Whiplash

You have been in an accident which has "whipped" your neck and caused damage to spinal ligaments and other spinal structures.

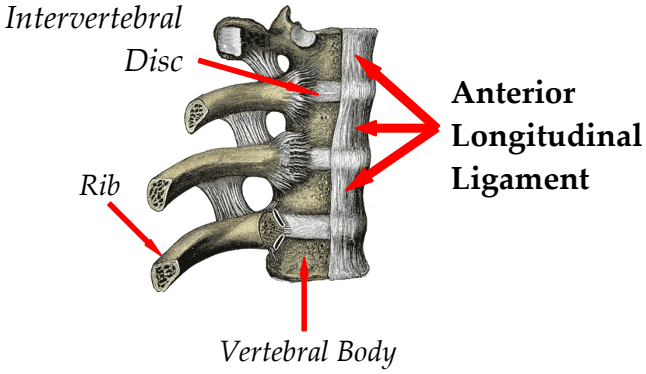
This injury is classically associated with automobile collisions. Generally it happens when one vehicle is rammed from behind by another without the driver of the front vehicle having any warning. As the front vehicle lurches forward the driver's head snaps back (*hyperextension*), and then as the sudden forward movement of the vehicle ceases the head snaps forward (*hyperflexion*). However the reverse of the above sequence can occur in a head-on collision.

(a) Possible Primary Whiplash Injuries

Hyperextension Injuries

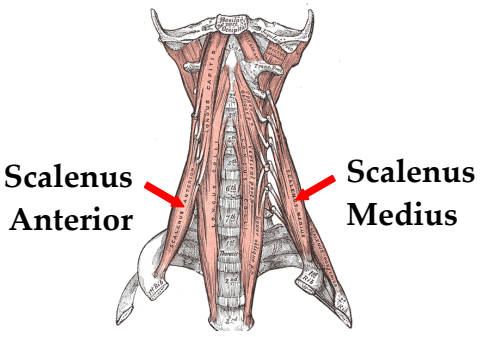
Hyperextension Injuries I

1. Tearing of the *anterior longitudinal ligament*, or bulging of this ligament onto the spinal cord.



Hyperextension Injuries II

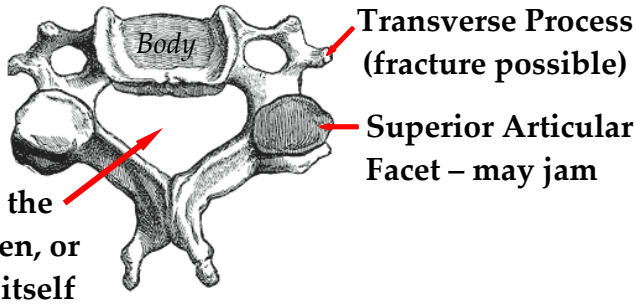
2. Rupture or damage to the *scalenus* muscles, especially *scalenus anterior*. This may lead to arm-hand pain (due to irritation or entrapment of the *brachial nerve plexus*).



Hyperextension Injuries III and IV

3. *Superior articular facet jamming* (i.e. jamming of the joint to the next vertebra above) or fracture of the *transverse process* above.

