

Original Article

Comparison of conventional heaney technique and ten step vaginal hysterectomy technique

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Received 22 January 2023; Accepted 02 May 2023; Available online 23 May 2023

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Abstract

Aim: This study aimed to compare the conventional Heaney technique and the ten-step vaginal hysterectomy technique.

Materials and Methods: This retrospective study included 65 women who were operated vaginal hysterectomies at Kanuni Sultan Süleyman Training and Research Hospital between 1 October 2020 and 31 December 2021. Female patients aged between 40 and 85 who underwent vaginal hysterectomy for benign indications were enclosed in the study.

They were divided into two groups, Conventional Heaney's technique(CHVH Group 1) and the ten-step vaginal hysterectomy technique (TSVH Group 2). In the CHVH group, 39 were potentially eligible and 35 were included in the study. On the other hand, in the TSVH group, 33 were potentially eligible and 30 were included in the study.

Results: There were 8(22.85%) complications in the CHVH group and 4(13.33%) in the TSVH group. With the CHVH method, there were 2(5.71%) bladder perforations, 1(2.85%) converted to laparotomy, and 1(2.85%) laparotomy problem. In the TSVH approach, there was no bladder perforation, and no one converted to laparotomy. The group patients' operating times were longer in the CHVH method than in the TSVH technique, 56.6018.44 and 42.2018.63, respectively. Prolapsus uteri were the most common indication for surgery in both groups.

Conclusion: TSVH is superior to CHVH in terms of complication, and operating time, The ten-step vaginal hysterectomy technique can be used because of its low complication rates.

Keywords: Comparison, complication, heaney technique, ten-steps technique, vaginal hysterectomy

INTRODUCTION

The most common operation performed on women in gynecology is a hysterectomy. Vaginal hysterectomy was first mentioned by Soranus of Ephesus. The first successful vaginal hysterectomy was done by Recamier in 1829. In 1853, Ellis Burnham reported the first successful abdominal hysterectomy [1]. In 1989, Reich et al. [2] performed the first laparoscopic hysterectomy When compared to abdominal or laparoscopic procedures, vaginal

hysterectomy has significant advantages. It can be done under epidural anesthesia, which is especially important for elderly women who are often in high-risk groups. Despite its benefits, vaginal hysterectomy is gradually losing its dominance in the surgical repertoire and is becoming phased out in many centers [3]. According to Driessen et al. [4], the number of laparoscopic hysterectomy procedures performed in the Netherlands grew from 3% in 2002 to 10% in 2007 and 36% in 2012. According to

CITATION

Buhur A, Oncu N. Comparison of conventional heaney technique and ten step vaginal hysterectomy technique. NOFOR. 2023;2(2):26-9. DOI: 10.5455/NOFOR.2023.01.02



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the findings of a 2015 Cochrane review[5], vaginal hysterectomy was superior to abdominal and laparoscopic techniques and recommended as the first-choice procedure for benign reasons

Over the years, so many vaginal hysterectomy techniques have been developed and practiced, such as the Porges, Falk, von Theobald, Heaney, Chicago, and Joel-Cohen methods. A standardized and simplified vaginal hysterectomy technique was required to evaluate complications in surgical approaches performed in the same or different centers. Michael Stark improved and pioneered the "Ten-Step Vaginal Hysterectomy" by re-evaluating six techniques [6].

The goal of this study was to compare the conventional Heaney technique and the ten-step vaginal hysterectomy technique.

MATERIAL AND METHOD

This study retrospectively analyzed 65 female patients between the ages of 40 and 85 who were operated on for vaginal hysterectomy at Kanuni Sultan Suleyman Research and Training Hospital between October 2020 and December 2021. They were divided into two groups, (Conventional Heaney technique, CHVH, and ten steps vaginal hysterectomy (TSVH). In the CHVH group, 39 were potentially eligible and 35 were included in the study. On the other hand, in the TSVH group, 33 were potentially eligible and 30 were included in the study.

All cases were classified according to the operative technique. Demographic and clinical features were compared, such as obstetric history, previous abdominal surgery, pelvic sonography findings, complications, treatment options, and length of hospital stay.

Inclusion and exclusion criteria:

Female patients between the ages of 40 and 85 who had a vaginal hysterectomy for benign reasons were included in the study. Patients with missing file information were excluded from the study.

The night before the surgery, the patients underwent mechanical colon cleansing with a rectal enema. Cefazolin sodium a dose of one gram was administered intravenously to all patients one hour preoperatively and six hours postoperatively. For thromboembolism prophylaxis, enoxaparin at a dose of 0.4 ml was administered subcutaneously 8 hours before the procedure and continued at 24-hour intervals throughout the hospitalization.

