

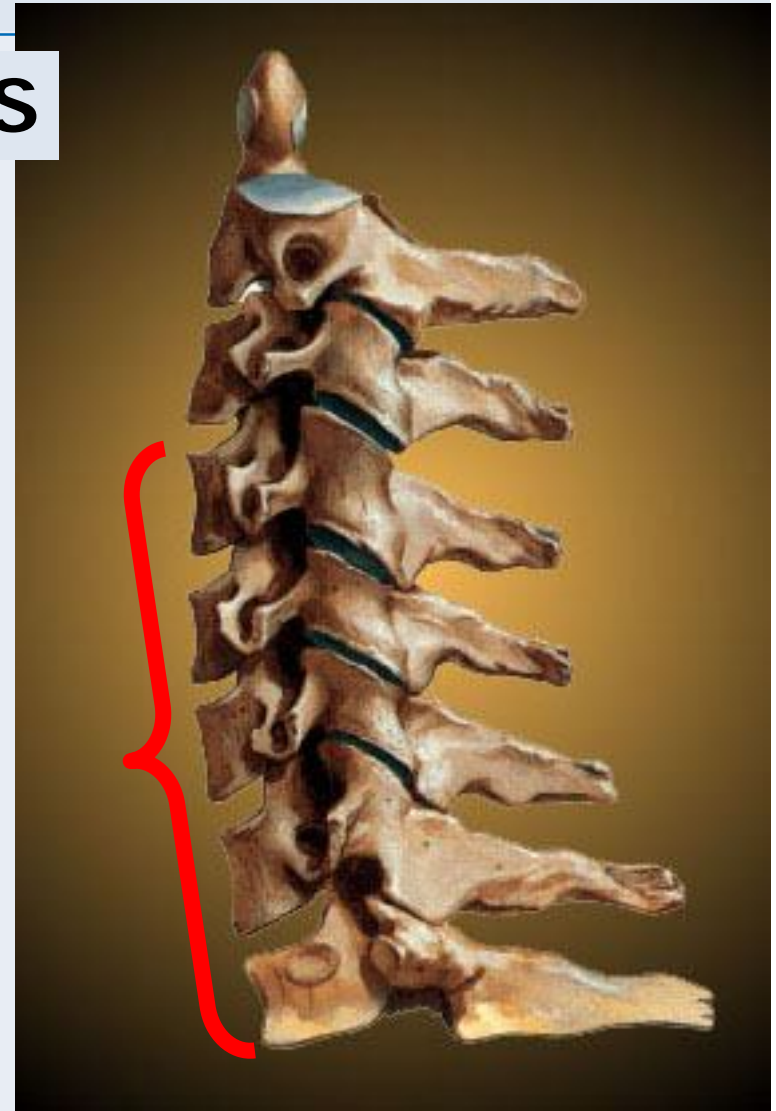
**THERAPEUTIC ALTERNATIVES**

**IN RECENT TRAUMATOLOGY**

**OF THE**

**LOWER CERVICAL SPINE**

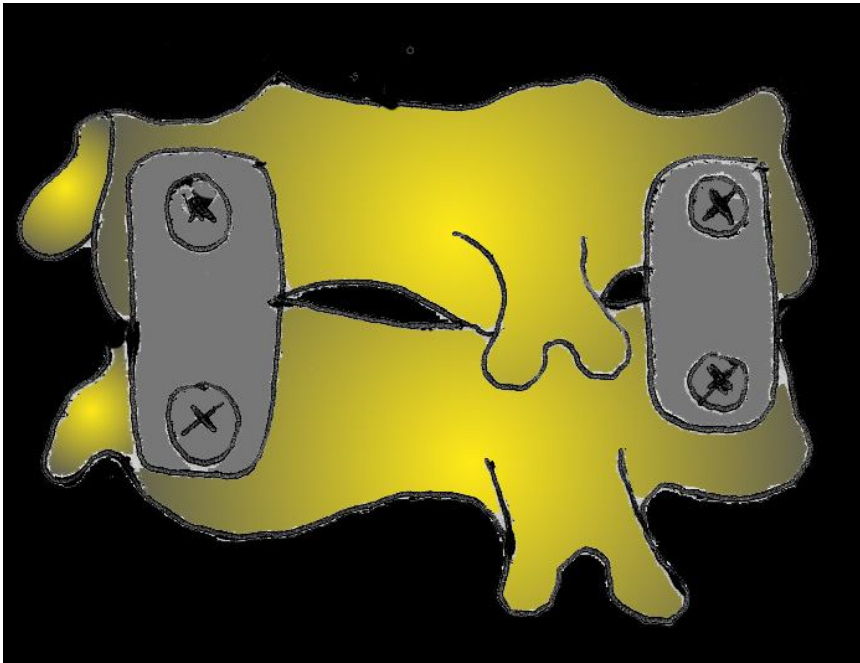
J-M.VITAL



Spinal Unit , Tripode , Bordeaux , FRANCE

## POSTERIOR SURGERY

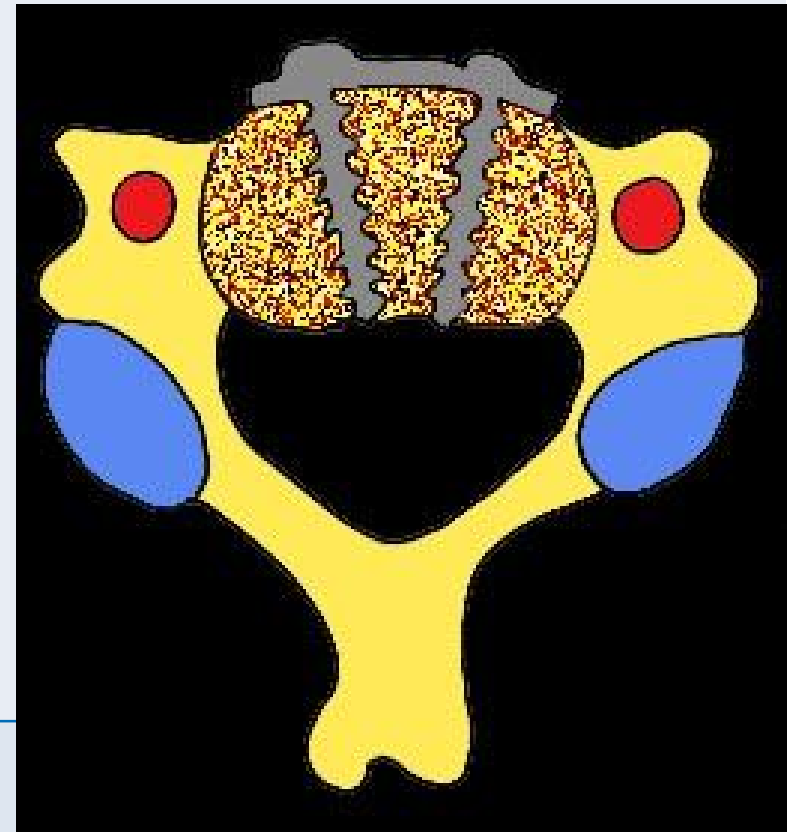
---

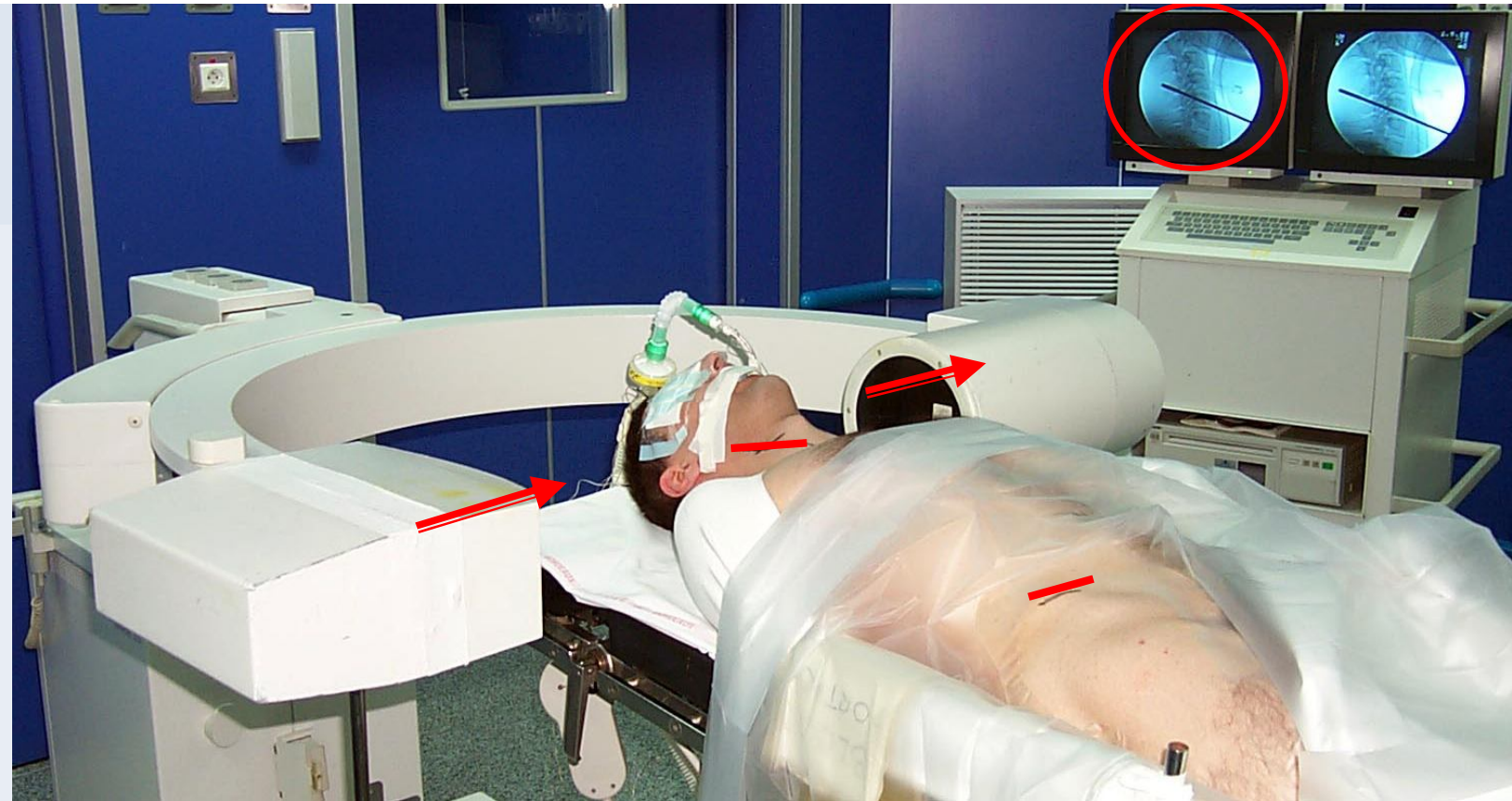


## COMBINED SURGERY

## ANTERIOR SURGERY

---



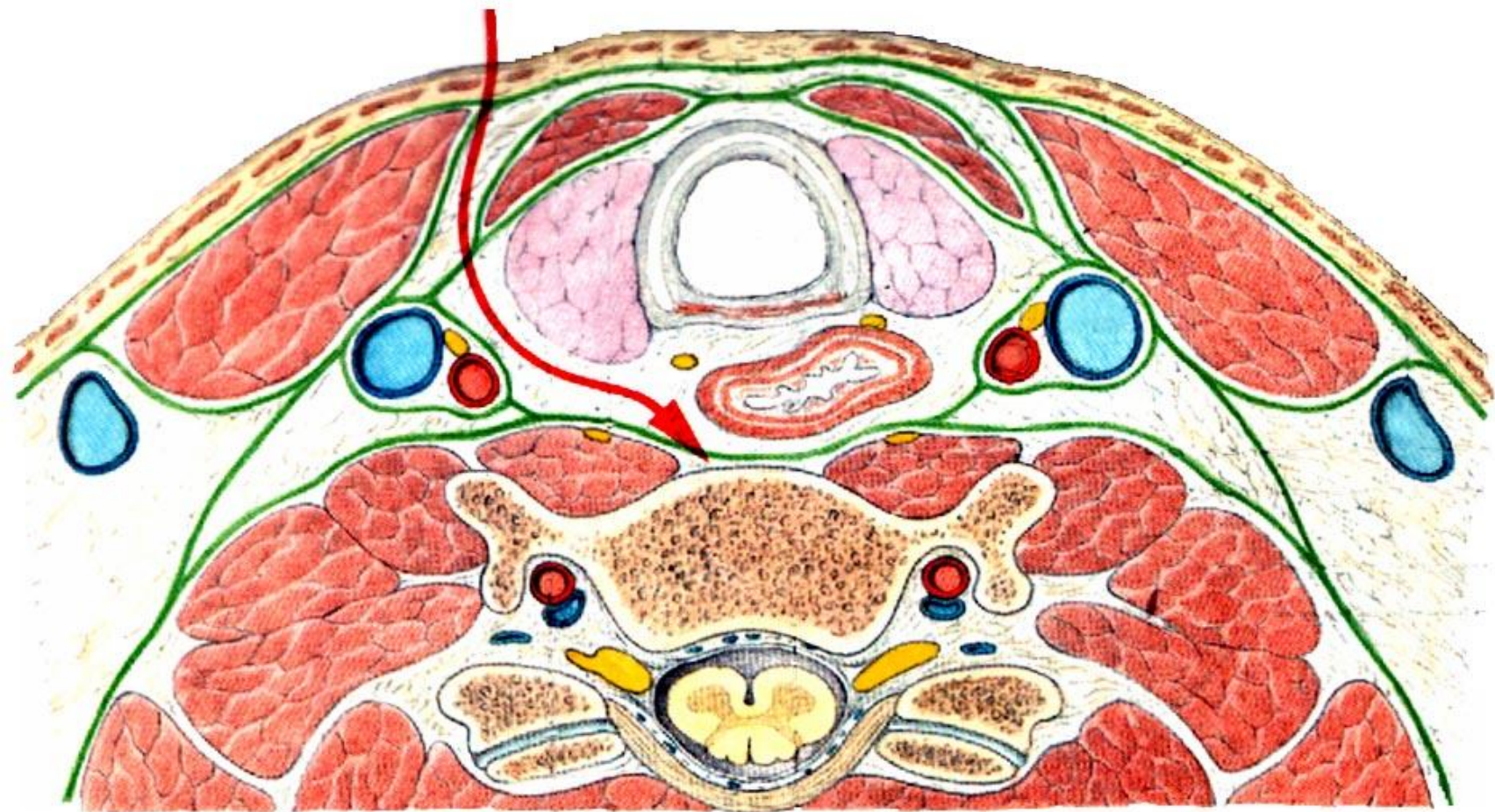


## ADVANTAGES OF THE ANTERIOR APPROACH



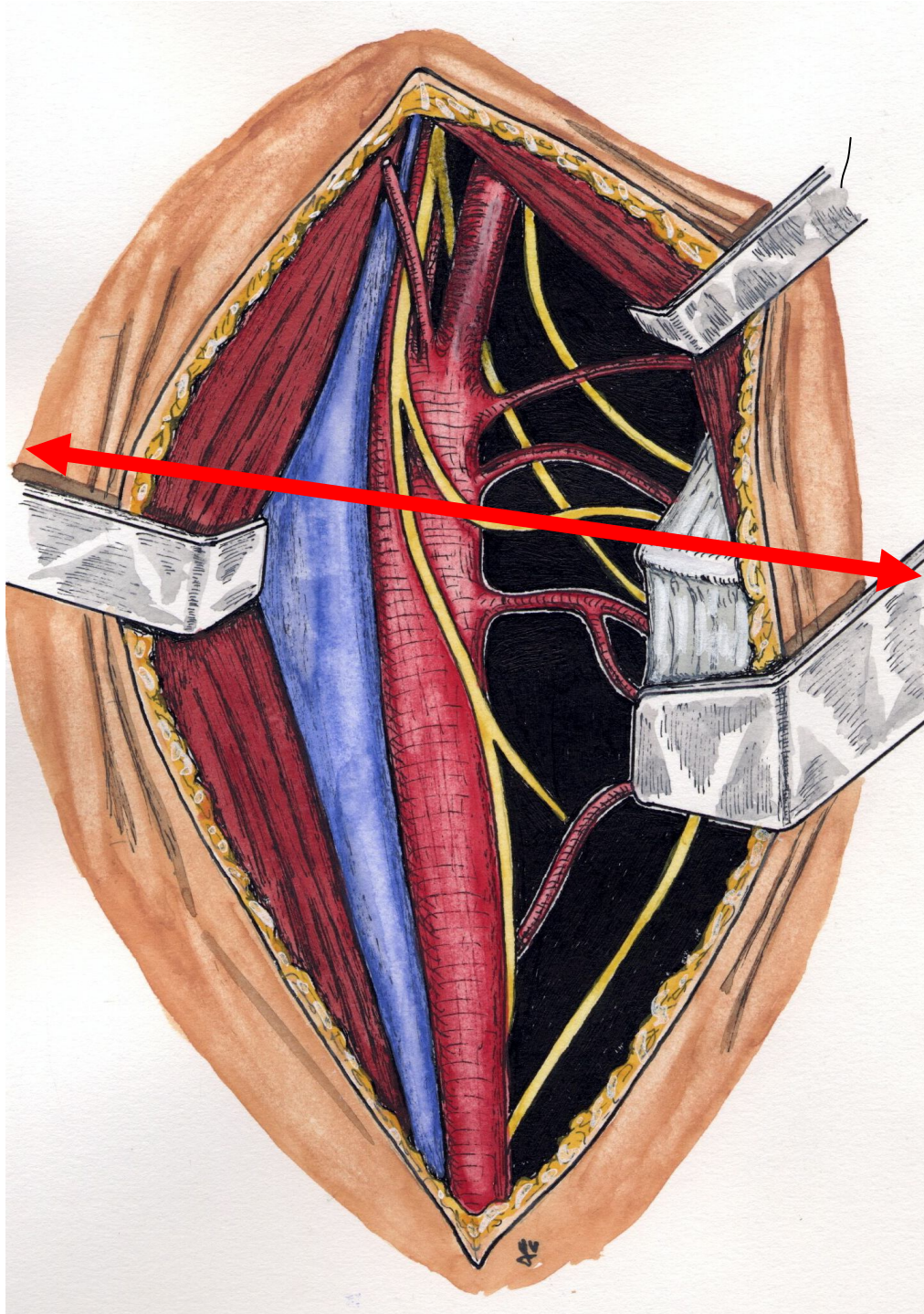
- No turning of the patient required
- Direct exposure of the body and discs
- Interbody arthrodesis
- Stabilization by screw-plate system







# RIGHT APPROACH



# Graft without internal fixation

**STAUFFER**

100% instability (16 c.)

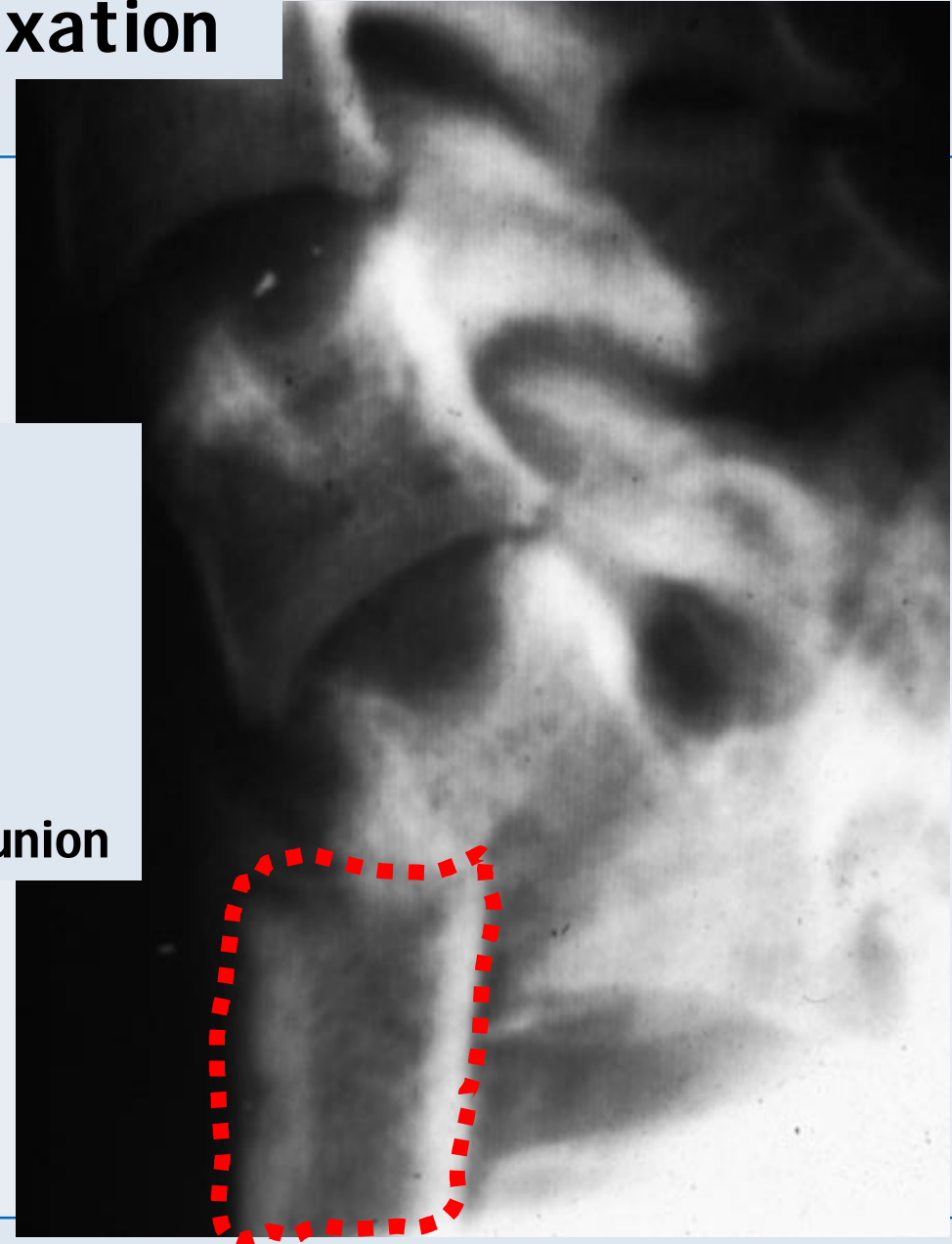
**GREGORY**

100% Graft displacement

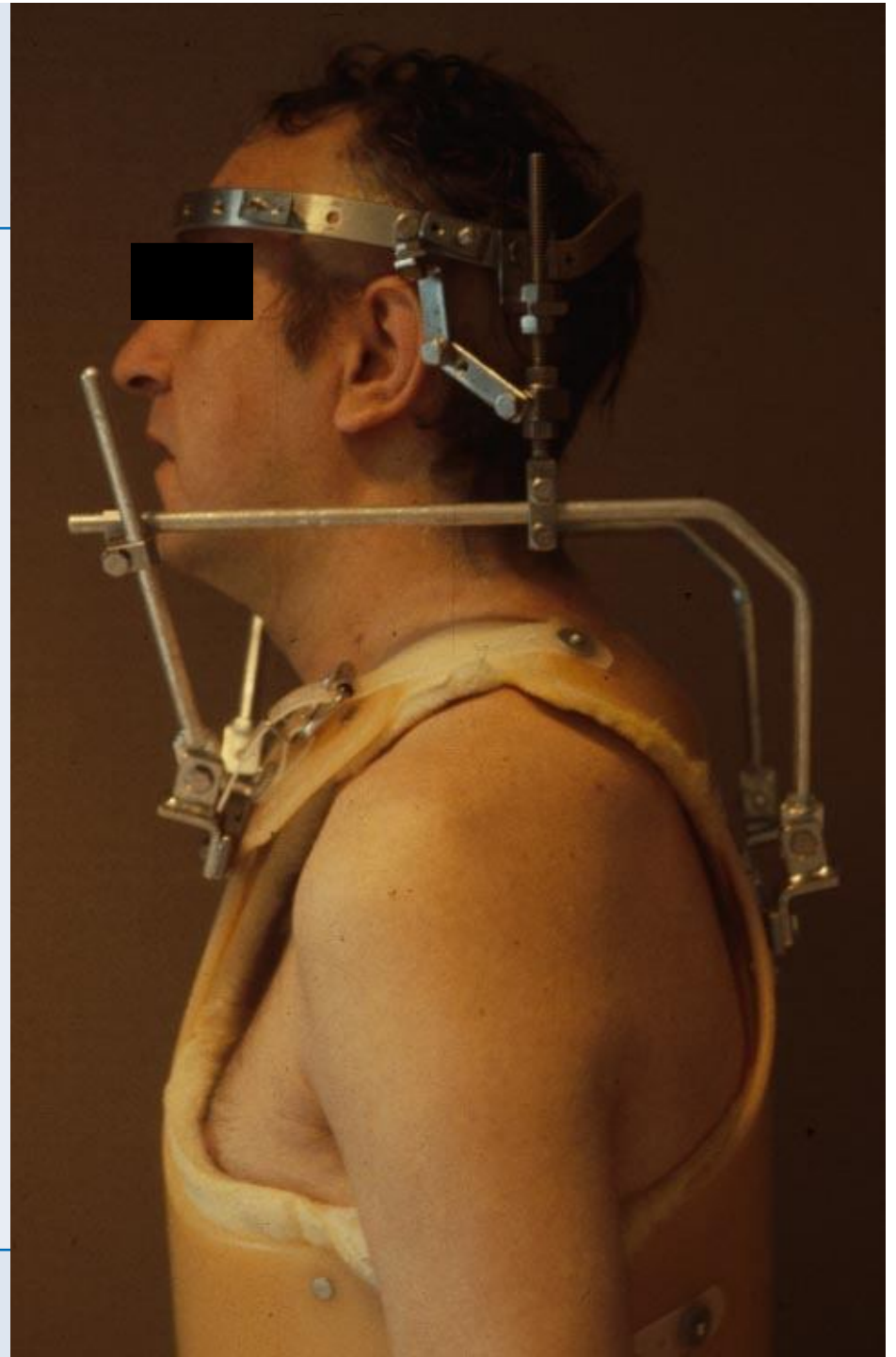
**BOHLMAN**

Single level:5% non union

Multiple level:15% non union



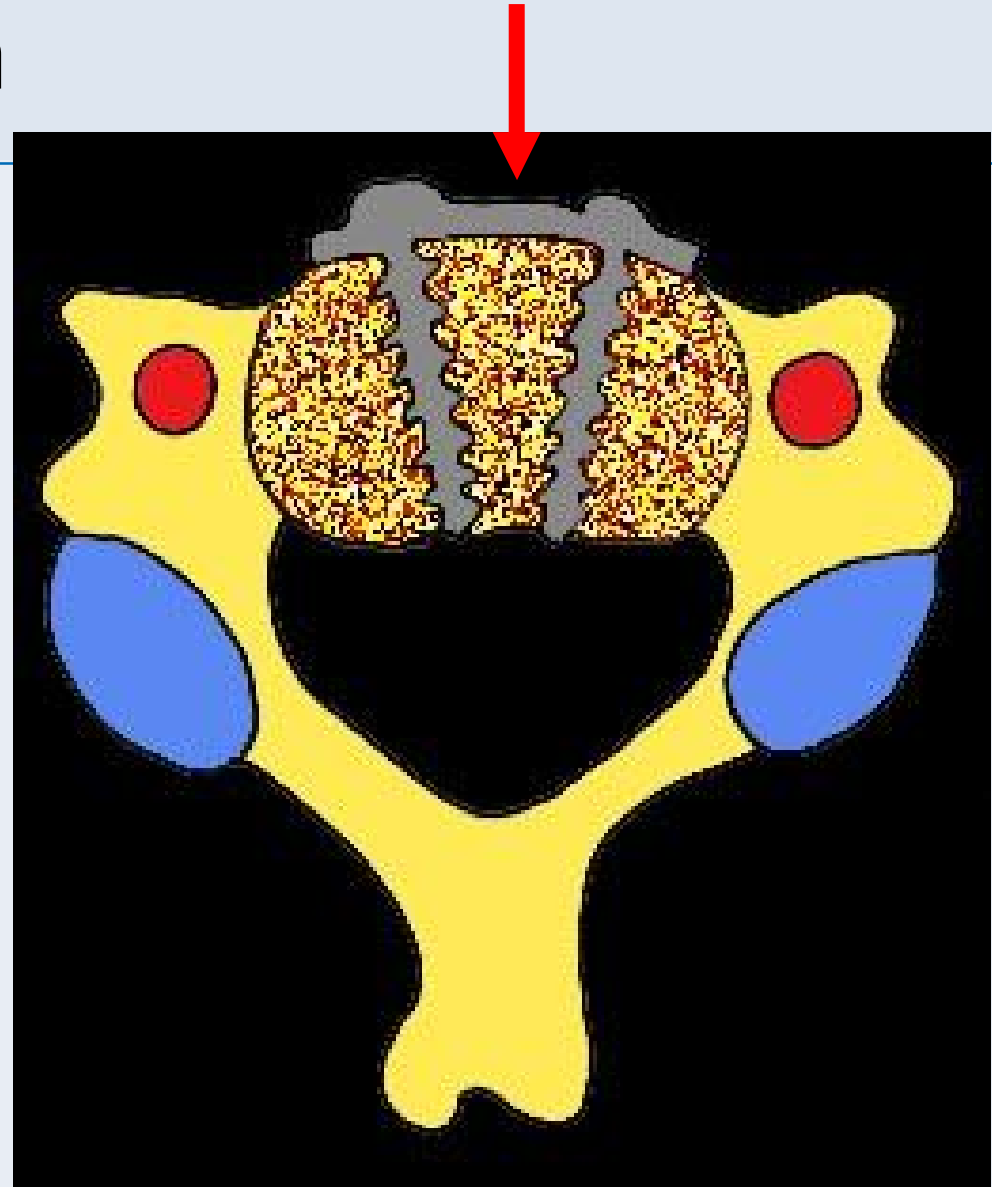






# Internal Fixation

OROSCO (1970)  
SENEGAS (1971)  
TSCHERNE (1979)  
BOELHER (1979)  
CASPAR (1982)  
MORSCHER (1986)



