

Imaging Considerations for the GORE® EXCLUDER® Iliac Branch Endoprosthesis Procedure

BY PROF. ANTOINE MILLON, MD, PhD

Imaging considerations for GORE® EXCLUDER® Iliac Branch Endoprosthesis (IBE) placement are quite similar to standard endovascular aneurysm repair. Precise preoperative planning is fundamental, especially the calculation of the C-arm projections for the iliac bifurcation and the internal iliac division. The internal iliac gate of the IBE should be deployed at least 10 mm above the iliac bifurcation and in good anterior-posterior position to aid in cannulation of the internal iliac artery. The better the image of the iliac bifurcation, the more precise the positioning of the device will be. The anterior and caudal obliquity of the C-arm must be determined to get the perpendicular view of the internal iliac artery origin (Figure 1). The angulation of the C-arm must also be positioned to get the better view of the internal iliac artery division (anterior and posterior trunk) in order to precisely deploy the internal

iliac component (Figure 2). All these angulations have to be preoperatively calculated with a dedicated 3D workstation.

The procedure can be performed in a hybrid room or with a mobile C-arm. However, for obese patients and those requiring strong angulations of the C-arm, a high-power C-arm system is needed to get good imaging quality. Fusion imaging for this procedure is not yet fully reliable. A stiff guidewire in tortuous iliac arteries considerably changes the arterial morphology.

At the beginning of the procedure, angiography is performed with the appropriate angulation of the C-arm to determine the origin of the internal iliac artery (Figure 3). The IBE is then deployed with the internal iliac gate 10 mm above the internal iliac artery to have enough room for the catheterization. Before deployment, the lateral marker of the internal gate has

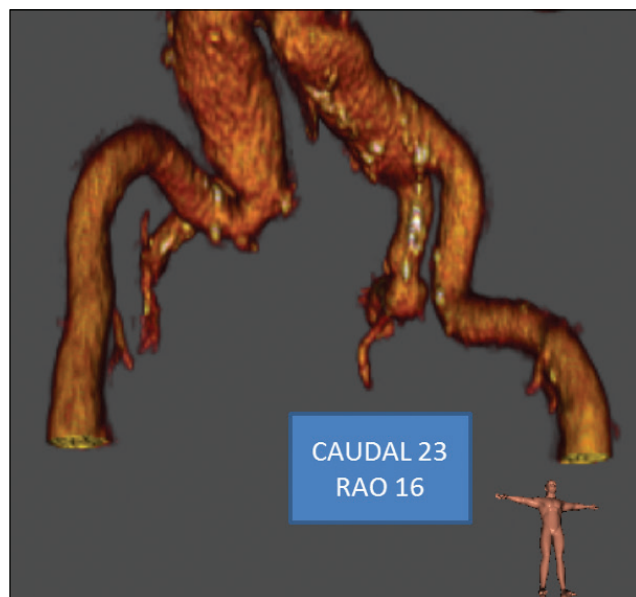


Figure 1. Preoperative projection of the C-arm to visualize the origin of the left internal iliac artery using a THERANVA ENDOSIZE® 3D workstation.

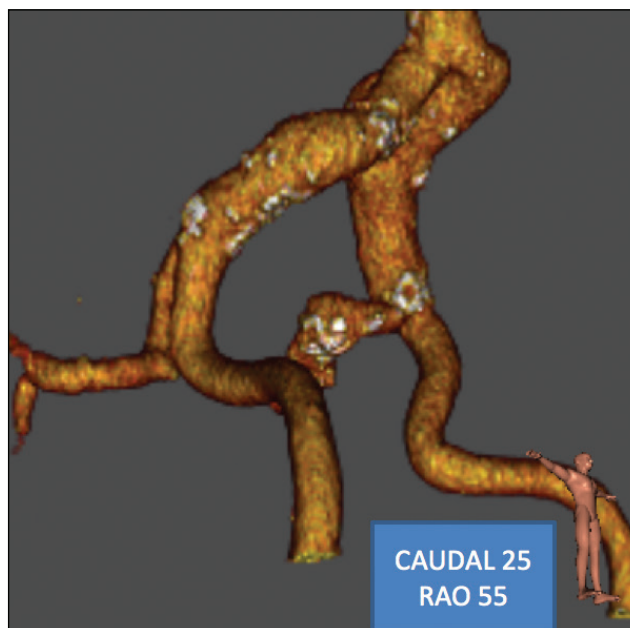


Figure 2. Preoperative projection of the C-arm to visualize the division of the right internal iliac artery using 3D workstation.

