

Chapter 10

Flow-Limiting Iliac Artery Dissection Post-angioplasty

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Abstract This case discusses when and how to treat a post-angioplasty arterial dissection. The merits of balloon expanding and self-expanding stents are also discussed.

Keywords Complications • Post-angioplasty • Arterial dissection

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Case History

A 52-year-old gentleman presented with 100 m left leg claudication. Magnetic resonance angiography (MRA) demonstrated stenoses of the mid-left common iliac and origin of the external iliac artery. He was brought into the department for a day case angioplasty procedure.

Procedure

A retrograde puncture of the left common femoral artery was performed, with placement of a 4 Fr sheath. Three thousand units of heparin were given via the sheath, and a Terumo wire and Cobra catheter were used to cross the stenoses. AP and oblique left iliac artery angiography was performed after administration of 20 mg Buscopan. The common (CIA) and external iliac artery (EIA) stenoses were confirmed (Fig. 10.1a). Angioplasty of these regions was performed using an 8 × 40 mm low-profile balloon. Completion angiography demonstrated a

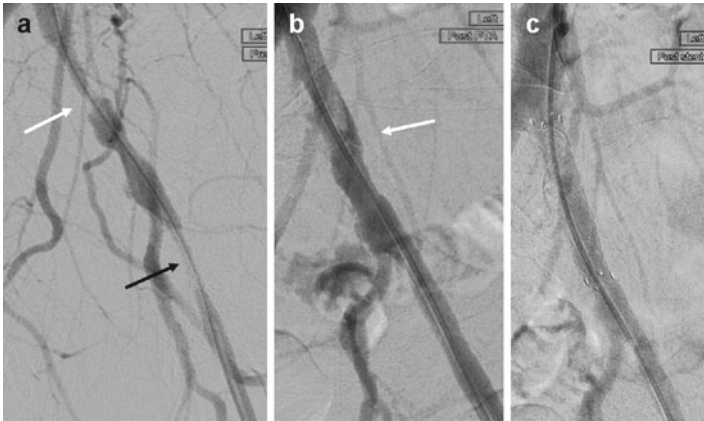


FIGURE 10.1 (a) Angiography demonstrating left CIA (white arrow) and EIA stenoses (black arrow); (b) dissection flap seen in left CIA (arrow); (c) CIA stent, with good flow

dissection flap within the common iliac artery, which was flow-limiting causing >50 % luminal narrowing (Fig. 10.1b).

The 4 Fr sheath was exchanged for a 6 Fr sheath, and secondary stenting, using an 8 × 40 mm self-expanding stent, was performed to treat and pin back the left CIA dissection flap (Fig. 10.1c). Good flow was seen following this, with three vessel runoff in the calf.

Discussion

In the case of iliac stenotic disease, angioplasty (PTA) is the procedure of choice. Stenting is indicated when there is a >30 % residual stenosis, a residual peak systolic gradient of >10 mm Hg, or a flow-limiting dissection. The aim of stenting is to eliminate or reduce the dissection flap and to restore luminal patency to a size commensurate with the diameter of the vessel segments above and below the stent. In this case the dissection flap was flow-limiting and causing a >50 % reduction in lumen size. Prolonged balloon inflation could have been attempted to reduce the dissection flap without stenting, but due to its extent, stenting was felt to be a better option.

Primary stent placement is generally accepted in clinical practice for patients with chronic iliac artery occlusions and with recurrent stenosis after previous iliac PTA, though there is still little evidence to support the latter approach.

Appropriate stent choice depends on the lesion morphology and location. When dealing with lesions of high elastic recoil, such as calcified or eccentric plaques at the ostium of the CIA or EIA, a balloon-expanded stent is more appropriate than a self-expanding due to greater resistance to extrinsic compression. A self-expanding stent should be chosen to stabilize longer, less calcified vessel segments. In this case a self-expanding stent was used, to exert some additional force on the dissection flap.

Tips

- Flow-limiting dissections/elastic recoil of the artery post-angioplasty should be treated with prolonged balloon inflation +/- secondary stenting.

- The aim of the treatment is to eliminate or reduce the dissection flap and restore luminal flow.
- If approaching from the contralateral groin, a long sheath over the bifurcation may provide added support when deploying a stent.
- Balloon-expanded stents are recommended for heavily calcified lesions, as they offer more radial force.

Commentary

Before commencing angioplasty of the iliac arteries, you should always ensure the availability of both bare and covered stents in case of either a dissection, inadequate angioplasty result, or an arterial rupture.

Arterial dissections are a direct consequence of angioplasty but may also occur as a result of guidewire trauma at the time of crossing a stenosis or occlusion. If a dissection occurs against the flow of blood (e.g., in the case of a retrograde CFA puncture), it is likely to be self-limiting as the force of the blood flow in the opposite direction will often close the flap. If it occurs in the direction of blood flow, then it is likely to become flow-limiting as the flap is kept open by the direction of blood flowing from the aorta. It is important to obtain through and through luminal communication across the dissected segment before proceeding to prolonged balloon dilatation or stenting.

Further Reading

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