

An Experience with Vascular Trauma

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This prospective study was conducted at Jinnah Hospital, Lahore over a period of twenty one months. Patients between the ages 18-32 years presenting with Vascular Trauma in A/E department were included in the study. Gender distribution was 17 males and one female. The vascular trauma was as follows: 2 radial arteries, 2 posterior tibial arteries, 8 femoral arteries, 4 popliteal arteries, 1 popliteal vein, 1 axillary artery. All of these patients were managed surgically. The end results for all were patent vessels with functional limbs averting deaths and preventing life long disabilities thereby improving the quality of life and productivity as a human being.

Key words: Vascular trauma, vascular repair

Arterial surgery is one of the most technically demanding areas of surgery and is an unforgiving speciality—the immediate success or failure of a vascular intervention is usually apparent before the patient leaves the operation theatre. Good results are achieved by thorough planning, careful handling of tissues and the appropriate use of instruments, needles, sutures and grafts. Vascular injuries occur in many trauma cases and need to be identified and treated promptly preferably to prevent amputation of limbs or if that fails death. Penetration injuries usually occur by firearms and knives.

In U.K. the most common causes of vascular injury are blunt trauma and iatrogenic injury⁽¹⁾. The most common vascular injury is disruption of the vessel. Disruption may be partial or complete. Due to gearing up of crime rate, firearms and stab wounds are a routine. If a timely decision is taken and appropriate action instituted not only patient survives but lives a useful and meaningful life with functional limb. This technical expertise is available only in tertiary care centers with many patients referred from periphery with pressure bandages or ligated vessels. The aim of the study was to see how the patient behaves in our setup after vascular repair and what are the success rates.

Materials and methods

This prospective study was carried out in time frame August 2001 to May 2003. The venue of study was Accident & Emergency department Jinnah Hospital, Lahore under surgical unit-I. The patients were admitted through casualty department. The patients presenting with symptoms of vascular injuries were subjected to emergency aid, history taking, clinical examination and laboratory investigations. On the basis of history, clinical examination and x-rays treatment was planned in individual cases. All the patients were monitored for haemodynamic stability and most needed blood transfusions and I/V fluids. The patients were taken to operating room as quickly as possible. In all patients flow sheets were maintained and all the relevant data recorded. The diagnosis of vascular disruption was primarily supported by clinical examination and x-rays

were carried out to rule out fractures. Where indicated external fixator was applied.

Results

The study included 18 patients out of whom 17 were males and one female. All the patients were admitted through Accident & Emergency department and operated. The relevant pulses were absent in all cases with bleeding from the trauma site except one which had blunt trauma. After surgery out of 18, 17 vessels remained patent and one was ligated. All patients had functional limbs post operatively. Patency was documented by Doppler ultrasonography post operatively.

Table 1. Frequency distribution of patients with vascular trauma by gender

Males	Females
17	1

Table 2 Outcome of surgery postoperatively (n=18)

Patent vessels	Non-patent vessels	Functional limbs
17	1 popliteal vein ligated	18

Table 3. Site of vascular injury

Radial artery	2
Posterior-tibial artery	2
Axillary artery	1
Femoral artery	8
Popliteal artery	4
Popliteal vein	1

Discussion

All the patients were young with mean age 25 years (18-32 years). They had no pre existing cardio pulmonary lesion or atherosclerosis. All had normal lipid profiles. Two posterior Tibial arteries, two radial arteries with mobilization of both arterial ends and subsequent end to end anastomoses with 6/0 prolene round body interrupted sutures was done. One axillary artery, 8 femoral arteries, 4 popliteal arteries with reverse autogenous long saphenous vein grafts harvested from contra lateral thighs was the procedure of choice. Proximal control was achieved in all before, application of clamps to injury site.

One popliteal vein was ligated because the patient went into cardiac arrest on operating table due to excessive bleeding and late presentation. Free flow of blood was established with Fogarty. All had subsequent fasciotomies. All were heparinized (5000 iv) per operative and then 1000 units/hour I/V for next 4 days. They were monitored with APTT. Fasciotomies though not routinely indicated for all vascular injuries and are indicated especially for popliteal artery injury². In this study all were backed up by fasciotomy which were later, closed or grafted. The procedure helped to reduce the incidence of reperfusion injury. The pressure measurements are not routinely done in our setup hence not knowing the critical pressure₍₃₎ and the need for urgent fasciotomy.

Conclusion

The diagnosis of peripheral vascular trauma has undergone significant evolution in last 2 decades. A minority of patients with arterial trauma in western setup present with

classic findings. Occult arterial injury diagnosis is more challenging. Many authors now recommend one selective use of arteriography or other diagnostic modalities based on the results of clinical examination and non-invasive pressure determinations.

In our setup even in cases of blunt trauma with suspicion of vascular injury we have to rely on clinical examination and then on exploration.

References

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