**1979 - 1999: 597 cases**

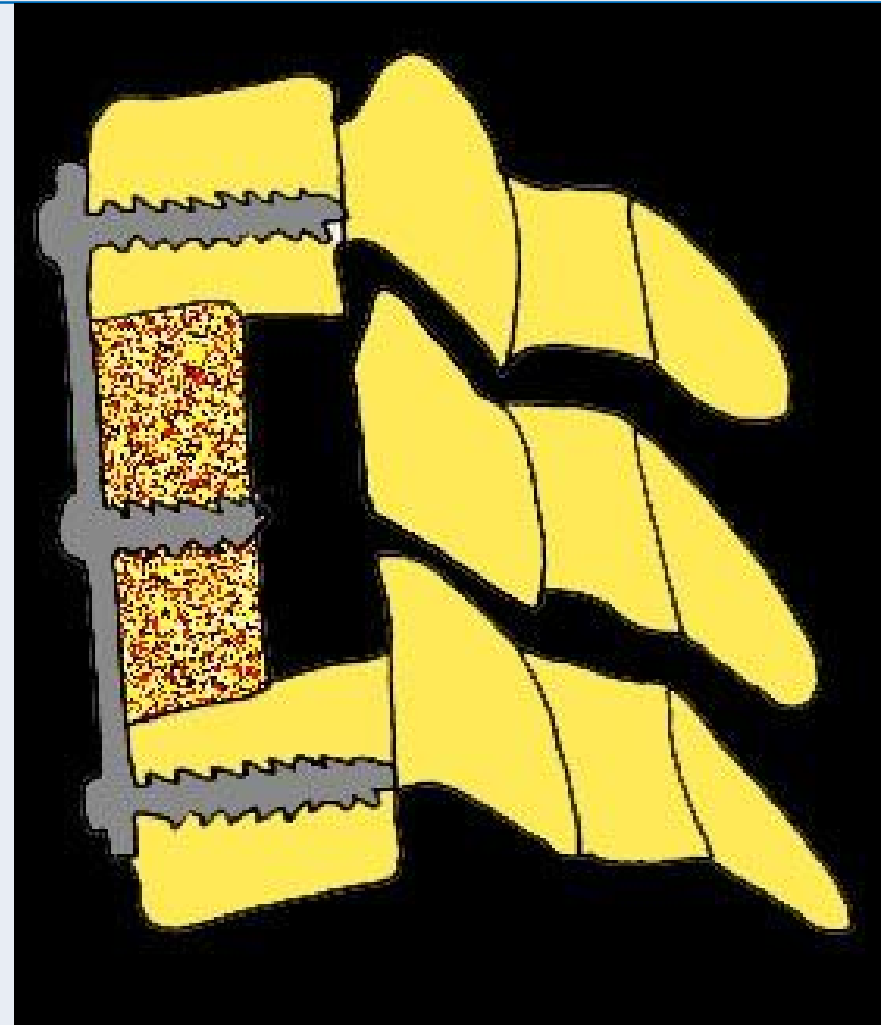
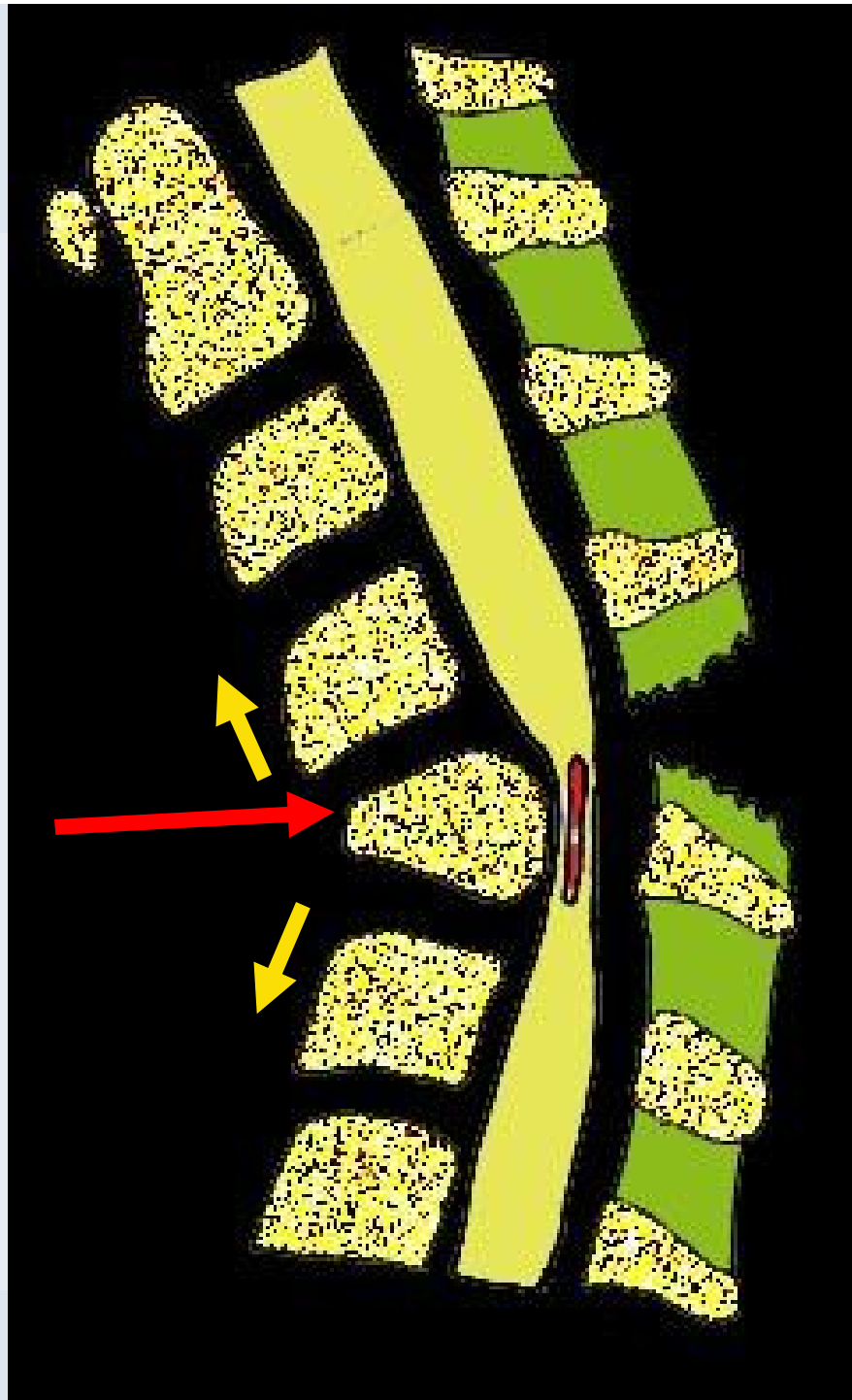
Dislocation and severe sprains	304	(51%)
Tear drop	119	(20%)
Burst fractures	118	(20%)
Others fractures arc post. (pillar, fracture separation of the pillar)	53	( 9%)

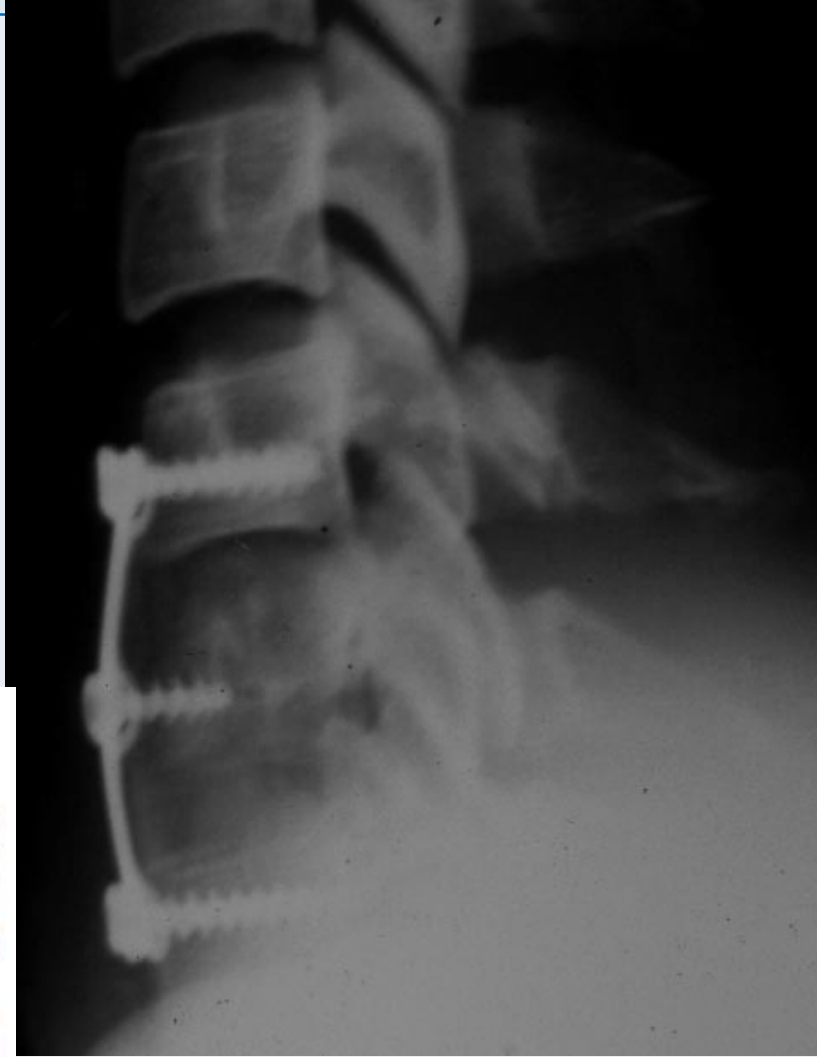
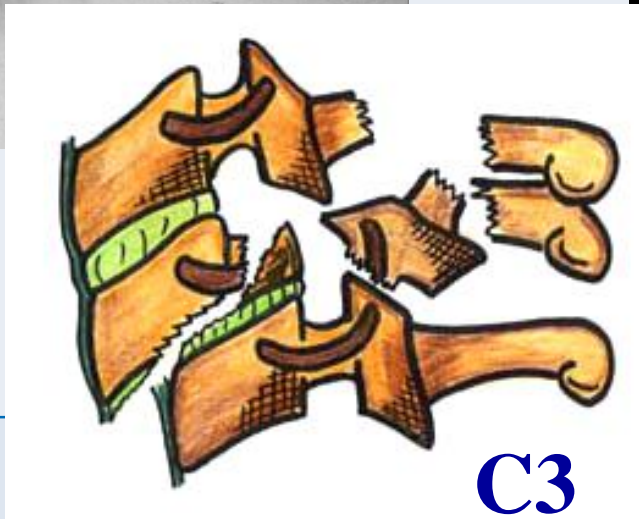
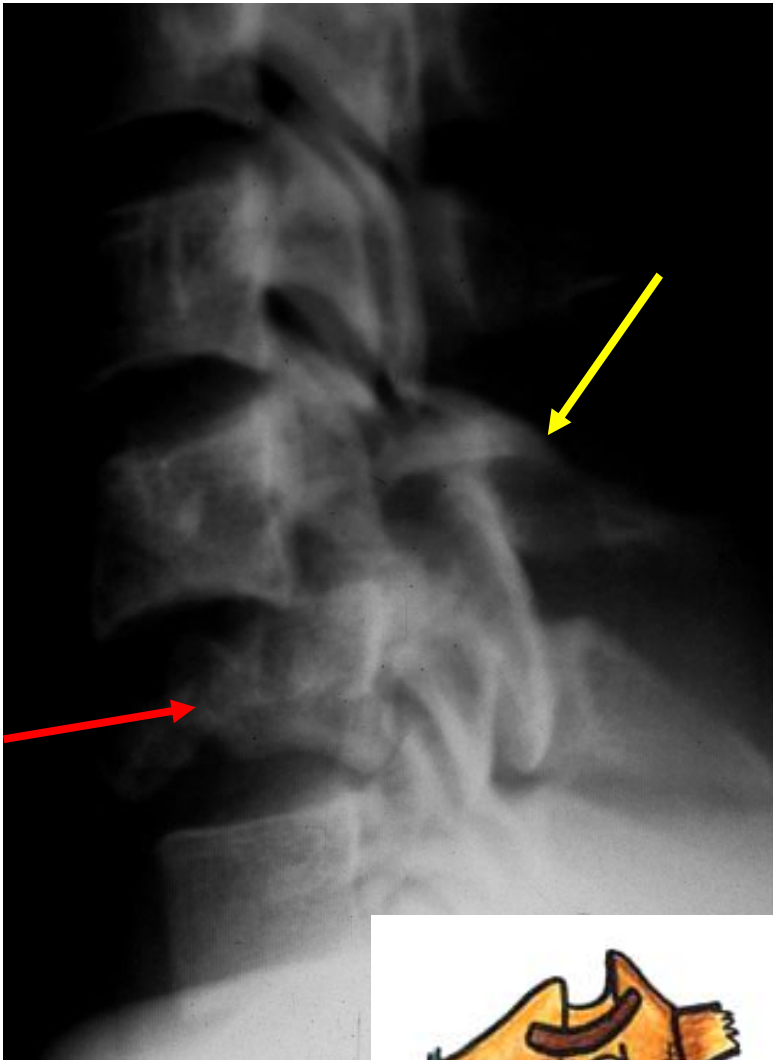
Tetraplegia	435	(73%)
Without neural deficit	162	(27%)



**TRAUMAS WITH NEUROLOGIC DEFICIT**

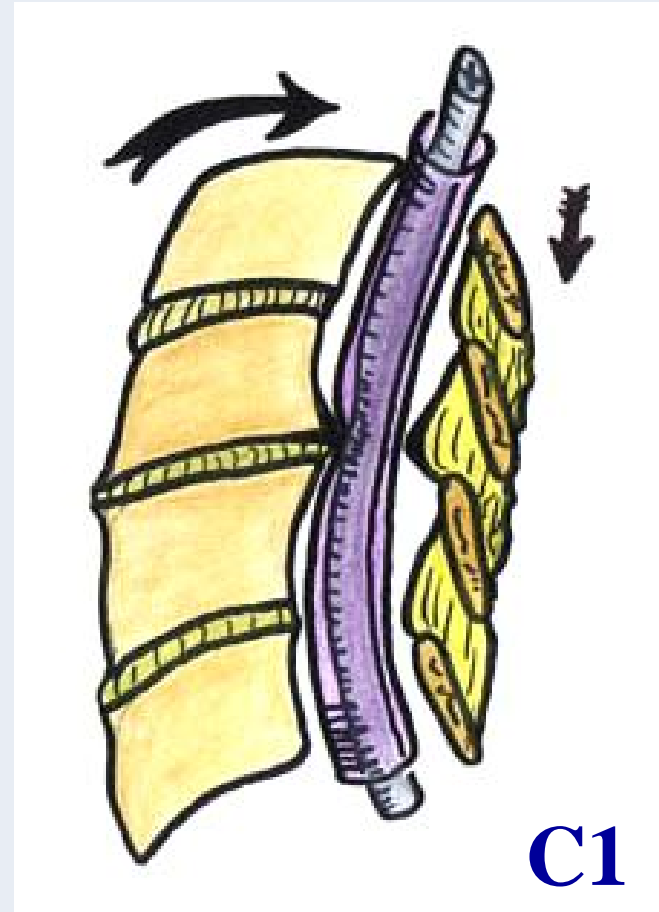






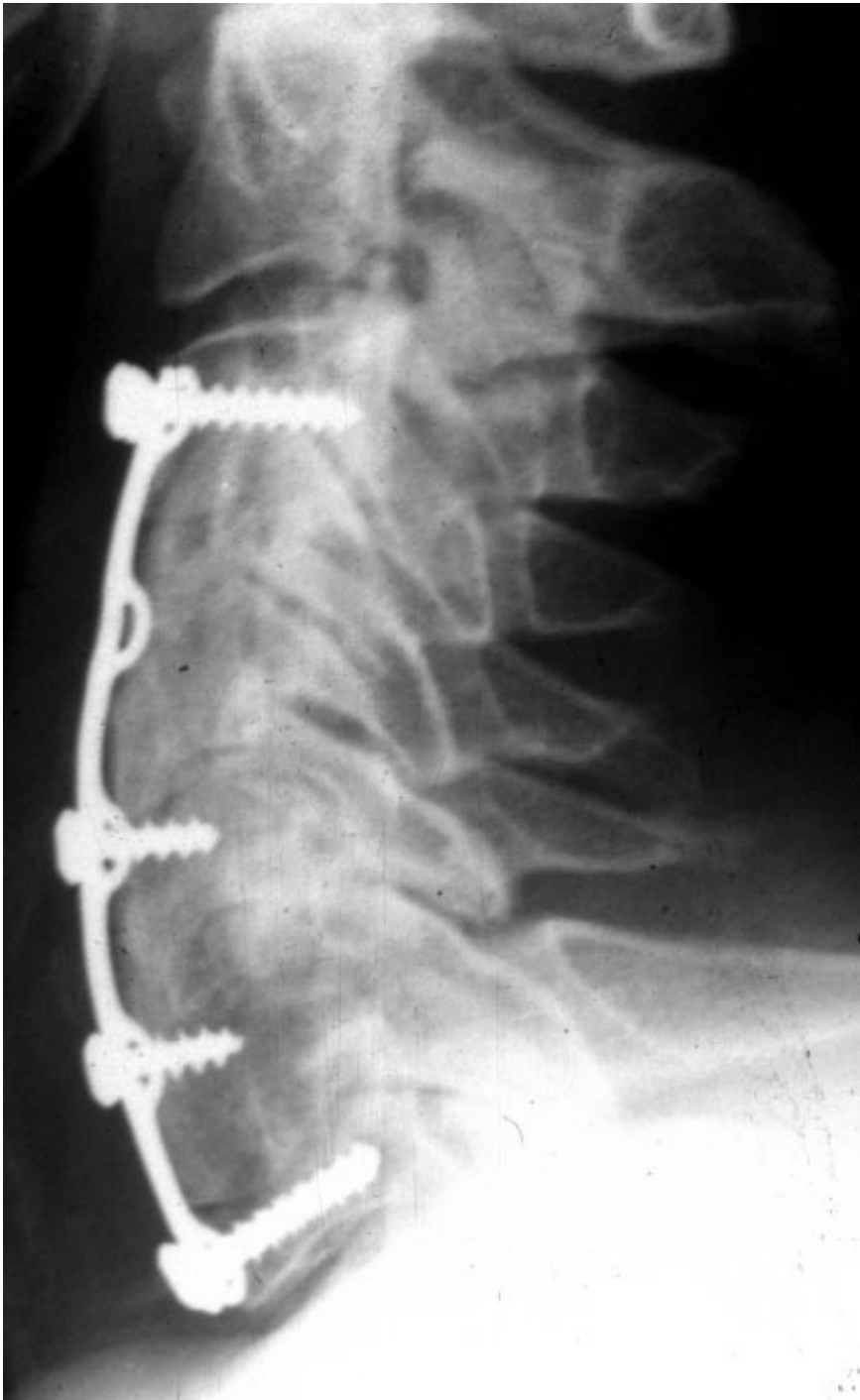
(ARGENSON)

# Hyperextension in case of Narrow Cervical Canal





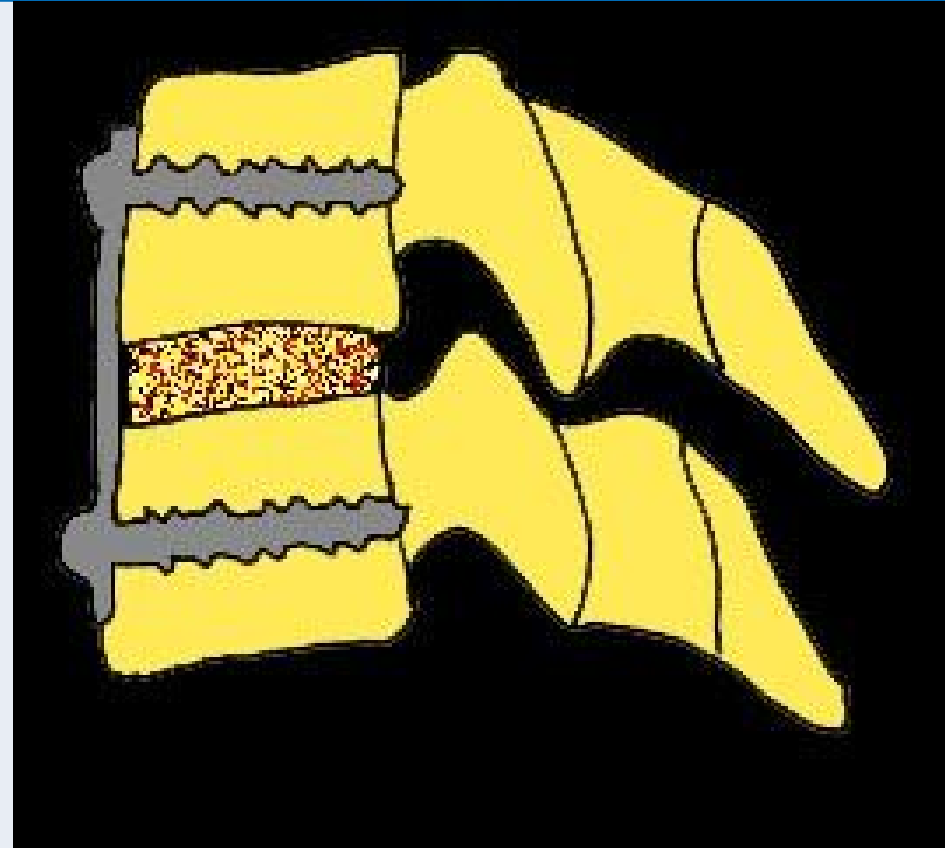




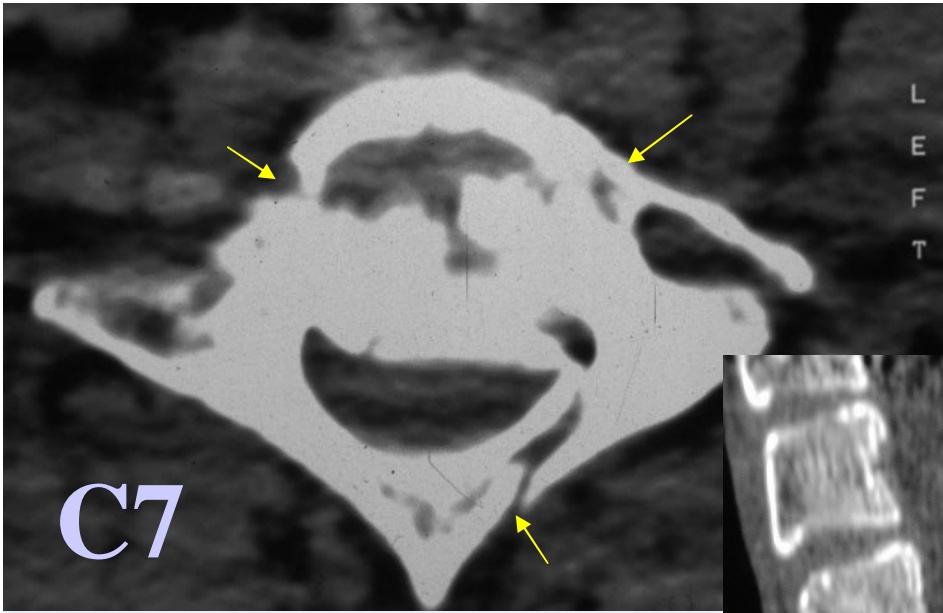
**ANTERIOR**

**SURGICAL**

**TREATMENT**



Depending on THE NATURE OF THE LESION



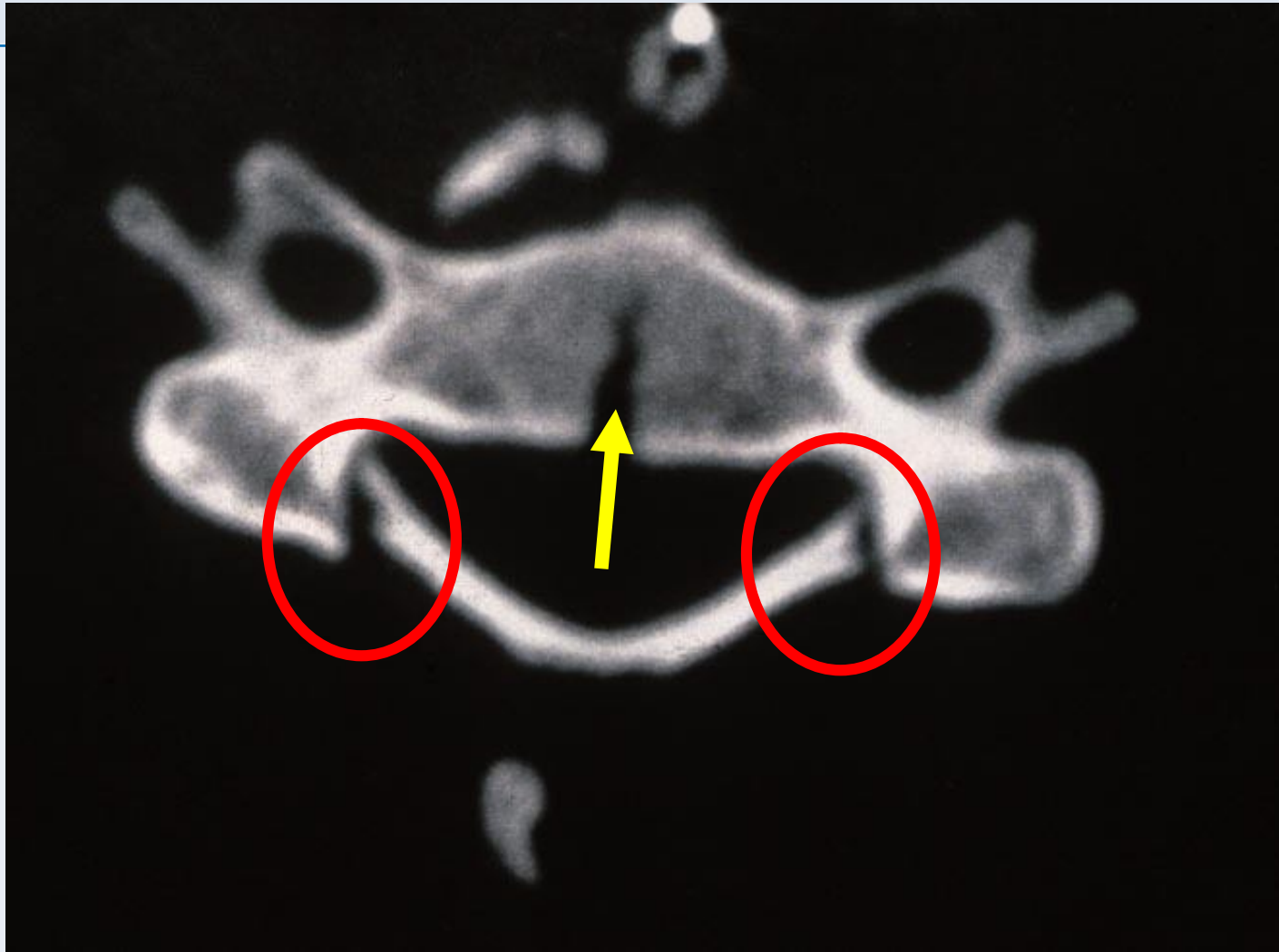
**FRACTURE TYPE BURST (A2)**



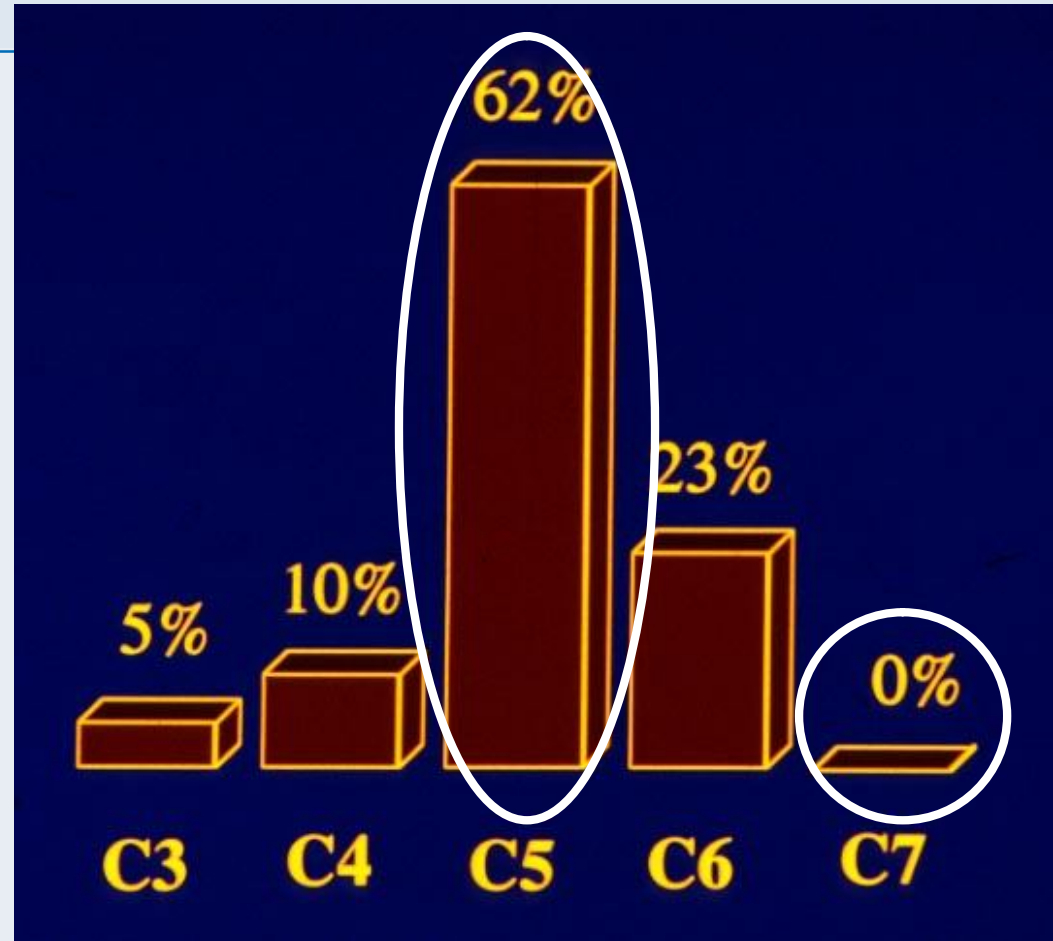
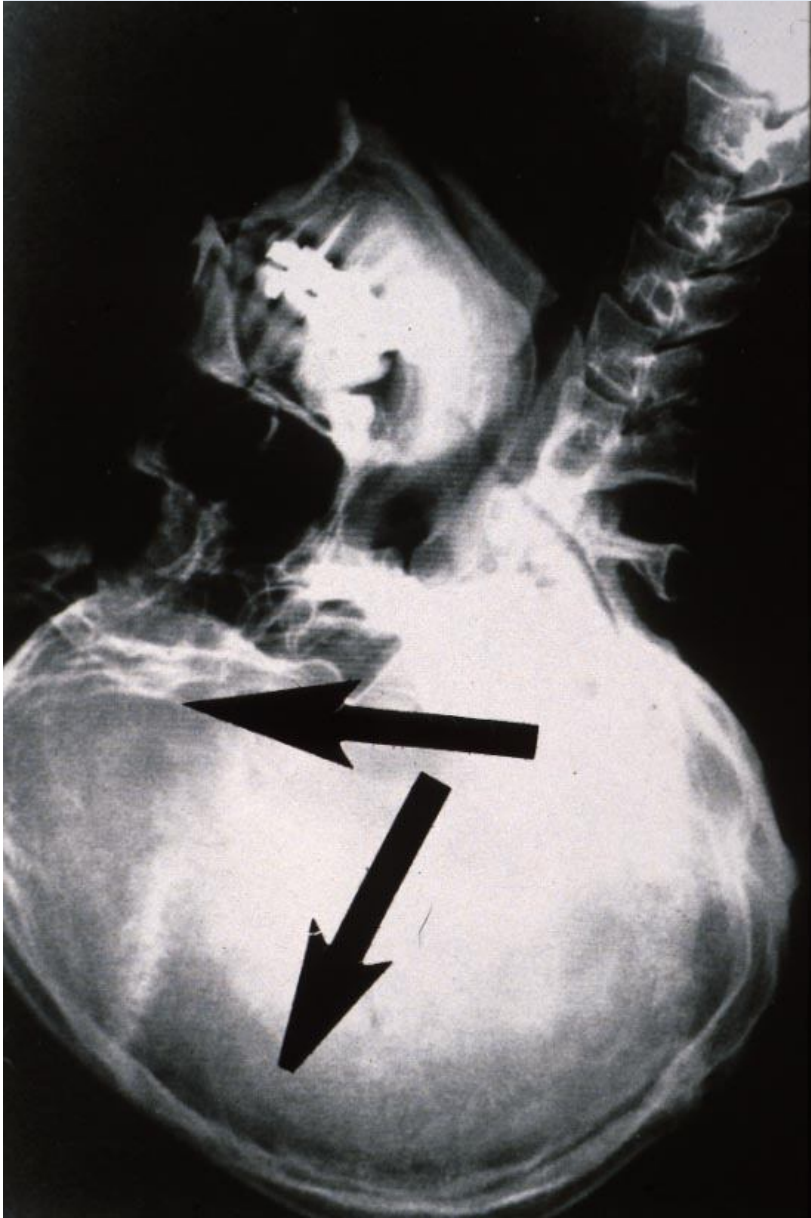
**TEAR DROP**

