Urinary Functions after Subtotal Versus Total Abdominal Hysterectomy

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Abstract

Objectives: To assess the effect of abdominal hysterectomy on urinary functions and to compare subtotal and total abdominal hysterectomy as regard urinary functions.

Study Design: Prospective study.

Patients and Methods: We randomized 50 Egyptian females candidate for hysterectomy for benign conditions to do subtotal or total abdominal hysterectomy. We assessed urinary symptoms, physical examination and urodynamic evaluation preoperatively and six months postoperatively.

Results: There was no significant difference between subtotal and total abdominal hysterectomy as regard urinary functions.

Conclusion: Hysterectomy, whether total or subtotal, did not adversely affect urinary bladder function. Thus, we cannot depend on the effect of hysterectomy on urinary functions as a matter of preference of total or subtotal type of the operation.

Key Words: Subtotal – Total abdominal hysterectomy – Urinary functions.

Introduction

HYSTERECTOMY (surgical removal of the uterus) is the most commonly performed gynecological surgical procedure. In 2010, over 430,000 inpatient hysterectomies were performed in the United States, 65 percent of hysterectomies are total abdominal, 23 percent vaginal, 10 percent total laparoscopic, and 2 percent subtotal abdominal or laparoscopic [2].

One of the observed risk factors for lower urinary tract symptoms are muscular and/or neuromuscular pelvic injury during hysterectomy [3].

It is difficult to decide whether to do a total or subtotal abdominal hysterectomy. This is because research that compares the two procedures is limited, and shows only small and conflicting differences. Subtotal hysterectomy with preservation of the cervix has been reported as a less invasive option than total (or "complete") hysterectomy. Unlike total hysterectomy, some patients with the subtotal procedure had cyclic bleeding, and all required ongoing Pap smear surveillance. Subtotal abdominal hysterectomy results in more rapid recovery and fewer short term complications but infrequently causes cyclic bleeding or cervical prolapse [4]. In general, a surgeon should choose the procedure which maximizes patient safety and best achieves the goal of the operation. Recent developments in gynecologic surgery have expanded the minimally invasive options for hysterectomy. Less invasive procedures, when possible, are typically preferable to more invasive procedures [5].

Patients and Methods

- We conducted the study at the Department of Obstetrics and Gynecology at Kasr Alini Hospital from September 2012 to March 2014. We recruited 120 Egyptian women candidate for abdominal hysterectomy for benign uterine diseases, but only 50 patients approved to be included in the study.
We obtained an informed consent from each patient before participation in the study.

The two treatment groups were similar in age, weight, parity, race or ethnic group, and indications for hysterectomy.

We did pap smear to each patient before surgery to detect any cervical pathology. We excluded patients with cervical pathology from the study.

The indications of hysterectomy were for benign conditions, e.g., symptomatic uterine fibroids (bleeding, pressure or pain), abnormal genital bleeding.

Pre-and post-operative evaluation:

We interviewed and examined the patients preoperatively and 6 months postoperative.

Subjective questionnaire to detect urinary Symptoms including:
- Diurnal frequency of micturition (voids >6 times a day).
- Nocturia (waking at night more than one time to void).
- Urge urinary incontinence (urine leakage related to a feeling of urgency).
- Stress urinary incontinence (urine leakage related to physical activity, coughing or sneezing).
- Dysuria (stinging/burning sensation).
- Hesitancy (difficulty in initiating micturition).
- Reduction of the stream (compared to previous performance).
- Sensation of incomplete bladder emptying.
- Haematuria [6].

Objective urodynamic studies: We did urodynamic evaluation for all participants in the study. We performed all urodynamic studies using AN-DROMEDA M00 101-2 ELLIPSE.

We did the following tests:

- Filling cystometry; we evaluated and compared the following parameters [7]:
  - First desire to void (the point at which the woman first experiences an awareness of the need to empty her bladder).
  - Maximum cystometric capacity (the point at which the woman can delay micturition no longer).
  - Maximum detrusor pressure reached during filling phase.

Uroflowmetry:

Where the maximum flow rate and the residual volume were identified [8].

