

## Evaluation of Iatrogenic Genitourinary Fistula after Major Gynaecological Operation in Patient Group Admitted in BSMMU

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### Abstract:

**Introduction:** Close proximity of urinary tract and genital systems in females poses potential risk of fistulas formation during surgical interventions. Gynaecological malignancy, bleeding, prolonged surgery, the presence of active infection during operation, endometriosis, large uterus, previous pelvic operation, pelvic adhesions and myoma uteri are major predisposing factors that may increase the risk of urological injuries & genitourinary fistulas. Genitourinary fistulas result in continuous or intermittent urinary incontinence and a significant public health issue with negative physical, emotional and social impacts on individuals. **Materials and Methods:** This cross sectional observational study was conducted in Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University, Dhaka, from 27th March 2017 to 26th September 2017. The sample was collected by purposive sampling technique. The study subjects were women with iatrogenic fistula (diagnosed after a clinical examination and investigations) attended in out-patients or in-patients department. **Result:** Mean age of patients was  $32.5 \pm 9.54$  years. Vesicovaginal fistula was commonest cause for iatrogenic genitourinary fistula, present in 34 patients. Ureterovaginal fistula was 10 patients and 6 patients detected urethrovaginal. Aetiological factors revealed that, 46.0% occurred during vaginal hysterectomy, 18.0% due to abdominal hysterectomy, 20.0% due to laparotomy with salpingoophorectomy and 16.0% during laparotomy with cystectomy. **Conclusion:** The commonest urogenital fistula is the vesicovaginal fistula. Urinary leakage following gynaecological surgery is a dreaded complication due to the formation of urogenital fistula. Thorough evaluation, using all diagnostic tools for complete diagnosis, understanding the pathophysiology and choosing the best surgical procedure are mandatory to obtain good outcomes after the surgical procedures.

**Key words:** Genitourinary Fistula, Gynaecological Operation, Iatrogenic Genitourinary Fistula.

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abnormal communication between the urinary tract and the genital tract, resulting from a surgical procedure. Iatrogenic genitourinary fistulas are typically caused during cesarean section (CS), ruptured uterus repair, hysterectomy for ruptured uterus, and gynecological hysterectomy<sup>1</sup>. The female genital and urinary tracts are anatomically closely related; therefore, the potential for injury to one must always be considered when operating on the other. The risk of damage increases when the normal anatomy is altered by primary pathologic factors or when it is insufficiently identified during intraoperative complications, such as severe bleeding or pelvic adhesions<sup>2</sup>.

Ureterovaginal fistula predominantly occurs as a result of ureteral injury during gynaecological/obstetric surgery like abdominal/vaginal/radical hysterectomy, or anterior colporrhaphy and other pelvic surgical procedures like vascular surgery, urological surgery, including retropubic bladder neck

### Introduction:

An iatrogenic genitourinary fistula (IGUF) is an

suspensions or colon surgery<sup>3</sup>. This fistula can also result from locally advanced malignant disease, radiation therapy, pelvic trauma or chronic inflammatory diseases like actinomycosis<sup>4</sup>. Laparoscopically-assisted vaginal hysterectomy<sup>5</sup> and rarely transvaginal oocyte retrieval<sup>6</sup> have also been considered in the etiology. In cases of iatrogenic post-operative ureterovaginal fistula, ureteral injury usually occurs in the form of laceration, trans-section, crushing, avulsion, suture ligation (partial/complete) or ischaemia due to the devitalisation of the ureteral blood supply.

Genito-urinary tract injuries due to obstetric and gynecologic surgery are normally divided into two categories: acute complications such as bladder laceration or ureter laceration that can be identified immediately during the operation, and chronic complications such as vesicovaginal fistula, ureterovaginal fistula, and urethrovaginal fistula, which can occur later on. Previous study noted that urinary tract injury complicates an estimated 0.2 to 1% of all gynecologic procedures and pelvic operations<sup>7</sup>. Another study noted 82.0% of ureter injuries occur during pelvic surgery<sup>8</sup>, and 75% of urinary tract injuries are due to gynecologic surgery<sup>9</sup>.

