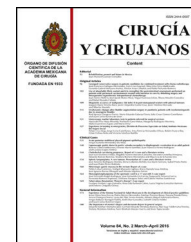




CIRUGÍA y CIRUJANOS

Órgano de difusión científica de la Academia Mexicana de Cirugía
Fundada en 1933

www.amc.org.mx www.elsevier.es/circir



CLINICAL CASE

Difficulties in the percutaneous approach of the acute coronary syndrome with associated axillobifemoral bypass[☆]



Efrén Martínez-Quintana^{a,*}, Fayna Rodríguez-González^b

^a Servicio de Cardiología, Complejo Hospitalario Universitario Insular-Materno Infantil, Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain

^b Servicio de Oftalmología, Hospital Universitario de Gran Canaria Dr. Negrín, Las Palmas de Gran Canaria, Spain

Received 2 December 2014; accepted 4 May 2015

Available online 1 September 2016

KEYWORDS

Peripheral artery disease;
Aortoiliac obliteration;
Acute coronary syndrome

Abstract

Background: Peripheral arterial disease and coronary artery disease are frequently associated. The percutaneous approach may sometimes involve additional difficulties to the coronary artery disease.

Clinical case: The case is presented on an 82-year-old male patient with multiple cardiovascular risk factors, a Leriche syndrome and axillobifemoral bypass, who was admitted to hospital due to an inferior myocardial infarction. The procedure approach (radial, brachial, or femoral access routes for percutaneous coronary treatment) and associated complications from the procedure are discussed.

Conclusion: Although technical improvements and/or treatment of peripheral vascular lesions may allow percutaneous coronary intervention, individual risk and benefit in each patient must be assessed.

© 2015 Academia Mexicana de Cirugía A.C. Published by Masson Doyma México S.A. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

[☆] Please cite this article as: Martínez-Quintana E, Rodríguez-González F. Dificultades en el abordaje percutáneo del síndrome coronario agudo con *bypass* axilobifemoral. *Cir Cir*. 2016;84:405–408.

* Corresponding author at: Complejo Hospitalario Universitario Insular Materno Infantil, Servicio de Cardiología, Avd. Marítima del Sur, s/n, 35016 Las Palmas de Gran Canaria, Spain. Tel.: +34 9284 41360; fax: +34 9284 41853.

E-mail address: efrencardio@gmail.com (E. Martínez-Quintana).

PALABRAS CLAVE

Arteriopatía
periférica;
Obliteración
aorto-iliaca;
Síndrome coronario
agudo

Dificultades en el abordaje percutáneo del síndrome coronario agudo con *bypass* axilobifemoral

Resumen

Antecedentes: La arteriopatía periférica y la enfermedad coronaria están frecuentemente asociadas, y plantear el abordaje percutáneo puede entrañar, en ocasiones, dificultades añadidas a la propia enfermedad coronaria.

Caso clínico: Presentamos el caso de un paciente varón de 82 años, con múltiples factores de riesgo cardiovasculares, síndrome de Leriche y *bypass* axilobifemoral, que ingresa por infarto de miocardio inferior. Se comentan las dificultades en las vías de acceso (radial, braquial y femoral) y las posibles complicaciones derivadas del tratamiento coronario percutáneo.

Conclusión: Aunque las mejoras técnicas en el tratamiento de las lesiones vasculares periféricas, pueden permitir el tratamiento percutáneo de las lesiones coronarias, debemos valorar el riesgo y el beneficio en estos pacientes de forma individualizada.

© 2015 Academia Mexicana de Cirugía A.C. Publicado por Masson Doyma México S.A. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Background

Atherosclerosis is a systemic disease, which jointly involves several vascular territories, including peripheral artery disease, which is one of the most prevalent conditions and usually coexists with coronary heart disease.¹ This potentially increases morbidity, and therefore, mortality.² It is estimated that 32% of patients with peripheral artery disease also have associated coronary or cerebrovascular disease, and 24% of them have disease in the 3 territories,³ which reflects the severity and extension of the atherosclerotic process. In fact, patients with acute coronary syndrome and peripheral artery disease have more extensive and severe heart disease and therefore a poorer inpatient and outpatient clinical outcome.^{4,5}

Patients with peripheral vascular arteriopathy and heart disease have a poor prognosis, and treatment alternatives for them are considerably reduced; hence the importance of making an appropriate functional diagnosis, to enable the specialist to decide the invasive coronary procedures required, irrespective of the difficulties of access via the percutaneous approach.

This article describes the therapeutic management of a patient with acute coronary syndrome and peripheral vascular arteriopathy.

Clinical case

An 82-year-old male with a history of diabetes mellitus, systemic arterial hypertension, smoker, former drinker of alcohol at toxic levels, chronic obstructive pulmonary disease and chronic kidney failure. The patient had undergone an axillobifemoral bypass due to Leriche's syndrome 7 years previously, a right hemicolectomy for ischaemic colitis 5 years previously, endoscopic argon plasma coagulation for a lower digestive tract haemorrhage, secondary to duodenal angiodysplasia 4 years previously, and 2 years previously had started treatment with: clopidogrel (75 mg/24 h orally),

ranitidine (150 mg/12 h orally) for a lacunar ischaemic stroke in the territory of the right middle cerebral artery probably of atheroembolic origin.

