

# Spinal injury

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# Causes

Fall from height

Motor vehicle accident

Damage to vertebrae, discs, ligaments, spinal cord

Lesion of spinal cord

- without fracture of vertebral column

- with fracture of vertebral column

Temporary damage

Permanent damage

# Spinal shock

Loss of all functions of spinal cord

Complete loss of motor function, sensation, reflexes and sinister function

Symptoms:

Complete paraplegia, absent reflexes, no muscle tonus, loss of sensation

Appears in incomplete or complete transverse lesion of spinal cord. It resolves after 24- 48 hours

It is changing into spastic paraplegia after 3 weeks

The end of spinal shock:

Annal reflex or bulbocavernosus reflex

# Transversal lesion of spinal cord

Anatomic disruption of spinal cord with irreparable damage

## Complete:

Loss of motor function, sensation, reflexes,  
loss of control of bowels

It is apparent after resolving of spinal shock

Paraplegia changes into spastic one

## Incomplete:

Loss of motor function of different stage

Disturbance of sensation (pain, thermal, vibration, tactile).

# Concussion of spinal cord

Reversible and functional

Short period of loss of function

Improvement after some hours or days

# Contusion of spinal cord

Anatomic disturbance of spinal cord  
(necrosis, oedema, bleeding, exsudation, thrombosis  
- increasing pressure to the spinal cord)

Symptoms: paraplegia, areflexia,  
loss of sensation, bowel dysfunction

# Hematomyelia

Localised bleeding into the spinal cord

Symptoms: paraplegia, areflexia,  
loss of sensation, bowel dysfunction

# Compression of spinal cord

Disturbance of circulation in spinal cord  
by mechanical and reflectoric forces

Disturbance of circulation of cerebrospinal fluid.

Symptoms: according to the level of damage  
paraplegia, areflexia,  
loss of sensation, bowel dysfunction



# Level of damage of spinal cord

C1 - C4: immediate death

C5 - T1: quadriplegia, quadraparesis

Bellow T1: upper extremities- no loss of function  
lower extremities- paraplegia or paraparesis

**Cauda equina**- involves lumbar and sacral roots L1-L5, S1-S5.

Cauda equina syndrom: by compression bellow L1 vertebra:

- spinal claudication, palsy of lower extremities
- parestesia in lower extremities, nerve roots pain
- disturbance of sfincter function and of reflexes

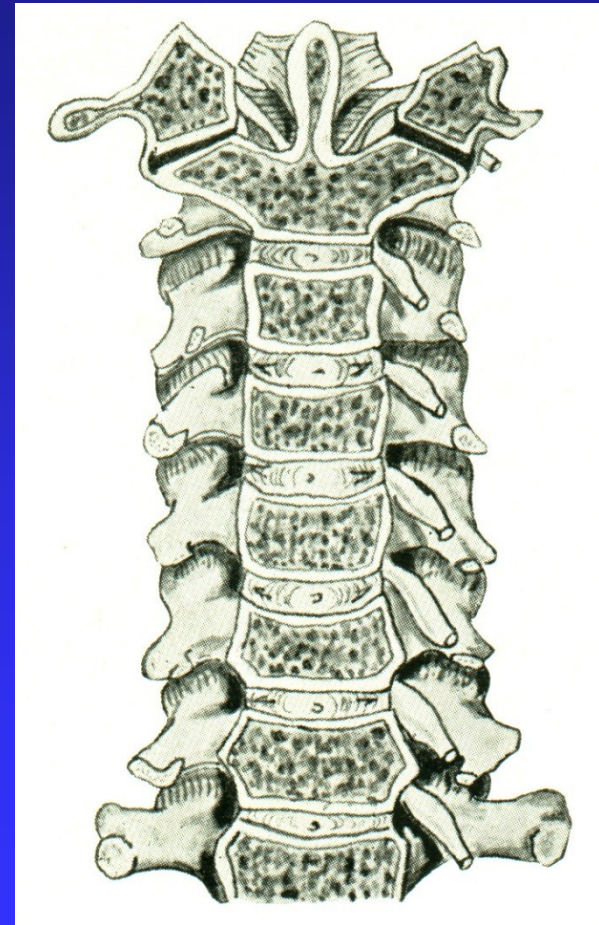
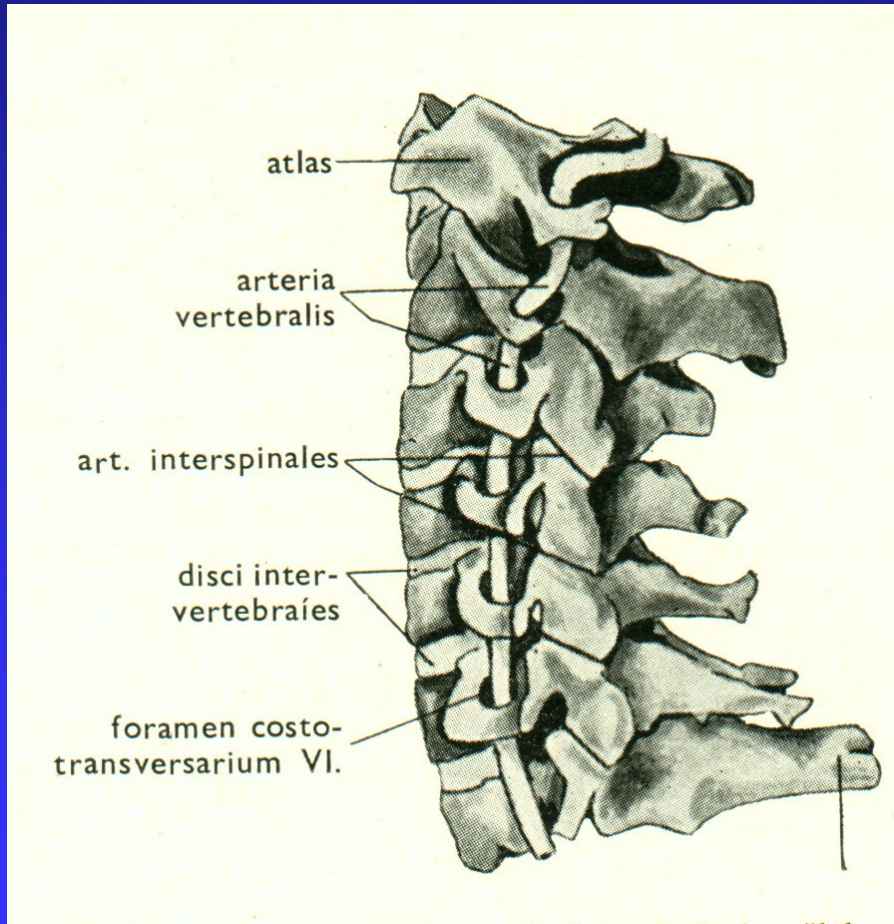
**Spinal cord epiconus**- roots S1, S2

