

A New Technique of Pyeloplasty; Using a Renal Pelvis-based Tubularized Flap for Repairment of Recurrent Uretero-pelvic Junction Obstruction

Yeni Pyeloplasti Tekniği; Tekrarlayan Üretero-pelvik Bileşke Obstrüksiyonunun Onarımında Renal Pelvis Tübülerize Flep Kullanılması

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ABSTRACT Surgery for recurrent uretero-pelvic junction obstruction after some open and endoscopic interventions is a challenging operation for the urologists. There is no standard intervention for these cases. Type of surgery varies depending on renal function, size of renal pelvis, length of strictured area and surgeon's experience. In this case report, we present a novel pyeloplasty technique which enlarged renal pelvis is used. After this repairment, the patient was good in terms of both clinical and radiological outcomes.

Keywords: Reconstructive surgical procedures; kidney pelvis; endoscopy; ureteral obstruction

ÖZET Bazı açık ve endoskopik girişimlerden sonra tekrarlayan üretero-pelvik bileşke obstrüksiyonu ameliyatı, ürologlar için zorlu bir ameliyattır. Bu durumda standart bir müdahale yoktur. Cerrahi yöntemin tipi böbrek fonksiyonuna, böbrek pelvis boyutuna, obstrüktif alanın uzunluğuna ve cerrahın tecrübesine göre değişir. Bu olgu sunumunda, genişlemiş renal pelvisin kullanıldığı yeni bir pyeloplasti tekniği sunulmuştur. Bu onarımdan sonra hastanın hem klinik hem de radyolojik sonuçları iyiydi.

Anahtar Kelimeler: Rekonstrüktif cerrahi prosedürleri; renal pelvis; endoskopi; üreteral obstrüksiyon

Although uretero-pelvic junction obstruction (UPJO) is a congenital anomaly of the urinary system in most of the patients, some of the cases have an acquired UPJO due to urolithiasis, post-operative/inflammatory/ischemic stricture, fibroepithelial polyps, adhesions and malignancy.¹ If UPJO leaves untreated, it may cause hydronephrosis, chronic infection or urolithiasis, resulting in progressive deterioration of renal function. The main mechanism inducing renal parenchymal damage is high pressure in the pelvicalyceal system.² The aims of the treatment are to improve patient's symptoms and preserve renal functions. To achieve these aims, there has been de-

scribed many techniques including open, endoscopic, laparoscopic and robotic surgeries. The choose of the surgical technique depends on preference and experience of the surgeon. In patients who had one or more failed previous treatments, standart procedures may be difficult to be performed. In this case report, we present a new pyeloplasty technique using enlarged renal pelvis in a female patient who underwent several failed previous surgeries.

CASE REPORT

A 49-year-old female patient presented with a complaint of persistent right flank pain. In her medical

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history, she had been performed endopyelotomy in November 2014, open pyeloplasty in March 2015 and endopyelotomy in August 2015. She had also undergone open renal surgeries due to urolithiasis for three times. Ultrasound examination showed that she had right hydronephrosis. In intravenous urography, right hydronephrosis with UPJO was found. There was a huge renal pelvis and ureter was not visualized distally. UPJO was confirmed by mercaptoacetyl-triglycine-3 diuretic renogram. If a D-J stent was placed into her right ureter, she was comfortable. After removing D-J stent, she had a flank pain in her right side. Treatment options including repeated D-J stent placement and open surgery were discussed with the patient. The patient have decided to undergo re-pyeloplasty. After having informed consent, the patient was prepared for the operation.

DESCRIPTION OF THE TECHNIQUE

The patient was placed in lithotomy position under general anaesthesia, and retrograde pyelography was done to confirm the exact position of the obstruction. After placing the patient in the classical flank position, right flank incision was performed over the previous incision. Retroperitoneal area was entered. Ureter was found at the level of iliac artery and dissected from lower to upper part. The kidney and renal pelvis were hardly dissected as renal pelvis, UPJ and upper ureter were covered with stiff fibrotic tissue due to previous open and endoscopic procedures. Renal pelvis was very dilated, and UPJ and upper ureter were seriously obstructed. Fibrotic tissue covering upper ureter and UPJ area was cleared by sharp dissection.

