

# Treatment Selection for a Vesicoureteral Reflux Case Following Renal Transplantation

## Böbrek Nakli Sonrası Gelişen Vezikoüreteral Reflü Olgusunda Tedavi Seçimi

Mehmet Erikoğlu<sup>1</sup>, Halil İbrahim Taşcı<sup>2</sup>, Mehmet Balasar<sup>3</sup>, Mesut Pişkin<sup>3</sup>

<sup>1</sup>Department of General Surgery, Necmettin Erbakan University Meram Medical Faculty, Konya, Turkey; <sup>2</sup>Clinic of General Surgery, Turkish Ministry of Health Reyhanlı Public Hospital, Hatay, Turkey; <sup>3</sup>Department of Urology, Necmettin Erbakan University Meram Medical Faculty, Konya, Turkey

### ABSTRACT

The vast majority of renal transplant patients suffer from urological complications. These urological complications account for the most important causes of morbidity and mortality cases such as delay in graft functions and graft loss following transplantation. 57-year-old male patient contracted vesicoureteral reflux (VUR) following cadaveric renal transplantation. Initially subureteric injection was tried because of recurrent urinary tract infection and impairment of graft functions but open procedure ureteroneocystostomy was repeated since the injection failed to produce results. The patient is currently in his post-op month 10 and his follow-ups revealed no problems thus far. While less invasive methods such as endoscopic procedures can primarily be selected for the treatment of VUR, which leads to urinary tract infections and impairment in graft functions subsequently, open surgical procedures are considered to be an appropriate approach for failed injection or advanced stage cases.

**Key words:** renal transplantation; subureteric injection; vesicoureteral reflux

### ÖZET

Böbrek nakli yapılmış hastaların önemli bir kısmında ürolojik komplikasyonlar gelişmektedir. Gelişen bu ürolojik komplikasyonlar nakil sonrası greft fonksiyonunda gecikme, greft kaybı gibi morbiditelerin ve mortalitenin en önemli sebeplerindedir. Elli yedi yaşında erkek hastada kadaverik böbrek nakli sonrasında vezikoüreteral reflü gelişti. Tekrarlayan idrar yolu enfeksiyonu ve greft fonksiyonlarında bozulmaya yol açması nedeni ile öncelikle subüreterik enjeksiyon denedi; fakat başarılı olmaması üzerine açık prosedürle üreteroneocystostomi işlemi tekrarlandı. Hasta ameliyat sonrası 10. ayında ve takipleri problemsiz olarak devam ediyor. Sonuçta idrar yolu enfeksiyonu ve greft fonksiyonlarında bozulmaya yol açan VUR sonrasında öncelikle daha az invazif bir yöntem olan endoskopik yöntemler tercih edilebilirken, başarısız enjeksiyon; ya da ileri evre vakalarda açık cerrahi prosedürün tercih edilmesi uygun bir yaklaşım olarak görülmektedir.

**Anahtar kelimeler:** böbrek nakli, subüreterik enjeksiyon, vezikoüreteral reflü

Uzm. Dr. Halil İbrahim Taşcı, TC Sağlık Bakanlığı Reyhanlı Devlet Hastanesi, Genel Cerrahi Kliniği, Reyhanlı, Hatay - Türkiye, Tel. 0505 481 04 45  
Email: okcu1@mynet.com  
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### Introduction

The 5-year survival rate for renal transplant patients is significantly higher than that of dialysis patients (85.5% and 35.8% respectively)<sup>1</sup>. Although renal transplantation has such positive sides as cost-efficiency and high survival rates, a vast majority of renal transplant patients contract urological complications. These urological complications account for the most important causes of morbidity and mortality cases such as delay in graft functions and graft loss following transplantation<sup>2</sup>. The most significant of these complications are urinary leakage, narrowness, and vesicoureteral reflux.

Our aim in this case report is to present the case of a patient that received endoscopic subureteral injection for the treatment of vesicoureteral reflux following renal transplantation but had to go through ureteroneocystostomy again since the injection failed to produce results in the light of literature on the subject.

### Case Report

Fifty-seven-year-old male patient, who had been in hemodialysis for the last 8 years because of chronic renal failure brought about by diabetes and hypertension, underwent cadaveric renal transplantation. Lich-Gregoir method was performed for ureterovesical anastomosis during the surgery. Urinary output was enabled following surgery. A drop in urea and creatinine values was seen. Early examinations revealed no pathologies in the transplanted kidney's blood build-up, excretion, and concentration functions. The patient was discharged on day 15 without any problems.



