Ureteric Injuries after Hysterectomy in a Tertiary Care Center of Nepal: A Descriptive Cross-sectional Study

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ABSTRACT

Introduction: Pelvic surgery is the most common cause of iatrogenic ureteral injury. The incidence of ureteric injuries varies between skilled and inexperienced surgeons. The study aims to determine the prevalence of ureteric injuries sustained during hysterectomy in a tertiary care center of Nepal.

Methods: A descriptive cross-sectional study involving the women attending the gynecological outpatient department of a tertiary care center of Nepal, for various benign and malignant conditions and later on underwent hysterectomy from June 2019 to June 2020 was done after obtaining ethical clearance from the Institutional Review Committee (Reference No. 245). Convenient sampling method was used. The data were entered in Excel and analyzed using Statistical Package for Social Sciences version 17. Point estimate at 95% Confidence Interval was calculated along with frequency and proportion for binary data.

Results: Altogether, 1 (0.63%) (0.55-0.71 at 95% Confidence Interval) out of 159 patients sustained the ureteric injury during hysterectomy in a tertiary care center of Nepal. The injury was seen during the exploratory laparotomy for adnexal mass. The injury was recognized intraoperatively and was repaired with double J stenting. A total of 159 patients were enrolled in the study that had undergone hysterectomy over one year for various benign and malignant conditions. Out of which 21 (13.2%) had undergone surgeries for malignant conditions and 138 (86.79%) for benign conditions.

Conclusions: Iatrogenic ureteric is still a major cause of harm and concern in hysterectomy. Patients with ureteric injury should be evaluated and intervened at the earliest.

Keywords: hysterectomy; iatrogenic; injury; ureter.

INTRODUCTION

The incidence of ureteric injury is reported to be 0.5 to 1.0% in surgery of benign diseases1-3 and 5 to 30% in surgery of malignant diseases like radical hysterectomy.2 Ureteric injury is reported more when patients have associated factors like endometriosis, pelvic infection, huge pelvic masses, previous abdominopelvic surgery, and radiation therapy.4,5,6 Ligation and transaction injuries are the most common type, and other forms are thermal injury, kinking, de-vascularization, partial/compleet transaction, and perforation.7,8

Iatrogenic ureteral injury is a serious complication of gynecologic surgery. The identification of these injuries needs to be done on time which will allow the immediate repair of these injuries, reduce morbidity, and decrease the chances of the medico-legal outcome. To our knowledge, such study hasn’t been conducted in any hospitals of Nepal till date.

The study aims to find out the prevalence of ureteric injuries sustained during hysterectomy in a tertiary care center of Nepal.

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METHODS

This descriptive cross-sectional study was conducted in Shree Birendra Hospital (SBH), a tertiary level hospital in Kathmandu, Nepal. The Institutional Review Committee of the Nepalese Army Institute of Health Sciences approved the study (Reference No. 245), and informed written consent was obtained from all the patients before enrolment. This study included women visiting the Gynecology outpatient department of SBH with benign and malignant indications to undergo an elective hysterectomy in one year between June 2019 to June 2020. Laparoscopic hysterectomy were excluded from the study. The sample size was calculated as follows:

\[ n = \frac{Z^2 \times p \times q}{e^2} \]
\[ = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.09)^2} \]
\[ = 119 \]

Where,
- \( n \) = minimum required sample size
- \( Z \) = 1.96 at 95% Confidence Interval (CI)
- \( p \) = prevalence taken as 50% for maximum sample size
- \( q \) = 1 - \( p \)
- \( e \) = margin of error, 9%

The calculated sample size was calculated to be 119. Adding 10% as a non-response rate, the minimum required sample size was 131. We took data from 159 patients. Convenient sampling method was used.

The data was collected using a semi-structured questionnaire consisting of variables such as age at the time of surgery, indication for surgery, type of surgery performed, type and time when the injury was identified, method of repair, and outcome of the repair. The data was obtained from the patient by interviewing, from case files, operating theatre details, surgical and gynecological ward registries. Visualization of ureteric peristalsis and pooling of urine in the operating field was the initial intraoperative method to detect injury during the procedure. The injury identified at the table was repaired during the primary surgery by the attending gynecologist and urosurgeon.

The data were entered in Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 17.

RESULTS

Altogether, 1 (0.63%) patient sustained the ureteric injury.

Twenty-one (13.2%) had undergone elective hysterectomy surgeries for malignant conditions and 138 (86.79%) for benign conditions. The group of benign conditions included uterine prolapse 39 (24.52%), uterine fibroids 34 (21.38%), benign adnexal masses 27 (16.98%), menstrual disorders 24 (15.09%), and endometriosis 7 (4.40%). The group of malignant conditions was limited to ovarian cancer 8 (5.03%), cervical cancer 8 (5.03%), endometrial cancer 3 (1.88%), molar pregnancy 3 (1.88%), vulval cancer 2 (1.25%). The study distinguished between the open procedures followed for benign conditions and malignant conditions. Benign conditions had undergone total abdominal hysterectomy, subtotal hysterectomy, vaginal hysterectomy, and exploratory laparotomy. Among malignant conditions, the surgical operations conducted were staging laparotomy, radical hysterectomy, and vulvectomy (Figure 2).

DISCUSSION

Iatrogenic injury to the ureter is the most common complication of abdominopelvic surgery, ranging from less than 1 to 10 percent of procedures, depending...
The ureteric injury sustained in this study was following exploratory laparotomy with hysterectomy done for adnexal mass in 73 years old patient. The injury was identified intraoperatively by urinary extravasations into the retroperitoneal space. Similar to the study conducted by Patil SB, et al. open hysterectomy for adnexal mass in 73 years old patient. The injury was identified at the table and managed accordingly. A similar review conducted in eastern Nigeria found ligation and transaction the most common location is the lower ureter. The injury or fistula may become apparent either immediately or much more commonly, in a delayed fashion several days to weeks after surgery. However, a high index of suspicion with symptoms such as flank pain and fever may suggest ureteric injury after pelvic surgery. Complete transaction of the ureter causes immediate leakage of urine within first 24-48 hours of surgery, while ligation and thermal injury present later following tissue necrosis.

The experience of the operating surgeon may also be an important risk factor. Keeping this in mind, the hysterectomies in our institution are all conducted by experienced surgeons. This may be why we had a smaller number of iatrogenic ureteric or bladder injuries and an injury identified intraoperatively.

CONCLUSIONS
Our study revealed that a simple hysterectomy for a benign disease could be the cause of ureteral injury. Intraoperative evaluation of the ureter during vaginal procedures is more difficult given the limited operating field and anatomic distortion. Cystoscopy is a simple procedure to evaluate a silent injury to the urinary system. The adoption of universal cystoscopy after all hysterectomies is recommended. This will allow the immediate repair of these injuries, reduce morbidity, and decrease the chances of the medico-legal outcome.

Conflict of Interest: None.

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