CASE REPORT

Post-traumatic Clavicular Pseudo-arthrosis – an Unusual Case of Venous Thoracic Outlet Syndrome

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Key Words: Clavicular pseudo-arthrosis; Clavicular non-union; Thoracic outlet syndrome.

Introduction

Pseudo-arthrosis may complicate non-union of a clavicular fracture and is a rare cause of thoracic outlet syndrome (TOS). We report the case of a post-traumatic clavicular pseudo-arthrosis causing venous TOS. As clavicular non-union is likely to have been under-reported previously and venous TOS is often mis-diagnosed, we report this case to emphasise vigilance to this condition.

Case Report

A 68-year-old woman was referred to outpatients with a 2-year history of left arm swelling and heaviness. This followed a previous vascular consultation at another hospital 6 months previously. Seventeen years previously she had sustained a fracture to the mid-shaft of her left clavicle following a fall from a motor cycle. This was complicated by non-union, for which internal fixation using Kirschner and tension band wires and iliac bone grafting was performed. Despite intervention the fracture failed to unite and after 18 months her metal work was removed.

Clinical examination revealed a swollen left arm with non-pitting oedema, but no cyanosis or superficial venous collaterals. A bony prominence of the left clavicle was present and crepitus was palpable over this with shoulder movement. All pulses were palpable with a negative Roos’ test. There was no sensori-motor deficit, axillary lymphadenopathy or breast masses.

A clinical diagnosis of lymphoedema was made. Chest X-ray confirmed non-union of the left clavicle (Fig. 1), but isotope lymphangiogram was entirely normal. Venous duplex suggested the presence of a stenosis in the left subclavian vein where it crossed the clavicle. Contrast venography demonstrated the...
In TOS isolated venous compression is uncommon and accounts for only 1.5 to 5% of all cases. Malunion or hypertrophic non-union of a clavicular fracture results in callus mass which can cause TOS. Atrophic non-union is characterised by bone resorption and rarely causes compression.\(^1,2\) A pseudo-arthrosis may develop and is clinically characterised by mobility at the fracture site. Only one case of venous TOS resulting from post-traumatic clavicular pseudoarthrosis has been previously reported in the literature.\(^3\)

Clavicular pseudo-arthrosis carries an inherent risk of subclavian vein thrombosis (Paget-Schroetter syndrome) and thoracic outlet decompression is recommended. Partial claviculectomy may result in loss of the stabilising function of the clavicle and neurogenic symptoms may occur.\(^1\) Conversely clavicular reconstruction, with bone grafting and rigid internal fixation, will promote union, restore length and provide decompression.\(^5\) In our patient the risk of non-union following revision surgery was high and this approach was probably not appropriate.

This case report emphasises the need for vigilance to this condition in the case of upper limb swelling, discomfort or heaviness in an arm following a clavicular fracture.

**Discussion**

In the absence of neuro-arterial symptoms venous TOS is commonly misdiagnosed as lymphoedema, Raynaud’s syndrome, reflex sympathetic dystrophy, shoulder-hand syndrome, carpal tunnel syndrome or functional disorders. The onset of venous TOS is often insidious with arm swelling, heaviness, fatigue and cyanosis.

Acknowledgement

Acknowledgement to Mr. David Limb, Consultant and Senior Lecturer in Orthopaedic Surgery, with a special interest in shoulder surgery.

**References**


Accepted 20 July 2000