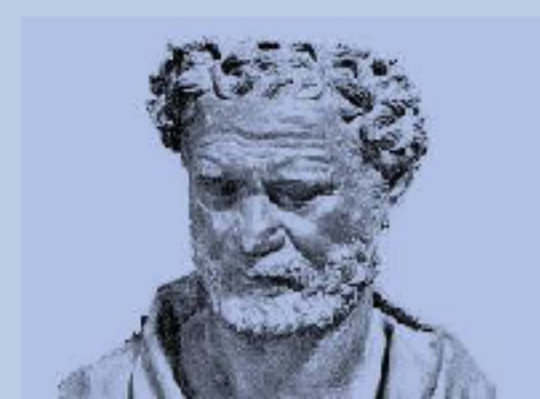


# THE PREOPERATIVE VASCULAR MAPPING WITH DUPLEX ULTRASONOGRAPHY IN SUCCESSFUL VASCULAR ACCESS CREATION

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## Introduction

Preoperative vascular mapping is used to evaluate the structural and functional quality of the vasculature which is to be used for the creation of a vascular access. This procedure offers the opportunity to choose the most appropriate vessels, thus guiding the vascular surgeon in terms of the type and location of the access. Given the improved survival of peripheral native arteriovenous fistulae (AVF) compared with synthetic grafts, vascular mapping contributes to enhanced creation of radio-cephalic anastomoses (AVFs).



Figure 1. Mapping of radial art.

## Method

We retrospectively studied the reliability of preoperative vascular mapping in 44 patients with end-stage renal disease (ESRD) in relation to the creation of a peripheral native AVF. The studies were performed at bedside by a nephrologist, with a portable ultrasound scanner (Sonosite MicroMaxx<sup>®</sup>), one to two days prior to planned surgery. The vascular access was considered successful if it's efficient to support a 4-hour dialysis session, after its first cannulation.