4. Bleeding into the spinal cord (haematoma, bruise). The danger is permanent spinal cord damage.

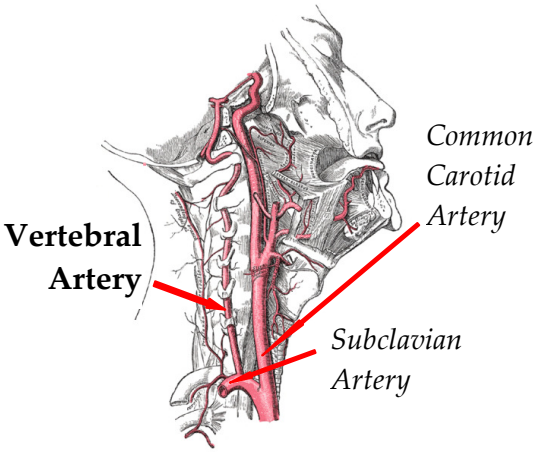


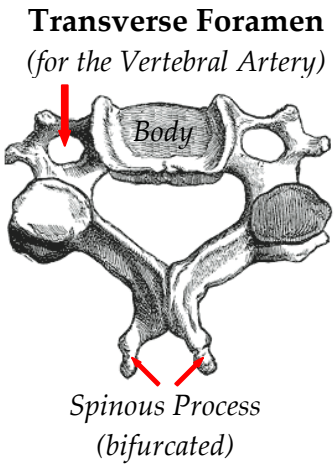
Hyperflexion Injuries

1. Kinking of the vertebral artery. See illustration next page. Inside the neck, there are two arteries running up through holes in the vertebra; one each side of the bone. Each hole is known as the *transverse foramen*. The arteries are called the vertebral arteries.

Inside the skull, the two vertebral arteries join to form the *basilar artery*, which provides circulation to the *brain stem*. Kinking of one or both vertebral arteries may create a *clot* leading to *stroke*, especially in people with compromised vertebral artery diameter. So care must be taken.

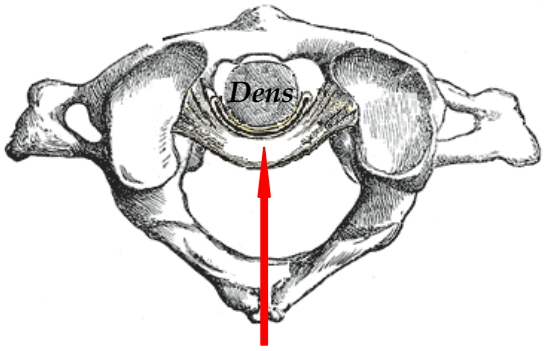
Hyperflexion Injuries I





Hyperflexion Injuries II

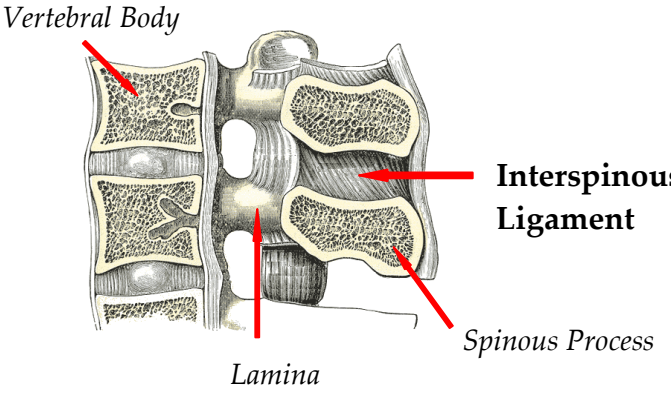
2. Rupture of the *Transverse Ligament of the Atlas*. The atlas is the first vertebra beneath the skull.



The Transverse Ligament of the Atlas

Hyperflexion Injuries III

3. The third possible hyperflexion injury is strained or torn *interspinous ligaments*.



4. The fourth possible hyperflexion injury (no illustration) is dislocation of one or more vertebrae, most likely dislocation of the facet joints (joints between the vertebra which allow the spinal bones to move relative to one another), rather than complete dislocation of the vertebra, which would lead to death.

(b) Secondary Whiplash Injuries

Symptoms

Initial secondary effects on the *sympathetic nervous system* are common but usually transitory, and may include: dizziness, tinnitus (ringing in the ears), blurred vision, dilated pupils, sweating, and photophobia (sensitivity to light)

There are some secondary problems that may show up months later, such as recurring facet joint problems (joints between the vertebra) or adhesions (the joining [by scar tissue] of tissues that are meant to be separate).

For that reason it is important that you keep in contact with your practitioner for some time after the event which caused your whiplash.

Author Paul James Davies