URETERO-VAGINAL FISTULA AND ITS MANAGEMENT

by

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Serious damage to the urinary tract, particularly the ureters, during pelvic surgery is a serious misadventure and in spite of the greatest care and skill, severence or occlusion of the ureter and fistula formation can not always be avoided. Postoperative ureteric fistulae are coming into prominence in recent years with increasing employment of total hysterectomies and radical hysterectomies for pelvic malignant disease and, if this trend continues, it is likely that more urinary tract injuries are liable to occur in future.

The primary or immediate type of ureteric fistula is traumatic as a result of direct injury to the ureter. The secondary or delayed type follows ischaemic necrosis of ureteric tissue due to vascular deprivation and is sometimes unavoidable by the very nature of the operations, radical surgical procedures for cancer of cervix.

During the years 1962-63, at Nilratan Sarkar Medical College and the years 1964-66 at Eden Hospital, Medical College, Calcutta, 130 cases of genito-urinary fistulae were treated. A total of 7,475 major operations were performed during these years. The types of genito-urinary fistulae treated are recorded in table 1. But these figures do not actually indicate the frequency of the injuries to the urinary tract in the hospitals, as both the centres receive patients from the city and districts at large and many cases were due to difficult labours at home without proper medical aid.

TABLE I

Type of operation preceding fistula

Type	Nos.
Vesico-vaginal	102
Urethro-vesico-vaginal	6
Urethro-vaginal	2
Recto-vesico-vaginal	1
Uretero-vaginal	19
Total	130

Experience with these 19 cases of uretero-vaginal fistulae is reported in this study because in most of them the precise cause of the injury was known. Many patients with these injuries have no specific symptoms or typical premonitory symptoms. Oliguria was not apparent in any patient with unilateral ureteric injury. Table 2 analyses the type of operations performed.

Urologic complications were by far the most common in radical pelvic surgery and uretero-vaginal fistulae occurred in 8% of such cases. The incidence of this post-operative complication may reach over 10% if

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TABLE II
Type of Operation preceding fistula

Type of operation	No. of post-operation fistula
Wertheim's hysterectomy	10
Radical vaginal hysterectomy (Schauta)	2
Total abdominal hysterectomy	1
Removal of cervical fibromyoma	2
Removal of tubo-ovarian mass	1
Removal of broad ligament tumour	1
Caesarean section	1
Ectopic ureter	1
Total	19

the surgery follows radiation therapy. The locations where ureteral damage is most likely to occur must constantly be borne in mind by the surgeon and guarded against. In the dissection of the ureters in radical surgery, the periureteral connective tissue should be preserved as also the mesial leaf of peritoneum should be attached to the upper half of the pelvic segment of the ureters.

In the case having total hysterectomy, the ureter was included in stitches inserted to arrest haemorrhage near the angle of the vagina, and in the case of caesarean section injury occurred during attempts to stitch a tear extending from the lower segment laterally. The case of the ectopic ureter was interesting in the sense that the ureter opened into the anterior vaginal wall just below the urethra and the patient, an unmarried young girl, had the only complaint of nocturnal enuresis.

Diagnosis

The clinical awareness of the presence of the fistula is dribbling of urine with, or without, pain or discomfort on the involved side, along the course of the ureter or at the costo-vertebral angle. The testing of bladder with methylene blue rules out vesico-vaginal fistula and establishes the strong suspicion that it is ureteral. Intravenous injection of indigo-carmine will confirm the diagnosis of uretero-vaginal fistula. Cystoscopic examination is essential to determine the condition of the bladder and the site of the injured ureter, if performed along with the indigo-carmine injection. Intravenous pyelography for estimation of the function of the upper urinary tract is essential and retrograde urography may occassionally be of added help.

