

## Paraplegia after percutaneous nephrolithotomy: A rare clinical entity

*Nadir bir klinik durum: Perkütan nefrolitotomi sonrası gelişen parapleji*

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### Abstract

Percutaneous nephrolithotomy (PNL) is recommended as a first choice in the treatment of kidney stone larger than 2 cm with acceptable complication rate, high success rate and high postoperative patient comfort. Fever, bleeding, urine leakage are the most frequent complications of PNL. Paraplegia following PNL is a very rare complication. In this present study, paraplegia due to vasospasm of Adamkiewicz artery following PNL was reported.

**Keywords:** Adamkiewicz artery, Paraplegia, Percutaneous nephrolithotomy

### Özet

Perkütan nefrolitotomi (PNL) düşük komplikasyon ve yüksek başarı oranı ayrıca yüksek post operatif hasta konforu ile 2 cm'den daha büyük böbrek taşlarının cerrahi tedavisinde ilk seçenek olarak tavsiye edilmektedir. Ateş, kanama ve üriner kaçak PNL'nin en sık görülen komplikasyonlarındandır. PNL sonrası parapleji nadir görülen bir komplikasyondur. Bu olgu sunumumuzda PNL sonrası Adamkiewicz arterinin vazospazmı sonrası parapleji gelişen bir hasta değerlendirilmiştir.

**Anahtar Kelimeler:** Adamkiewicz arteri, Parapleji, Perkütan nefrolitotomi

**Introduction**

Percutaneous nephrolithotomy (PNL) is commonly used minimally invasive method for treatment of urinary stone disease greater than 2 cm in diameter. PNL is recommended as a first choice in the treatment of kidney stone disease which resistant to Shock Wave Lithotripsy (SWL) with higher success rate (greater than 95%), acceptable complication rate and high postoperative patient comfort.

**Case Report**

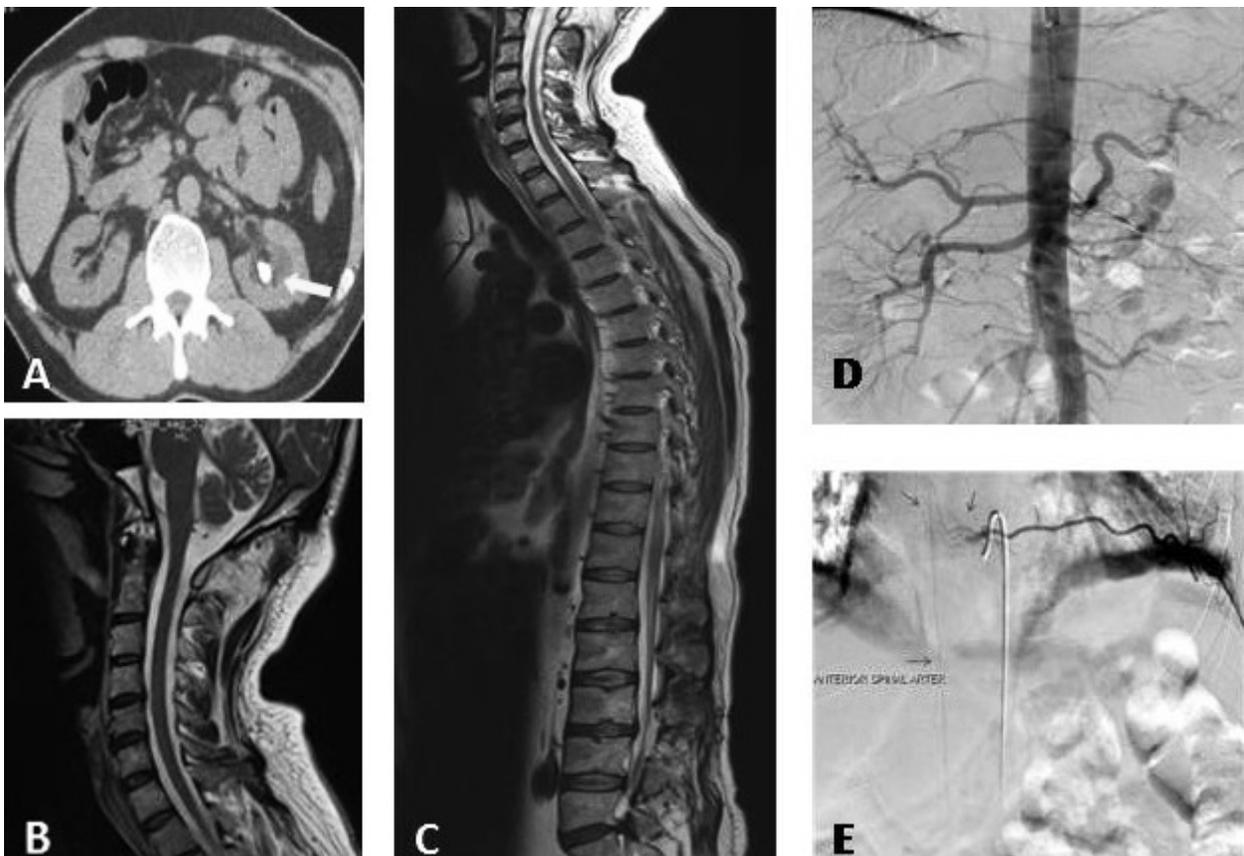
Forty five year old male patient admitted to our clinic with left flank pain. His medical history revealed controlled essential hypertension with alpha blocker and neurologic examination was normal, preoperatively. Biochemical analysis, hemogram and urine culture were in normal ranges. Computerized tomography showed left renal pelvic stone 2 cm in diameter (Fig. 1A). Standard PNL was done in prone position using ultrasonic lithotriptor. During PNL, a transient hypertensive attack and

