

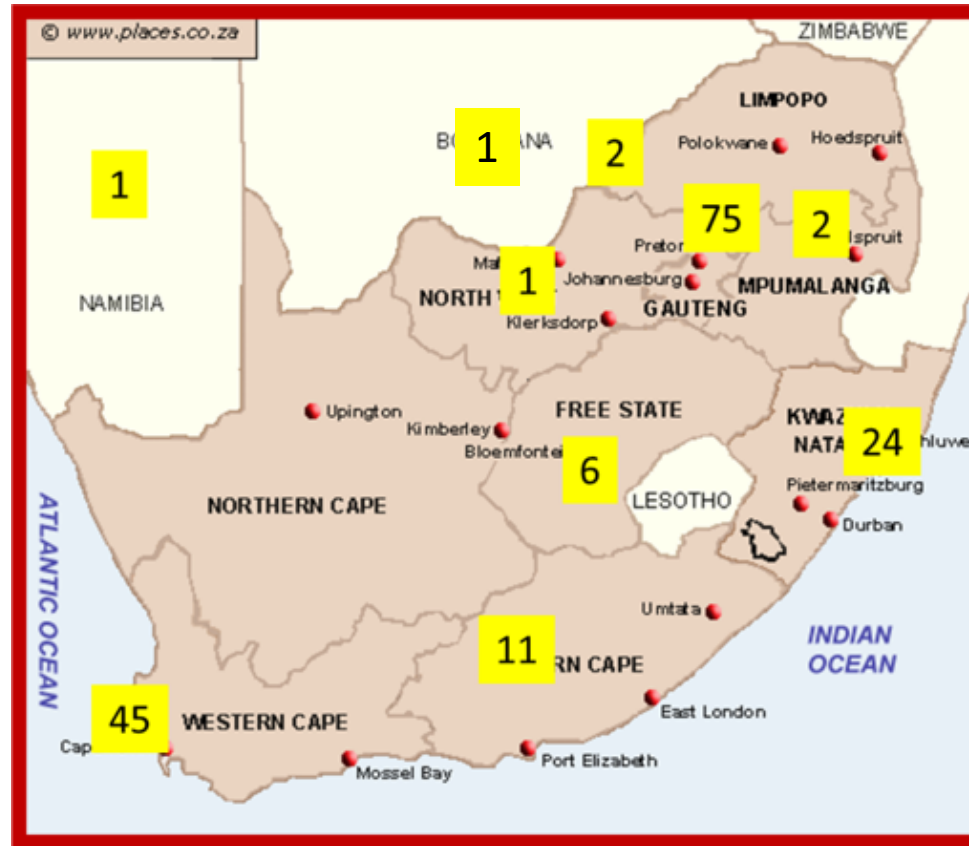
Identifying the patient who requires emergency spine surgery or care



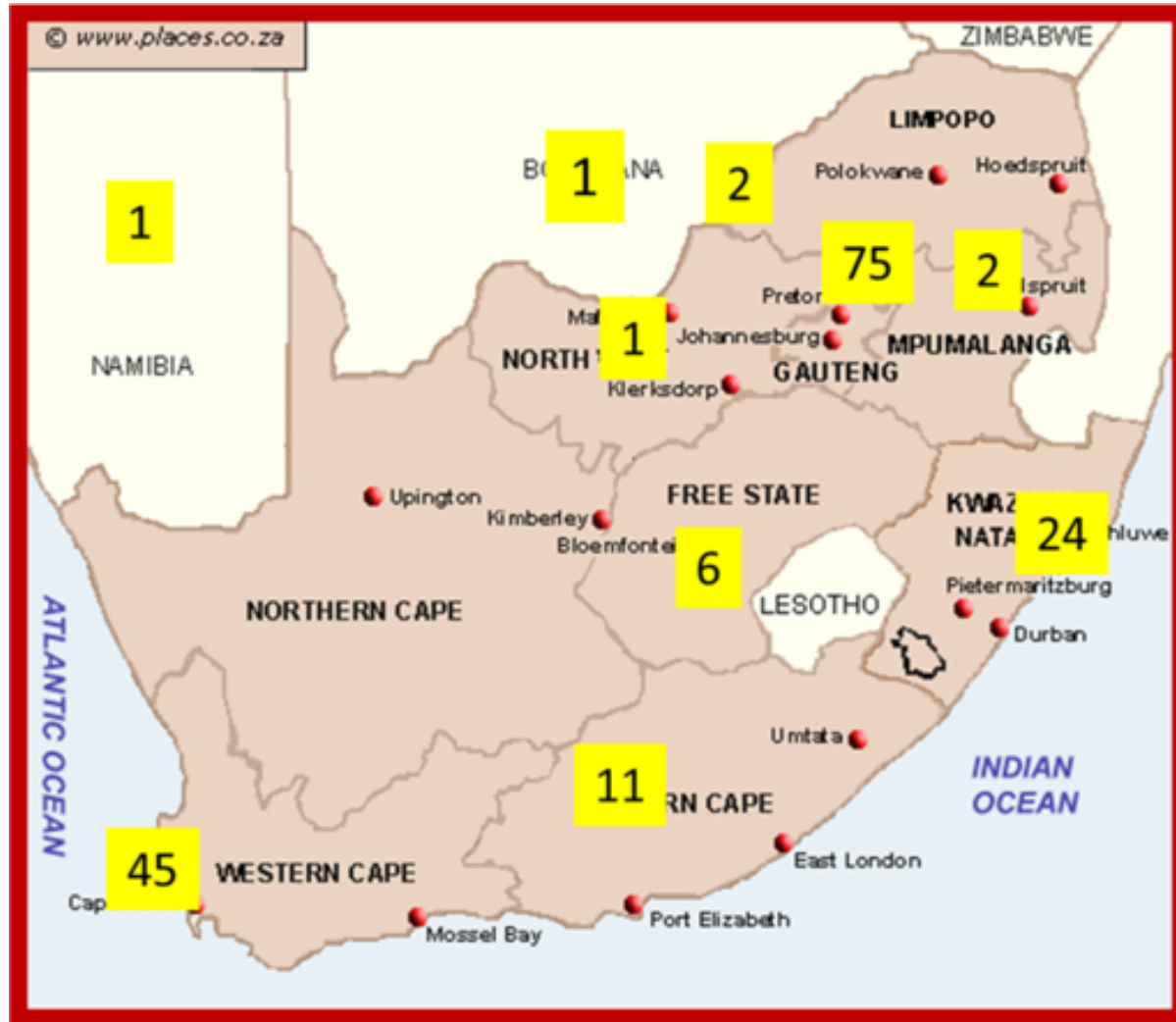
World Spine Care

Prof AJ Vlok
University of Stellenbosch
Tygerberg Academic Hospital
South Africa

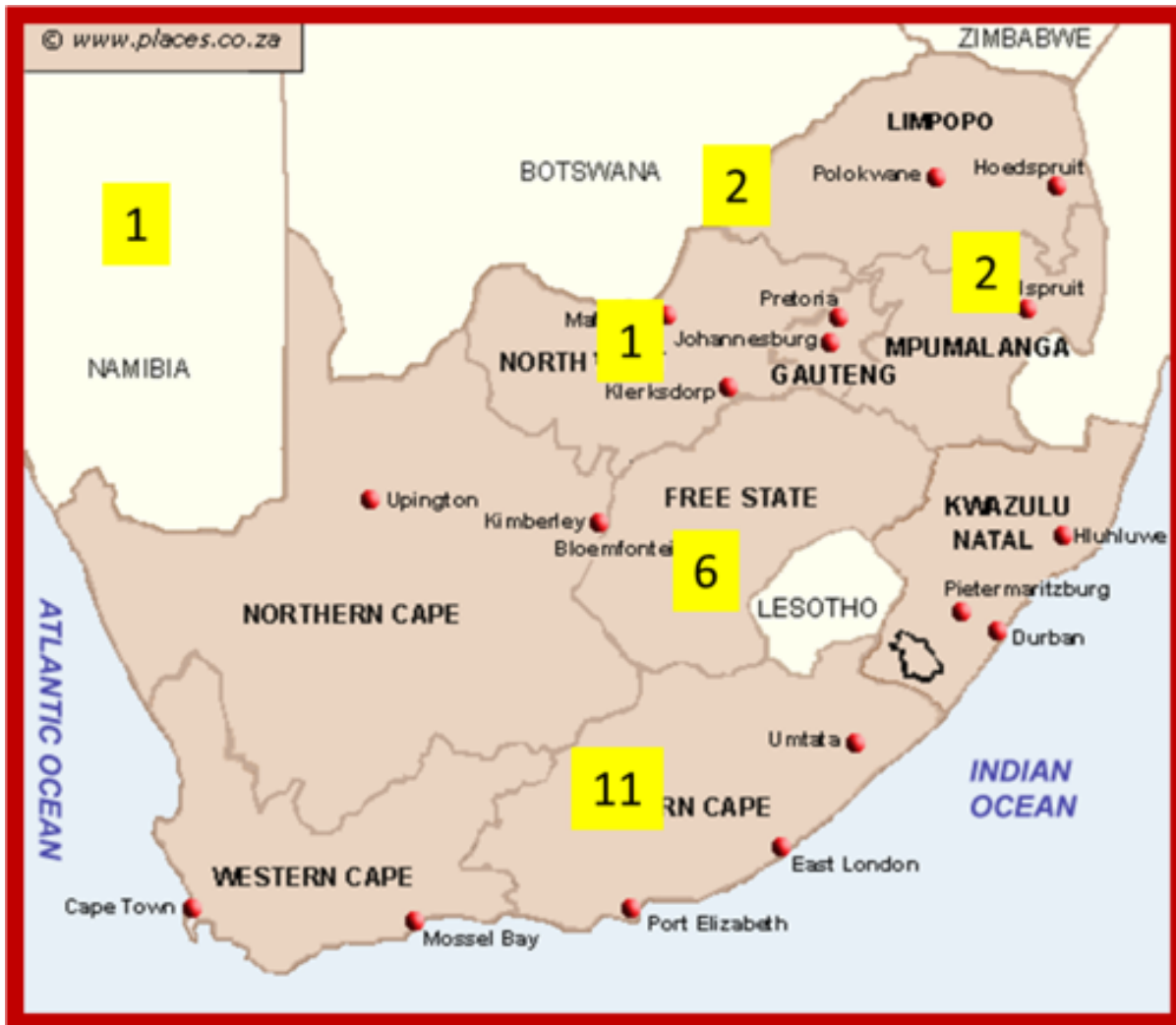
“You are in a Level 1 District Hospital in an underserved area of the world”