Surgical technique;

The CHVH technique began with an incision around the vaginal wall and cervix, then separated the bladder from the uterus, opened the anterior peritoneum, opened the posterior peritoneum, cut and ligated the uterosacral ligaments, cut and ligated the cardinal ligaments, ligated uterine vessels, delivered the uterine fundus outward, cut and ligated the tubo-ovarian and round ligaments, removed the surgical specimen. The round ligament and uterosacral-cardinal peduncles were fixated to the vaginal mucosa, reperitonized, and closed the vaginal mucosa [7].

The TSVH technique began with an incision around the vaginal

wall and cervix, then separated the bladder from the uterus, opened the posterior peritoneum, cut and ligated the uterosacral and cardinal ligaments together, ligated the uterine vessels, delivered the uterine fundus outward, opened the anterior peritoneum, cut and ligated the tubo-ovarian and round ligaments, removed the surgical specimen, left the peritoneum open, both sacro-uterine ligaments and paracervical tissues are connected for cul-de-sac obliteration repaired the pelvic floor, closed the vaginal wall [8].

Ethical Approval: This study conforms to the provisions of the Declaration of Helsinki and was approved by the ethics committee of Istanbul Kanuni Sultan Süleyman Training and Research Hospital KAEK/2022.09.199. Due to the study's retrospective character, the need for patient consent for both participation and publishing was waived. All patients provided written, fully informed consent before surgery. All the operations are performed by the same surgeon.

(SPSS Statistics for Windows Version 24.0 was used. The parameters distributed with normal distribution t-test was used. Independent t-test was used to compare paired groups, paired t-test was used to evaluate preoperative and postoperative variables, The parameters distributed with normal distribution explained by Mean+SD, Mann-Whitney U test was used for non-normally distributed parameters, The parameters distributed with non-normal distribution explained by Median(min-max) or median(25th-75thpercentiles). Chi-square and Fisher's exact test were used for comparisons of categorical variables. Significance and $p < 0.05$ were evaluated.

RESULTS

A total of 72 patients who underwent CHVH and TSVH surgeries in the obstetrics of a tertiary hospital between 01.10.2020 and 31.12.2021 were started in this retrospective research. Seven patients were eliminated from the trial because they were unable to complete the study or because their file information was missing. It was conducted on 65 patients. There were 4 non-participants in the CHVH and 3 in the TSVH so the CHVH technique was performed in 35 patients and the TSVH technique in 30 patients. The characteristics of the cases are shown in Table 1.

Table 1. Characteristics of patients

	CHVH	TSVH	p-value
Age, years (mean±SD)	56.32±8.85	55.18±.07	0.45
Parity, n (mean±SD)	3.84±2.09	3.74±2.06	0.99
BMI, kg/m ² (mean±SD)	26.04±2.11	25.96±2.16	0.13
Menopausal status			
Postmenopausal, n (%)	27 (30.0%)	24 (56.0%)	0.34
Premenopausal, n (%)	8 (70%)	6 (44.0%)	
Previous surgery, n(%)			
Simultaneous surgery(%)	8 (14.3%)	7 (14.0%)	0.47

SD: Standard deviation n: number, %: percentage
CHV: Conventional Heaney vaginal hysterectomy.TSVH, Ten steps vaginal hysterectomy. An Independent t-test was used to compare two groups of continuous data. The Chi-Square test was used to compare two groups of categorical data. *Statistically significant, $p < 0.05$

There was no statistically significant difference in terms of mean age, mean parity, and body mass index, outcomes of vaginal hysterectomy techniques are given in Table 2.

Table 2. Operation time, hospital stay, and complications

	CHVH n (%)	TSVH n (%)	p
Bladder perforation	2 (%5.71)	0 (0)	0.02*
Bleeding requiring blood transfusion	1 (%2.85)	1 (%3.33)	0.62
Conversion to laparotomy	1 (%2.85)	0 (%0)	0.01*
Vaginal cuff infection	1 (%2.85)	0 (%0)	0.02*
Vaginal cuff dehiscence	1 (%2.85)	1 (%4)	0.03*
Vaginal cuff bleeding	1 (%2.85)	1 (%2)	0.46
Reoperation	1 (%2.85)	0 (%0)	0.02*
Pre-operative Hb(g/dl)	11.33±1.24	11.40±1.31	0.51
Postoperative Hb(g/dl)	9.60±0.74	9.53±1.44	0.43
Operation time (min)	56.60±18.44	42.2±18.63	0.01*
Hospital stay (d)	2.2±1.3	2.3±1.3	

min: minute, d: day, NS: not significant, n: number, %: percentage
 * Significant difference by 0.05 level

There were 8 complications (22.85%) in the CHVH group and 4 (13.33%) in the TSVH group. With the CHVH technique, there were 2 (5.71%) bladder perforations, 1 (2.85%) converted to laparotomy, and 1 (2.85%) relaparotomy problem. In the TSVH group, there was no bladder perforation, no relaparotomy, and no one was converted to laparotomy. The group patients' operating times were longer in the CHVH method than in the TSVH technique, 56.6018.44 and 42.2018.63, (p=0.01) respectively). There was no significant difference between the CHVH and TSVH groups in terms of length of hospital stay 2.2±1.4 and 2.3±1.1 days respectively. (p=0.32). There was a substantial difference between the CHVH and TSVH groups in terms of bladder perforation and operation times.

