

Urological Complications of Obstetrical and Gynaecological Surgery- Experience with the Management of 39 Patients.

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The purpose of study was to see the results of repair of Vesicovaginal fistula (VVF) and ureterovaginal fistula (UVF) from January 2001 to December 2001. We prospectively analyzed 39 patients who were operated in our department for the management of Vesicovaginal and ureterovaginal, fistulae due to gynecological and obstetrical procedures. Out of these 39 patients 17 (43.5%) were in third decade of life with mean age of 32.5 years. 31 (79.48%) were having VVF and 08 (20.51%) were having UVF. 30 (76.92%) patients were operated in first attempt, 07 (17.94%) needed second attempt and 04 (10.25%) were operated for third time. We can decrease the incidence of genitourinary fistulae by improving physical and socio-cultural status of the patients and by better training of the young doctors.

Key words: Vesicovaginal fistula, gynecological surgery, management

Injury to the urinary tract is often associated with gynaecological or obstetrical surgery, because of the close proximity of the female pelvic organs to the ureter, bladder and urethra¹. When distended, the bladder is spherical and when empty it is tetrahedral, with a small posterior surface or base, a superior surface that expands with filling and two-inferiolateral surfaces that receive the ureters. The posterior part of the superior surface rests on the Corpus Uteri, while the bladder base rest on the cervix and anterior vagina^{1,2}, so it is not uncommon that the female patients presents with one of the itrogenic complications of the gynaecological or obstetrical procedures.

Intraoperative bladder injury have been reported (1.8%) with abdominal hysterectomy³, Vaginal hysterectomy 0.4%³, caesarian section less than 1%⁴, anti incontinence procedures surgery for pelvic organ prolapse and laparoscopic surgery has incidence of approximately less than 1%⁵, similarly ureteric injuries also occurs in about 0.5% to 2.5 % of the gynecological procedures^{6,7}. In addition to all these, Obstetrical trauma is also a common cause of urinary tract injuries, particularly in third world counties, where most of the deliveries are conducted by untrained personal like Dais (midwife) and where the antenatal care is not up to the standard. About 90% of the urinary tract fistulae in the female patients are secondarily to obstetrical trauma at birth⁸.

The patient may present in immediate post-operative period with the Symptomatology related to the type of injury or may present late as one of the distressing symptom. The injury to the urinary tract during any gynecological or obstetrical procedure occurs due to one of the following mechanisms⁹.

1. Electro cautery.
2. Ligation
3. Incision.
4. Crush injury
5. Clamping.

Other causes include tissue necrosis as a result of inadvertent suture placement between the vaginal cuff and the posterior aspect of the bladder¹⁰. Tissue necrosis of the bladder wall also occurs when the head of the baby compresses the wall of the bladder between itself and the pubic bones in case of obstructed labour^{1,5}. In any case the patient presents with symptoms which often results in extreme distress for both the patient and the treating physician.

This current prospective study was conducted to review the patients who present to the Urology department with one of the complication of gynecological or obstetrical procedure and to highlight the importance of more meticulous approach towards these patients.

Materials and methods

This prospective study was carried out at the department of Urology, Mayo hospital Lahore during January 2001 to December 2001. All the patients who presented to this Department with urological complications of one of the Gynecological or obstetrical procedure were included in this study. All the patients were admitted and reviewed for the cause of surgery, type of surgery, type of injury and any immediate attempt of repair at the time of injury. Patient's history and physical examination including her pelvic examination was done. Laboratory investigations were performed to ensure general well being of the patient and radiological investigations, including both ultra sonography and contrast radiography, were performed to know the extent of the injury and to evaluate the functions of the upper tract. On the initial diagnostic pelvic examination and cystoscopy the injured area and the surrounding area was noted for the degree of inflammation, pliability and potential infection. Surgery was planned depending upon the nature of the injury and the status of the tissue, in some cases of VVF, where infection and inflammation was not settled, patients were advised to wait for two to three months till the

inflammation subsided. In cases of the ureteric injuries, where it was suspected that the ureter was ligated, clamped, crushed or incised, cystourethroscopy was performed, as an initial step. Double J ureteric stent was passed where possible followed by ureteroneocystostomy where the injury was near the distal end of the ureter and Bori's flap where the length of the damaged ureter was not adequate. In patients with Vesicovaginal fistulas, transvaginal repair was used whenever satisfactory vaginal exposure was possible. In the case of poor vaginal exposure, that is, narrow introitus, poorly estrogenized or scarred tissue, or morbid obesity transvesical repair was preferred. In either case repair was performed in two layers with 2/0 vicryl. First layer with interrupted sutures and second with continuous sutures. Indwelling Foleys catheter no 16 was left per urethra for two weeks along with vaginal pack for 12 hours.