The Global Spine Care Initiative: a consensus process to develop and validate a stratification scheme for surgical care of spinal disorders as a guide for improved resource utilization in low- and middle-income communities. Emre Acaroğlu, Tiro Mmopelwa et al. European Spine Journal Oct 2017



	Population estimate	% of total population
Eastern Cape	7 061 700	12.6
Free State	2 861 600	5.1
Gauteng	13 498 200	24.1
KwaZulu-Natal	11 079 700	19.8
Limpopo	5 803 900	10.4
Mpumalanga	4 328 300	7.7
Northern Cape	1 191 700	2.1
North West	3 790 600	6.8
Western Cape	6 293 200	11.3
Total	55 908 900	100,0



	Population estimate	% of total population
Eastern Cape	7 061 700	12.6
Free State	2 861 600	5.1
Limpopo	5 803 900	10.4
Mpumalanga	4 328 300	7.7
Northern Cape	1 191 700	2.1
North West	3 790 600	6.8
Total	25037800	44.7

South African Burden - HIV

HIV

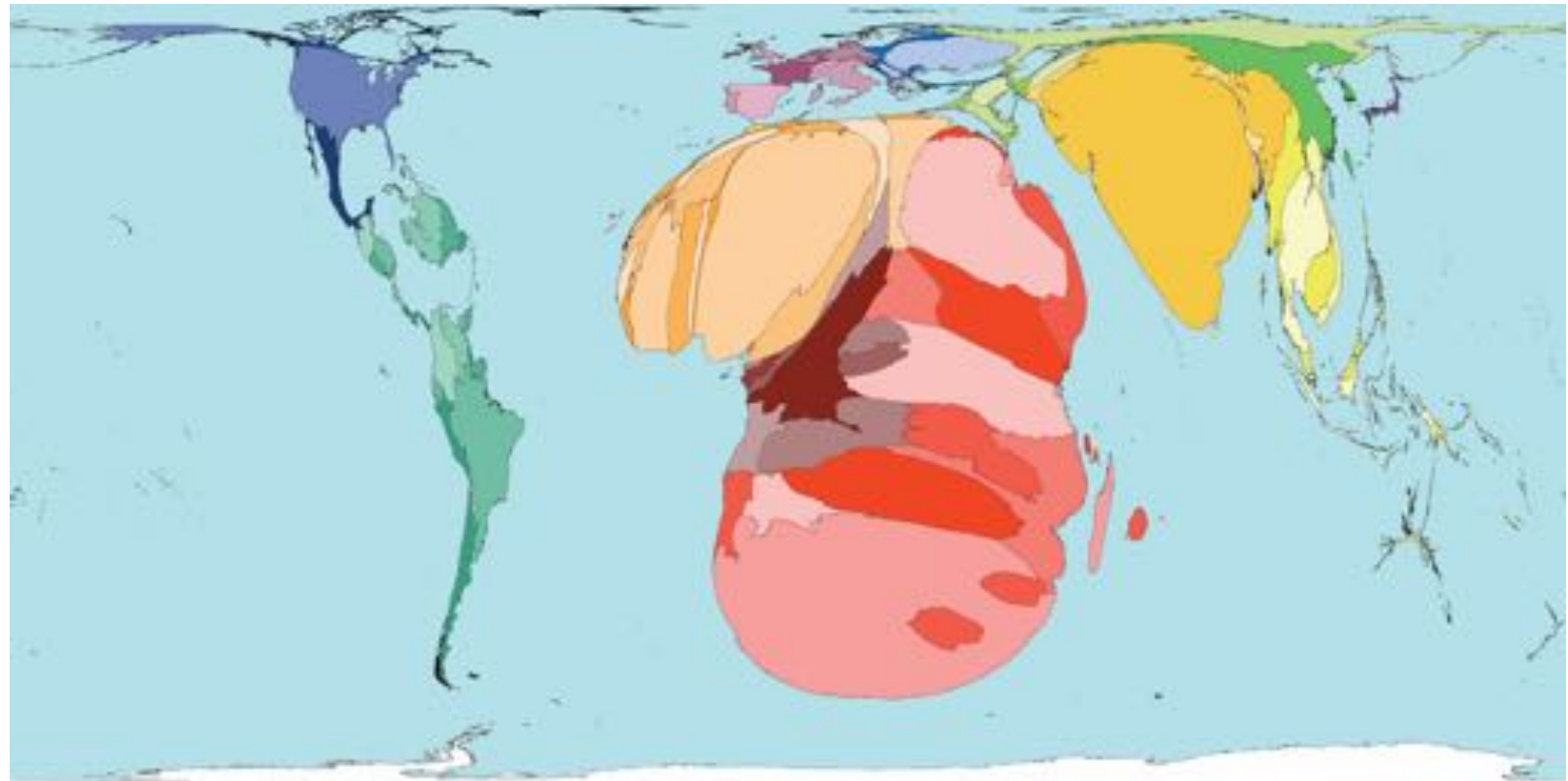
TB

Trauma

Degenerative disease

Deformity

Worldwide distribution of HIV



South African Burden - TB

HIV

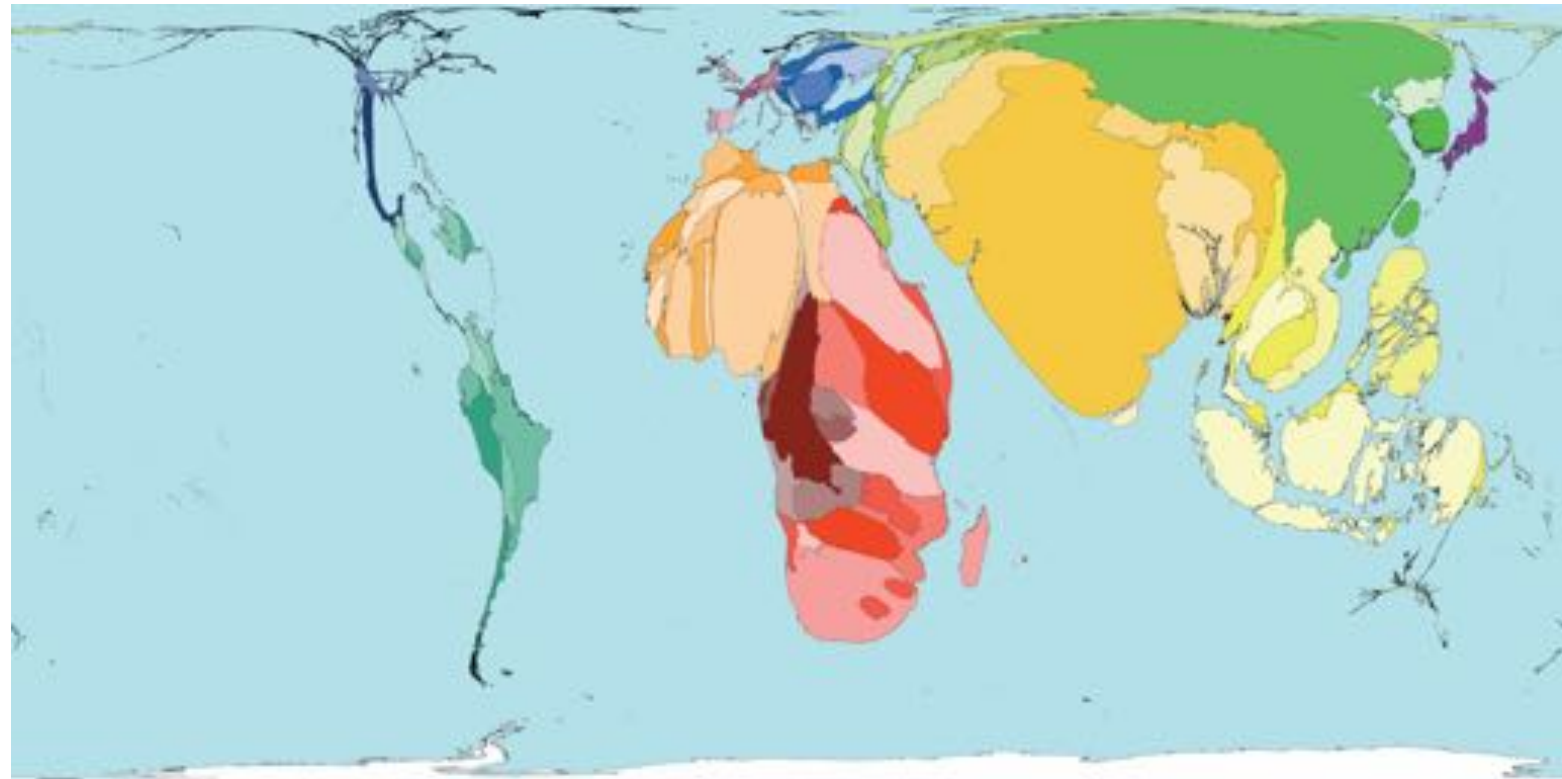
TB

Trauma

Degenerative disease

Deformity

Worldwide distribution of TB



South African Burden - Trauma

HIV

TB

Trauma

Degenerative disease

Deformity



Some of the 23 passengers (17 adults and six children) with the goat wait outside a minibus taxi that was stopped for overloading on Saturday morning. Traffic officers impounded the vehicle, which was on its way to the Transkei.

