Endografts Are the Way to Treat Popliteal Aneurysms and the Results Are Durable

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Background

The most feared complication of a popliteal artery aneurysm (PAA) is acute thrombosis with occlusion of the aneurysm, and distal embolization. Deep ischemia may occur as a result of this complication, and can lead to limb loss in up to 40% of the cases. Repetitive distal embolization of small mural thrombi can also lead to progressive chronic limb ischemia. To prevent these severe complications, elective treatment is advocated. Open surgical treatment with a venous bypass graft is still the treatment of choice for most surgeons.

The first endovascular repair of a PAA, performed with a home-made device, was reported in 1994 by Marin. Thereafter, several case reports and small cohort studies with different stent grafts have been published. Advantages of the endovascular treatment include the minimally invasive character of the procedure with minimal morbidity, and shorter operation time and hospital stay. A specific problem associated with the technique is that the stent graft crosses the knee joint. Repetitive stress on the device in this bending zone may lead to complications, including kinking, fracture of stent graft material, and occlusion.

In our hospital, after an initial feasibility study, we adopted a policy of preferential endovascular treatment for PAAs larger than 20 mm in diameter.

Results

A total of 67 PAAs were evaluated for endovascular repair. Ten PAAs (15%) were excluded. All 57 endovascular procedures were successful. During follow-up, 12 (21%) stent grafts occluded. Four patients were managed conservatively, eight patients required treatment to re-open the occluded stent graft. No patient required amputation or bypass surgery. There were 14 other complications. There were eight migration problems of which three required extensions or bridging stent grafts. In two patients, sac enlargement was diagnosed. In two cases, a stenosis was treated by percutaneous transluminal angioplasty. Finally, in two cases stent breakages occurred and resulted in an occlusion.

Discussion

The results of this single prospective cohort study are good, with acceptable patencies at 2 years, and no severe complications such as amputation or acute need for below knee surgery. The procedure is effective and simple, and patients do make a quick recovery. The stent-grafts are flexible and available in the required diameters and lengths. We can safely state that the goal (ie, excluding the risk of distal embolization) is achieved by this endovascular treatment. Surprisingly, the patients who suffered an occlusion had relatively mild symptomatology.

At this moment, we are lacking long-term results of this minimally invasive procedure. In addition, more stent graft problems can be expected owing to repetitive stress on the stent grafts with each bending of the knee. Hopefully, more flexible stent grafts will emerge in the future. For the moment, we try to avoid overlap of two stent-grafts in the bending zone of the knee because this overlap makes the stent grafts even less flexible.

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