Results

A total of 39 patients presented in urology Department with one of the complications of the gynecological or obstetrical procedure during the period one-year from January 2001 to December 2001. Most of the patients were in their third and fourth decade of life, with the mean age of 32.5 years (Table no 1). Fourteen (35.8%) out of 39 patients were referred from tertiary Hospitals and 16 (41%) from District Hospitals and rest of the 09 (23.2%) patients presents with complications secondary to Dai handling during Labour.

Table 1. Age incidence.

Age group	n=	%age
<20	03	07.6
21-30	17	43.5
31-40	13	33.3
41 and above	06	15.3

Out of these 39 patients, 31 (79.48%) presented with Vesicovaginal fistula and the rest of 08 (20.51%) with ureteric injury. In cases of the Vesicovaginal fistulas almost all the patients had complaint of dribbling of urine (true incontinence), of which 27 patients had totally no control over urination. In patients with ureteric insult flank pain was the commonest presentation postoperatively followed by fever, paralytic ileus and increased level of serum Creatinine postoperatively in 76%, 12%, 08% and 04% respectively.

Surgery for caesarian section was found out to be the major culprit for the injuries, 14 (35.89%) patients had history of caesarian section for fetopelvic disproportion, followed by, 11 (28.20%) patients who had abdominal hysterectomy, 07(17.94%) patients had history of prolonged obstructed labour, 04 (10.25%) had vaginal hysterectomy, 02(5.12%) had laparoscopy for primary infertility and 01 (2.65%) had history of forceps delivery. (Table II).

Table II. Etiology

Etiology	n=	% age
Post C-section	14	35.89
Abdominal hysterectomy	11	28.29
Obstructed labour	07	17.94
Vaginal hysterectomy	04	10.25
Laparoscopy	02	05.12
Forceps delivery	01	02.56
Total	39	100

Cystourethroscopy was performed in all the patients to evaluate the extent of injury and the condition of the tissue. Cystourethroscopy revealed rent of varying degree, in the bladder wall in 31(79.88%) patients, 05 (12.82%) had complete obliteration of the lumen of the ureter and in 03(7.69%) patients the lumen was negotiated through which Double J ureteric stent was passed over a guide wire.(Table III).

Table III. Cystoscopy findings.

Cystoscopy findings	n=	% age
Bladder rent.		
o < 2cm	16	43.58
o 2-4 cm	08	23.07
o >4 cm	07	12.82
Ureteric injury		
o Complete injury	05	12.82
o Partial injury	03	7.69

Over all 50 procedures were performed in these 39 patients, of which 30 (76.93%) had single successful operation, 07 (17.94%) had two operations and in 04 (10.25%) third surgery had to be performed to make the patient completely symptom free.(Table no. IV & V).

Table IV. Procedures.

Procedure	n=	%age
Trans-Abdominal VVF repair	20	51.28
Trans-vaginal	09	23.07
Bori's flap	03	07.69
Reimplantation ureter	02	05.12
Ureterosigmoidostomy	02	05.12
Double JJ	03	07.69

Table V. out come of surgery.

Surgery	n=	Operative Success	Redo 1	Redo 2
VVF	31	24	06	04
Ureter	08	07	01	00
%Age		76.93	17.94	10.25

Discussion

Gynecological surgery is often associated with urological complications, the most common being post operative urinary tract fistulas and accidental ligation or injury of the ureter (11). In the developed nations urological complications after gynecological or obstetrical surgery

are most unfortunate and uncommon where as in the developing countries and particularly in the underdeveloped nations with limited medical resources gynecological and obstetrical procedures accounts for most of the urinary tract fistulas^{12,13}.

