Regarding “Predictive factors and clinical consequences of proximal aortic neck dilatation in 230 patients undergoing abdominal aorta aneurysm repair with self-expandable stent-grafts”

In their recent article Cao et al (J Vasc Surg 2003;37:1200-5) analyzed the predictive factors for proximal aortic neck dilatation in 230 patients with abdominal aorta aneurysms repaired with self-expanding stent grafts. They used the 1 month postoperative computed tomography scan as the baseline for subsequent evaluation of aortic neck dilatation. However, the authors did not report the aortic neck diameter at the level of the lowest renal artery or the distance between the lowest renal artery and the beginning of the stent graft at their 1 month study. Since the length of the residual aortic neck is not known, accuracy of deployment cannot be determined from their article. Without this information it is difficult to determine if the stent graft was initially implanted in a distal portion of the aortic neck, which would more likely dilate in the follow-up period. Correctly positioned endografts just below the renal arteries have been shown by May et al2 to be correlated with no enlargement of the proximal aortic neck. Could the authors provide this information?

The angle between the flow axis of the infrarenal neck and the body of the aneurysm was defined as the aortic neck angle by Cao et al. The angle between the flow axis of the suprarenal aorta and the infrarenal neck was not reported according to suggested standards. In an article published by our group3 the angle between the flow axis of the suprarenal aorta and the infrarenal neck was a factor related to the need for secondary procedures (extender cuffs and/or conversion) after endovascular grafting. Although, aortic neck dilatation was not evaluated in our article, we think that a possible correlation between the angle between the flow axis of the suprarenal aorta and the infrarenal neck with aortic neck dilatation should be evaluated. Could the authors provide us with such an analysis?

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REFERENCES

On the basis of your comments, we reviewed all the computed tomography scans of patients included in our study. The length between the lowest renal artery and the first portion of the endograft at the one-month control was measured, as suggested. The mean renal-to-graft distance is 5.32 mm, the median value is 5 mm, and the interquartile range is 5.0 to 9.2 mm. As a result, 72% of our patients showed a renal-to-graft distance <5 mm at 1 month follow-up. Analyzing the incidence of neck dilatation in the subgroup of patients with renal-to-graft distance >10 mm, we found that 26% (10/38) of these patients show neck dilatation during follow-up, while in the subgroup with closer deployment this incidence is 29% (55/192) (P = .85). We included the variable “renal-to-graft distance” in our multivariate model and the independent predictors of neck dilatation after endografting were the same as before: neck circumferential thrombus, preoperative neck diameter, and preoperative aneurysm diameter. In our experience, a graft positioned right below the renal arteries did not protect from neck dilatation.

In our opinion, a possible influence of the angle between the suprarenal aorta and the aortic neck towards infrarenal aortic neck dilatation is unlikely, especially in patients who underwent infrarenal stent-graft placement. For this reason, the possible influence of the angle between the aortic neck and the abdominal aortic aneurysm was measured; yet this variable was not an independent predictor of neck dilatation.

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Regarding “Magnetic resonance angiography minimizes need for arteriography after inadequate carotid duplex ultrasound scanning”

The article by Back et al (J Vasc Surg 2003;38:422-31) on the use of magnetic resonance angiography (MRA) to define the carotid artery anatomy, if the carotid duplex ultrasound scanning was either indeterminate or inadequate, shows that MRA may replace arteriography for most patients. MRA is widely used in many medical centers today rather than arteriography to confirm the results obtained from a carotid artery duplex scanning before planning a carotid endarterectomy, and most would agree that the combination of duplex scanning and MRA increases the appropriate selection of patients for surgery. However, it is important to be aware that the severity of the stenosis as determined by MRA can occasionally be deceiving. We have shown, as have others, that the MRA will overestimate the degree of stenosis in approximately 10% of studies. Furthermore, occluded vessels can be misclassified as being severely stenosed by MRA, and these patients could be scheduled for surgery. Thus, relying on MRA alone may lead to misclassification of the stenosis and inappropriate treatment of the patient.

