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Etiological Factors and Outcome of Ureterovaginal Fistula: A Study in Tertiary Care Hospitals

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Abstract

Background: *Ureterovaginal fistula is a communication between the distal ureter and the vagina. It is a rare but a relatively frequent complication of pelvic surgery. The etiological factors are very important in the treatment procedure of ureterovaginal fistula. We have very few data regarding this issue.*

Aim of the study: *The aim of this study was to assess the etiological factors and outcome of ureterovaginal fistula in women.*

Methods: *This was an observational study and it was conducted in Shaheed Ziaur Rahman medical College Hospital (SZMCH), Bogura, Bangladesh, during the period from May 2016 to December 2018. This study was approved by the ethical committee of the mentioned hospital. In total 48 women with ureterovaginal fistula at the center were included as the study population on the basis of non-probability purposive sampling. The investigative procedures, etiology, clinical presentation and outcomes were recorded. All the data were collected, processed, analyzed and disseminated by MS Office and SPSS version 20 as per need.*

Result: *In analyzing the etiological factors among participants we found that, among the patients of post-hysterectomy 16.67%, 14.58%, 25% and 4.17% were with abdominal hysterectomy for fibroids, abdominal hysterectomy for malignancy, cesarean hysterectomy and rupture uterus with SVD (Spontaneous vaginal delivery). In analyzing the final outcomes among the participants we found most of the patients (n=40; 83%) healed and continent. Then 13% healed with residual incontinence and the rest 4% patients healed ureterovaginal fistula with residual vesicocervicovaginal fistula.*

Conclusion: *In this study the emergency cesarean section was found to be commonest etiological factor and the use of abdominopelvic ultrasound was found to be effective in the confirmation of diagnosis and identifying the affected ureter. Well planned hysterectomy for benign and malignant uterine pathologies may reduce the frequencies of ureterovaginal fistula.*

Keywords: Ureterovaginal fistula, Etiological factors, Ureteroneocystostomy, Outcome.

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Introduction

Ureterovaginal fistula is a communication between the distal ureter and the vagina. It is a rare but a relatively frequent complication of pelvic surgery. The etiological factors are very important in the treatment procedure of ureterovaginal fistula. We have very few data regarding this issue. It commonly occurs as a result of complication of pelvic surgeries like genitourinary endoscopic procedures, gynaecological and obstetric surgeries, colorectal and vascular surgeries. Approximately two thirds of all ureteral injuries occur during gynecologic surgeries.[1] Accounting for 0.5% to 2.5% of major gynaecological surgical procedures in which abdominal hysterectomy accounts for over half of the total cases seen.[2] Cesarean section is clearly the most common cause for ureteric injury among the obstetric procedures.[3] Reports from Nigeria indicate that cesarean sections and cesarean hysterectomies were the leading causes of ureteric injury leading to ureterovaginal (UVF) fistula being responsible for (38%) and (25%) of the cases, respectively.[4] The occurrence of both vesicovaginal and ureterovaginal fistula at the same time has been described by some authors.[5] Ureteral fistulas to the genital tract in the female may connect with the vagina or much less commonly with the fallopian tube or the uterus.[6] Risk factors for the development of ureteral fistulas also include endometriosis, obesity, pelvic inflammatory disease, radiation therapy and pelvic malignant disease.[7] The intimate relation of pelvic ureter to the female genital tract throughout its course in the pelvis makes ureter more vulnerable to injury during various gynaecological procedures. The frequently encountered sites of ureteric injury leading to UVF are lateral to the uterine vessels, base of the infundibulopelvic ligament, the ureterovesical junction close to the cardinal ligaments, at the point where ureters cross the pelvic brim at the ovarian fossa and at the level of the uterosacral ligament.[8] The most common presenting symptom is the onset of constant urinary incontinence one to four weeks after surgery. The condition is associated with devastating physical, social and mental consequences; and significantly impacts the quality of life of the affected individuals.[9]

Objective

General Objective:

- To assess the etiological factors and the outcome of ureterovaginal fistula in women.

Specific Objective:

- To collect information regarding the socio-demographic characteristics of patients with ureterovaginal fistula.
- To assess the diagnostic findings regarding the types of surgery performed.

