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## GYNECOLOGY

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# A Comparative Study of Quality of Life of Patients Who Underwent Total Laparoscopic Hysterectomy and Total Abdominal Hysterectomy

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## ABSTRACT

**Objectives:** To evaluate the effect of total laparoscopic hysterectomy (TLH) on the quality of life compares to total abdominal hysterectomy (TAH) method in Thailand.

**Materials and Methods:** After approval from ethical committee was achieved, the study was conducted. Euro-quality of life five dimensions (EQ-5D) questionnaire was used to evaluate quality of life. The questionnaire was given to the patients before surgery, day 1, 7 and 28 after operation. The patients were already assigned to perform TAH or TLH by their voluntariness. General characteristics and operative procedure including complications were also recorded. Data analysis was performed by using SPSS version 22.

**Results:** Hundred cases of TAH and 102 cases of TLH were collected. Baseline characteristics, diagnosis, operative time and complication rate were not difference. Educational level and income were slightly higher in TLH group. TLH had less blood loss and shorter hospital stay and had tendency to mobilize better than TAH group. The other aspects of quality of life such as pain, self-care and doing usual activity were similar. Anxiety score in both groups were improved after the operation.

**Conclusion:** TLH can reduce blood loss, hospital stay without increasing the complications. There were slightly differences in quality of life between group and the differences were found in only short term after the operation. TLH still had the benefit on faster recovery, shorter hospital stay and less blood loss.

**Keywords:** total laparoscopic hysterectomy, quality of life, complication, EQ-5D.

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# การศึกษาเปรียบเทียบคุณภาพชีวิตของผู้ป่วยที่เข้าผ่าตัดมดลูกแบบส่องกล้องและแบบเปิดหน้าท้อง

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## บทคัดย่อ

**วัตถุประสงค์:** เพื่อเปรียบเทียบผลของการผ่าตัดมดลูกแบบส่องกล้องเปรียบเทียบกับการผ่าตัดแบบเปิดหน้าท้องต่อคุณภาพชีวิตของผู้ป่วย

**วัสดุและวิธีการ:** การศึกษานี้เริ่มทำหลังจากได้รับอนุญาตจากกรรมการวิจัย โดยใช้แบบสอบถาม EQ-5D เพื่อประเมินคุณภาพชีวิตของผู้ป่วย โดยจะแจกแบบสอบถามให้กับผู้ป่วยเพื่อประเมินคุณภาพชีวิต ตั้งแต่ก่อนผ่าตัด หลังผ่าตัด 1, 7 และ 28 วัน ในผู้ป่วยที่เข้ารับการตัดมดลูกทั้งแบบส่องกล้อง และแบบเปิดหน้าท้องซึ่งผู้ป่วยจะเป็นผู้ตัดสินใจเลือกวิธีการผ่าตัดเอง นอกจากรักษาพยาบาลที่ยังเก็บข้อมูลเกี่ยวกับการผ่าตัดและภาวะแทรกซ้อนหลังผ่าตัดอีกด้วย โดยผลการศึกษานี้จะถูกวิเคราะห์โดยใช้โปรแกรม SPSS รุ่น 22

**ผลการศึกษา:** จากผู้ป่วยที่เข้ารับการผ่าตัดแบบเปิดหน้าท้อง 100 ราย และ แบบส่องกล้อง 102 ราย พบว่า ลักษณะโดยทั่วไปของผู้ป่วย โรคที่เป็นสาเหตุให้ตัดมดลูก ระยะเวลาการทำการผ่าตัด และภาวะแทรกซ้อนนั้นไม่มีความแตกต่างกัน แต่ในกลุ่มผู้ป่วยที่เข้ารับผ่าตัดแบบส่องกล้องนั้นจะมีรายได้ และระดับการศึกษาที่สูงกว่าเล็กน้อย รวมทั้งมีการเสียเลือดที่น้อยกว่า และระยะเวลาในการนอนโรงพยาบาลสั้นกว่า ในส่วนของคุณภาพชีวิตนั้น ในกลุ่มที่ผ่าตัดแบบส่องกล้อง จะสามารถเคลื่อนไหวได้เร็วกว่า แต่ในแง่ความเจ็บปวด หรือการทํากิจวัตรประจำวันนั้นไม่ได้มีความแตกต่างกันอย่างมีนัยสำคัญ ในส่วนของความกังวลนั้นทั้งสองกลุ่มมีคะแนนหลังผ่าตัดดีขึ้นกว่าก่อนผ่าตัด

