AORTIC SADDLE EMBOLECTOMY via femoral arteries

by Raj Mohan Nambiar

FRCS (Edin).
Consultant Surgeon,
General Hospital,
Singapore.

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SADDLE EMBOLISM of the aorta constitute about 9 – 12% of all peripheral embolism (Haimovic 1950) and is the most serious of all types of embolism. Without treatment, over 75% of cases die within a few days and the rest require major amputations (Griffiths 1938). It is generally believed that embolectomy is unsuccessful beyond 12 – 14 hours after onset due to the high incidence of thrombosis that occurs and spreads proximal and distal to the obstructing embolus within a few hours. (Poole & Farrar 1952).

The following case is reported because the circulation into the lower limbs has been successfully re-established by saddle embolectomy, 14 hours after onset of embolism by using the retrograde femoral route.

Case Report:

K.C.M., male Chinese taxi-driver, aged 23 years, woke up on 30 July, 1966, at 4 a.m. and felt numbness in his legs. After he had been to the toilet, when he got up from a squatting position, he felt pins and needles and loss of power in the lower limbs. He also had excruciating pain in the legs which radiated upwards to the thighs and abdomen. He was seen in the local tuberculosis hospital and was transferred to the Orthopaedic Unit with a diagnosis of tuberculosis paraplegia. He was transferred to our unit at 4.30 p.m.

Previous History:

He gave no history of claudication, coronary or other heart diseases. He had treatment for pulmonary tuberculosis since 1956 and had had a right upper and middle lobectomy in December 1964 and a right thoracoplasty in June 1965 for resistant tuberculosis. In December 1965, he had exploratory burr-holes made for suspected extradural haematoma when he was admitted in deep coma and was only later discovered as having had an overdose of barbiturates.

On examination, he was a small man of thin build. His blood pressure was 150/100 and pulse 80 min. He had no motor power or sensations below the trunk. The legs were pale, cold and toes mottled. The superficial veins were not visible. There was no arterial pulsation in the femoral, popliteal or at the ankles on both sides. The pulsations in the carotids and upper limbs were normal. His heart was normal

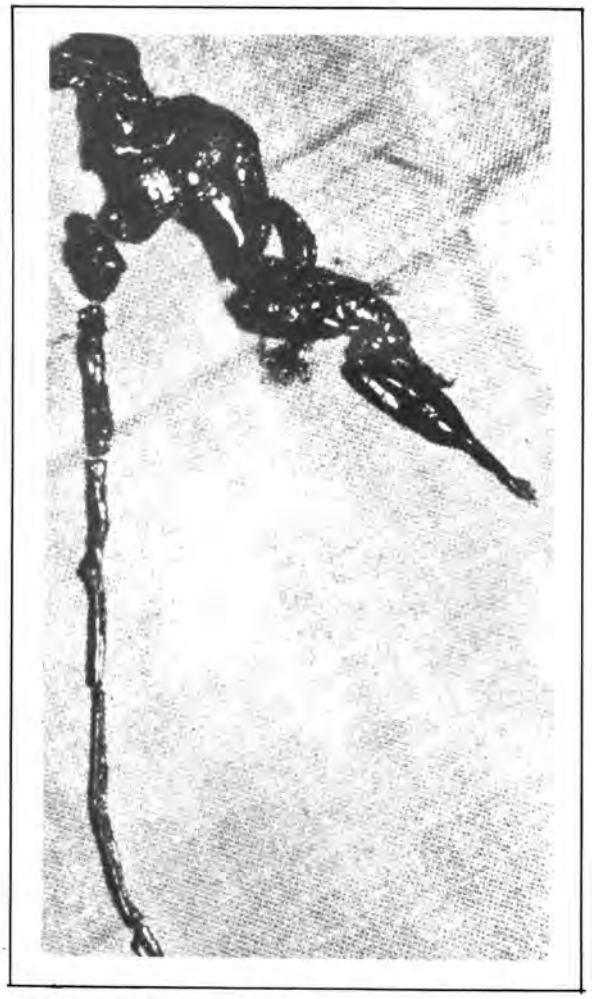

Fig. 1: The saddle embolus that was removed.