Prolonged labor is another culprit in the formation of fistula. The main problem is hypoxia due to prolonged labor. In addition, the use of vacuum, forceps and episiotomy are considered risk factors. Vesicovaginal fistulas (VVF) developed in 10 patients after vaginal delivery and this was the most frequent (10/15) cause of fistulas<sup>10</sup>. The main presentation of fistula is urinary incontinence. The incontinence is usually constant developing 1 to 4 weeks after surgery<sup>11</sup>. Pelvic adhesions due to previous surgery, repeated caesarean section, markedly enlarged uterus at the time of hysterectomy and massive bleeding obscuring the operative field could be considered as the main causes of iatrogenic genitourinary fistula<sup>4</sup>.

**Materials and Methods:**

This cross sectional observational study was conducted in the Department of Obstetrics &Gynaecology, Bangabandhu Sheikh Mujib Medical University. Diagnosis and evaluation of patients condition was made on the basis of patient’s statement, clinical examination and available medical records.

A thorough clinical examination and relevant investigations were conducted. All the information was recorded in a structured questionnaire. Data was checked and rechecked for omissions, inconsistencies and improbabilities. Data analysis was performed by Statistical Package for Social Science (SPSS), version-22. Data was edited, coded and entered in to the computer. Statistical analyses were done and level of significance was measured by using appropriate hypothetical testing. Level of significance (p value) is set at 0.05 and confidence interval at 95%. Results were presented as

text, tables and diagram.

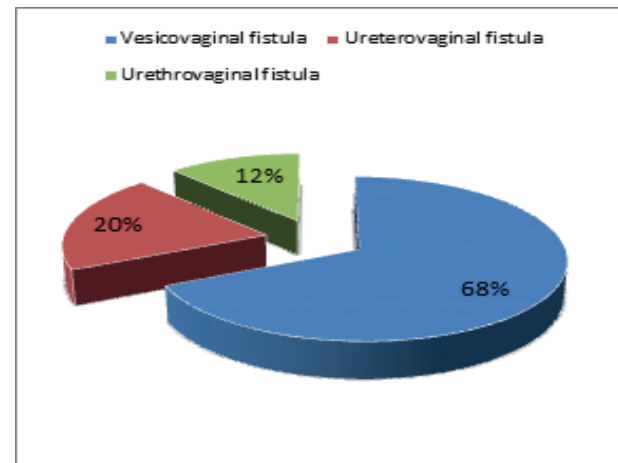
**Result & Observation:**

Table I shows the mean age of the study patient was 32.5 ± 9.54 years. Maximum patients (52.0%) belonged to the age group 31-40 years. In this study vesicovaginal fistula was commonest iatrogenic genitourinary fistula, present in 34 patients, followed by ureterovaginal fistula in 10 patients and 6 patients detected urethrovaginal fistula (Figure 1).

Total of 50 patients fulfilling inclusion/exclusion criteria were studied. Results and observations are given below:

**Table I: Demographic characteristics of the respondents (n=50)**

Age (years)	Frequency	Percentage (%)
21-30	14	28.0
31-40	26	52.0
>40	10	20.0
Mean ± SD	32.5 ± 9.54	



**Figure 1: Types of iatrogenic fistula (n = 50)**

Table II shows the aetiological factors for iatrogenic fistulas revealed that, 46.0% of women developed iatrogenic fistulas during vaginal hysterectomy, 18.0% during abdominal hysterectomy, 20.0% during laparotomy with salphingoophorectmy and 16.0% due to laparotomy with cystectomy.

**Table II: Surgeries causing iatrogenic fistulas (n=50)**

Aetiological factors	Frequency	Total
Vaginal hysterectomy	23	46.0
Abdominal hysterectomy	9	18.0
Laparotomy with salphingoophorectmy	10	20.0
Laparotomy with Cystectomy	8	16.0

**Table- III: Risk factors profile of study subject (n=50)**

Risk factors	Frequency	Percentage (%)
Obesity	38	76.0
Endometriosis	3	6.0
H/O pelvic malignancy	7	14.0
H/O pelvic surgery	43	86.0
History of PID/genital infection	18	36.0
History of abdominal surgery	13	26.0

The risk factors are shown on table. Among the risk factors obesity present in 76.0% cases; H/O pelvic surgery were 86.0% cases and History of PID/genital infection were 36.0 % cases.