tachycardia encountered and resolved by anesthesiologist. After PNL, almost three hours later, patient expressed paraplegia on his lower extremities.

Neurological examination showed paraplegia at T8 level. Early perioperative MR imaging was normal range (Fig. 1B and C). Anticoagulant therapy was initiated. After nephroscopy catheter was removed in second postoperative day, peripheral angiography revealed normal renal and anterior spinal artery patency fed medulla spinalis (Fig. 1D and E)

**Discussion**

Although PNL procedure is minimally invasive technique, some major complications may occur during perioperative period (1). Patients have comorbidity factors are in more risk of complications (2). Adamkiewicz’ artery is the largest vessel of the medulla spinalis and supplies the spinal cord by anastomosing with the anterior (longitudinal) spinal artery. It arises from a left posterior intercostal artery, which branches from the aorta, and



**Figure 1.** Radiological appearances of the patient. **A:** Left renal pelvic stone (yellow arrow) **B** and **C:** Early perioperative magnetic resonance shows no evidence of pathology **D:** Postoperative angiographical appearances of renal arteries **E:** Patent Adamkiewicz’ anterior spinal artery (red thin arrows).

supplies the lower two thirds of the spinal cord via the anterior spinal artery. If this artery is damaged or obstructed, it can result in anterior spinal artery syndrome, causing loss of urinary and fecal control and impaired motor function of the legs. Sensory function is often preserved to a degree (3). Transient vasospasm or embolism may cause medullar ischemia and subsequently paraplegia. Complete motor paralysis occurs below the level of the lesion due to interruption of the corticospinal tract. In particular, elder patients undergo major abdominal aortic surgery or have cardiopulmonary risk factors are prone to embolism or vasospasm (4). When the literature was reviewed complete paraplegia due to ischemic spinal cord injury was reported to be caused by interruption of critical collateral blood supply to the spinal cord (5). Our patient was taking medication for arterial hypertension and an hypertensive attack might promote vasospasm. The patient had irreversible paraplegia despite appropriate intervention and underwent physiotherapy program. When the etiology of medullar ischemia is reviewed, vasospasm is seemed the only reasonable factor for our case (6). It should be remembered that paraplegia may occur during or after major surgeries and detailed systemic evaluation is mandatory.

**Informed Consent:** Written informed consent was obtained from the patient.

**Conflict of Interest:** The authors declared no conflict of interest.

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