

## PREDISPOSING FACTORS IN THE OCCURRENCE OF COMPLICATIONS AFTER VAGINAL HYSTERECTOMY

Muhammet Erdal SAK<sup>1</sup>, Ali OZLER<sup>1</sup>, Sibel SAK<sup>2</sup>, Neval Yaman GORUK<sup>1</sup>, Talip KARACOR<sup>3</sup>, Talip GUL<sup>1</sup>

<sup>1</sup> Department of Obstetrics and Gynecology, Dicle University, Faculty of Medicine, Diyarbakır, Turkey

<sup>2</sup> Department of Maternity and Children's Hospital, Diyarbakır

<sup>3</sup> Diyarbakır Ergani State Hospital, Diyarbakır

### SUMMARY

**Objective:** To investigate the predisposing risk factors in the occurrence of complications after vaginal hysterectomy.

**Material and methods:** The data obtained from 223 patients, admitted to tertiary care center that underwent vaginal hysterectomy due to benign pathology between January 2006 and March 2012 were retrospectively analyzed. Chi-square test was used to evaluate variables in categorized groups.

**Results:** Group variables occurred age, number of pregnancies and abortion, parity, stage according to pelvic organ prolapse classification (POP-Q), periods of hospitalization and urinary catheterization. The main complications were hemorrhage, febrile morbidity and vaginal vault prolapse. Advanced age (> 60), pelvic prolapse, long-term hospitalization and urinary catheterization, were predisposing factors for the presence of complications.

**Conclusion:** Vaginal hysterectomy is a safe and effective method, although not completely devoid of intraoperative or postoperative complications. Advanced age (> 60), POP-Q stage 3-4 pelvic prolapse, prolonged hospitalization and urinary catheterization were seem to be predisposing conditions for the existence of complications. Appropriate preoperative planning and meticulous postoperative care may be helpful to reduce the rate of complications.

**Key words:** complications, predisposing factor, vaginal hysterectomy

*Journal of Turkish Society of Obstetrics and Gynecology, (J Turk Soc Obstet Gynecol), 2013; Vol: 10, Issue: 4, Pages: 226- 30*

## VAJİNAL HİSTEREKTOMİ SONRASI KOMPLİKASYONLARIN ORTAYA ÇIKMASINDA PREDİSPOZAN FAKTÖRLER

### ÖZET

**Amaç:** Vajinal histerektomi sonrası komplikasyonların ortaya çıkmasında, predispozan risk faktörlerini araştırmak.

**Gereç ve yöntemler:** Ocak 2006-Mart 2012 tarihleri arasında, üçüncü basamak sağlık merkezine başvuran ve benign patoloji nedeniyle vajinal histerektomi uygulanan 223 hastadan elde edilen verilerin retrospektif olarak analizi yapıldı. Kategorize edilen gruplar içindeki değişkenleri değerlendirmek için ki kare testi kullanıldı.

**Bulgular:** Grup değişkenleri yaş, gebelik ve abort sayısı, parite, pelvik organ prolapsus sınıflandırmasına (POP-Q) göre evreleri, hastane yatış ve üriner kateterizasyon sürelerinden oluştu. Ana komplikasyonlar hemoraji, febril morbidite ve vajinal kaf prolapsusu idi. İleri yaş (> 60), pelvik prolapsus, uzun süreli hastanede yatış ve üriner kateterizasyon komplikasyonların varlığı için predispozan faktörler idi.

**Sonuç:** Vajinal histerektomi güvenli ve etkili bir yöntem olmasına rağmen intraoperatif veya postoperatif komplikasyonlardan tamamen yoksun değildir. İleri yaş (> 60), POP-Q evre 3-4 pelvik prolapsus, uzun süreli hastanede yatış ve üriner kateterizasyon, komplikasyonların varlığı için predispozan görünmektedir. Uygun preoperatif planlama ve titiz postoperatif bakım komplikasyon oranını azaltmak için yararlı olabilir.

**Anahtar kelimeler:** komplikasyon, predispozan faktör, vajinal histerektomi

*Türk Jinekoloji ve Obstetrik Derneği Dergisi, (J Turk Soc Obstet Gynecol), 2013; Cilt: 10, Sayı: 4, Sayfa: 226- 30*

**Address for Correspondence:** Dr. Muhammet Erdal Sak, Dicle Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı, Diyarbakır  
Phone.: + 90 (533) 511 22 72  
e-mail: drmesak@yahoo.com

Received: 14 November 2012, revised: 07 May 2013, accepted: 09 May 2013, online publication: 10 May 2013

## INTRODUCTION

Hysterectomy is the most common surgical procedure unrelated to the pregnancy. It can be performed by the abdominal, vaginal or laparoscopic routes, previous history of pelvic surgery, uterine size or mobility and the surgeon's experience. Although the vaginal and laparoscopic approaches have lower rates of morbidity and a faster recovery process, up to 40% of hysterectomies are still performed abdominally<sup>(1)</sup>.

