



The effect of laparoscopy in chronic pelvic pain on quality of life

Servet Şekeryapan ÇALIKOĞLU , Melike DOĞANAY , Duygu TUĞRUL*, Burak ERSAK,
Mahmut Kuntay KOKANALI 

University of Health Sciences, Zekai Tahir Burak Women Health Care, Training and Research Hospital, Ankara, Turkey

Received: 09.07.2021

Accepted/Published Online: 26.07.2021

Final Version: 01.01.2022

Abstract

Chronic pelvic pain (CPP) is a problem facing gynecologists. Laparoscopy is a minimally invasive surgical technique used for both diagnosis and treatment of CPP. This study aimed to investigate the determination of women with pelvic pain who will benefit from diagnostic laparoscopic surgery and its effect on quality of life. A prospective designed study conducted between October 2013 - August 2015 including 90 patients at University of Health Sciences, Zekai Tahir Burak Women Health Care, Training and Research Hospital, Turkey. While 45 patients in reproductive age with complaints of non-cyclic pelvic pain for more 6 months constituted the study group, 45 patients with no active complaints who admitted for laparoscopic tubal ligation constituted the control group. Short Form-36 (SF-36) and Visual Analog Scale (VAS) Questionnaire was applied to patients in preoperative and postoperative periods. While VAS score in study group patients before surgery was $6,91 \pm 0,92$, it was $4,33 \pm 1,64$ after surgery ($p < 0.001$). In addition, there were statistically significant difference between SF-36 Physical Health and SF-36 Mental Health scores before and after surgery. There was a significant improvement in quality of life in the study group. Laparoscopic approach should be preferred for direct visualization and immediate treatment in patients with CPP. Laparoscopy keeps its importance for patients with CPP, improving quality of life.

Keywords: chronic pelvic pain, laparoscopy, quality of life, surgery

1. Introduction

Pain has been described as an unpleasant emotional sensation that originates from a specific part of the body, is related to tissue damage or not, and is also related to the past experiences of the person (1). New theories in the perception of pain emphasize the importance of emotional, environmental, and cognitive factors as well as physical factors. These "Biopsychosocial models" recognize that chronic pain is the result of complex relationships, each of which can affect the other, such as sensory stimulation, psychological factors, and socio-environmental factors (2). Although there is no generally accepted definition of chronic pelvic pain (CPP), it is one of the most complex problems facing gynecologists (3). It has been defined as pain felt in anatomical pelvis, anterior abdominal wall that fits under the umbilicus, lumbosacral region and hips for at least 6 months which disrupts the quality of life and is severe enough to need medical assistance (2, 4-6). On the other hand, this definition is not very useful in clinical practice and is rarely used.

There may be many different disorders of visceral or somatic origin in the etiology of CPP. The wide scope of etiology causes confusion in the diagnosis and treatment of patients who apply to gynecology clinic. Depression, anxiety, low quality of life, low productivity, decreased energy, sexual

dysfunction and relationship problems were thought to be associated with CPP (7,8). Despite focused anamnesis and examinations, most of the reasons remain unclear and patients leave the polyclinics unsatisfied (5). Therefore the diagnostic treatment should be planned in a multidisciplinary manner.

Nowadays laparoscopy, which is a minimally invasive surgical technique used for both diagnosis and treatment, is thought to be the most important diagnostic tool in determining the CPP (6,9,10). In line with the developing technology and possibilities, it has gained an important place. While the rate of laparoscopy performed for CPP was 17% in 1987, this rate has reached 40% these days. It also accounts for 20% of hysterectomies performed for benign reasons (3,5,11). When the literature is examined, it is seen that there are few studies on the effect of laparoscopy on quality of life, especially in women of reproductive age, despite the high cost. Although some studies have shown that, laparoscopy has a positive psychological effect on CPP (12), the other studies indicated that laparoscopy do not affect either pain symptoms or quality of life in the long term and over half of women with CPP still take analgesics and have reduced quality of life (3,13).