**FRACTURE**

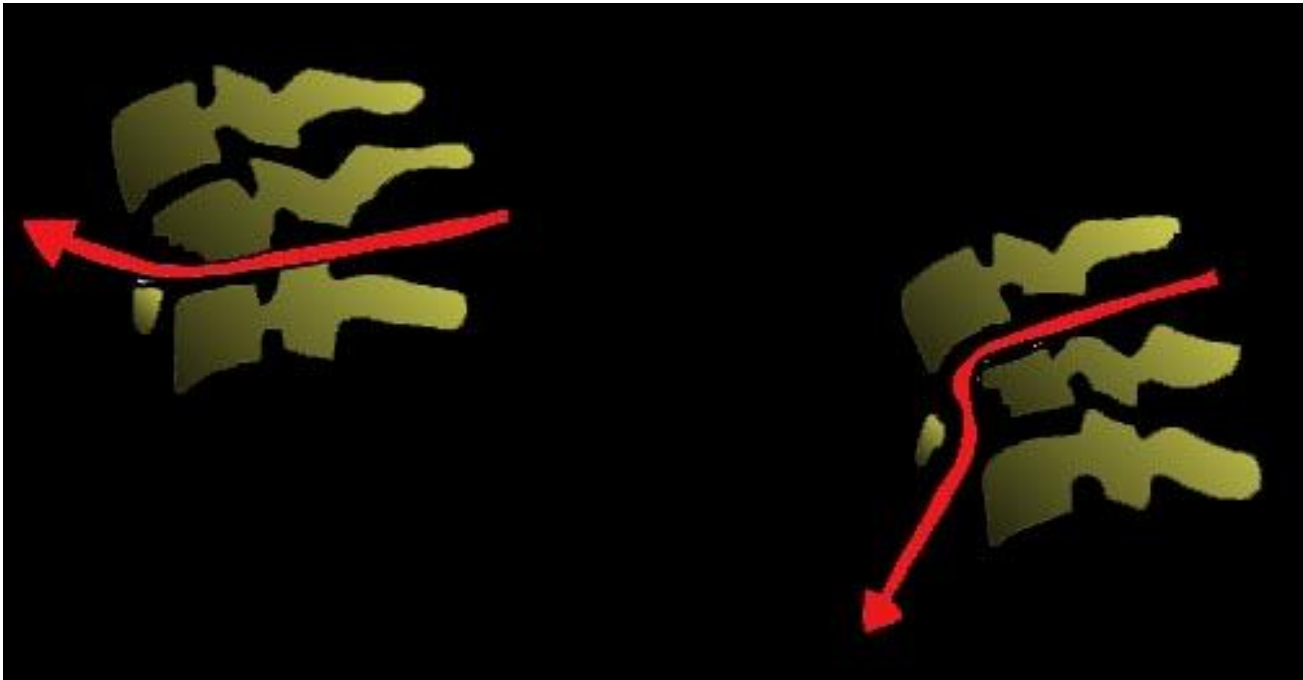




60 CASES



Luc CARI OU Thesis , 1996

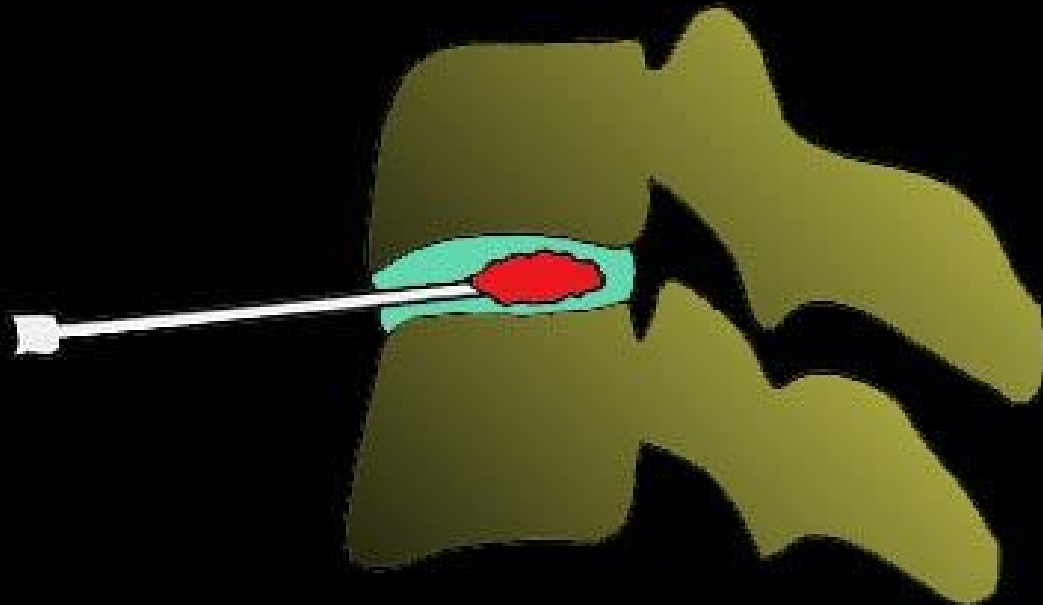


## DISCOGRAPHY

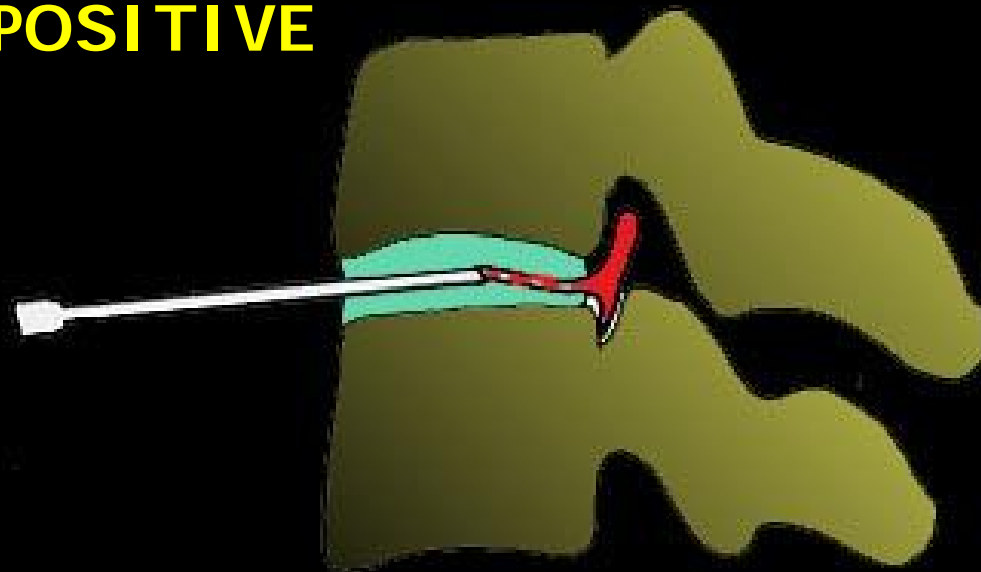




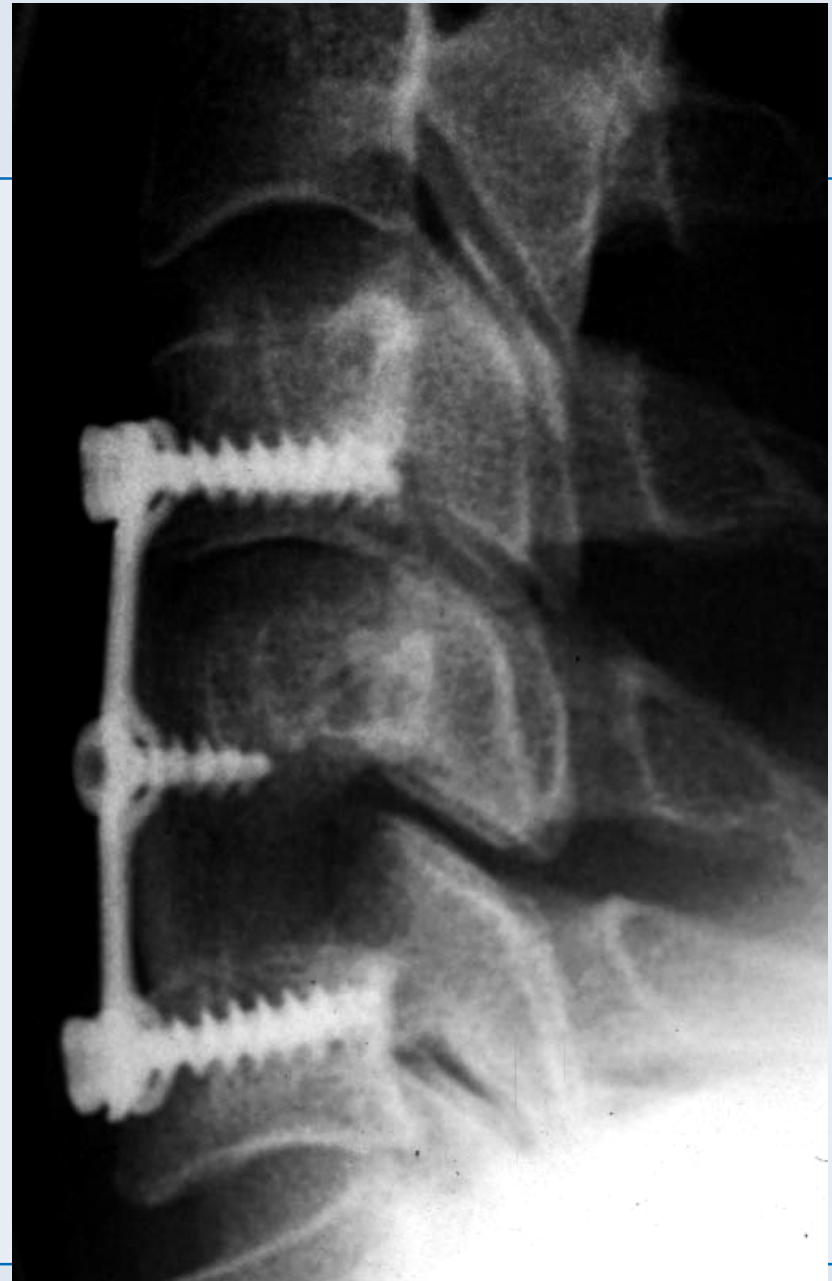
**NEGATIVE**



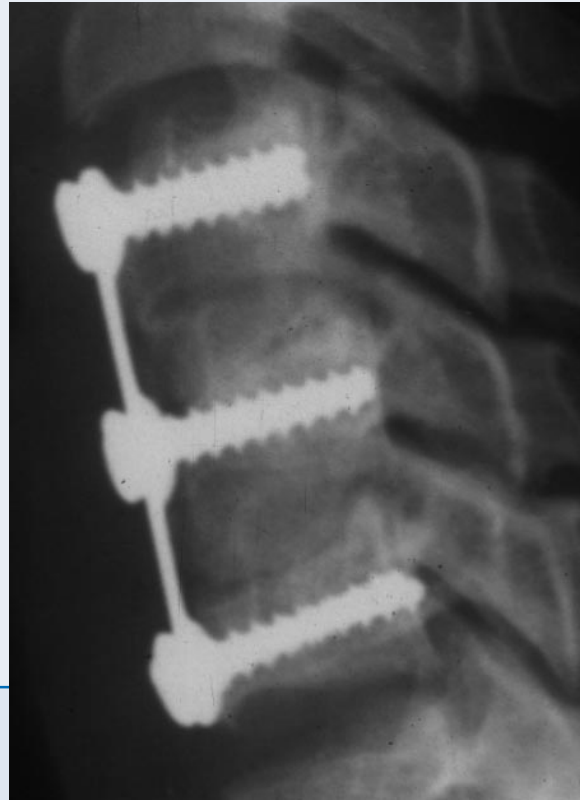
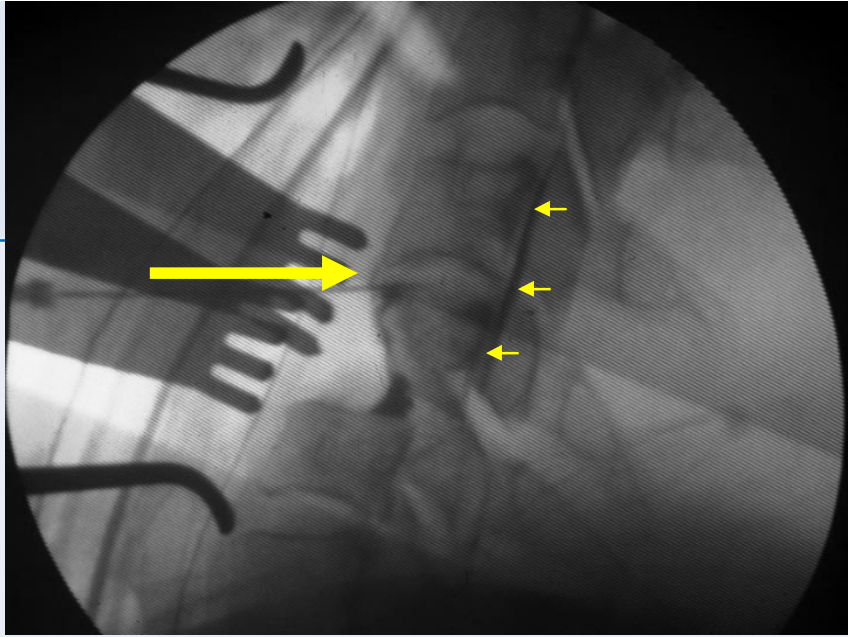
**POSITIVE**

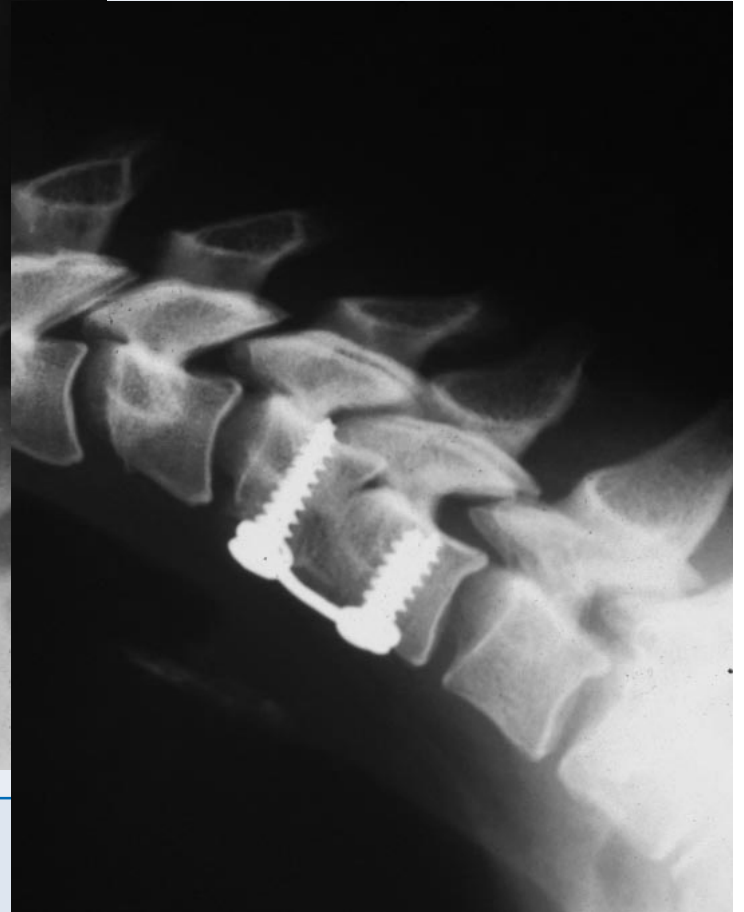
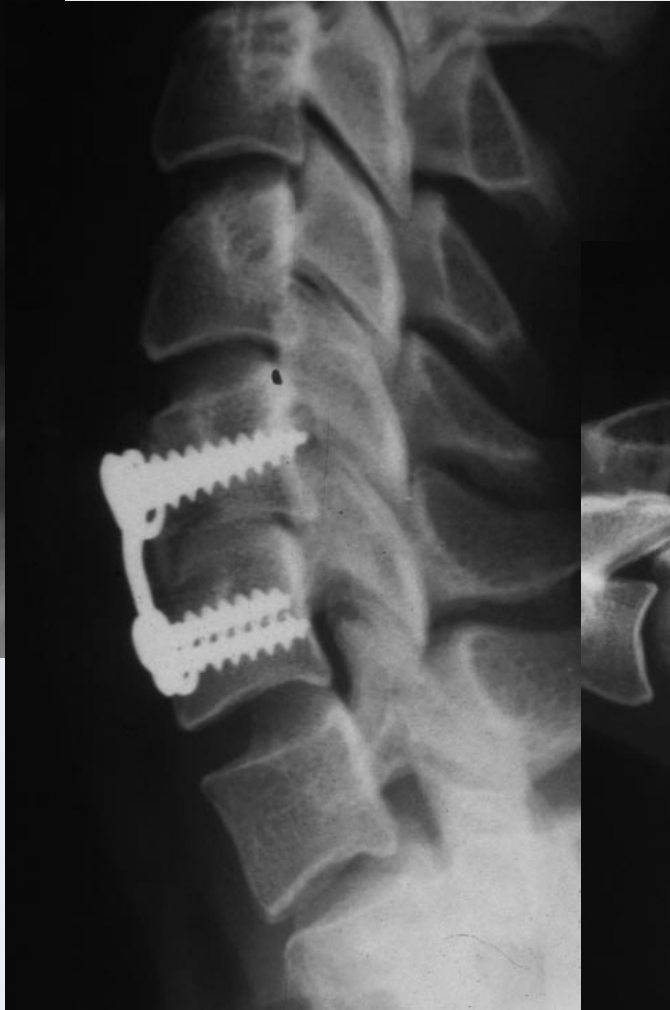


**IF NEUROLOGIC DEFICIT**



**CORPECTOMY**

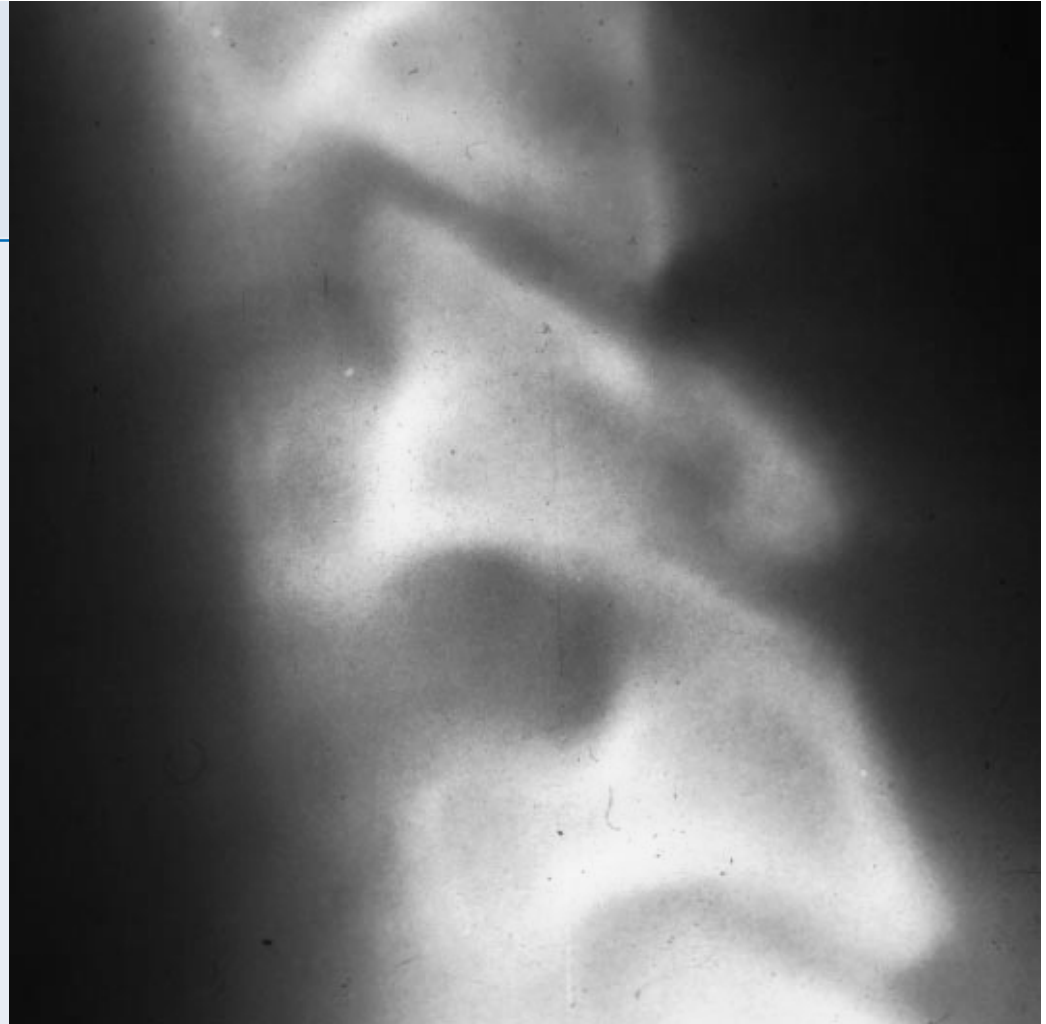






# **BORDERLINE INDICATIONS**

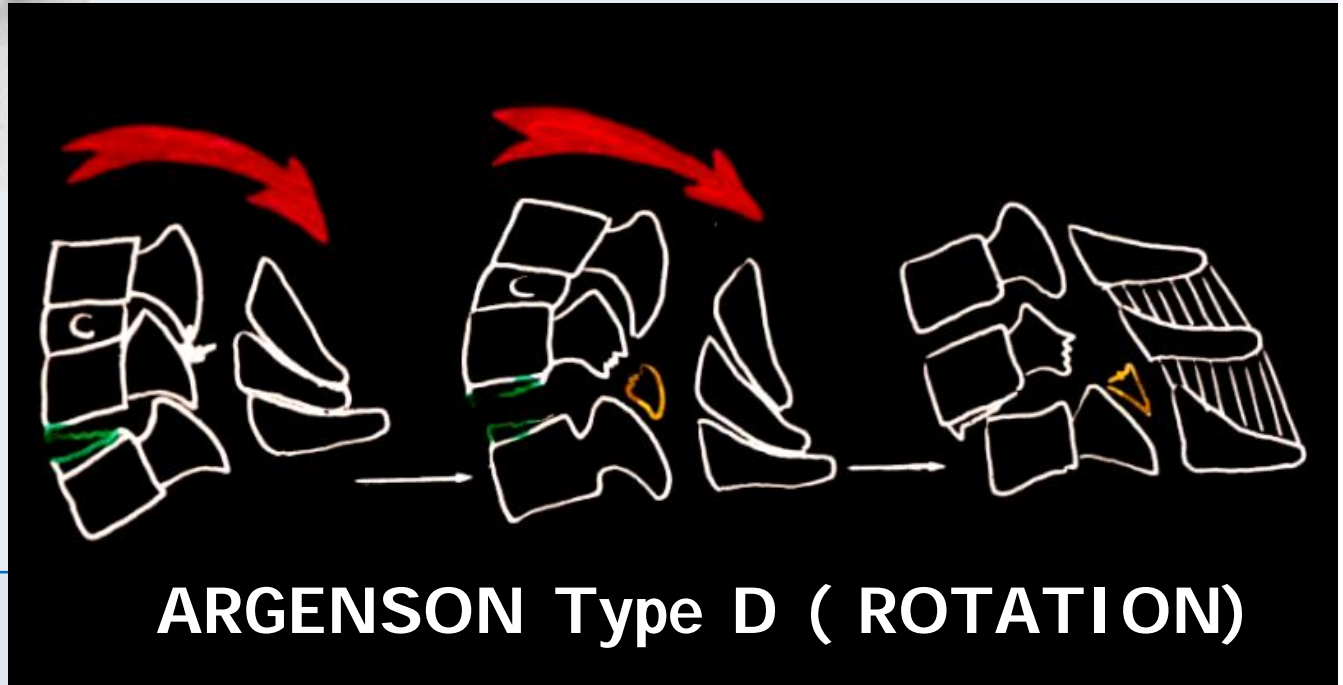
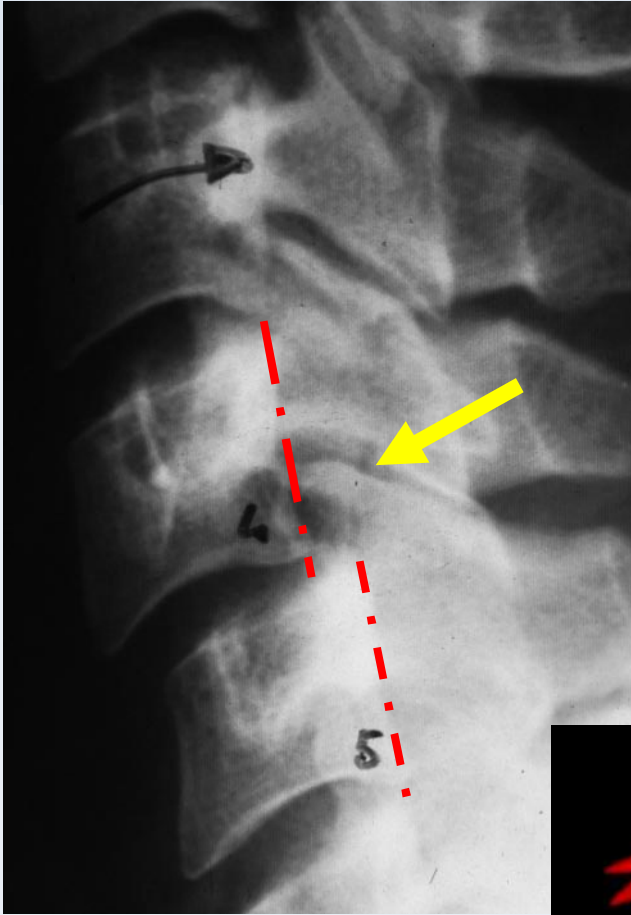
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**. Articular process fracture**

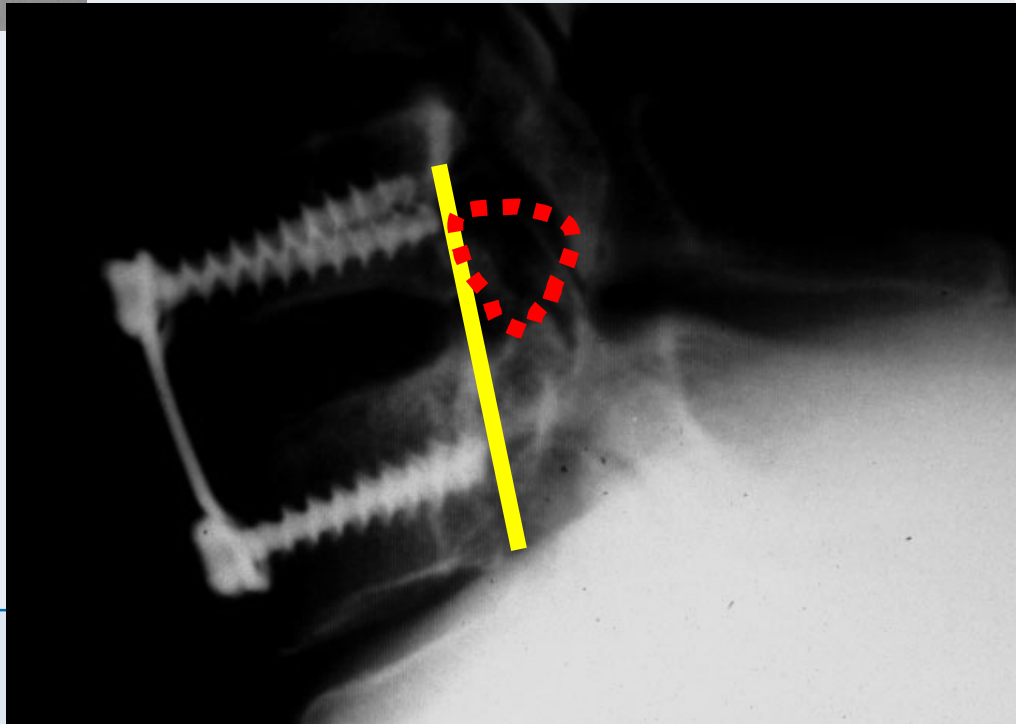
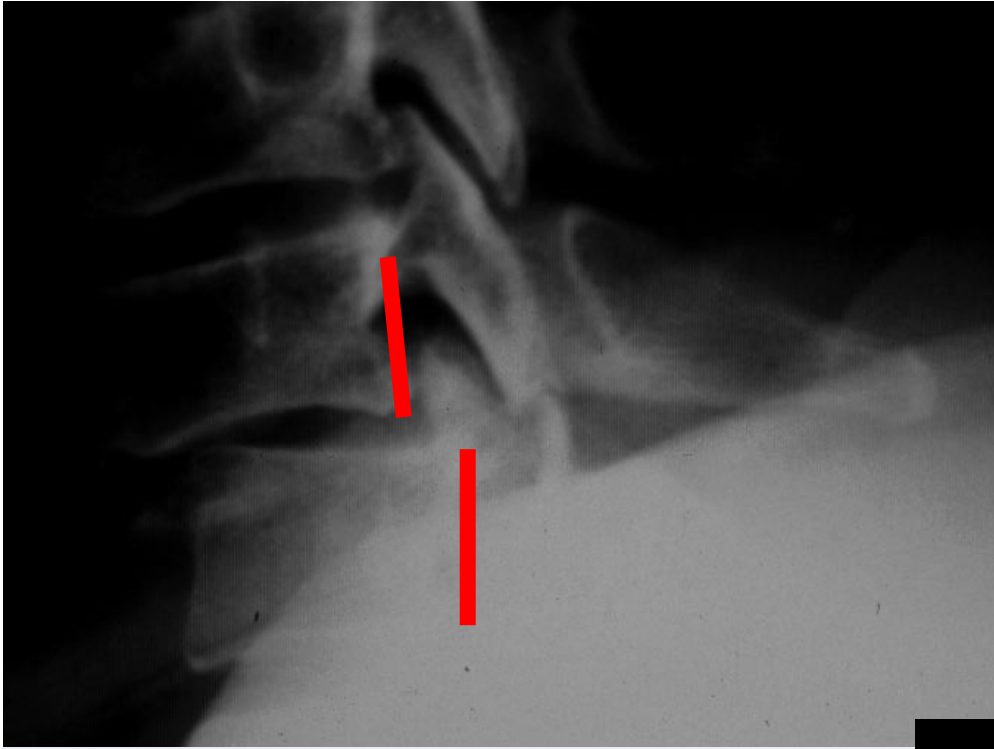
**Articular mass fracture separation**

