CASE REPORT

A Rare Cause of Thoracic Outlet Obstruction

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Introduction

The term thoracic outlet syndrome (TOS) describes a complex of signs and symptoms caused by compression of the neurovascular structures of the arm as they pass the thoracic outlet. We report a case of a rare cause of thoracic outlet obstruction.

Case Report

A 70-year-old male had a history of embolectomy of the right brachial artery followed by surgical elimination of a symptomatic subclavian artery aneurysm by a venous interposition graft and scalenotomy in 1980. In November 1998 he presented with a sudden ischaemia of this arm. On examination there was a cold, pale forearm without palpable peripheral pulses. Occlusion of the venous graft and brachial artery was diagnosed and successfully treated with intra-arterial urokinase infusion. After prolonged fibrinolysis and unsuccessful PTA a residual stenosis in the venous graft was eventually treated with a 10 cm × 8 mm ePTFE–Nitinol endoprosthesis (Hemobahn, W. L. Gore and Ass.) (Fig. 1). Completion angiography showed a successful procedure with patent outflow arteries. At dismissal and during initial follow-up the patient was free from symptoms. Fifteen months later he started to complain about weakness and pain in the right arm with abduction and/or elevation. With provocation tests radial artery pulses disappeared and a murmur in the right fossa supraclavicularis could be auscultated. Frequency analysis also showed complete loss of the Doppler signal with hyperabduction and elevation of the right arm.

Spiral CT has been proven to be successful in studying the functional anatomy of the thoracic outlet.1 Three-dimensional angiopiral CT was performed in resting and provocation positions. Elongation and severe kinking of the venous graft were seen with elevation of the arm, without signs of costoclavicular compression (Fig. 2).

Discussion

In patients with an arterial type of TOS, chronic compression and trauma to the subclavian artery in the thoracic outlet may lead to intimal ulceration at that level or may lead to poststenotic dilatation and aneurysmal degeneration of the artery just distal to the site of compression.2 As subclavian artery aneurysms often result in peripheral embolisation and/or thrombosis, surgical treatment is indicated. Effective treatment to prevent vascular complications requires early recognition and prompt correction of the aneurysm and compressive mechanism. A variety of treatment strategies have been described in literature.3–5

Our patient represents a rare cause of thoracic outlet obstruction. Kinking is diagnosed in an elongated venous interposition graft, which is reinforced by a

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Fig. 1. A residual stenosis in the venous graft (A) is successfully treated with a Hemobahn endograft (B).

Fig. 2. Kinking of the venous graft provoked with elevation of the arm is probably reinforced by the presence of the endograft.

relatively stiff endograft just distal from the kinking with provocation.

To prevent the kinking of the graft surgical revision would have been necessary in a scarred area. Because moments of provocation were satisfactorily reduced in our patient with restrictive guidelines, there was no need for further treatment.

In conclusion, we think that if stent (grafts) are to be used near articulating joints the effects on natural arterial displacement may be disadvantageous and should be taken into account.

References