

## INTRAOPERATIVE MANAGEMENT AND URINARY SYSTEM COMPLICATIONS DURING TOTAL LAPAROSCOPIC HYSTERECTOMY

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### SUMMARY

**Objective:** Many authors were accepted that Total Laparoscopic Hysterectomy (TLH) is interesting and reliable treatment at benign gynecological conditions. The aim of this study is to present intraoperative management and urinary system complications performing TLH.

**Material and methods:** This study was included 116 patients who underwent TLH with or without additional surgical procedure at Ege University Medical School, Department of Obstetrics and Gynecology between 2002-2008. Bilateral salpingoophorectomy for 77 (66,3%), Burch colposuspension for 9 (8.4%), adhesiolysis for 40 (37.7%), and McCall Culdeplasty for 10 (8,6%) were applied as additional surgical procedure. Average age of patients was 48.1 years. BMI and parity was  $27.1 \pm 2.3$  kg/m<sup>2</sup> and  $1.8 \pm 1.1$ , respectively. 24 (20.6%) cases were presented previous surgical procedure and 71 (61.2%) cases were postmenopause.

**Results:** Bladder injury occurred as urinary system complication at 2 (1.7%) women. The other postoperative complications were loss of blood exceed than 500 ml, infection and turned conversion to laparotomy; 9 case (7.75%), 2 case (1.7%) an done case, respectively. However bladder injury was recognized during operation and repaired concurrently. Any long term complication and ureteral injury was seen.

**Conclusion:** The rate of our urinary system complication was 1.7% in study group performing TLH. Risk factors were prior caesarean section history, prior pelvic surgery history and extensive endometriosis. Familiarity of pelvic anatomy and operator training were very important at advanced laparoscopic application. The avoidance of complication can be possible with good observation of surgical area, gentle dissection and favorable using of energy modality.

**Key words:** complication, hysterectomy, laparoscopy, urinary system

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## LAPAROSKOPİK HİSTEREKTOMİDE ÜRİNER SİSTEM KOMPLİKASYONLARI VE YÖNETİMİ

### ÖZET

**Amaç:** Laparoskopik histerektominin benign jinekolojik durumlarda ilgi çekici ve güvenli bir yöntem olduğu birçok otorite tarafından kabul edilmektedir. Bu çalışmanın amacı, laparoskopik histerektomi uygulanan hastalarımızdaki üriner sistem komplikasyonları ve intraoperatif yönetimi sunmaktır.

**Gereç ve yöntemler:** 2002 ve 2008 tarihleri arasında Ege Üniversitesinde ek cerrahi girişim yapılarak ya da yapılmadan laparoskopik histerektomi uygulanan 116 hasta bu çalışmaya dahil edilmiştir. Yapılan ek cerrahi girişimler 77 (%66,3) hastada bilateral salpingooforektomi, 9 (%8,4) hastada Burch kolposüspanسیون, 40 hastada (%37,7) adezyolizis ve 10 (%8,6) hastada McCall kolpopektisi idi. Hastaların ortalama yaşı  $48.1 \pm 3.2$  yıl, vücut kitle indeksi (BMI)  $27.1 \pm 2.3$   $kg/m^2$ , parite  $1.8 \pm 1.1$  idi. 24 (%20,6) hastanın geçirilmiş abdominal cerrahi öyküsü mevcuttu ve 71 (%61,2) hasta postmenopozal dönemde idi.

**Bulgular:** Benign nedenler ile laparoskopik histerektomi uygulanan 116 hastada, postoperatif dönemde iki hastada (1.72) üriner sistem komplikasyonu olarak mesane yaralanması meydana gelmiştir. Üriner sistem dışında, 9 hastada (%7,75) 500ml'yi aşan kan kaybı, 2 hastada post-op enfeksiyon (%1,72), 1 hastada (%0,86) laparotomiye dönüş olmuştur. Mesane yaralanması intraoperatif olarak tanı konup laparoskopi esnasında başarı ile mesane onarımları gerçekleştirildi. Uzun dönem komplikasyon gelişmedi. Hiç bir hastada üreter yaralanması olmadı.

