

## URETERAL INJURY IN GYNAECOLOGY AND OBSTETRICS AN ANALYSIS OF 20 CASES (1978-1989)

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### SUMMARY

We are presenting here an analysis of 20 cases of ureteric injuries from Dept. of Obstetrics and Gynaecology LTMM College and LTMG Hospital Sion, Bombay-2, India over a period of 12 years from 1978 to 1989. A comprehensive study with reference to incidence, method of treatment, results and follow-up including a review of literature is presented herewith.

### INTRODUCTION

Injury to the ureter is a rare complication of gynaecological surgery, despite the fact that the ureters lie concealed in extraperitoneal tissue immediately adjacent to the ovarian and uterine vessels and the cervix. The incidence of such injuries varies with the experience of the surgeon, but in the hands of a competent gynaecologist, and with modern techniques, they probably occur in only 0.5/1.0% of all pelvic operations (Mattingly and Borkowf 1978), possibly rising to nearer 2% with radical hysterectomy (Macasaet et al 1976). It is associated with high morbidity, ureterovaginal fistulae and potential loss of

kidney function. Because of the serious risk of impairment of renal function ureteral injuries are more troublesome than injury to either bladder or rectum; other 2 common sites of surgical trauma during gynaecological surgery.

### OBSERVATIONS AND DISCUSSION

Experience gained from dealing with ureteric injuries in 20 cases associated with or following obstetric and gynaecological surgery during the 12 years (1978-1989) at our hospital is used to illustrate the principles involved and the overall results are also brought out lucidly in our review. The incidence of ureteric injury in our series is 0.1% which compares favourably with the reported in-

cidence the world over of 0.1 to 2.5% (Freda & Tacchi 1962, Buchsbaum and Schmidt 1982). Operative injury to the ureter results from one of the 4 types of trauma: ligation, crushing, transection or angulation with secondary obstruction. Each type of injury may be either partial or complete. As shown in Table 1, this complication occurs more often during the performance of a hysterectomy than any other pelvic operation. According to Stanton (1990), the commonest causes are hysterectomy followed by caesarean section, colposuspension, sling procedures,

10-13% (Ghosh 1980) but with improved techniques and post-operative bladder drainage, it has been reduced to 1.4% by Inguilla and Cosmi (1967). The ureterovaginal fistula may rarely follow LSCS when the incision extends to the uterine artery resulting in haemorrhage or haematoma (Lawson 1967). 2 cases of ureterocervical fistulae of obstetric origin have been reported by Sen & Chaudhary (1976), and Oumachigui et al (1982) found uterine injuries in 0.09% due to transection, extension of incision or haemostasis.

TABLE 1

Sr. No.	Disease	Operation	No. of Cases	%
1.	Prolapse	Vaginal Hysterectomy with repair	6	30%
2.	Multiple Fibroids	Abd. Hysterectomy	2	10%
3.	T.O. Masses	Annexectomy	2	10%
4.	Endometriosis	Abd. Hysterectomy	1	5%
5.	Carcinoma Cervix	Wertheim's Hysterectomy	2	10%
6.	Carcinoma Cervix	Schauta's Hysterectomy	4	20%
7.	Rupture Uterus	Obstetric Hysterectomy	3	15%
TOTAL;			20	100%

TABLE 2

Sr. No.	Signs and Symptoms of Patients with Ureteral Injury	No. of cases	%
1.	Abdominal mass with Fever	4	20%
2.	Anuria	2	10%
3.	Vaginal Leakage	10	50%
4.	Detection on Table	4	20%
TOTAL:		20	100%

anterior colporrhaphy and tuboovarian procedures. More than any other pelvic operation the Wertheim type of radical hysterectomy for cervical carcinoma has contributed to ureteral injury with incidence of ureteric fistulae being