DISCUSSION

There were 8 complications (22.85%) in the CHVH group and 4(13.33%) in the TSVH group. With the CHVH technique, there were 2(5.71%) bladder perforations, 1(2.85%) converted to laparotomy, and 1(2.85%) relaparotomy. In the TSVH group, there was no bladder perforation, no relaparotomy, and no one was converted to laparotomy. The group patients' operation times were longer in the CHVH method than in the TSVH technique, 56.6018.44 and 42.2018.63, (p=0.01) respectively.

TSVH is superior to CHVH in terms of bladder complication, and operative time, The ten-step vaginal hysterectomy technique is more straightforward and more applicable and has better clinical results than the classical technique.

When the steps of both vaginal hysterectomy techniques are compared, some important differences are seen.

a-In the ten-step technique, an incision is made around the vaginal

wall and cervix first, and the anterior peritoneum is not opened immediately. In the Heaney technique, the anterior peritoneum is first opened to the vaginal mucosa.

b-In the ten-step technique, the Sacro-uterine ligament and paracervical tissues are held and tied with a single maneuver. In the Heaney technique, both sacro-uterine ligaments and paracervical tissues are cut in separate steps.

c-The peritoneum is left open in the ten-step technique. In the Heaney technique, the peritoneum is closed.

d-In the Ten step technique, both sacro-uterine ligaments and paracervical tissues are connected for cul-de-sac obliteration. In the Heaney technique, it does not bind.

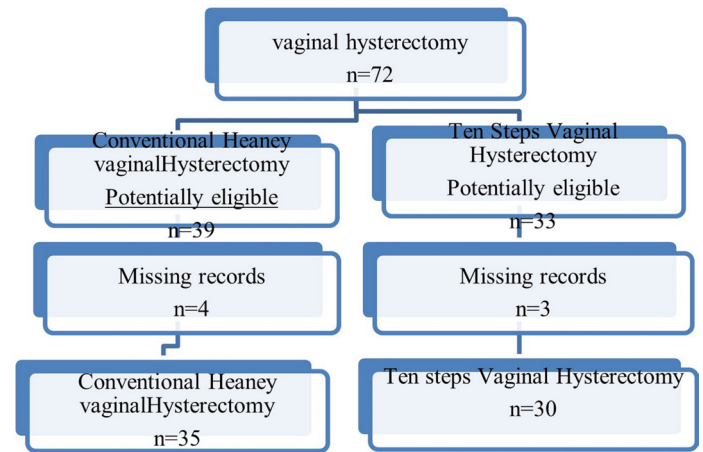


Figure 1. Flowchart of vaginal hysterectomy

Interpretation

In CHVH trying to open the anterior peritoneum first leads and increases the risk of the urinary tract complication, In the Ten step technique binding Sacro uterine ligaments and cardinal ligaments together reduces the operation time. Leaving the peritoneum open allows the mobilization of intra-abdominal organs and fewer adhesions occur. In the Ten step technique, sacro-uterine ligaments and paracervical tissues are connected for cul-de-sac obliteration and to prevent internal organ diseases.

Bina I, et al. [9]. Reported that in ten steps technique compared with other techniques, there was a short hospital stay and less blood loss. Gorkem U, et al. [10] found shorter hospital stays, less operation time, and less analgesic requirement Zoricic D, et al. [11] reported shorter.

The studies comparing the TSVH and laparoscopic hysterectomy showed that despite the wide use of laparoscopy Ten steps vaginal hysterectomy should be a particular place in gynecology practice [12,13].

Strengths and Limitations of the Study

The data were meticulously collected, and the sample size was sufficient in comparison with the studies in the literature. This study determined the consequences of experience that could be

beneficial to each group. It can not be used for malignancies, severe adhesions, or large uterus. The study was retrospective and was conducted in a single Turkish tertiary care hospital. Those limitations may limit the ability to establish causal relationships and the generalizability of the study, hospital stay, less operation time, and less analgesic requirements. In this study, we didn't find any difference in terms of blood loss but found a significantly shorter operation time.

CONCLUSION

The ten-step vaginal hysterectomy technique is more straightforward and more applicable and has better clinical results than the classical technique. TSVH is superior to CHVH in terms of complication, and operating time. The ten-step vaginal hysterectomy technique can be used because of its low complication rates. Clinical studies with larger samples are required to determine the generalizability of the study.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical approval

Approval was obtained from the Istanbul Medical Sciences Kanuni Sultan Süleyman Research and Training Hospital Ethics Committee Number: 2022.09.199.

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