

Successful treatment of ileofemoral venous thrombosis following cardiac catheterization

MARK WHITTAKER and R. V. KERR

General Infirmary, Leeds

Whittaker, M., and Kerr, R. V. (1973). *Thorax*, 28, 794–796. Successful treatment of ileofemoral venous thrombosis following cardiac catheterization. This paper describes a case of ileofemoral venous thrombosis following transeptal cardiac catheterization. The diagnosis was established by phlebography and early venous thrombectomy was successfully performed.

Cardiac catheterization, although frequently performed, is not without risk. The most frequent complications are cardiac arrhythmias and perforations of the myocardium and major vessels. Venous thrombosis and pulmonary embolism are rare. Early recognition and treatment are advised to prevent the serious sequelae of pulmonary embolism and the postphlebotic limb. The present case emphasizes the importance of early surgical intervention in the prevention of pulmonary embolism and the restoration of normal venous function.

CASE HISTORY

The patient, a man of 44, was admitted for cardiac investigation. Four months before admission he had been admitted to another hospital with pneumonia and congestive cardiac failure. He had never been ill before and was successfully treated with digoxin and diuretics. He had remained dyspnoeic and was unable to return to work as an engineer. A heart murmur had been heard when he was 4 years old but there was no definite history of rheumatic fever.

On examination he was not distressed and his blood pressure and pulse were normal. There were no signs of congestive cardiac failure and all the peripheral arterial pulses were present. The heart size was increased and the left ventricular impulse was accentuated. The first heart sound in the aortic area was followed by a loud systolic ejection murmur conducted towards the neck accompanied by a thrill, and the second sound was followed by a soft diastolic murmur. The first heart sound at the apex was loud with an opening snap and a mitral diastolic murmur. Auscultation of the lung fields was normal. Chest radiography and screening revealed an enlarged left atrium

and ventricle with marked aortic valve calcification and slight calcification of the mitral valve.

An electrocardiogram showed sinus rhythm and left atrial and ventricular hypertrophy. Haematological and biochemical investigations were unremarkable.

The patient was considered for cardiac surgery and cardiac catheterization was performed. The right heart was catheterized through the right long saphenous vein and the left heart was catheterized

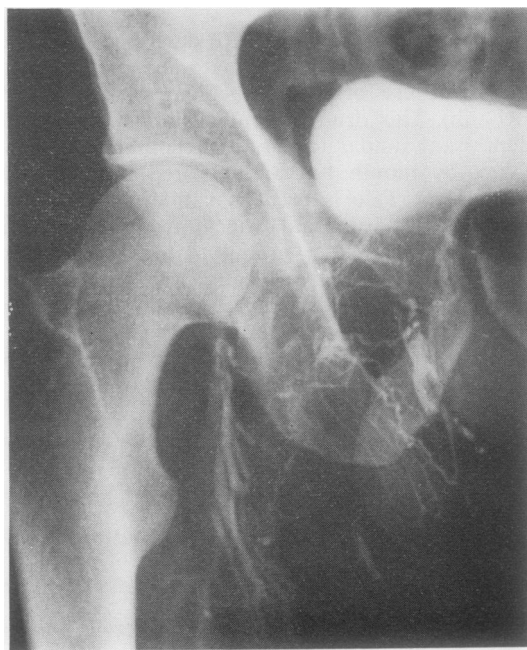


FIG. 1. Preoperative venogram showing occlusion of the ileofemoral vein. The venous collateral circulation is clearly seen.

Requests for reprints: M. Whittaker, F.R.C.S., University Department of Surgery, The General Infirmary, Leeds 1.

transseptally through the same vein which was ligated on completion.

Twenty-four hours after this procedure the patient complained of sudden pain and swelling in the right leg which was found to be blue, mottled, swollen, and cold. Dilated superficial veins and tense, pitting oedema extended up to the groin. The peripheral arterial pulses were all present.

Phlebography was immediately carried out using bilateral percutaneous injection of contrast into dorsal veins in the feet (Thomas, McAllister, and Tonge, 1971). The left side was normal but the right side showed extensive deep venous occlusion including the deep femoral vein and the ileofemoral vein to the level of the caval bifurcation (Fig. 1).

Urgent ileofemoral venous thrombectomy was performed. The right common femoral vein was exposed in the groin and found to be turgid with clot. The ligated stump of the saphenous vein was found to contain clot and was therefore ligated flush at the saphenofemoral junction. A large-ballooned Fogarty catheter was passed proximally into the vena cava. A large amount of thrombus and clot was retrieved. The distal clamps were removed and further clot was extruded spontaneously under considerable pressure

with subsequent excellent venous flow. The common femoral vein was then closed. There was an immediate and dramatic improvement in the limb following this operation.

Postoperatively the patient was anticoagulated with subcutaneous heparin and given a Dextran 70 infusion. Oral anticoagulation with warfarin was then started and within 48 hours the leg had returned to apparent normality with complete relief of symptoms. Fourteen days postoperatively further phlebograms were done and these showed that the deep venous system was patent but with some minor irregularity consistent with residual thrombus (Fig. 2). The opposite leg showed some thrombus in the sinusoids of the calf. When examined three months later the limb was clinically normal and the patient was asymptomatic. He has recently undergone successful mitral and aortic valve surgery.

DISCUSSION

Venous thrombosis and pulmonary embolism following cardiac catheterization is rare. In a study of 12,367 procedures (Ross, 1968), 11 patients developing pulmonary embolism were reported, including three who had preceding thrombophlebitis. One patient died two weeks after catheterization. There was no clinical evidence of thrombophlebitis but necropsy revealed large pulmonary emboli and thrombus adherent to the femoral vein at the site of puncture. The patient had not been anticoagulated. This series also included two patients with severe thrombophlebitis but without clinical evidence of pulmonary emboli. Both patients were anticoagulated and both survived. In a series of 191 cases of transseptal left heart catheterization (Adrouny, Sutherland, Griswold, and Ritzmann, 1963) only four cases of venous thrombosis were described. All four patients were anticoagulated but this did not prevent pulmonary emboli in two. All four patients survived. In a recent publication early venous thrombectomy for ileofemoral venous thrombosis is advised (Mavor and Galloway, 1969) to prevent pulmonary embolism and to preserve normal venous function in the lower limb. Accurate assessment of the site and extent of thrombus is possible with phlebography and we would like to stress the importance of this investigation as soon as there is clinical suspicion that thrombosis has occurred.

We wish to acknowledge the help of Dr. W. Whitaker, consultant cardiologist, Mr. E. A. Benson, consultant surgeon, and Dr. D. J. Lintott, consultant radiologist, in the preparation of this paper.



FIG. 2. Venogram on the fourteenth postoperative day showing the patent ileofemoral segment.

REFERENCES

- Adrouny, Z. A., Sutherland, D. W., Griswold, H. E., and Ritzmann, L. W. (1963). Complications with transeptal left heart catheterization. *American Heart Journal*, **65**, 327.
- Mavor, G. E. and Galloway, J. M. D. (1969). Iliofemoral venous thrombosis. *British Journal of Surgery*, **56**, 45.
- Ross, R. S. (1968). Pulmonary complications. *Circulation*, **37** and **38**, Supplement 3, p. 46.
- Thomas, M. L., McAllister, V., and Tonge, K. (1971). Simplified phlebography in deep venous thrombosis. *Clinical Radiology*, **22**, 490.