Although vaginal hysterectomy (VH) should be the preferred method in most cases, has intraoperative and postoperative complications. Its success and complication rates may be associated with nulliparity, the degree of prolapse, a history of caesarean section and pelvic surgery, endometriosis and pelvic adhesions<sup>(1-3)</sup>. The purpose of this study was to determine the predisposing factors of complications after vaginal hysterectomy in our institute.

## MATERIALS AND METHODS

This study was performed in the Dicle University, School of Medicine, Department of Obstetrics and Gynecology, after the approval of Institutional Review Board. The data obtained 223 patients with vaginal hysterectomy due to benign pathology were analyzed retrospectively between January 2006 and March 2012. Hysterectomy criteria was determined according to recommended by Dicker<sup>(4)</sup>.

Age, number of pregnancies and parities, level of pelvic prolapse, complications, durations of urinary catheterization and hospitalization after surgery were noted. Pelvic Organ Prolapse Quantification (POP-Q classification) was used staging the uterine prolapse. The distal portion of the uterus were evaluated hiymenal ring than 1cm staying above (stage I), less than 1 cm from the distal portion of the uterus that are on the ring hiymenal (stage II) or the distal part of the uterus located below the ring hiymenal (stage III and IV). The complications were classified according to the Dicker's criteria<sup>(4)</sup>. These criteria consist of febrile morbidity (oral temperature  $>38^{\circ}\text{C}$  measured at least 4 h apart on any 2 postoperative days excluding the first 24 hours after the operation), hemorrhage requiring operative or postoperative blood transfusion, unintended major surgical interventions (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, 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 Statistical Package for Social Sciences (SPSS Inc, Chicago, IL) 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 were used to assess the correlation of variables.

## RESULTS

Operation indications given in Table I. Complications, descriptive data and distribution of variables in our series are demonstrated on Tables II and III Vaginal cuff sacrospinous ligament fixation was observed in 26 (%11.6) patients. Transobturator tape procedure was applied to 17 (7.6%) patients for stress urinary incontinence. Average follow-up was 44 months (range 7-80 months). According to the chi-square test occurrence of complications in patients over 60 years of age (13.9%) under the age of 60 by the (5.7%) was significant. When we categorized the number of pregnancy and parity 0-5, 6-10 and 10 in the form of higher, there were no complications significantly associated ( $p=0.72$  and  $p=0.9$ ). Similarly whether or not the abortion did not seem to be a risk factor ( $p=0.46$ ). Longer duration of hospitalization ( $>10$  days) was significantly associated with occurrence of complications ( $p<0.001$ ). Urinary catheterization for more than 3 days ( $p=0.04$ ) and POP-Q stage 3-4 uterine prolapse ( $p=0.04$ ) were associated with a higher risk of complications.

**Table I:** Indications for surgery.

Indication	n,%
Pelvic prolapsus	187 (83.8)
Stress incontinance	5 (2.2)
PP+SI	12 (5.3)
Endometrial Pathology(Hiperplasia, polip ie)	5 (2.2)
PP+ uterin fibroid	8 (3.5)
PP+adenomyosis	4 (1.7)
PP+adenomyosis	2 (0.8)

**Table II:** Early and late complications.

Early complications	Management	n,%
Hemorrhage	Intraoperative blood transfusion	8 (3.6)
	Postoperative blood transfusion	6 (2.7)
	Laparotomy	3 (1.3)
Febrile Morbidity		5 (2.2)
<b>Late Complication</b>		
Cuff Prolapse	Sacrocolpopexy	2 (0.9)
<b>Total</b>		<b>24 (10.8)</b>

**Table III:** Distribution of patients with variables and complications of vaginal hysterectomy and Chisquare test analysis.

