RUPTURE OF THE AXILLARY ARTERY

J. M. C. Gibson, Edinburgh, Scotland

From the Royal National Orthopaedic Hospital, London

"... Leur histoire n'est pas nouvelle: Dupuytren avait incisé 'd'un bistouri agile' un hématome axillaire de même source, provoquant une hemorragie foudroyante..."

Rupture of the axillary artery is an unusual but well recognised complication of anterior dislocation of the shoulder and of late reduction of the dislocation. In the absence of a dislocation of the shoulder or a fracture of the neck of the humerus it is a very rare occurrence, and I can find only one previous record of such a case (St John, Scudder and Stevens 1945). The purpose of this paper is to record two further cases.

CASE REPORTS

Case 1—A sixty-two-year-old man tripped on the edge of a pavement and fell on to his left arm, injuring the left shoulder; he was unable to give further details of the mechanism of the injury. Shortly afterwards his hand became pale, and a swelling appeared in the shoulder and axilla.

He was admitted to hospital five hours later. The hand was cold, there was tightness of the finger flexors, and all the pulses in the left arm were absent. There was a large swelling in the axilla. Radiographs showed no fracture or dislocation of the shoulder.

Operation—Seven hours after the accident the axillary artery was explored under general anaesthesia. A complete tear of the axillary artery was found just distal to the origin of the subscapular artery, which was not pulsating. Atheromatous plaques were found in the torn ends of the artery and were trimmed. The ends were anastomosed, but pulsation extended only about an inch beyond the suture line. The repair was therefore undone, and with a polythene catheter some thrombus was sucked out of the distal end, producing a seemingly adequate backflow. The artery was again trimmed, and as the ends could not now be brought together a saphenous vein graft was inserted, but again pulsation extended only a short distance beyond the distal suture line. The wound was closed with drainage.

Progress—During the next two days the state of the arm improved. The contracture of the finger flexors disappeared and active movement of the elbow returned. Only the tips of the fingers were cyanosed, but there was no pulse below the axilla. The wound became infected, and three weeks after the accident secondary haemorrhage necessitated amputation of the arm through the shoulder joint. Thereafter he developed bronchopneumonia, from which he died two months after the accident.

Case 2—A seventy-one-year-old woman was admitted to hospital three hours after falling downstairs. She had not been able to move the left arm since, the arm was cold and blue, there was a swelling in the axilla and below the clavicle, and there was no pulse in the left arm. Radiographs showed no bone injury or dislocation.

Operation—The axillary artery was explored immediately under general anaesthesia. A tear was found in the artery at the origin of the subscapular artery; there was also a tear in the axillary vein. The torn part of the artery was excised. There was a sluggish backflow from the distal end, which was not improved by suction through a catheter. End-to-end anastomosis was made, and after this there was some pulsation distal to the suture line, but the brachial pulse did not return.

Progress—After operation the radial pulse was absent, but the circulation to the arm was adequate, and movements of the hand and fingers were good. A year after the accident there is still some weakness and stiffness in the arm and hand.
DISCUSSION

The pathogenesis of rupture of the axillary artery complicating anterior dislocation of the shoulder is clear. Rupture most commonly occurs in elderly patients, whose vessels are atheromatous. The axillary artery is anchored by its subscapular branch, compressed by the dislocated head of the humerus, and stretched round the head of the humerus by hyper-abduction. This was shown by Milton (1954) in post-mortem dissections and by McKenzie and Sinclair (1958) in post-mortem arteriographs.

In the absence of a dislocation it is presumed that sudden hyperabduction of the arm sometimes stretches an atheromatous axillary artery from its attachment at the origin of the subscapular branch enough to tear it. It is also possible that at the moment of injury a temporary subluxation of the head of the humerus occurs, producing a situation akin to that in complete dislocation. St John, Scudder and Stevens (1945) in their case (in a young man) blamed minor injury to a vessel which histologically showed degenerative changes.

In most of these elderly patients, in whom the artery is ligated or becomes thrombosed, the collateral circulation is inadequate and permanent incapacity results (Calvet, Leroy and Lacroix 1941). One of the important factors in this connection is the damage almost always sustained by the subscapular artery, which is an important link in the collateral circulation of the axillary artery.

In comparison with the results after ligation or thrombosis the favourable results after successful primary repair of the artery in elderly patients reported in recent years (Henson 1956, Stener 1957, Cranley and Krause 1958, McKenzie and Sinclair 1958) leave one in no doubt that primary repair of the artery should be attempted.

In both cases reported here incomplete clearance of thrombus from the distal part of the artery was the probable cause of failure to restore blood flow in the main arteries. Suction through a polythene cannula was used but was inadequate. FORCEIBLE retrograde flushing through arteriotomies in the radial and ulnar arteries is a more efficient method of removing thrombus.

SUMMARY

1. Two cases of rupture of the axillary artery without dislocation of the shoulder or fracture of the neck of the humerus are reported, and the etiology is discussed.
2. The treatment of a ruptured axillary artery is primary repair, and not ligation.
3. In the repair of the artery the complete clearance of distal thrombus is most important; retrograde flushing is advised for this purpose.

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REFERENCES