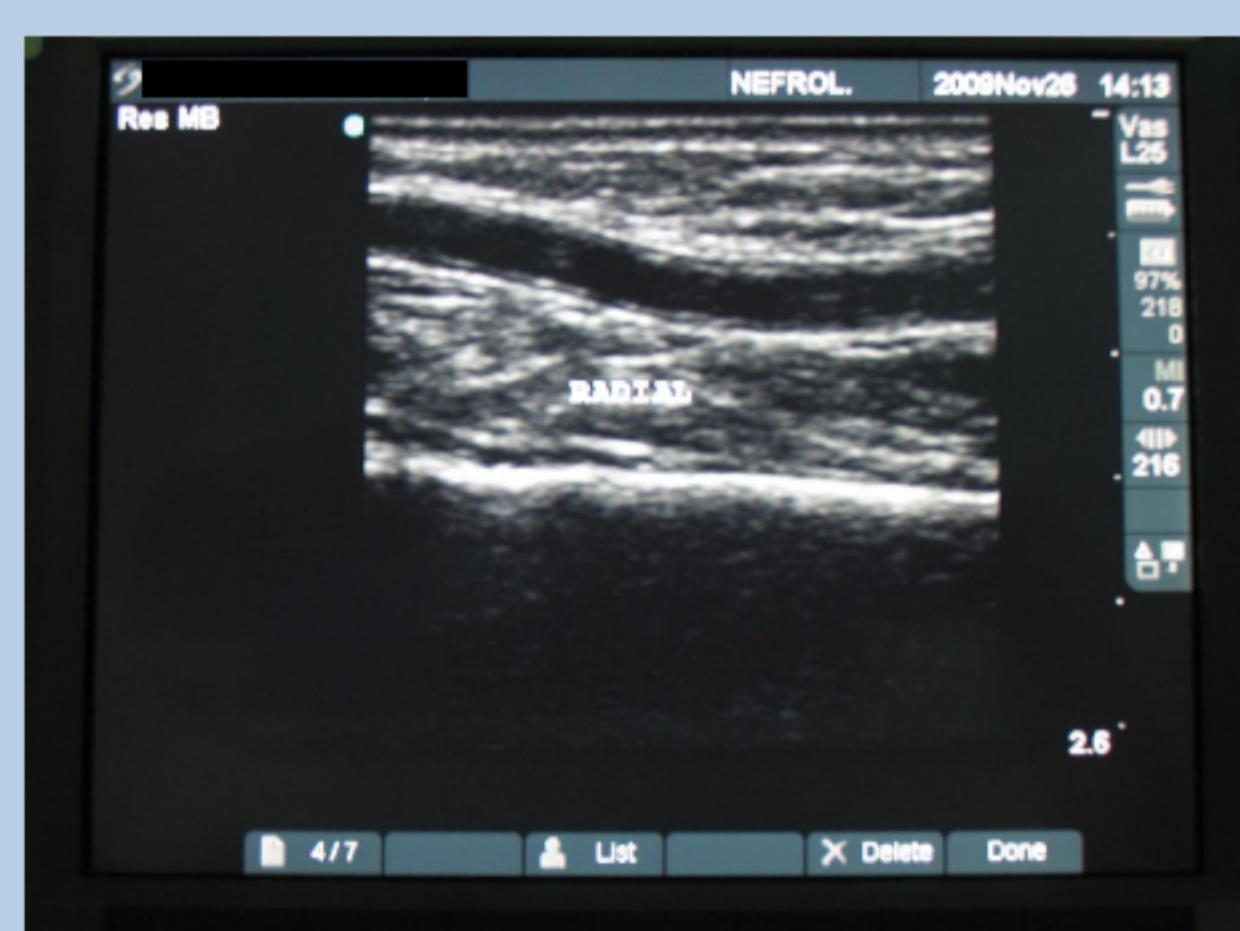


Figure 2. Mapping of radial art.

## Results

Of the 44 patients studied, in 36 individuals (82%) the sonographic and surgical findings were matched and the AVF that was performed has been indicated by the previous mapping study. A radio-cephalic fistula at the left wrist (non-dominant arm) was created in 16 of these 36 patients (36%) (group 1), while in 20 patients (group 2) the vascular access was created in various other sites according to the sonographic findings. In 8 patients (18%) (group 3) the sonographic findings did not correspond to the findings during surgery. (Figure 5) The radial artery diameter was statistically significantly greater in the Group 1 compared with the other Groups (2 and 3) of patients, while the cephalic vein diameter did not differ significantly between the three groups. (Table)



Figure 3. Mapping of cephalic v.