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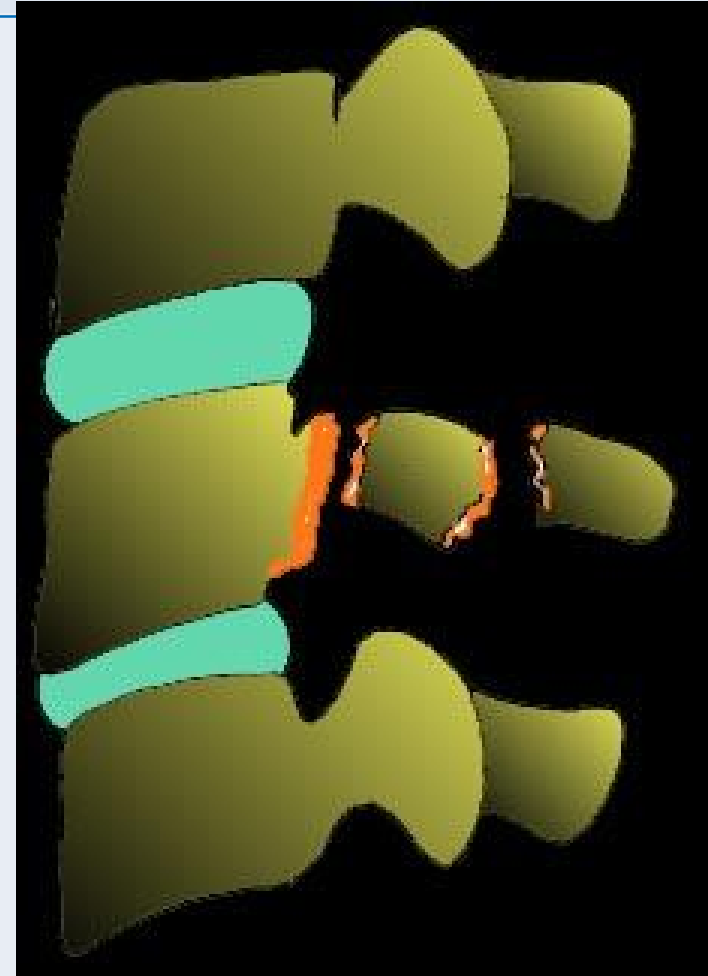
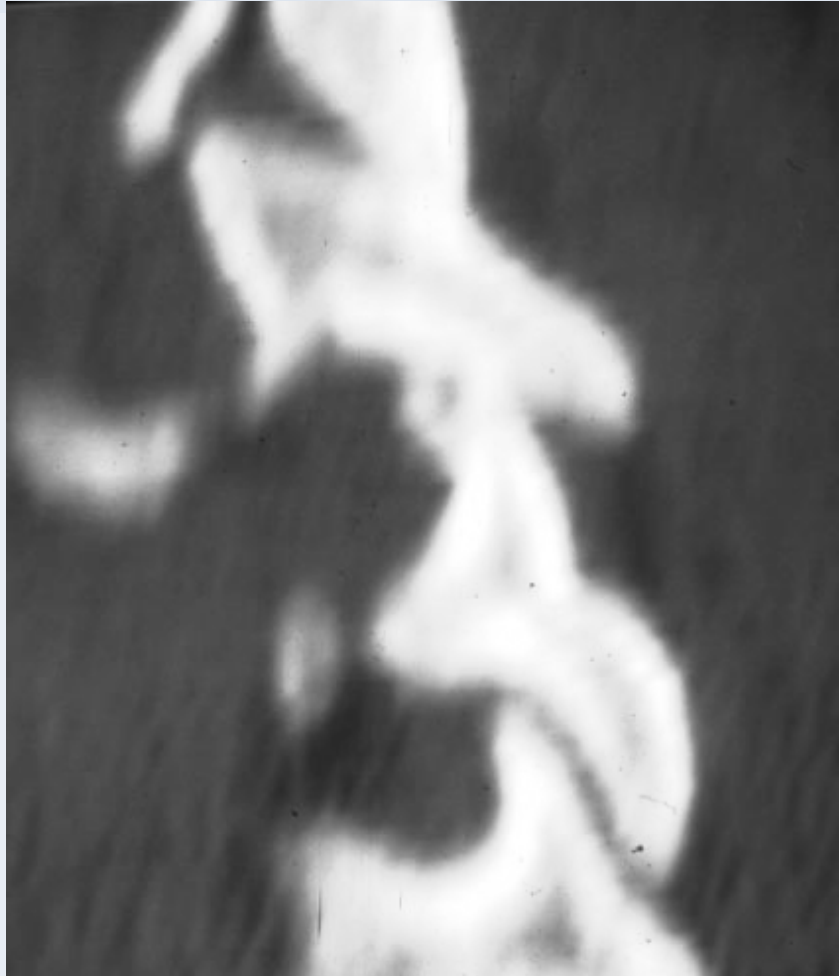


**ARGENSON Type D ( ROTATION )**

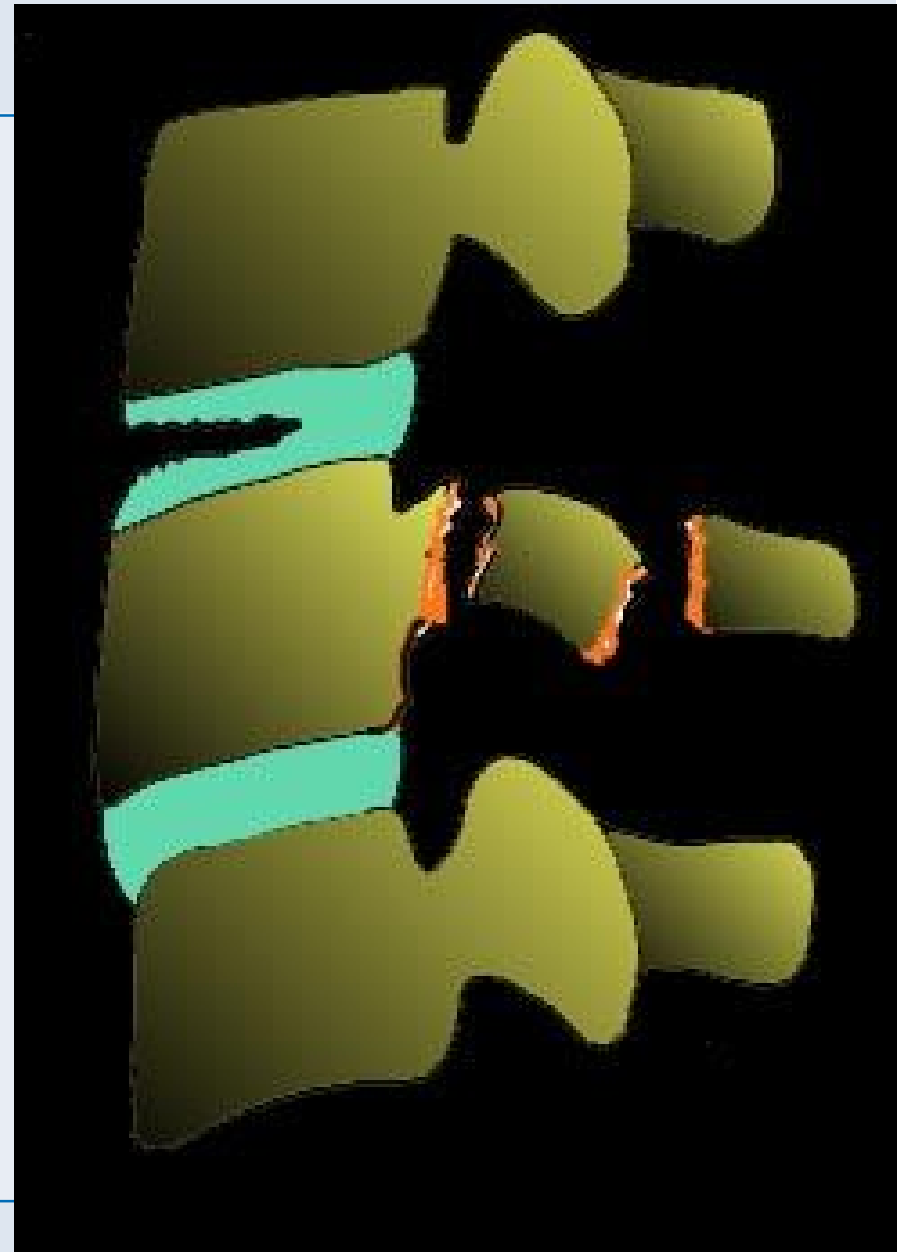
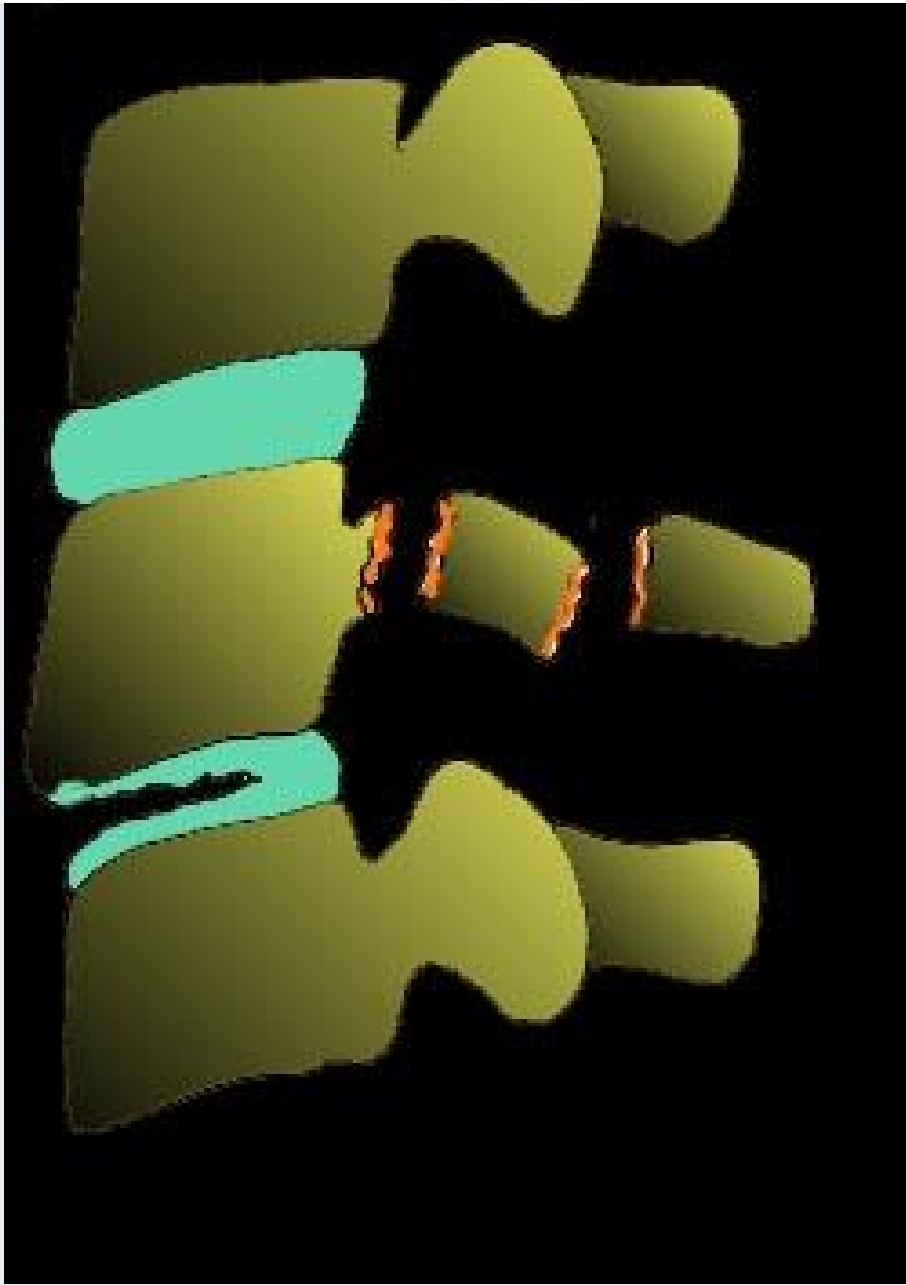


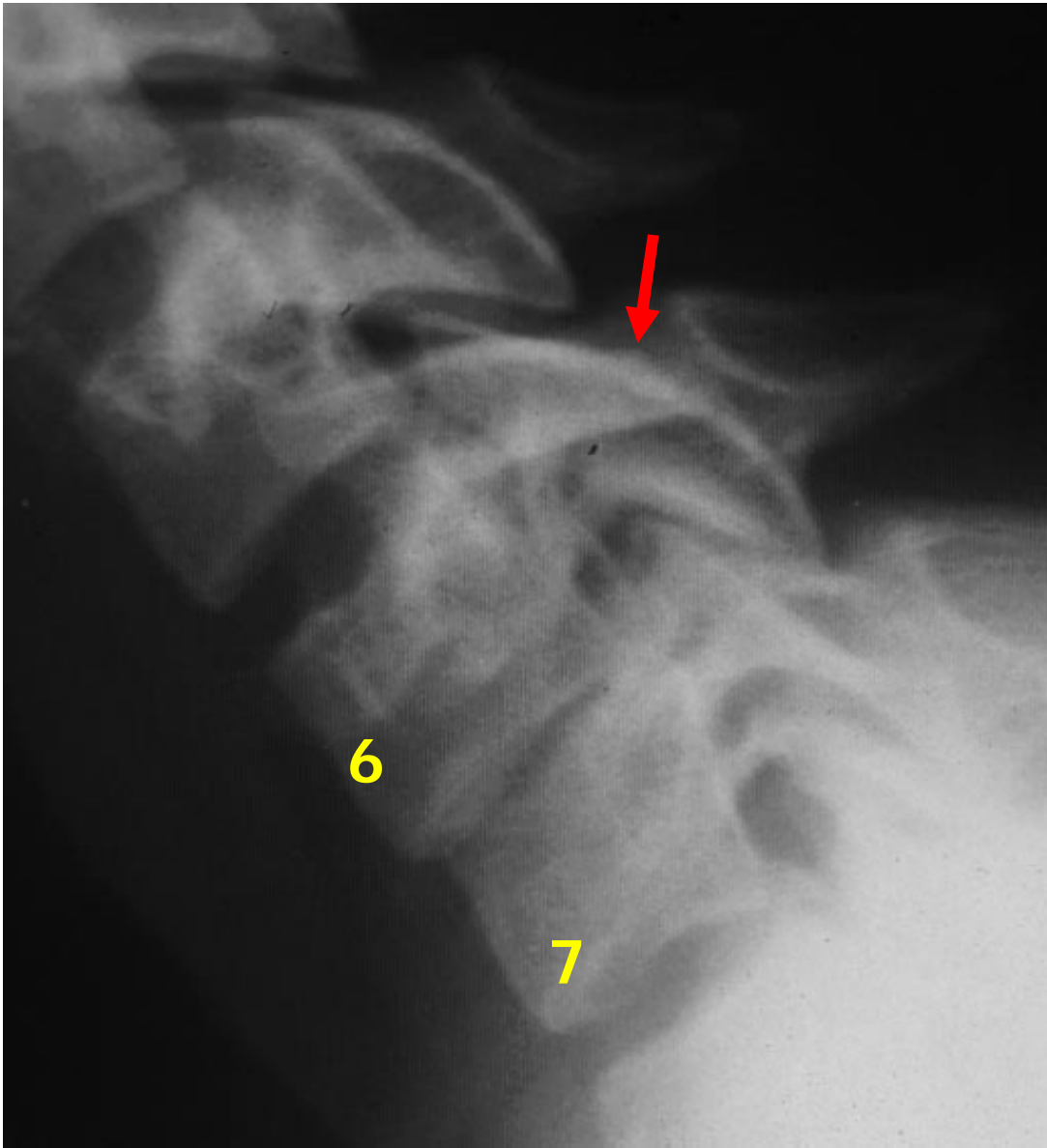


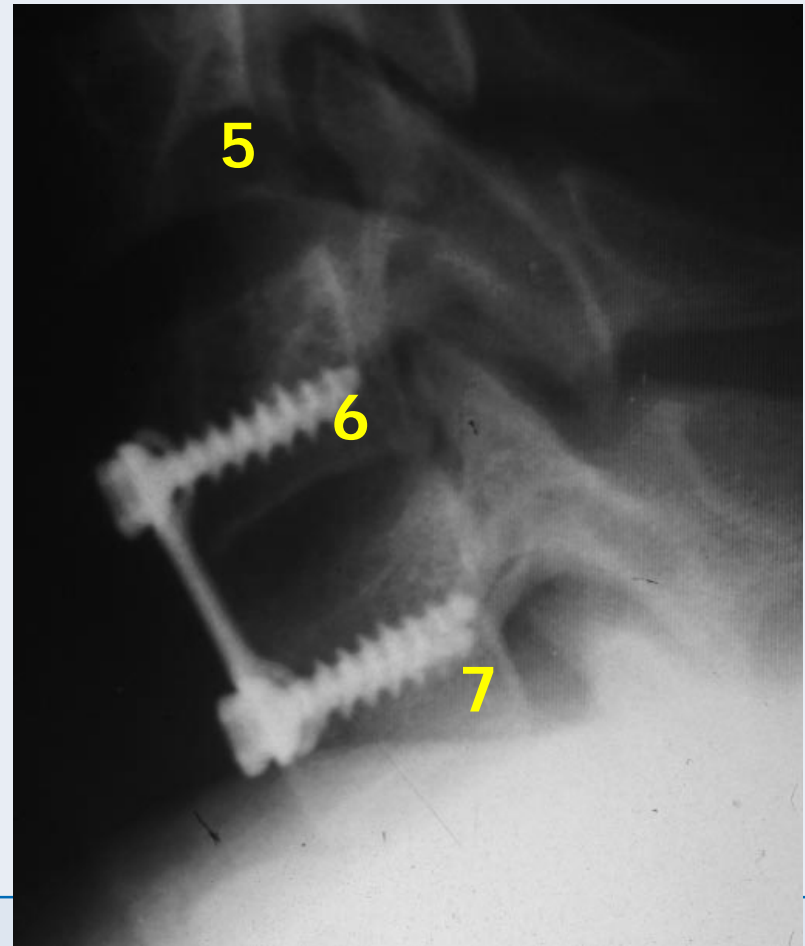
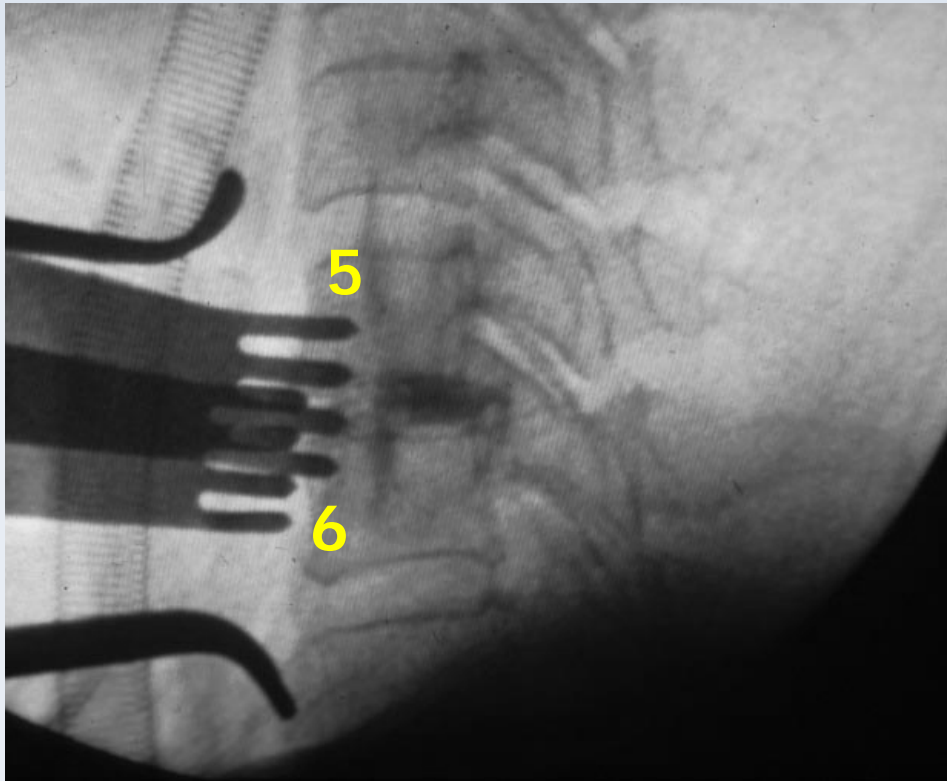


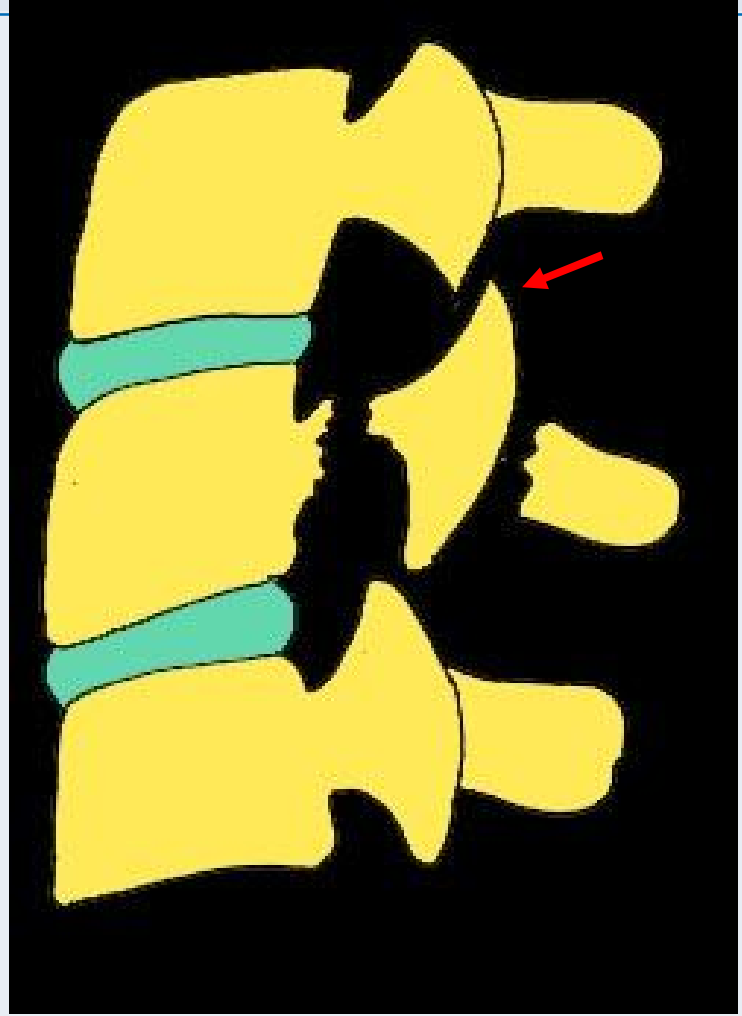


**ARTICULAR MASS FRACTURE SEPARATION**



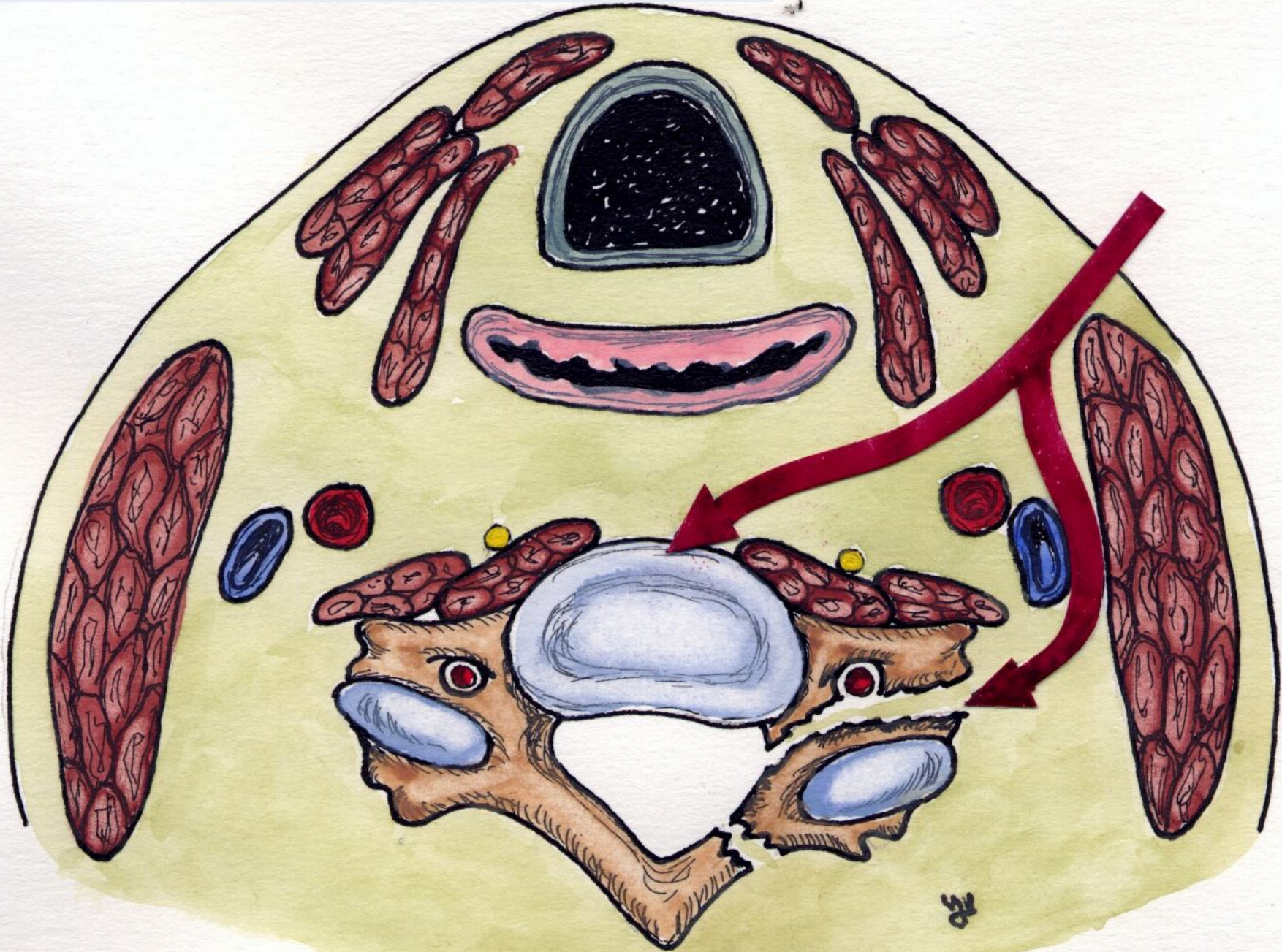




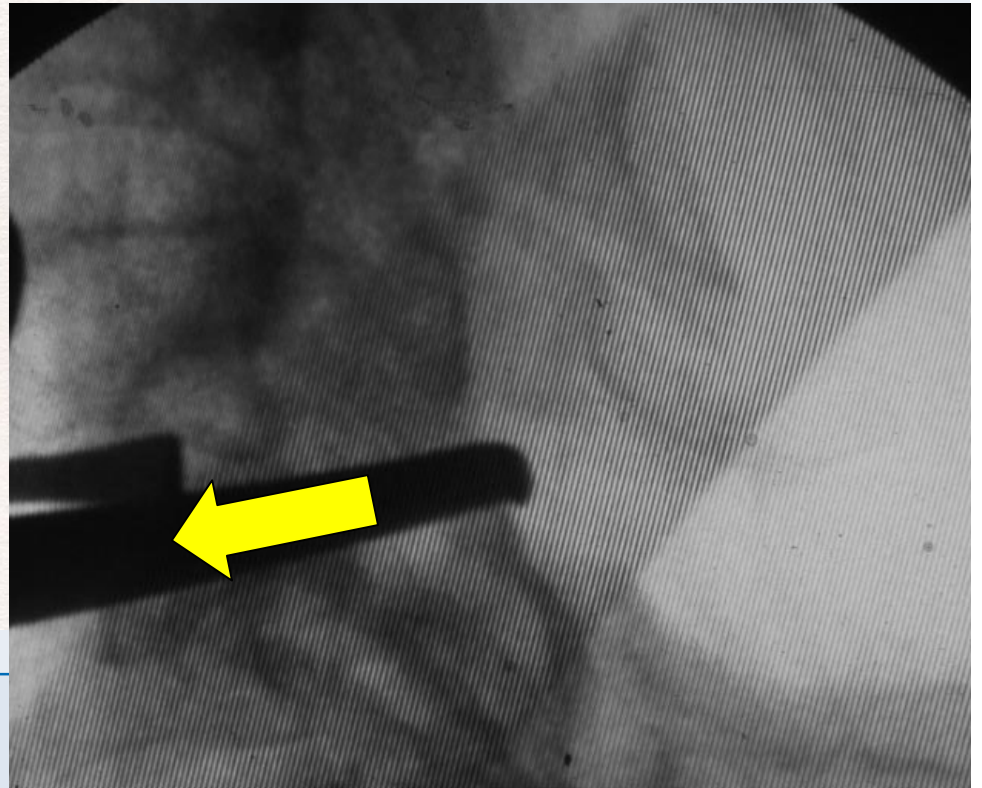
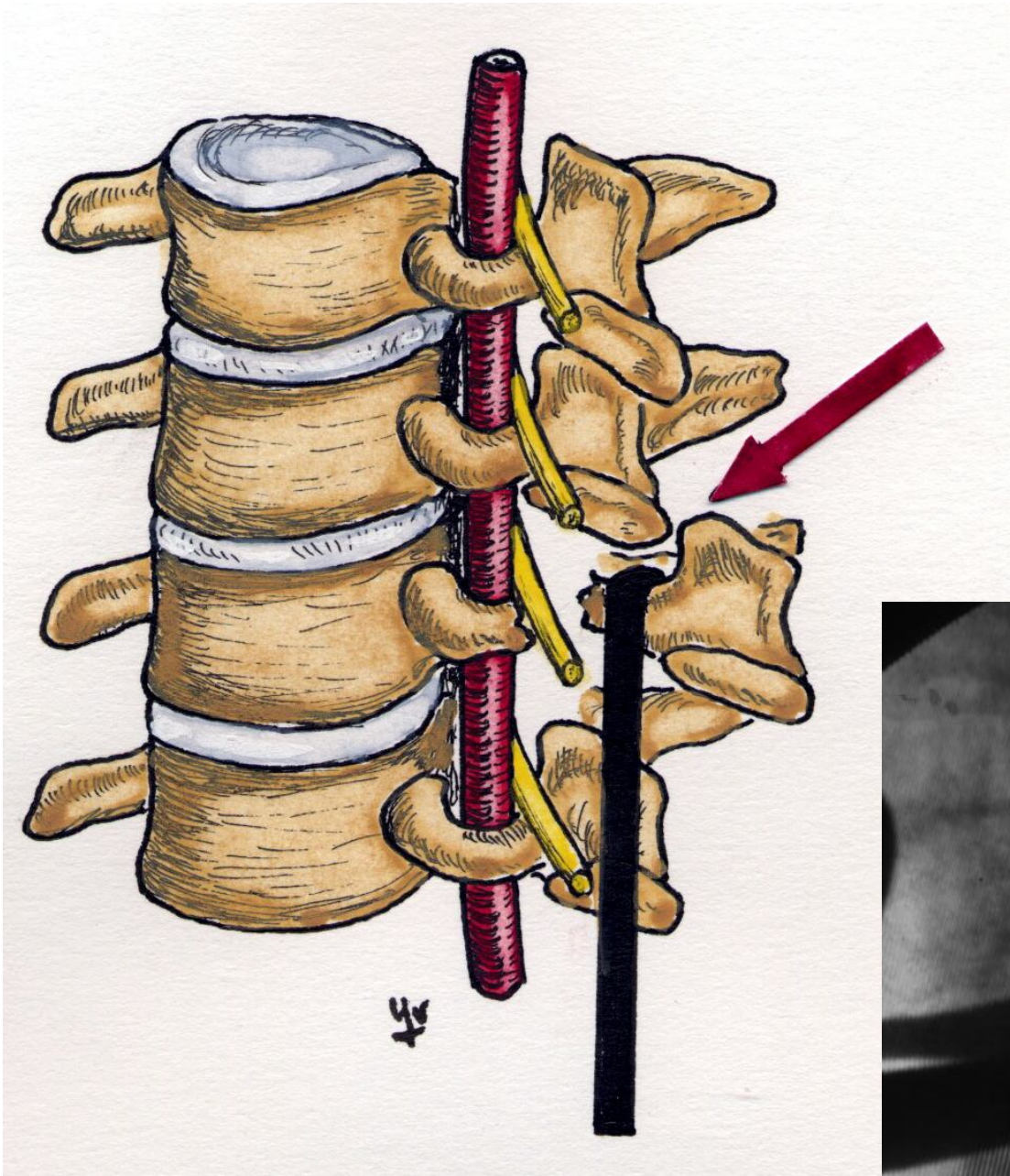


