

# Iatrogenic Bilateral Ureteric Injuries A Complication during Pelvic Surgeries

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## ABSTRACT

**Aim:** To determine the etiology, presentation, diagnosis and treatment of iatrogenic bilateral ureteric during pelvic surgery.

**Method:** A total of 7 patients with bilateral ureteric injury presented with anuria and uretrovaginal fistula was treated and their data was reviewed.

**Results:** The seven patients with iatrogenic bilateral injury was treated. In two patients injury recognized per operatively, four presented with anuria and one had incontinence .Abdominal hysterectomy and vaginal hysterectomy was the reason for ureteric injury in 3 and1 cases respectively, while 1case of each had cervical mass excision , c section and c section hysterectomy. Ureters were ligated bilaterally in 4 ,there was bilateral ureterovaginal fistula in 1,excised ureter with mass in 1 ,while in 1 had ligated one ureter and transected other ureter associated vvf after vaginal hysterectomy. All survived six ,had successful repair except one who had disruption of vvf.

**Conclusion:** The early recognition of injury and its treatment can reduce the morbidity and mortality.

**Keywords:** VVF, vesicovaginal fistula, hysterectomy

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## INTRODUCTION

Derry was the person who observed the injury of urinary tract in the mummy of Henhenit who lived in the court of King Mentuhotep II on 2050 BC. However it was first described on 1030 AD in the Opus called Al-Kanoun.<sup>1</sup>

Iatrogenic ureteric injury is well known complication of abdominopelvic surgery. However the reported incidence of ureteric injury in surgery of benign diseases is 0.5 to 1%<sup>4,5</sup>. But this incidence is very high (5 to 30%) in surgery of malignant diseases like radical hysterectomy<sup>4</sup>. Historically iatrogenic injury to urinary tract was more commonly associated with abdominopelvic surgery .But now the endoscopic urological intervention and laparoscopy associated trauma<sup>5, 6</sup> is more commonly associated with urological injuries.

Bilateral ureteric injury is very rare and severe complication of pelvic surgery. The predisposing factors are excessive bleeding and difficult hemostasis, nature of pathology like malignancy, inexperienced surgeon, history of previous pelvic surgery. These injuries can be because of ligation, transection, crushing, tethering or excision of portion of ureter.<sup>7</sup> It can lead to anuria, fluid overload, urosepsis and urinary fistula. They can be recognized per operatively or their presentation can be delayed even up to three months<sup>7</sup>. This delay in recognition can leads to loss of renal unit and even deaths have been reported because of urosepsis<sup>7</sup>.

We reviewed our data and found six cases of bilateral ureteric injury. All cases treated successfully there was no loss of renal unit and death.

## MATERIAL AND METHOD

This is a quantitative prospective study the sampling technique was non propability purpose sampling .All the patients were admitted through emergency except two in which emergency call was received as these patients were already on operation table. Their detail history regarding primary disease for which they have undergone pelvic surgery, post-operative urine output, details of operating surgeon like qualification and experience .Their detail physical examination done regarding urine output anemia signs of fluid overload as well per vaginal urinary leakage noted. Their required investigations like complete blood count, urine analysis, renal profile, electrolytes, ultrasonography of abdomen pelvis. In those cases where patients have anuria and her condition was not stable regarding general health status as well deranged renal functions fluid over load percutaneous nephrostomy was performed.

In all cases we performed urethrocystoscopy to see associated injury of urinary bladder and ureteroscopy and tried to negotiate the injury site if possible then DJS was passed. In other cases the abdomen was opened through previous extended incision and retro- peritoneum entered ureter identified and traced up to site of injury and pathology was identified. The bladder and ureter was mobilized

then bilateral uretroneocystostomy performed over dJ-stent and psoas hitch on one side and vvf repaired. After placement of drain and per urethral foley,s abdomen closed .Foley’s was removed after 10 days and dj-stent after 6 to 8 weeks. Patients were called after one month three months six month and one year for assessment renal function and ultrasonography to see hydronephrosis.

**RESULTS**

A total of seven patients was treated with bilateral ureteric injury treated by a single surgeon. The age range was from 35 to 57 year with mean age 46.71 years. One (14.3%)injury occurred during C section, one (14.3%) during c section hysterectomy, one(14.3%) in which excision n of cervical mass where both ureters were entrapped and were excised with mass and three (42.3%) during abdominal hysterectomy while vaginal hysterectomy one (14.3%). In two patients(28.6%) injury was recognized at table .Other three (42.9%) presented with anuria and two (28.3%) presented with per vaginal urinary leakage due to bilateral uretrovaginal fistula .In 4(57.12%) cases there was ligated ureters, one (14.28%) case having bilateral excised ureters due to their entrapment in mass and its part was

excised with mass In remaining one (14.3%) case there was partial tear in ureter either due to ligature or due to nick in it and its contralateral side was also ligated and fistula was formed on both side. Two abdominal and one vaginal hysterectomies were performed by general practitioner, one hysterectomy was done by general surgeon, and cervical mass excision was carried also by general surgeon. C section hysterectomy was done by experienced gynecologist bleeding was reason for bilateral ureter ligation .other one abdominal hysterectomies was also done by gynecologist. In those three cases where anuria was the presentation two out of these three cases were stable and operated immediately and other patient was unstable due to fluid overload and percutaneous nephrostomy was performed and his Hb was low. She had delayed repair when her renal profile was normal and Hb was build up.

Six patients had excellent course of post-operative recovery. One patient with vaginal hysterectomy had vvf with bilateral ureteric had again disruption of vvf postoperatively and lost the follow up .One patient of cervical malignancy expired because of primary disease after 4 months this procedure. All other patients remain well regarding their renal function.