Vascular Access

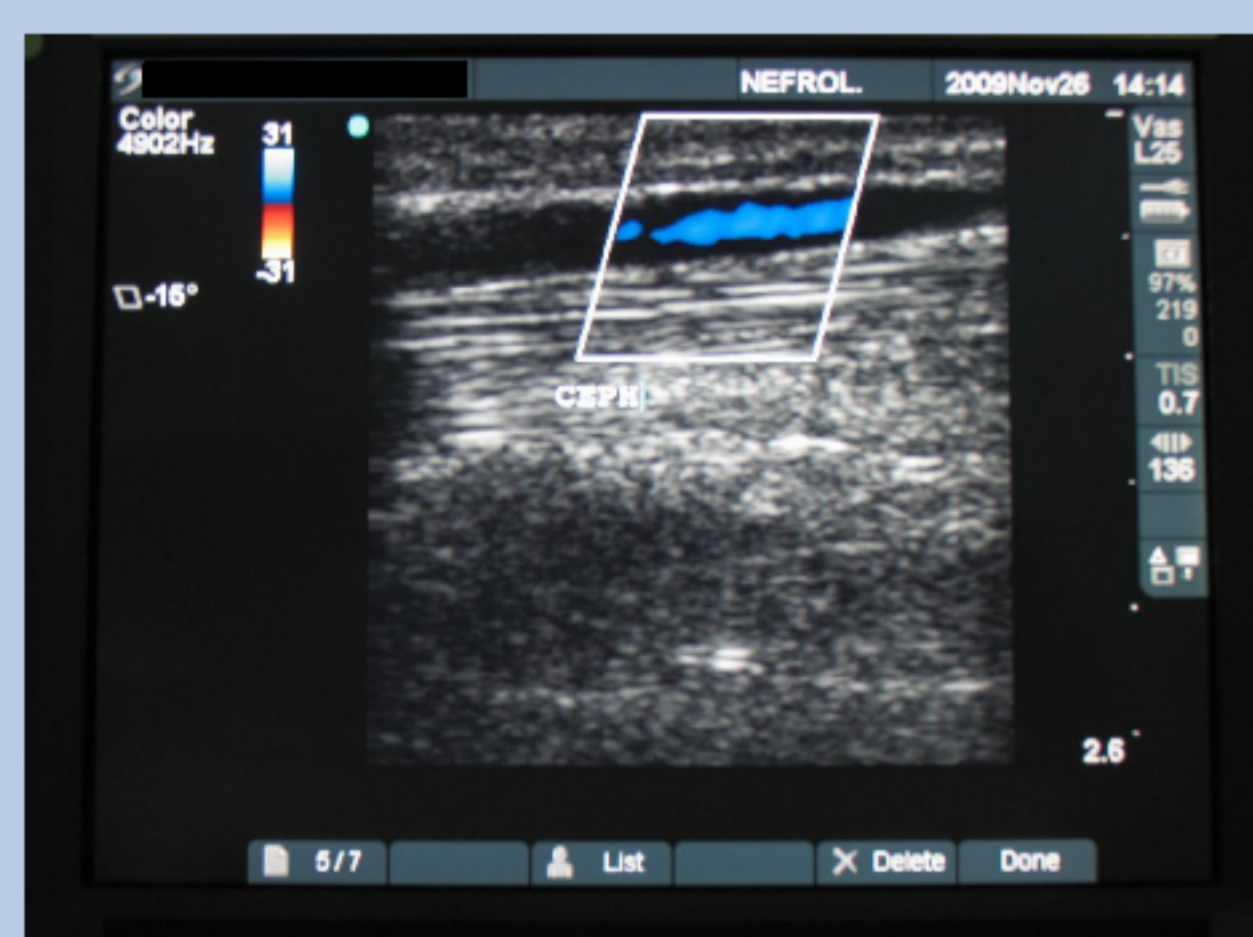


Figure 4. Mapping of cephalic v.

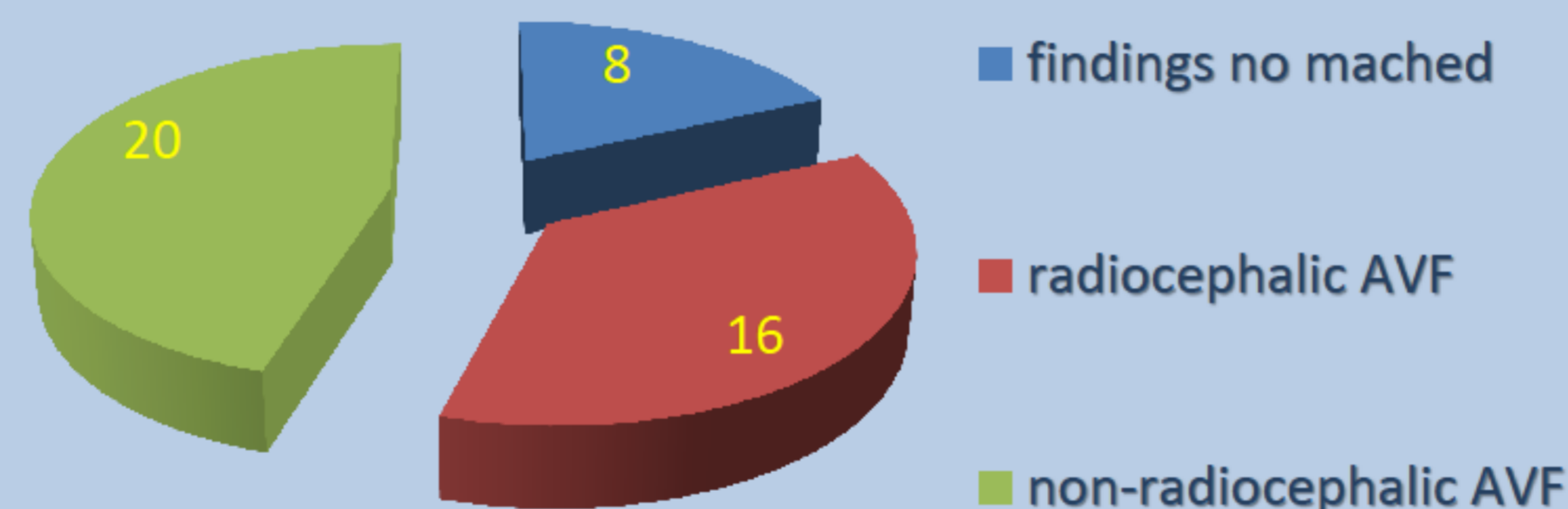


Figure 5. The 3 groups of patients

	Group 1	Group 2	Group 3	p(1-2)	p(1-3)
Radial artery	0,29 cm IQR 0,22-0,3	0,21 cm IQR 0,2-0,24	0,22 cm IQR 0,18-0,24	0,001	0,027
Cephalic vein	0,30 cm IQR 0,26-0,35	0,25 cm IQR 0,22-0,36	0,29 cm IQR 0,22-0,36	0,160	0,742

Table. Comparison of vessels' diameter

## Conclusion

Conclusively, preoperative vascular mapping using Duplex ultrasonography seems to be a reliable method to guide the surgeon to create a suitable and sustainable peripheral native vascular access.

