by themselves for the purpose of this study.

The Authors conclude that there are no significant differences with respect to subjective assessment after the surgical procedure, between the two study groups, while according to the patients, 3 months after the procedure, quality of life is better after the laparoscopic cholecystectomy. These are perfectly known observations and reported worldwide several decades ago. Currently it is obvious that patients after laparoscopic cholecystectomy feel better hours and days after the procedure as compared to patients undergoing conventional cholecystectomy. And this is the main argument for the laparoscopic method. The drawback of this study is lack of clear selection criteria to respective, comparable groups of patients. Were the patients randomized to respective treatment groups and assigned to elective procedures, excluding acute cases? Was the conventional cholecystectomy group composed mainly from acute patients? This is important for the study conclusions. Patients undergoing emergency surgery will treat their operation and convalescence period (sometimes very long) as a serious condition and adverse life episode. While patients undergoing an elective surgery (i.e. patients who are mainly or always qualified to undergo laparoscopic surgery) will perceive the surgery itself and postoperative period as something more beneficial.

Generally, this study provides not much added information. The only valuable data is information indicating smaller rate of biliary tract injury during conventional surgery versus laparoscopic procedures. Despite obvious benefits of laparoscopic technique as a less invasive method, we must remember that in many cases conventional cholecystectomy remains a essential supplement and sometimes the only treatment method of symptomatic cholecystolithiasis.

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