

CASE REPORTS

Scintigraphic Appearance of Axillofemoral and Femorofemoral Bypass Grafts

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The scintigraphic appearance of axillofemoral and femorofemoral bypass grafts was reviewed in three cases in which the grafts were patent and intravascular radiotracers defined their course. In a fourth case, the axillofemoral graft was occluded and an aberrant vessel was identified (probably acting as a physiological shunt).

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The axillofemoral bypass was introduced to treat lower-extremity ischemia in patients who were poor candidates for intraabdominal reconstructions (1). This procedure has been extended to supply both legs from a single axillary artery (2) or by a femorofemoral graft. Several series have reported on the efficacy of the procedure, and the incidence of patency of the shunt (3). Although contrast radiographs have been used to describe the patency of such grafts, as well as complications (4), we are not aware of the use of scintigraphic procedures in evaluating axillofemoral shunts. We describe our experience with four patients who had axillofemoral grafts.

CASE REPORT

Case 1. A 78-yr-old male with a history of ethanolism was referred for a radiocolloid evaluation of the liver. An anterior hepatic dynamic study (Fig. 1) showed a marked decrease in perfusion below the mid portion of the abdominal aorta. In addition, an aberrant perfusion pathway was noted to the patient's right of the aorta. There was a history of axillofemoral bypass because of lower-aortic occlusion. The graft later became obstructed. The additional perfusion pathway was probably a dilated vessel acting as a physiological shunt around the aortic block.

Case 2. A 73-yr-old male was referred for a Tc-99m erythrocyte study because of gastrointestinal bleeding. The anterior dynamic sequence (Fig. 2, left) revealed a crescent of activity passing down the abdomen at its left-hand border. On static images (Fig. 2, center), the pathway also showed clearly. The patient had an axillofemoral bypass graft 6 mo before the radionuclide study. On the left lateral view (Fig. 2, right), the graft could be identified as distinct from other pathways.

Case 3. An 81-yr-old man was referred for a labeled red-cell study because of suspected gastrointestinal bleeding, which the study did not reveal. There was, however, evidence of a lateral vascular channel. A femorofemoral communication was also apparent on the images.

Case 4. A 72-yr-old woman with known cardiac problems was admitted because of gastrointestinal bleeding. A Tc-99m erythrocyte study (Fig. 3) showed the right lateral position of an accessory channel, as well as a femorofemoral pathway. The patient had prior axillofemoral and femorofemoral bypass grafts.

DISCUSSION

Once pointed out, the axillofemoral and femorofemoral grafts are found to be quite distinctive on static blood-pool images. Indeed, the dynamic sequence (Fig. 2) also produces a nearly definitive image. We have found the dynamic sequence helpful in pointing out the upper portion of the abdominal aorta, and the



FIG. 1. Anterior image obtained during dynamic Tc-99m sulfur colloid study in Patient 1. Aorta is approximately in midline. Aberrant pathway can be seen to viewer's left.

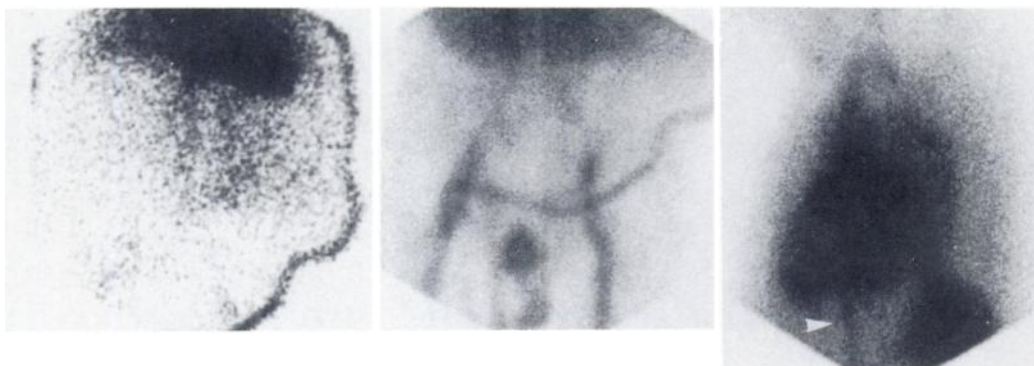


FIG. 2. Images from Case 2. Anterior view, during dynamic sequence, shows passage down left side of abdomen (left). Grafts are readily seen on this static image (center). Left lateral view of thorax (anterior is to viewer's left) shows axillofemoral graft as linear band of activity (arrow) (right).



FIG. 3. Anterior abdominal image taken 30 min after start of a Tc-99m erythrocyte study. Axillofemoral pathway can be noted to viewer's left. Femorofemoral pathway is also apparent.

progression of radiolabel through an alternative pathway. Each of the patients had the grafts because of severe major-vessel disease (usually the lower aorta or iliacs). The success of the grafts is

usually assayed by the presence of pulsatile flow to the lower extremities. Whether radionuclide imaging will play a part in determining the patency of the grafts, or the site of obstruction, has still to be determined. That is, the radionuclide studies (with an intravascular label) will need to be compared with radiographic contrast studies in terms of ease of performance and diagnostic yield.

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REFERENCES

1. BLAISDELL FW, HALL AD: Axillary-femoral bypass for lower extremity ischemia. *Surgery* 54:563-568, 1963
2. SAUVAGE LR, WOOD SJ: Unilateral axillary bilateral femoral bifurcation graft: A procedure for the poor risk patient with aortoiliac disease. *Surgery* 60:573-577, 1966
3. RAY LI, O'CONNOR JB, DAVIS CC, et al: Axillofemoral bypass: A critical reappraisal of its role in the management of aortoiliac occlusive disease. *Am J Surg* 138:117-128, 1979
4. BANDYK DF, THIELE BL, RADKE HM: Upper-extremity emboli secondary to axillofemoral graft thrombosis. *Arch Surg* 116:393-395, 1981

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