Which parameters may influence the duration of hospitalization after vaginal hysterectomy?

Vajinal histerektomi sonrası hangi parametreler hastanede kalım süresini etkiler?

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Abstract

Objective: To estimate the variables that may affect the duration of hospitalization after vaginal hysterectomy.

Material and Methods: An 11-year retrospective analysis was performed on data derived from 197 patients who underwent vaginal hysterectomy due to non-malignant pathology at a tertiary care center between January 2000 to November 2011.

Results: The average age of the patients in our series was 60.9±11.1 with a duration of hospitalization of 11.6±6.1 days after vaginal hysterectomy. The grouping variables consisted of age, number of pregnancies, abortions, parities and the presence of intra or postoperative complications. Advanced age (>60), increased number of pregnancies (>5) and parities (>5) and occurrence of intra or postoperative complications were found to be correlated with the duration of hospitalization after vaginal hysterectomy. Categorical variables were analyzed by Pearson’s chi square or the Fisher exact test. The Mann Whitney U test was used to compare groups, while the correlation of variables was assessed with the Spearman Correlation Analysis.

Conclusion: Vaginal hysterectomy is a safe and effective procedure. Advanced age, increased number of pregnancies and parities and occurrence of intra or postoperative complications may prolong the duration of hospitalization after surgery. Increased experience, careful surgical technique and adherence to aseptic principles may improve the cost-effectivity and decrease the duration of hospitalization.

Key words: Pelvic prolapse, treatment, surgery, vaginal hysterectomy, duration of hospitalization

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Introduction

Hysterectomy may be performed through vaginal, abdominal or laparoscopic routes. Traditionally, vaginal hysterectomy (VH) is offered to women with symptomatic genital prolapse. It not only offers a lower complication rate, but also allows the repair of pelvic prolapse (1, 2). Reported benefits of vaginal hysterectomy compared to abdominal hysterectomy include shorter duration of hospital stay, more rapid return to normal daily activities, and fewer unspecified infections or febrile episodes (2). However, it is not still as popular as expected; possibly due to the relative lack of experience and shortage of technical facilities. Increased familiarity with outcomes of VH may help to eliminate this limitation (3).

The economic aspect of medical services cannot be ignored in the changing circumstances of the world. Duration of hospitalization constitutes an important component of cost-effectivity, which gains importance in provision of healthcare services. As far as we know, no published studies have investigated factors affecting the duration of hospitalization after VH in the literature.

Our aim was to outline parameters that may affect the duration of hospitalization after vaginal hysterectomy in our institution.
Material and Methods

Medical records of 197 patients treated surgically with VH for benign gynecological diseases in the obstetrics and gynecology department of a tertiary care center between January 2000 to November 2011 were studied retrospectively. Approval of the local Institutional Review Board had been obtained. The indication for hysterectomy was based on the criteria proposed by Dicker et al. (4).

The demographics, occurrence of intra and postoperative complications and duration of hospitalization after surgery were noted. Patients were classified into three groups with regard to duration of hospital stay after surgery: Groups 1, 2 and 3 consisted of hospitalization for 0-10 days; 11-20 days and >20 days, respectively. Descriptive data and grouping variables such as age, number of pregnancies, parities, history of abortions and occurrence of intra and postoperative complications are shown in Table 1 and Table 2.

The complications were classified according to Dicker’s criteria (4): These criteria include febrile morbidity (oral temperature >38°C measured at least 4 hours apart on any 2 postoperative days excluding the first 24 hours after the operation), hemorrhage requiring operative or postoperative blood transfusion, unintended major surgical procedures (laparotomy, repair of a perforated viscous, or unplanned repair of a major blood vessel performed intraoperatively or postoperatively during the same hospitalization due to a problem related to the hysterectomy), life-threatening events such as intraoperative or postoperative cardiac or respiratory arrest, myocardial infarct or embolus or anaphylactic shock), re-hospitalization for a complaint or problem related to the hysterectomy and death or complication leading to death occurring intraoperatively or within 42 postoperative days.