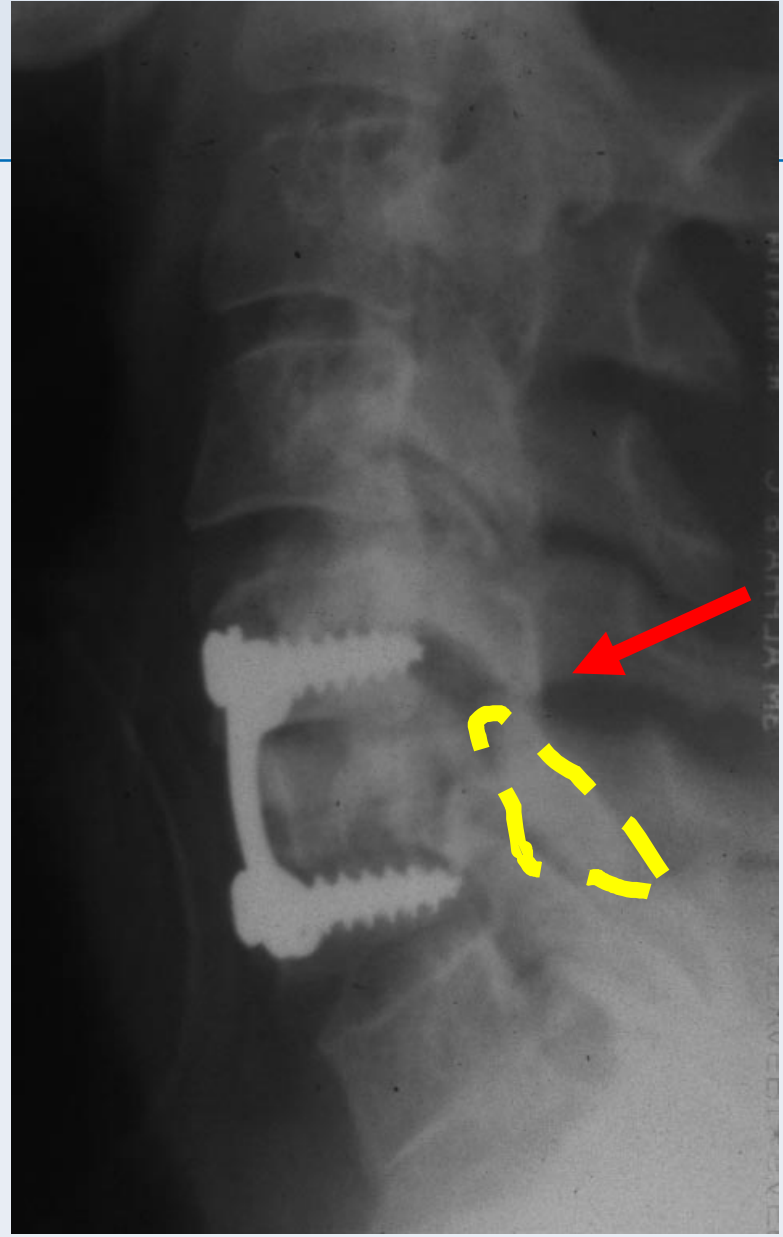
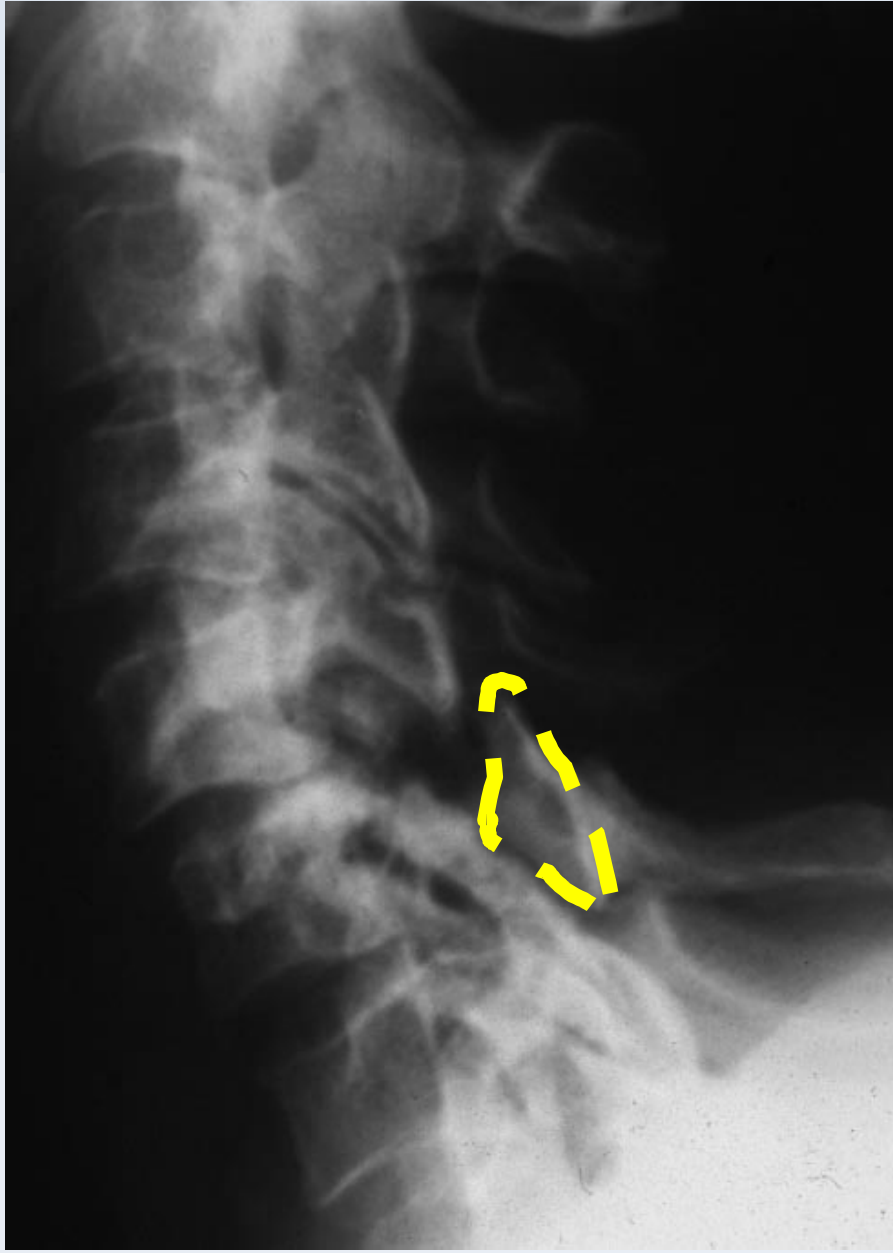


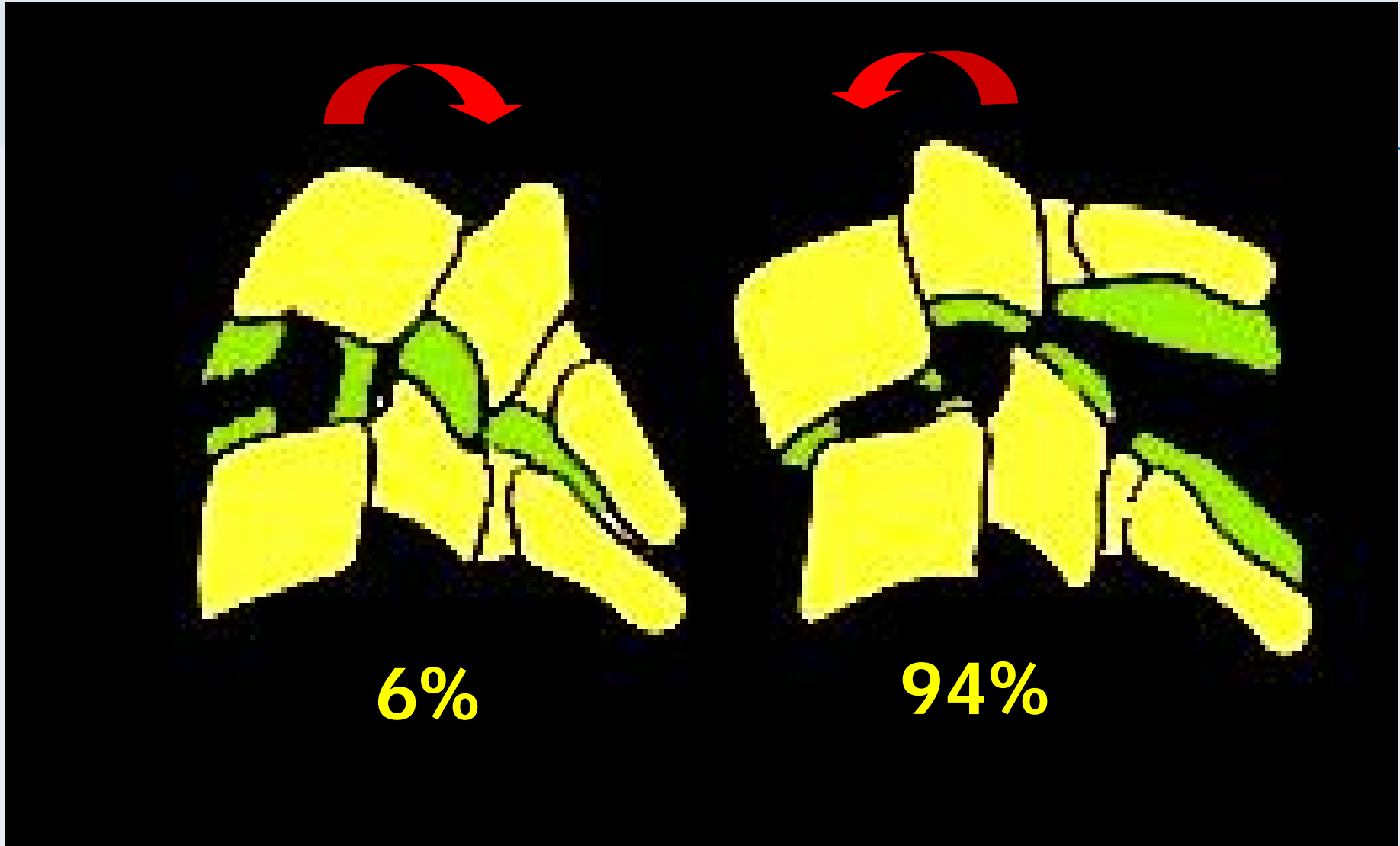
# Retro-Vascular Approach



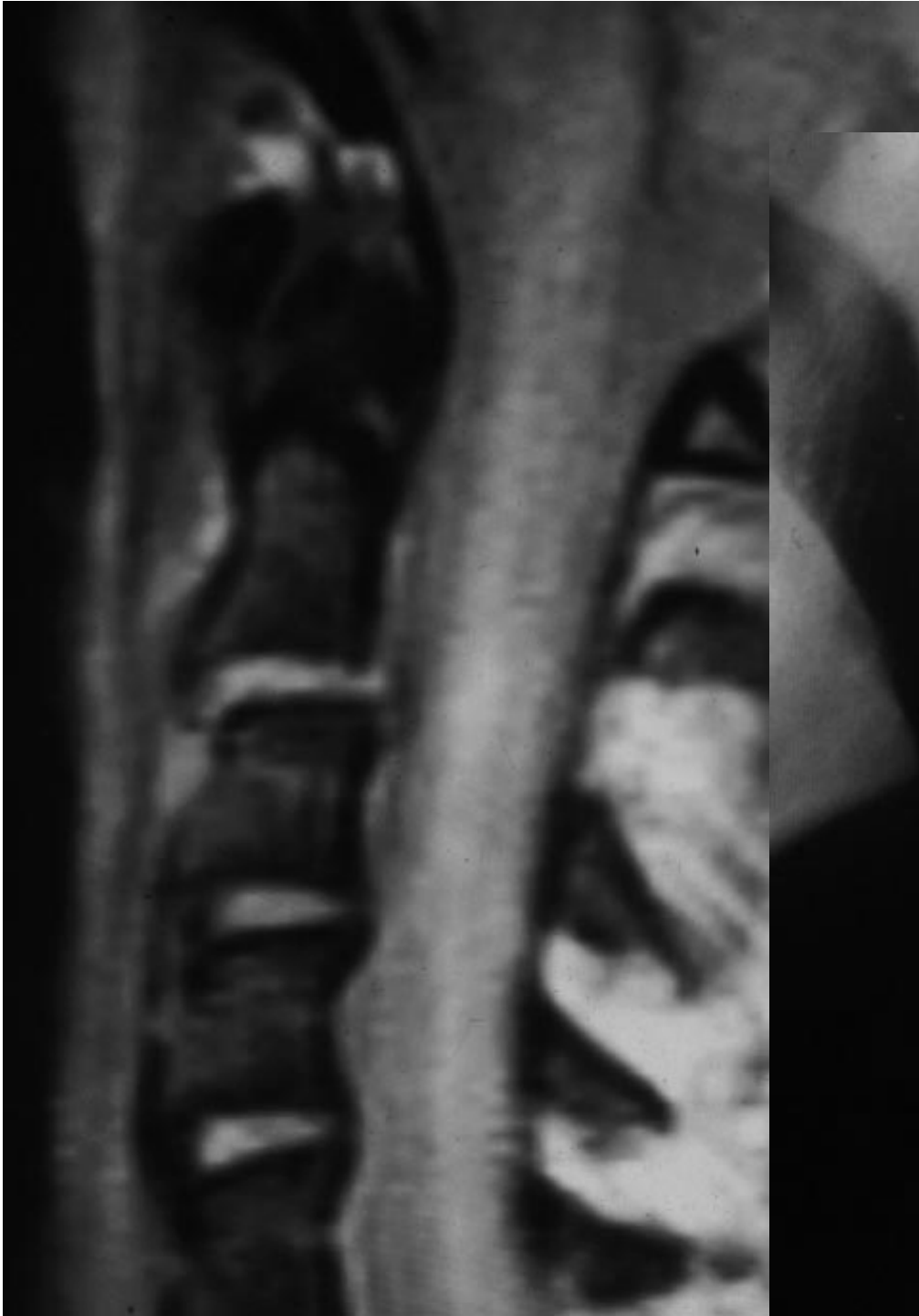






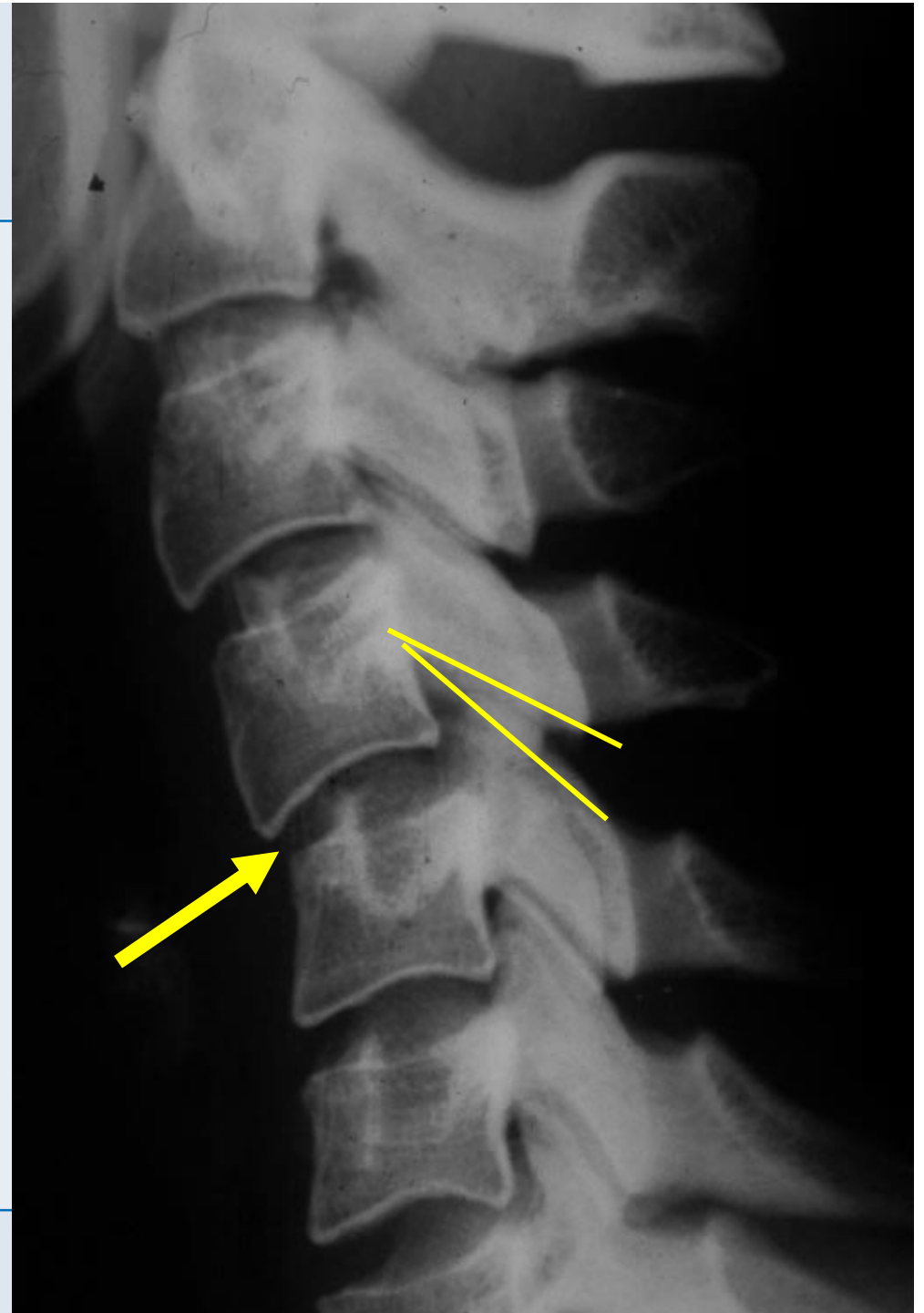


**SEVERE    SPRAINS**

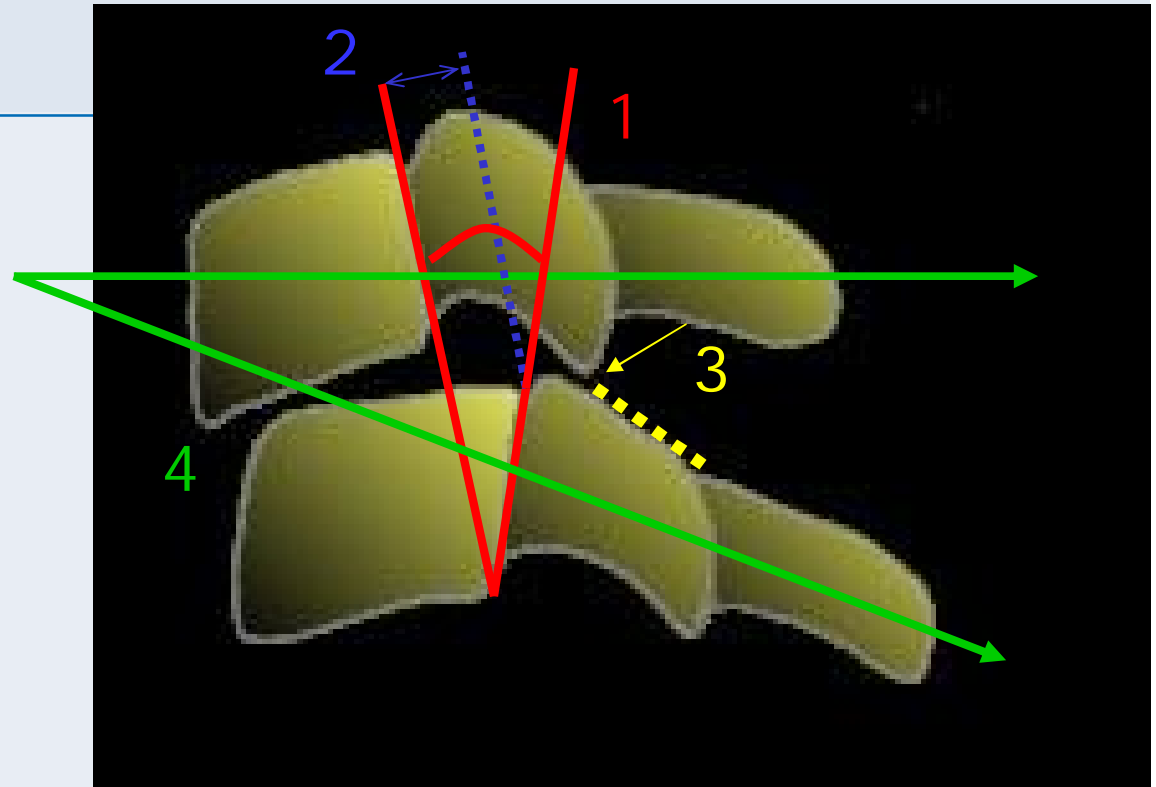




# STATIC X Ray



## DYNAMIC X Ray



1.  $> 15^\circ$

2.  $> 3 \text{ mm}$

3.  $> 50\%$

4.  $> 15^\circ$

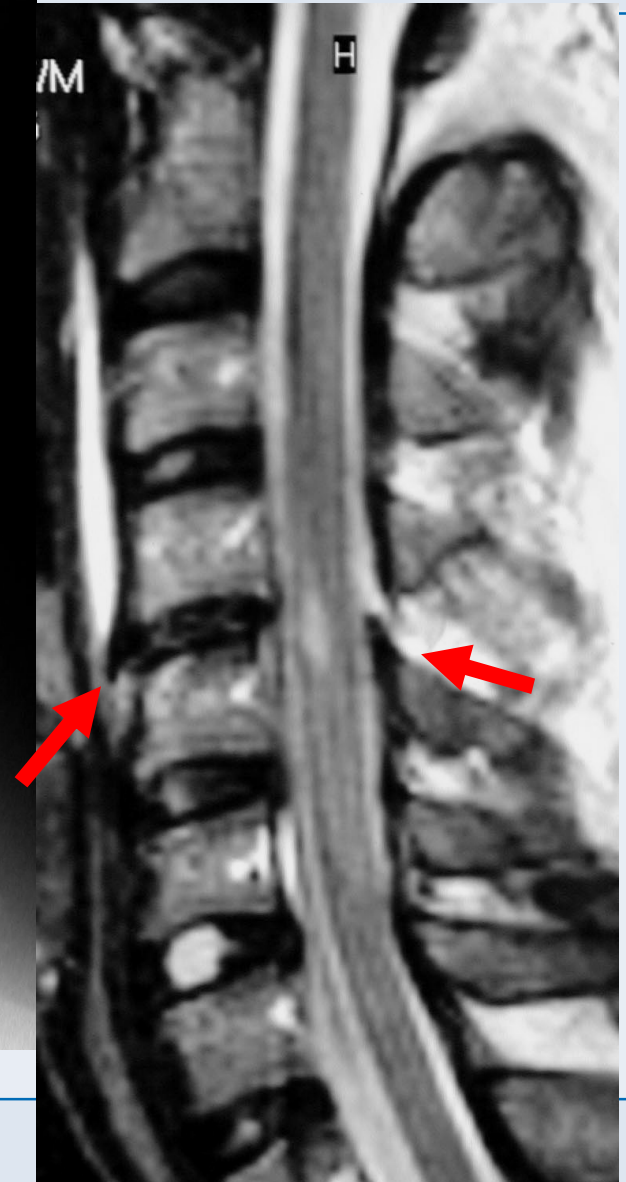
( LOUIS )







**(B2)**



**ou LUXATION REDUITE ?**



C2-C5:34(20%)

C5-C7:126(75%)

C7-T1:8(5%)