**Conus medullaris** – roots S3 - S5:

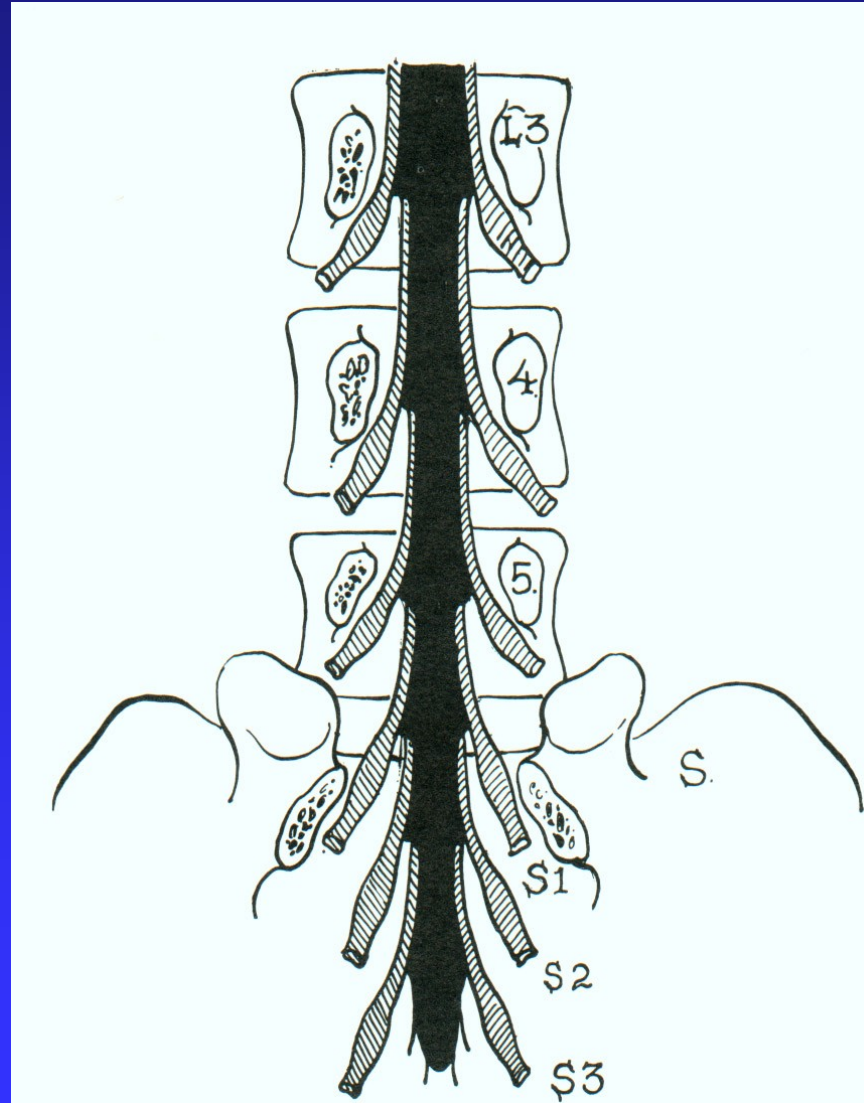
loss of sfincter functions

# Cervical spine

## Roots C1-C8



# Roots of lumbar spine L1-L5



# Symptoms of spinal cord lesion and fracture of vertebral column

Disturbance of sensation in extremities

Disturbance of motor function in extremities

Strange position of the body

Pain in the back region

Parestesias in extremities

# First aid

Examine function of extremities

Check the pain, oedema or hematoma

Make a note about the function

No change of position- do not move the casualty from the previous position, support the head in the neutral position

Check the casualty's breathing, if not - start CPR

Use log-roll technique

Vacuum immobilisator, Philadelphia collar

Urgent careful transport

Corticoids