23 people — and one goat — spill out of overloaded taxi

SHARIKA REGCHAND

A MINIBUS taxi carrying 17 adults, six children and a goat was impounded in Commercial Road on Saturday.

Senior Provincial Traffic Inspector Zain Mabonod said traffic officials stopped the taxi, which was en route to the Transkei, when they noticed that the sliding door was not closed properly.

He said a passenger was sitting on top of luggage and holding a goat with its head sticking out of the door.

The taxi was impounded and taken to the Mkonjeni testing

grounds where it was found to be unroadworthy.

The driver, who has been charged for overloading, had to make alternative arrangements for the passengers to continue their journey.

TOYOTA



South African Burden

HIV

TB

Trauma

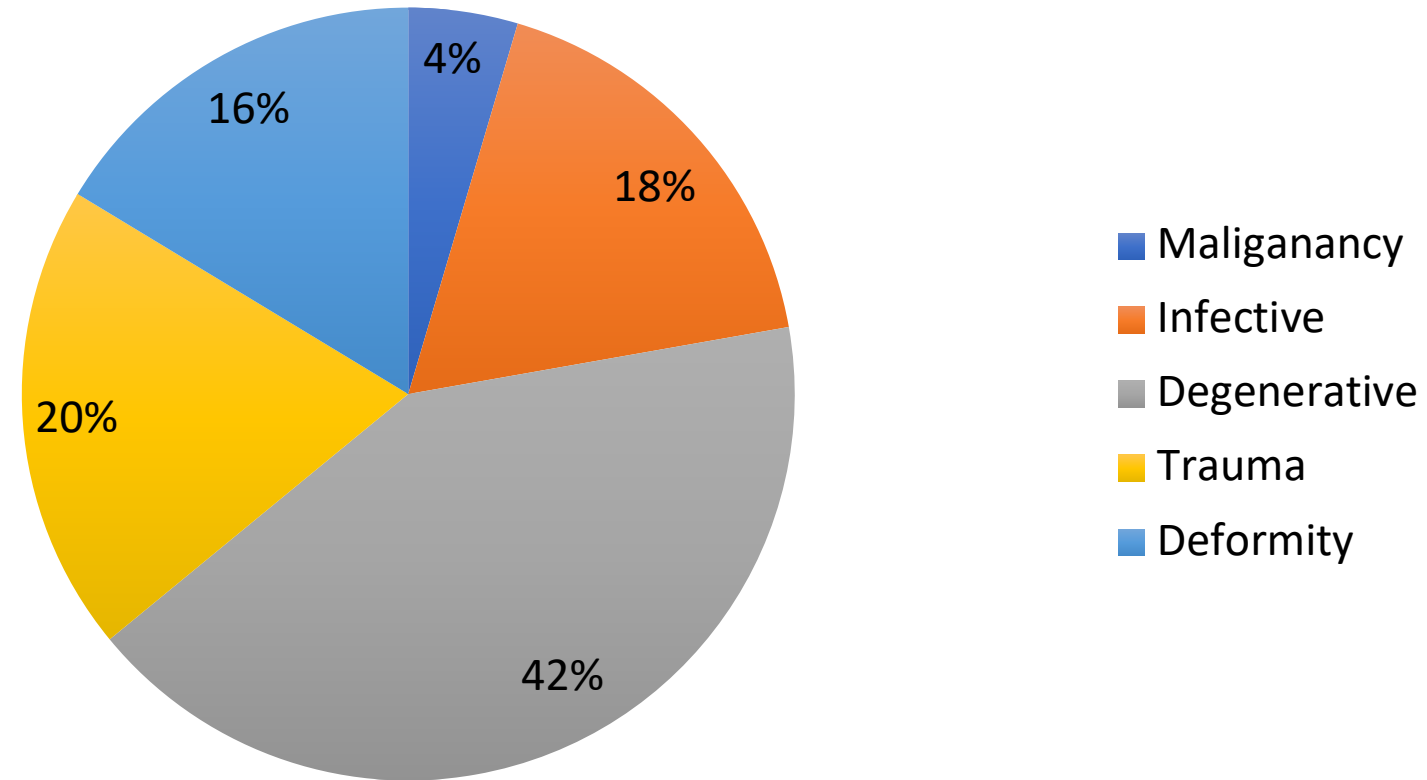
Degenerative disease

Deformity



Advanced pathology due to delay in presentation

Distribution of spinal pathology



The 42 % Degenerative cases nearly always have to make way for the rest

Who is more dangerous?



SPINAL PATIENT

Initial presentation



Indications for surgery

Instability

Neurology

Deformity

EMERGENCY

SURGERY

1) INSTABILITY

If we suspect that the spine will not be able to withstand physiological loading

2) NEUROLOGY

If the patient has significant neurological fall-out or if the neurology is progressing

3) DEFORMITY

If we predict that the patients' spine will deform in the near future secondary to the underlying pathology



SURGERY

1) INSTABILITY

If we suspect that the spine will not be able to withstand physiological loading

2) NEUROLOGY

If the patient has significant neurological fall-out or if the neurology is progressing

3) DEFORMITY

If we predict that the patients' spine will deform in the near future secondary to the underlying pathology

SURGICAL STRATEGY

1) **STABILIZE THE SEGMENT**

2) **DECOMPRESS THE NEUROLOGICAL STRUCTURES**

3) **CORRECT THE DEFORMITY**

“You are in a Level 1 District Hospital in an underserved area of the world”

HISTORY

What is normal for a 70yr old?

What is unexpected for a 25yr old?

Recognize the RED FLAGS!



Red Flags!

Inappropriate pain for AGE!

<20, >65

Pain not relieved by REST

THORACIC Pain

Night Pain

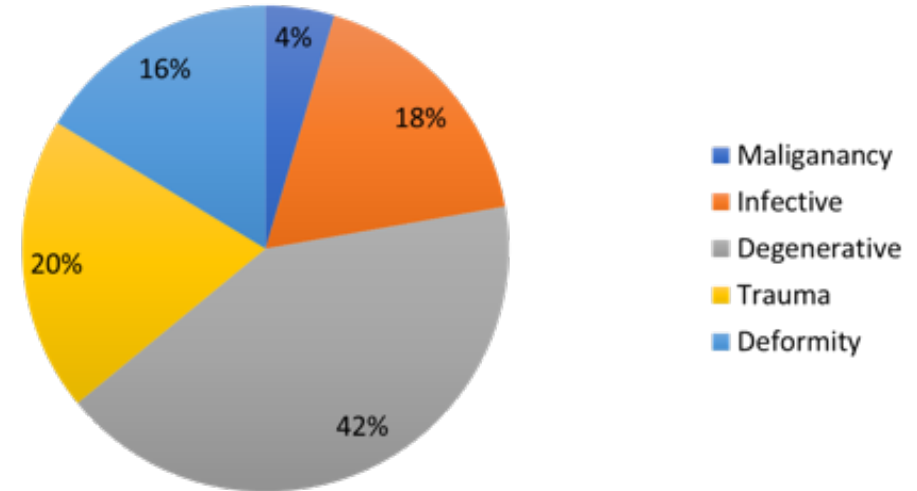
Systemic Illness, Weight Loss, Constitutional Sx, History of Malignancy, Night Sweats

Chronic Steroid Use

Neurological Signs

Violent Trauma

Structural Deformity



What is an emergency?

The one thing we cannot fix is the SPINAL CORD

We have to recognize **neural compromise or instability with POTENTIAL neural compromise**