It has been said that 'the venal sin is injury to the ureter, but the mortal sin is failure of recognition.' In every case where ureteral injury is suspected it has to be thoroughly investigated and confirmed before treatment can

begin. In our series of 20 cases, 4 were detected on table (Table 2). In one of the Schauta's operations, one ureter got included when infundibulopelvic ligament was ligated. This was recognised when ureter was further dissected and immediate deligation was done. In another Schauta's operation both ureters were injured. One ureter got included in one of the ligatures applied to control brisk bleeding that occurred during the dissection of ureter. On the other side the ureter got nicked during its dissection. Immediate deligation with suturing of perforation was done (Table 4) IVU 3 weeks later showed good kidney function in both cases (Table 3). The intravenous urogram (IVU) was the single most valuable diagnostic study in directing attention to ureteral injury. Our study revealed hydronephrosis and hydroureter in 50% of cases (Table 3).

with a 'Psoas hitch' and submucosal tunnelling to prevent vesicoureteric reflux. In the presence of dense adhesions, a transperitoneal Boari flap procedure may be preferred as was done in 2 cases in our series (Table 4).

Where evidence of ureteric damage becomes evident after operation and the site of injury is not clearly seen on the IVU, cystoscopy and ascending ureterogram will be the procedures of choice. In some early cases simple ureteric drainage with a whistle tip or flute ended catheter may allow a small fistula to heal (Hulse et al 1968). If the leak does not dry up quickly, however, some form of operative intervention is necessary and there is little point in further delay (Beland 1977). Table 4 clearly shows that conservative treatment worked in 3 of our cases. Awareness of the possibility of combined bladder and

TABLE 3

Sr. No.	Intravenous Urogram (IVU) Findings	No. of Cases	%
1.	Normal	4	20%
2.	Extravasation	3	15%
3.	Hydroureter and Hydronephrosis	10	50%
4.	Nonvisualisation	3	15%
TOTAL:		20	100%

If the ureters is injured intraoperatively or injury suspected, the entire length of pelvic ureter is exposed and nature and extent of injury defined. If a high ureteric injury is found, direct end to end anastomosis is performed. If a low ureteric injury is found, it is usually possible to reimplant the ureter into the bladder. The most important technical point according to Whitehead (1979) is to ensure that the ureteric implantation is performed without tension which is best done

ureteric fistulas has led to routine cystoscopy and bilateral ureterograms at our hospital prior to definitive repair - a policy also recommended by Murphy et al (1982). The methods of treatment, results and long term follow up of our patients are clearly outlined in Table 4. Procedures like nephrostomy, formation of ileal conduit, ureteroureteral anastomosis, ligation of affected ureter and nephrectomy were not required in our centre. Although the overall differences in results be-

TABLE 4

THE METHODS OF TREATMENT, RESULTS AND LONG TERM FOLLOW UP OF OUR SERIES

Time of Recognition of Injury	No. of Cases	Treatment Given	No. of Cases	Immediate Results	Long Term Follow-up
A) On Operation Table	4	a) Deligation	3	Good	Awaited
		b) Deligation with suturing of perforation in the ureter	1	Good	Awaited
B) Within 24 hours after Operation	2	Unilateral cutaneous ureterostomy	2	Good	Reimplantation into bladder done after 8 weeks
C) Delayed Recognition	14	a) Conservative treatment with spontaneous closure of fistula	3	Good	Good in one case other 2 cases lost for follow-up
		b) Reimplantation into bladder	8	Good in all 8	Good in 5 cases 3 are lost for follow-up
		c) Reimplantation into bladder with bladder flap	2	Good	good
		d) Implantation of ureter into colon	1	Good	Lost for follow-up
TOTAL: 20		TOTAL: 20			

tween those treated immediately and those receiving delayed treatment are relatively small (Table 4), Mendez et al (1978) in a retrospective study of 44 surgical ureteral injuries have reported that patients with immediate recognition and treatment have a better prognosis than patients with delayed recognition and treatment.

The gynaecologist must not hesitate to ask for skilled assistance as soon as urinary tract injury is encountered - the urologist has access to diagnostic techniques, and is familiar with reconstructive methods, which should ensure that the problem is dealt with as safely and effectively as possible, with a minimum of delay.

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