

SURGICAL TREATMENT OF VESICoureTERIC REFLUX*

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Vesicoureteral reflux (VUR) has been one of the most important subjects of Pediatric Urology during the last two decades, and the number of VUR cases has significantly increased. VUR cases usually present themselves with the complaints of disorders of micturition, urinary infection, enuresis nocturna, fever of unknown origin, abdominal pain, hypertension, chronic renal insufficiency, and growth and developmental disorders¹⁻³.

Apart from the known etiological factors of reflux a familial tendency for reflux should be considered¹⁻⁴. If there is urinary infection or disorders of micturition in another child in the family, then the possibility of reflux must be investigated. If reflux is diagnosed then, according to the stage, medical or surgical therapy should be instituted, and there should be at least two years of follow-up. Urine analysis and cultures at four-month intervals in the first year and at six month intervals in the second year, are essential.

Some cases present with uremia; this is usually when reflux has not been diagnosed in time or when treatment has been mishandled. With these cases there is no alternative to dialysis and renal transplant, whereas cases which are treated with a proper therapeutic regimen in time, usually have a good outcome and long survival.

For our series when patients attended the unit with the complaints of urinary infection, nocturnal enuresis and disorders of micturition we usually went ahead without waiting for a second attack, and made the routine investigations, once urinary infection was diagnosed in these boys or girls. Our methods of investigation in the diagnosis of VUR are shown in Table I.

As can be seen, in the evaluation of this type of urological complaint in children, radiological investigations such as IVP and voiding cystography are essential. As a rule voiding cystography is done prior to IVP. Voiding cystography should not be performed while there is acute urinary infection, as this can affect the results.

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TABLE I
Evaluation Procedures of the Patient
Urine Culture and Antibiotic Sensitivity Test

Sterile urine	Positive culture	
•	Medical treatment	
	Sterile urine	
	IVP	
Suspected cases	Other pathologies	
	(Renal stones, congenital renal pathologies)	
Voiding Cystography (under fluoroscopy)		
VUR		
Grade I		
Grade IIA	Medical treatment	Follow-up
Grade IIB		
Grade IIB		
Grade III	Surgical treatment	Follow-up
Grade IV		

Radiological assessment should be made after a sterile urine culture has been obtained.

Radiologic evaluation was made according to Dwoskin-Perlmutter classification⁵. Medical treatment was instituted for Grade I and Grade IIA cases. Duration of the medical treatment is rather long. For the first three months urine culture and sensitivity tests are repeated monthly and if sterile urine is obtained, antibiotic treatment is stopped and intervals of urine culture increased. At the end of six months a voiding cystography is again taken and a re-evaluation is made whether or not the patient has any complaints or symptoms.

In some cases, the duration of this re-evaluation has been one year. Although infection and urinary symptoms disappeared, there was no change in the reflux according to the radiological findings. In our opinion, surgical therapy should not, in such cases, be postponed any longer. Scar formation due to reflux is not reversible as it is in classic obstructive uropathies.

Grade IIB cases also are initially treated medically, and the same regimen as described above is used. If the urinary infection cannot be controlled medically or the reflux increases, then surgical treatment is considered.



Figure 1
IVP of the patient before operation.

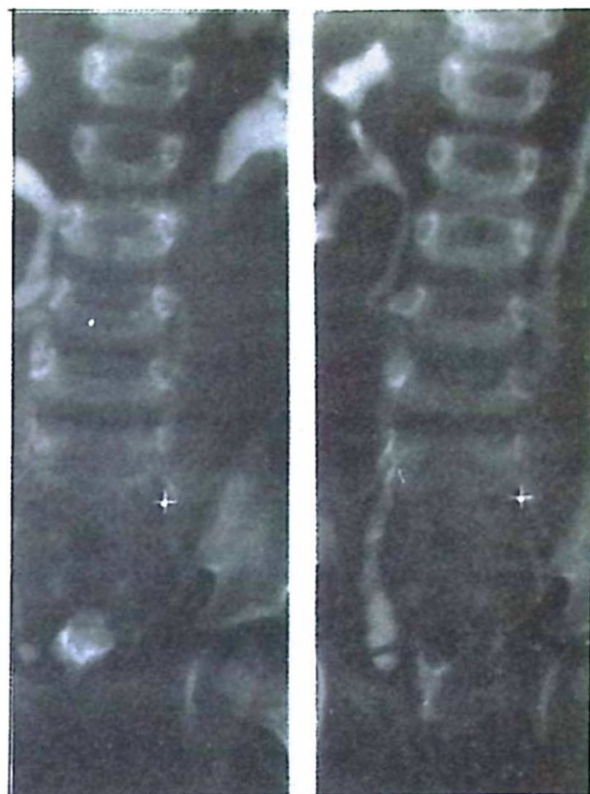


Figure 2
M.S.U. of the same patient before operation.