Parameters		Complication		Total (n)	p
		+(n,%)	-(n,%)		
Age	>60	117(86)	19(14)	136	0,050
	≤60	82(94,3)	5(5,7)	87	
Gravida	0-5	54(90)	6(10)	60	0,721
	6-10	100(87,7)	14(12,3)	114	
	>10	45(91,8)	4(8,2)	49	
Parity	0-5	76(88,4)	10(11,6)	86	0,904
	6-10	92(89,3)	11(10,7)	103	
	>10	31(91,2)	3(8,8)	34	
Abortion	-	117(88,0)	16(12,0)	133	0,458
	+	82(91,1)	8(8,9)	90	
POP-Q stage	1	30(83,3)	6(16,7)	36	0,040
	2	116(94,3)	7(5,7)	123	
	3-4	53(82,8)	11(17,2)	64	
<b>Urinary catheterization</b>					
time	≤3 day	167(91,8)	15(8,2)	182	0,040
	> 3 day	32(78,0)	9(22,0)	41	
<b>Hospital stay</b>					
time	0-10 day	99(96,1)	4(3,9)	103	0,001
	11-20 day	86(89,6)	10(10,4)	96	
	>20 day	14(58,3)	10(41,7)	24	

## DISCUSSION

The vaginal route for hysterectomy may be preferable in women with medical disorders as it is associated with lower intra and postoperative morbidity. In a recent study, it was reported that women who underwent abdominal hysterectomy had significantly longer hospital stays than those who had VH. Patients that underwent abdominal hysterectomy had higher rates of postoperative pyrexia, wound infection, haematuria and longer catheterization<sup>(4-6)</sup>.

Vaginal route offers advantages like a lack of incision in the abdominal wall, less likelihood of pain, sepsis, adhesions, ureteral and intestinal injury, more rapid return of bowel function, a shorter duration of operation, less surgical bleeding, early discharge and lower cost<sup>(3,6-8)</sup>. Despite the fact that VH is advocated in many cases, it is not totally free of intraoperative and postoperative complications<sup>(2,3,7)</sup>. Our complication rate is 10.8% which is consistent with overall rates of complication in the literature that vary between 4.1% and 44.8%. We have included nulliparous patients and those with a history of caesarean section and other pelvic surgery in our study. In these, the intraoperative and postoperative complication rates were 3.6% and 7.2%, respectively. Intra-operative hemorrhage requiring blood transfusion was the most common postoperative complications in our series (3.6%). Surgical challenges leading to severe hemorrhage may ensue from features of patients such as advanced age, nulliparity, grandmultiparity or history of previous pelvic surgery. Hemorrhage requiring for postoperative blood transfusion (2.7%), febrile morbidity (2.2%) and vaginal cuff prolapse (0.9%) were other complications. Relative low incidence of febrile morbidity can be attributed to strict use of prophylactic antibiotics in our patients. In the literature, it is documented that the risk of uterine prolapse increases with age and the number of vaginal births<sup>(7)</sup>.

According to our study, older patients (>60), Pelvic prolapse POP-Q stage 3-4, longer durations of hospitalization and urinary catheterization were possibly predisposing factors for the occurrence of forementioned complications. Geriatric patients deserve to be monitored more closely during the pre, intra and postoperative time course. Co-morbidities as well as structural alterations of abdominal and pelvic organs may facilitate the development of complications in these patients.

The duration of hospitalization is longer in complicated patients can be interpreted in two ways: First, it is not surprising to expect a longer hospitalization due to the management process of the complication. It must not be ignored that unnecessary prolonged hospitalization may predispose to morbidities like hospital infections resulting in a vicious circle. Therefore, measures that can be taken at home effectively (such as analgesia) should not be indications for hospitalization. However due to the tertiary center in south-eastern Anatolia, as

patients to be more complicated, coming from rural areas, transportation problems, preoperative preparation time, local estrogen should be used preoperatively, uncomplicated postoperative follow-up of patients still interpreted to be longer than the duration of stay of reasons.

Urinary catheterization is used in patients with presumable injury to urinary tract. These catheters must not be withdrawn without convincing the integrity and function of urinary system. Similar to hospitalization issue as mentioned above, unnecessary and prolonged maintenance of urinary catheters may predispose to urinary tract infections and febrile morbidity. Maximum caution should be performed during dissection of the vesicouterine fold to avoid penetration of the bladder in patients without prolapse.