We would like to suggest that computed tomographic angiography (CTA) may be a better technique for defining the anatomy and morphology of the diseased carotid artery. The results obtained by CTA have a high correlation with the results obtained with MRA and with carotid duplex scanning, and CTA can identify the plaque morphology and ulceration. In our study, CTA was also excellent for the detection of occluded vessels. We recommend that if the carotid artery duplex scan is inadequate, results

Reply

We thank you for your comments regarding our recent publication on aortic neck dilatation after endografting.
Regarding “Factors that predict prolonged length of stay after aortic surgery”

We read with interest the recent article by Chang et al (J Vasc Surg 2003;38:335-9). Whilst we acknowledge the fantastic results reported—including a mortality rate of only 0.4%, which is far superior to other reports1,2—we would like to draw attention to the interpretation attributed to renal impairment as a risk factor for prolonged stay. Chang et al’s definition of preoperative renal insufficiency was a serum creatinine of over 2.0 mg/dL (182 µmol/L). We believe this to be excessively high, thus accounting for the very low number of patients (5.4%) in this risk group and the difficulty in analyzing this risk factor, as recognized by the authors themselves. The United Kingdom Small Aneurysm Trial recognized renal impairment as a significant risk factor in postoperative mortality, though in this trial impairment occurred in 5.6% compared with 0.4% in the study by Chang et al. Patients who died had a mean creatinine of 122.2 µmol/L (1.34 mg/dL) compared with 107.4 µmol/L (1.18mg/dL) for survivors. Furthermore, each 40 µmol/L increase in serum creatinine increased mortality by 40%.2

The choice of a threshold value for abnormal serum creatinine is largely arbitrary as up to 60% of renal function can be lost before development of abnormally high serum creatinine.3 In our hospital normal serum creatinine is defined as below 120 µmol/L (1.32 mg/dL) for men and 97 µmol/L (1.07mg/dL) for women. However, a recent study of peripheral vascular disease patients suggested that even this may be too high,4 our group found that over 80% of peripheral vascular disease patients with normal serum creatinine had impaired renal function as defined by creatinine clearance (CrCl), normal being over 100mL/min. Of these, over 70% had a CrCl below 60mL/min, at least 40% below normal. Serum creatinine above 85 µmol/L (0.94mg/dL) was found to significantly predict a reduced creatinine clearance.5

In conclusion, we recommend that for peripheral vascular disease patients a threshold value of 85 to 120 µmol/L (0.94-1.32mg/dL) serum creatinine be used. This would more accurately reflect the significant burden of renal disease in this patient population. Creatinine clearance remains, however, a better and more accurate measure of renal function than serum creatinine.

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REFERENCES
4. Rashid ST, Agarwal S, Hamilton G. Discovering renal impairment in peripheral vascular disease using creatinine clearance in patients with normal serum creatinine [Programme and Abstract Book]. European

Reply

We appreciate your inquiry into our recent work with carotid magnetic resonance angiography (MRA) and have several comments. Overestimation of the severity of carotid disease by “time-of-flight” MRA has been primarily explained by a better understanding of the “flow void” phenomenon occurring with disturbed flow past higher grade carotid stenoses.1 Stenoses greater than the threshold diameter reduction seen on arteriography will not be directly measurable by MRA in the presence of a flow void potentially leading to overestimation. Secondly, Nederkoorn and colleagues2 have nicely shown that overestimation of stenosis severity does not occur in the absence of a flow gap when the same projections of MRA and contrast arteriography are compared. Since MRA projections are typically displayed in sequential 15° rotations, more than standard anterior-posterior and lateral angiographic views may be required to accurately define the degree of stenosis.

As we noted both in this article and in our previous study, MRA has correctly differentiated near occlusions from complete occlusions in our experience.1 When our MRA definition for internal carotid artery occlusion was used, 18 of 19 patients had internal carotid patency accurately resolved by MRA and 2 of 3 patients required arteriography to determine operability (not resolve patency). We have limited experience with carotid computed tomographic angiography but acknowledge that it may serve as a complementary imaging modality.

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REFERENCES