Methods:

- The patient presented with a symptomatically full bladder. She voided spontaneously in a uroflow chair. Maximum flow rate and postvoid residual urine volume were obtained via a transurethral catheter.
- The microtransducer catheters were connected to the appropriate cables and to the tubing from the water pump.
- With the patient in the supine position on a urodynamic chair, the abdominal catheter was placed into the vagina. A dual microtransducer 6-French catheter with a filling port was then placed into the bladder. The patient was moved to a sitting position.
- After the catheters were appropriately placed, the subtraction was checked by asking the patient to cough. Cough-induced pressure spikes should be seen on the $p_{ves}$ and $p_{abd}$ channels, but not on the true detrusor pressure channel.
- The urinary bladder was filled with normal saline at room temperature with a filling rate 50-100ml/min. First desire to void and strong desire to void were recorded. Throughout the filling portion of the examination, the patient was asked to perform provocative activities, such as coughing and straining. The external urethral meatus was constantly observed for any involuntary urine loss.

Results

Table (1): Comparison between subtotal versus total hysterectomy as regard urinary symptoms before and after hysterectomy.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hysterectomy</th>
<th>Subtotal</th>
<th>Total</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary symptoms before hysterecmy:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>6 (24%)</td>
<td>4 (16%)</td>
<td>NS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>1 (4%)</td>
<td>3 (12%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysuria</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Urinary symptoms after hysterecmy:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>No</td>
<td>3 (12%)</td>
<td>3 (12%)</td>
<td>NS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>2 (8%)</td>
<td>1 (4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysuria</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

This table shows no significant difference between subtotal and total hysterectomy as regard urinary symptoms before and after hysterectomy.
This table shows significant change in urinary symptoms before and after hysterectomy by using chi-square test. Before hysterectomy, urinary frequency was present in 10 cases (20%) while after operation frequency decreased to only 6 cases (12%). Before hysterectomy, dysuria was present in 4 cases (8%) while after operation dysuria decreased to 3 cases (6%).

Table (3): Comparison between urinary symptoms before and after hysterectomy.

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary symptoms before hysterectomy:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td>Frequency</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Dysuria</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Urinary symptoms after hysterectomy:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>41</td>
<td>82</td>
</tr>
<tr>
<td>Frequency</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Dysuria</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>*p</td>
<td>&lt;0.05</td>
<td>S</td>
</tr>
</tbody>
</table>

This table shows that there is no significant difference between pre and post hysterectomy results of all variables.

Discussion

The possible consequence of different types of pelvic surgery and the function of female urogenital tract requests properly designed clinical trials to evaluate the function of the urinary bladder before and after operation. Scientific reports concerning bladder function after hysterectomy are conflicting. However, clinical observation obviously shows that many women correlate urinary incontinence with previously performed operation [9].

This study was designed to assess the influence of abdominal hysterectomy on the urinary symptoms. Also to detect if the type of operation (whether-
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A total of 50 patients were included in this study. They were divided into two groups:

Group A: 25 patients who were decided to have subtotal abdominal hysterectomy.

Group B: 25 patients who were decided to have total abdominal hysterectomy.

As regard urinary symptoms, the current study showed no significant difference between subtotal and total hysterectomy whether before or after operation. Significant decrease in urinary frequency after subtotal hysterectomy occurred. After total hysterectomy significant decrease of urinary frequency and dysuria occurred.

As regard urodynamics we found no significant difference between subtotal and total hysterectomy whether before or after operation in maximum cystometric capacity, maximum detrusor pressure, maximum flow rate and residual volume. The exception was average volume for first desire to void after hysterectomy which was higher among subtotal hysterectomy group (162.5 ±31ml) compared to total hysterectomy group (144.4 ±21ml) with significant difference. No significant difference between pre and post hysterectomy results of urodynamic parameters in both groups except maximum detrusor pressure which was significantly decreased after subtotal hysterectomy (8.5 ±3cm H2O before versus 7.4±3cm H2O after hysterectomy).

The observed postoperative improvement of urinary symptoms may be explained by removal of the uterus which caused pressure on the urinary bladder especially if there was anterior uterine wall fibroids.

Thakar and Sultan declared that simple abdominal hysterectomy and vaginal hysterectomy do not adversely affect bladder function. Furthermore, conservation of the cervix by performing a subtotal (supracervical) hysterectomy does not have advantages over total hysterectomy regarding pelvic organ function. By contrast, as radical hysterectomy involves more extensive dissection of the pelvic organs and innervation, some degree of pelvic organ dysfunction may occur [10].