Days before he was admitted to hospital he presented symptoms compatible with melena. On admission he reported epigastralgia and vegetative reactions, over 10 h, electrocardiogram revealed ST elevation of 2 mm on the bottom side, and therefore he was given a loading dose of acetylsalicylic acid (300 mg) and clopidogrel (300 mg) orally, an intravenous bolus of heparin sodium (5000 IU) and intravenous nitroglycerin in continuous perfusion. However, due to the recent picture of digestive tract bleeding, fibrinolysis was decided against, and a primary angioplasty was performed. Initially the approach was through the right radial artery but it was not possible to reach the ascending aorta, due to the high angulation of the right subclavian artery after the axillobifemoral bypass outlet (Fig. 1A). Due to the impossibility of right-sided access, entry through the left radial artery was attempted unsuccessfully, due to stenosis at this level (Fig. 1B). For this reason the left brachial artery was cannulated, without managing to reach the aorta due to a sub-occlusion at proximal level of the left subclavian artery (Fig. 1C). Finally, an attempt was made to cannulate the femoral arteries, beneath the axillobifemoral bypass connection, and avoid puncturing them. It was not possible to cannulate the femoral artery (Fig. 1D).

Due to the course of the infarction, the patient's stability, poor electrocardiographic expression and the risk of puncturing the bypass in an anticoagulated patient, with double antiaggregation on admission, it was decided to opt for conservative treatment. However, 12 h later, the patient presented a complete atrioventricular block, with haemodynamic repercussions. For this reason, an attempt was made to place a temporary transvenous pacemaker, using Seldinger's technique, without managing to advance the guide. A few minutes later, the patient entered asystole. Despite advanced cardiopulmonary resuscitation manoeuvres, the patient died.

