

## CASE REPORT

## Acute lower extremity paralysis after lower extremity endovascular intervention

### Alt ekstremitte damar içi girişiminden sonra oluşan alt ekstremitte paralizisi

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**Summary**– A 61-year-old man underwent successful percutaneous revascularization of both lower limbs with multiple stent implantations. Paralysis of right lower limb was noticed after completion of procedure when transferring the patient from angiography table. Since hematoma compressing lumbosacral neural plexus could be a fatal complication, computed tomography (CT) image was taken. CT showed bulge of distended bladder compressing stent struts. Following placement of Foley catheter, condition improved and he was subsequently discharged uneventfully.

**Özet**– Altmış bir yaşında erkek hastaya çoklu stent yerleştirme ile her iki alt ekstremitte başarılı perkütan revascularizasyon yapıldı. Hasta anjiyografi masasından kaldırılırken sağ alt ekstremitte paralizisi olduğu farkedildi. Lumbosakral sinir ağına bası yapan hematoma hayati bir komplikasyon olabileceğinden bilgisayarlı tomografi çekildi. Tomografi gergin mesane çıkıntısının stent strutları üzerine bası yaptığını gösterdi. Foley kateter yerleştirilmesinden sonra durum düzeldi ve hasta olaysız olarak taburcu edildi.

Femoral neuropathy is a rare complication of percutaneous vascular procedure. Diagnosis can be confusing due to complex clinical presentation. Retroperitoneal hematoma and access site complications comprise most important underlying etiologies and may have vital consequences. Presently described is case of acute femoral nerve paralysis due to a distended bladder after percutaneous peripheral arterial intervention.

#### CASE REPORT

A 61-year-old man presented at outpatient clinic with complaint of severe claudication. He had history of diabetes, hypertension, and smoking. Physical examination revealed absence of right femoral, popliteal, and dorsalis pedis artery pulses and weak left lower extremity pulses. Blood pressure and heart rate were measured at 140/95 and 80 bpm, respectively. Electrocardiography was normal. Computed tomography

(CT) angiogram revealed total occlusion of right common iliac artery and 80% stenosis of left external iliac artery with collateral circulation. Percutaneous intervention was arranged. Patient lay in a supine position and was prepped and draped in sterile fashion. Left and right common femoral arteries were punctured and 6-F sheaths were inserted. Left iliac stenosis was stented with 7.0x59 mm and 7.0x39 mm balloon-expandable stents (Omnilink Elite; Abbott Vascular, Inc., Santa Clara, CA, USA). Next, 0.35 Glidewire and Navicross microcatheter (Terumo Interventional Systems, Inc., Somerset, NJ, USA) were advanced to distal cap of right iliac occlusion. Occlusion was passed with Glidewire and microcatheter was removed. Angioplasty was performed with 7.0x40 mm balloon at 10 atm (FoxCross PTA Catheter; Abbott Vascular, Inc., Santa Clara, CA, USA). Balloon-expandable stents 9.0x59 mm, 8.0x59 mm, and 8.0x39 mm in size