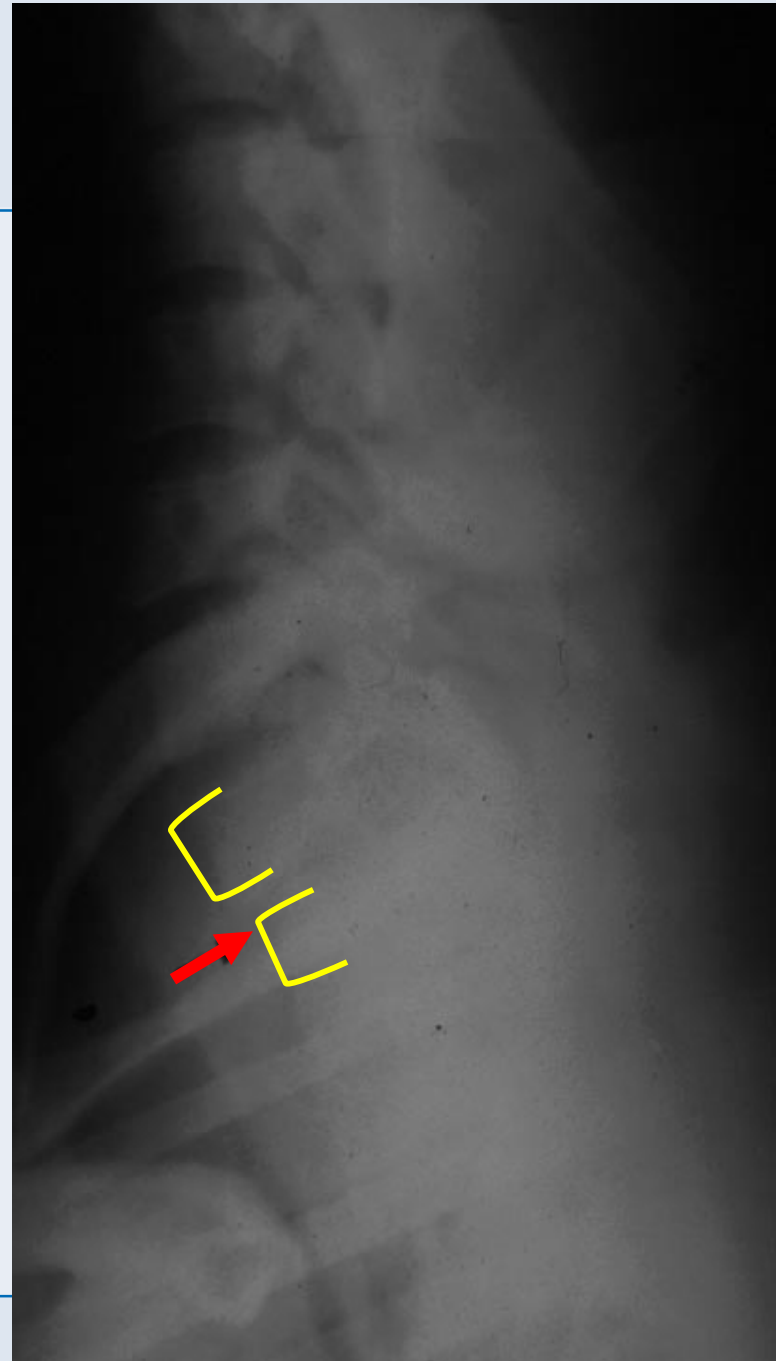
Unilateral dislocations 77

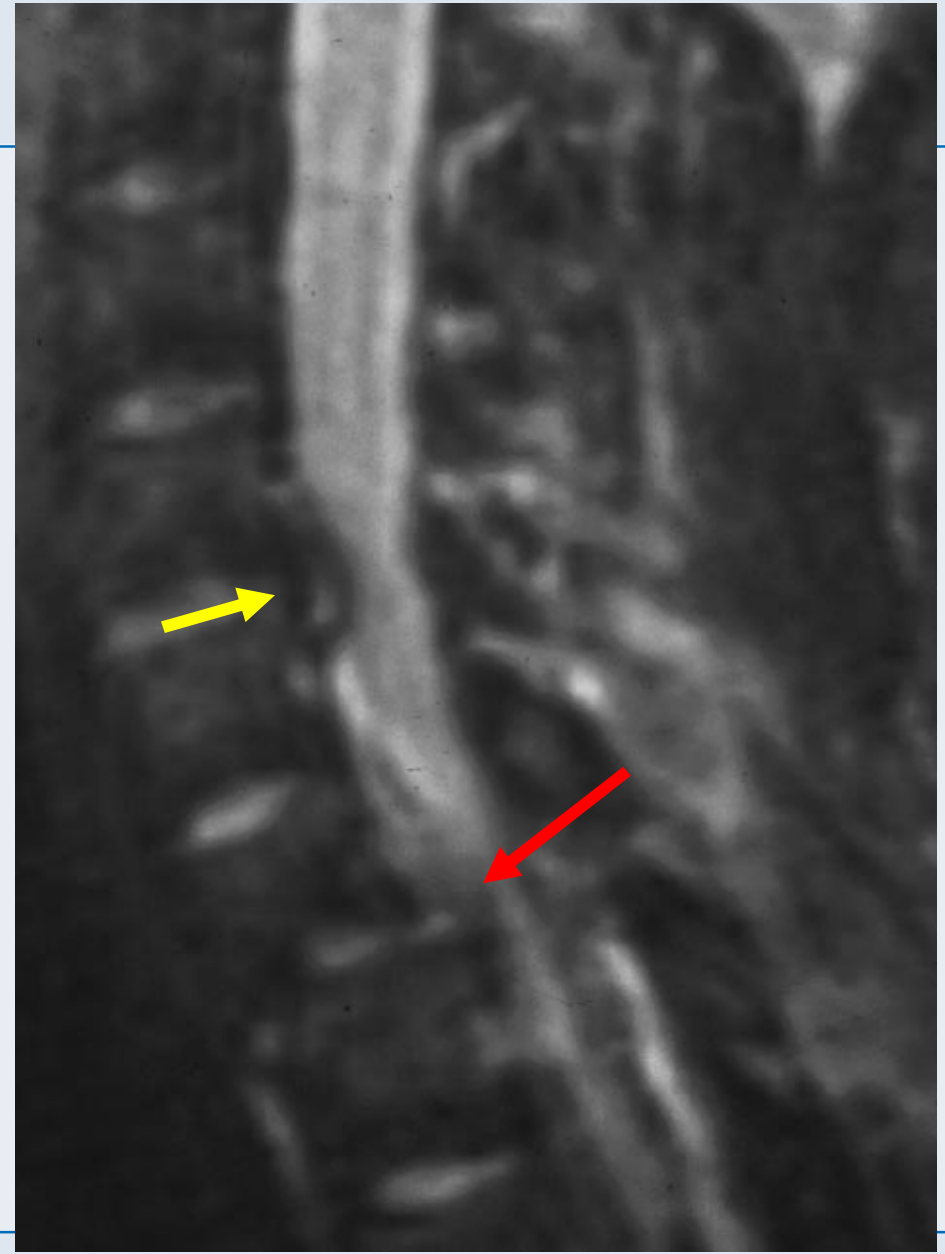
Bilateral dislocations 91

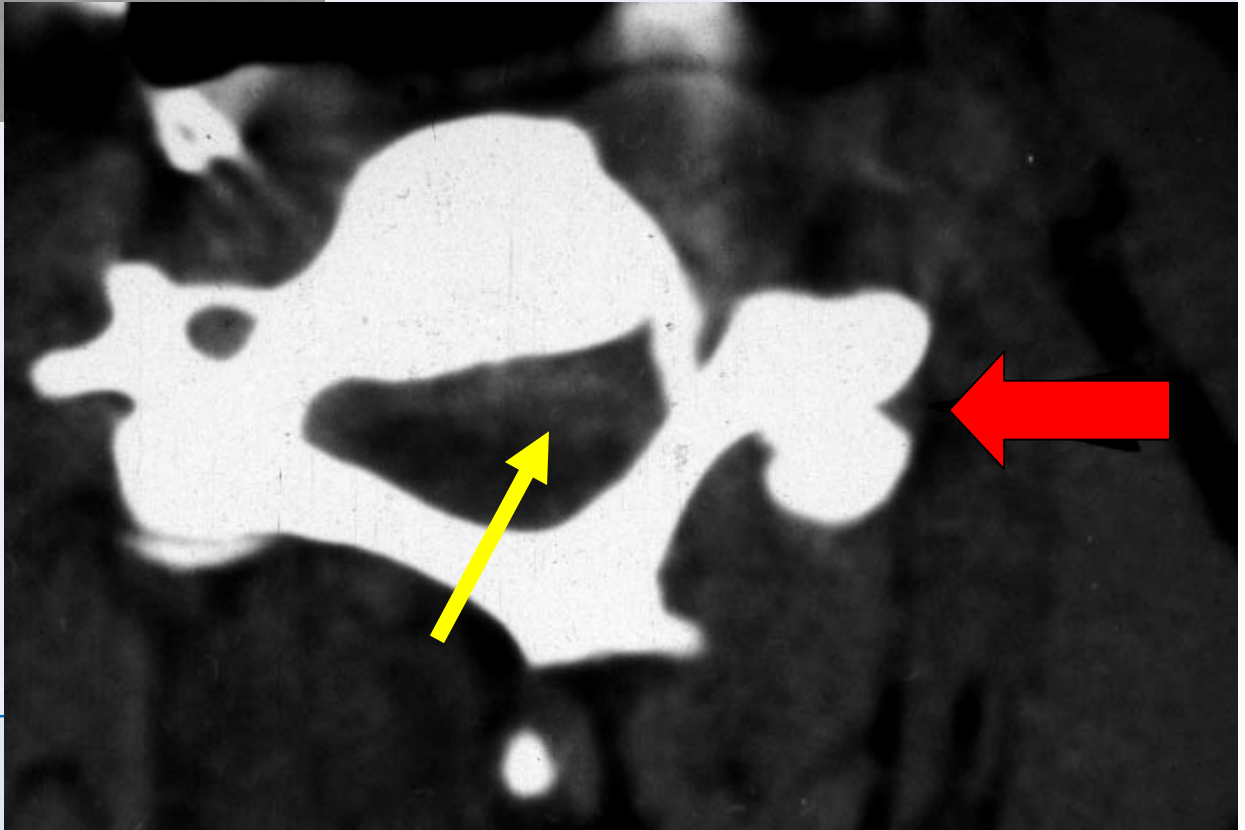
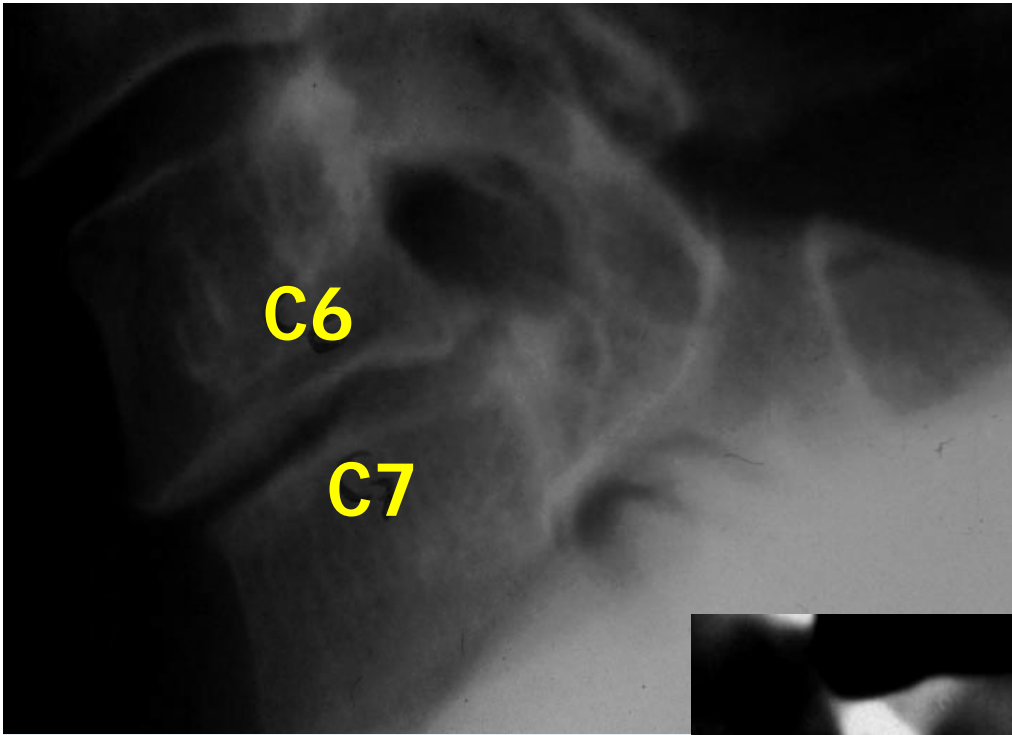
168

VITAL, Spine (1998)

**7 cases with  
neuroaggressive  
disc extrusion**







# REDUCTION



- 1 Gradual traction without anesthesia**
- 2 Closed manipulations under general anesthesia**
- 3 Anterior surgical reduction**

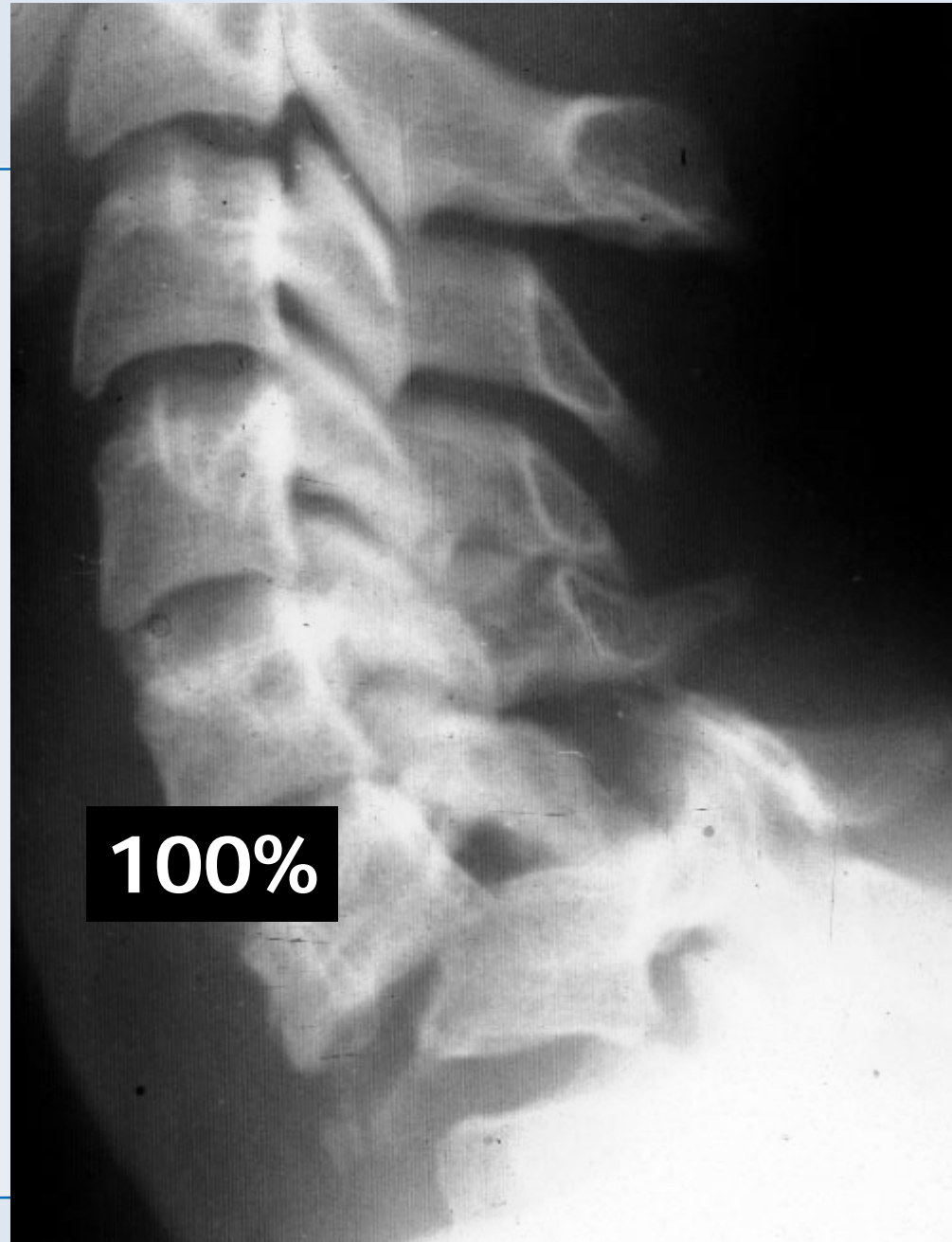


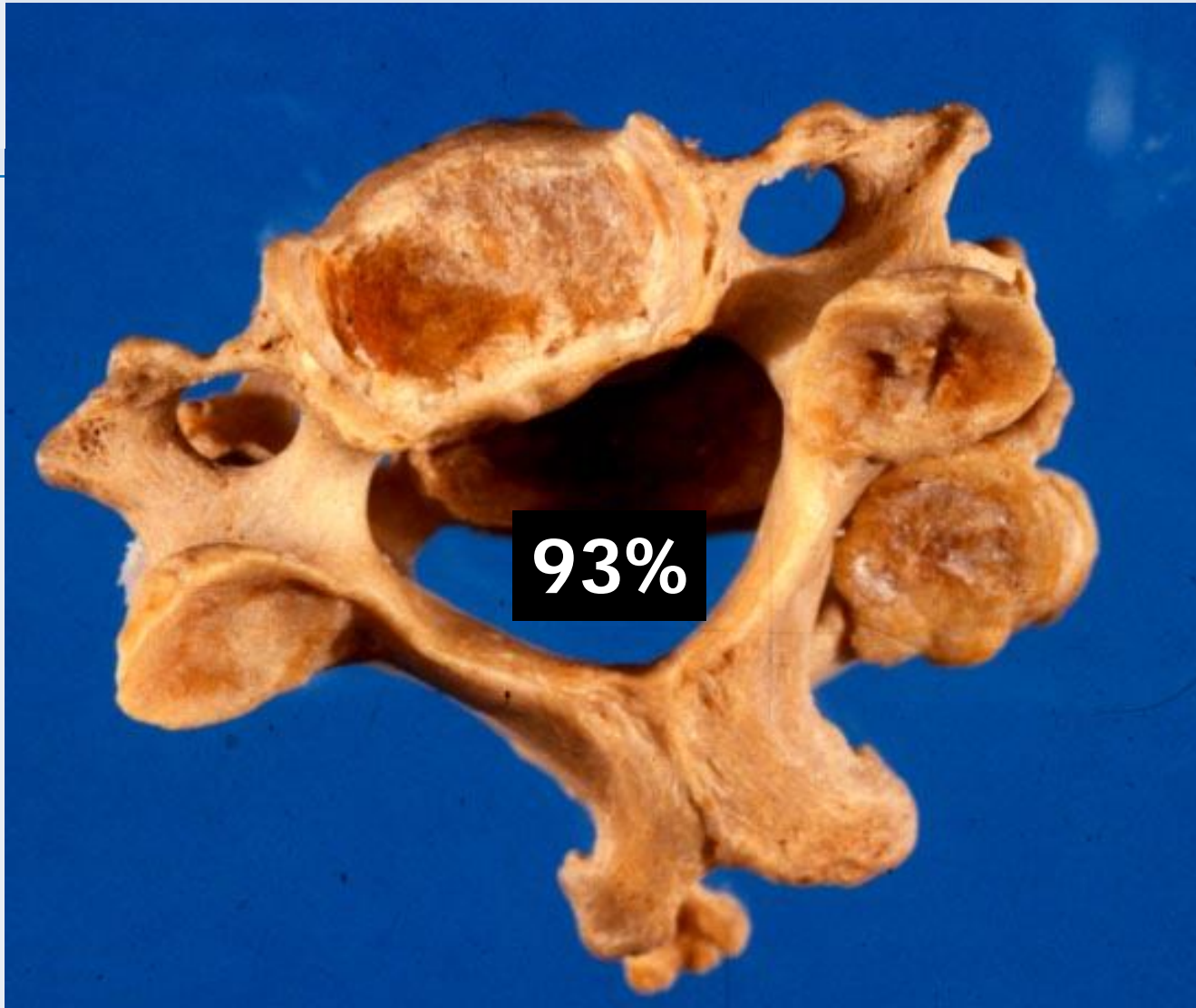
# BILATERAL FACET DISLOCATIONS

43%

30%

27%





23%

36%

34%

## UNILATERAL DISLOCATION



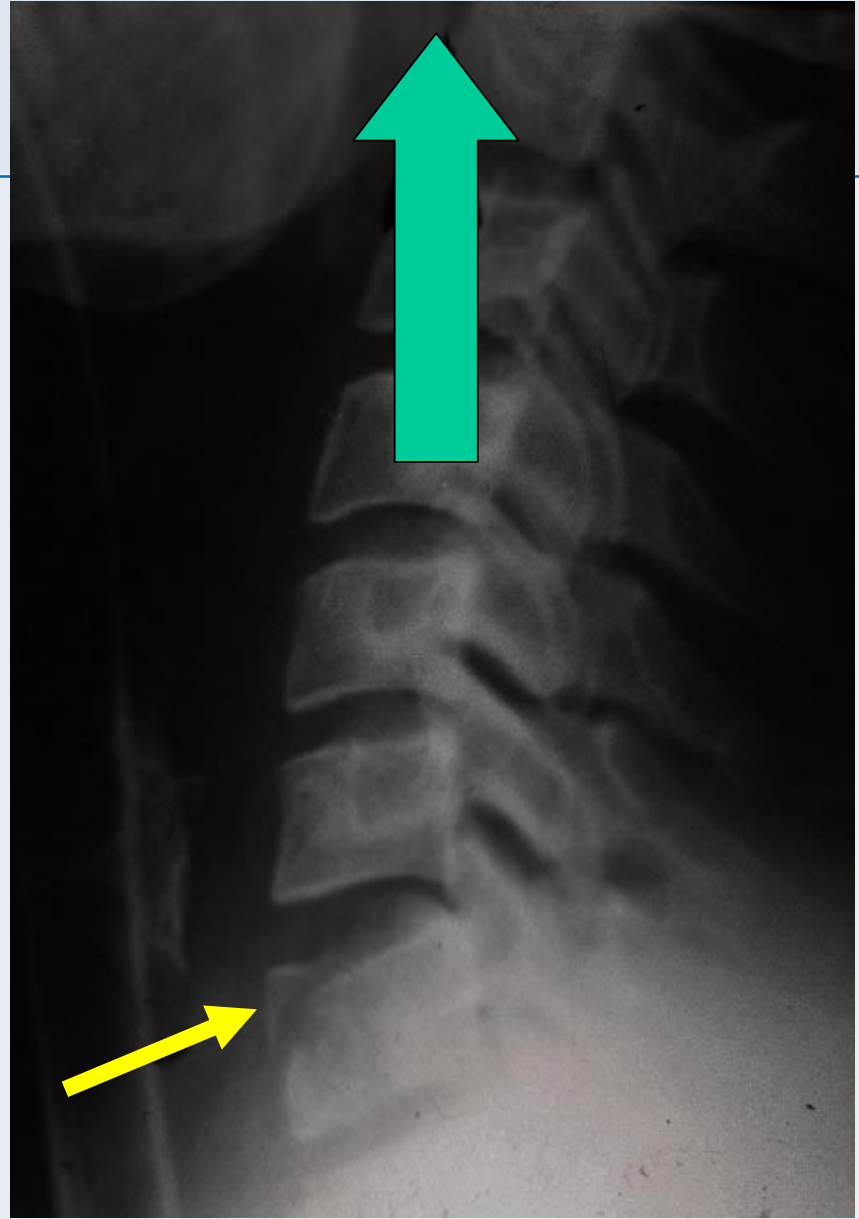
**P. max= 3 to 4 kg**

**(weight of the head)**



**2 kg  
per vertebral level  
away  
from the cranium**

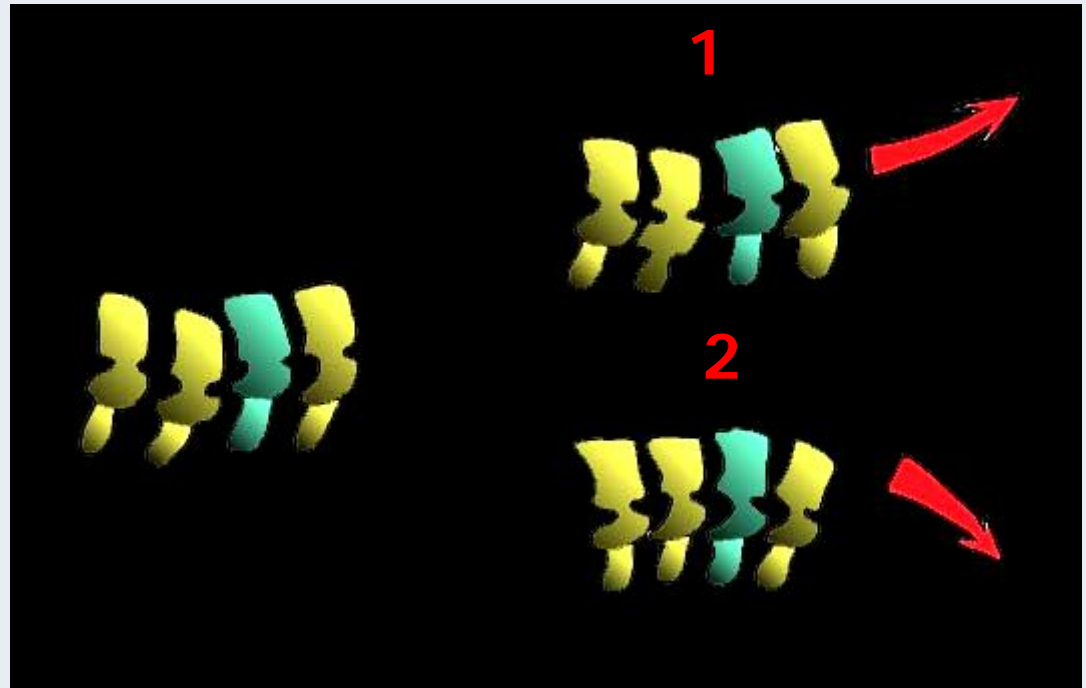
## **1 Gradual traction without anesthesia**

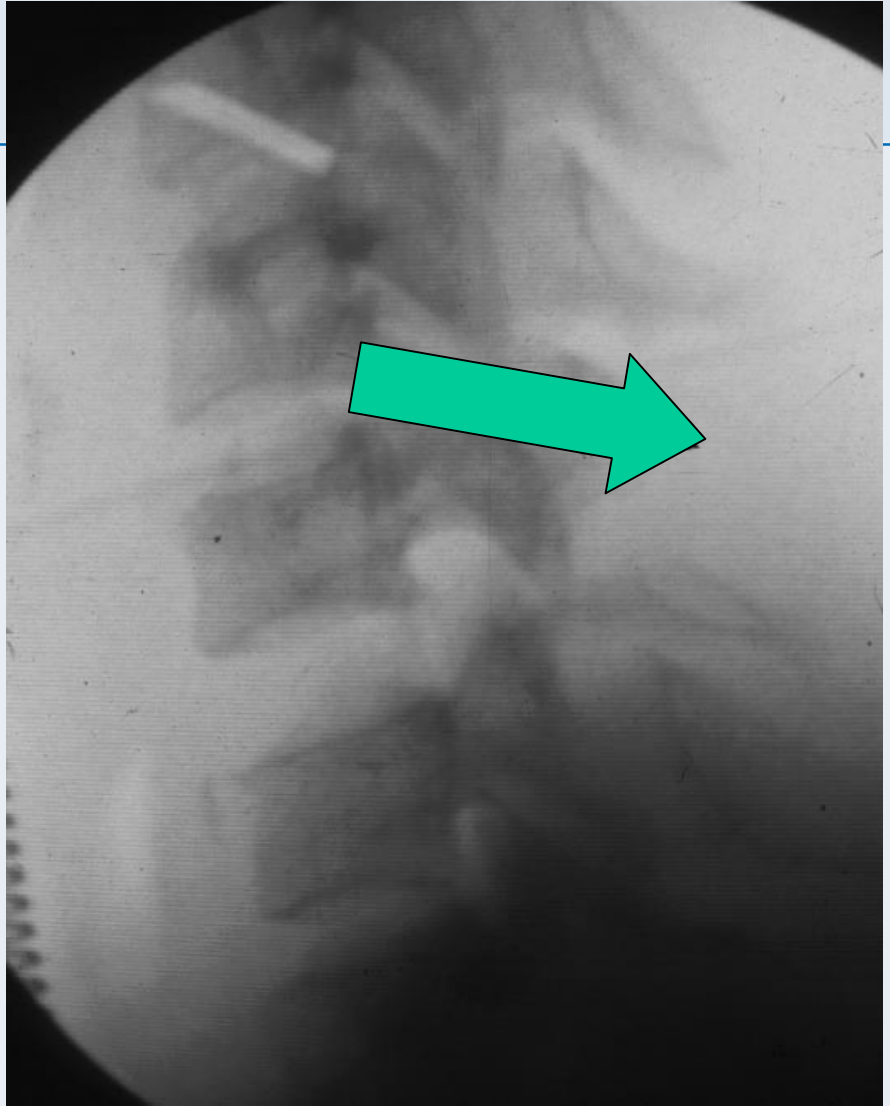
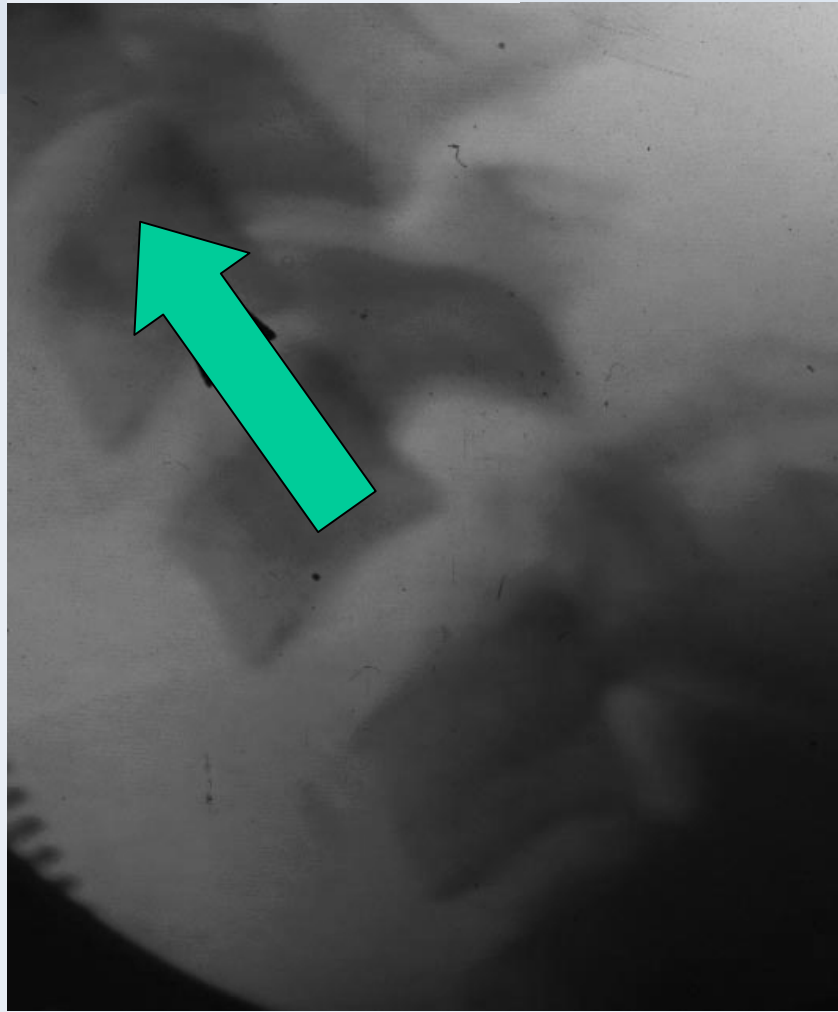


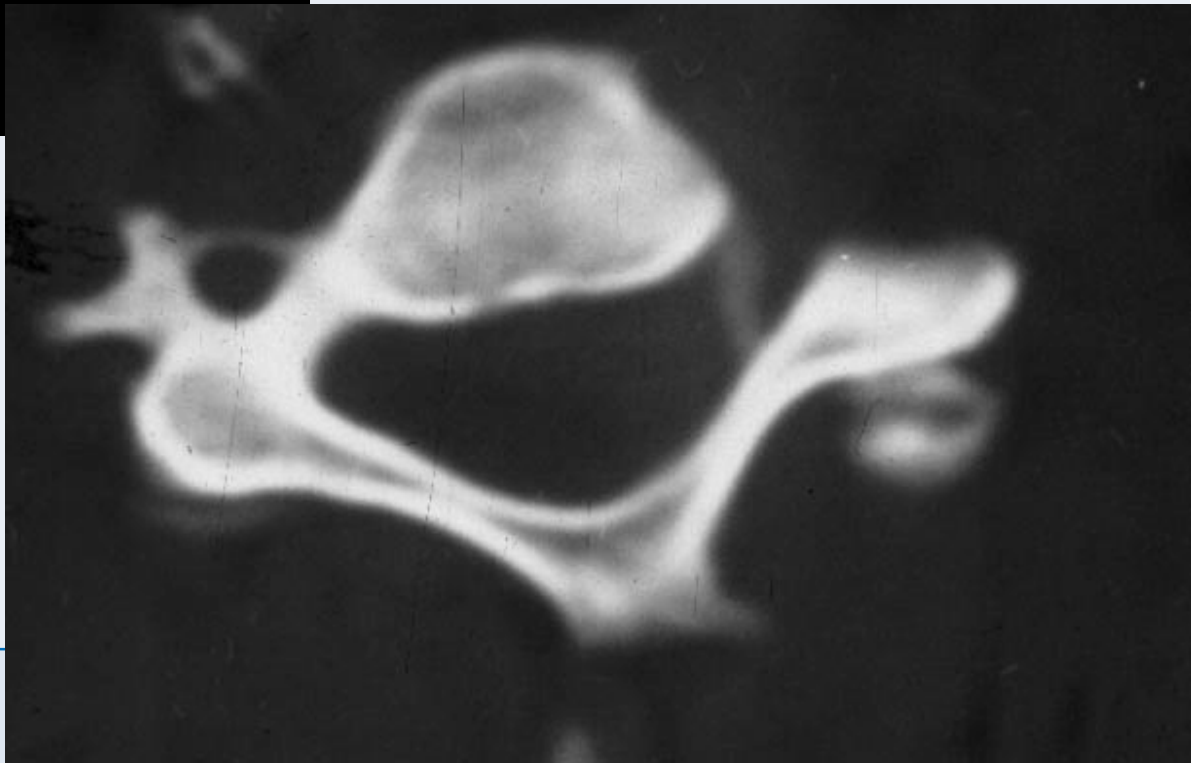
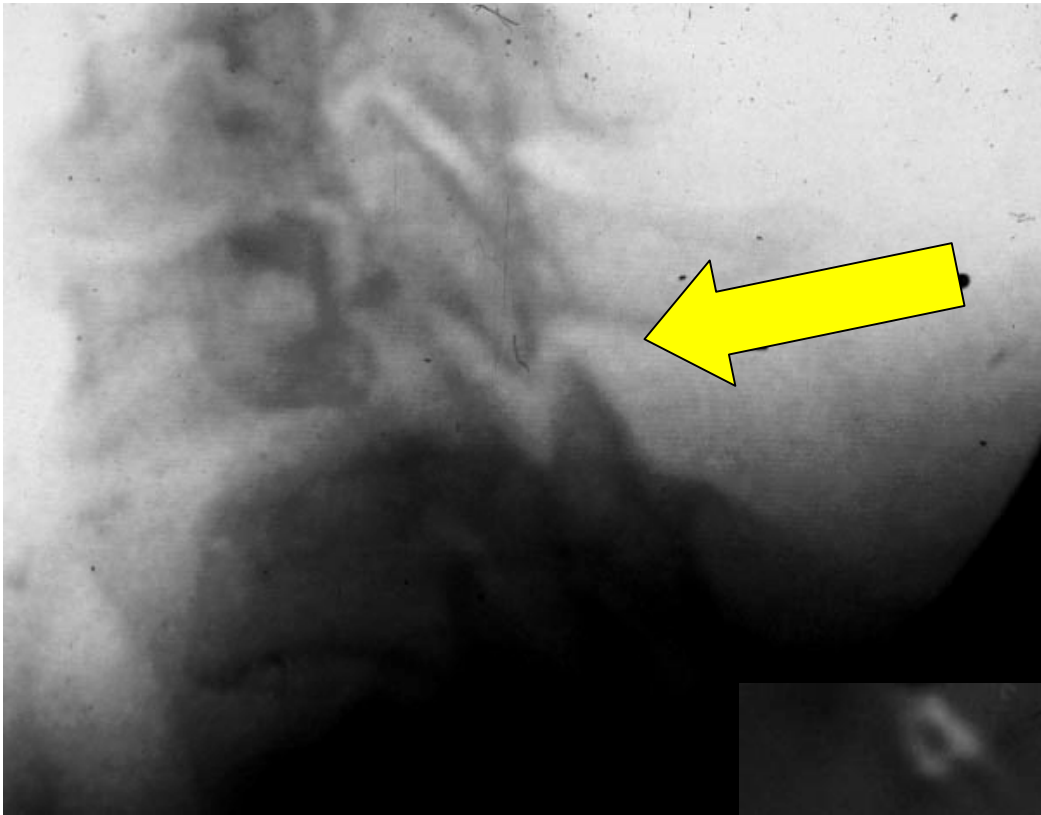


