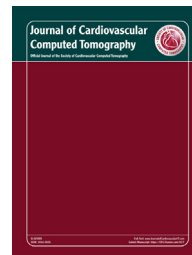




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Review Article

CT angiography and magnetic resonance angiography findings after surgical and interventional radiology treatment of peripheral arterial obstructive disease



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ABSTRACT

In the last years, technical innovations in the field of CT angiography (CTA) and magnetic resonance angiography (MRA) have allowed accurate and highly detailed evaluation of peripheral vascular pathologies. This has dramatically changed the diagnostic approach in treatment planning of peripheral arterial obstructive disease and also enabling early identification of treatment failure or treatment-related complications after surgical or endovascular procedures. Although Doppler Ultrasound is the first-line imaging modality during follow-up after treatment, its role is currently diminishing in importance mostly because of the proliferation of high-end CT and MR scanners capable of fast, reproducible, and highly reliable vascular imaging. The aim of this study is to review the various surgical and endovascular procedures for peripheral arterial obstructive disease and to provide CTA and MRA samples of common and uncommon complications related to treatment.

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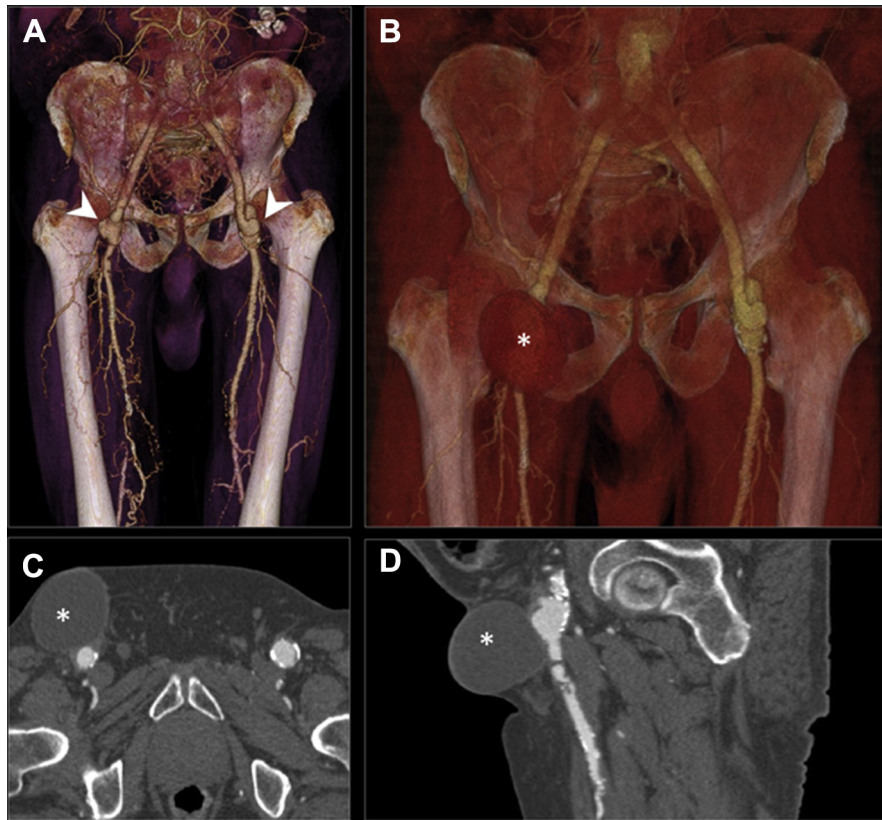


Fig. 1 – CT angiogram of a 79-year-old male patient previously treated with aortobifemoral bypass due to bilateral obstruction of the common and external iliac arteries (TASC D). Three weeks after treatment, right inguinal swelling occurred. Frontal volume rendering image (A) demonstrates bilateral small pseudoaneurysms at the femoral anastomotic sites (arrowheads). The soft-tissue visualization setting applied to the same image (B) shows a round mass at the right inguinal wall (asterisk). Hypodense perivascular collection (asterisk) is confirmed on both transversal Multi Planar Reconstruction (MPR) (C) and curved planar reformation (CPR) (D) images. The findings indicate a subacute seroma. Treatment is not required because of the absence of compression on the vascular structures.

1. Introduction

In the last years, technical innovations in the field of CT angiography (CTA) and magnetic resonance angiography (MRA) have allowed accurate and highly detailed evaluation of peripheral vascular pathologies.^{1,2} This has dramatically changed the diagnostic approach in treatment planning of peripheral arterial obstructive disease (PAOD) and also enabled early identification of treatment failure or treatment-related complications after surgical or endovascular procedures. Radiologists should be familiar with the various types of treatment for PAOD, as prescribed by the Trans-Atlantic Inter-Society Consensus (TASC) II classification,³ as well as the related complications.

Doppler ultrasonography (DUS) represents the first-line imaging technique for both diagnosis of PAOD and follow-up of most surgical or endovascular treatments. Although DUS is fast, relatively inexpensive, and widely accessible; it has limitations that are well known, including operator or scanner dependence and reduced field of view over long

vascular segments. Other major criticisms of DUS arise in particular anatomic regions, as in example the aortoiliac district (lack of visibility due to bowel interposition, high body mass index) or the lower limb district (reduced diagnostic accuracy in heavily calcified vessels, as commonly encountered in PAOD). Moreover, life-threatening complications that require a prompt treatment, such as bleeding, acute ischemia, distal embolization, or femoral pseudoaneurysm with retroperitoneal spread, could be misinterpreted or underestimated by DUS necessitating a second-line imaging. The role of DUS in patients' follow-up after treatment, as well as in the initial diagnosis of vascular pathologies, is currently diminishing in importance, mostly because of the progressive diffusion of high-end CT and MR scanners capable of fast, reproducible, and highly reliable vascular imaging.

The aim of this article is to review the various surgical and endovascular procedures for PAOD and to provide CTA and MRA samples of common and uncommon complications related to treatment.

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