Brief Reports

Transcatheter Arterial Embolization with Absolute Ethanol Injection for Enlarged Polycystic Kidneys after Failed Metallic Coil Embolization

Yusuke Sakuhara, MD, Fumi Kato, MD, Daisuke Abo, MD, Yu Hasegawa, MD, Tadashi Shimizu, MD, Satoshi Terae, MD, and Hiroki Shirato, MD

Kidney enlargement in autosomal-dominant polycystic kidney disease (ADPKD) may cause symptoms by compressing the alimentary tract, lungs, and heart. The clinical symptoms may be progressive, may markedly decrease quality of life, and may even be life-threatening. Although treatment of this disease is often difficult, transcatheter arterial embolization (TAE) with metallic coils has been reported as a renal contraction therapy that is less invasive than surgery. The present report describes a case of ADPKD successfully treated by TAE with absolute ethanol after a previous TAE procedure with metallic coils failed to contract the affected kidneys because of recanalization.

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Abbreviations: ADPKD = autosomal-dominant polycystic kidney disease, TAE = transcatheter arterial embolization

AUTOSOMAL-dominant polycystic kidney disease (ADPKD) is one of the most common monogenic disorders, and globally it is one of the most common causes of end-stage kidney disease (1). The clinical course of ADPKD typically includes refractory abdominal discomfort and flank pain caused by renal enlargement, which are experienced by approximately 60% of patients (1). Several treatment methods have been reported to decrease kidney size to achieve relief of the symptoms (2–6). Aspiration with or without sclerosis of cysts may relieve symptoms (2,3), but is known to be associated with a high recurrence rate (2) and rare but serious complications including perirenal hemorrhage, arteriovenous fistula formation, and infection (7,8). Conventional nephrectomy would result in complete cure, but with high rates of morbidity (11.5%) and mortality (5%) (9). Transcatheter arterial embolization (TAE) of the renal artery by with metallic coil embolization has recently been reported as an effective and less invasive renal contraction therapy for ADPKD (7,8,10). The present report describes successful treatment of ADPKD with renal arterial embolization with absolute ethanol injection for a patient in whom a previous TAE procedure with metallic coils had failed as a result of recanalization.

From the Department of Radiology, Hokkaido University Graduate School of Medicine, N-15, W-7, Kita-ku, Sapporo, Hokkaido, 060-0838, Japan. Received May 30, 2007; final revision received October 7, 2007; accepted October 8, 2007. **Address correspondence to** Y.S.; E-mail: yrb03514@nifty.com

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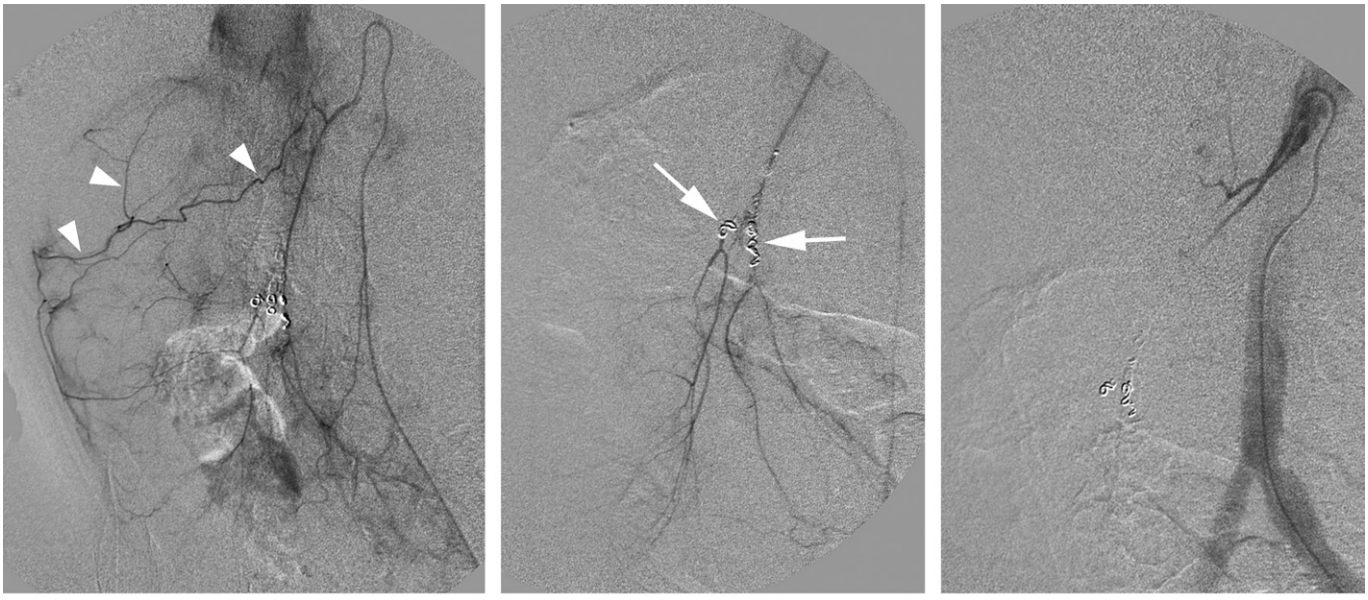
CASE REPORT