Fig. 2: The post-operative aortogram showing completeness of removal.

clinically, radiologically and on E.C.G. examination. There was no lesion detected in X-ray of the lumbar spines.

A diagnosis of saddle embolus of the aortic bifurcation was made and he was operated upon immediately (14 hours after onset). Under general anaesthesia (Dr. M.G. John), the patient was first catheterised and bladder emptied. Vertical incisions were made from the mid-inguinal point downwards below the inguinal ligament. The common femoral and its bifurcation were exposed within the femoral sheath and umbilical tapes placed around each of these vessels. There was very little bleeding during exposure of the vessels. The arteries were felt empty and had no pulsation. A transverse arteriotomy was made at the broadest point in the common femoral artery. Heparin solution was injected distally and vascular clamps applied. A well lubricated Jacques catheter was passed through the arteriotomy upwards to the aortic bifurcation till the catheter could not advance further. Suction was applied to the catheter and as much clot as possible was removed by withdrawing the catheter out and repeating this on either side. An endarterectomy wire loop stripper (Connell's) was gently passed upwards to loosen any clots stuck to the side of the vessel. The catheter was reintroduced and suction applied as described above, withdrawing the catheter each time to remove the clots till the entire clots were removed. (See fig. 1). This was confirmed by the gushing out of pulsatile blood flow.

There was some resistance felt at the origin of the left common iliac artery although free pulsatile flow was obtained on both sides. The arterial clamps were tightened and the arteriotomy was closed with a continuous everting suture with 5.0 atraumatic silk. Before the final stitch was tied, the lumen of the

vessels was flushed with heparinised solution.

At the end of the operation, there was excellent femoral pulsation on both sides. The veins were filled and the posterior tibial pulses could be felt. Post-operatively, the patient was put on antibiotics and Chymar 5,000 units daily for 3 days. Intravenous fluid therapy was continued to keep the blood pressure over 110.

Six hours after the operation, the patient could move the limbs and the cramp-like pain disappeared. Both pulses in the ankles were felt. He developed subcutaneous haematoma in the groins which had to be evacuated. After 24 hours, he was started on Dindevan (Phenindione) 150 mg., and continued on maintainence dose to keep the thrombotest level at about 20%. This was continued for about eight weeks.

He was discharged well on 19 August, 1966, and has remained well since, without pain or claudication in the legs. He has had numbness over the outer sides of both ankles since the operation. An aortogram (translumbar) done (see fig. 2) six months after the operation shows completeness of removal of emboli.

Discussion:

The success in the treatment of arterial embolism depends on early diagnosis and prompt surgical treatment. The classical features as exemplified in this case are sudden pain and numbness and cold, pulseless extremities on examination.

The surgical approach may be made either by trans-abdominal route or retrograde femoral route. The trans-abdominal route has the advantage that the lesion can be directly attacked, the completeness of removal can be ascertained and any associated atheromatous lesions can be discovered and dealt with at the same time. Most of the authorities accustomed to this approach disapprove the femoral route as opening the smaller femoral vessel and passing catheters may produce more trauma, spasm and secondary thrombosis. It is also claimed that the completeness of removal cannot be determined and any associated proximal lesion may remain undiscovered (Linton 1945). However, most of these patients with embolism are seriously ill with auricular fibrillation or coronary insufficiency and are unlikely to stand the stress of a laparotomy. On the other hand, femoral approach, being a much simpler procedure, can be done even under local anaesthesia. Since Rividin (1941) reported the first successful case by this method there has been sporadic reports of such successful cases. Willmann and Rollins (1959) reported four consecutive successful cases and Colt (1965) has presented three consecutive cases. Recently, May et al (1967) have described further successes using Fogarty's catheter for clot extraction. The experience in this case shows that even in a late case, the femoral route is a highly satisfactory and adequate method.

Summary

The successful treatment of Saddle embolism of aorta by retrograde femoral route 14 hours after onset is described with relevant literature on the operative methods.

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