

4. Conservative treatment

Few patients may have minor blood vessel injury. In such patients, expectant treatment may be adopted with serial evaluation. If there is any deterioration, the patient may be taken up for surgery.

SUMMARY

Vascular trauma is both life-threatening as well as a limb-threatening surgical emergency. Urgent vascular intervention is of prime importance for limb salvage.

In Indian setting, there are very limited number of centers who are practicing vascular surgery. Most of the patients present to dedicated vascular centers very late, resulting in amputation of limb or death. The amputation rate can be significantly reduced when proper care is given timely, that is, within 6 hours of injury.

To reduce the limb loss rate and death rates, hard signs of injury must be identified and the patient must be immediately transferred to a dedicated vascular center or to a trauma center having vascular expertise.

Early revascularization, intensive post-operative care and team approach help in achieving the goal of functional limb salvage.



Vascular Society of India

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VASCULAR TRAUMA

EARLY IDENTIFICATION AND TREATMENT IS CRUCIAL!

FOR PATIENT INFORMATION / EDUCATIONAL PURPOSES

VASCULAR TRAUMA



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INTRODUCTION

India is one of the fastest growing economies, with a fast rate of urbanization, industrialization and motorization. Trauma has become the leading cause of death worldwide and represents the leading cause of death among young adults in industrialized nations.

Vascular injury of the extremities is a complication following both penetrating and blunt trauma. The incidence of these mechanisms vary widely according to the rate of trauma, in different regions across India.

The overall incidence of trauma and vascular injuries is increasing. Although vascular injuries are present in only 1%– 2% of injured patients, these patients account for a far greater share of morbidity, mortality and resource utilization than those without such injuries. In recent studies, vascular injuries to the extremities account for 20%–50% of all vascular injuries. As is typical for the general population of injured patients, those with vascular injuries to the extremities tend to be young, with the average age in the 30s, and predominantly (70%–90%) male.

WHY IS IT DANGEROUS?

Blood vessel injury causes abrupt cut-off in blood circulation to the legs/hands, leading to death of the cells in that limb.

Any part of our body cannot survive beyond 4–6 hours without blood supply. A minor delay in vascular repair can cost the patient his/her limb or life.

WHAT ARE THE SYMPTOMS AND SIGNS OF VASCULAR INJURY?

- High velocity injury to limb (with or without fracture) due to road traffic accident, industrial accidents, etc.
- Sharp cut injury over the leg/hand
- Feeling of numbness in the leg/hand
- Loss of movement and sensation in the leg/hand (similar to paralysis)
- Blue/black color changes in the toes/fingers

WHAT IF URGENT TREATMENT IS NOT PROVIDED?

It is a life-threatening and limb-threatening emergency. Ideally, a vascular injury should be repaired within 4–6 hours of the incidence.

If delayed, the patient may lose their limb or life. Delay in treatment may also increase the risk of kidney failure.

DIAGNOSIS OF VASCULAR INJURY: WHAT TO DO NEXT IF I AM SUSPECTING INJURY TO BLOOD VESSELS IN MY LEG/HAND?

Consult a vascular surgeon for clinical assessment immediately.

Doctor will perform a **color Doppler test/computed tomography (CT) angiography** of the injured limb and will explain you the course of treatment. These imaging tests can detect vascular injury with good accuracy.

TREATMENT OPTIONS

These can be broadly divided into four categories:

1. Emergency room management

In the emergency department, patients are managed as per Advanced Trauma Life Support (ATLS) guidelines. Life-threatening injuries are ruled out in primary survey. During the primary survey, actively bleeding wounds are identified and hemorrhage is controlled. Patient may also require urgent blood transfusion.

When hemorrhage is under temporary control, the patient is transferred to the operating room or vascular cath lab for definitive vascular repair or ligation.

2. Open surgical treatment

Open surgical control and bypass/primary repair remain the mainstays of the management of most vascular injuries to the extremities. It is a surgical procedure wherein two normal parts of blood vessels above and below the blocked area are connected by creating a bypass channel. Vascular repair is achieved with a reversed saphenous vein graft in most cases.

3. Endovascular treatment

In a special scenario, patient may have to be taken up to the vascular cath lab for emergency control of bleeding. This is particularly required when injury is in deeply situated vessel or patient is unable to tolerate major surgery.

A. Therapeutic Embolization: This procedure is used to block leakage from injured blood vessels. Different kinds of agents/particles/coils are used. Patients who will especially benefit from therapeutic embolization include those with multisystem injuries, ongoing bleeding, closed fractures or late diagnosis of a traumatic aneurysm after orthopedic surgeries.

B. Endovascular Stents and Stent Grafts: For the treatment of an intimal dissection or flap, endoluminal bypass can be performed using stents. In patients with traumatic aneurysm, covered stent/stent graft can be used.



Figure 1: CT angiography showing vascular injury



Figure 2: Operative photo of vascular injury

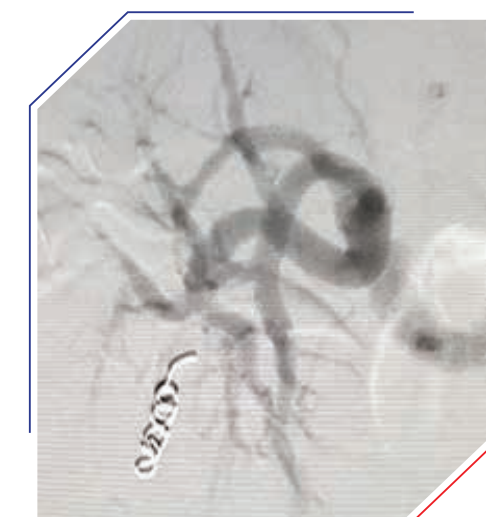


Figure 3: Renal coil embolization