Localized thrombus complicating saphenous vein grafts

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Summary
Recurrence of symptoms after a long saphenous vein graft may be due to a variety of causes. When the graft pulse can still be felt the presence of a localized thrombus partially occluding the lumen must be considered. After arteriographic confirmation such a thrombus can be easily removed.

Introduction
There are few accounts of late changes in long saphenous vein grafts. In describing a series of 58 grafts performed between 1966 and 1974 I drew attention to one patient in whom a thrombus had formed above a stenosed lower anastomosis (Case 2 below). Mavor et al. found that stenosis of the distal anastomosis occurred in 8 of 50 cases. In 2 cases the anastomosis was explored and thrombus removed, but in 3 others failure of the distal anastomosis led to complete graft occlusion. It seems quite likely that this build-up of thrombus above a narrow distal anastomosis may be a fairly common cause of failure, but this is impossible to prove without repeated angiographic studies.

Two additional cases of thrombus developing in an apparently healthy graft have now been observed (Cases 1 and 3 below). In these cases the thrombus appeared well away from the anastomoses and was not obviously related to a valve or to any vein abnormality. In one case the thrombus appeared after 4 years and in the other after 11 years, so that it would seem to be a late complication. Late thrombus formation is certainly not well documented, and Szilagyi et al. do not mention it in a review of 377 autografts, although they list 8 types of morphological change recognized by arteriography.

Diagnosis and management
When symptoms recur after a saphenous vein graft the graft is often palpable and obviously thrombosed. At this stage it is impossible to determine what caused the graft closure. However, in some cases with recurrent symptoms the graft may still be felt pulsating. It is this presentation which should lead the surgeon to consider the possibility of a localized thrombus in the graft and to investigate it by arteriography. Certainly it is an important and urgent matter to investigate. When diagnosed it is a simple matter to remove the thrombus surgically and to repair the graft with a patch.

FIG. 1 Arteriogram of Case 1 showing incomplete occlusion of vein graft.
Without surgical removal complete closure of the graft is inevitable.

Case reports
Case 1 The patient was aged 63 in 1970 when she had a long saphenous vein graft. The graft was 26 cm in length and extended from the junction of the proximal and middle thirds of the superficial femoral artery to the distal popliteal artery. At this operation it was noted that a valve near the proximal end was attached to the vein wall with chordae-like tissue that had been seen in a heart valve. These were excised, but it was not possible to see if any other chordae were present on other valves. Four years later the symptoms recurred, but the graft pulse was still present. The arteriogram (Fig. 1) showed the presence of a thrombus in the middle of the vein. When this was explored and removed a small channel was found alongside it. After removal of the thrombus the vein was repaired with a cephalic vein patch. There was no evidence of a valve, kink, or indeed any abnormality at the site of the thrombus. The circulation returned to normal after this operation and has remained so to date.

Case 2 A man of 60 years was treated by a long saphenous vein graft from the middle third of the superficial femoral artery to the distal popliteal artery in 1968. Symptoms recurred 4 years later, in 1972. The graft pulse was easily palpatble and the arteriogram showed partial occlusion of the graft in the region of the lower anastomosis (Fig. 2). At exploration a thrombus about 2 cm in length was found traversing the lower anastomosis and almost completely occluding it. There was some narrowing at the anastomosis but no irregularity of the lining. After removal of the thrombus the opening was repaired with a vein patch. About 2 years later the vein graft thrombosed and severe rest pain returned. He was then satisfactorily treated with an ileopopliteal Dacron graft, but unfortunately there was no information concerning the cause of the recurrence.

Case 3 A man born in 1906 was treated by a long saphenous vein graft in 1965. Intermittent claudication recurred in this leg 11 years later, in 1976, when an arteriogram showed patency of the graft but irregular thrombosis of its lower end (Fig. 3). Unfortunately this extended to occlude the whole graft while he was waiting for surgical treatment.

References