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ECTOPIC URETER : A CASE REPORT

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A case of ectopic ureter is recorded in the notes below.

Ectopic ureters in the female can be found in the vulva, in the vagina, in the cervix or uterus, or low down in the urethra, where they are difficult to find.

In the male they open into the prostatic urethra, or into the seminal vesicle or the ampulla of the vas deferens. In the male there is no incontinence or leak, as the ectopic opening is above the external sphincter and urine regurgitates back into the bladder.

CASE REPORT

A well-built female Bantu child, D.M., 8 years of age, was brought to the Urology Out-patient Department, Red Cross War Memorial Children's Hospital, Rondebosch, Cape, with a history of incontinence since birth.

When asked to pass urine she produced 6 ounces of clear urine without difficulty. On going into the history more closely it was revealed then that she would pass reasonable quantities of urine at normal intervals, but in spite of this would be constantly wet. This is known as 'paradoxical incontinence', and immediately suggests the diagnosis of an ectopic ureter, inserted somewhere outside the vesical sphincter, with the other ureter or ureters discharging normally into the bladder, and so accounting for the urine that is passed normally and periodically. On closer questioning two further significant points came out: (a) She was comparatively dry while lying down, and (b) she would continue to leak immediately after having emptied her bladder. Further helpful points were: (c) There was no dysuria, frequency, urgency, strangury or haematuria, and (d) there have been no accidents or serious illnesses.

On examination there was nothing of note clinically, the kidneys were not palpably enlarged, the bladder was not palpable after micturition, there was no residual urine, and the urine on catheterization was crystal clear.

No ectopic ureteric opening could be seen on the vulva or introitus on cursory examination in the Out-patient Department, but the tentative diagnosis of ectopic ureter was made and she

was sent for intravenous pyelography studies, and booked for cystoscopy.

Differential Diagnosis

Urge incontinence, such as is found in infection, bladder stone etc. could be ruled out from the absence of any history of urgency, dysuria or frequency, and further because of the normal urine. Overflow incontinence such as is found in bladder-neck obstruction, e.g. Marion's disease, could also be excluded because she passed her urine easily and had no residual urine. It was not a case of enuresis, because in fact she was comparatively dry at night. And lastly there was no sign of spina bifida or other evidence of neurological abnormalities to suggest a neurogenic condition.

Special Examinations

The I.V.P. studies were interesting in that the patient showed a normal single right kidney, but a double left kidney pelvis and left ureter.

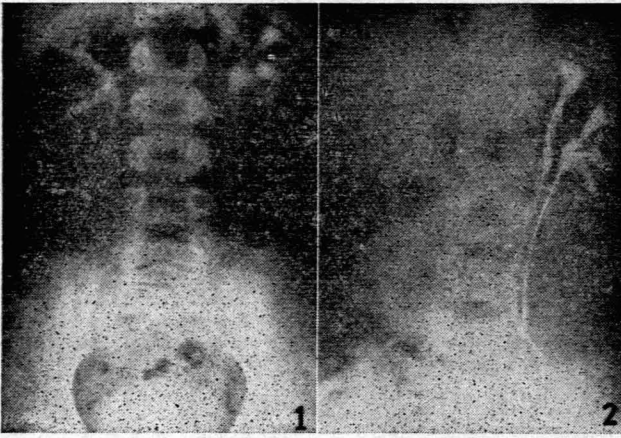
Dr. E. van der Burgh, radiologist to the Red Cross Hospital reported as follows:

'I.V.P.: Both kidneys excrete the dye well and there are no signs of abnormality of the right renal tract. The left kidney and ureter are bifid. The ureter from the lower portion of the left kidney is clearly shown in the various views in its entire length but not so the ureter from the upper portion of the bifid segment. It is therefore not certain whether both the ureters on the left side enter the bladder or whether there is an ectopic insertion. The bladder when filled appears to be normal in size and showed normal appearances.'

The general rule is that if there is a double kidney, the upper portion consists of one calyceal system, and the lower portion of the remaining 2 calyceal systems and, furthermore, the upper ureter always opens lower than the lower ureter (Fig. 1).

Of course it does not mean that all double ureters have the upper opening in an ectopic position, because we fairly frequently find 2 ureteric openings on one or both sides in the bladder. Neither does it mean if there are 2 ureters on the one side, that the upper of the two is necessarily the ectopic one, because in fact it could be the single ureter on the opposite side that is ectopic. But the chances are that if there is one embryological abnormality on the one side, then further abnormalities will also be on the same side.

Under an anaesthetic, and with an intravenous drip of dextrose and water to stimulate urinary secretion, a careful vulval examina-



Figs. 1 and 2

tion was made, and the ectopic opening was found immediately; urine was pouring forth from it at regular intervals. (The intravenous drip proved to be of great help. The patient prepared for general anaesthesia is so dry that one has to wait many minutes sometimes before there is an efflux from a ureter. If further indication is needed as to where the urine is coming from, an intravenous injection of indigo carmine may be given.)

