

A case of giant renal calculus with poorly functioning opposite kidney

Karşı taraf böbrek fonksiyonu kötü olan bir dev böbrek taşı olgusu

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Giant renal calculus is rarely seen in urologic practice. A 69-year-old woman who had right giant renal calculus with poorly functioning opposite kidney is presented. She was with a history of right pyelolithotomy for large renal calculus 10 years back. Ultrasonography(USG), uncontrast computed tomography (CT), plain abdominal X-ray (KUB) and intravenous urography (IVU) revealed a giant renal calculus (10 x 8 cm) and grade III hydronephrosis on the right kidney and moderate calixiel dilation on the left kidney. Diethylene triamine pentaacetic acid (DTPA) renal scan showed good functioning affected kidney and poor functioning opposite kidney. Right pyelolithotomy was performed. During the manuplation of the stone removal, the stone was divided into five pieces spontaneously. This situation made the procedure easier. The stones were extracted without any complications, and a double-j (DJ) stent was placed to the patient. Chemical analysis of the stone revealed a calcium phosphate stone. KUB and IVU showed complete stone clearance and modarate dilatation on the right renal pelvis on the second month postoperatively. Like this case, today, open stone surgery is still continues to represent a reasonable alternative treatment option for some special cases.

Keywords: Giant renal calculus, treatment, pyelolithotomy.**Özet**

Dev böbrek taşı üroloji pratiğinde nadiren görülmektedir. Karşı taraf böbrek fonksiyonu kötü ve dev böbrek taşı olan 69 yaşındaki bayan hasta sunulmaktadır. Hastanın 10 yıl önce geçirilmiş sağ piyelolitotomi hikayesi vardı. Ultrasonografi (USG), kontrastsız bilgisayarlı tomografi (BT), direkt üriner sistem grafisi (DÜSG) ve intravenöz piyelografi (İVP) ile sağ böbrekte dev böbrek taşı (10 x 8 cm) ve III. derece hidronefroz, sol böbrekte ise orta derecede kaliksiyel dilatasyon saptandı. Dietilen triamin pentaasetik asit (DTPA) böbrek sintigrafisi, taşın olduğu böbreğin iyi fonksiyona, karşı taraf böbreğin ise kötü fonksiyona sahip olduğunu gösterdi. Hastaya sağ piyelolitotomi yapıldı. Taşın alımı sırasında taş kendiliğinden 5 parçaya ayrıldı ve bu da işlemi daha da kolaylaştırdı. Taşlar herhangi bir komplikasyon olmadan çıkarıldı ve double-j (DJ) stent konuldu. Taş analizi ile taşın kalsiyum fosfat taşı olduğu saptandı. Operasyon sonrası 2. ayda çekilen DÜSG ve İVP, taşın tamamen temizlendiğini ve sağ böbrek pelvisinde orta derece dilatasyon olduğunu gösterdi. Bu olguda olduğu gibi, günümüzde, açık taş cerrahisi bazı özel olgular için hala kabul gören alternatif bir tedavi yaklaşımıdır.

Anahtar Kelimeler: Dev böbrek taşı, tedavi, piyelolitotomi.

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Makalenin Geliş Tarihi: 04.02.2009 Kabul Tarihi: 17.03..2009

Introduction

Giant renal calculus is a rare clinical entity in modern urological practice. It is frequently resulted in a non-functioning kidney. Rarely, it may also progress slowly, without symptoms and without abolishing renal function.

(1). It may be a predisposing factor for development of urothelial neoplasms (2,3). Nephrectomy is recommended for the management of non-functioning kidney or concomittend with urothelial neoplasms.

However, if residual renal function in the affected kidney is good, pyelolithotomy is generally preferred. (4,6) Percutaneous nephrolithotomy (PCNL) may be considered in patients with giant renal calculus, however it has some disadvantageous (6,7). Herein, a case of giant renal calculus with poorly functioning opposite kidney is presented because of its rarity, and management of this situation is discussed with relevant literature.

