

Percutaneous diathermic ablation of infected pyelocalyceal diverticulum

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KEY WORDS

diverticulum ▶ renal calyx ▶ infection

ABSTRACT

We report a case of infected pyelocalyceal diverticulum (PCD). PCD is usually asymptomatic but may present with symptoms of urinary tract obstruction when complicated by calculi or infection, when the latter supervenes. There is an indication for surgical treatment when the diverticula are complicated which fail to respond to simple antibiotic treatment. Percutaneous ablation of PCD with dilatation of diverticular neck is a safe and effective alternative to injection of sclerosing agents. Since percutaneous fulguration associated with canal dilation provides good success rate and low morbidity, it should be recommended as the standard treatment for PCD.

INTRODUCTION

Pyelocalyceal diverticulum (PCD) is a relatively uncommon cyst like lesion [1]. If it is asymptomatic, PCD usually requires no form of intervention [1]. We experienced infected PCD and treated it successfully with percutaneous electric ablation and ureteral stenting.

CASE REPORT

A 78-year-old woman consulted us presenting with fever and left flank distension. She has been followed as a case of complicated renal cyst (Fig. 1A). A computed tomography (CT) revealed a cystic lesion 20 x 11 cm on the left kidney that was enlarged in comparison with the previous one (Fig. 1B). During diagnostic procedures of the infected renal cyst, in percutaneous puncture of the lesion puriform fluid was found and drained continuously with nephrostomy tube 7 French (Fr). The retrograde pyelography revealed communication between the lesion and the pyelocalyceal system by a short stenotic isthmus and lead to the diagnosis of the lesion PCD.

In the operation, the tract was dilated to 10 Fr and a 9.5 Fr rigid ureteroscope was introduced to the system. The concomitant biopsy of the lesion wall revealed atrophic tubules in its submucosal layer, confirming PCD as well. By advancing a guide wire to the ureter via the collecting system, diverticular neck was dilated in order to enhance urine drainage from the diverticulum. The whole diverticular cavity was fulgurated with an electric unit set at 15 to 20 watts. We could thus appropriately place the stent from the lumen of the diverticulum to the bladder (Fig. 2A-D).

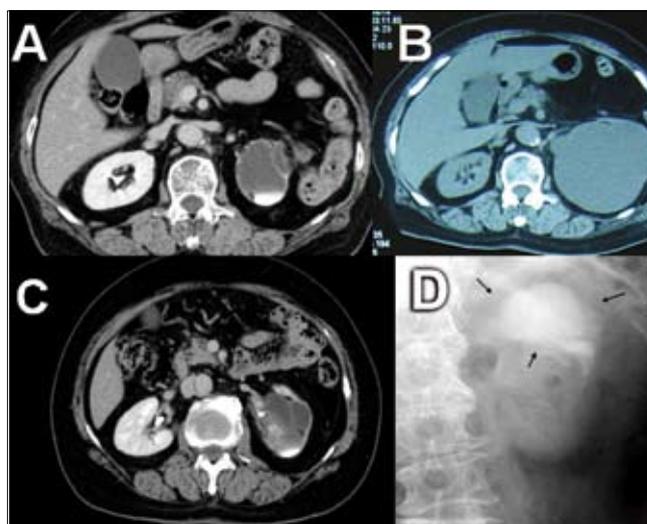


Fig. 1. Contrast enhanced CT demonstrates that contrast medium enters diverticula, with free level within the cyst (Fig. 1A). CT revealed a cystic lesion 20 x 11 cm that was larger than the previous one (Fig. 1B). The contrast enhanced CT and scout film demonstrates that PCD reduced in size 6 months after operation (Fig. 1C and D).