This opening was behind the urethra, but definitely to the right of the mid-line. A ureteric catheter was passed up it, and immediately coursed over to the left side, below the urethra. The catheter was advanced for a distance of about 25 cm. and the urethra was then dilated and a cystoscope passed. In the bladder there were 2 normally situated ureteric orifices, one on each side. Only the ureter on the left side in the bladder was catheterized.

Retrograde studies were then made: (1) With the two catheters in position; (2) with Uriodone injected into the catheter going up the ectopic ureter (this proved that this ureter did in fact go to the upper third of the left kidney); and (3) with dye injected into both ureteric catheters on the left side (Fig. 2).

Dr. van der Burgh reports:

'Left retrograde pyelogram: The pyelographic findings confirm the previous impression that there is a duplex kidney and double ureter on the left side. The appearances of the calyces and the pelvis are normal. Of course the films do not demonstrate or indicate the openings of the lower ends of these ureters and it is thus not known from the radiological point of view whether there is an ectopic opening present.'

TREATMENT

There are 4 possibilities:

(a) Merely tying off the ectopic ureter somewhere in the abdomen. This might lead to sepsis, especially once it has been catheterized.

(b) Implanting the ectopic ureter into the bladder. This is not an easy procedure. The anastomosis often gives a reflux up the ureter, and should be reserved only for cases where it is essential to preserve the kidney tissue supplying the ectopic ureter, e.g. gross disease or absence of the opposite kidney.

(c) Anastomosing upper pelvis to lower pelvis, after removing portion of the upper ureter.

(d) Partial nephrectomy of the upper portion of the kidney.

Operation

Through a left loin incision the kidney was mobilized after catheterizing the ectopic ureter from the vulva. The catheter could be palpated going into the upper pelvis.

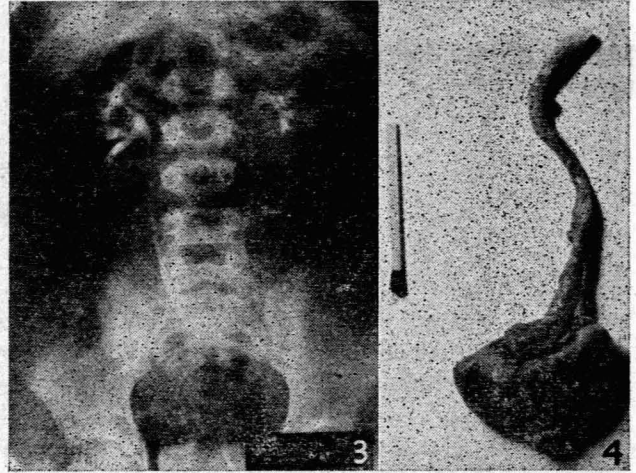
The separate leash of vessels going to the upper portion of the kidney was isolated and, after the fact had been established that there were additional arteries and veins going to the lower 2/3rds of the kidney, the upper vessels were tied and severed and partial nephrectomy done through the shallow sulcus demarcating the

two portions. The ectopic ureter was freed and removed as far down as the bony pelvis.

There was more bleeding from the cut kidney surface than had been anticipated, and large vessels had to be understitched and tied, followed by shallow mattress stitching of the exposed surface, and then by suture of the kidney capsule.

The perinephric sheath was stitched to keep the kidney up and the space was drained through a stab wound below the main incision.

Post-operatively the patient ran a very normal course, and on only one occasion was there a slight trace of blood in the urine. At no time was there any leak of urine through the stab wound.



Figs. 3 and 4.

I.V.P. performed one week after the operation showed a normal lower portion of kidney with two calyceal systems, the only abnormality being that the infundibulum leading to the upper of the two systems was narrowed, presumably due to compression by oedema. But as the upper calyces were not distended and were functioning normally it is presumed that once the oedema goes, the infundibulum will widen (Fig. 3).

Dr. van der Burgh reports:

'I.V.P.: The upper pole of the bifid left kidney has been removed. What remains of the left kidney functions satisfactorily, and no signs of abnormality of the remaining calyces or pelvis can be detected. The right kidney continues to show normal appearances.'

Dr. D. McKenzie, pathologist to the Red Cross Hospital, reports:

Specimen consists of one of the poles of the kidney measuring $4 \times 2.5 \times 3$ cm. Originating from the surface which has been cut from the original kidney at operation is a ureter 7.5 cm. in length. The attached end of the ureter disappears into the centre of the kidney substance. The kidney tissue shows lobulation and the ureter, which is normal in size, appears to end in a normal single calyx. There is a small cyst 0.6 cm. in diameter in the kidney cortex; otherwise there is no macroscopic abnormality to be seen in this specimen (Fig. 4).

Seen in the Out-patient Department 14 days after the operation, the patient was well and dry.

SUMMARY

The differential diagnosis of ectopic ureter is briefly discussed and a case is described and its treatment outlined.

I am indebted to Dr. P. J. Mostert, Superintendent of the Red Cross Hospital, and Prof. J. H. Louw, Head of the Surgical Department, Medical School, Cape Town, for permission to publish this case. My thanks are due to Mr. T. B. McMurray for the photographs of the X-ray plates.