In this study, it was aimed to determine the effect of laparoscopy in CPP on quality of life. In addition it was planned to evaluate the organic pathologies in patients who underwent diagnostic laparoscopy in the reproductive age with a pre-diagnosis of CPP, and to select patients who would benefit from surgery.

2. Materials and Methods

After receiving approval from the institutional review board, the medical records of consecutive patients who were admitted to Ankara Dr. Zekai Tahir Burak Women's Health Training Research Hospital gynecology outpatient clinic between October 2013 and August 2015 were reviewed. The study was performed in accordance with the 1964 Helsinki declaration and ethical permission has been obtained. While patients who applied with the complaint of chronic pelvic pain and underwent laparoscopy were defined as the study group, patients who had laparoscopic tube ligation for contraception without any complaints were defined as the control group.

The diagnosis of CPP was accepted as pain felt in anatomical pelvis, anterior abdominal wall that fits under the umbilicus, lumbosacral region, and hips for at least 6 months (7). Patients' age, obstetric and gynecological history, initial clinical symptoms, laboratory, and transvaginal imaging findings were recorded as study parameters. Patients who had gastroenterological, musculoskeletal, urological, or psychiatric diseases, those with cardiovascular system and pulmonary disease that would constitute absolute contraindications to laparoscopy, and those with morbid obesity were excluded from the study. The Short-Form 36 (SF-36) quality of life scale and the Visual Analog Scale (VAS) were administered to the patients before the laparoscopy operation and 6 months after the operation (14). The patients in the study group were evaluated within the scope of the pelvic pain assessment form created by the International Pelvic Pain Association (15).

During conventional laparoscopy under general anesthesia, the uterus, bilateral ovaries, tubas, douglas, sacrouterine ligaments and pelvic side walls were evaluated and pathological areas were sampled. The patients were invited for examination in the 6th postoperative month. The primary outcome was relief of pain after treatment and detection of the most common pathologies in the reproductive age, and the secondary outcome was the changes in quality of life.

Data were analyzed via SPSS version 22.0 (SPSS Inc., Chicago, IL, USA). Pearson's Chi-Square Test and Fisher's Exact Test were used to evaluate categorical variables. Normal distribution of the variables was evaluated using visual (histogram and probability graphs) and analytical methods (Shapiro-Wilk Test). Student's T Test for statistical significance between two independent groups and Paired Sample T Test for significance between two dependent

groups were used for variables with normal distribution. For the variables found to be non-normal distribution; Mann-Whitney U Test was used as statistical method for significance between two independent groups, and Wilcoxon Signed-Ranks Test between two dependent groups. According to the results of laparoscopy, the sensitivity, specificity, positive and negative predictive values and accuracy of the pelvic examination and USG results were calculated. A p value of less than 0.05 was taken to be significant.

3. Results

For this study, 45 patients admitted to the hospital with the diagnosis of CPP and 45 patients who had laparoscopic tube ligation for contraception without any complaints were determined. While the mean age of the study group patients was 37.84±5.49 years, it was 37.27±4.05 years in the control group (p=0.226). There were no significant differences between the groups in terms of body mass index (BMI), status of education, profession, chronic disease status. Furthermore, diseases present in patients with chronic diseases, history of operation and type of surgery in patients with a history of surgery were similar between the groups (Table 1).