Methodology & Materials

This was an observational study and it was conducted in Shaheed Ziaur Rahman medical College Hospital (SZMCH), Bogura, Bangladesh, during the period from May 2016 to December 2018. This study was approved by the ethical committee of the mentioned hospital. In total 48 women with ureterovaginal fistula at the center were included as the study population on the basis of non-probability purposive sampling. Proper written consents were taken from all the participants before collecting data. The ages of the participants were 15 years and more. A predesigned questioner was used in collecting patient data. The investigative procedures, etiology and clinical presentations were recorded. The operative procedure contemplated was noted and the post-operative results were evaluated. The diagnosis was made on the basis of the history of surgical intervention followed by urinary incontinence. All the data were collected, processed, analyzed and disseminated by MS Office and SPSS version 20 as per need.

Result

In this study in analyzing the ages of the participants we found the highest number of patients from 26-35 years' age group which was 33.33% (n=16). Then 27.08%, 20.83% and 18.75% patients were from 36-45, >45 and 15-25 years' age groups respectively. Besides this in analyzing the parity of the participants we observed, the highest number (n=19; 39.58%) of participants had 3-4 parity. Then 31% had 5-6 parity and 29% had 1-2 parity. According to the marital status of the participants we found, most of the patients (96%) were married whereas only 4% were divorced. In analyzing the educational status of the participants we observed, the highest number of participants had taken non-formal education which was 35.42%. Then 31.25%, 20.83% and the rest 12.50% participants taken Secondary level, Higher Secondary level and Graduation & above level of education. In analyzing the etiological factors among participants we found among total participants 60.42% were the patients of post-hysterectomy whereas the rest 39.58% were the

patients of post-cesarean section. On the other hand, among the patients of post-hysterectomy 16.67%, 14.58%, 25% and 4.17% were with abdominal hysterectomy for fibroids, abdominal hysterectomy for malignancy, cesarean hysterectomy and rupture uterus with SVD (Spontaneous vaginal delivery). Among all the participants, most of the cases (n=36; 75%) had not attempted for repair the fistula. Then 17%, 6% and 2% participants had got 1, 2 and 3 previous attempts. In analyzing the diagnostic findings regarding the types of fistula we found, 41 participants were with only ureterovaginal fistula whereas 10% were with ureterovaginal & vesicouterine fistula and the rest 4% were with ureterovaginal & vesicocervicovaginal fistula. In this study in analyzing the affected area regarding fistula we found left, right and bilateral portion as associated in 50%, 39.58% and 10.42% patients respectively.

Table I

Socio-demographic data of participants (n=48)

Variable	n	%
Age group (Years)		
15-25	9	18.75
26-35	16	33.33
36-45	13	27.08
>45	10	20.83
Parity		
1-2	14	29.17
3-4	19	39.58
5-6	15	31.25
Marital Status		
Married	46	95.83
Divorced	2	4.17
Educational Status		
Non formal	17	35.42
Secondary level	15	31.25
Higher Secondary level	10	20.83
Graduation & above	6	12.50

Table II: *Etiological factors among participants (n=48)*

Factors	n	%
Post-hysterectomy (n=29; 60.42%)		
Abdominal hysterectomy for fibroids	8	16.67
Abdominal hysterectomy for malignancy	7	14.58
Cesarean hysterectomy	12	25.00
Rupture uterus with SVD	2	4.17
Post-cesarean section (n=19; 39.58%)		

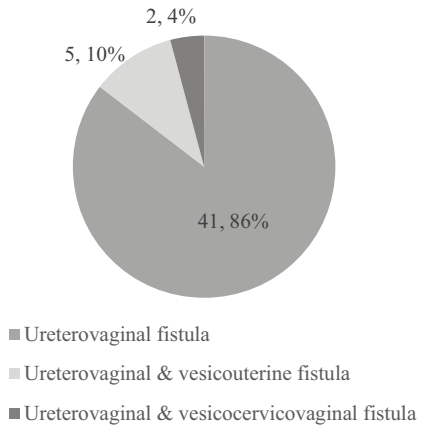

Fig.-1: *Diagnostic findings on type of fistula among participants (n=48)*

Table III: *Affected Side, ultrasound findings & treatment approach distribution (n=48)*