Urinary fistula to vagina has been described since the beginning of the written record¹². In industrialized nations, gynecological surgery is the most common cause of the Vesicovaginal fistula, with either abdominal or vaginal hysterectomy associated with about 75% of genitourinary fistulas (14). In our series mean age of the patients was 32.5%, which is similar to other results from Asian countries, where age presentation in most of the patients was 21 – 30 years¹⁵. A review of 43 patients with VVF and urethrovaginal fistula by Goodwin and Scardino in 1980 identified gynecological surgery as the cause in 32 patients¹⁶. In 1992, Fancer⁹ reported on 151 genital fistulas of the lower urinary tract. A total of 137 (91%) were post surgical, with 125 occurring after gynecological surgery. Total hysterectomy was the most common antecedent procedure, accounting for 110 (73%) of the fistulas, with 99 of the hysterectomies performed transabdominally^{9,17}. Similarly in 1997 a study was carried out at, Department of Urology, Riyadh Medical Complex, Riyadh, Saudi Arabia which states that rate of urinary tract complications following gynecological procedures is being 43 per 100,000 births and Caesarian section accounts for 9.5%¹⁸. Our present study correlates with local studies but contradict with international data since in our series we found that caesarian section is the commonest cause of urinary tract fistula (36%), followed by abdominal hysterectomy in 28% cases, where as in western countries Hysterectomies are the common cause followed by caesarian sections^{17,18}. Our results do not correlate with the results of Mustafa and Rushwan (1979) where major cause of VVF was prolonged obstructed labour (74.8%), instrumentation (20.5%) and other gynecological operations (4.7%)³².

The management of the urinary tract fistulas varies depending upon the nature and extent of the injury. Vesicovaginal fistulas can be treated conservatively by catheterization, antibiotics and anti cholenergics (to prevent bladder spasm) although the success rate is very small¹⁹. Transvaginal or trans abdominal electrocoagulation of the epithelial lining of the fistula tract has been advocated as a minimally invasive therapy for very small VVF^{20,21}. Despite all approaches towards repair of the VVF transvesical and trans abdominal remains the standard treatment for many of the fistulas particularly in developing countries. Many studies supported transvesical repair and as much advocate transabdominal approach^{11, 20,22}. What ever be the surgical approach the basic principle remains the same, that is, all suture lines should be tension free, uninfected and dry⁹. When repair is tenuous, interposition of a well-vascularized graft is recommended²³. Three to six months

period is recommended between the development of the postoperative fistula and attempt at repair²⁰, however early closure is recommended to avoid psychological and psychosocial distress of the patient^{24,25}. In our present series we have given 2 to 3 months period before repair. We use transabdominal route for repair in most of the cases as compared to the trans vaginal route due to multiple facts, like poor vaginal exposure, narrow introitus, obesity or supratrigonal large fistula. Ureter is the second most commonly injured organ after urinary bladder, during gynecological and obstetrical surgery⁹. Incidence of ureteric injury varies from 0.1% to 1.5%^{7,9}. One third of ureteral injuries in gynecologic surgery occur during vaginal hysterectomy (26). With the advent of laparoscopic surgery in gynecology the incidence of ureteric injuries increases from 1.5% to more than 3.5%²⁷. Most of the ureteric injuries occur at the level of lower third of the ureter followed by middle third of the ureter²⁸. In our present series we had 08 (20.51%) patients with ureteric injuries, of these patients two patients had laparoscopy and rest of the 06 had abdominal hysterectomy, out of these 08 patients two (25%) had injury at lower third of the ureter and 06 (75%) had injury at middle third of the ureter, these results correlates with both the international^{29,30} and local³¹ studies regarding etiology of the ureteric injuries.

Conclusion

VVF is a multi dimensional complication, which affects the patient's physical, social and psychological life. It has been observed that itrogenic injury to the urinary tract is still common in our practice even in tertiary hospitals where best consultants and modern equipments are available; the rate of urological complications is at rise instead of decreasing. To reduce the incidence we need to improve the causal factors which include physical, socio economic, education of the patient as well training of our young doctors working in Tehsil, District and even Tertiary hospitals.

References

1. Peggy A. N. Urological complications: Backer and Deppe management of perioperative complications in gynecology: W. B. Saunders company: 1997: chp (8): 83-98.
2. Gosling J, Harris P, Humpherson J, et al. Atlas of human Anatomy. Philadelphia, JB Lippincott: 1985: 59-61.
3. Wheelock J, Krebs H, Hurt W. Sparing and repairing the bladder during gynecological surgery. *Contemp. Obstet Gyneol.* 1984, 23: 155-159.
4. Kuskarelis D, Sakkas J, Aravantions D. Urinary tract injuries in gynecological and obstetrical procedures. *Int Surg* 1975; 60: 40.
5. Peterson H, Hulka J, Philips J. American association of Gynecological laparoscopists' 1988 membership survey on operative laparoscopy: *J Repnd Med* 1998; 35: 587-589.
6. Halloway H J. Injury to the urinary tract as a complication of gynecological surgery. *Am J Obstet Gyneol.* 1950: 60: 30-40.

