

# Significant stenosis of proximal left subclavian artery presenting with absence of left radial pulse and recurrent angina after coronary artery bypass grafting

Istotne zwężenie proksymalnej części lewej tętnicy podobojczykowej objawiające się brakiem tętna na tętnicy promieniowej lewej i nawracającymi bólami wieńcowymi po operacji pomostowania wieńcowego

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## Abstract

Stenosis of the subclavian artery, before the left internal mammary artery branch, is an important problem for patients who have undergone coronary artery bypass grafting, with an incidence rate of 0.5-1.1%. In this paper, a case of left subclavian artery stenosis, which developed after coronary artery bypass surgery and led to recurrent anginal attacks in the patient, is presented.

**Key words:** angina, coronary artery bypass grafting, subclavian artery stenosis

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## Introduction

Coronary subclavian steal syndrome was described by Hargola and Tyras in the 1970s. In most cases, it is caused by atherosclerosis. Stenosis of the subclavian artery, proximal to the take-off of the left internal mammary artery, produces inversion of the flow in the left internal mammary artery itself and a steal of blood from the coronary circulation when this conduit is used as a bypass graft. The prevalence of significant subclavian artery stenosis is low; it has been reported to be 0.4% [1]. The prevalence of subclavian stenosis in patients who have undergone coronary artery bypass grafting is approximately 0.5-1.1%. In a recently published series, out of 780 patients treated with surgical myocardial revascularisation, a concomitant occlusive disease of the subclavian artery was observed in 13 patients (1.6%) [2]. However, this relatively uncommon cause of myocardial ischaemia is increasingly reported due to the more frequent use of internal mammary arteries in cardiac revascularisation [2-4]. Here, we present a case of left subclavian artery stenosis that developed after coronary

artery bypass surgery, leading to recurrent anginal attacks in the patient.

## Case report

A 56-year-old female complaining of typical chest pain for about one hour was admitted to our clinic. She had been suffering from progressive angina for 9 months, with increasing severity and frequency for the last 2 weeks. She had a history of coronary artery bypass grafting 5 years ago, hypertension and past smoking. On physical examination, her right radial pulse was normal but the left one was absent. Blood pressure measured from the right arm was 165/80 mmHg, but it could not be measured from the left arm. Her resting 12-lead ECG revealed minimal ST segment depression and inverted T waves on anterior derivations.

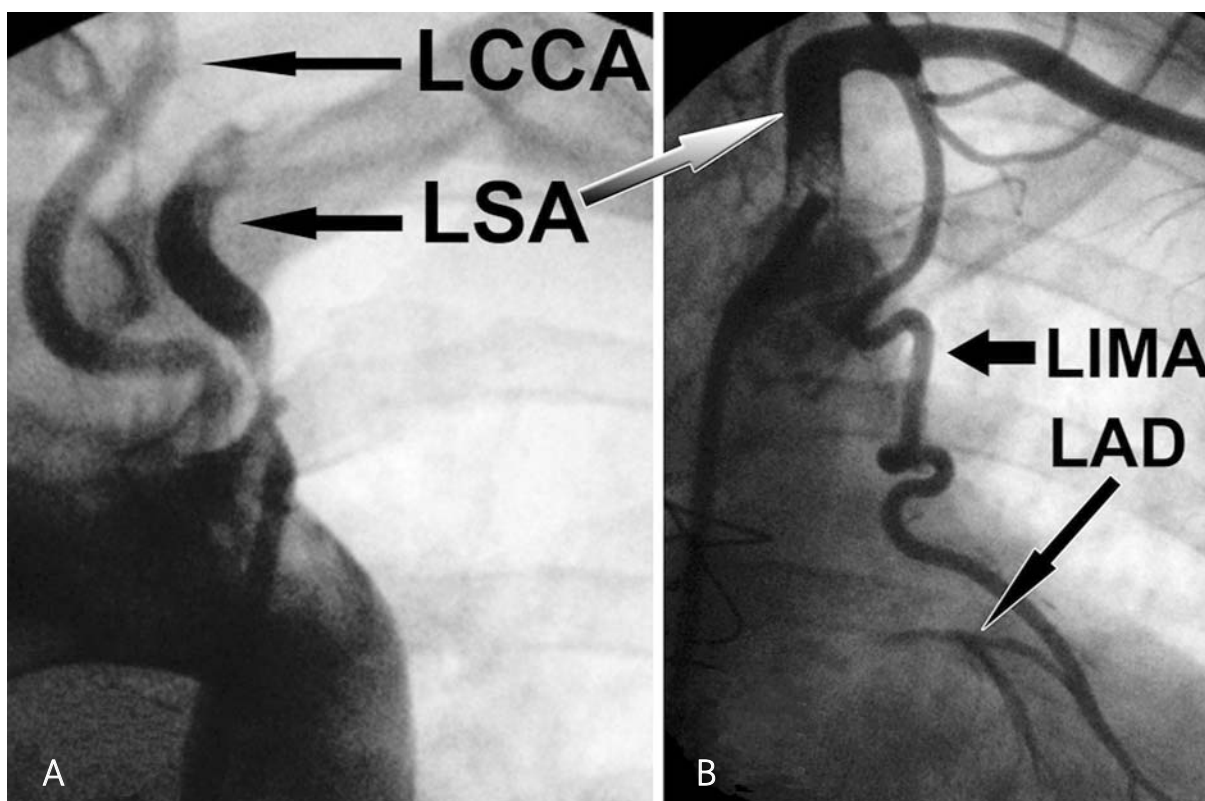
Angiography of the patient showed ostial 95% stenosis of the left subclavian artery. Successful stenting was achieved at the occlusion site by using 7 × 18 mm sized bare metal stent, after balloon predilatation (Figure 1). Following the intervention, her chest pain relieved, the left

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**Figure 1.** **A** – angiogram showed ostial stenosis of left subclavian artery. Note that LIMA could not be visualised. **B** – after stenting of the critical lesion by 7X18 mm sized bare metal stent, LIMA was visualised clearly  
 LAD – left anterior descending artery, LCCA – left common carotid artery, LIMA – left internal mammary artery, LSA – left subclavian artery

radial arterial pulse was palpated, and the inter-arm blood pressure difference disappeared.

## Discussion

Typical manifestation of the syndrome consists of the recurrence of ischaemia or angina despite complete surgical myocardial revascularisation. Stenosis of the subclavian artery also causes hypoperfusion to the ipsilateral arm, with dullness, pain, functional impairment, reduction of radial pulse amplitude, and decrease of blood pressure [1-3]. Bilateral brachial artery blood pressure measurement is the standard for screening for significant obstruction (stenosis/occlusion) of the proximal vasculature supplying the upper extremity and should be performed in patients with an elevated risk profile, to avoid missing a hypertension or peripheral artery disease diagnosis because of unilateral pressure measurement in an obstructed arm. Using angiographic information as a gold standard, English et al. have suggested that an inter-arm pressure difference of  $\geq 15$  mmHg has a sensitivity of approximately 50% and a specificity of 90% for detecting subclavian artery stenosis [5-6].

Before the advent of percutaneous transluminal intervention, the only available therapeutic option for stenosis or total occlusion was transthoracic or extrathoracic bypass grafting. But, percutaneous transluminal intervention has been

performed for the treatment of subclavian artery stenosis since 1980. So, our patient has been free of symptoms for 6 months after the successful stenting of the stenosis.

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