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ORIGINAL ARTICLE

Frequency of Urological Injuries in Obstetrical and Gynaecological Surgery at Tertiary Care Hospital

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ABSTRACT

Introduction: Due to the anatomical proximity of the urogenital organs, reproductive and obstetrical procedures have been intrinsically linked to urological damage. The connection of the genital and urine tracts anatomically and during embryologic development makes the urinary system particularly vulnerable to damage during surgical procedures in the female. Urinary bladder and ureter injuries are a common post-gynecological or obstetrical surgery complication.

Objectives: To determine the frequency of urological injuries in obstetrical and gynaecological surgery.

Materials & Methods: A total of 142 women who are undergoing obstetric and gynecologic surgeries, 25 to 55 years of age were included. Patients having urological injury from other than obstetric and gynecologic surgeries were excluded. In this study all patients were included who are fulfilling inclusion criteria undergoing obstetric (cessarean section) & gynaecologic (laprotomies & hysterectomies) were enrolled after taking written informed consent. Risk factors for urological injuries were assessed in terms of indication (risk for surgery), site of ureteric injury, location of bladder injury was noticed.

Results: Age range in this study was from 25 to 55 years with mean age of 40.20 ± 6.92 years. Majority of the patients 77 (54.23%) were between 41 to 55 years of age. Mean duration of surgery was 62.16 ± 14.52 minutes. Mean time interval after surgery was 37.51 ± 13.89 hours. In this study, frequency of ureteral injury, urinary bladder injury and mixed injury in obstetrical and gynaecological surgery was found in 20 (14.08%), 14 (9.86%) and 07 (4.93%) patients.

Conclusion: This study concluded that understanding pelvic anatomy, detailed dissection, and patience in challenging cases are the essential elements to predict and reduce damage.

Keywords: obstetrical and gynaecological surgery, ureteric injury, bladder injury.

INTRODUCTION

Due to the anatomical proximity of the urogenital organs, reproductive and obstetrical procedures have been intrinsically linked to urological damage.[1] The proximity of the urine and sexual organs due to their close embryologic development and anatomical proximity makes the urinary system more susceptible to damage during surgical procedures in the female.[2-3] Urinary bladder and ureter injuries are a common post-gynecological or obstetrical surgery complication.[4-6] An estimated 0.2% to 1% of all pelvic surgery and gynecologic surgeries are complicated by urinary tract damage.[7] According to studies, the incidence of bladder and ureter complications after gynaecological surgery was 0.49 percent, and during obstetrics operation it was 0.18 percent and 0.01 percent, respectively.[8]

The closeness of the genital and urine tracts anatomically and during embryologic development makes the urinary system particularly vulnerable to damage during surgical procedures in the female pelvis.[2-3] Urinary bladder and ureter injuries are a common post-gynecological or obstetrical surgery complication.[4-6] An estimated 0.2% to 1% of all pelvic surgery and gynecologic procedures are complicated by urinary tract damage. [7] According to studies, the incidence of bladder and ureter problems during gynaecological surgery is 0.49%, while during obstetric surgery it is 0.18% and 0.01%, respectively.[8]

A frequent complaint among gynaecologists and obstetricians is urethral damage. The mortality associated with ureteric injury includes extended hospital stays, more surgical surgery, reoperations, a possible loss of kidney function, and a decrease in the standard of life for women.[9-11] Urological damage is a significant side effect of gynaecological surgery.[12] Both straightforward and complex surgical techniques have the potential to cause intraoperative damage to the ureter.[13] The frequency of injuries differs based on the type of gynecologic surgeries done, the complexity of the surgical procedure, altered pelvic anatomy as a result of infectious diseases, prior surgeries, adhesions, prior radiation treatment, placement of vertebral ligament fibroids, and intraoperative complications like heavy bleeding.[14] According to reports, ureter injuries are caused by gynaecological procedures 75% of the time. Compared to ureteral injuries, bladder injuries have been found to occur 2–3 times more frequently.[15]

Post surgery, urogenital fistula formation and leakage in bladder are painful for patient and cause the surgeon concern and a sense of failure. Similar to the development of anuria right after surgery, this condition necessitates rapid care for patient. Early recognition and prompt, appropriate treatment of these injuries have a significant impact on the patient's prognosis. The burden of a failed first repair of such injuries falls on the surgeon as well as the patient, who experiences social isolation and misery due to urine leakage. During pelvic surgery, ureter injuries account for 1682% of cases.[8] Urinary tract injuries resulting from obstetric and gynecologic surgery are usually classified into two categories: acute problems, which can be detected right away during the operation, such as bladder tearing or ureter lacerations, and prolonged problems, which can develop over time, such as vesicovaginal fistulas, ureterovaginal fistulas, and ureter strictures. 17

In contrast to complex gynaecological surgeries, excellent obseterical care had resulted in a declining such damages, at least in the obstetric sector. In order to develop prevention methods for urological problems following surgery, our study's primary goal is to quantify the prevalence of urological injuries in obstetrical and gynaecological surgical procedure in our medical setting.