Prevention

The prevention of some of these fistulae may be possible by knowing the anatomical course of the pelvic ureters and appreciating the vulnerable sites of injury. Pre-operative urological studies and preparation of patient is most important when cancer, tumour, endometriosis or infection involves the pelvic structures. Insertion of ureteral catheters in such cases may sometimes be of help. All structures should be identified before clamping and needless denudation of ureters and base of the bladder should be avoided in radical surgery for carcinoma of the cervix. Finally, where, in spite of extreme caution, injury occurs, immediate repair is far more effective than postoperative management.

Management

The management of the immediate postoperative uretero-vaginal fistula

begins with the passing of ureteral catheters. But attempts to pass a ureteric catheter per urethra beyond the site of injury were not successful in any of the cases. With the failure of such procedure it is preferable to wait for 4-6 weeks to allow subsidence of oedema and inflammatory reaction, and in ischaemic fistulae up to six months, to afford opportunity for spontaneous closure and this occurred in 2 cases of the series and subsequent pyelography revealed normal kidney function.

TABLE III

Operations for repair of fistula

Technique	No. of cases
Spontaneous cure	2
Uretero-ureteral anastomosis	2
Reimplantation into bladder	7
Boari-flap operation	3
Transplantation into sigmoid colon ..	4
Nephrectomy	1
Ectopic ureter (refused operation) ..	1
Total	20

If a fistula is left unrepaired for any length of time, the related kidney will undergo irreparable damage and so one must be prepared to use one of the many methods for reconstituting the interrupted urinary tract within a reasonable time. Having established the diagnosis, repair is attempted depending on the amount of tissue loss. In the absence of any tissue loss uretero-ureteral anastomosis over a ureteral catheter is performed leaving a drain as was done in 2 cases, but narrowing due to fibrosis is more likely to occur as happened in one case. Reimplantation into the bladder, if possible, is the treatment of choice and was done in 7 cases with extremely satisfactory results. In 3 cases a Boari bladder flap was made to compensate for insufficient ureteral length. Ureterovesical anastomosis should be further reinforced by sutures through the fascia of the ureter and the outer bladder wall and a peritoneal covering of the anastomosis is desirable. An ileal segment may be used when ureteral shortening is extensive but was not used in any of these cases, and instead, transplantation into the sigmoid colon was chosen in 4 cases in older women with higher ureteric injury. However, in shortened ureters with bilateral involvement, an ileal pouch with uretero-ileal anastomosis may be the only solution. Nephrectomy was needed in one case of pyelonephrosis not responding to medical treatment. In no case was ureteral ligation performed. The case of the ectopic ureter refused operation and has since been lost sight of.

There was 1 death in the series, the patient dying on the 2nd postoperative day from uraemia following bilateral uretero-vesical anastomosis, the fistula having followed Wertheims operation for carcinoma of the cervix. All other cases are living and well with good kidney function.

Summary

With increasing use of radical surgery for pelvic malignant disease and more aggressive removal of uterus for benign lesions, traumatic and ischaemic postoperative uretero-vaginal fistulae are on the increase.

Study of 18 cases of postoperative uretero-vaginal fistula and one case of ectopic ureter during a period of 4 years is reported.

The types of genito-urinary fistulae and the operations preceding the occurrence of uretero-vaginal fistula have been summarised.

Diagnosis of the condition and suggestions for its prevention have been narrated.

Optimum conditions must be established with adequate time allowance for resolution of inflammation after control of infection. Repair of postoperative ureteral fistula is essential to preserve kidney function, prevent urinary infection and to eliminate the misery of urinary incontinence.

The place of uretero-ureteral anastomosis, implantation into bladder, Boari flap operation, uretero-ileal anastomosis, ureterosigmoidostomy and nephrectomy has been discussed. Uretero-ureteral anastomosis and implantation into the bladder give better final results than other procedures.

The problem of urinary fistula is one that can be coped with. In the development of modern surgical techniques, particularly for radical surgery, it behoves the operator to be familiar with the fistula problem, and with the help of urological colleagues, he should gradually perfect himself in reparative surgery necessary and develop his own judgement for the management of such cases.

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