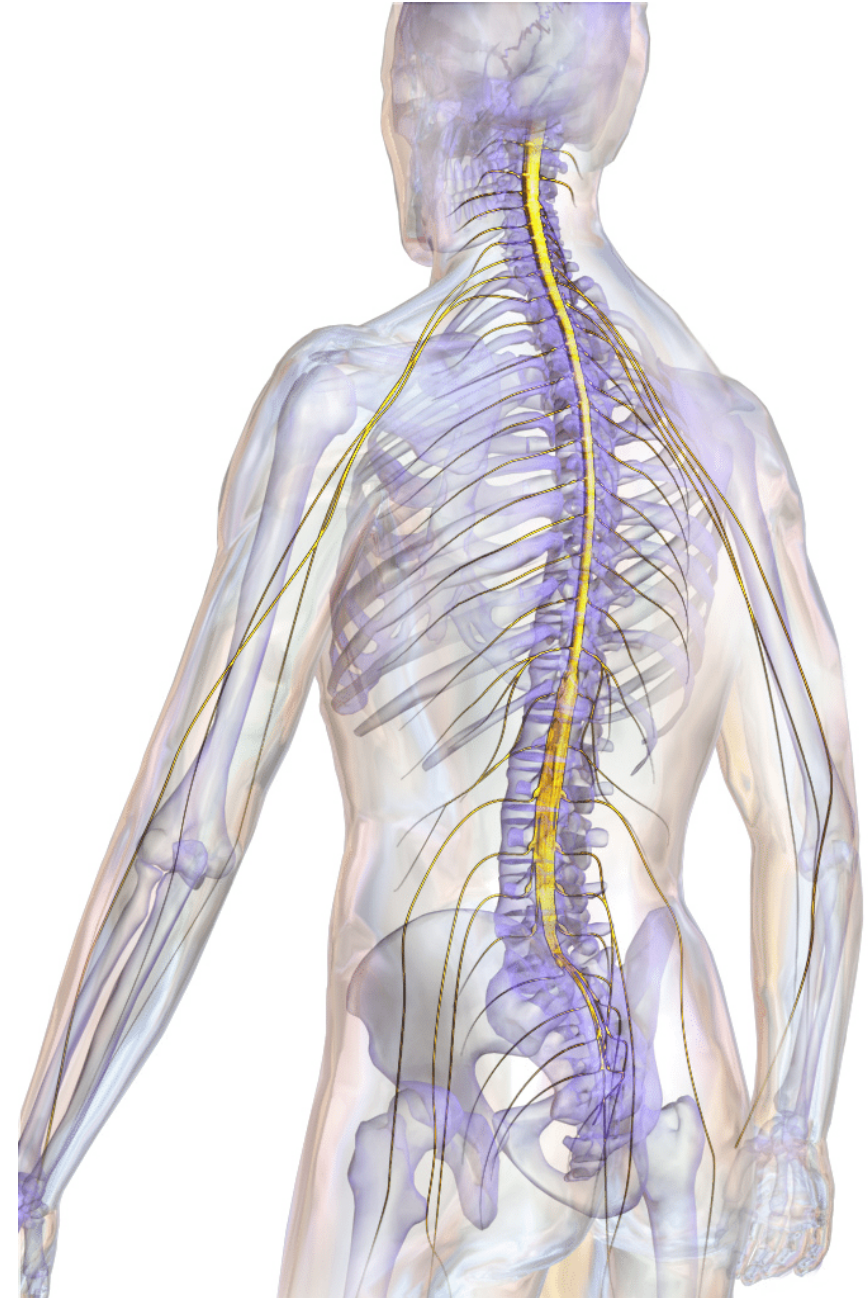
HISTORY

CLINICAL EXAMINATION

SPECIAL INVESTIGATIONS

Imaging

Lab testing



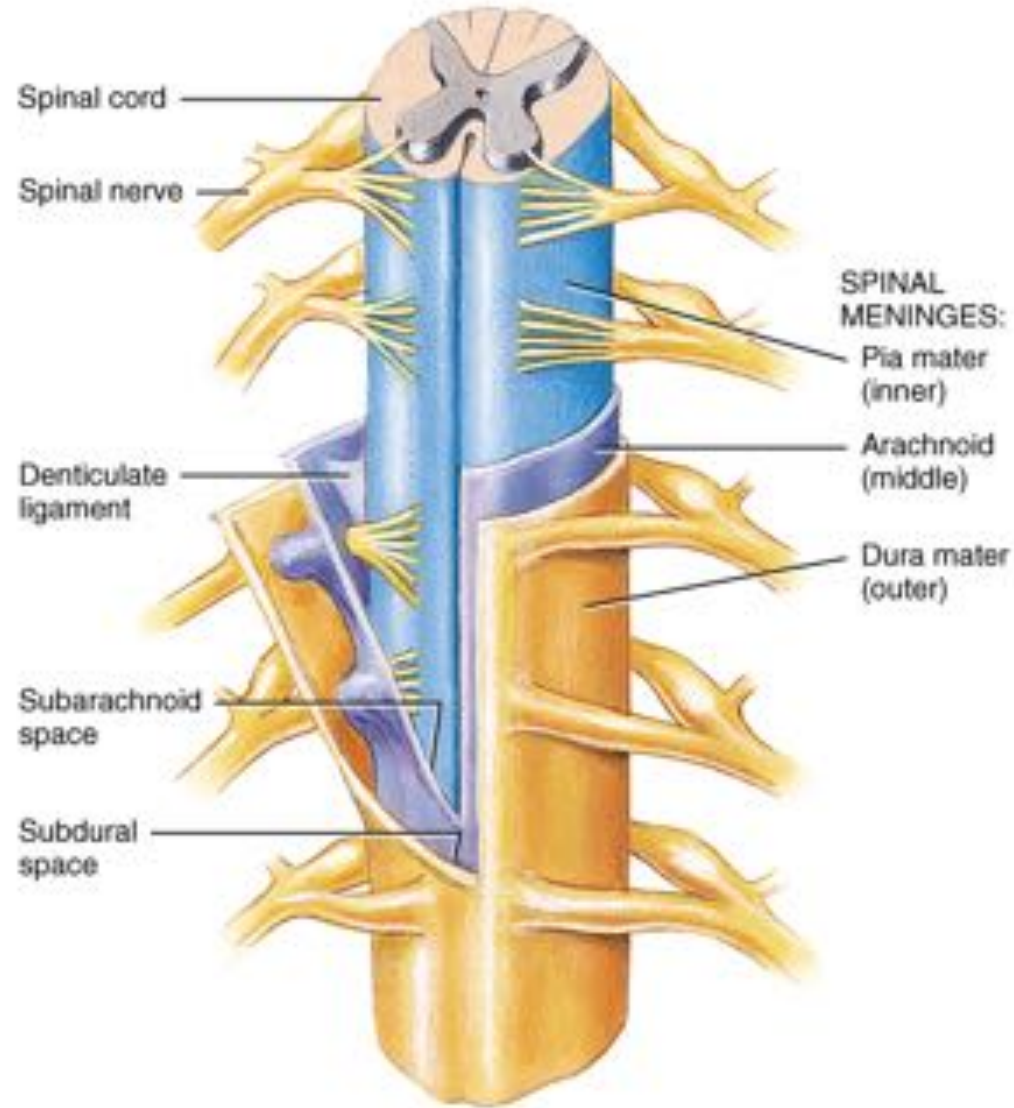
ANATOMY

SPINAL CORD

Myelopathy

NERVE ROOT

Radiculopathy



MOTOR
SENSORY
REFLEXES

(a) Anterior view and transverse section through spinal cord

Neurogenic vs Spinal Shock

SHOCK:

Inadequate perfusion of tissue oxygenation of essential organs

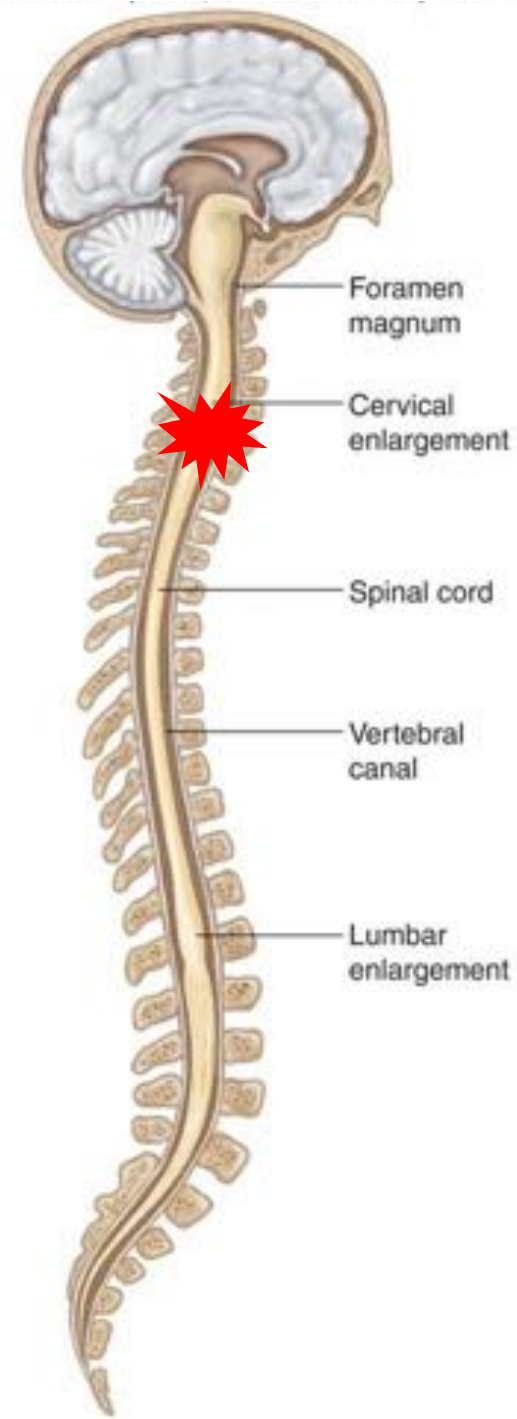
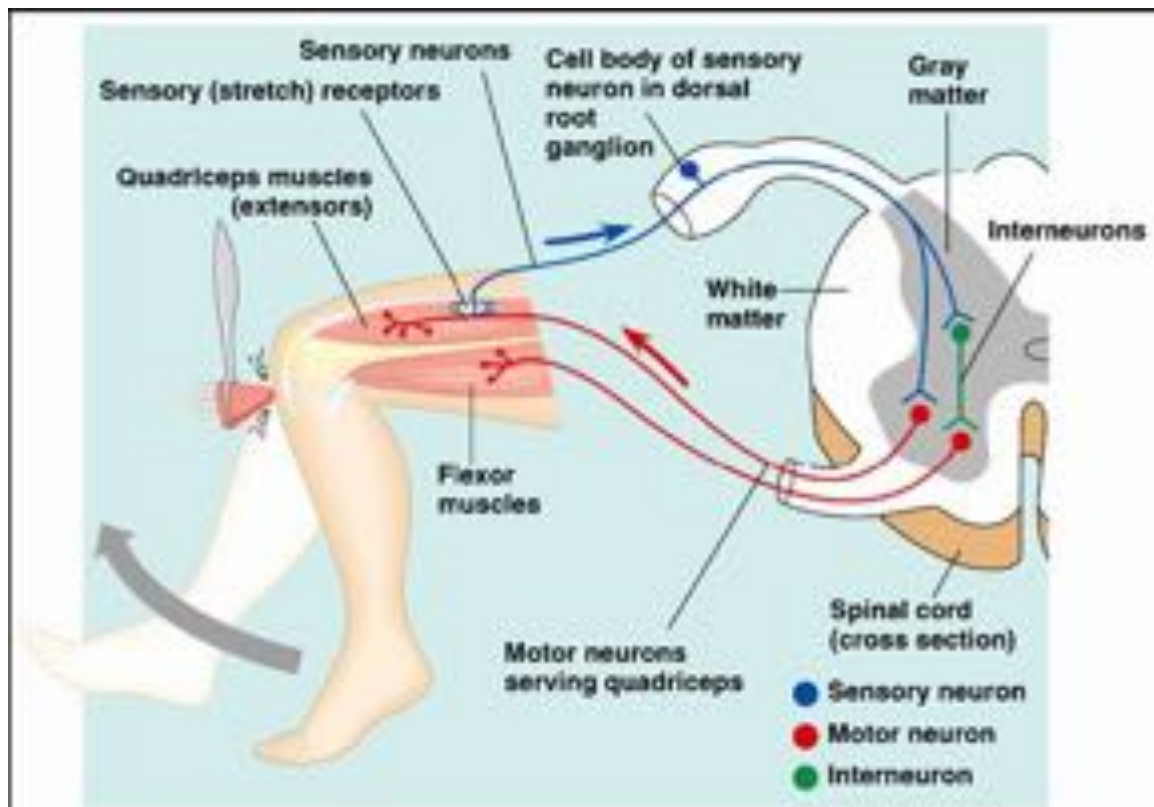
Neurogenic / Septic / Anaphylactic / Hypovolemic / Cardiogenic