A 53-year-old woman was admitted to our hospital with symptoms of dysphagia, severe abdominal distention, and discomfort sitting up in bed. She had been diagnosed with ADPKD at the age of 31 years and had been undergoing hemodialysis for chronic renal failure since the age of 49 years. She had undergone TAE of the right renal artery with microcoils at the age of 49 years because the right kidney was enlarged and polycystic, which was thought to contribute to her symptoms greatly. The right kidney transiently decreased in size for 10 months after TAE but subsequently became enlarged on follow-up ultrasonography. On arrival at our hospital this time, the patient was generally in good health but her abdomen was greatly swollen, with a maximum circumference of 89 cm, much larger than expected given her height of 141.8 cm. Both kidneys were larger than they had appeared on computed tomography (CT) 6 months earlier. Her history and these findings strongly suggested that her symptoms were caused by recurrent enlargement of the kidneys as a result of ADPKD progression.

Laboratory tests showed that the chronic renal dysfunction had gradually progressed accordingly. Laboratory data at arrival showed increased levels of serum creatinine (5.8 mg/dL) and urea nitrogen (27 mg/dL). Also revealed were anemia (erythrocyte

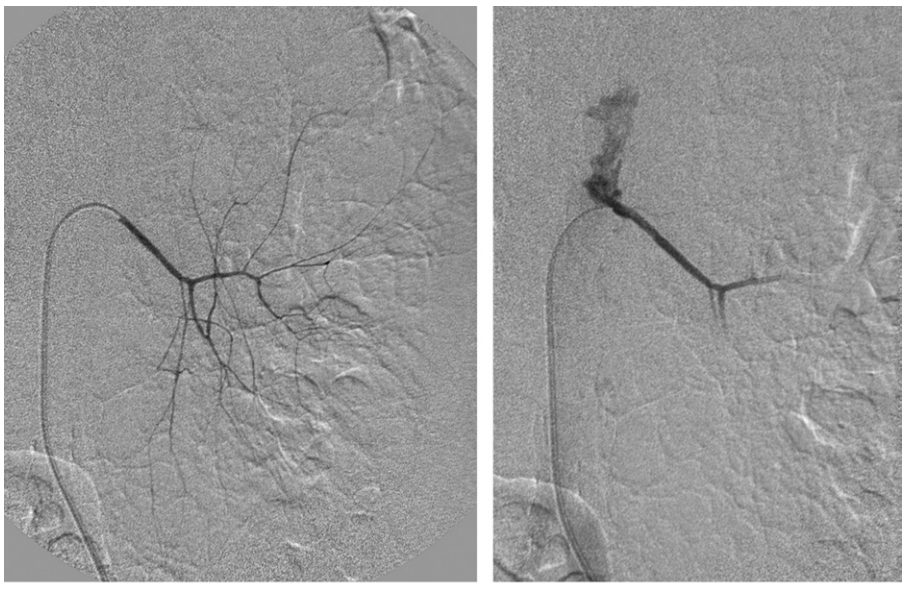


a. b. c.

Figure 1. **(a)** Right renal arteriogram before TAE shows narrowed and stretched renal arteries and a developed renal capsular artery (arrowheads). **(b)** Platinum coils are placed in the right renal artery (white arrows); however, recanalization is shown on the selective right renal angiogram. **(c)** After TAE with absolute ethanol, the right renal artery and renal capsular artery are occluded.

count, 3.69 × $10^4/\mu$L; hemoglobin level, 10.3 g/dL; hematocrit, 31.4%), leukopenia (3,100/μL), a mild increase in γ-glutamyl transpeptidase (48 IU/L), and a mild decrease in cholinesterase (208 IU/L). Other serologic data were within the normal ranges.

CT images showed markedly enlarged bilaterally polycystic kidneys and multiple liver cysts. The left kidney measured 15.0 × 12.2 × 28.0 cm and the right measured 13.2 × 8.3 × 22.0 cm. The volumes (according to the formula [π / 6] × [length × width × depth] as an ellipsoid on CT images) were 2,681 mL and 1,261 mL on the left and right, respectively. There were no findings of solid tumors in the kidneys or any other malignancy in contrast medium–enhanced abdominal and pelvic CT images. The renal parenchyma were enhanced, suggesting sufficient renal blood flow. The metallic coils that had been inserted in the previously attempted TAE procedure were observed in the right renal hilum.



a. b.

Figure 2. **(a)** Left renal arteriogram before TAE shows narrowed and stretched renal arteries. **(b)** After TAE, the left renal artery is occluded.

TAE was selected as the treatment of choice to embolize the peripheral arteries through the recanalized arteries in which coils had been placed. The treatment was approved by the institutional review board of our hospital before treatment, and written informed consent was obtained from the patient. TAE was performed in January 2006. Under local anesthesia, a 5-F sheath introducer (Super Sheath Introducer; Togo Medikit, Miyazaki, Japan) was percutaneously inserted into the aorta via the right femoral artery by Seldinger technique. First, abdominal aortography was performed with a 4-F Omniflush catheter (Togo Medikit). The arteriogram before renal TAE showed bilaterally narrowed and stretched renal arteries and polycystic kidneys (**Figs 1,2**). Selective renal arteriography was then performed with use of a 4-F Mikaelsson catheter (Create Medic, Kanagawa, Japan). The right renal arteriogram showed microcoils