MATERIAL AND METHODS

This descriptive, cross-sectional study was conducted at the Urology department, Shahida Islam Medical & Dental College/Teaching Hospital, Lodhran, and Kidney Centre, Bahawal Victoria Hospital, Bahawalpur, from July 2020 to June 2021. A sample of 142 patients was selected through consecutive non probability sampling technique and by taking prevalence of those patients who had ureter injury P=23.7%[12] using error (d) = 7%. Total sample size was 142 patients using WHO software for calculation of sample size with 95% confidence interval. Women who are undergoing obstetric and gynecologic surgeries with age 25-55 years were selected. Patients having urological injury from other than obstetric and gynecologic surgeries were excluded. In this

study all patients were included who are fulfilling inclusion criteria undergoing obstetric (cessarean section) & gynaecologic (laprotomies & hysterectomies) were enrolled after taking written informed consent. Risk factors for urological injuries were assessed in terms of indication (risk for surgery), site of ureteric injury, location of bladder injury was noticed.

Data was analyzed using software SPSS version 21. Percentage and frequency were calculated for qualitative variable like type of surgery, site of injury, bladder injury and ureter injury. Mean±SD were calculated for quantitative variable i.e. age, duration of surgery and duration of injury.

RESULTS

Age range in this study was from 25 to 55 years with mean age of 40.20 ± 6.92 years. Majority of the patients 77 (54.23%) were between 41 to 55 years of age. Mean duration of surgery was 62.16 ± 14.52 minutes. Mean time interval after surgery was 37.51 ± 13.89 hours. In this study, frequency of ureteral injury, urinary bladder injury and mixed injury in obstetrical and gynaecological surgery was found in 20 (14.08%), 14 (9.86%) and 07 (4.93%) patients.

Table 1: Frequency of outcome in gestational hypertension

Type of injury	Frequency	Percentage
Ureteral injury	20	14.08
Urinary bladder injury	14	9.86
Mixed injury	07	4.93
No injury	101	71.13

DISCUSSION

In obstetric and gynaecological operations, urological injuries that involve disruption to the urinary system and ureter are relatively unusual. In actuality, gynecologic operations are to blame for 75% of iatrogenic urinary tract injuries. [18] An approximated 0.2 to 1% of all pelvic surgery and gynecologic surgeries are complicated by urinary damage. 19 Despite the low occurrence of urologic injuries, there are many urologic injuries because of the large volume of gynecologic surgical treatment, and these urological problems are linked to significant mortality in the form of longer operating times, increased blood loss, longer hospitalisation, increased febrile mortality rates and occasionally the need for additional surgery. The prevalence of these injuries have decreased and they are now identified earlier and treated more effectively in modern practice because of increasing information about these injuries and advancements in surgical procedures.[20]

I have conducted this study to calculate the frequency of urological injuries in obstetrical and gynaecological surgery. In this study, frequency of ureteral injury, urinary bladder injury and mixed injury in obstetrical and gynaecological surgery was found in 20 (14.08%), 14 (9.86%) and 07 (4.93%) patients. Bladder laceration and vesicovaginal fistula was observed as most common kind of urinary tract injury.[21]Raut V reported lower incidence of bladder and ureteral injuries compared to our study. They found bladder and ureteral injuries in gynecological operations to be 1.23% and 0.11% respectively and in obstetric procedures they found it to be 0.67% and 0.33% respectively.[22]

When compared to researches over a five-year period by Vandana et al[23] in 2013, Lee et al[24] in 2012, and Venkitaraman et al[25] in 2008, which reported the frequency to be 0.29 percent, 0.2 percent, and 0.1 percent, correspondingly, our results are very different. Because there are fewer obstetricians and gynaecologists in most developing nations, more patients are being directed to hospitals for treatment of difficulties. Health workers who perform surgeries lack understanding of the anatomical link between the urinary and genital tracts.[26]

Preventing blind blood vessel clamping, working closely to pathology, identifying the ureteral course prior to dissection, careful movement from the operation site, and brief diathermy treatments can all help to reduce ureteral injuries. [27] Surgically, the ureteric injuries are challenging to diagnose. Bilateral ureteral catheterization aids in the identification of ureters during surgery in situations that are expected to be challenging.[28] Urological injuries can be quickly repaired because to intraoperative detection, which is also related with reduced death rate.[29]

The rate of urological damage during urogynecological surgeries has been reported to range from 2.6 to 8%, while its usage in large benign gynaecological surgeries has only discovered injuries in 0.4 percent of patients. Cystoscopy should be taken into account in complicated instances because it is economical.[30] Regardless of the cause of the urological injury, urgent radiological investigation using contrast-enhanced computed tomography or intravenous urography is eventually necessary for the diagnosis to avoid postponing therapy. [31] Basic principles of ureteral repair include tension-free anastomosis via ureteric mobilisation, ureteric dissection while preserving the adventitial sheath.[32]

CONCLUSION

This study concluded that frequency of ureteral injury, urinary bladder injury and mixed injury in obstetrical and gynaecological surgery was found in 14.08%, 9.86% and 4.93% patients. So, we recommend that a proper protocol should be designed in the high risk patients. Information of pelvic anatomy, careful dissection and patience in difficult cases are the key factors to consider and prevent injury.

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