**Age**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	35.00	2	28.6	28.6	28.6
	45.00	1	14.3	14.3	42.9
	50.00	2	28.6	28.6	71.4
	55.00	1	14.3	14.3	85.7
	57.00	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

**Etiology**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	c section	1	14.3	14.3	14.3
	Abdominalhyrectomy	3	42.9	42.9	57.1
	c section hysterectomy	1	14.3	14.3	71.4
	excision of cervical mass	1	14.3	14.3	85.7
	transvaginal hytrectomy	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

**Presentation**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid bil ureteric fistula	1	14.3	14.3	14.3
Anuria	4	57.1	57.1	71.4
per op recognition	2	28.6	28.6	100.0
Total	7	100.0	100.0	

**Diagnosis**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid bil u v f	1	14.3	14.3	14.3
bil ligated	4	57.1	57.1	71.4
ureter fntrapped in cervical mass	1	14.3	14.3	85.7
right ligated and left uvf with vvf	1	14.3	14.3	100.0
Total	7	100.0	100.0	

**Treatment**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid rt d j s and lt uretroneocystostomy	1	14.3	14.3	14.3
deligation of bil ureter	1	14.3	14.3	28.6
bil uretroneocystostomy	4	57.1	57.1	85.7
bil uretroneocystostomy and vvf repair	1	14.3	14.3	100.0
Total	7	100.0	100.0	

**DISCUSSION**

Iatrogenic bilateral ureteric injury is very rare as compared other urinary tract injuries like unilateral ureteric injury and vesicovaginal fistula etc. However the overall reported incidence of ureteric injury is 0.5-1.5%<sup>7</sup>. In other study it is reported as 0.013%<sup>8</sup>. The reported incidence of bilateral ureteric injury is 5-10% of all ureteric injuries<sup>7</sup>. But in radical hysterectomy the incidence of iatrogenic urinary tract injury is very high 5-30%<sup>4</sup>. Lars reported 2.2% incidence of bilateral ureteric injury<sup>8</sup>. Any iatrogenic injury of urinary tract has multiple problems. These injuries ultimately lead to fistula formation or cause obstructive renal failure in case of bilateral ureteric ligation. If not picked early can lead to urosepsis and even deaths have reported<sup>10</sup>. The morbidity of patient is also increased. Despite of these serious medical issue if sufferers develop urinary fistula their social

misery increased many folds like isolation and separation of couples ONKAR SINGH<sup>11</sup>.

In our study the age range was 35 -57 years ,mean age was age was 46.16 years and median age was years. <sup>7</sup> have reported in their study age between 18 – 74 yeas. So our result are similar to other studies

The time of recognition of injury is very important .Intraoperative recognition of ureteic injury is very low ranges from 11-33% <sup>1</sup>. If they are identified per operatively they can be repaired quite easily<sup>8</sup>. Otherwise if these injuries are identified late patients do present with ,anuria ,renal failure and urinary fistula, In our study 2 (28.56%) patients injury was identified at table and managed accordingly. Their post-operative recovery was uneventful as compared to other 5(1.44%) patients have to undergo second surgery as well as their morbidity was also increased. In study of <sup>8</sup> they recognize 12.5% ureteric

per operatively .In another study of <sup>7</sup> bilateral injury none was recognized per operatively. In another study presentation was delayed from 2 to 10 days . So our result regarding per operative ureteric injury identification are similar to international literature .In one case there was high index of suspicion as it was excision of residual cervical mass and other patient has emergency c section followed hysterectomy because of severe bleeding and they applied stitch blindly to control bleeding.

The mode of presentation in bilateral ureteric injury varies . They can present with anuria, fluid overload, urinary fistula. IF their presentation is delayed in obstructed cases they can present with urosepsis. In our study 2(28.56%) patients injury was identified per operatively while 2(28.56%) presented with urinary leakage after 10 days and 3(42.85%) presented within 48 hours with anuria. In our study these cases picked up quite early by primary treating surgeons. The anuric patients in study of 7 presented at one to three days delay with average delay of two days. So our results are comparable with international literature. The reason could be that wide spread availability and use of ultrasonography. In study<sup>7</sup> ultrasound importance regarding detection of hydronephrosis high lighted. But reason for this early detection is index of high suspension in presence of anuria because of bleeding and application of stitches and clamps blindly

In our series one (14.28%) patients has undergone C section other one (14,28%) c section hysterectomy one(14.28%) had residual cervical mass excision while remaining three (42.85%) patients had undergone abdominal hystectomy and one (14.28) vaginal hystrectomy for dysfunctional uterine bleeding and fibroid uterus. In C section and hysterectomy the major reason for ureteric injury is application of blind clamps and ligature to control the bleeding. (Matani).In study of Mate Kole there were 7 cases among which 4 has undergone hysterectomy for fibroid two had hysterectomy for Ca uterus and one for c section hstrectomy .Hysterectomy was the major reason for bilateral injury in our as well other studies. So our results are comparable with other studies.

In our study 5 (71.44%) patients has undergone uretroneocystostomy with vvf repair in one case, one (14.28%) bilateral deligation of ureters with djs insertion also in immediate postoperative time. The remaining one (14.28%)case presented with bilateral uvf we did uretroscopy and found a small rent in ureter, able to pass djs on one side and contralateral uretroneocystostomy done .In study of MateKole all

has undergone uretroneocystotoy. Similarly Mathew treated 5cases of bilateral ureteric injury where 40% need initial bilateral reimplantation. Those 3 cases who have undergone primary bilateral stenting devolped strictures in two ureters which need further treatment in form of reimplantation and dliatation of stricture.

## CONCLUSION

The early recognition of injury and its treatment can reduce the morbidity and mortality and loss of renal and death can be avoided by prompt treatment.

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