Recognised by their **hemodynamic picture**

Spinal shock

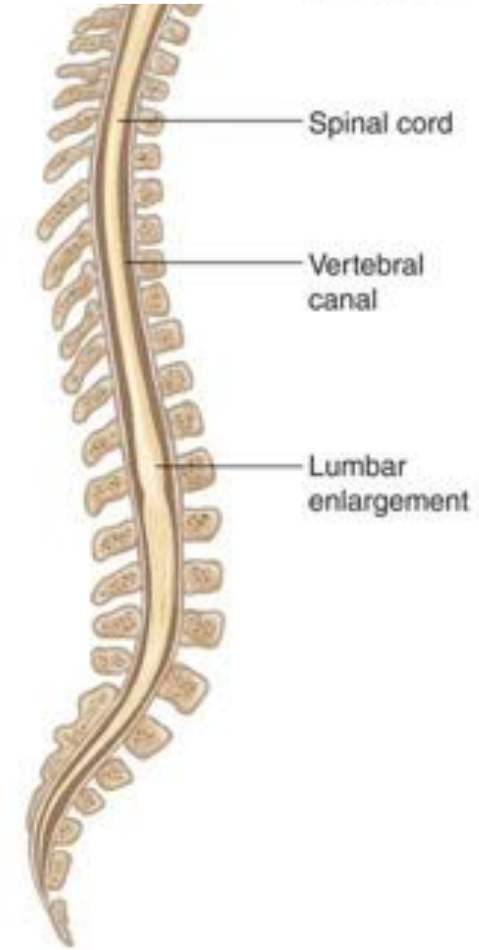
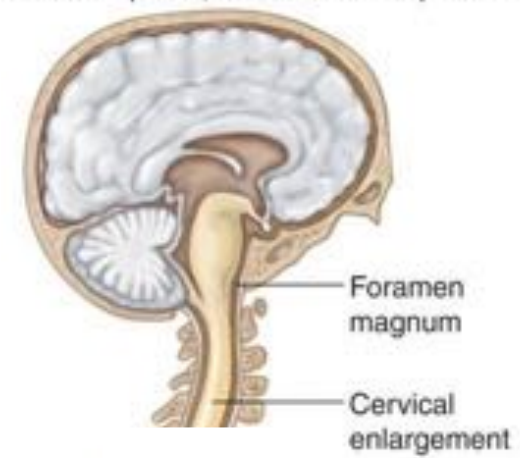
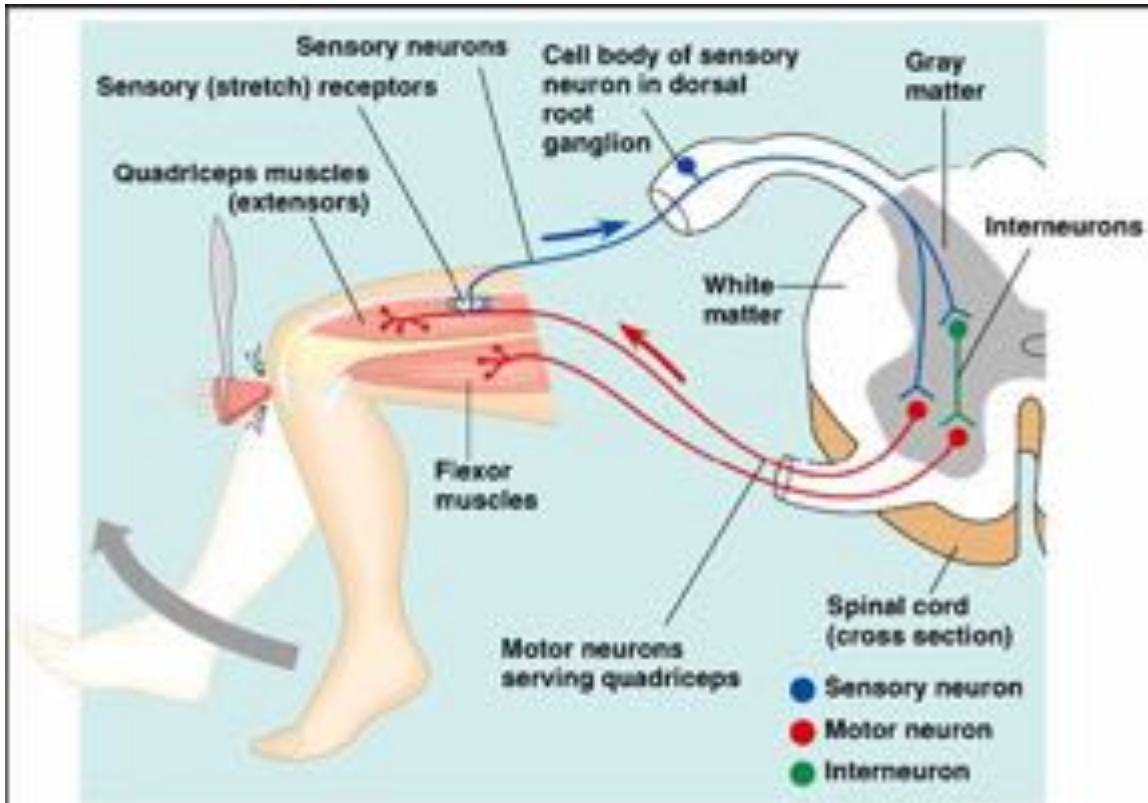
Complete cessation of neurologic function below a level of injury