Standart surgeries as dismembered pyeloplasty, vertical or spiral pyeloplasty were not possible due to previous procedures. Peroperatively, we decided to use renal pelvis-based tubularized flap pyeloplasty technique in order to achieve an anastomosis without tension as she had a huge renal pelvis. Obstructive area in UPJ was cut and sutured at the level of renal pelvis from the outside. Fibrotic and obliterated ureteric segment was resected up to the healthy ureter. The distance between renal pelvis and distal part of the ureter was 5 cm. Distal part of the ureter was medially spatulated about 1 cm (Figure 1 and Figure 2).

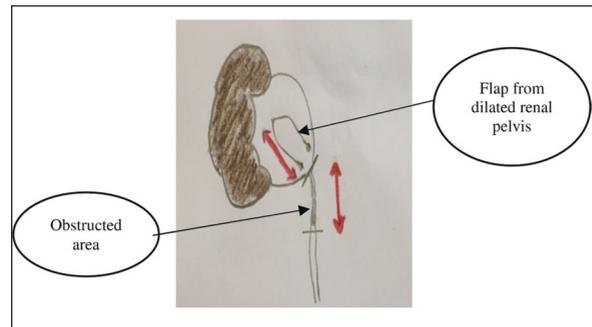


FIGURE 1: Uretero-pelvic junction obstruction and flap from renal pelvis are seen.

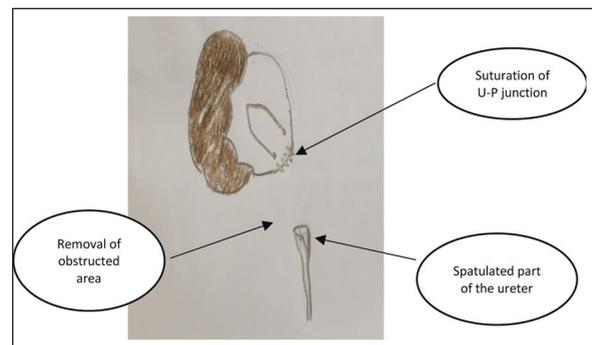


FIGURE 2: Removal of the obstructed segment of the ureter and suturation of the renal pelvis.

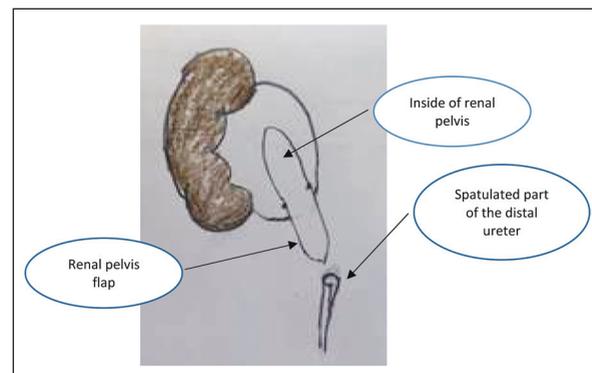


FIGURE 3: Flap of renal pelvis is extended to the upper ureter.