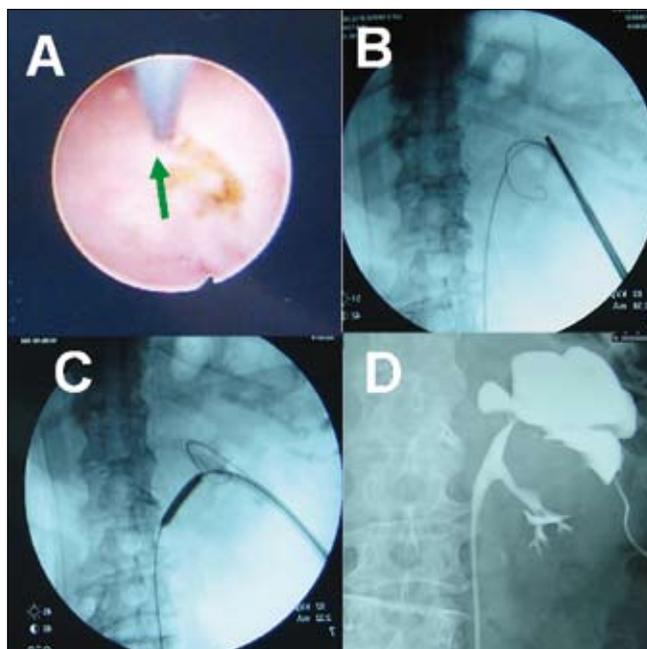


Fig. 2. Ureteroscope demonstrates dimple at origin of 0.038-inch guide wire inserted to renal pelvis (arrow) (Figure A and B) Dilatation of a narrow channel by balloon dilator (Figure 2C). Stent in the lumen of the diverticulum (Fig. 2D).

The nephrostomy tube and stent were removed on the fourth and 20th postoperative days, respectively. The PCD significantly reduced in size 6 months after the operation (Fig. 1C and D).

DISCUSSION

PCD is a relatively uncommon cyst-like lesion which is connected to the renal calyx by a short stenotic isthmus [1-3]. It is occasionally associated with infection because of urinary stasis. There are some reported cases of infection of a renal cyst with rupture into the urinary tract i.e. communicating cysts [4]. The clinical symptoms are quite similar to those present in the infected PCD [1, 4]. The cystic lesion in our case was within the renal parenchyma and communicating with the main collecting system via a narrow channel before infection. Biopsy performed at the operation assured us about the diagnosis of PCD. Further clinical studies are needed to elucidate the confusion that appeared.

Placement of an antegrade drainage tube to the cystic cavity alone is not adequate in the case of PCD. Treatment of complicated PCD has been performed primarily by open surgical intervention, by partial nephrectomy. Recently, instead of open surgery, endoscopic repair has been used to externalize the calyceal diverticulum into the pyelocalyceal cavities using retrograde approach [5-7]. Nephrostomy tube was already placed in our case. Comparing to the retrograde method, our adopted operative technique is simple and effective. Direct puncture of the calyceal diverticulum enables the surgeon to use a large rigid ureteroscope and perform electrocautery ablation in clear vision. Since percutaneous fulguration associated with canal dilation provides good success rate and low morbidity, it should be recommended as the standard treatment for PCD. As a novel approach in the treatment of a calyceal diverticulum, the laparoscopic approach in symptomatic calyceal diverticula also represents an effective and minimally invasive method and definitive management of the anatomical abnormality [8]. We would require future upper pole resection when symptoms recur.

CONCLUSION

Percutaneous ablation of PCD with dilatation of diverticular neck is a safe and effective alternative to injection of sclerosing agents.

REFERENCES

1. McLaughlin AP 3rd, Pfister RC: *Spontaneous rupture of renal cysts into the pyelocalyceal system*. J Urol 1975; 113: 2-7.
2. Wulfsohn MA: *Pyelocalyceal diverticula*. J Urol 1980; 123: 1-8.
3. Rathaus V, Konen O, Werner M et al: *Pyelocalyceal diverticulum: the imaging spectrum with emphasis on the ultrasound features*. Br J Radiol 2001; 74: 595-601.
4. Okubo Y, Ogawa M, Tochimoto M, Tsuchiya A: *Spontaneous communication between a simple renal cyst and the pyelocalyceal system with a gas-producing infection*. Urol Int 2003; 70: 335-336.
5. Al-Basam S, Bennett JD, Layton ZA: *Transdiverticular percutaneous nephrostomy for calyceal diverticular stones*. J Vasc Interv Radiol 2000; 11: 885-889.
6. Nakada SY, Stroom S, Preminger GM: *Controversial cases in endourology. Calyceal diverticular calculi*. J Endourol 1999; 13: 61-64.
7. Gross AJ, Herrmann TR: *Management of stones in calyceal diverticulum*. Current Opinion in Urology 2007; 17: 136-140.
8. Miller SD, Ng CS, Stroom SB, Gill IS: *Laparoscopic management of calyceal diverticular calculi*. J Urol 2002; 167: 1248-1252.

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