Table 1. Demographic and descriptive data of patients

Age	Study Group (n=45)	Control Group (n=45)	p
Age	37.84±5.49	37.27±4.05	0.226 ^a
Body Weight (kg)	70.38±10.82	73.78±8.98	0.108 ^b
Height (cm)	162.31±5.30	163.80±5.88	0.210 ^b
BMI (kg/m ²)	26.71±3.96	27.52±3.25	0.293 ^b
Status of Education			
Primary School	22 (48.9)	15 (33.3)	0.512
Middle School	7 (15.6)	10 (22.2)	
High School	11 (24.4)	14 (31.1)	
College/ University	5 (11.1)	6 (13.3)	
Profession			
Housewife	27 (60.0)	25 (55.6)	0.699
Teacher	3 (6.7)	6 (13.3)	
Slogger	8 (17.8)	6 (13.3)	
Officer	7 (15.6)	8 (17.8)	
Chronic Disease Status			
None	26 (57.8)	32 (71.1)	0.186
Yes	19 (42.2)	13 (28.9)	
Diseases Present in Patients with Chronic Diseases (n=32)			
Depression	9 (47.4)	5 (38.5)	0.871
Asthma	2 (10.5)	2 (15.4)	
Migraine	4 (21.1)	2 (15.4)	
Hypertension	4 (21.1)	4 (30.8)	
History of Operation			
None	33 (73.3)	25 (55.6)	0.078
Yes	12 (26.7)	20 (44.4)	
Type of Surgery in Patients with a History of Surgery (n=32)			
Laparotomy	8 (66.7)	14 (70.0)	0.998 ^c
Laparoscopy	4 (33.3)	6 (30.0)	

^aMann-Whitney U Test; ^bStudent's T Test; ^cFisher's Exact Test
Values were presented as mean±standard deviation and number (%)
BMI: Body Mass Index
p<0.05 was considered statistically significant

Table 2. Distribution of some pregnancy related features, duration of pain, history of pelvic inflammatory disease and treatment method of the groups

	Study Group (n=45)	Control Group (n=45)	p
Gravidity	2.87±1.41	3.84±1.41	0.002^a
Parity	2.33±1.15	3.00±1.04	0.007^a
Abortus	0.53±0.62	0.84±0.90	0.135 ^a
Duration of Pain (months)	12 (6-120)	0 (0-4)	<0.001^a
Type of Delivery			
Nulliparity	3 (6.7)	0	0.843*
Vaginal Delivery	30 (66.7)	33 (73.3)	
Cesarean Section	12 (26.7)	12 (26.7)	
Difficult Labor and Delivery History (n=87)			
None	30 (71.4)	30 (66.7)	0.631*
Yes	12 (28.6)	15 (33.3)	
Pregnancy Contraception Status			
None	10 (22.2)	11 (24.4)	0.803
Yes	35 (77.8)	34 (75.6)	
Type of Contraception Used (n=69)			
Traditional	14 (40.0)	11 (32.4)	0.150
Condom	11 (31.4)	8 (23.5)	
Intrauterine device	9 (25.7)	7 (20.6)	
Oral Contraceptive	1 (2.9)	5 (14.7)	
Other	0	3 (8.8)	
History of Pelvic Inflammatory Disease			
None	29 (64.4)	36 (80.0)	0.099
Yes	16 (35.6)	9 (20.0)	
Type of Treatment in Patients with a History of Pelvic Inflammatory Disease (n=25)			
Outpatient	12 (75.0)	7 (77.8)	0.998 ^c
Inpatient	4 (25.0)	2 (22.2)	

^aMann-Whitney U Test; ^bStudent's T Test

*Nulliparous patients were excluded from the statistical analysis.

Values were presented as mean±standard deviation, median (min-max) and number (%)

p<0.05 was considered statistically significant

The gravidity and parity were higher in the study group than in the control group. Furthermore, duration of pain was significantly more in the study group (12 (6-120) months vs 0 (0-4) months) (p<0.001). However, there were no significant differences between the groups in terms of history of pelvic inflammatory disease and treatment method of the groups (Table 2). The percentage of patients with ovarian cysts in the study group was significantly higher than the control group. On the other hand, there was no statistically significant difference in terms of adhesions, paratubal cysts and myomas because of laparoscopy (p> 0.05) (Table 3).