7. Mann W J, Arato M, Patsner B, et al. Ureteral injuries in Obstetrical and gynecological surgery. *Obstet Gynecol*: 1988;72: 82-85.
8. Rashid Latif Khan; *Gynecology. Medical publications*: 1992 (2); 287-295.
9. Raz S, Little N A, Juma S: *Female urology*. In waish D C, Retik AB, Staney T A, eds: *Campbell's Urology*. 6th ed. Philadelphia. W. B. Saunders company, 1992,2782-2828.
10. Zimmern P E, Ganabath R, Leach G E: Vesicovaginal fistula repair. *Atlas Urol Clin North Am* 1994; 2: 87-99.
11. Wendy W L, Cindy L A, Edward M G. Management of female genitourinary fistulas: transvesical or trans vaginal approach?, *J Urol*. 1998; 160: 1995-1997.
12. Zancharin R E: *Obstretical fistulas*. New York, Springer-veerlag, 1988.
13. Falk H C, Tancer M L: Vesicovaginal fistula: An historical Survey. *Obstet Gynecol* 1984; 3: 337-341.
14. Lee A L, Synmond R E, William T J: Current status of genitourinary fistula. *Obstet Gynecol* 1988; 72 : 313-319.
15. WHO (world Health Organization) ; 1989. The prevention and treatment of obstetrical fistula, report of technical advisory group, Ganiva, 1989.
16. Goodwin W E, Scardino P T. Vesicovaginal and ureterovaginal fistulas: a summary of 25 years of experience. *J Urol*, 1980. 123: 370.
17. Ba Thike, Than Aye. Vesicovaginal fistulas, *Int J Gynecol Obstet* 1992; 37: 127-130.
18. Onuora VC, al Ariyan R, Koko AH, Abdelwahab AS, al Jawini N. Major injuries to the urinary tract in association with childbirth. *East Afr Med J* 1997 Aug;74(8):523-6
19. Tancer M L: Observations on prevention and management of Vesicovaginal fistulas after total hysterectomy. *Surg Gynecol Obstet* 1992; 175: 501-506.
20. O' Connor VJ Jr: Review of experience with VVF repair. *J Urol* 1980; 123: 367-369.
21. Stovsky M O, Lgnatoff J M, Blum M D, et al: Use of electrocoagulation in the treatment of VVF. *J Urol*: 1994: 152: 1443-1444.
22. Landes R R: Simple transvesical repair of Vesicovaginal fistulas. *J Urol*. 1979. 122: 604.
23. Wein A J, Mallory T R, Green berg s S H et al: Omental transposition as an aid in genitourinary reconstruction procedure. *J Urol*. 1980. 120 : 473-477.
24. Persky L, Heman G, Guerrier K: Nondelay in VVF repair: *Urology* 1979; 13: 273-275.
25. Blaivas JG, Heritz D M, Romanzi L J. Early versus late repair of VVF: vaginal and abdominal approaches. *J Urol*. 1995; 153: 1110-1113.
26. Cruikshank SH. Avoiding ureteral injury during total vaginal hysterectomy. *South Med J* 1985 Dec;78(12):1447-50.
27. Negrin Perez MC, De La Torre Fdz P, Ramirez A. Ureteral complications after gasless laparoscopic hysterectomy. *Surg Laparosc Endosc Percutan Tech* 1999 Aug;9(4):300-2.
28. Selzman AA, Spimak JP. Iatrogenic ureteral injuries: a 20-year experience in treating 165 injuries: *J Urol* 1996 Mar;155(3):878-81.
29. Zinman Im, libertion JA, Roth RA. Management of operative ureteral injury. *Urology* 1978; 12: 290-303.
30. Lezin MA, Stoller ML. Surgical ureteral injuries. *Urology*. 1991; 38: 497-506.
31. Saifal K T, Lubna M, Memon AS. Treatment of gynecological and obstetrical ureteric injuries. *JSP (int)*; 1999 (4): 31-35.
32. Mustafa AZ, Rushwan HME. 1979. Acquired genitourinary fistulae in Sudan. *Jr. Obstet Gynecol*. 78,1039-1043.