Figure 3
Postoperative IVP of the same patient



Figure 4
Postoperative M.S.U. of the same patient.

Surgical treatment is applied in Grade III and IV cases. Temporary nephrostomy or ureterostomy for urinary drainage is applied in Grade IV cases with dilated ureters and chronic renal failure. When the patient is in a condition for surgery and ureteral tonus is regained, an anti-reflux operation is performed.

Cysto-urethroscopic investigations are made in cases of bilateral reflux with high volumes of residual urine, to evaluate the bladder neck. Endoscopic examination is also done in Grade II cases which do not respond to medical treatment well, in order to evaluate the localization and type of the ureteral orifices and to determine the sub-mucosal length of the ureters.

Between the years 1979 - 1984, with these methods of investigation, VUR has been diagnosed in 137 patients. The ages of the patients ranged from 3 months to 15 years. Surgical treatment was indicated in 63 patients (31.4%). Of these 63 cases 30 were unilateral. Of these 30 unilateral cases 24 were on the left and 6 on the right side.

The classification of these cases according to the Dwoskin-Perlmutter method is shown in Table II.

The surgical procedures applied in these cases were the Gregoir, Politano-Leadbetter, Hendren and Cohen anti-reflux operations. As every uretero-vesical junction

TABLE II
Classification According to Dwoskin-Perlmutter

Grade IIA	5
Grade IIB	33
Grade III	27
Grade IV	21

TABLE III
Surgical Methods of Anti-Reflux Operations

Gregoir	55
Hendren	20
Politano-Leadbetter	14
Cohen	5
Ureteroselectomy, P-L	1
Nephrectomy	1

is considered as a unit every operation has been considered separately and so our figures are for each operation not for each case.

As can be seen in Table III our favorite procedure has been the Gregoir operation. It is an ideal surgical intervention, especially for Grade IIB cases with moderate ureteral dilatation. The reasons of preference of this method are: there is no need for urethral catheter drainage and the bladder is not opened. In some Grade III and IV cases, when the diameter and length of the ureter has to be considered, other methods have been used.

In the third post-operative month IVP and voiding cystographies are repeated. Cases with positive urine cultures before the operation are medically treated for three months post-operatively. In cases where no complications are seen, a second radiologic examination is carried out in the sixth month post-operatively.

There were no early post-operative complications in cases treated with the Gregoir procedure. At a late period post-operatively the reflux persisted in three cases. Endoscopic controls were made on these patients and the length of the submucosal tunnel was found to be satisfactory. They were taken under medical control. In the sixth post-operative month the reflux subsided in one and continued in the other two cases. In one case a late complication following the Gregoir procedure was stenosis at the operation site. This patient had a second operation and the stenosis was treated with Paquin technique.

In one case, operated on by the Hendren method, a fistula developed which disappeared spontaneously. In another case surgical intervention was necessary to overcome a fistula. In one case of Grade II reflux, operated on by the Politano-Leadbetter technique, bilateral stenosis developed. A second operation was done to relieve the obstruction on one side. A nephrectomy was necessary on the other side because there was a non-functioning kidney.

Apart from the classic complications such as persistence of reflux, stenosis, fistula and impaired renal function, in one case of unilateral reflux, contralateral reflux was seen in the post operative period. This brings to mind Hanani's assertion, which has raised much discussion, that both sides may need to be operated on in unilateral reflux cases⁶. We agree that bilateral surgical intervention should be considered in some cases.

In our series *E.coli* and *Proteus* growth in urine cultures were frequent in the pre-operative period. In the post-operative period *Klebsiella* infection was significant in cases in which an urethral catheter had been utilized.

Sterile urine cultures were obtained in 80% of cases after three months of antibiotic treatment. In some cases, even though the urine was sterile, there was no improvement in renal function because of scar formation of renal parenchyma.

The overall success rate for intervention has been 83.8%; there have been eleven unsuccessful cases.

Summary

63 cases of vesicoureteric reflux have been surgically treated in our department between the years 1979 and 1984. The youngest patient was three months old and the oldest 15 years of age. The procedures used are described and evaluated; complications are reviewed and treatment discussed.

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