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS Inc, Chicago, IL, USA) 11.0 software for Windows. Categorical variables were analyzed by Pearson’s chi square or Fisher exact test. Mann Whitney U test was used to compare groups. Spearman Correlation Analysis was used to assess the correlation of variables.

Results

The duration of hospitalization after vaginal hysterectomy for the whole study group was 11.6±6.1 (range 4 to 41) days and was expressed in Table 1. The duration of hospitalization was 15.6±7.99 (range 8 to 41) days for the complicated group, and 9.82±3.97 (range 4 to 19) days for the uncomplicated group. Length of hospital stay was prolonged in our series because of the preoperative hospitalization of the patients for electrocardiography, chest radiography, and routine laboratory screening based on age, gender, and concomitant medical diseases. These procedures usually last for 2-4 days according to the underlying cardiovascular or respiratory diseases.

The distribution of complications according to Dicker’s criteria was shown in Table 3. Five patients (23.8%) developed febrile morbidity, four (19.1%) operative blood transfusion, two (9.5%) postoperative blood transfusion, four (19.1%) unintended major surgical procedures, three (14.3%) life-threatening cardiac or respiratory events, and three (14.3%) re-hospitalization.

Table 1. Descriptive data of our series

| Average±SD | Range |
|------------|-------|
| Age        | 60.9±11.1 | 35-81 |
| No. of pregnancies | 6.8±2.2 | 0-14 |
| No. of parities | 7.1±3.0 | 0-13 |
| No. of abortions | 0.72±1.0 | 0-5 |
| Duration of hospitalization after VH (days) | 11.6±6.1 | 4-41 |

SD: standard deviation, VH: vaginal hysterectomy

Table 2. Distribution of variables

| Variable           | n  | %  |
|--------------------|----|----|
| Age                |    |    |
| ≤60                | 78 | 39.6 |
| >60                | 119| 60.4 |
| Number of pregnancies |    |    |
| 0-5                | 52 | 26.4 |
| 6-10               | 108| 54.8 |
| >10                | 37 | 18.8 |
| Number of parities |    |    |
| 0-5                | 72 | 36.5 |
| 6-10               | 103| 52.3 |
| >10                | 22 | 11.2 |
| History of abortion |    |    |
| Yes                | 79 | 40.1 |
| No                 | 118| 59.9 |
| Intra and postoperative complications |    |    |
| Yes                | 21 | 10.7 |
| No                 | 176| 89.3 |

Table 3. The distribution of complications according to Dicker’s criteria

| Complications according to Dicker’s criteria | n (%) |
|---------------------------------------------|-------|
| Febrile morbidity                           | 5/21  (23.8%) |
| Hemorrhage requiring operative or postoperative blood transfusion | 6/21 (28.6%) |
| Unintended major surgical procedures (laparotomy, repair of a perforated viscous, or unplanned repair of a major blood vessel performed intraoperatively or postoperatively during the same hospitalization due to a problem related to the hysterectomy) | 4/21 (19.1%) |
| Life-threatening events such as intraoperative or postoperative cardiac or respiratory arrest, myocardial infarct or embolus or anaphylactic shock) | 3/21 (14.3%) |
| Re-hospitalization for a complaint or problem related to the hysterectomy | 3/21 (14.3%) |
| Death or complication leading to death occurring intraoperatively or within 42 postoperative days | 0/21 (0%) |
Analysis results showed that advanced age was correlated to the duration of postoperative hospitalization (rs=0.178, p=0.023). Duration of hospitalization was significantly prolonged in patients with >5 previous pregnancies (rs=0.225, p=0.001). No further difference was noted between durations of hospitalization of patients with 6-10 and >10 previous pregnancies (p=0.146).

Similar results were obtained for the number of parities. Patients with >5 parities were likely to be hospitalized for a longer time after surgery (rs=0.310, p<0.001). There was no difference between the durations of hospitalization of patients with 6-10 and >10 parities (p=0.426).

The presence of intra- or postoperative complications were strongly associated with the duration of hospitalization in this series (p<0.001), while a history of abortion seemed not to influence the interval for postoperative hospital stay (p=0.591). Previous surgeries were also not correlated to the duration of postoperative hospitalization (rs=0.478, p=0.267).