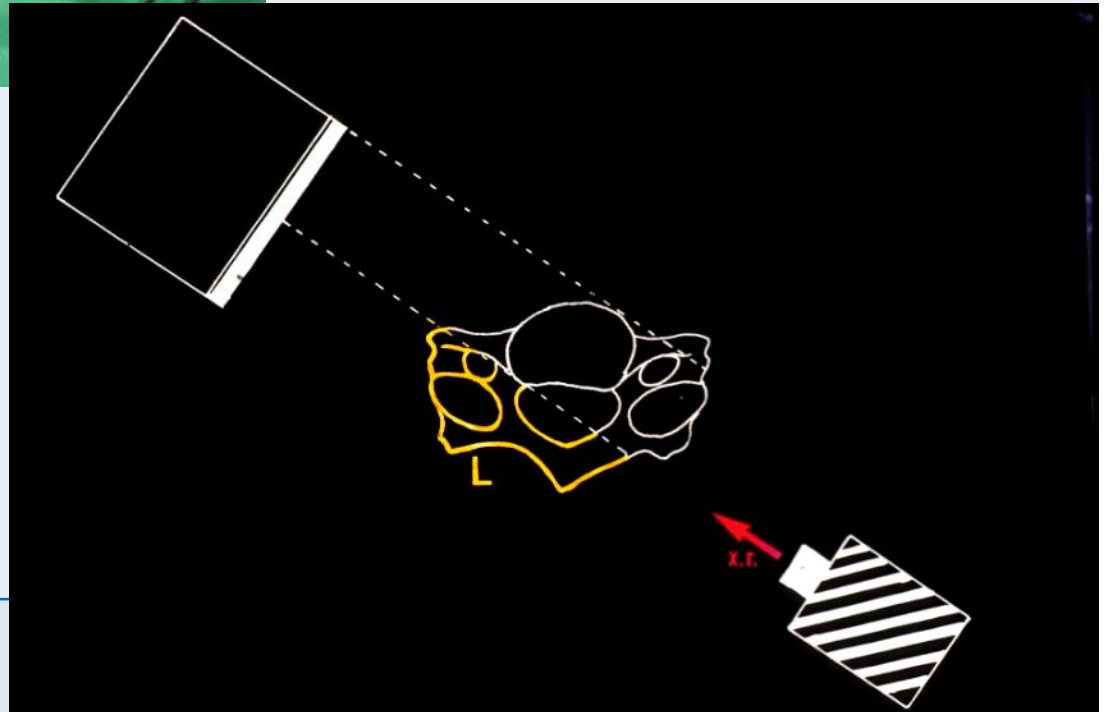
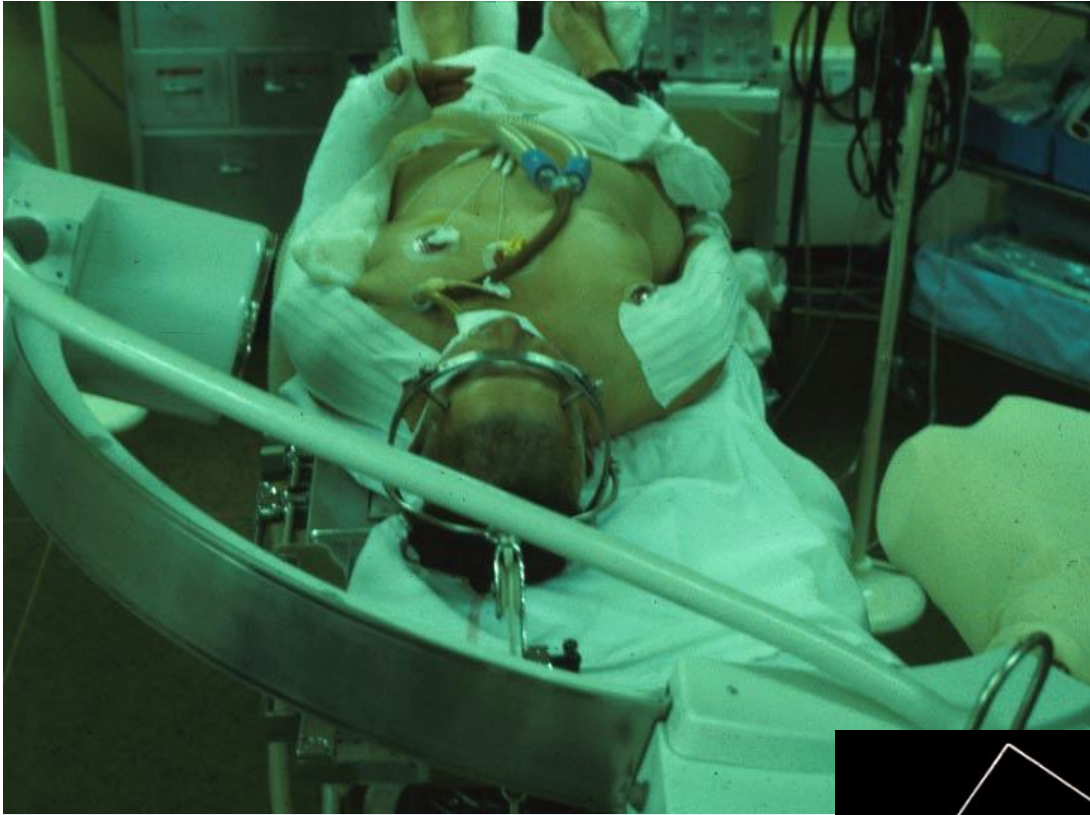
## 2 Closed manipulations under general anesthesia



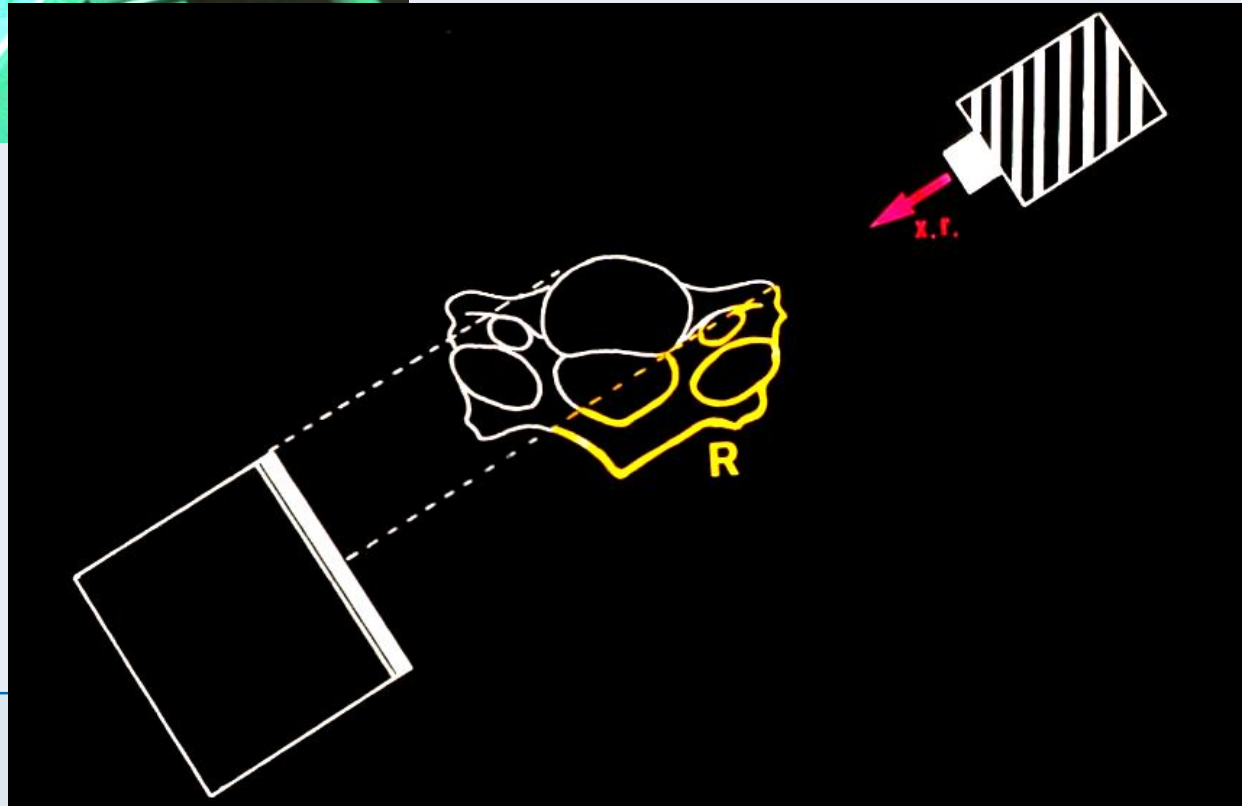
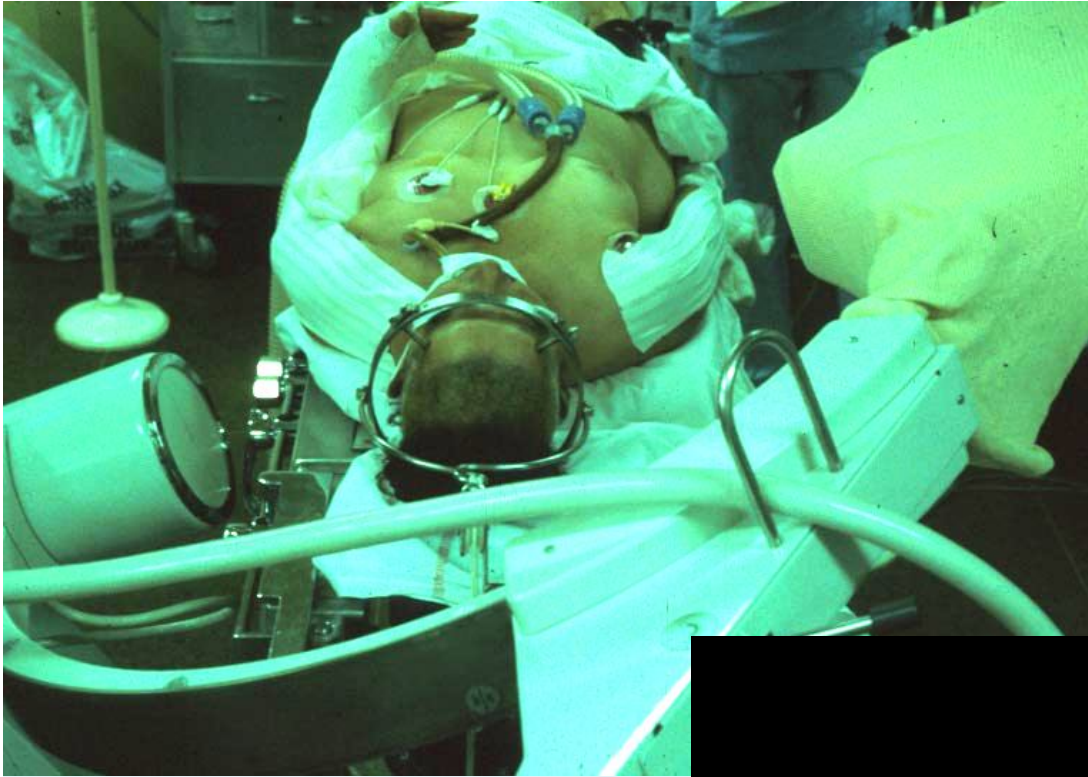




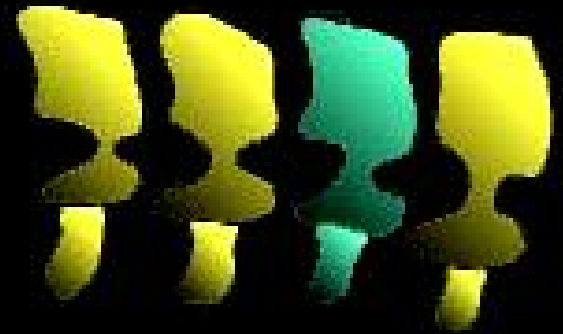
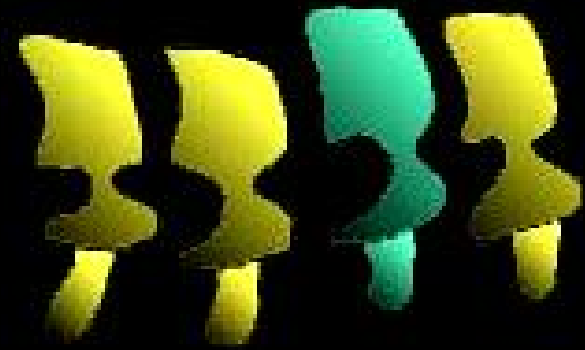


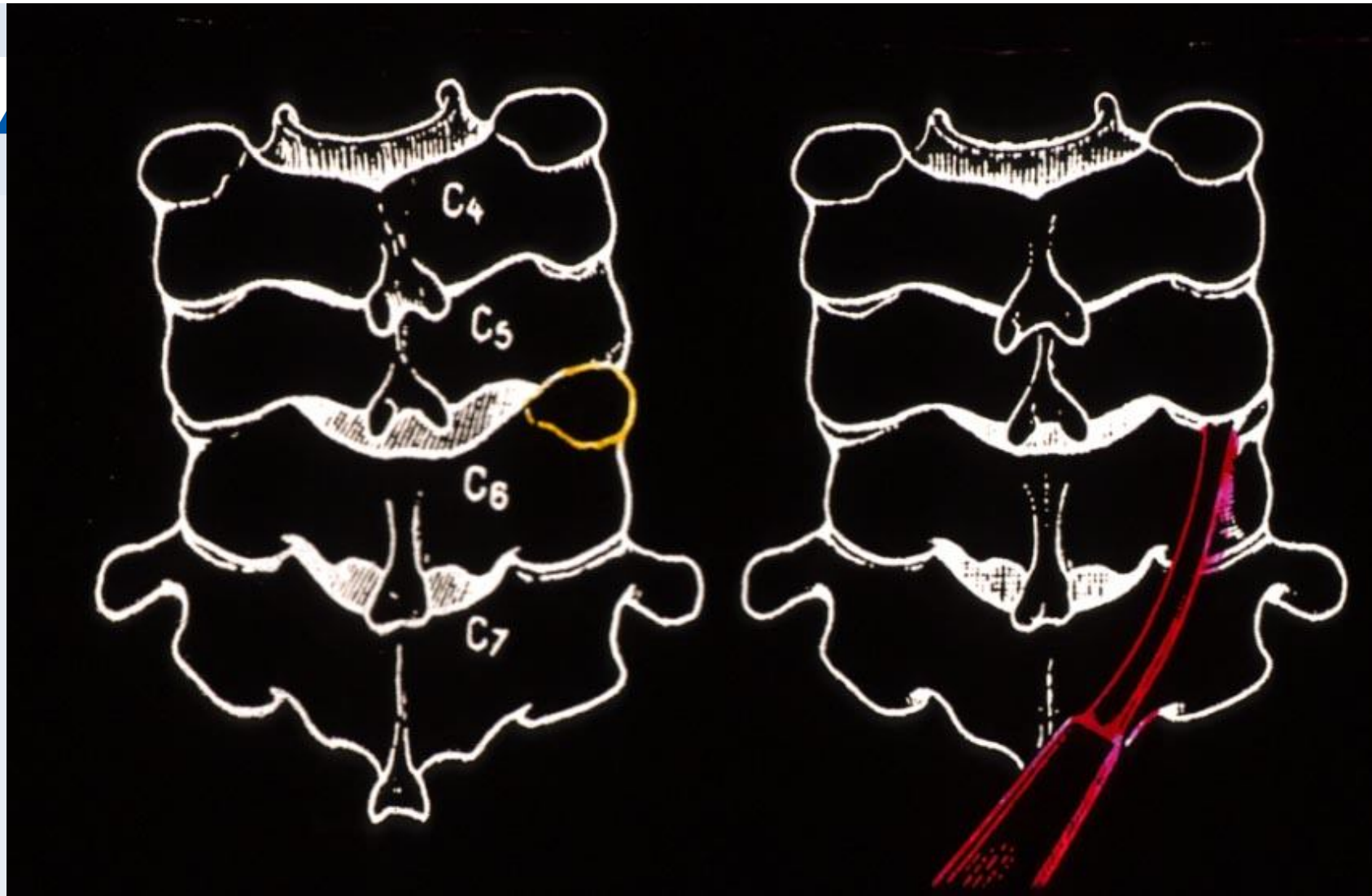






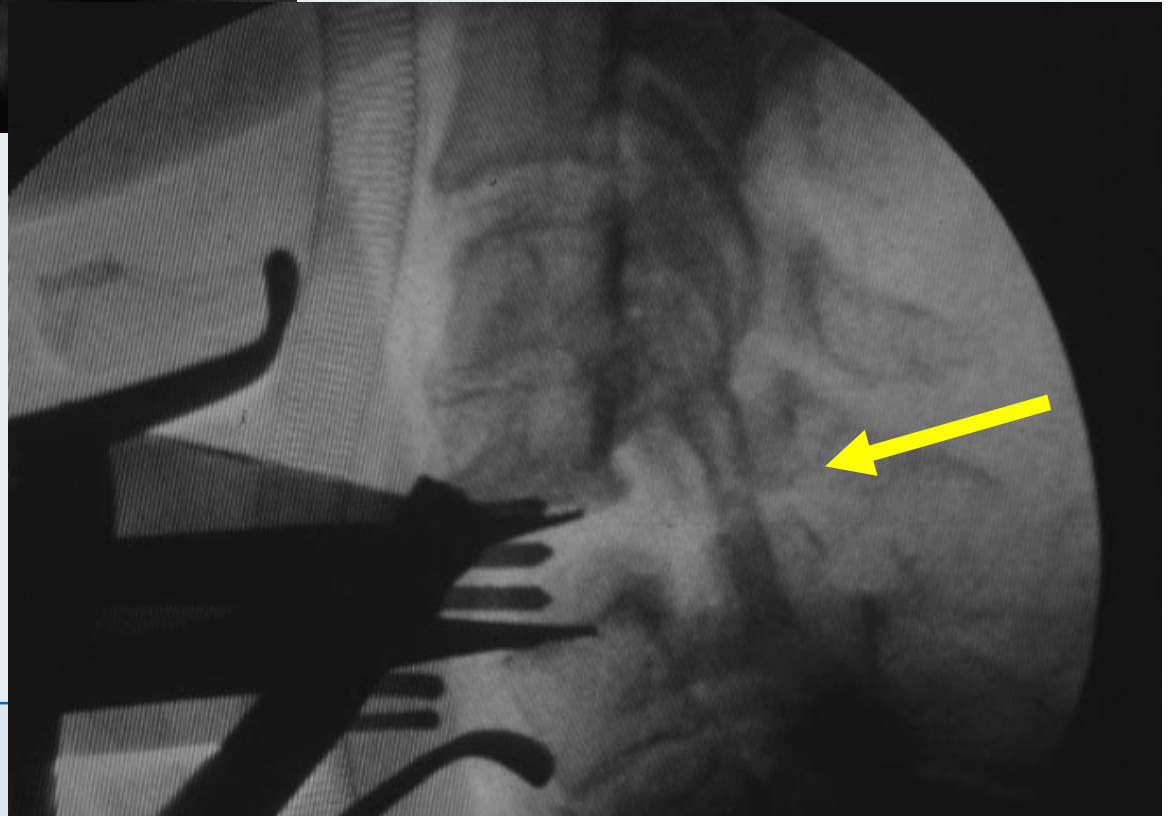
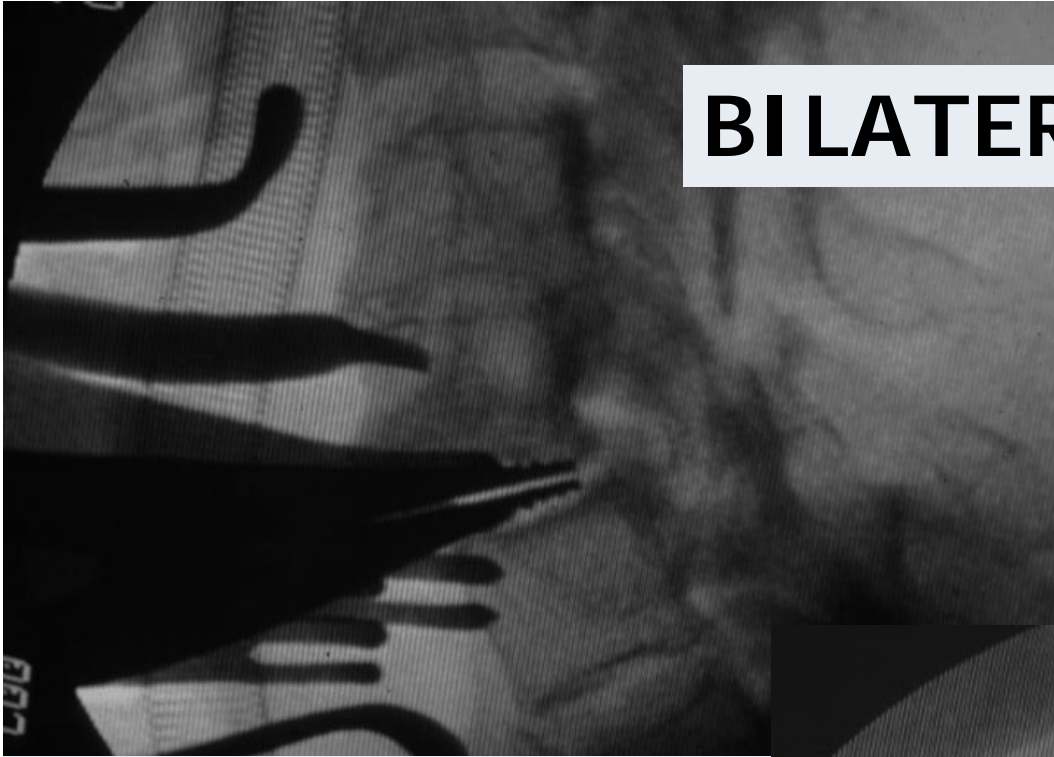