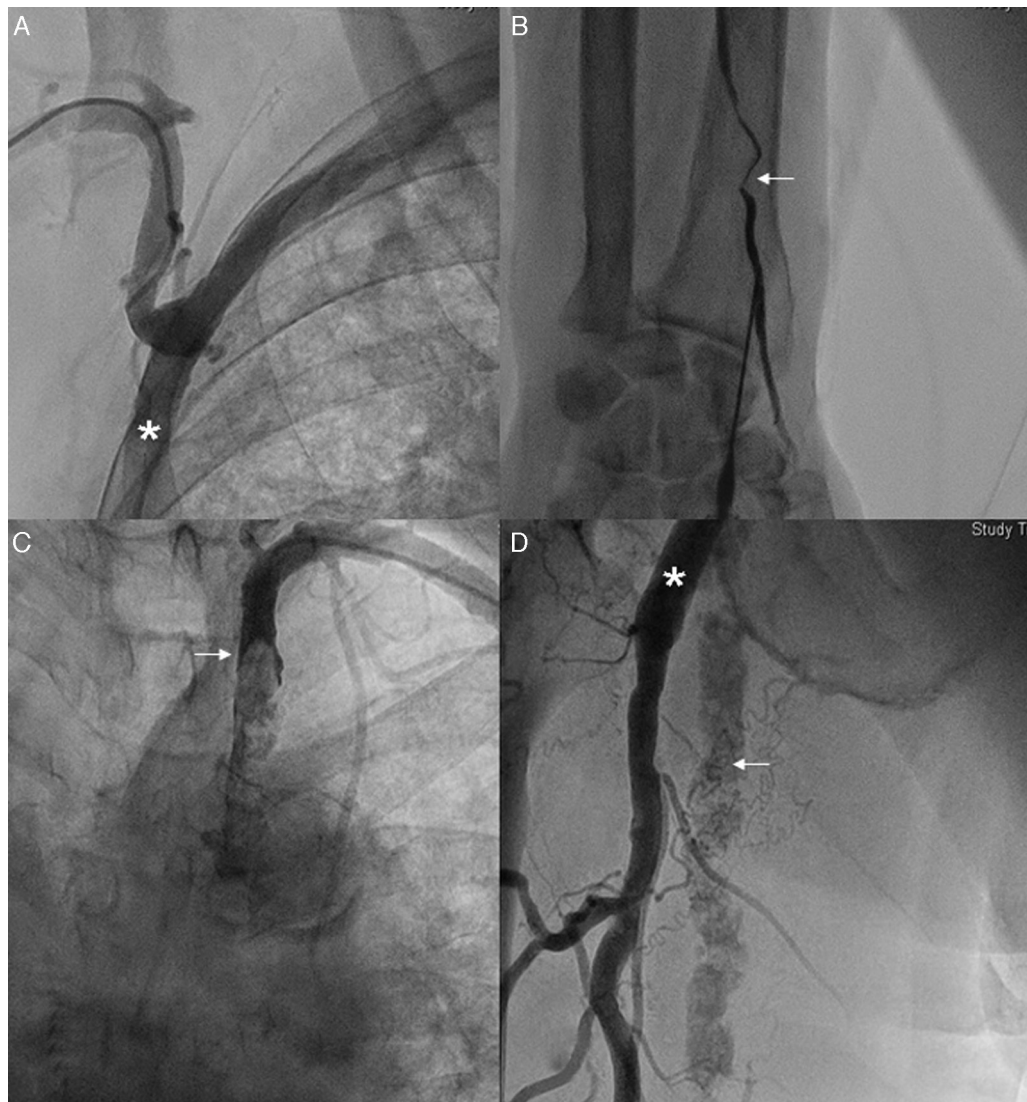


Figure 1 (A) Evidence of high angulation of the right subclavian artery after the axillobifemoral bypass outlet (asterisk). (B) Stenosis of the left radial artery (arrow). (C) Sub-occlusion at the level of the proximal third of the left subclavian artery (arrow). (D) High angulation at the level of the superficial femoral artery (arrow) with axillofemoral bypass (asterisk) connected to the deep femoral artery.

Discussion

Patients with extracardiac vascular disease are doubly at risk of presenting more extensive and severe heart disease, which increases their chances of fatal reinfarction.² This reflects the severity and extension of the atherosclerotic process, and added to this is the fact that effective therapeutic interventions, such as the use of glycoprotein IIb/IIIa inhibitors, beta blockers or early coronarography are used less frequently.⁶

With reference to percutaneous vascular access in patients with peripheral artery disease, we should bear in mind the difficulty and complexity that these procedures occasionally entail.⁶ In fact, the co-existence of peripheral artery disease can force a change of initial access route or oblige acting percutaneously on the vascular lesion which is impeding access,⁷ as occurred in the case we present; despite the fact that the use of hydrophilic guidewires or

long sheath introducers has greatly improved percutaneous access in these patients.

With regard to puncturing the axillofemoral bypass, previous studies document that direct puncture of a vascular graft⁸ is safe and preferable to the transaxillary route.^{9,10} However, we should bear possible complications in mind, which include: uncontrollable bleeding due to the nonvascular nature of the graft, interruption of the anastomotic suture with the consequent formation of a pseudo aneurysm, infection of the graft or interruption of pseudointima with the consequent tendency towards thrombosis.

Conclusion

Nonetheless, with the diversity of catheters and hydrophilic material available for treating peripheral vascular lesions, which can potentially enable vascular access, we should

make a cost-benefit evaluation in these patients and individually assess possible complications in each case.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Funding

None of the authors have received funding.

Authors' contribution

All the authors have participated in interpreting the data, drafting the article and the final approval of the version for publication.

Conflict of interests

The authors have no conflict of interests to declare.

References

1. Huelmos A, Jiménez J, Guijarro C, Belinchón JC, Puras E, Sánchez C, et al. Enfermedad arterial periférica desconocida en pacientes con síndrome coronario agudo: prevalencia y patrón diferencial de los factores de riesgo cardiovascular tradicionales y emergentes. *Rev Esp Cardiol*. 2005;58:1403-10.
2. Morillas-Blasco P, Castillo-Castillo J. Valor pronóstico de la enfermedad arterial periférica en la cardiopatía isquémica. *Rev Esp Cardiol Supl*. 2009;9:24-30.
3. Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FGR, et al. Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II). *Eur J Vasc Endovasc Surg*. 2007;33 Suppl. 1:S1-75.
4. Froehlich JB, Mukherjee D, Avezum A, Budaj A, Kline-Rogers EM, López-Sendón J, et al. Association of peripheral artery disease with treatment and outcomes in acute coronary syndromes. The Global Registry of Acute Coronary Events (GRACE). *Am Heart J*. 2006;151:1123-8.
5. Mukherjee D, Eagle KA, Kline-Rogers E, Feldman LJ, Juliard JM, Agnelli G, et al. Impact of prior peripheral arterial disease and stroke on outcomes of acute coronary syndromes and effect of evidence-based therapies (from the Global Registry of Acute Coronary Events). *Am J Cardiol*. 2007;100:1-6.
6. Ferreira-González I, Permanyer-Miralda G, Heras M, Ribera A, Marsal JR, Cascant P, et al. Prognosis and management of patients with acute coronary syndrome and polyvascular disease. *Rev Esp Cardiol*. 2009;62:1012-21.
7. García-Lara J, Valdesuso R, Hurtado J, Valdés M. Peripheral arterial disease and coronary angiography: forging a path. *Rev Esp Cardiol*. 2007;60:1211-2.
8. Marks WM, Akin JR, Eisenberg RL, Gooding GA. Direct puncture and angiographic evaluation of axillary-to-femoral bypass grafts. *Br J Radiol*. 1977;50:256-60.
9. AbuRahma AF, Robinson PA, Boland JP. Safety of arteriography by direct puncture of a vascular prosthesis. *Am J Surg*. 1992;164:233-6.
10. Eisenberg RL, Mani RL, McDonald EJ. The complication rate of catheter angiography by direct puncture through aorto-femoral bypass grafts. *Am J Roentgenol*. 1976;126:814-6.