**สรุป:** การผ่าตัดมดลูกแบบส่องกล้องนั้นจะลดการเสียเลือด ลดระยะเวลาในการนอนโรงพยาบาล โดยที่ไม่ได้เพิ่มภาวะแทรกซ้อน ในส่วนความแตกต่างของคุณภาพชีวิตระหว่างกลุ่มนั้นพบเพียงเล็กน้อย และความแตกต่างนั้นเป็นเพียงระยะสั้นหลังผ่าตัด อย่างไรก็ตามการผ่าตัดผ่านกล้องยังมีประโยชน์ในแง่ของการพื้นตัวที่เร็วกว่า การนอนโรงพยาบาลที่สั้นกว่า และเสียเลือดที่น้อยกว่า

**คำสำคัญ:** การผ่าตัดมดลูกแบบส่องกล้อง, คุณภาพชีวิต, EQ-5D

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## Introduction

Hysterectomy is one of the common procedures performed by gynecologists. Hysterectomy can be performed by exploratory, laparoscopic and robotic assisted in manner. Exploratory is the most common manner to perform hysterectomy worldwide<sup>(1)</sup>. Laparoscopic hysterectomy usually refers to a hysterectomy which at least one part of the operation is undertaken laparoscopically<sup>(2)</sup>. In our study, we focused on total laparoscopic hysterectomy (TLH) which was defined as the entire operation including suturing of the vaginal vault is performed laparoscopically<sup>(2)</sup>. Nowadays, TLH is increasing its popularity. Minimally invasive surgery has various benefits such as faster recovery, shorter hospital stay and earlier return to work. Therefore, the proportion of laparoscopic to exploratory hysterectomy is increasing<sup>(3, 4)</sup>. Most of the researches focused on complications, operative time and cost of treatment<sup>(3-5)</sup>. However, quality of life is an important aspect to be concerned. There are many methods to evaluate the quality of life. Each method can be used to evaluate quality of life in different aspect. Moreover, quality of life in each community depends on cultural, social and familial supporting system.

Assessment of health quality is an abstract, subjective and difficult to measure<sup>(6)</sup>. Several questionnaires are available to measure in different aspects of health quality. The Euro-quality of life five dimensions (EQ-5D) is a simple self-administered instrument used to measure health related quality of life (HRQOL)<sup>(6)</sup>. This questionnaire assesses five socially domains including mobility, self-care, usual activity, pain/discomfort and anxiety/ depression. Each domain was classified into 5 levels starting from 1 which means the best to 5 that means the worst. Moreover, EQ-5D also accompanies by a visual analogue scale (VAS) on which the subject is asked to provide a self-assessment their own health ranged from 0 to 100 which are the worst to the best imaginable health state respectively<sup>(6)</sup>. Therefore, EQ-5D is a generic instrument intended

for use by different health professionals. EQ-5D is a holistic view of health, which includes the medical definition, as well as the fundamental importance of independent physical, emotional and social functioning. Each domain is classified into 5 steps of health quality and easily to use, interpret and compare. Therefore, EQ-5D can be used to measure quality of life of the patient in several conditions such as postoperative evaluation for patients' health. EQ-5D is already translated into Thai language. Thai version EQ-5D has been proven for reliability and acceptability of the questionnaire<sup>(7)</sup>. Because of the simply and precise of the questionnaire, it does not disturb the patient too much. Therefore, the response rate to the questionnaire is very high.

There have been some studies compared the quality of life of the patients who underwent different type of hysterectomy such as TAH (total abdominal hysterectomy) vs TLH (total laparoscopic hysterectomy) vs VH (vaginal hysterectomy) vs SLH (supracervical hysterectomy)<sup>(8, 9)</sup>. Those studies mostly performed in Western countries. Many cultural aspects, life style, social support and perceptions are different between Western and Eastern countries. Therefore, the aspect in quality of life may be different. For those reasons, this study was conducted to evaluate the quality of life of the patients who underwent TAH compare to TLH at King Chulalongkorn Memorial Hospital, Bangkok, Thailand.

## Materials and Methods

After Ethical Board Committee of Chulalongkorn University approved the protocol, the study was conducted. The recruitment and data collection were performed during August 2016 and August 2017. Sample size calculation based on the data from previous study<sup>(9)</sup> with determined  $\alpha$  error at 0.05,  $\beta$  error at 0.2. From the previous study, they found that the difference of EQ-5D score more than 5% was considered as significant. Ninety subjects per arm were required. We add 10% for dropout

rate, therefore; 99 subjects per group were collected.