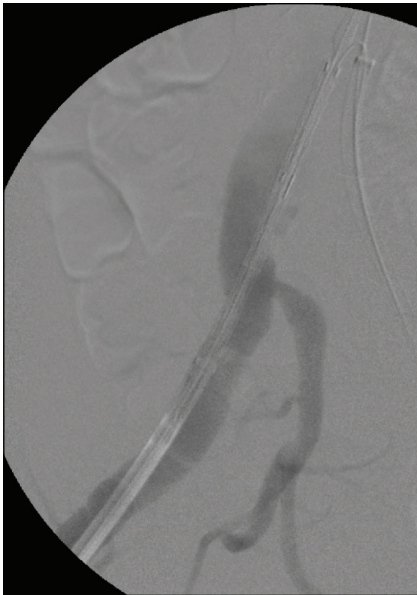


Figure 3. Initial angiography in the proper projection for the origin of the internal iliac artery before deployment of the Iliac Branch Component. Markers of the internal gate are positioned on the good position.



Figure 4. Angiography in the proper projection for the internal iliac division before deployment of the internal iliac component.

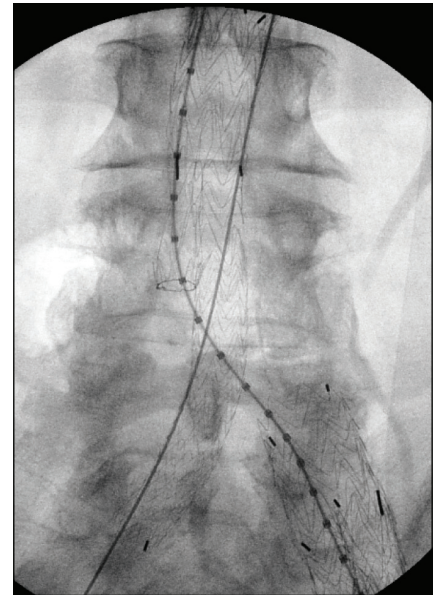


Figure 5. High-power fluoroscopy image before deployment of the bridging component in order to visualize the markers of the proximal end of the IBE.

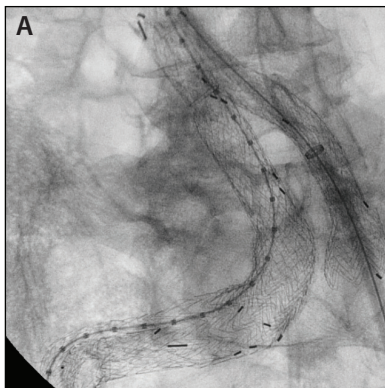


Figure 6. Insufficient overlap between the IBE and the bridging component, leading to an endoleak.

Trunk-Ipsilateral Leg Endoprosthesis and the Iliac Branch Component (IBE main trunk). Markers of the GORE EXCLUDER Device contralateral gate and markers of the IBE must be on the same image. The marker of the proximal end of the IBE must be aligned in order to eliminate the parallax and to obtain the optimal overlap. High-power fluoroscopy is sometimes needed to get a better visualization of the markers (Figures 5 and 6). ■

to be positioned on the proper lateral side. Once the IBE is deployed and the internal iliac artery is catheterized, angiography is performed with the appropriate angulation to determine the internal iliac artery division before deployment of the internal iliac component (Figure 4).

Another key point is the imaging during the deployment of the bridging component between the contralateral gate of the GORE® EXCLUDER® Device

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