

# Overview of Iliac Interventions

BY ROBERT M. BERSIN, MD



## ACCESS SITES

Common femoral access is used in the vast majority of cases. If the procedure is to treat a stenosis, the operator will usually prefer a retrograde approach on the ipsilateral side of the stenosis. If, however, the lesion is very distal near the common

femoral artery, a contralateral approach is preferred. In total occlusions, many operators prefer to start with the antegrade approach to the lesion, which usually involves coming from the contralateral iliac using a crossover technique to access the proximal cap of the total occlusion. This is often combined with an ipsilateral retrograde femoral approach to cross the distal cap using the "bidirectional technique."

Brachial access is not as common, but is an alternative, especially if the aortic bifurcation is steeply angulated or femoral access is poor.

## DIAGNOSTIC DEVICES USED

### Sheath Sizes

Use 4-F or 5-F sheaths and diagnostic catheters, according to operator preference; 6-F diagnostics are rarely used. It can be very helpful to perform contralateral caudal oblique angulations to lay out the common and external iliac bifurcations. This provides a good orthogonal projection of the iliac vessel. These should be performed using digital subtraction, rather than on cine angiography, whenever possible. For aortic lesions, it is often helpful to do lateral projections, which will reveal isolated posterior plaque of the aorta not readily appreciated in the anteroposterior projection. This view also shows the origins of the visceral vessels for the presence of ostial lesions.

### Flush Diagnostic Catheters

For power-injection aortography, we advise using either a standard pigtail catheter or a flow-directed catheter, such as the Omniflush (AngioDynamics, Queensbury, NY).

### Selective Diagnostic Catheters

For contralateral access, we commonly use the

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Omniflush for steeply angulated aortic bifurcations and the Cobra C1 or C2 diagnostic catheter (Cook Incorporated, Bloomington, IN; and Cordis Corporation, a Johnson & Johnson company, Miami, FL) for broader angle bifurcations.

## Diagnostic Guidewires

Generally speaking, the wires used in the iliacs are .035-inch. There are three basic categories of guidewires commonly used in the iliacs: stainless steel J wires, stainless steel floppy-tipped, and hydrophilic. Choice of guidewire depends on lesion severity. If the lesion is very difficult to cross, I usually will use a Glidewire (Terumo Medical Corporation, Somerset, NJ) to cross. If a moderate stenosis is encountered and cannot be crossed easily with a J wire, I will use one of the stainless steel floppy-tipped wires. If there is not much disease on the access site, a standard J wire can be used.

## INTERVENTIONAL DEVICES USED

### Interventional Guidewires

In this anatomy, the same family of wires is often utilized for both diagnostic and interventional work. Once the lesion is crossed, any .035-inch wire can be used to deliver the balloons and stents. Smaller wires (.014-inch or .018-inch) are not commonly used, but may be used to deliver adjunctive modalities such as laser, cryoplasty, or atherectomy devices.

### Interventional Sheaths

A sheath with a distal tip marker should be used for interventions. For ipsilateral procedures, I prefer the Cordis Brite Tip, which has a radiopaque distal marker band. Effective options from the contralateral

approach are the Cook Flexor sheath and Terumo's Pinnacle Destination. Sheath size depends on the size of the vessels, but 6-F and 7-F are most commonly used. If aortic work requiring larger balloons and stents is involved, an 8-F or larger sheath may be required.

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### PTA Balloons

Most balloons used are short-shafted, with 80-cm shafts and are .035-inch compatible. Most of the balloons used are 20 mm, 30 mm, or 40 mm in length; diameters are usually in the 5-mm to 10-mm range.

### Stents

Premounted, balloon-expandable stents (stainless steel or cobalt chromium) are the most commonly used stents for aortic and common iliac implants. Stent sizes are comparable to those of the balloons used, but may at times be longer, although this is not common. If the procedure involves the external iliac or the common femoral arteries, self-expanding stents (nitinol or Elgiloy [Elgiloy Ltd. Partnership, Elgin, IL]) are commonly used for their flexibility and ability to adapt to marked changes in diameter.

Stent grafts (iCAST [Atrium Medical Corporation, Hudson, NH] and Gore Viabahn [Gore & Associates, Flagstaff, AZ]) are also used, but most commonly for aortic or common iliac implants where there are either aneurysmal disease components or acute vessel rupture and require larger sheaths (8 F or 9 F).

### Other Devices

Devices other than balloons and stents are not commonly used for aortic or iliac procedures. The larger size of these vessels diminishes the efficacy of atherectomy or laser procedures. Thrombolysis may be used in cases of acute arterial occlusion, or for chronic occlusions to reduce the thrombus burden prior to stent implantation.

### Interventional Notes

IVUS is an important adjunct in complex anatomy situations. It is strongly recommended in "diagnostic dilemma" cases in which the symptoms or noninvasive data do not match the angiographic findings. IVUS is

helpful in determining lesion severity, marked changes in vessel diameter, complex bifurcation disease, or in the assessment of aneurysmal disease.

### Imaging Notes

CTA and MRA are the most commonly used imaging modalities, with CTA preferred in most patients, particularly when dealing with aneurysmal components. CTA can be used instead of IVUS to assess plaque distribution and severity.

### Contrast Recommendations

I strongly recommend iodixanol. If digital subtraction angiography is being used, the abdominal and pelvic aortograms can usually be performed using a 30-mL injection. However, this can be diluted and still produce a good image, such as for patients with renal insufficiency. Hand injections can be used for selective iliac or femoral angiography, if performed with digital subtraction.

### Pharmaceuticals

All patients are placed on aspirin unless they have an allergy. Clopidogrel is not required for aortic or iliac interventions, but is often prescribed as is done for any vascular patient. Most interventional procedures are performed with either heparin or bivalirudin. There is some evidence that bivalirudin may reduce the bleeding complications of vascular interventional procedures over unfractionated heparin.

Bivalirudin dosing requires adjustment of dosing for creatinine clearance, whereas heparin does not. In treating chronic occlusions, some operators prefer to start with unfractionated heparin and then switch to bivalirudin once the CTO has been successfully crossed. Glycoprotein IIb/IIIa inhibitors are rarely used for this indication unless thrombus develops during the procedure.

### Tests Used

If heparin is used, the target ACT level is at least 200 seconds, with repeated ACT measurements at 30-minute intervals, or no less frequently than once per hour for longer interventions. For bivalirudin, this is not required, and the infusion is run until the intervention is complete. ■

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