Recognised by their **neurological picture**



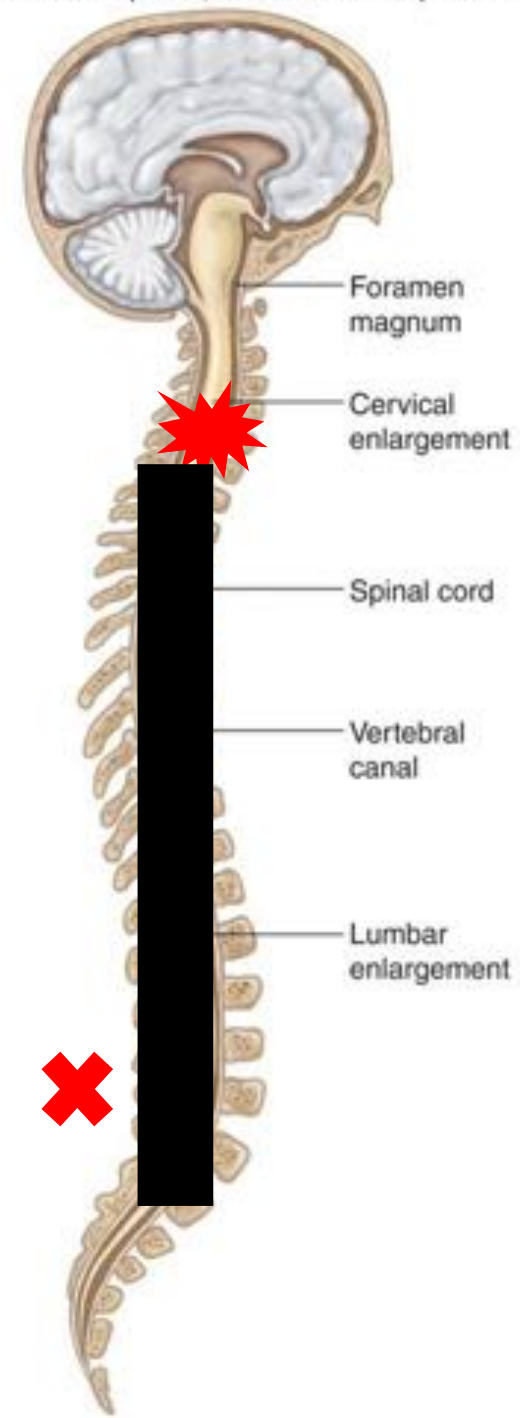
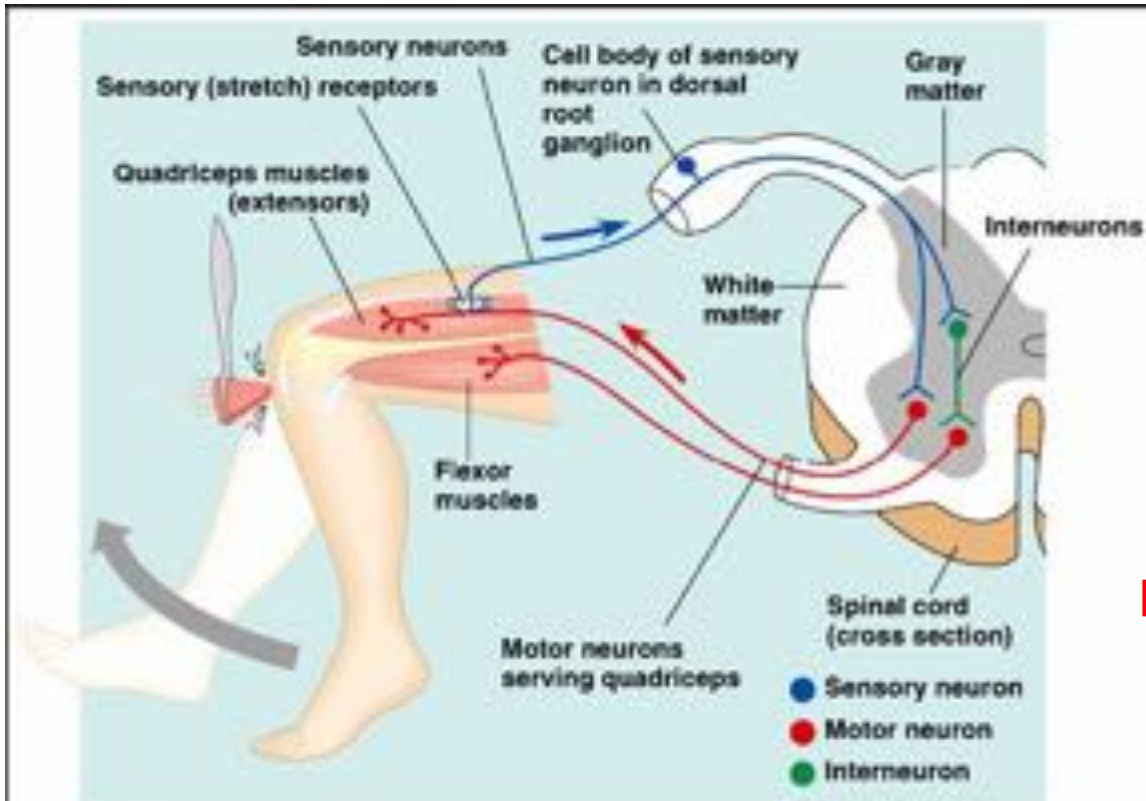
COMPLETE

- NO MOTOR
- NO SENSORY
- POSITIVE REFLEXES



SPINAL SHOCK

- NO MOTOR
- NO SENSORY
- **NO REFLEXES**



WHAT IS EMERGENCY VS URGENT?

ABSOLUTE EMERGENCY SURGERY:

- IMMEDIATELY, e.g. Bi-facet dislocation or Cauda Equina Syndrome

EMERGENT SURGERY:

- WITHIN 6 HOURS, e.g. Spinal Infection, systemically sick

URGENT SURGERY:

- NEXT AVAILABLE LIST, e.g. successfully reduced Bi-facet dislocation

DELAYED EMERGENT SURGERY:

- PLANNED 24-48+ HOURS DELAY, e.g. Burst fracture

SEMI-ELECTIVE:

- NEXT WEEK, e.g. tumour / TB surgery without progressive neurology

ELECTIVE:

- NEXT MONTH, e.g. stable spinal stenosis

Reduction of a C-spine dislocation



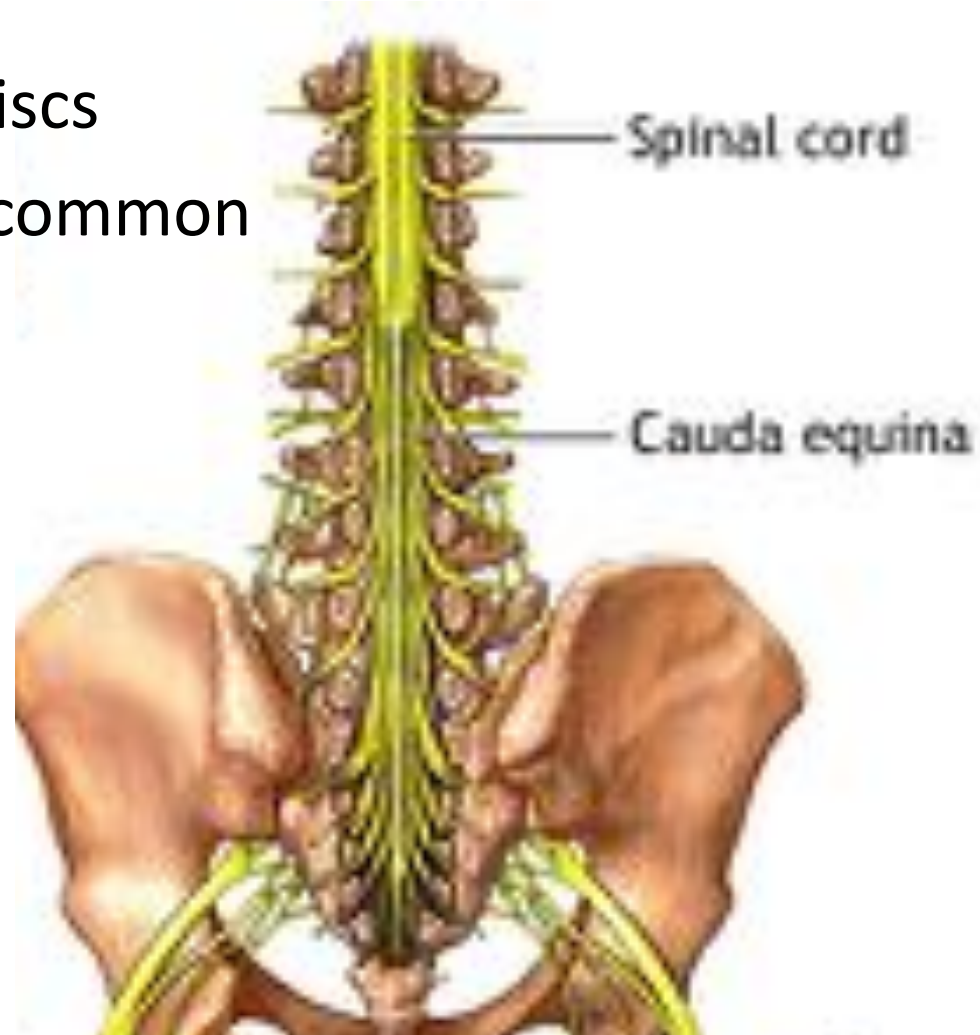
Pre- and post-reduction

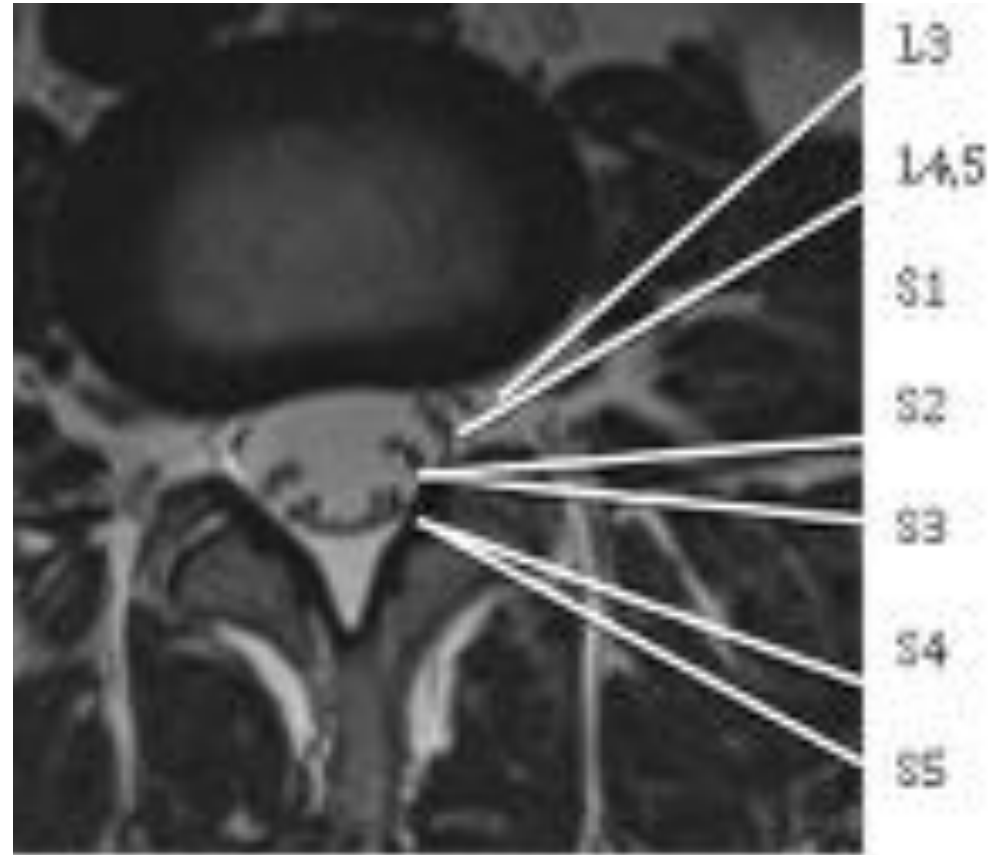
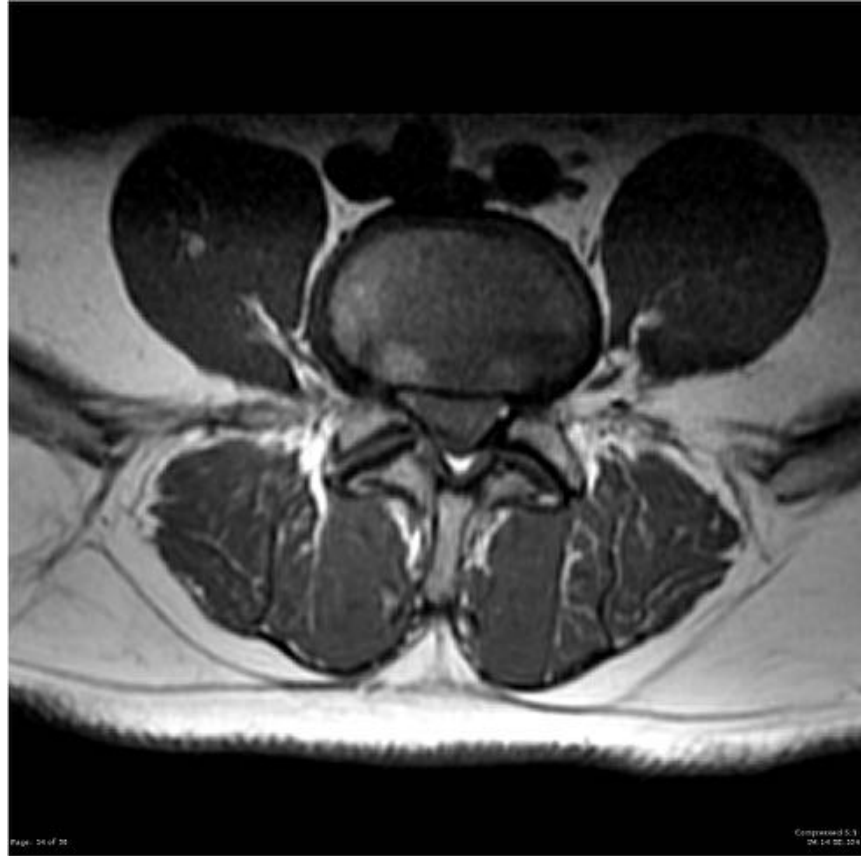


Cauda Equina Syndrome

3% of herniated discs

L4/5, L5/S1 most common





Review of Medicolegal Cases for Cauda Equina Syndrome: What Factors Lead to an Adverse Outcome for the Provider?

ELDRA W. DANIELS, BS; ZACHARY GORDON, MD; KEISHA FRENCH, BS; URI M. AHN, MD;
NICHOLAS U. AHN, MD

Significant association with verdict for plaintiff:
Time to surgery (>48 hours)

No case reviewed had a rectal examination!

Only 26.7% had initial complaints mentioning bowel / bladder
The rest more **subtle**

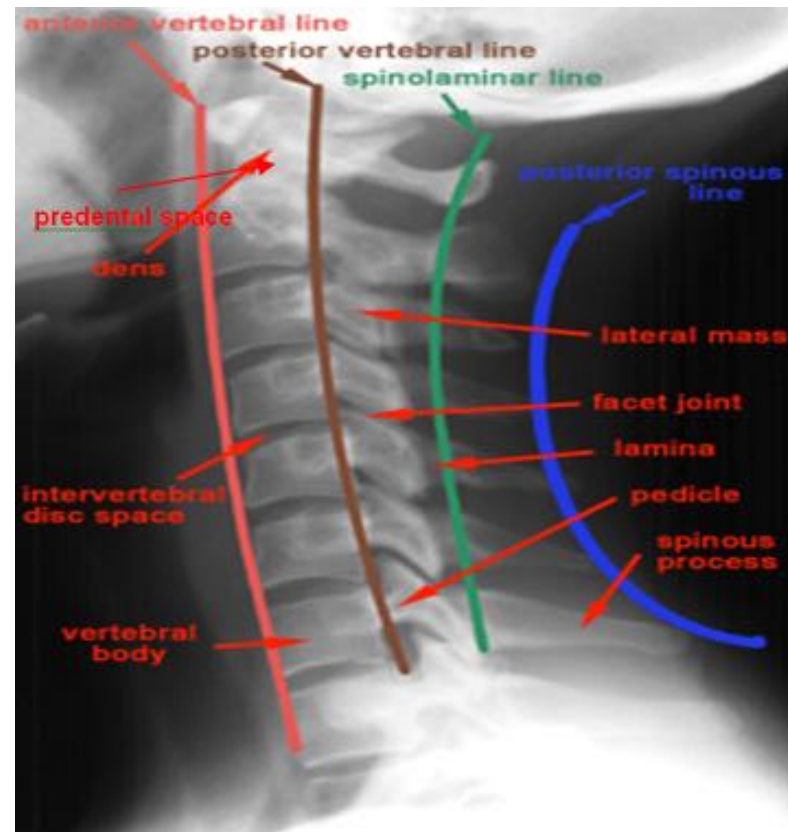
Put your finger in it or put your foot in it!



X-rays – cervical spine

Part of ATLS

Essential to have a structured or systematic approach



Quality of the X-ray



Imaging



Imaging

- ADI



Imaging

- ADI
- Soft tissue



Imaging

- ADI
- Soft tissue
- Anterior body line



Imaging

- ADI
- Soft tissue
- Anterior body line
- Posterior body line



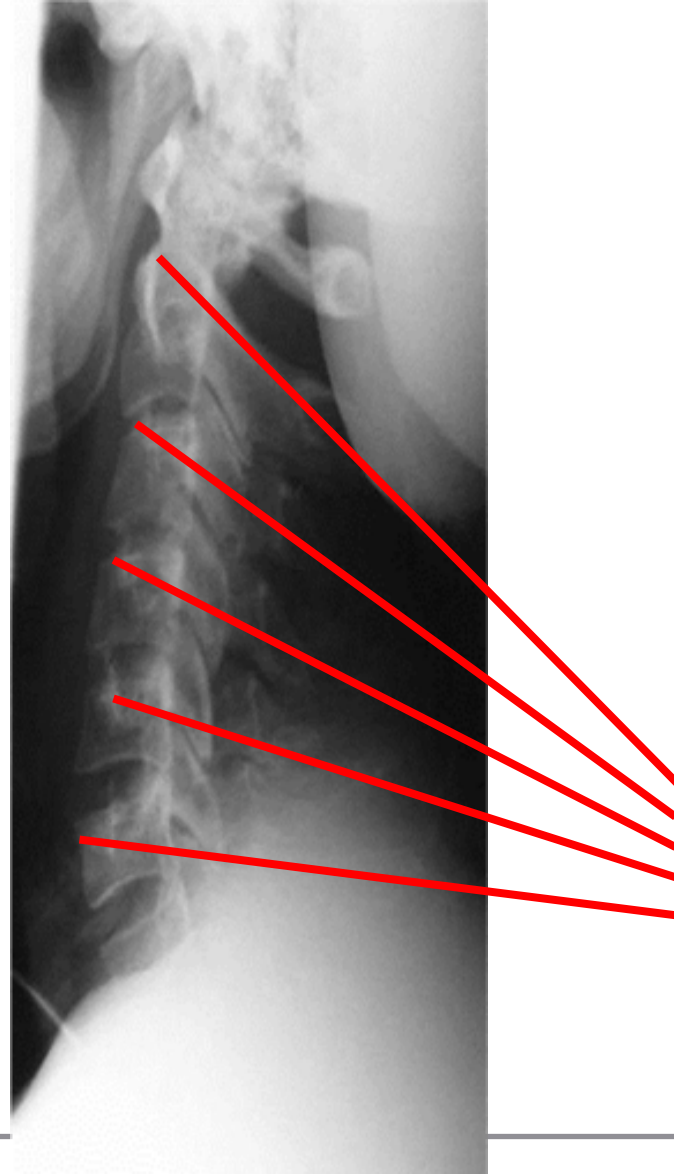
Imaging

- ADI
- Soft tissue
- Anterior body line
- Posterior body line
- Spino-laminar line



Imaging

- ADI
- Soft tissue
- Anterior body line
- Posterior body line
- Spino-laminar line
- Converging spinous processes



Accurate conclusions

We are using **bony examinations** to deduce **ligamentous injury**
Similarly this can correlate with a **neurological injury**

