

## Traumatic Vascular Injury - Head & neck

### Consumer Information

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### What is Traumatic vascular injury to the head & neck?

Traumatic vascular injuries can be either:

1. A blunt injury to the chest, neck or head, which can result in damage to the blood vessels supplying the brain and can be caused by:
  - Forceful compression or pressure from a seat belt during a motor vehicle accident
  - Sudden movements such as bending and extending of the neck which may happen during a motor vehicle accident when a vehicle decelerates or accelerates (whiplash), often associated with fractures of the spine
  - During a fall where the neck will also be subject to similar sudden bending and extending movements, also often associated with fractures of the spine
  - Sporting injuries with similar sudden movements as above
  - Strangulation
2. Penetrating injuries caused by sharp objects that pierce the skin and important structures beneath the skin, such as arteries, veins, windpipe etc. These may be a result of industrial accidents, motor vehicle accidents, stabbing, shrapnel etc.

**It is important to note there is a similar condition known as Spontaneous vascular injury to the head and neck. Although the effects on the brain of the two conditions are the same, the cause is very different. Spontaneous vascular injury occurs without an external blow or sudden movement and is related to an inherent or natural defect in the wall of the artery. A "stroke" (a sudden attack caused by an interruption in the flow of blood to the brain) is an example of a spontaneous injury. This can lead to a loss of consciousness, speech, power in an arm or leg or feeling in parts of the body.**

### How do patients generally present with Traumatic vascular injury to the head & neck?

Traumatic vascular injury to the head and neck is generally identified when a patient arrives at a hospital emergency department as a result of injuries they have received.

### What happens during a Traumatic vascular injury to the head & neck?

There are four arteries that carry blood supply from the heart to the brain, two in front of the brain and two behind the brain. The arteries in front supply the main part of the brain called the cerebral hemispheres and can be felt pulsating on either side of the windpipe. The arteries at the back are partly surrounded by bone in the spine and supply the hindbrain and important structures in the deeper part of the brain. Being partly encased by bone they are more vulnerable to injury when there is a fracture in the neck. The different types of injuries that can occur are:

1. Stretching or bruising to the artery that can lead to reduced blood flow to the brain or clots travelling to the brain causing a stroke
2. The innermost layer of the artery may tear, with blood splitting along these layers reducing the flow of blood to the brain
3. Tearing of the inner-lining of the artery that can lead to reduced blood flow to the brain or to blood clots that can then travel with the blood flow and lodge in the brain causing a stroke
4. In very severe injuries, there can be a total loss of blood flow beyond the injury site.

### Are there any after effects of a Traumatic vascular injury to the head & neck?

Stroke is the main after effect of a traumatic vascular injury to the head and neck, with the injury to the artery itself often going unnoticed. A stroke may occur immediately at the time of the injury or may be delayed up to weeks or even months later.

### When is a Traumatic vascular injury to the head & neck suspected?

These injuries are usually detected in a hospital emergency department. Particular types of injuries such as cervical (neck) fractures, severe whiplash injury, fracture of the skull, seat belt abrasions to the neck, severe fractures of the face and chest and a penetrating injury (e.g. stabbed with a sharp object) to the neck are known to be associated with this condition.

## How is a Traumatic vascular injury to the head & neck diagnosed?

Traumatic vascular injury is usually diagnosed following a [computerised tomography \(CT\)](#) scan. If an abnormality is still suspected but not clearly visible on the CT scan, a catheter angiogram is performed. This is done in an angiography suite at a hospital. A catheter (a thin plastic tube) is inserted in the groin and a liquid contrast or dye is injected directly into the arteries to more clearly show the abnormality on the images taken. In certain circumstances, a [magnetic resonance imaging \(MRI\)](#) scan may be performed to assess the spine or brain of a patient suffering from a stroke and this also may show the injury to the blood vessel(s).

## What are the risks of a Traumatic vascular injury to the head & neck?

Stroke is the main risk of a traumatic vascular injury which may be instantaneous or delayed from a few hours to a few weeks or even months after the injury occurs. If the stroke is large or involves the part of the brain that controls breathing or consciousness, it may be fatal. Of those patients diagnosed with head and neck traumatic vascular injury 60-85% will survive and most will do quite well after rehabilitation. Of these survivors, 25-40% will be left with a moderate to severe neurological disability (affecting the structure and function of the nervous system).

## Who treats the Traumatic vascular injury to the head & neck?

Once a diagnosis of traumatic vascular injury to the head and neck has been made, a multidisciplinary approach is adopted. A neurosurgeon, a neuro-radiologist and a neurologist (all specialist doctors) will often work together to determine the best management strategy. Sometimes an ear, nose and throat specialist or vascular surgeon may also be involved.

## What is the treatment of Traumatic vascular injury to the head & neck?

The treatment given will depend on the severity of the injury. Minor injuries are closely observed and

the patient might be given a blood thinning medication to avoid a blood clot forming, dislodging and travelling to the brain. In more severe cases, a stent (an open plastic or stainless steel tube) is inserted into a damaged artery to keep it open so that it does not become blocked. In rare circumstances surgery is required to repair the artery.

## How common is Traumatic vascular injury to the head & neck?

With the increase in high-speed motor vehicle accidents these injuries are becoming more common. Advances in imaging technology have improved the detection of these injuries, often before they have caused damage to the brain. Studies have shown that motor vehicle accidents are the main cause, and account for well over half the cases. It is reassuring that only about 1-2% of patients admitted to a major trauma centre will suffer from this condition.

### Please note:

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

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