**Sonuç:** Laparoskopik histerektomi uyguladığımız hastalarda üriner sistem yaralanması oranımız %1,7'dir. Risk faktörleri, geçirilmiş sezeryan öyküsü, geçirilmiş laparotomi, nulliparite, adezyon oluşturan pelvik cerrahidir. İleri düzey laparoskopik cerrahi uygulamalarında, pelvik anatomisinin iyi bilinmesi ve cerrahin öğrenim eğrisi oldukça önemlidir. Komplikasyonların önlenmesi, cerrahi alanın iyi eksplorasyonu, ince disseksiyonu ve enerji modalitelerinin uygun kullanımı ile mümkün olabilir.

**Anahtar kelimeler:** histerektomi, komplikasyon, laparoskopi, üriner sistem

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### INTRODUCTION

After cesarean section, hysterectomy is the most common procedure for uterine pathology. Hysterectomy has traditionally been performed abdominally or vaginally. Laparoscopic procedure is an alternative due to difficulties of total abdominal hysterectomy and vaginal hysterectomy. Total Laparoscopic Hysterectomy (TLH) procedure includes; surgery dissection, ligation, suturation, trocar insertion and suturing of the vaginal cuff<sup>(1)</sup>. The advantages of laparoscopic hysterectomy are less infection, less blood loss, shorter hospitalization and earlier return to work<sup>(2)</sup>. Urinary system especially bladder complications had a significantv predominance in laparoscopic hysterectomy<sup>(3)</sup>. The aim of this study is to present intraoperative management and urinary system complications performing TLH.

### MATERIAL AND METHODS

One hundred and sixteen patients who underwent TLH with or without additional surgical procedure at Ege University Medical School, Department of Obstetrics and Gynecology between 2002-2008, were evaluated retrospectively. A Veress needle is used to create pneumoperitoneum and entered 4 trocar into abdominal cavity. After observation of the abdomen, ureter inspected at the pelvic brim. Ureter dissected between pelvic brim and uterine artery. Depends on performing salpingo-oophorectomy or not, the infundibulopelvic ligament or the ligamentum ovarii proprium are divided with bipolar coagulation and scissors. The round ligaments are divided with bipolar coagulation and scissors. A vesicouterine fold of peritoneum is incised. The bladder can then be dissected free from the uterus and pushed down. After inspection of uterine artery coagulated with bipolar coagulation. The cardinal and uterosacral ligaments are also coagulated with bipolar cautery. During this period, we different diathermy methods were used in this steps such as Ligasure and

Harmonic Scalpel. Tampon is placed in to vagina. The circular culdotomy is performed followed by anterior and posterior colpotomy. The tampon is removed. Then, the uterus is pulled down into the vagina and it can be placed there as a plug to prevent loss of pneumoperitoneum. As a three sutures are placed to vaginal vault, it is closed; two corner of the the vaginal vault and another in the midline. Bleeding control is performed and then additional procedure performed if it is need. Bowel preparation is performed with oral and rectal solutions in all patients. Prophylactic antibiotic is used in intaroperative and postoperative period.

## RESULTS

Mean age of the patients was 48.1±3.2 years. Mean BMI was 27.1±2.3 kg/m<sup>2</sup> and parity was 1.8±1.1. Twenty four (30 %) patients with previous abdominal surgery and 67 (63 %) patients was postmenopausal.

Mean hospitalization was 2.4 (range 1-7) days, blood loss was 220 ml (50-800 ml), operating time was 100 minutes (range 45-170 minutes), uterine size was 9.2±2.3 gestational weeks.