Variable	n	%
Affected Ureter		
Left	24	50.00
Right	19	39.58
Bilateral	5	10.42
Ultrasound Findings		
Left hydroureteronephrosis	21	43.75
Right hydroureteronephrosis	21	43.75
Bilateral hydroureteronephrosis	6	12.50
Treatment approach		
Abdominal reimplantation	38	79.17
Boari-flap	7	14.58
Reimplantion through vaginal route	3	6.25

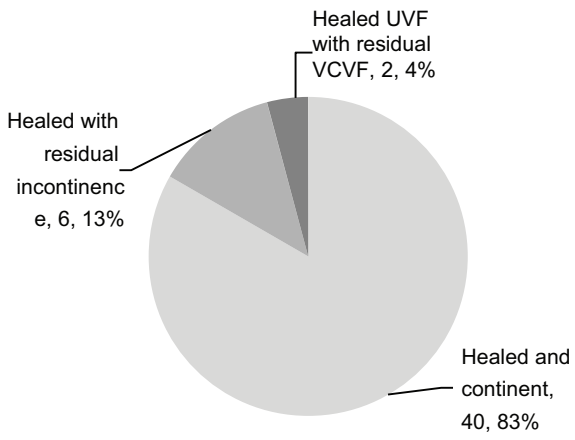

Fig.-2: *Final outcomes among participants (n=48)*

Discussion

The aim of this study was to assess the etiological factors and outcome of ureterovaginal fistula in women. In generally, ureterovaginal fistula occurs as the results of ureteral injury during surgery like abdominal/ radical/ vaginal/ caesarean section/hysterectomy, or anterior colporrhaphy as well as other pelvic surgery like vascular/urological surgery, including retropubic bladder neck suspensions or even colon surgery.[10] Such fistula may also results from radiation therapy, locally advanced malignant disease, pelvic trauma or chronic inflammatory diseases (CID) as like actinomycosis.[11] For ureterovaginal fistula, the obstetric causes are generally considered to be the predominant ones. [12] In this study in analyzing the etiological factors among participants we found among total participants 60.42% were the patients of post-hysterectomy whereas the rest 39.58% were the patients of post-cesarean section. On the other hand, among the patients of post-hysterectomy 16.67%, 14.58%, 25% and 4.17% were with abdominal hysterectomy for fibroids, abdominal hysterectomy for malignancy, cesarean hysterectomy and rupture uterus with SVD (Spontaneous vaginal delivery). One of the Nigerian studies[13] it was reported that, caesarean sections (CS) and caesarean hysterectomies (CH) were found as the leading cause of ureterovaginal fistula that collectively reaching up to 63%, and that was similar to their study where they found 70.5% cases due to the caesarean section/caesarean hysterectomies/ Spontaneous vaginal delivery (SVD). In this study in analyzing the affected area regarding fistula we found left, right and bilateral portion as associated in 50%, 39.58% and 10.42% patients respectively. In an earlier study[14] they also reported left-sided as predominance. That may due to the fact that, usually the operating gynaecologist stands on the right side of the patients and the "left-sided bleeding" is controlled by the clamps under obscured vision.[10] In cases of "combined fistulas of ureterovaginal or vesicovaginal fistula", the management may require bladder reconstruction.[15] Besides these, bilateral ureterovaginal fistulas have been reported as well.[16]

Conclusion and recommendations

Generally, ureterovaginal fistula occurs in emergency procedures including the emergency caesarean section and emergency hysterectomies. Well planned hysterectomy for benign and malignant uterine pathologies may reduce the frequencies of ureterovaginal fistula. In abdominal hysterectomy for complex pelvic or uterine-ovarian masses, "pre-operative bilateral double J ureteric stenting" can be applied to avoid the ureteric injury. This was a single centered study with a small sized sample. So the findings of this study may not reflect the exact scenario of the whole country. For getting more specific findings we would like to recommend for conducting more studies regarding the same issue

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