On the contrary, El-Toukhy et al., (2004) conducted a study, which investigated the effect of different techniques of hysterectomy: Total abdominal, vaginal, laparoscopic or subtotal. They evaluated 187 patients aged 29-73 who underwent hysterectomy for various indications. At 6 months after surgery, urinary symptoms occurred less frequently (p<0.01) and urodynamic studies remained unchanged. Moreover, the patients reported significantly lower rates of stress incontinence (p=0.005), urgency (p=0.03) than before operation regardless of the hysterectomy technique used. Based on these findings, they concluded that simple hysterectomy, whether performed abdominally, vaginally or laparoscopically, does not adversely affect urinary function at 6 months after the surgery [11].

Also in another study, urodynamic examination was done in 20 women before and three months after abdominal hysterectomy. Increased maximum bladder capacity, increased voiding time and decreased average urethral flow rate were observed. The lower urinary tract symptoms improved after abdominal hysterectomy [12].

A meta-analysis involving a random sample of 2322 women, between 35 and 70 years showed that hysterectomy increases the odds of urinary incontinence by 30% [13].

The prevalence of micturition and defecation symptoms between different modes of hysterectomy was compared in a retrospective study by Roovers et al., they found increased prevalence of urge incontinence and feeling of incomplete evacuation in patients who had undergone vaginal hysterectomy compared to patients who had undergone total abdominal hysterectomy. However, they did not find statistically significant odds ratios between the two groups [14].

Conclusion:

Hysterectomy, whether total or subtotal, did not adversely affect urinary bladder function. There was improvement of urinary symptoms postoperatively. According to uroflowmetry and cystometry, the effects of total hysterectomy were different compared to subtotal hysterectomy. Yet, all of these effects were clinically insignificant. Thus, we cannot depend on the effect of hysterectomy on urinary functions as a matter of preference of total or subtotal type of the operation.

References


المлюخص العربي

قد تتأثر وظائف الجهاز البولي السفلي بجراحات الحوض وذللك نظرًا لتكامل ترابط الضغيرة العصبية للحوض وتتمير الأعصاب السبطنية والباراسبطنية التي تتلح في ملء وصرف المثانة. صممت هذه الدراسة لتقييم تأثير استئصال الرحم عن طريق البطن وساعة، كان كليا أم جزئيا على وظائف الجهاز البولي.

تم ضم خمسين مريضة إلى هذه الدراسة وتم تقسيمهم إلى مجموعتين:

• المجموعة A: تضمن 25 مريضة تقرر إجراء استئصال جزئي للرحم.
• المجموعة B: تضمن 25 مريضة تقرر إجراء استئصال كلي للرحم.

تم تقييم المريضات قبل العملية وبعد ستة أشهر من اجرائها.

أظهرت الدراسة عدم وجود فرق معنوي بين الاستئصال الجزئي والكلي للرحم في وظائف الجهاز البولي قبل وبعد اجراء العملية مع ملاحظة وجود تحسن في بعض شكاوى الجهاز البولي بعد اجراء العملية.

وبالنسبة لدمارية التبول فقط خلق من الاحساس الآل للبول كان أعلى بعد عملية الاستئصال الجزئي للرحم (21.2±17.5) مقارنة بالاستئصال الكلي للرحم (14.4±14.0) وكان هذا الفرق معنوي. كما أن الضغير الأكسلي لمحلل مثاني قد قل بصورة مؤخرة بعد عملية الاستئصال الجزئي للرحم. هذه التغيرات في وظائف الجهاز البولي عموما لم تكن ذات معنى طبيعيا.

خلال اللو القيم استئصال الرحم سواء كان كليا أم جزئيا لا يؤثر سلبا على وظائف المثانة بل عموما تحسن في شكاوى الجهاز البولي بعد العملية. كما أن الشكوى التي ترفع على تطايرات الدماغية تصل إلى مختلفة بين الطريقتين في استئصال الرحم ولكنها غير مؤثرة إكلينيكيا ولهذا فلا يمكن الاعتماد على تأثير استئصال الرحم على وظائف المثانة في التقييم بين الاستئصال الكلي والجزئي للرحم.