

Application of Kissing Balloon Technique in Radio-cephalic Arterio-venous Fistula Stenosis: Case Report

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Introduction

Kissing balloon technique is frequently used for coronary bifurcation lesions. Intervention in either branch of a bifurcation lesion frequently leads to snow plowing effect with shifting of plaque, compromising the opposing branch. Kissing balloon technique, which means dilatation of the main branch and the side branch at the same time, could avoid plaque shifting and restore main branch geometry. Similar situations may be encountered in percutaneous transluminal angioplasty (PTA) of radio-cephalic arterio-venous fistula (AVF) at the anastomosis site. Balloon dilatation of either radial artery or cephalic vein could result in plaque shifting to the opposing vessel. Here, we report a successful PTA using kissing balloon technique for anastomosis site in a patient with AVF.

Case Report

A 90-year-old woman with a history of hypertension, old stroke, uremia on regular dialysis came to our center for inadequate flow of AVF for PTA. A 6 Fr sheath was inserted to left radial artery. Fistulography revealed left radiocephalic AVF with focal stenosis over arterial anastomosis and segmental stenosis over juxta-anastomotic cephalic vein. Bifurcation lesion was identified (figure 1).

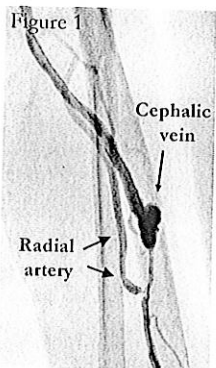
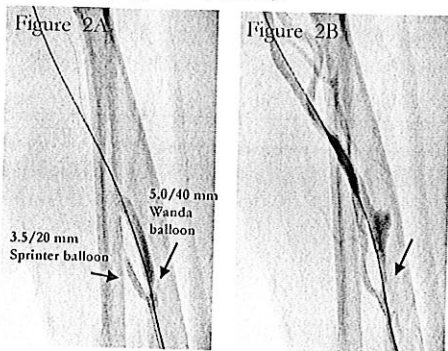


Figure 1. Fistulography revealed bifurcation lesion with stenoses at anastomosis site of radial artery and cephalic vein.

The radial artery was crossed with a .014" PT2 wire, and the cephalic vein with a .035" Terumo wire. Kissing balloon technique was used to dilate both arterial and venous lesions simultaneously, with a 3.5/20 mm Sprinter balloon at 6 atm over arterial site (figure 2A, black arrow), and a 5.0/40 mm Wanda balloon at 14 atm over venous site (figure 2A, white arrow), respectively. Resistant lesion was noted over venous site. (figure 2B, arrow).



The venous lesion was further dilated with a 5.0/40 mm Conquest balloon at 24 atm x 30 sec (figure 3). Final kissing balloon technique was not performed because 6Fr sheath is too small for both 3.5 mm Sprinter balloon and 5.0 mm Conquest balloon.

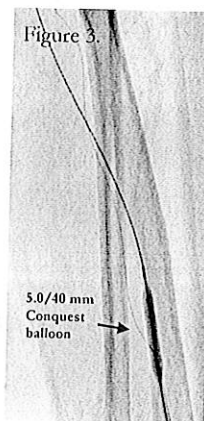


Figure 3. Resistant stenotic lesion over left cephalic vein was successfully dilated with a 5.0/40 mm Conquest balloon at 24 atm (white arrow).

Both technical and clinical success of PTA were achieved. Immediately after the kissing-balloon PTA, brisk antegrade flow was achieved (figure 4A, 4B), and pressure measured via the radial sheath decreased from 157/86 mmHg before to 73/31 mmHg after PTA. The patient underwent hemodialysis on the following day smoothly.

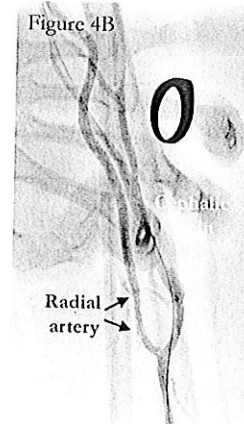
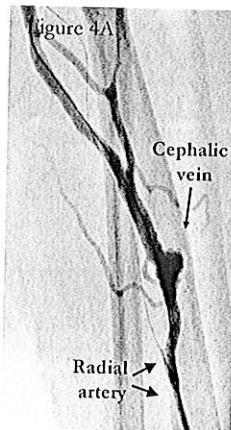


Figure 4A. Fistulography revealed adequate angiographic result of left cephalic vein after PTA. Figure 4B. Fistulography by compressing cephalic vein revealed mild dissection and mild residual stenosis of left radial artery.

Conclusions

Our single-case experience suggests that for hemodialysis patients with radio-cephalic AVF, bifurcation lesion stenoses involving the arterial and venous anastomosis site, PTA using kissing balloon technique could be applied safely and efficiently.