**Figure 1.** Voiding cystourethrographic view of recurrent reflux after subureteral injections.

The patient, who had burning sensation when urinating, was seen to have urinary tract infection in the first post-op month during the follow-ups. *Escherichia* and *klebsiella pneumonia* as seen in the urine culture. The patient's problem frequently recurred and he had secondary renal function impairment brought about by urinary tract infection. In his laboratory, creatinin value was 2,2 mg/dL, üre 98: mg/dL, white blood cell:3400. Upon the patient's voiding cystourethrography revealed that there was vesicoureteral reflux (VUR) in the transplanted kidney, the urology clinic administered subureteric Dextranomer / hyaluronic acid copolymer (Deflux) injection to the patient. Patient's complaints continued and no progress was seen in his current pathology as revealed by his laboratory and radiological results at the end of the first month following this procedure (Fig. 1). Reoperation was planned and during operation ureter of transplanted kidney was seen as dilated and tortuous. Open procedure ureteroneocystostomy was repeated according to the Lich-Gregoir technique. The patient's routine follow-ups continue to be performed and his examinations and analyses revealed neither urinary tract infection nor any finding that would be suggestive of VUR in the post-op month 10 and his renal functions were within normal on bounds. As there were no evidence of a urinary

tract infection or renal failure due to laboratory results, urine culture and ultrasonograph, voiding cystourethrography was not repeated after second operation to avoid contrast nephropathy.

## Discussion

Although renal transplantation plays a positive role in maintaining cost-efficiency and survival, a significant portion of renal transplant patients develop urological complications. These complications give way to an increase in morbidity rates and subsequently an increase in graft loss in patients<sup>2</sup>. According to the data presented in literature, the rate of post-renal transplantation complications like leakage, narrowness, and VUR varies between 2.5% and 14.1%<sup>3</sup>. In our case, the patient, who had recurrent urinary tract infection following renal transplantation, we determined VUR as revealed by examinations and analyses.

One of the most significant reasons for these problems relies both on organ removal and technical problems faced during preparation and ureteral anastomosis<sup>4</sup>. In a study by Gürkan et al. the authors compared two ureteral anastomoses techniques and stated that VUR was seen in 3 out of 34 cases in which the Lich Gregoir technique was used, while no VUR cases were seen

in 41 cases that had undergone ureteroureterostomy<sup>5</sup>. The results of this study suggest that ureteroureterostomy should be performed as the type of anastomosis in patients with no VUR in the native kidney<sup>5</sup>. The initial operation for our patient was also the Lich Gregoir technique used in ureteral anastomosis. We think that VUR, which was developed in our patient, related with technical problems faced during first operation.

Post-transplantation VUR rate varies between 50% and 86% depending on the technique of ureteroneocystostomy<sup>6</sup>. In most of the studies the cases with VUR are mostly early stage, while stages 4 and 5 are not seen. There are many studies which have shown that in early stage VUR cases, or even in advanced stage VUR as presented in some studies, the rate of urinary tract infection and the rate of related urosepsis did not change in comparison to control groups<sup>7</sup>. In spite of the presence of these data, most of the clinicians are in consensus that advanced stage VUR cases with urosepsis based on recurrent urinary tract infection or urinary tract infection should be surgically treated<sup>8</sup>. Intervention was planned for our case upon frequent urinary tract infection and related impairment in graft functions.

Endoscopic treatment methods came to the fore since a second open surgical procedure would be an invasive method and the risk of ureteral necrosis, urinary leakage, and narrowness at the anastomosis. It is preferred over subureteric injection open surgery because it has a low rate of post-op morbidity, shorter period of procedure and hospitalization, and it does not give way to any problems in dissection during a possible operation following failed injection<sup>9</sup>. Materials like teflon, dextranomer in sodium hyaluronate, calcium hydroxyapatite, pyrolytic carbon coated zirconium oxide were used in subureteric injection<sup>9</sup>. Although the results of subureteric injection are similar to those of open surgery in low-grade VUR cases, success rates go down with advanced stage cases and after repeated injections<sup>9</sup>. We initially administered subureteric injection in our patient because it was a method with less morbidity but since it failed we performed open surgical procedure.

Consequently, ureteral anastomosis technique used during renal transplantation proves to be an important factor for VUR alongside with other post-operative urological complications. While endoscopic methods that are less invasive can be primarily selected to treat VUR cases, which causes urinary tract infection and impairment in graft functions, to prefer open surgical procedures after failed injection or in advanced cases is considered to be an appropriate approach.

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