Permission for the usage of EQ-5D was obtained from Euro-QOL group. EQ-5D was translated and verified into several languages include Thai language. We used Thai version of EQ-5D questionnaire to determine the quality of life of the subjects in this study.

The patients who were admitted and planned to perform TAH or TLH depended on their own decision at out patient department clinic after holistic counselling was given. However, their financial status and insurance coverage may influence their decision about the operation options. All the participants were counselled about the details of the trial and the questionnaire including follow-up visits. During preoperative period, general characteristics and clinical data of the participants were collected. Thai version EQ-5D questionnaire was given to the participants to read and answer by themselves (day 0; pre-operation). After the operation, the follow up questionnaires for day 1, day 7 and day 28 postoperation were given and the patients had to complete the questionnaires at home. The participants had to send back the entire questionnaire at follow-up visit.

General characteristics included age, parity, education, income, underlying disease and history of previous pelvic surgery. Operative data including diagnosis, pathologic report, weight of specimen, operative time, operative blood loss, conversion rate, blood transfusion and complications were also collected. Quality of life was measured with EQ-5D with VAS scale to determine their quality of life at before the operation then day 1, day 7 and day 28 postoperation.

After all data were collected, statistics analysis was performed with SPSS version 22. Unpaired t test, Chi square test, Fisher-Exact test, mean, median and percentile were used to analyze the date and presented in table or graph as appropriate.

## Results

Total 100 cases of TAH and 102 cases of TLH

were collected. Baseline characteristics of the participants including age, weight, height, body mass index (BMI), education, income, underlying disease, diagnosis and history of previous pelvic surgery were shown in Table 1. Weight, height, BMI, menopause status and diagnosis were similar in both groups. Educational level and income of TLH group were higher than TAH group. Previous pelvic surgery and age of the patients were slightly higher in TAH group. The most common reason to perform hysterectomy was myoma uteri in both groups. This study included precancerous and cancer cases. Precancerous cases included endometrial hyperplasia and CIN 3 with positive margin after proceeding excisional procedure. Cancer cases include cervical cancer stage Ia1 and early stage low risk endometrial cancer that can be treated by TAH or TLH.

Operative data and QOL data were presented in Table 2. Uterine size and operative time were not different in both groups. Blood loss was higher and length stay was longer in TAH group. Complication rate was similar. We found rectal injury one case in TAH group (1/100) and ureteric injury 1 case in TLH group (1/102). There was no conversion in this study. Transfusion rate in TAH group was 1% (blood loss 1,200 ml) and 1.96% in TLH group. For the transfusion in TLH group, one case had blood loss 800 ml and another one case had blood loss only 200 ml but she had anemia before the surgery. For the quality of life data, the less EQ-5D score means the better quality of life in that aspect. For domain 1 (mobility), TLH group had poorer score than TAH group. However, at day 1 after the operation mobility score was similar between group and TLH group was significantly higher ability to mobilize than TAH group in first week after the operation. Finally the different of mobility (domain 1) was not detected at 1 month after the operation. For domain 2 (self-care), there was no different between group in any point of time. Details of other aspects of quality of life in EQ-5D were presented in Table 2.

For VAS score, VAS in TLH group was slightly

higher than TAH in preoperative period and 1 week after the operation. However, the trend of VAS score in day 1 and day 7 after the operation decreased

from the preoperative baseline and then finally achieved higher VAS score in 1 month after operation in both groups.

**Table 1.** General characteristic of the population in TAH and TLH group.

Characteristic	TAH (N=100)	TLH (N=102)	p value
Age (year): Mean (SD)	45.7 (9.2)	48.8 (7.5)	0.008
Weight (Kg): Mean (SD)	58.4(12.1)	59.5 (12.4)	0.547
Height (cm): Mean (SD)	157.2 (4.8)	157.9 (5.2)	0.378
BMI (Kg/m <sup>2</sup> ): Mean (SD)	23.7 (4.8)	23.8 (4.6)	0.783
Education: N (%)			
Primary	12 (12)	5 (4.9)	
Secondary	26 (26)	20 (19.6)	
Bachelor	50 (50)	2 (2.0)	
Higher than Bachelor	12 (12)	64 (62.7)	
Income (Baht): N (%)			
< 15001	19 (19)	12 (11.8)	
15001-30000	36 (36)	17 (16.7)	
30001-50000	41 (41)	38 (37.3)	
> 50000	4 (4)	35 (34.3)	
Menopause: N (%)			
No	77 (77)	75 (73.5)	
Yes	23 (23)	27 (26.5)	
Underlying disease: N (%)			
No	58 (58)	68 (63.7)	
Diabetes Mellitus	7 (7)	5 (4.9)	
Hypertension	16 (16)	8 (7.8)	
Dyslipidemia	2 (2)	4 (13.7)	
Other (Thyroid, CA breast)	17 (17)	17 (16.7)	
Previous pelvic surgery: N (%)			
No	59 (59)	68 (66.7)	
Yes	41 (41)	34 (33.3)	
Diagnosis: N (%)			
Myoma	58 (58)	65 (63.7)	
Adenomyosis	4 (4)	15 (14.7)	
Ovarian cyst	17 (17)	2 (2.0)	
Premalignant and malignant lesions*	21 (21)	20 (19.6)	