Case report

A 69-year-old woman presented with right flank pain and macroscopic hematuria during the previous six months. She was with a history of right pyelolithotomy for large renal calculus 10 years back. She had hypertension and ischemic heart disease as co-morbid conditions. On clinical examination, the patient had a scar of right flank incision with a palpable hard right kidney. Complete blood count, liver function studies, BUN, creatinine, parathyroid hormone and calcium levels of serum were within normal range. Urine analysis showed 18-20 erythrocytes and 15-20 leukocytes in every field. Urine culture did not show any growth. Ultrasonography (USG) and uncontrast computed tomography (CT) revealed a giant renal calculus (10x8 cm) and grade III hydronephrosis on the right kidney. Similarly, plain abdominal X-Ray (KUB) and intravenous urography (IVU) demonstrated a right renal calculi (10 x 8 cm) with grade III hydronephrosis (Fig. 1 a,b) and moderate calixiel dilation on the left kidney.

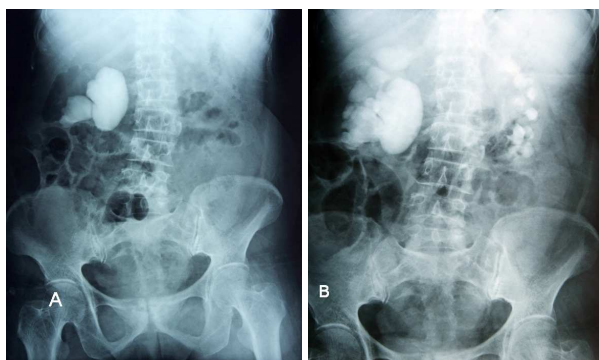


Fig 1 (a,b). KUB and IVU are showing a giant right renal calculus (10 cm) with grade III hydronephrosis and moderate calixiel dilation on the left kidney.

Diethylene triamine pentaacetic acid (DTPA) renal scan showed that the right kidney contributed 44.53 % to the total renal function and the left kidney 32.39 % (Fig. 2).

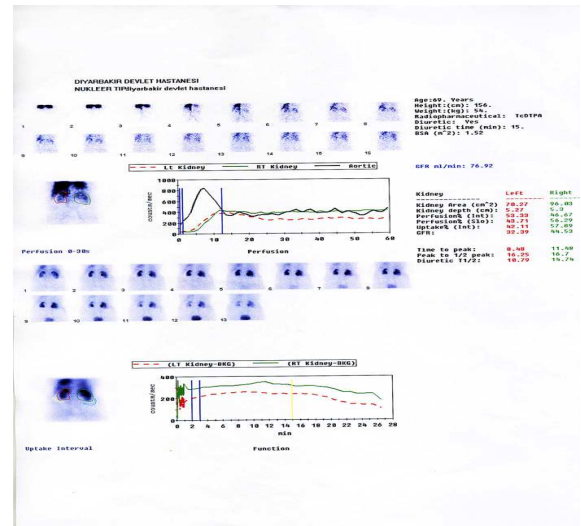


Fig 2. DTPA renal scan is demonstrating moderate function in the affected kidney and poor function in the opposite kidney.

Surgical removal of the stone was planned because of its large size and poorly functioning opposite kidney. Informed consent was provided from the patient. Right pyelolithotomy was performed to the patient. During the manipulation of the stone removal, the stone was divided into five pieces spontaneously. The stones were removed, and a DJ stent was placed to the patient. Pyelolithotomy was closed with 4/0 vickryl watertight suture, and a drain was placed in the retroperitoneal space. No complications were observed during the procedure. The stone was weighted 520 g and measured 10 cm (Fig. 3).



Fig 3. The giant renal calculus.

Urinary leakage from the drain continued until fifth day after the surgery. The drain was removed on the sixth day after the surgery, and she was discharged on the next day. Chemical analysis of the stone revealed a calcium phosphate stone. KUB and IVU showed complete stone clearance and moderate dilatation on the right renal pelvis on the second month postoperatively (Fig. 4 a,b).