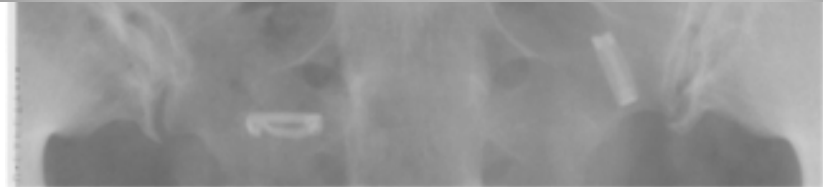


AP view

Blinking owl sign

Absent pedicle

? metastases



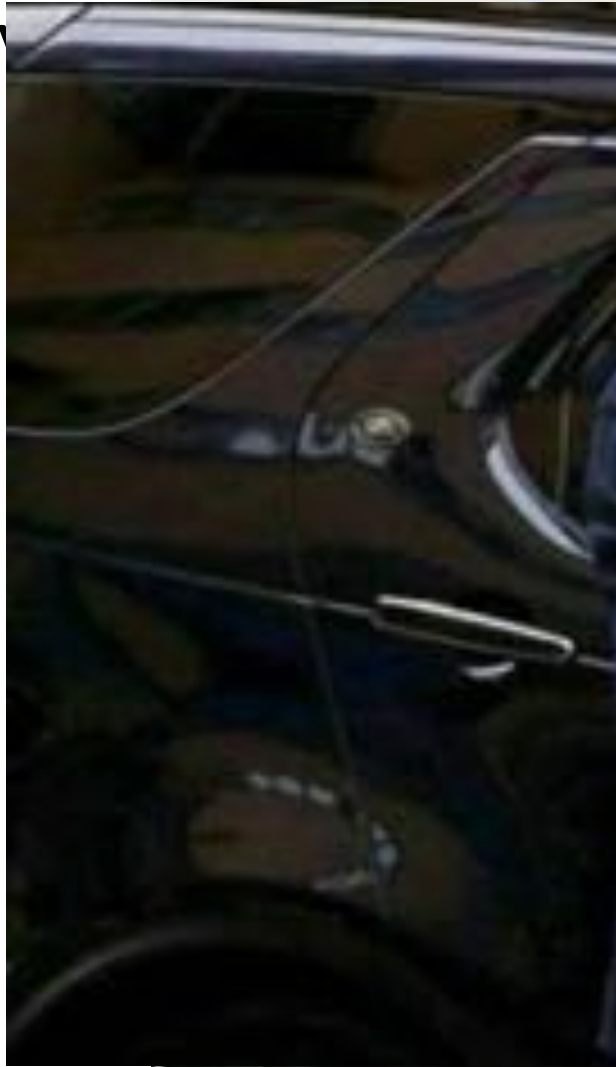
Case

16 year old girl

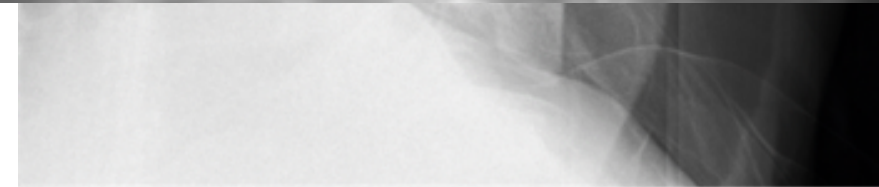
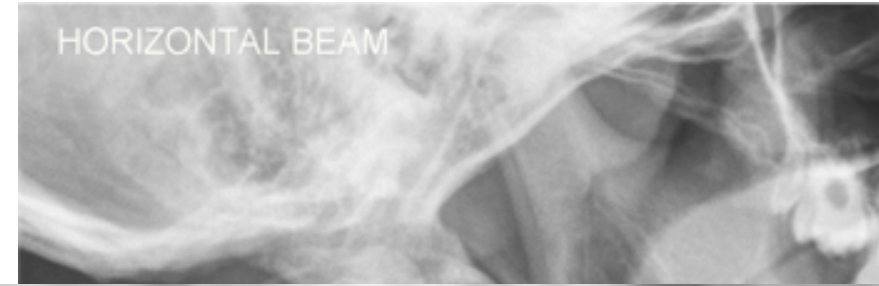
Severe mechanical backache



Always 2 v

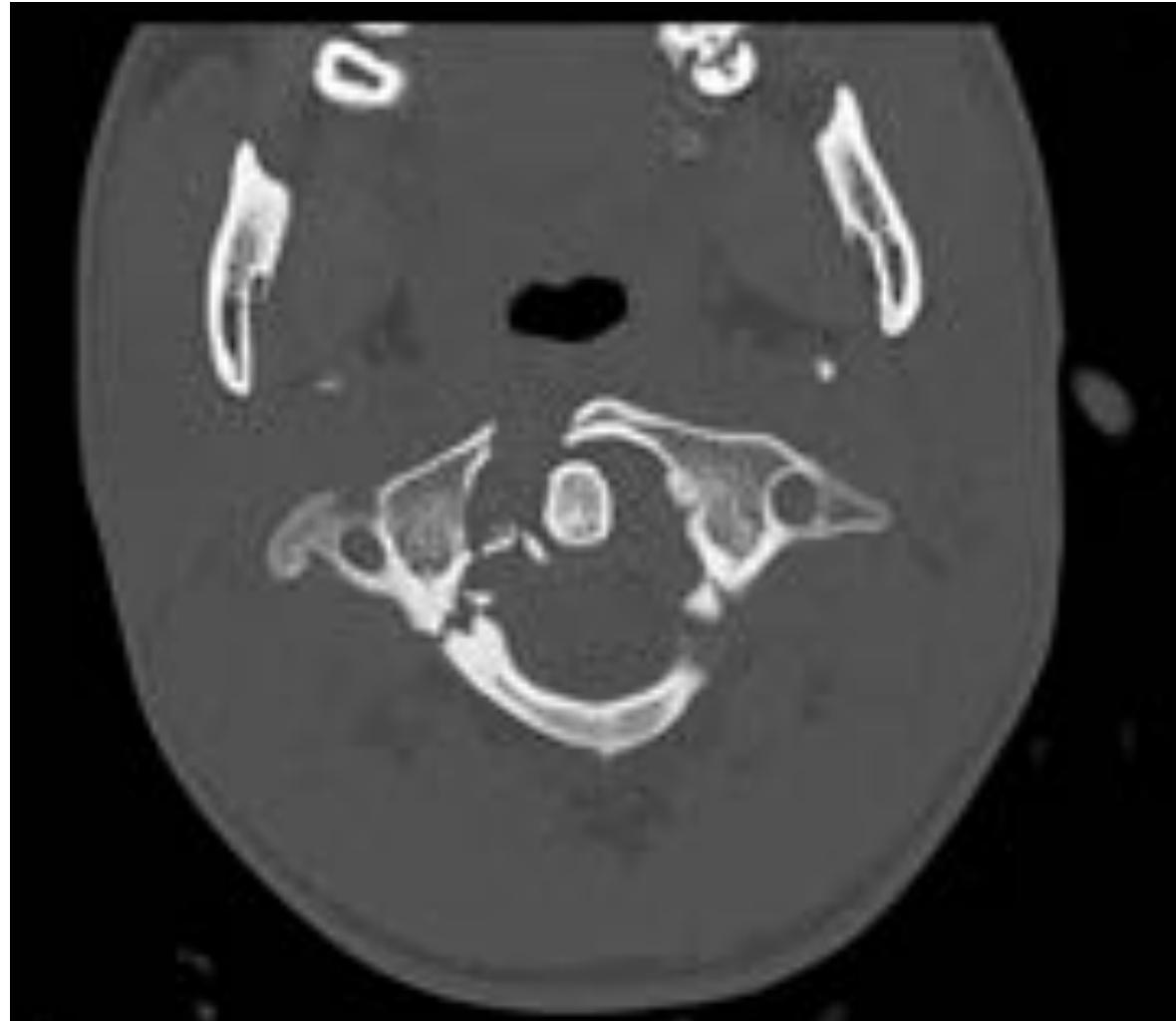


24 yr Male
Fell down flight of stairs
Neurologically intact
Severe neck pain



Open Mouth





Mechanical backache



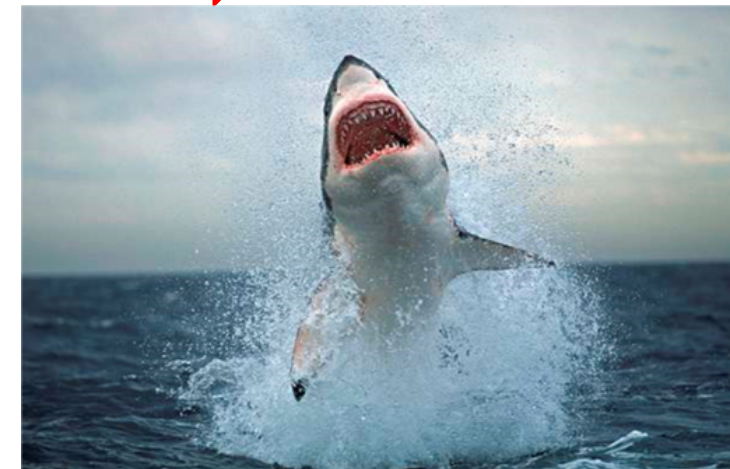
A FOOL WITH A TOOL IS STILL A FOOL

Grady Booch



SPINAL PATIENT

Initial presentation



SUMMARY

You are in a Level 1 District Hospital in an underserved area of the world

YOU CAN:

Accurate History

Examine properly

Interpret basic bloods and imaging

RED FLAGS

KNOW WHEN TO REFER ASAP



Thank you