\* Premalignant lesions included CIN I, II, III and Endometrial hyperplasia; Malignant lesions included cervical cancer stage Ia1 and early stage low risk endometrial cancer

**Table 2.** Surgical outcome and quality of life of the patients in TAH and TLH group.

	<b>TAH (N=100)</b>	<b>TLH (N=102)</b>	<b>p value</b>
Uterine size (g): Median (range)	195 (126-390)	214 (124-316)	0.234
Operative time (min): Mean (SD)	89.5 (37.7)	98.1 (27.7)	0.067
Estimate blood loss (ml); Median (range)	200 (85-300)	100 (50-200)	< 0.05
Length of stay (d): Mean (SD)	3.78 (1.06)	2.68 (0.73)	< 0.05
EQ-5D Day 0 (preoperative): Mean (SD)			
D0-1 (mobility)	1.01 (0.17)	1.11 (0.40)	0.024
D0-2 (self care)	1.10 (0.41)	1.07 (0.38)	0.575
D0-3 (usual activity)	1.13 (0.56)	1.06 (0.31)	0.265
D0-4 (pain/ discomfort)	1.53 (0.95)	1.23 (0.55)	0.007
D0-5 (anxiety/ depression)	1.71 (1.05)	1.31 (0.73)	0.002
VAS Day 0: Mean (SD)	76.95 (17.94)	83.16 (13.86)	0.006
EQ-5D Day 1 (after operation): Mean (SD)			
D1-1 (mobility)	2.45 (1.23)	2.35 (0.96)	0.531
D1-2 (self care)	2.10 (1.26)	2.10 (0.92)	0.960
D1-3 (usual activity)	1.90 (1.11)	1.85 (0.96)	0.851
D1-4 (pain/ discomfort)	2.44 (1.08)	2.24 (0.81)	0.148
D1-5 (anxiety/ depression)	1.65 (1.10)	1.40 (0.62)	0.050
VAS Day 1: Mean (SD)	70.80 (16.72)	75.03 (14.07)	0.053
EQ-5D week 1 (day 7): Mean (SD)			
W1-1 (mobility)	1.87 (0.69)	1.60 (0.64)	0.006
W1-2 (self care)	1.36 (0.61)	1.28 (0.51)	0.342
W1-3 (usual activity)	1.75 (0.89)	1.91 (1.10)	0.253
W1-4 (pain/ discomfort)	1.84 (0.86)	1.80 (0.61)	0.732
W1-5 (anxiety/ depression)	1.36 (0.77)	1.22 (0.49)	0.139
VAS week 1: Mean (SD)	77.50 (15.71)	82.2 (13.4)	0.023
EQ-5D month 1 (day 28): Mean (SD)			
M1-1 (mobility)	1.29 (0.48)	1.26 (0.47)	0.703
M1-2 (self care)	1.06 (2.78)	1.13 (0.50)	0.239
M1-3 (usual activity)	1.15 (0.39)	1.31 (0.53)	0.013
M1-4 (pain/ discomfort)	1.31 (0.48)	1.40 (0.65)	0.256
M1-5 (anxiety/ depression)	1.25 (0.59)	1.04 (0.26)	0.002
VAS month 1: Mean (SD)	84.90 (14.61)	87.83 (12.56)	0.127

## Discussion

This study was conducted to compare quality of life of TAH and TLH patients by using EQ-5D questionnaire. In the aspect of mobility in the questionnaire reflects walking and moving abilities, patients in TAH group had better mobility score in preoperative period but the tendency of mobility score in TLH group was better than TAH group at postoperative day 1. However, there was no statistically significant at that point. The superiority of mobility score in TLH group was obviously showed in 1 week after operation. Finally, the score became similar at 1 month after the operation. From the result of several studies showed that pain in TLH was less than TAH. Therefore, the patients in TLH groups achieved faster mobility in recent post-operative period but the difference of mobility score disappeared after 1 month. This confirmed the short term benefit of TLH in mobility aspect.