Table 3. Laparoscopy results of the groups

Laparoscopy Results	Study Group (n=45)	Control Group (n=45)	p
Ovarian Cyst	17 (37,8)	7 (15,6)	0,017
Adhesion	12 (26,7)	5 (11,1)	0,059
Paratubal Cyst	3 (6,7)	2 (4,4)	0,998 ^a
Myoma	1 (2,2)	1 (2,2)	1,000 ^a

Values were presented as number (%)

^aFisher's Exact Test

In table 4, VAS of the groups before surgery is shown. The visual analogue scale score was significantly more in the study group than in the control group (6.91±0.92 vs 2.09±1.58) (p<0.001).

Table 4. Visual Analogue Scale (VAS) of the Groups Before Surgery

	Study Group (n=45)	Control Group (n=45)	p*
	$\bar{X} \pm SD$	$\bar{X} \pm SD$	
VAS Score Before Surgery	6.91±0.92	2.09±1.58	<0.001

\bar{X} : Mean; SD: Standard Deviation

*Mann-Whitney U Test

VAS: Visual Analogue Scale

Values were presented as mean±standard deviation

p<0.05 was considered statistically significant

While VAS score in study group patients before surgery was 6,91±0,92, it was 4,33±1,64 after surgery (p<0.001). In addition, there were statistically significant difference between SF-36 Physical Health and SF-36 Mental Health scores before and after surgery (Table 5).

Table 5. Visual Analogue Scale (VAS) and Short Form Survey-36 scores of the study group before and after the surgery

(n=45)	Before Surgery $\bar{X} \pm SD$	After Surgery $\bar{X} \pm SD$	p
VAS Score	6.91±0.92	4.33±1.64	<0.001^a
SF-36 Physical Health	33.77±10.05	39.83±10.33	<0.001^b
SF-36 Mental Health	36.90±9.90	41.14±9.25	<0.001^b

\bar{X} : Mean; SD: Standard Deviation

VAS: Visual Analogue Scale

SF-36: Short Form Survey

^aWilcoxon Test; ^bPaired T Test

Values were presented as mean±standard deviation

p<0.05 was considered statistically significant

4. Discussion

Chronic pelvic pain is one of the most common complaints in gynecology. CPP, which may be of pathological, physiological, or psychological origin, is not always easy to evaluate and the results can be troublesome for both the doctor and the patient. The absence of a pathological finding on physical examination and the tendency to establish a relationship between pelvic pain and psychogenic origin generally lead to inappropriate orientation of patients and temporary symptomatic treatment methods. Although one can have an idea about the female genital organs with bimanual pelvic examination, it is an indisputable fact that it cannot be as accurate as a diagnosis made with laparoscopy under direct observation. The appropriate treatment of CPP can shorten

the duration of pain and increase quality of life, resulting in less morbidity and cost. In addition, it reduces the workload of the clinician.

Laparoscopy offers a key advantage over the medical treatment allowing definitive histologic diagnosis and surgical treatment in one procedure. Therefore, it is very useful. However, despite these there is no consensus on this subject in the literature. Also, there is little research on this subject. In this study, the preoperative VAS scores of those in the study group were found to be significantly higher than the control group. Also, the postoperative VAS scores of the patients in the study group were found to be decreased significantly while SF-36 physical health and SF-36 mental health scores increased significantly.

The results of the studies investigating the effect of laparoscopy in CPP are controversial. Furthermore, there is little research focusing on long-term outcome after laparoscopy that uses standardized measures to evaluate quality of life. While some studies have reported a reduced quality of life up to 2 years after laparoscopy (13) and found a lack of evidence of benefit with high rate of negative laparoscopy findings (16) the others indicated that laparoscopy improves quality of life in patients with CPP (17).

Similar our study, in a study by Swanton et al. pain scores of 39 patients with CPP before and after laparoscopy were evaluated. VAS was used to evaluate the pain scores. And significant decreases were observed in the pain scores of the patients before and after the operation (18).