#### Abbreviations:

AUR Acute urinary retention  
CT Computed tomography

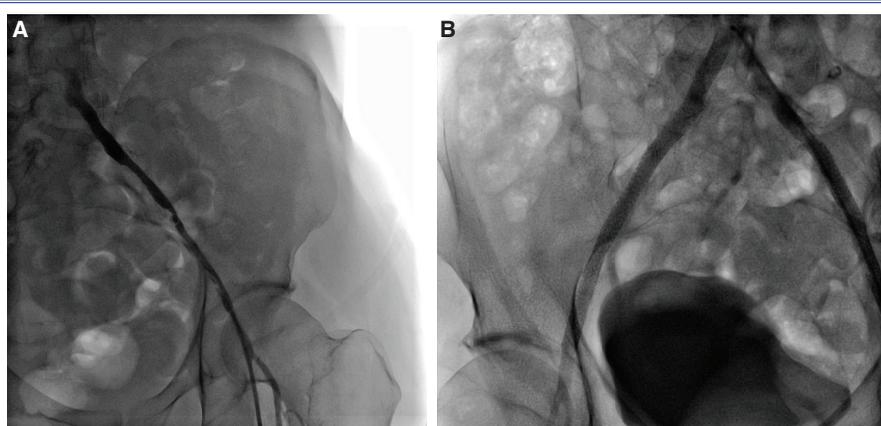
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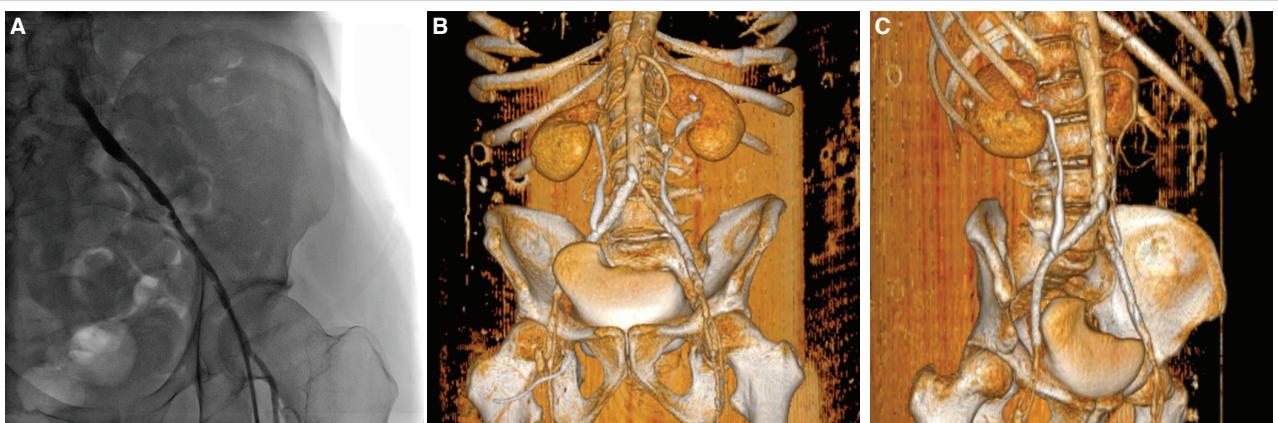
**Figure 1.** (A) Initial angiogram from left common femoral artery showed critical stenosis on left external iliac artery and flush occlusion of common iliac artery. (B) Final angiogram displaying patent right iliac artery lumen and stents.

(Omnalink Elite; Abbott Vascular, Inc., Santa Clara, CA, USA) were implanted successfully (Figure 1a, b). Total of 300 cc of contrast medium was used during procedure. Following procedure, the patient was not able to move from the angiography table to the transport stretcher. After a few failed attempts, we realized that the patient could not elevate his right leg. Physical examination revealed abdominopelvic distention and patient was unable to flex thigh. He was hemodynamically stable, with 130/80 mmHg blood pressure and 85 bpm heart rate. Hemotacrit was also stable, with level of 33%. Despite stability of the patient, potential hematoma compressing lumbar nerve plexus remained the most important pathology to exclude. Contrast-enhanced abdominal CT scan did not reveal any hematoma; however, significant bulge in lateral wall of urinary bladder was apparent (Figure 2a). Volume-

rendered 3D images depicted compression of femoral nerve between pouch-like bulging of bladder and iliac stents (Figure 2b, c). A 14-F Foley catheter was inserted and 500 mL of urine was drained. Two hours after placement of Foley catheter, patient's complaint was resolved and he was able to easily flex his thigh. Two days after procedure the patient underwent thorough abdominal ultrasound examination after drinking 1500 mL water and without urination. Examination revealed normal findings and excluded any anatomical pathology, including diverticula and pseudodiverticula. He was discharged on third day post procedure and follow-up was uneventful.