For self-care aspect which represents any self-care activities such as bathing, tooth brushing and toileting, there was no different between groups in any point of time. During hospitalization (day 1 to day 3 postoperation), daily activity of the patients was usually assisted by nurse and the patient's relatives. Therefore, the interpretation of the difficulty of activity and translated into score may be interfered. After the patients went back home, Thai cultural and familial supporting system may have some influences in self-care and usual activity of the patients. In extended familial system like Thai or many Asian families, the patients usually received some assistances from their relatives to manage their self-care and daily activity during their recovery time which was different from Nuclear family system in Western countries. For that reason, the daily activity of our patients may be manipulated by their relatives. Therefore, the difficulties of daily activity in TAH and TLH which were represented by self-care score may not be significantly different. While, the nuclear family system of Western countries, the patients have to do nearly all daily and self-care activities by themselves. Without any assistant to

manage activity, the different of the score became higher because of the difficult of daily activity was clearly showed in many Western studies<sup>(2, 6)</sup>. For the usual activity which means working, reading a book or doing hobbies, there were no differences between TAH and TLH in preoperative, 1<sup>st</sup> day and the 1<sup>st</sup> week after the operation but TLH group had worse score in the 4<sup>th</sup> week after the operation. Form many data, TLH patients returned to work earlier than TAH patients. TAH patients usually got sick leave for 4-6 week after the operation, while TLH patients already returned to work at that period of the time. Therefore, the actual daily activity at one month duration may be different between groups. Unfortunately, this study did not collect some data such as return to work duration and analgesic medication consumption. Collecting these factors in future research may be required. Moreover, the aspect of social and familial support may need in-depth interview to evaluate the detail of the support in each family.

For pain and discomfort aspect, TAH group felt more pain at the baseline. After the operation, pain and discomfort between groups were not different. However, in the 1<sup>st</sup> day after the operation, the anesthetic methods may influence the pain score because TAH patients in our hospital were mostly performed under spinal anesthesia but TLH was performed under General anesthesia. Spinal opioid that was added in spinal anesthesia can reduce postoperative pain. For that reason, the benefit of TLH in less pain aspect was obscured by different anesthetic technique at 1<sup>st</sup> day after operation. For 1 week and 1 month after operation pain and discomfort score were still similar. While, TLH had higher mobility score with same pain and discomfort score at the 1<sup>st</sup> week, it may represent some different activity of the patients. For anxiety and depression aspect, TLH group had less anxiety score than TAH group before the operation. Education and information can reduce the anxiety of the patients both before and after the operation. Due to the higher educational level in TLH group, the

preoperative anxiety score in TLH was less than TAH group. Then the score was similar at day 1 and day 7 after operation. Anxiety score of both groups in postoperative period were lower than preoperative period. After successful operation, the anxious level decreased and the decline was not depended on mode of the operation.

For VAS which reflected the overall health status perception of the patients, TLH group had higher VAS score in pre-operative period and at day 7 after the operation. However, the differences of the score between groups were not detected in day 1 and day 28 after the operation. TLH had short term benefit and then the benefit was faded down after time. Our results were different from some studies such as LACE trial<sup>(9)</sup>, which claimed that TLH gave a greater improvement quality of life than TAH up to 6 months after surgery. Study of Garry, et al<sup>(2)</sup> found that laparoscopic hysterectomy had better quality of life at 6 week after surgery. On the other hand, our study result was similar to the study of Lumsden, et al<sup>(4)</sup> that found no difference at 1 month, 6 month and 1 year after surgery.

This study compared the quality of life between TAH and TLH in Thai patients and the results of our study were different from many Western studies. The different familial system and culture of taking care of the sick people by their relatives resulted on the quality of life of the patients. The results of this study can be used to counselling to the patient who is planning to performed TLH or TAH. However, there still had some limitations in this study. First, this study was not a randomized controlled trial.

The patients were not randomly assigned to perform TAH or TLH. Therefore, some baseline characteristics such as educational level and income were different between groups. For elimination these confounders in the future study, randomized controlled trial would be required to dilute the confounder effect of those factors. Second, the return to work duration should also be collected in the future study because it may have the effect on

some aspect of quality of life. Moreover, the in-depth interview may be required to evaluate the details of the factors that result in recovery of the patients.

## Conclusion

TLH may help in short term improvement in some aspect of quality of life after surgery. Long term benefit in quality of life is not significant. However, TLH still has benefits in reduce blood loss and hospital stay compare to TAH.

## Potential conflicts of interest

The authors declare no conflict of interest.

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