Moreover, in a prospective randomized controlled trial, laparoscopy has been shown to be superior to medical therapy in the treatment of mild to moderate endometriosis over a 6-month period. Also in this study, although where endometriosis cannot be completely removed, it has been shown that 50% of the patients had less pain. It may be thought there is also a significant placebo response to surgical treatment (19). That the decrease in the pain scores of patients with normal genital findings can be explained by the placebo effect of laparoscopy in our study too. This placebo effect, which may be due to peritoneal cavity insufflation, anesthesia, or painkillers, has been reported to provide symptomatic improvement for up to six months (20). In addition, in the current study, in the group of patients for whom we could not detect organic pathology and whose complaints continued, a multidisciplinary approach was preferred after necessary interviews.

Whereas the routine use of laparoscopic adhesiolysis is not recommended for the management of CPP, in some studies laparoscopy has been found to be effective in the treatment of adhesive diseases. In a study of 187 cases, reduction or complete improvement in pain was observed in approximately one third of the patients after adhesiolysis (21).

In some studies, up to %85 of patients has been shown to have postoperative improvement in pain (19,22,23).

Despite the increased interest in noninvasive methods, laparoscopy under general anesthesia still maintains its importance in the investigation of CPP. However, perhaps one of the more important issues is who will do the laparoscopy and the information must be carefully recorded. Surgeons who perform laparoscopy for chronic pelvic pain should be able to complete laparoscopy in sufficient time and in good standards in diseases such as endometriosis, adhesions, ovarian cysts, and hydrosalpinx. In addition, the surgeon should follow up the patient after the operation by keeping a multi-disciplinary approach. One of the strengths of this study is that the surgery was performed by expert surgeons who went through the same training process. This research focused on long-term outcome after laparoscopy using standardized measures to evaluate quality of life. In addition, careful patient selection was done excluding patients with high-risk anesthetic profile, strong preoperative suspicion for severe intra-abdominal adhesions, or history of psychiatric disorders.

Although there are several limitations to this study, we believe it may be valuable for the literature. Once, a relatively small number of subjects may limit the reliability of data. Moreover, the current study is limited to provide results that depict the general reproductive age female population. Visual analogue scale of the groups before surgery was shown. However, VAS and SF-36 physical and mental health scores of the control group after surgery were not determined.

In conclusion, in this current study, a significant increase in quality of life has been observed in patients with CPP after the surgery. We think, each patient should be evaluated individually and if an underlying gynecological pathology is considered, laparoscopic approach should be preferred in terms of direct diagnosis and simultaneous treatment. Although the diagnoses made by laparoscopy vary according to the selected patient population and the accepted definition of CPP, diagnostic laparoscopy still maintains its importance in the diagnosis of CPP. However, further studies in larger populations are needed.

Conflict of interest

The authors declare that they have no conflict of interest.

Acknowledgments

We are grateful to participants for their voluntary participation in this research.

References

1. Treede R-D. The International Association for the Study of Pain definition of pain: as valid in 2018 as in 1979, but in need of regularly updated footnotes. *Pain reports*. 2018;3(2).
2. Reiter RC. Evidence-based management of chronic pelvic pain. *Clin Obstet Gynecol*. 1998;41(2):422-435.
3. Cox L, Ayers S, Nala K, Penny J. Chronic pelvic pain and