In our study, in two patients with vaginal cuff prolapse identified were done sacrocolpopexy. Ökten et al applied 15 patients underwent prophylactic transvaginal sakrospinöz fixation in order to avoid cuff prolapse after vaginal hysterectomy, they followed only one recurrence<sup>(9)</sup>. When we look at the Cochrane database published in 2010, abdominal sacral colpopexy recurrence rates were found to be less than sacrospinous fixation<sup>(10)</sup>. Cases of vaginal hysterectomy, prophylactic vaginal cuff to the sacrospinous ligament fixation is easy in terms of the applicability. In our clinic, in recent years the general approach all patients with vaginal hysterectomy direction of the vaginal cuff to the sacrospinous ligament fixation.

Preoperative planning of VH must involve a careful evaluation of level of pelvic prolapse. Pelvic prolapse POP-Q stage 3-4 brings about a higher risk for complications. These patients must be handled by a more experienced surgical team and any possibilities alerting for complications must be handled completely.

In our study we did not find impact of pregnancies, parities and abortions on the occurrence of complications. Vaginal hysterectomy may be technically more difficult in nulliparous than in multiparous women, since the vagina is narrower and the uterus is less prolapsed in nulliparous women<sup>(11)</sup>. However, it is claimed that rates of intra- or postoperative complications were similar between nulliparous and parous patients (11.5% and 14.6%, respectively), with comparable failure rates<sup>(2)</sup>.

Some limitations of our study must also be mentioned. First, interpretations that can be made from such a

retrospective study are limited. Second, performance of additional procedures like oophorectomy and anterior or posterior colporrhaphy in some patients in this series may contribute to the occurrence of complications. This impact could not be assessed in this study. Therefore, we think that further controlled studies must be conducted to unveil the predisposing factors for complications of VH.

## CONCLUSION

Even though vaginal hysterectomy is usually a safe and effective method in the management of pelvic prolapse, it is not totally devoid of complications. Advanced age (>60), level 3 pelvic prolapse, prolonged durations of hospitalization and urinary catheterization seem to be predisposing factors for occurrence of complications like hemorrhage requiring blood transfusion, febrile morbidity and vaginal cuff prolapse. Appropriate preoperative planning and meticulous postoperative care may be useful to decrease the rate of complications.

## REFERENCES

1. Raffi A, Samain E, Levardon M, Darai E, Deval B. Vaginal hysterectomy for benign disorders in obese women: a prospective study. *BJOG* 2005 Feb;112(2):223-7.
2. Miskry T, Magos A. Randomized, prospective, double-blind comparison of abdominal and vaginal hysterectomy in women without uterovaginal prolapse. *Acta Obstet Gynecol Scand* 2003 Apr;82(4):351-8.
3. Akyol D, Esinler I, Guven S, Salman MC, Ayhan A. Vaginal hysterectomy: Results and complications of 886 patients. *J Obstet Gynaecol* 2006 Nov;26(8):777-81.
4. Dicker RC, Greenspan JR, Strauss LT, Cowart MR, Scally MJ, Peterson HB, et al. 1982. Complications of abdominal and vaginal hysterectomy among women of reproductive age in the United States. *The Collaborative Review of Sterilization. Am J Obstet Gynecol* 1982 Dec 1;144(7):841-8.
5. Ng CCM, Han WHC. Comparison of effectiveness of vaginal and abdominal routes in treating severe uterovaginal or vault prolapse. *Singapore Med J* 2004 Oct;45(10):475-81.
6. Kovac SR, Barhan S, Lister M, Tucker L, Bishop M, Das A. Guidelines for the selection of the route of hysterectomy: application in a resident clinic population. *Am J Obstet Gynecol*

- 2002 Dec;187(6):1521-7.
7. Kovac SR. Hysterectomy outcomes in patients with similar indications. *Obstet Gynecol* 2000 Jun;95(6 Pt 1):787-93.
  8. Mathevet P, Valencia P, Cousin C, Mellier G, Dargent D. Operative injuries during vaginal hysterectomy. *European J Obstet Gynecol Reprod Biol* 2001 Jul;97(1):71-5.
  9. Vajinal histerektomiye takiben oluşabilecek kaf prolapsusunu önlemek için profilaktik transvajinal sakrosipinöz fiksasyon uygulaması. Öktem M, Eroğlu D, Esinler İ, Başer E, Zeyneloğlu HB. *TJOD Dergisi* 2007; 4: 65- 7.
  10. Cochrane Database Syst Rev. 2010 Apr; 14;(4): CD004014.
  11. Ottosen C, Lingman G, Ottosen L. 2000. Three methods for hysterectomy: a randomised, prospective study of short term outcome. *Br J Obstet Gynaecol* 2000 Nov;107(11):1380-5.