After putting two traction sutures on the renal pelvis, renal pelvis was incised as a flap 5 cm in length and 3 cm in width. Base of the flap was in the distal part of the renal pelvis over the ligated area. Proximal part of the flap was cut into a triangular shape. Firstly, triangular tip of the renal pelvis flap was sutured to spatulated part of the ureter in order to get a wide enough anastomosis. After placing a 6 F D-J stent into the ureter, renal pelvis flap was tubularized over the D-J

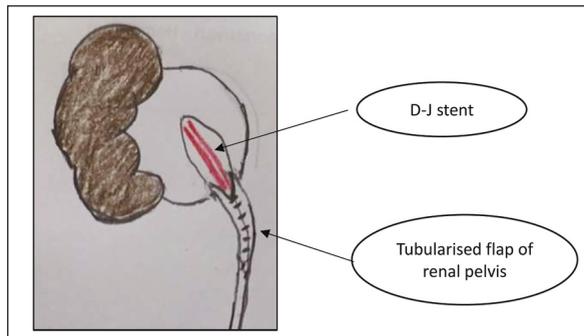


FIGURE 4: Flap of renal pelvis is tubularised and anastomosed to the upper ureter over the D-J stent.

stent using 4/0 vicryl running suture. Ureter and tubularized renal pelvis flap anastomosis without tension was completed using 4/0 vicryl separate suture (Figure 3 and Figure 4). After ensuring hemostasis and placing drain into the retroperitoneal area, flank incision was closed in two layers.

In third month after surgery, intravenous urography showed no hydronephrosis in right side (Figure 5a, b) and diuretic renogram revealed no obstruction. The result was perfect and the patient had no flank pain.

DISCUSSION

There are many endoscopic and open procedures in the treatment of UPJO.²⁻⁶ These procedures are very

successful and recurrence of UPJO after the treatment are very rare.⁷ If there is a failure after primary repair, re-do procedures are required. Although open salvage surgeries can be performed with 90% success rate in these patients, re-do pyeloplasty procedures may be very challenging for the surgeons due to increased patient morbidity and intraoperative difficulty caused by peripelvic scarring and adhesion.^{8,9} Additionally, standard surgical techniques cannot be used for the peripelvic scarring and adhesions.

Tsivian et al. presented a new technique of hilar ureterocalycostomy. In this case presentation, there were intrarenal pelvis and lack of severe hydronephrosis. Therefore, there was no enough tissue for a possible flap in renal pelvis. The authors decided to perform ureterocalycostomy peroperatively.¹⁰ Our patient had undergone open pyeloplasty once and endopyelotomy twice. Because of these procedures and possible urinary extravasation, severe scarring and fibrosis in peripelvic area were observed. After removing fibrotic upper ureter and UPJ, there was a 5 cm distance between renal pelvis and distal part of the ureter. Due to this gap, proximal and distal parts could not be approached to make an end-to-end anastomosis safely. Renal pelvis was very dilated. Therefore, we decided to use front side of renal pelvis as an



FIGURE 5: a) Preoperative intravenous urography shows no contrast passage from right renal pelvis to ureter after 2 hours. b) Postoperative intravenous urography shows contrast passage from right renal pelvis to ureter.

upper ureter inspiring from Boari flap technique for distal ureter repairment. After releasing ureter from the periureteral fibrosis, tension free anastomosis was succeeded. The patient did not have any flank pain after surgery. Both clinical and radiological outcomes were perfect.

In a comparative study of patients with UPJO with and without crossing vessels, the number of ICs in neurons, presence of fibrosis and inflammation is similar in the intact UPJ and UPJ.¹¹

In conclusion, the present technique seems very successful for the repairment of repeated UPJO in the patients with long upper ureteral stricture and dilated renal pelvis after several failed previous surgeries. However, we do not claim that this is the only technique in re-do pyeloplasty. This may be an option for surgical treatment of re-do UPJO in urologist's armamentarium.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Ali Ünsal, Hikmat Jabrayilov, Ali Atan; **Design:** Ali Ünsal, Ali Atan; **Control/Supervision:** Ali Ünsal, Ali Atan; **Data Collection and/or Processing:** Hikmat Jabrayilov; **Analysis and/or Interpretation:** Ali Ünsal, Hikmat Jabrayilov; **Literature Review:** Ali Atan, Hikmat Jabrayilov; **Writing the Article:** Ali Atan, Hikmat Jabrayilov; **Critical Review:** Ali Ünsal, Hikmat Jabrayilov.

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