- quality of life after laparoscopy. *Eur J Obstet Gynecol Reprod Bio.* 2007;132(2):214-219.
4. Howard FM. Chronic pelvic pain. *Obstet Gynecol.* 2003;101(3):594-611.
 5. Howard FM. The role of laparoscopy in the chronic pelvic pain patient. *Clin Obstet Gynecol.* 2003;46(4):749-766.
 6. Lamvu G, Tu F, As-Sanie S, Zolnoun D, Steege JF. The role of laparoscopy in the diagnosis and treatment of conditions associated with chronic pelvic pain. *Obstet Gynecol Clin North Am.* 2004;31(3):619-630.
 7. Haggerty CL, Schulz R, Ness RB, Investigators CHPS. Lower quality of life among women with chronic pelvic pain after pelvic inflammatory disease. *Obstet Gynecol.* 2003;102(5):934-939.
 8. Mathias SD, Kuppermann M, Liberman RF, Lipschutz RC, Steege JF. Chronic pelvic pain: prevalence, health-related quality of life, and economic correlates. *Obstet Gynecol.* 1996;87(3):321-327.
 9. Howard FM. The role of laparoscopy as a diagnostic tool in chronic pelvic pain. *Ballieres Best Pract Res Clin Obstet Gynaecol.* 2000;14(3):467-494.
 10. Howard FM. The role of laparoscopy in chronic pelvic pain: promise and pitfalls. *Obstet Gynecol Surv.* 1993;48(6):357-387.
 11. Farquhar CM, Steiner CA. Hysterectomy rates in the United States 1990–1997. *Obstet Gynecol.* 2002;99(2):229-234.
 12. Elcombe S, Gath D, Day A. The psychological effects of laparoscopy on women with chronic pelvic pain. *Psychol Med.* 1997;27(5):1041-1050.
 13. Doyle DF, Li TC, Richmond MN. The prevalence of continuing chronic pelvic pain following a negative laparoscopy. *J Obstet Gynaecol.* 1998;18(3):252-255.
 14. Hawker GA, Mian S, Kendzerska T, French M. Measures of adult pain: Visual Analog Scale for Pain (VAS Pain), Numeric Rating Scale for Pain (NRS Pain), McGill Pain Questionnaire (MPQ), Short-Form McGill Pain Questionnaire (SF-MPQ), Chronic Pain Grade Scale (CPGS), Short Form-36 Bodily Pain Scale (SF-36 BPS), and Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP). *Arthritis Care Res (Hoboken).* 2011;63 Suppl 11:S240-252.
 15. Lamvu G. Abstracts from the International Pelvic Pain Society (IPPS) Annual Scientific Meeting on Pelvic Pain 2019. *Pain Rep.* 2020;5(2):e815.
 16. van den Beukel BA, de Ree R, van Leuven S, Bakkum EA, Strik C, van Goor H, et al. Surgical treatment of adhesion-related chronic abdominal and pelvic pain after gynaecological and general surgery: a systematic review and meta-analysis. *Hum Reprod Update.* 2017;23(3):276-288.
 17. Abdou H, Ismail ME, Elboraie HO, Abou Talib Y. Effect of Laparoscopic Adhesiolysis of Pelvic Adhesions in Management of Chronic Pelvic Pain on Quality of Life. *Evidence Based Women's Health Journal.* 2020;10(3):223-229.
 18. Swanton A, Iyer L, Reginald P. Diagnosis, treatment and follow up of women undergoing conscious pain mapping for chronic pelvic pain: a prospective cohort study. *BJOG.* 2006;113(7):792-796.
 19. Sutton CJ, Ewen SP, Whitelaw N, Haines P. Prospective, randomized, double-blind, controlled trial of laser laparoscopy in the treatment of pelvic pain associated with minimal, mild, and moderate endometriosis. *Fertil Steril.* 1994;62(4):696-700.
 20. Baker PN, Symonds EM. The resolution of chronic pelvic pain after normal laparoscopy findings. *Am J Obstet Gynecol.* 1992;166(3):835-836.
 21. Malik E, Berg C, Meyhöfer-Malik A, Haider S, Rossmannith WG. Subjective evaluation of the therapeutic value of laparoscopic adhesiolysis. *Surg Endosc.* 2000;14(1):79-81.
 22. Stout AL, Steege JF, Dodson WC, Hughes CL. Relationship of laparoscopic findings to self-report of pelvic pain. *Am J Obstet Gynecol.* 1991;164(1):73-79.
 23. Nezhat FR, Crystal RA, Nezhat CH, Nezhat CR. Laparoscopic adhesiolysis and relief of chronic pelvic pain. *JLS.* 2000;4(4):281-285.