## DISCUSSION

Femoral neuropathy is a very infrequent complication of cardiovascular catheterization. Total of 20



**Figure 2.** (A) Computed tomography revealed bulging of bladder on iliac stents. (B, C) 3D volume rendered images depict right displacement of bladder on stents resulting femoral nerve compression.

cases were presented in the largest study, which included 9585 catheterizations. Large retroperitoneal hematoma was found in 16 patients, whereas groin hematoma or pseudoaneurysm was underlying etiology in 4 patients.<sup>[1]</sup> Apart from these pathologies that indirectly affect femoral nerve, prolonged manual compression on access site may cause direct injury to nerve.<sup>[2]</sup> In 2 cases of femoral neuropathy, direct injection of local anesthetic drug to myelin sheath and accumulation of drug around nerve were proposed as possible underlying mechanisms. Resolution of neuropathy began in 9 to 12 hours and was complete in 24 hours in those 2 cases.<sup>[3]</sup> In the present case, immediate evaluation with CT angiogram excluded hemorrhagic and vascular complications. In addition, injection of anesthetic drug into nerve sheath was unlikely, since 5 mL of lidocaine was injected in medial region of femoral pulsation and lower limb numbness was absent at time of injection. Injury due to manual compression was not a possible mechanism in this case, since symptoms started before access sheath removal.

Acute urinary retention (AUR) presents with inability to void and abdominopelvic distention. Underlying etiologies include urethral obstructive pathologies, neurological disorders, and medications. Although benign prostatic hyperplasia is the most prevalent pathology, rare cases of urethral strictures, urolithiasis, and urethral hematomas have been reported.<sup>[4,5]</sup> AUR is usually a benign condition and resolved with urethral catheter; however, distended bladder sometimes causes unusual and confusing clinical presentations. Venous obstruction due to bladder distention causing limb edema and even deep vein thrombosis have been reported.<sup>[6,7]</sup> Cystocerebral syndrome is another rare condition; mental status becomes altered due to increased sympathoadrenal stimulation induced by overdistended bladder.<sup>[8]</sup>

We think intraarterial injections caused rapid loading of bladder. Distended bladder was pushed by feces-filled rectum, causing posterolateral bulging of bladder in supine position. Although direct compression of femoral nerve by bladder is less likely, compressive effect of rigid stents on femoral nerve may have been augmented by bladder bulge on stents. Prompt resolution of symptoms after Foley catheter placement and absence of symptoms before and after

the procedure strongly support our suggestion. Unusual AUR cases most often present with extremely distended bladder and significant amount of urine; however, in present case we obtained only 500 mL of urine. To our knowledge, this is the first case report of nerve compression due to bladder distention causing transient femoral nerve palsy.

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### REFERENCES

1. Kent KC, Moscucci M, Gallagher SG, DiMattia ST, Skillman JJ. Neuropathy after cardiac catheterization: incidence, clinical patterns, and long-term outcome. *J Vasc Surg* 1994;19:1008–14. [\[CrossRef\]](#)
2. Kuruvilla A, Kuruttukulam G, Francis B. Femoral neuropathy following cardiac catheterization for balloon mitral valvotomy. *Int J Cardiol* 1999;71:197–8. [\[CrossRef\]](#)
3. Barçın C, Kuşaklıoğlu H, Köse S, Işık E. Transient femoral nerve palsy after diagnostic coronary angiography. *Anadolu Kardiyol Derg* 2009;9:248–9.
4. Curtis LA, Dolan TS, Cespedes RD. Acute urinary retention and urinary incontinence. *Emerg Med Clin North Am* 2001;19:591–619. [\[CrossRef\]](#)
5. Nishizawa K, Matsuoka T, Watanabe Y, Wani Y, Terai A. Urinary retention in a female patient caused by a urethral venous thrombus with massive edema. *Int J Urol* 2013;20:842–4.
6. Lin CH, Chen CJ, Kuan YC, Tseng YC. Compression on iliac vein from distended urinary bladder. *J Formos Med Assoc* 2014;113:664–5. [\[CrossRef\]](#)
7. Meinardi JR, Kremer J, van der Meer J. Deep vein thrombosis associated with distension of the urinary bladder due to benign prostatic hypertrophy—a case report. *Neth J Med* 2004;62:137–8.
8. Washco V, Engel L, Smith DL, McCarron R. Distended bladder presenting with altered mental status and venous obstruction. *Ochsner J* 2015;15:70–3.

**Keywords:** Bladder; femoral nerve; paralysis; peripheral artery disease; urinary retention.

**Anahtar sözcükler:** Mesane; femoral sinir; paralizi; perifer arter hastalığı; uriner retansiyon.