#### Discussion:

In this study most of the patients belonged to the age group 31-40 years (52.0%). Mean age was  $32.5 \pm 9.54$  years. Vesicovaginal fistula was commonest iatrogenic genitourinary fistula, present in 34 patients. Ureterovaginal fistulas were detected in 10 patient's and 6 patients detected urethrovaginal fistula. Aetiological factors for iatrogenic fistulas revealed that, 46.0% of women occurred due to vaginal hysterectomy, 18.0% during abdominal hysterectomy, 20.0% due to laparotomy with salpingoophorectmy and 16.0% during laparotomy with cystectomy.

Findings are consistent with result of other study. Mean age of patients was  $34.2 \pm 9.4$  (23-65) years<sup>12</sup>. In another study, age ranged from 22 - 70 years (mean  $35.18 \pm 13.907$ )<sup>3</sup>. A range of obstetric and gynecological procedures led to the development of IF, including CS (57.4 %), CS/hysterectomy (19.8 %), gynecological hysterectomy (19.6 %), ruptured uterus repair (3.1 %), and induced abortion (0.1 %). Other surgeries, such as destructive vaginal operations or symphysiotomy, also carry risks of accidental harm from the provider<sup>13</sup>. Retrospective analysis reported iatrogenic genitourinary fistula developed during gynecological procedures, most commonly hysterectomy. Vesico-[utero]-cervico-vaginal fistulas were the most common (43.6 %), followed by ureteric injuries (33.9 %) and vault fistulas (22.5 %). One quarter of women with iatrogenic fistulas had previously undergone a laparotomy<sup>1</sup>.

On evaluation of risk factors, present study shows that previous pelvic surgery, adhesion, previous PID, etc. were predisposing factors. In this study obesity present in 76.0% cases; H/O pelvic surgery were 86.0% cases and History of PID/genital infection were 36.0 % cases.

Previous study demonstrated that several factors are suspected to place a woman at risk of IF. These include prior uterine operation, endometriosis, cervical myoma, and prior pelvic radiation<sup>14-16</sup>. Scar tissue and adhesions from prior laparotomies can create challenges for providers performing obstetric and gynecological surgery. It is therefore reasonable to hypothesize that obstetric or gynecological surgery might carry a greater risk of iatrogenic injury for women who have

undergone a laparotomy in the past<sup>14</sup>.

Previous study reported that pelvic adhesions, radiotherapy, large uterus, gynecologic malignancies, endometriosis, anatomic anomalies are risk factors that may lead to genitourinary fistula<sup>17,18</sup>. The most important factor determining prognosis in ureter injuries is time interval from diagnosis to treatment. Intraoperative diagnosis reduces morbidity and mortality but delayed diagnosis may manifest itself with serious clinical consequences<sup>19</sup>. Unfortunately, most of the ureter injuries are diagnosed at a late stage. To reduce rate of urinary tract injuries during gynecological and obstetrical operations, a profound knowledge of anatomy and use of correct surgical techniques are required. Complications secondary to urinary tract injuries may be eliminated by early diagnosis and treatment<sup>12</sup>.

#### Conclusions:

Urinary leakage following gynaecological surgery is a dreaded complication due to the formation of urogenital fistula. It has significant morbidity, with social and psychological aspects aggravating the clinical situation. Bladder injury occurred very frequently as opposed to ureteral injury. The variety of injured states, difficulty of diagnosis, and time to complete cure were much greater among patients with ureteral injury. When a urologic complication develops, early diagnosis and early urologic intervention are necessary to prevent the occurrence of delayed urologic complications. Risk factors in our study include previous pelvic surgery, pelvic disease including malignancies and abdominal surgery. Pre-operative assessment of these risk factors, meticulous surgery, use of sharp dissection in order to mobilize the bladder from the operative field particularly when the plane has been altered by disease or scarring, may prevent the iatrogenic genitourinary fistula.

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