Postoperative complications are; 9 case (7.75 %) loss of blood exceed than 500 ml, 2 case (1.7 %) postoperative infection and 1 case (0.86 %) turned conversion to laparotomy (Table I). As urinary system complications; 2 (1.7 %) bladder injury occurred. Bladder injury was recognized during operation and repaired concurrently. First mucosal layer and than muscularis layer of bladder double sutured with 3-0 polylactic acid suture and examined with cystoscopy. Postoperative patients were followed up with Foley catheter 5-7 days. Long term complication and ureteral injury was not occurred.

**Table 1:** Complications of the patient who underwent TLH were shown.

Complication	n	%
Blood loss > 500 ml	9	8.4
Postoperative infection	2	1.8
Bladder injury	2	1.8
Conversion to laparotomy	1	0.9

## DISCUSSION

Performance of laparoscopic hysterectomy (LH) has increasing ratio and is a preferable alternative to laparotomy for patients whom has an immobile uterus and unsuitable for vaginal hysterectomy. Advanced age and high BMI were not contraindications for LH<sup>(4)</sup>. Randomized trials indicate that operating time was moderately increased or same for LH versus AH. Also the operating time was same or decreased for LH versus LAVH and the operating time was more increased for LH versus VH<sup>(5)</sup>.

Major complications rates in AH, LH and VH were 4.0 %, 4.3 % and 2.6 % respectively<sup>(6)</sup>. Urinary system especially bladder complications had a significant predominance in laparoscopic hysterectomy<sup>(3)</sup>. The literature reported that urinary system complications for performing LH is 2.5 % range 3.4 %<sup>(7-10)</sup>. An urinary system complication for performing LH is reported 1.7 % in our series, correlatively.

Tasaltas et al. reported that complications in their series (232 LAVH and 33 TLH)<sup>(11)</sup>; two cases of ureter fistula, one vesicovaginal fistula, one bladder injuries, two bowel obstructions and one postoperative pelvic hematoma. Also, they reported that one case of bladder injury, vaginal cuff hematoma and one superficial epigastric artery injury as a minor complications.

Pillet et al. reported that complications of the 1501 patients who underwent LH<sup>(12)</sup>. The rate of ureter injuries was 0.3 % (5 patients) and bladder injuries were 1 % (15 patients). Most important risks factors were previous caesarean section and previous laparotomy. Previous adhesiogenous abdominopelvic surgery and no previous vaginal delivery is also contributes to the complication risk. Among the 15 patients with bladder injury 2 of them has one risk factor at least, 11 patients has two risk factors at least. The enlarged uterus and operated by initial learning curve surgeon were reported in the remaining two patients who had no risk factors. Bladder injury risk for patients who had one cesarean is 1.4 %, and for patients who had more than one cesarean is 7 %. The risk increases with the number of previous cesarean.

Garry et al.<sup>(13)</sup> reported that result of patients who underwent VH and LH versus AH and LH. Bladder injury reported in the abdominal trial 1% and 2.1 % AH and LH respectively. Bladder injury reported in the vaginal trial 1.2 and 0.9 VH and LH respectively.

But some authors indicate that in the abdominal trial patients have more nulliparous, cesarean and endometriosis.

Significant point to prevent of the bladder injury while performing LH is gentle dissection of the bladder from the uterus and intense homeostasis. To recognize of the bladder injury is crucial during operation. The used to uterine canula reduce bladder injury<sup>(14)</sup>. If the border of bladder cannot visualized, the bladder by filling it through the catheter with a methylene blue dye solution<sup>(12)</sup>. Methylene blue dye solution also may use to avoid unknown injury.

In our series, 2 (1.7 %) bladder injury was occurred in patients who underwent TLH. Bladder injury was recognized during operation and repaired concurrently. First mucosal layer and than muscularis layer of bladder double sutured with 3-0 poly lactic acid suture and examined with cystoscopy. Patients were followed up with foley catheter 5-7 days postoperatively. Long term complication and ureteral injury was not occurred.

Experience of the surgeon is the other most important factor for the injury occurring. The complications can be prevent as a; surgical exploration, fine dissection and used to appropriate energy modalities<sup>(5,15,16)</sup>.

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