Late upper extremity embolic complications of occluded axillofemoral bypass graft (AxFG) or occluded axilloaxillary bypass graft (AxAG) are not frequently noted. A patient presented with acute right upper extremity thromboembolism 2 years after an AxFG occlusion. Computed tomography (CT) findings revealed kinking and occlusion of the axillary artery at the anastomosis. Another patient presented with acute left upper extremity thromboembolism 2 years and 6 years after an AxAG occlusion. CT indicated a thrombus progressing from the occluded graft to the axillary artery. Surgical repair of the axillary artery was performed in both patients without any complications.

Keywords: acute upper extremity thromboembolism, axillofemoral bypass graft, axilloaxillary bypass graft
Surgical Repair of Axillary Graft Stump Syndrome

thrombotic material that maybe released into the axillary circulation is one of the postulated mechanisms.

Furthermore, others have suggested that the lumen narrowing with irregularity of the wall either occurring as part of an intimal hyperplastic response or a configuration of graft-axillary artery anastomosis and its formation into a “Y” configuration as a result of undue tension contributes to distal embolization after graft thrombosis.

In the present cases, thrombotic material from the occluded graft was observed in case 2 and a “Y” configuration of the anastomosis which led to the occlusion of axillary artery and thromboembolism of brachial artery was observed in case 1. We think it important to adjust the graft to the proper length to prevent undue tension at the initial surgery.

Case 2

A 63-year-old man was admitted to our hospital due to a sudden onset of pain in the left arm in September 2012. In 2003, AxAG surgery was performed with a 7 mm ePTFE graft due to stenosis of the left subclavian artery. However, in 2006, AxAG occlusion developed, but no treatment was initiated as the patient was asymptomatic. In 2008, acute thromboembolism of the left brachial artery developed, and thrombectomy and stent implantation at the left subclavian artery were performed. In June 2012, acute thromboembolism of the left brachial artery was noted, for which thrombectomy was performed and anticoagulation with warfarin was initiated.

Upon examination, no left brachial artery pulse was detected. Angiography showed a patent stent in the left subclavian artery and left brachial artery occlusion. During the postoperative course, following the thrombectomy, CT indicated the presence of a thrombus progressing from the occluded graft in the axillary artery (Fig. 2), which was not detected by the angiography. Therefore, we detached the graft, removed the thrombus, and repaired the axillary artery with a saphenous vein patch. At 11 months after the surgery, he was symptom-free with no recurrent embolization.

Discussion

To our knowledge, 23 cases of AxFSS and 1 case of late upper extremity thromboembolism after occlusion of AxAG have been reported.

The mechanisms of AxFSS are believed to be multiple. The formation of a blind pouch containing soft thrombotic material that maybe released into the axillary circulation is one of the postulated mechanisms. Furthermore, others have suggested that the lumen narrowing with irregularity of the wall either occurring as part of an intimal hyperplastic response or a configuration of graft-axillary artery anastomosis and its formation into a “Y” configuration as a result of undue tension contributes to distal embolization after graft thrombosis. In the present cases, thrombotic material from the occluded graft was observed in case 2 and a “Y” configuration of the anastomosis which led to the occlusion of axillary artery and thromboembolism of brachial artery was observed in case 1. We think it important to adjust the graft to the proper length to prevent undue tension at the initial surgery.
Previous reports have suggested that anticoagulation therapy, endovascular management, and surgical repair should be used to treat AxFSS. However, some reports have shown that anticoagulation could not prevent the recurrence of embolization. In the present cases, anticoagulation therapy with warfarin did not prevent the occurrence of thromboembolism. Moreover, endovascular management is not always an option and its long-term results remain unclear. In case 1, endovascular management would have been difficult because of artery kinking.

We believe that the treatment for an occluded axillary graft stump is not always necessary because late thrombosis occurs infrequently. However, once it occurs, we recommend surgical repair by detaching the occluded graft and reconstructing the axillary artery, due to the associated risk of repeated embolism.

Conclusions

Surgical treatment for an axillary graft stump should be considered in patients presenting late upper extremity thromboembolism after occlusion of an AxFG or AxAG.

Disclosure Statement

Hitoshi Kanamitsu and other co-authors have no conflicts of interest.

References