A Cautionary Tale: New Onset Claudication Following Percutaneous Femoral Artery Closure

M.S. Mirza, H.S. Al-Barjas and H. Gajraj

1Department of General Surgery, Derby City General Hospital, NHS Trust-Derby, UK
2Department of General Surgery, Yeovil District Hospital, NHS Trust, UK

Introduction

We report new onset claudication in a previously healthy subject in whom access site haemostasis was achieved by Angioseal®. This iatrogenic injury occurred from failure of the Angioseal plug to resorb completely resulting in vascular stenosis and classical lower limb claudication requiring endarterectomy.

Keywords: Claudication; Angioseal.

Introduction

Haemostatic puncture closure devices are increasingly utilized for securing rapid haemostasis following diagnostic and therapeutic femoral artery catheterization. Despite the recent technical advances, vascular access complications continue to be a significant problem. A rare but potentially devastating complication is arterial occlusion. Here we report a case of iatrogenic claudication from Angioseal®.

Case Report

A 54-year man was referred to the vascular clinic with a recent onset classic claudication pain affecting his right thigh and calf. He had undergone coronary angioplasty and stenting 10 days earlier but had no previous history of symptomatic peripheral vascular disease. Except for smoking there were no other risk factors for atherosclerosis. Immediately after the procedure a 6 Fr Angioseal® device was deployed at the right femoral artery access site using recommended techniques. Physical examination revealed a good femoral pulse but diminished popliteal and pedal pulses on the right. An audible bruit was present over the groin area. All left lower limb pulses were normal. Duplex ultrasonography revealed significant narrowing of the right common femoral artery at the site of the angioseal plug utilised for puncture site haemostasis. A 3.5 mm high dome-like echogenic structure was visible on the wall of the femoral artery consistent with the plug of the Angioseal® device. Rest of the examination was unremarkable. In view of the reported biodegradability of the Angioseal® plug the patient was managed conservatively.

The patient’s symptoms failed to improve after 6 months and he underwent diagnostic arteriography. This confirmed sub-total occlusion of the right common femoral artery along with the presence of a shelf in the arterial wall as seen on duplex ultrasonography. Endarterectomy and surgical removal of the Angioseal® was undertaken. The patient had an uneventful recovery and remains asymptomatic at 12 weeks follow up.

Discussion

Local vascular management after percutaneous intervention continues to be an important aspect of diagnostic catheterisation and interventional cardiology. Vascular closure devices including Angioseal® (St. Jude Medical,
Minneapolis, MN), Vasoseal® (Datascope, Montvale, NJ) and Perclose® (Perclose, Redwood City, CA) remain a substantial tool of invasive cardiology. These devices either suture the puncture site or deploy some sealing material to obliterate the hole in the femoral artery. They have shown to result in rapid haemostasis, earlier ambulation and decreased length of hospital stay. Although complication rates remain low, the type and severity vary with each device and include bleeding, pseudoaneurysms, arteriovenous fistula, groin infection and acute arterial occlusions. 

Angioseal® is a collagen based vascular closure device. It consists of an absorbable T-shaped anchor, a collagen plug and an absorbable traction suture, in up to 8-Fr delivery system. At the completion of the percutaneous radiologic procedure, the anchor and collagen plug are inserted into the artery and then pulled up snugly against the arterial wall to seal the puncture site. Angioseal® has been relatively free from mechanical failure and achieves rapid haemostasis but carries the risk of specific device related complications, such as anchor embolisation or intra-arterial deposition of collagen. While most accounts of femoral artery occlusion with Angioseal® have been acute in nature we report gradual onset occlusion with classical lower limb claudication. This iatrogenic injury resulted from a non-absorbable Angioseal® plug requiring surgical removal. Resolution of symptoms with surgery confirmed the Angioseal® plug as the causative basis of the patient’s symptoms. Though rare, an occasional plug may fail to resorb giving rise to ischemic symptoms.

The extensive use of endovascular therapy has produced a concomitant increase in iatrogenic vascular trauma. Vascular injuries produced by these devices can be significantly more challenging to manage surgically than complications encountered before their introduction. Surgeons should be familiar with the design of these devices since they may be required to repair a variety of arterial injuries associated with their use.

References


Accepted 27 August 2006