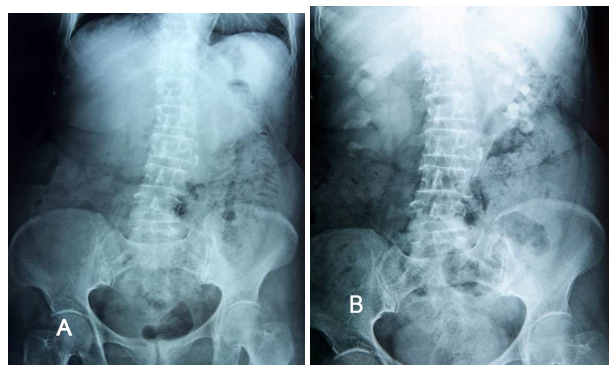


Fig 4 (a,b). Post-operative KUB and IVU are showing complete stone clearance and moderate dilatation on the right renal pelvis.

Discussion

Giant renal calculus is rarely seen and fewer than 10 reports are available in English literature. The largest renal calculus is of 1,350 g reported by Girgin et al. (5) It may be seen bilateral or in solitary kidney. Long standing calculus disease is known to cause functional impairment of kidney. They not only result in functional impairment of affected kidney, but also it may act as an important predisposing factor for development of urothelial neoplasms (2). Rarely, it may also cause a nephrocolic fistula with sigmoid impaction and perforation similar to gallstone ileus (8).

The development of endourological and non-surgical less-invasive techniques, such as extracorporeal shock wave lithotripsy (SWL), PCNL, ureterorenoscopy (URS), and laparoscopy have revolutionised stone treatment and led to a marked decrease in the need for open stone surgery. Nowadays, most of large renal stones are treated with PCNL or PCNL+SWL (9). However, open surgical procedures for stones removal are still performed. The need for open surgery for treatment of urinary stones is 2.7 % (10). Open surgery is only preferable in case of giant calculus requiring numerous percutaneous procedures along with SWL, after failure of the modern techniques or in cases necessitating additional surgical reconstruction (6).

The management of giant renal calculus depends on residual renal function in the affected kidney and the contra-lateral renal unit or associated urothelial tumor. Traditionally, giant renal calculus with non-functioning affected kidney is treated with open surgical nephrectomy. Recently, laparoscopic nephrectomy can be considered in patients with giant renal calculus and non-functioning kidney or associated with urothelial tumor (2). However, laparoscopic nephrectomy should be avoided if xanthogranulomatous pyelonephritis is suspected, as operating time has been reported to be significantly longer and morbidity significantly greater as compared to an open surgical approach (11). If the residual function in affected kidney is good, standart pyelolithotomy or PCNL can be performed (4,5,11). However, it is very difficult to attain a stone-free status with PCNL (6,11). The functional integrity of the contra-lateral kidney should be determined before the latter approach is undertaken. Some authors recommend to take biopsies of the urothelium in every stone surgery and if any suspicious finding is demonstrated (3). However, today, it is not uncommon to miss an associated urothelial tumor in patients with renal stones preoperatively due to advanced imaging methods.

In the present case, standart pyelolithotomy was performed due to good functioning affected kidney with poorly functioning opposite kidney. During the manipulation of the stone removal, the stone was divided into five pieces spontaneously. This situation made the procedure easier. The stones were extracted without any complications. Biopsy was not taken because preoperative CT findings were normal except giant renal calculus and hydronephrosis, and any suspicious finding associated urothelial tumor was not found during the operation. PCNL was not preferred due to some reasons; First, in this case, multiple procedures may be necessary to obtain stone free status. The patient had poorly functioning opposite kidney, and the function of affected kidney may be decreased due to multiple procedures. Second, the patient had undergone right nephrolithotomy for large renal calculus previously. This situation may make the procedure more difficult, and some serious complications may be seen during the procedure.

In conclusion, today, most of renal calculi can be rendered stone-free with endourological procedures, however, like this case, open stone surgery is still continues to represent a reasonable alternative for some special cases.

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