**Discussion**

Vaginal hysterectomy offers several advantages. In addition to the cosmetic benefit, the operating time is shorter, complications are rare, recovery is faster, and overall treatment costs are reduced (3, 5). The advent of laparoscopic hysterectomy has not changed these conclusions and it was concluded that specific guidelines should be established to replace abdominal hysterectomy not by laparoscopic hysterectomy but with vaginal hysterectomy (6, 7).

The most common indications for vaginal hysterectomy include stress urinary incontinence and pelvic prolapse. Although VH is advocated in many candidates for hysterectomy, it is not fully devoid of complications (5). In addition to complications, parameters that may affect the duration of hospitalization after VH are important for exploring the traps and pitfalls of this procedure.

Management of intraoperative and postoperative complications is important to improve the cost-effectiveness of VH. We have included nulliparous patients and those with a history of caesarean section and other pelvic surgery in our study. In our series, febrile morbidity and bladder injury were common complications. Febrile morbidity may be due to infections of the urinary tract or vaginal cuff, pelvic abscess and pneumonia (6). Bladder injury can occur in the presence of adhesions in the vesicovaginal space (7). These adhesions may be attributed to previous caesarean sections. A previous caesarean section history can be associated with higher rates of bladder injury. Bladder injuries can occur more frequently in patients without pelvic prolapse or with first-degree pelvic prolapse than in those with second- or third-degree pelvic prolapse. This can be explained by the difficulty in dissection of the vesicouterine fold (6, 7).

Maximum caution should be exercised to avoid penetration of the urinary bladder during dissection of the vesicouterine fold. Large uterine size can constitute a mechanical difficulty in vaginal hysterectomy. It may prolong the duration of the operation and increase the rate of complications during surgery (5, 7). Therefore, a large uterus can represent a contraindication to vaginal hysterectomy and an indication for abdominal hysterectomy for some gynecological surgeons.

There is no consensus about whether nulliparity, history of pelvic surgery and excessive uterine size are contraindications for vaginal hysterectomy (3, 5-7). Vaginal hysterectomy may be technically more difficult in nulliparous than in multiparous women. The vagina is narrower and the uterus is less prolapsed in nulliparous women and the operative duration may therefore be longer (6).

According to our results, aging, multiparity and presence of complications were found to prolong the duration of hospitalization. Urinary tract and vaginal infections can be sources of febrile morbidity. Aseptic technique and strict use of prophylactic antibiotics can aid the elimination of infections. Structural changes in the uterus due to aging can prolong the duration of hospitalization and increase the likelihood of complications. Multiparity can result in similar impacts and cause anatomical and physiological alterations. Awareness of potential complications in older and multiparous patients is important in preoperative planning and operative performance of the procedure.

Hospitalization after surgery sometimes can be necessary for management of pain after the procedure. Improvement of pain control methods can reduce the rate of hospitalization and its cost (8). Vaginal hysterectomy is reported to result in lower costs and utilization and more favorable functioning, pain, and activity profiles than either abdominal hysterectomy or laparoscopically assisted vaginal hysterectomy (9).

Our study has several limitations. First, interpretation of retrospective data possesses some restrictions. Second, decisions to perform vaginal hysterectomy were made by individual surgeons. Third, cost-effectiveness cannot be evaluated by duration of hospitalization alone. Other aspects like radiology, laboratory, pharmacy, nursing, and operating room costs cannot be ignored. Further studies involving these dimensions are required to reveal the actual cost-effectiveness of VH.

In conclusion, vaginal hysterectomy is an efficient treatment for uterovaginal prolapse with quick recovery and low complication rates. Advanced age, increased numbers of pregnancies and parities and occurrence of intra or postoperative complications may prolong the duration of hospitalization after surgery. Increased experience, careful surgical technique and adherence to aseptic principles may improve the cost-effectiveness of this procedure and decrease the duration of hospitalization.

**Conflict of interest**

No conflict of interest was declared by the authors.

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