Can blood flow surveillance and pre-emptive repair of subclinical stenosis prolong the useful life of arteriovenous fistulae? A randomized controlled study

Sir,

In the September 2004 issue of *Nephrology Dialysis Transplantation*, Tessitore et al. [1] provide further evidence that arteriovenous (AV) access blood flow surveillance and pre-emptive repair of subclinical stenosis reduce the thrombosis rate and prolong the life of AV fistulae. In this report, 12 of the 43 patients with dysfunction of AV fistulae proposed for treatment with percutaneous transluminal angioplasty (PTA) were considered not to be amenable to PTA by radiologists, and thus were surgical candidates for the following reasons: stenosis segment >2.5 cm, multiple perianastomotic stenoses and critical (>90%) isolated perianastomotic stenosis.

It has been documented that 2–6% of the cases referred for PTA are not amenable to angioplasty [2–4]. In contrast, in the present study [1], the 12 patients (28%) deemed ineligible for PTA by radiology represent an exceptionally high referral rate requiring surgical intervention. Of particular concern, seven out of the 43 patients (16%) received an AV interposition graft, rendering them susceptible to recurrent stenosis [5].

Multiple reports [2–4,6] have demonstrated that all of the above-mentioned complex stenoses of the AVF have routinely been treated successfully with PTA by interventional nephrologists and do not require referral to a vascular surgeon (Figures 1 and 2). We consider that referral of such cases for surgical revision is rarely needed, and actually can be deleterious, leading to unnecessary conversion of fistulae to grafts as well as surgical complications.

*Conflict of interest statement*. None declared.

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**Fig. 1.** Successful angioplasty of multiple perianastomotic lesions.

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Reply

Sir,
We read with interest the comments made on our paper [1] by Cipleu et al., who raise the issue of the eligibility of stenoses for surgical or endovascular treatment (PTA) in arteriovenous fistulae (AVFs).

Cipleu et al. were concerned by the very high rate of referral to the vascular surgeon (28%) in our study and especially by the use of an arteriovenous interposition graft (that they consider tantamount to 'conversion of fistulae to grafts') because of its susceptibility to recurrent stenosis. They also conclude that 'surgical revision is rarely needed and actually can be deleterious, leading to unnecessary conversion of fistulae to grafts as well as surgical complications', though they fail to cite literature in support of this statement.

Regarding the treatment of stenosis by PTA, Beathard et al. [2] reported that PTA was performed in 72% of AVFs with largely juxta-anastomotic venous stenoses (a population of AVFs and a rate of PTA similar to our study), but they did not report on the fate of the remaining 28% of AVFs (whether they were abandoned or treated differently).

In our study [1], we did not 'propose all AVFs for treatment with PTA' and treat by surgery those 'considered not to be amenable to PTA', as Cipleu et al. suggest, but our 'indications for surgery were lesions that the radiologist considered unlikely to be amenable to PTA'. In other words, we had both surgical and endovascular treatment options equally available, and surgery was performed not only for stenoses deemed technically ineligible for PTA, but also for those expected to have a significant residual stenosis after PTA in the light of our experience, and occasionally for those considered eligible for both treatments—based on the report by Schwab et al. of a higher restenosis rate after PTA than after surgery [3].

We are aware that our criteria for choosing the type of treatment were largely subjective, but this approach enabled us to conduct a prospective controlled trial comparing surgery (either neaonanostomosis or jump graft interposition) vs PTA in the pre-emptive treatment of perianastomotic stenoses in lower forearm AVFs, the results of which have been presented at the 2004 American Society of Nephrology meeting in St Louis [4]. This study showed a higher restenosis rate after PTA ($n = 40$) than after surgery ($n = 22$) (0.476 vs 0.159 stenoses per AVF-year, $P = 0.02$), while the rate was similar in the two surgically treated subgroups, i.e. 0.179 events per AVF-year after neaonanostomosis ($n = 10$) and 0.147 after jump graft ($n = 12$) ($P = NS$). Neither surgery nor PTA caused major complications in our series, and the survival
of the technique was similar between the two. These findings fail to support any of the concerns raised by Cipleu et al. as regards any higher complication rates being associated with surgery.

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1Divisione di Nefrologia Nicola Tessitore
2Dipartimento di Scienze Chirurgiche Giovanni Lipari
3Dipartimento di Medicina e Sanit Pubblica Albino Poli
4Istituto di Radiologia Valeria Bedogna
Servizio Emodialis Ospedale Policlinico Elda Baggio
Piazzale L. A. Scuro 10 Giancarlo Mansueto
Verona 37126
Italy
Email: nicola.tessitore@azosp.vr.it


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