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LESSON OF THE MONTH

Late Rejection of an Entire Polytetrafluoroethylene Carotid Patch with Complete Restitution of Vascular Continuity

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Introduction

In recent years, many studies have attested to the benefit of patch closure after carotid endarterectomy (CE) by comparison with primary closure.^{1,2} Patch closure of the internal carotid artery (ICA) is not without complications, however.^{2–5} This report describes a clinical observation that is unique in the medical literature, i.e. the late rejection of an entire polytetrafluoroethylene (PTFE) carotid patch, with none of the reported complications following this type of carotid closure, and with intact arterial reconstruction 48 months after rejection.

Case Report

A 63-year-old man underwent standard CE with PTFE patching for a high-grade symptomatic lesion of the carotid bifurcation: a 0.4 mm PTFE patch, 3 cm long and 4 mm wide, sewn in place with a 5/0 polypropylene monofilament suture, was employed to close the arteriotomy. After an uneventful postoperative course and discharge on postoperative day 6, the patient presented 48 months after CE with a cervical cutaneous fistula 6 mm in diameter, which had suddenly appeared 8 days earlier, revealing the



Fig. 1. The cutaneous fistula. The proximal extremity of the PTFE patch can be seen through the fistula. The running-suture material is intact (arrow).

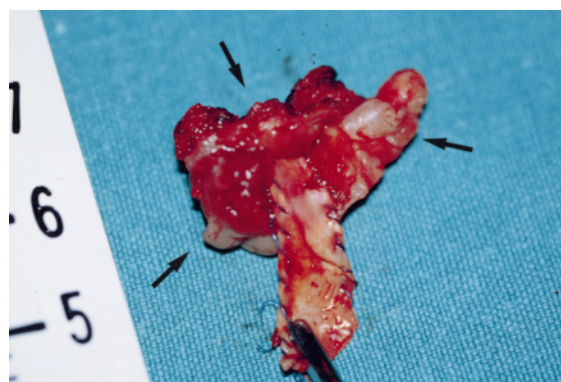


Fig. 2. The final specimen: the intact PTFE patch emerges from the removed cutaneous fistula (arrows). The PTFE patch's anastomotic suture line and running-suture material appear to be unaltered.

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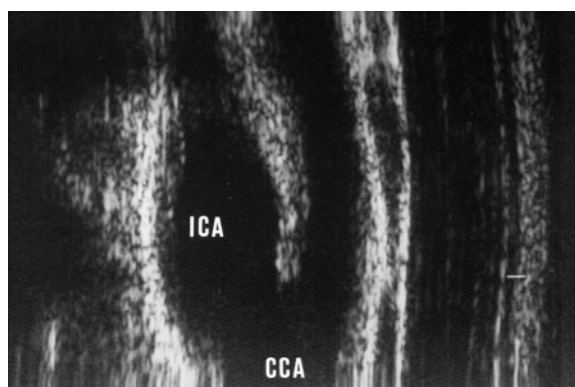


Fig. 3. Duplex-ultrasound scanning shows a patent endarterectomised internal carotid artery, with no onset of pseudo-aneurysm.

PTFE patch, complete with the continuous monofilament suture material (Fig. 1). No localised or generalised signs of inflammation were seen. Duplex ultrasound scanning (DUS) detected a patent endarterectomised ICA, with no obvious pseudo-aneurysm, enlargement or restenosis. Magnetic resonance angiography (MRA) confirmed these findings. The fistula was then removed surgically (Fig. 2), under regional anaesthesia, by the same surgeon who performed the first operation: the entire patch was dislodged into the superficial layers, under the platysma and sternocleidomastoid muscle, with no connection between its inner surface and the external arterial wall. Cultures of the cutaneous fistula and the entire patch proved negative, and the removal of the "foreign body" was curative. The patient was monitored every 3 months using DUS to check for any onset of pseudo-aneurysm (Fig. 3). Forty-eight months later, MRA was repeated and confirmed the intact arterial reconstruction (Fig. 4).

Discussion

Complications of patch angioplasty are rare. In the early postoperative period, "blow-out" (or aseptic rupture of the vein patch, especially when it is harvested from the ankle) is an infrequent but devastating complication.^{3,4} A significant incidence of aneurysmal expansion of saphenous-vein patches has been demonstrated by postoperative angiograms.^{1,5} Postoperative disruption¹ and patch infection⁵ have occasionally been reported in PTFE patches, though PTFE seems more resistant to sepsis than Dacron. The detachment and subsequent external rejection of the entire patch several years after CE is a remarkable event but, though the interval between the disruption

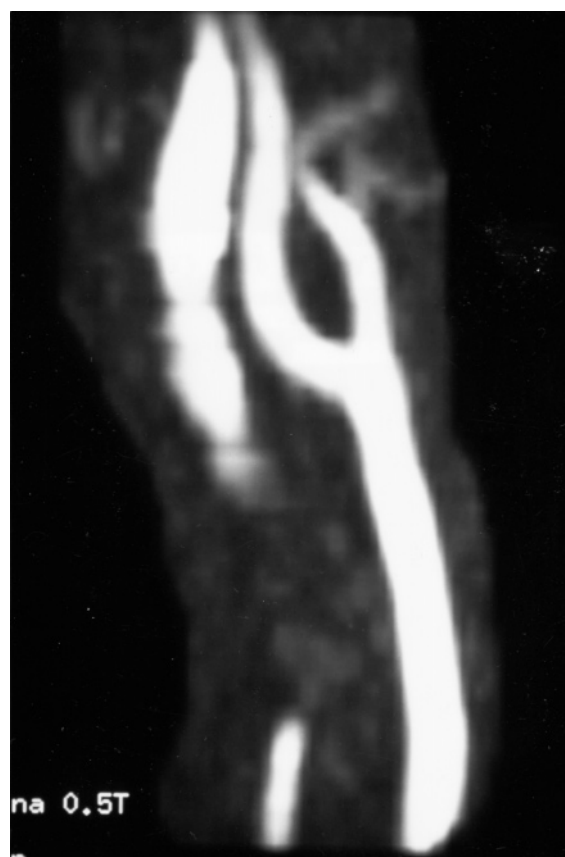


Fig. 4. Magnetic resonance angiography was repeated 48 months after the removal of the patch: the intact arterial reconstruction is evident.

of the patch closure and the harvesting of the patch in the draining sinus is not known, the finding of an intact ICA wall 48 months after rejection is so incredible that it is hard to believe.

There are two considerations. Firstly, the rejection could be due to a bacterial patch infection, though the culture was negative. Failure to culture organisms is common, due to glycocalyx formation, and is a known limitation to identifying an organism as a cause of complications. This event could consequently be misinterpreted as a "graft or patch rejection". This does nothing to diminish the unique nature of this case, however, particularly because one would expect an artery to develop a pseudo-aneurysm without an intact suture line. Secondly, since host arterial-vessel response to the prosthetic material is reportedly very different,⁶ is it possible that the patch served as external support for vessel regeneration? Because the arterial wall cannot be examined histologically, there is no way to arrive at a final explanation for the phenomenon, though patency of the ICA, with an intact wall, and no evidence of any recurrence or pseudo-aneurysm, would be consistent with this assumption.

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