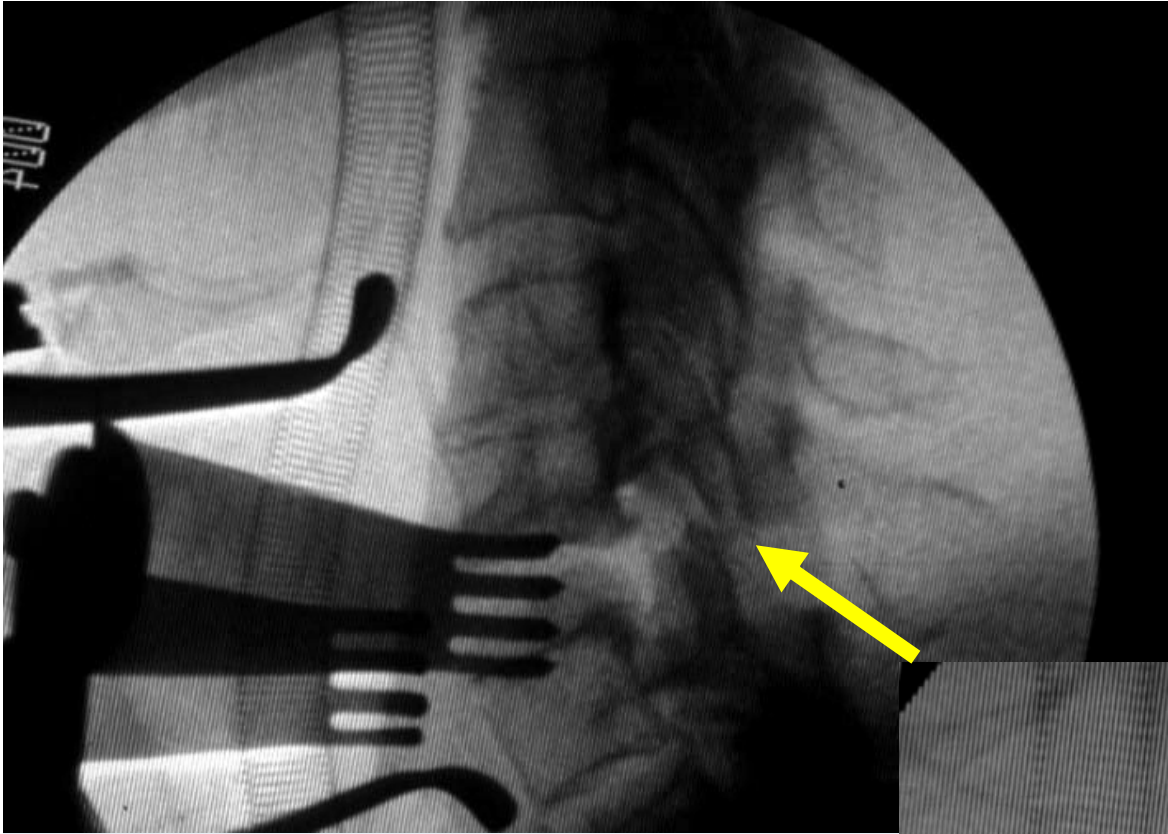




### 3 Anterior surgical reduction

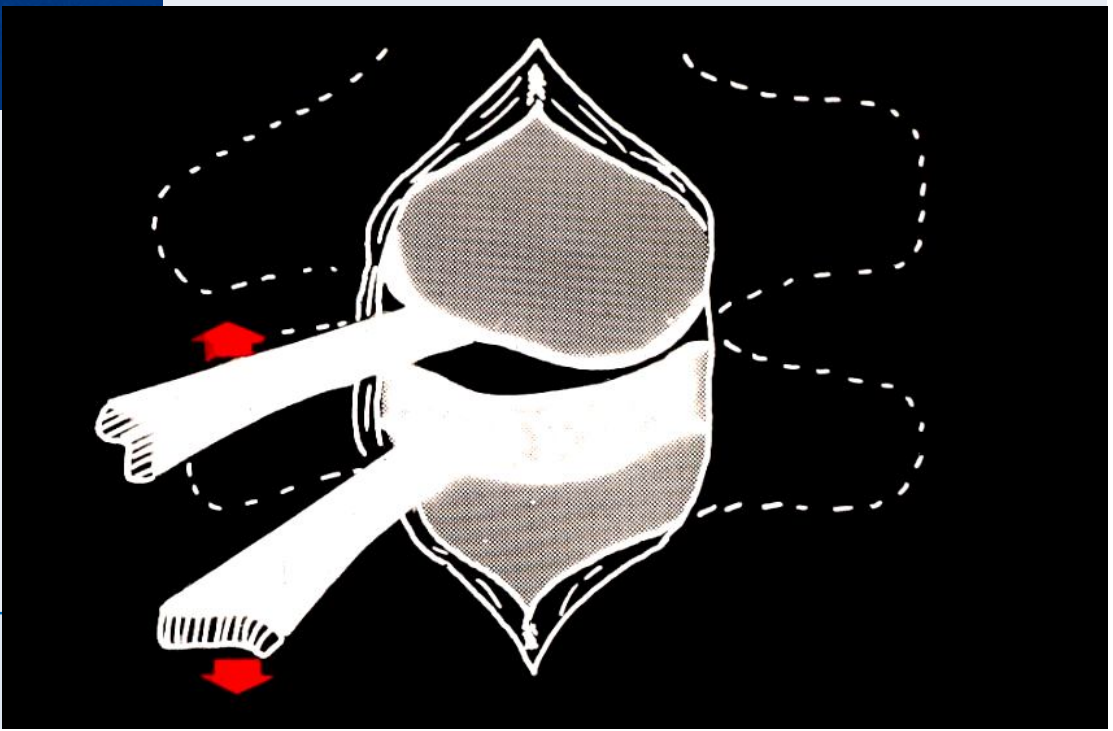
# BILATERAL DISLOCATION







# UNILATERAL DISLOCATION

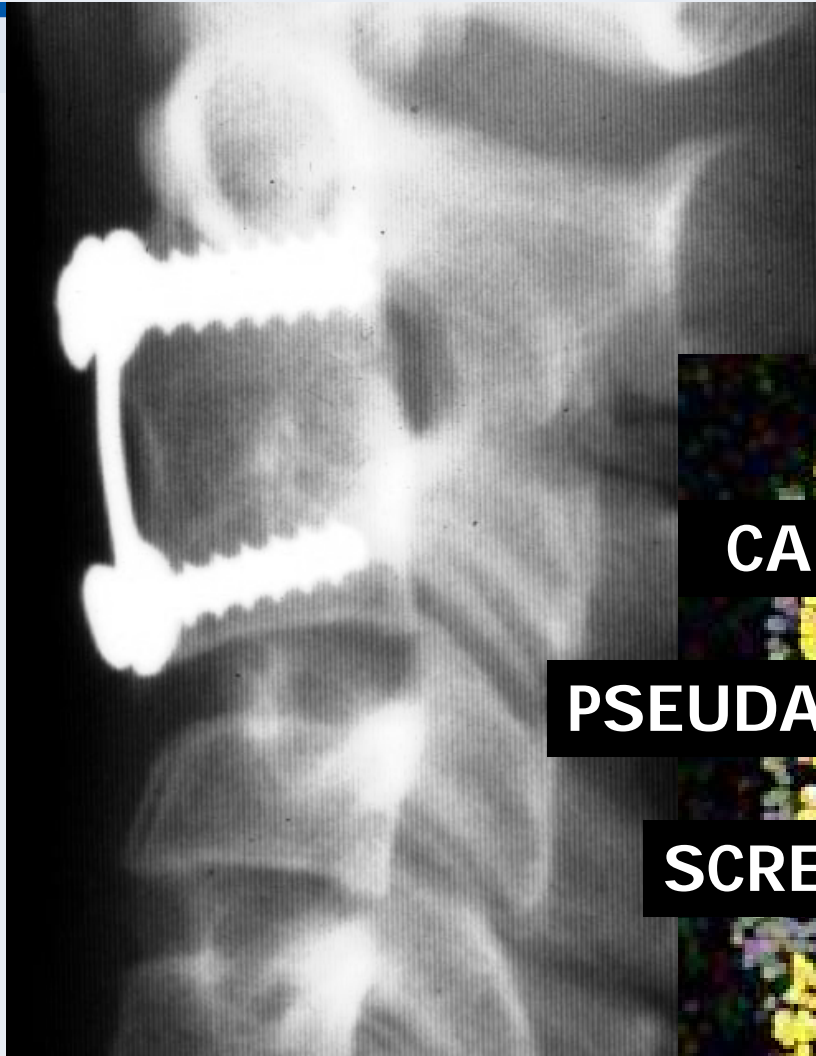






5 cases (/77) of irreducible unilateral dislocation

1979 to 1999 : 597cases



## COMPLICATIONS



**CALLUS DEFORMITY 6 (1%)**



**PSEUDARTHROSIS 9 (1,5%)**



**SCREW BREAKAGE 17 (3%)**

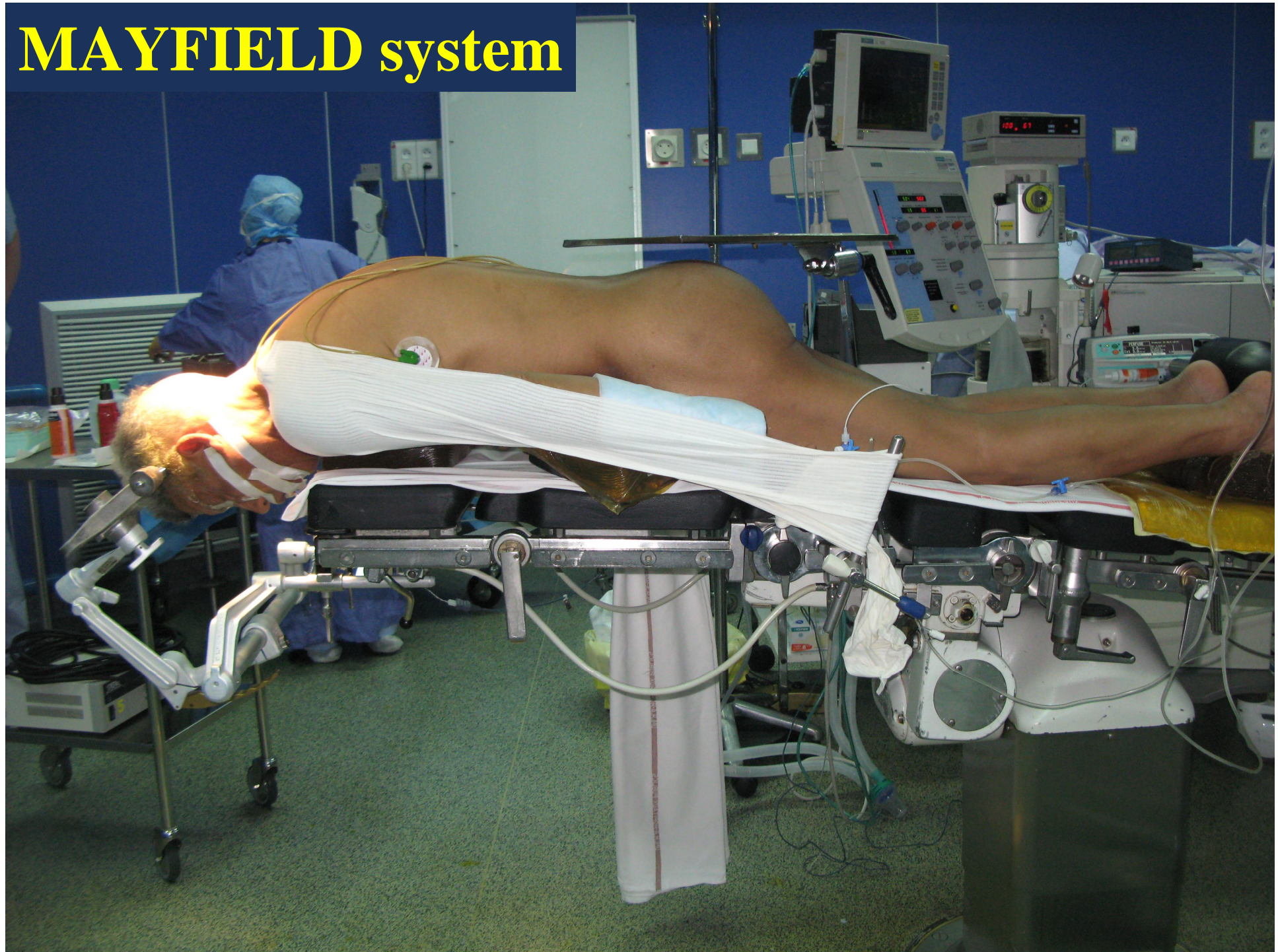


**NECESSITATING REOPERATION 12 (2%)**

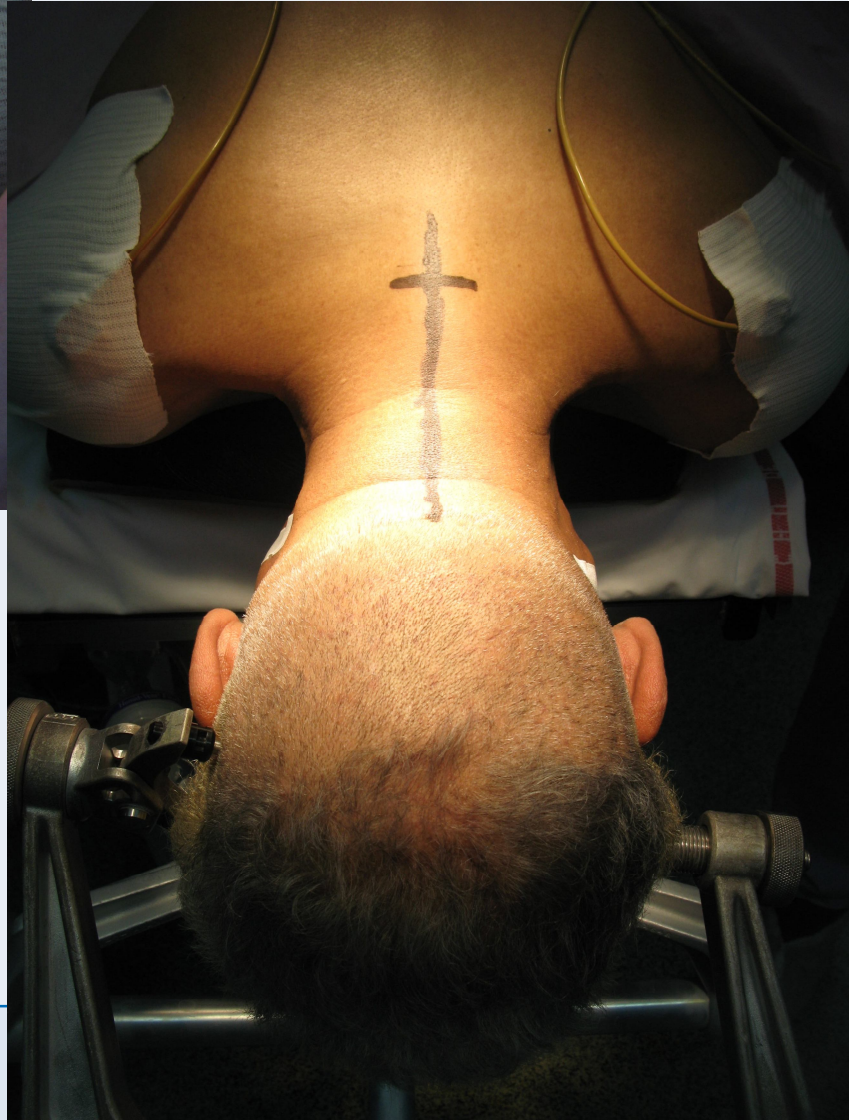
# POSTERIOR APPROACH



# MAYFIELD system







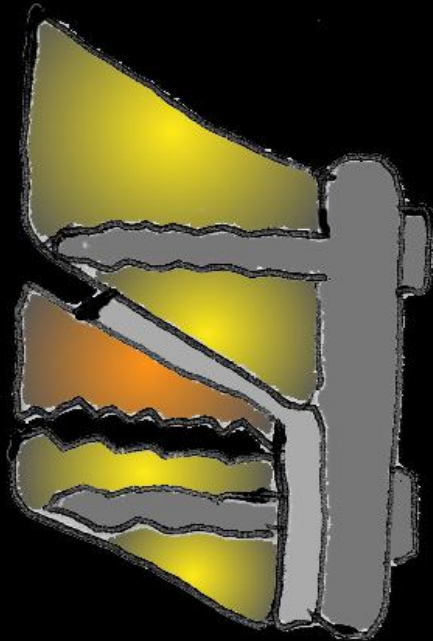
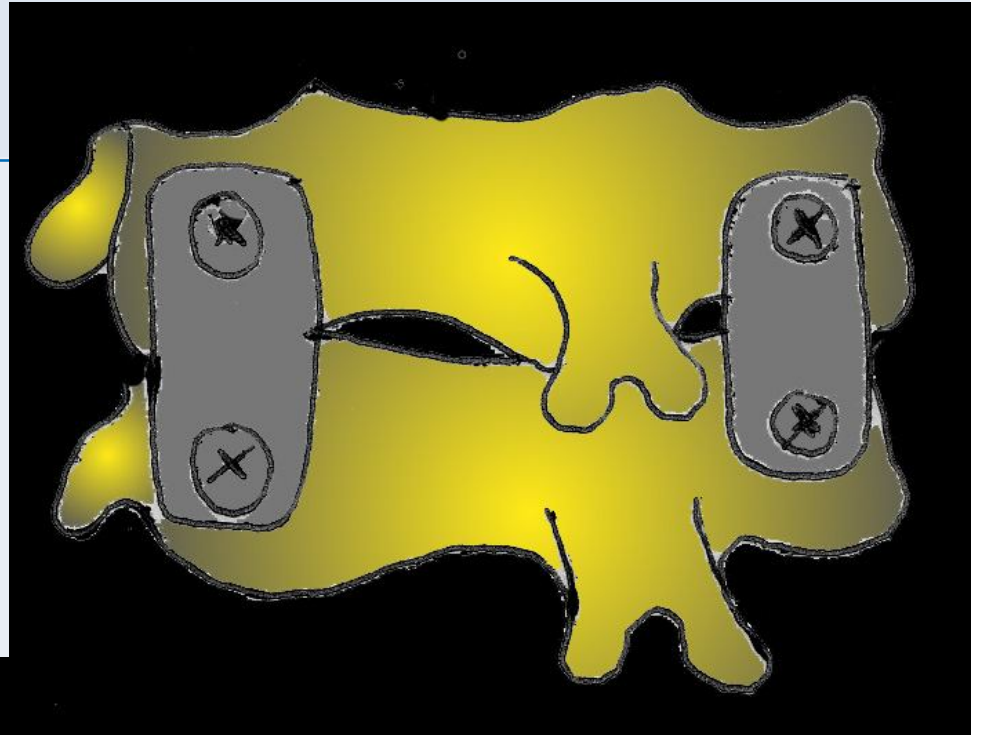
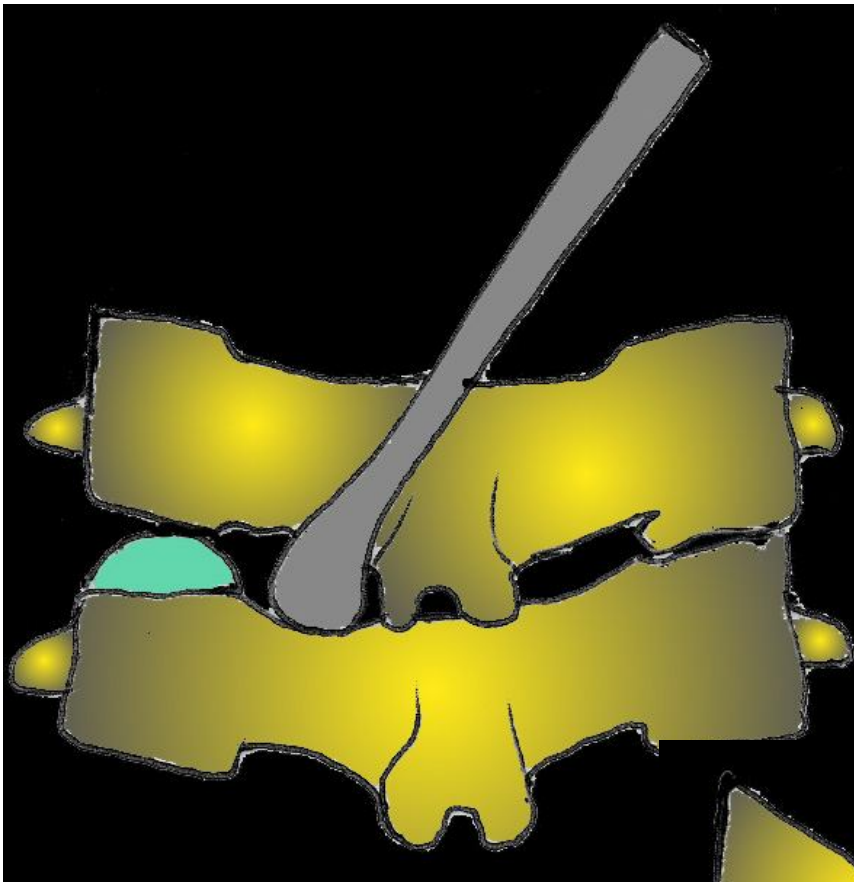


**No eyes compression**



**Xylocaine +adrenaline infiltration**



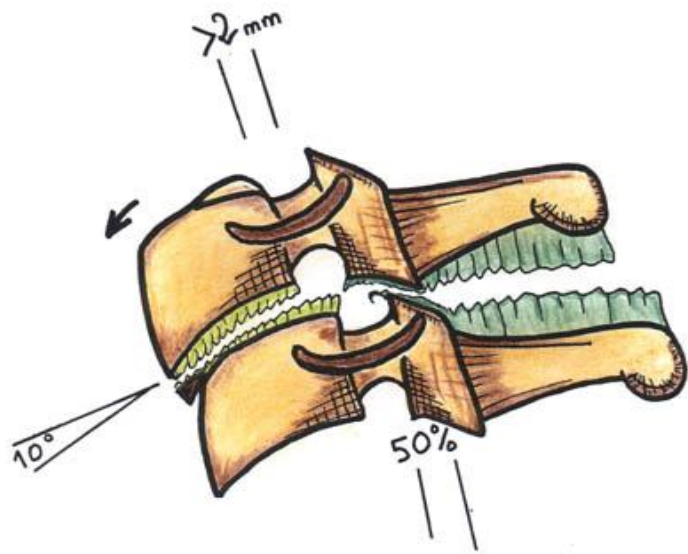


**PORTE MANTEAU**

# BIARTICULAR LUXATION (B3)



# SEVERE SPRAIN

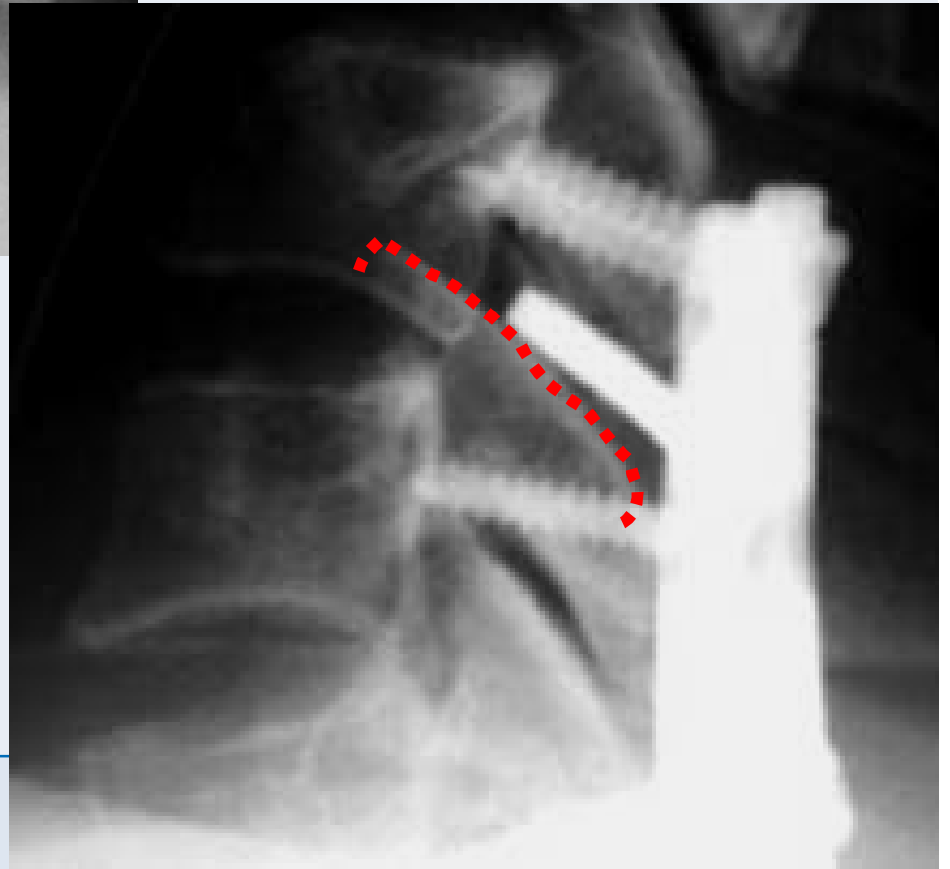
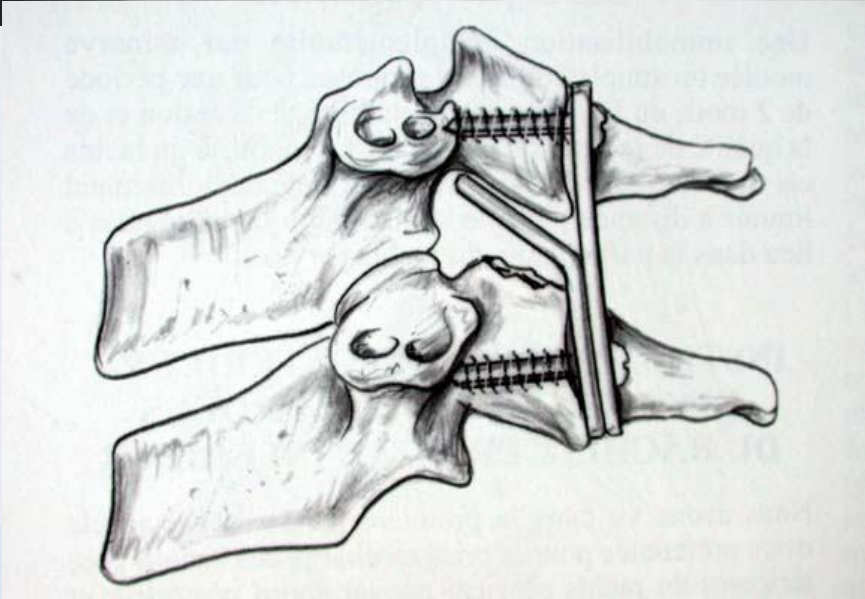
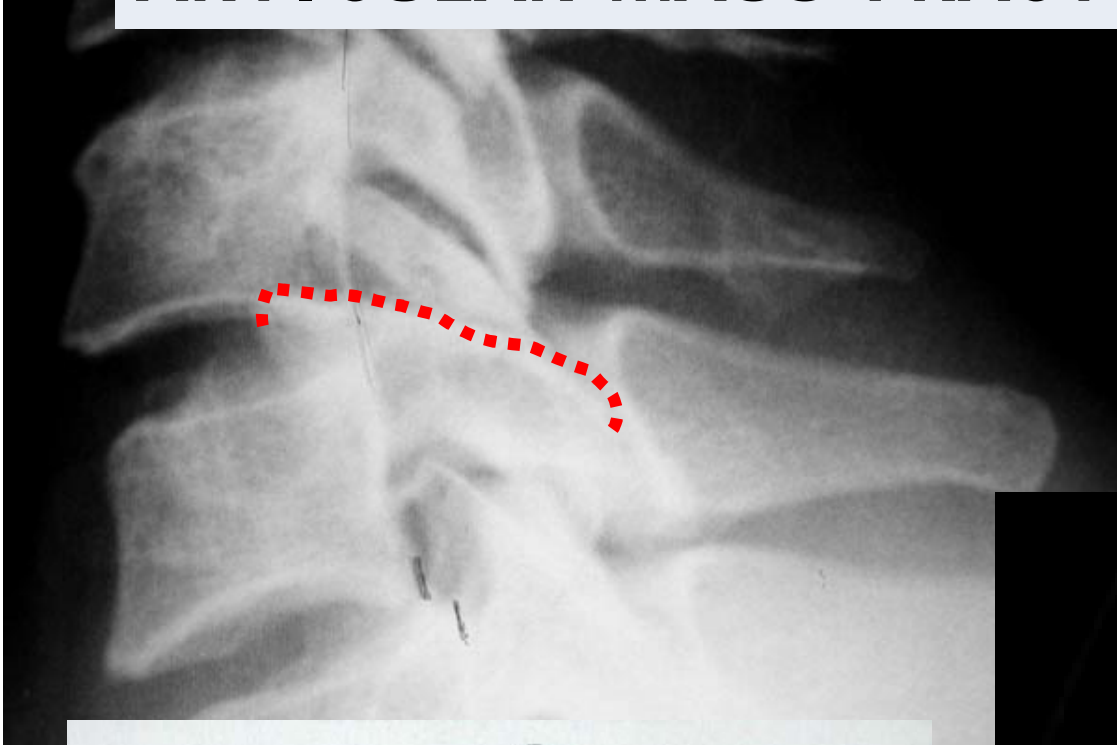






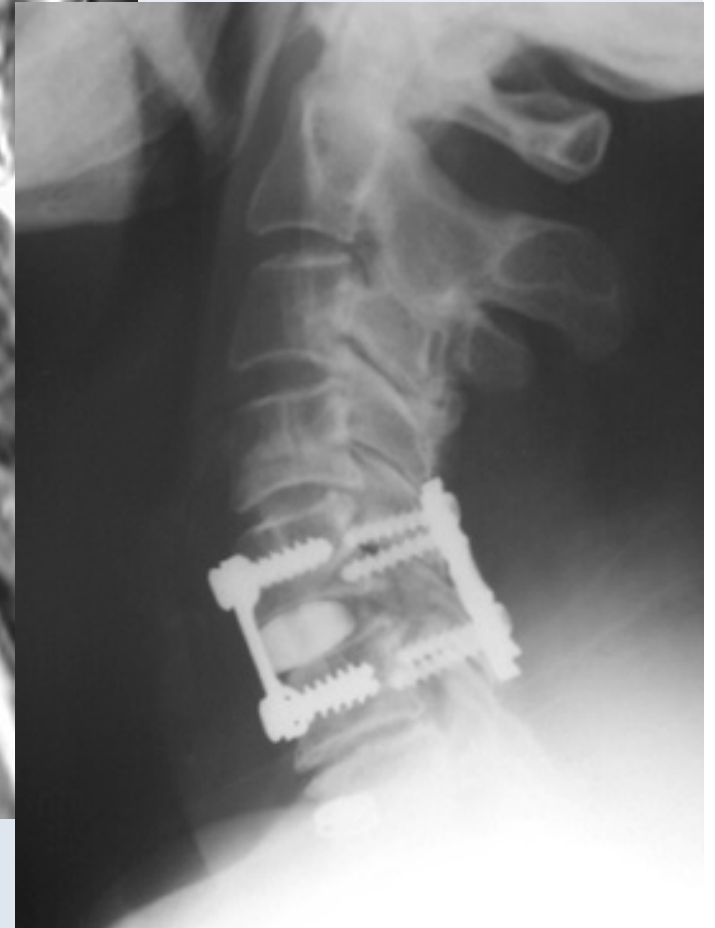


# ARTICULAR MASS FRACTURE SEPARATION



# **COMBINED APPROACH (SOFCOT 2001)**

# Indication de nécessité



# Indication de principe

11

EURORADIO C





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# **3 CAS RARES OU COMPLEXES**

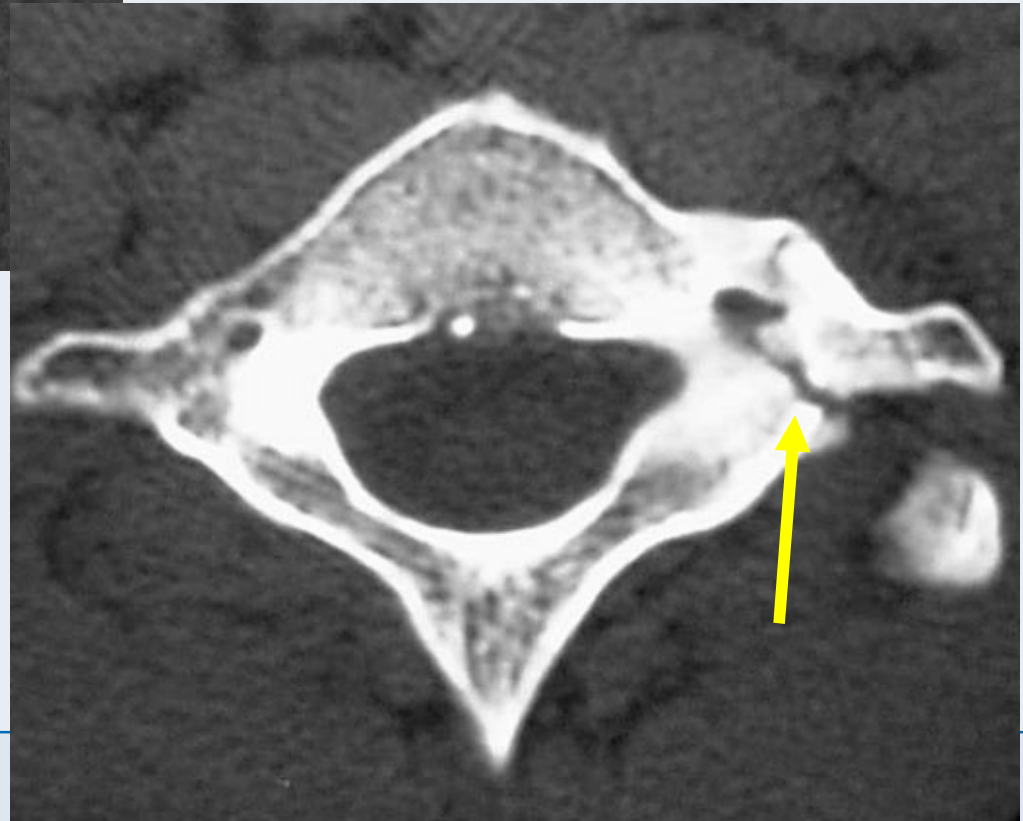
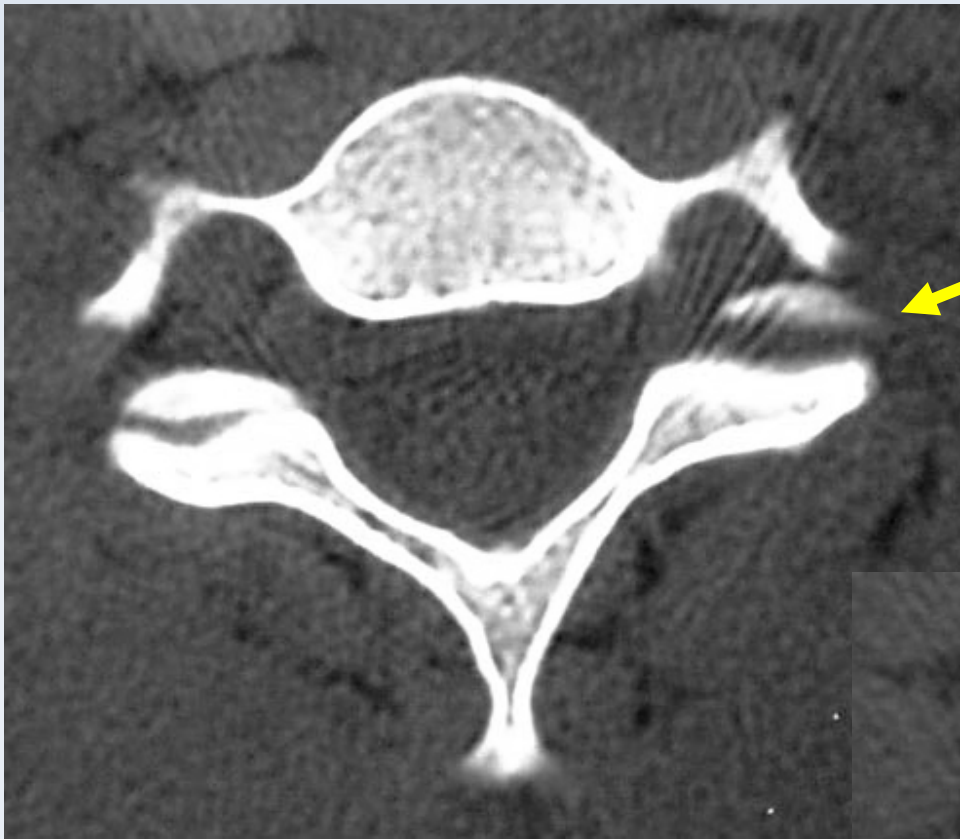
**...ou intérêt de la TDM et de l'IRM**

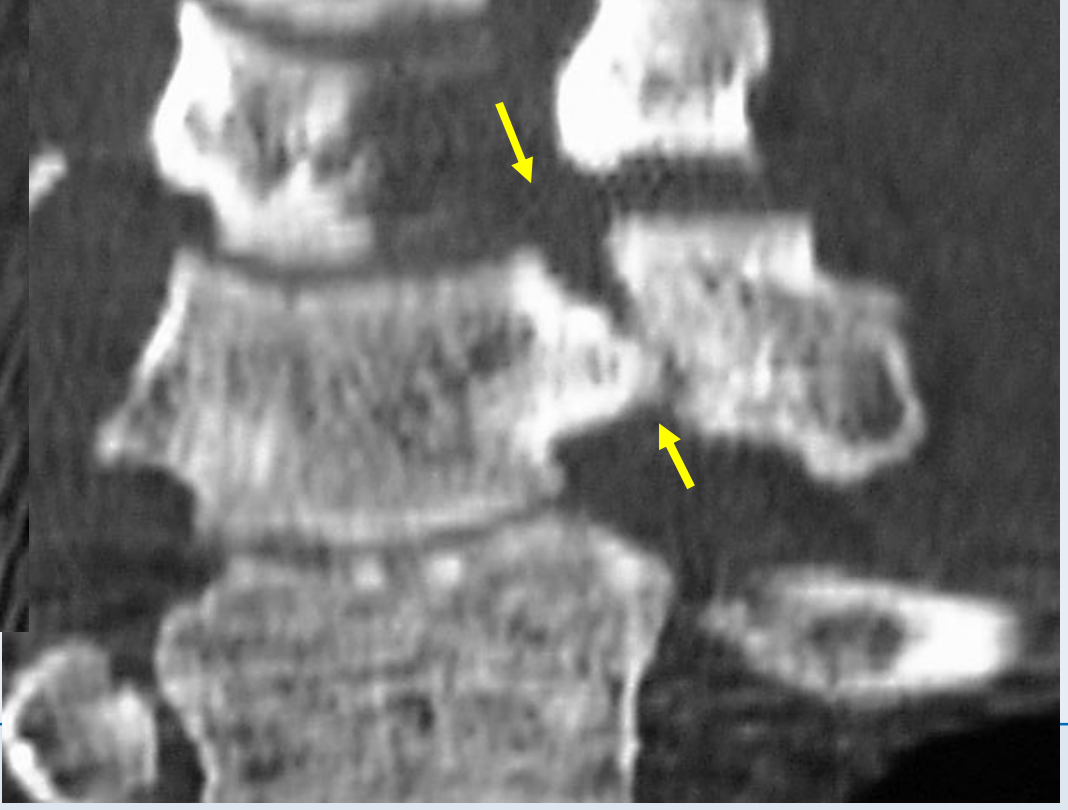
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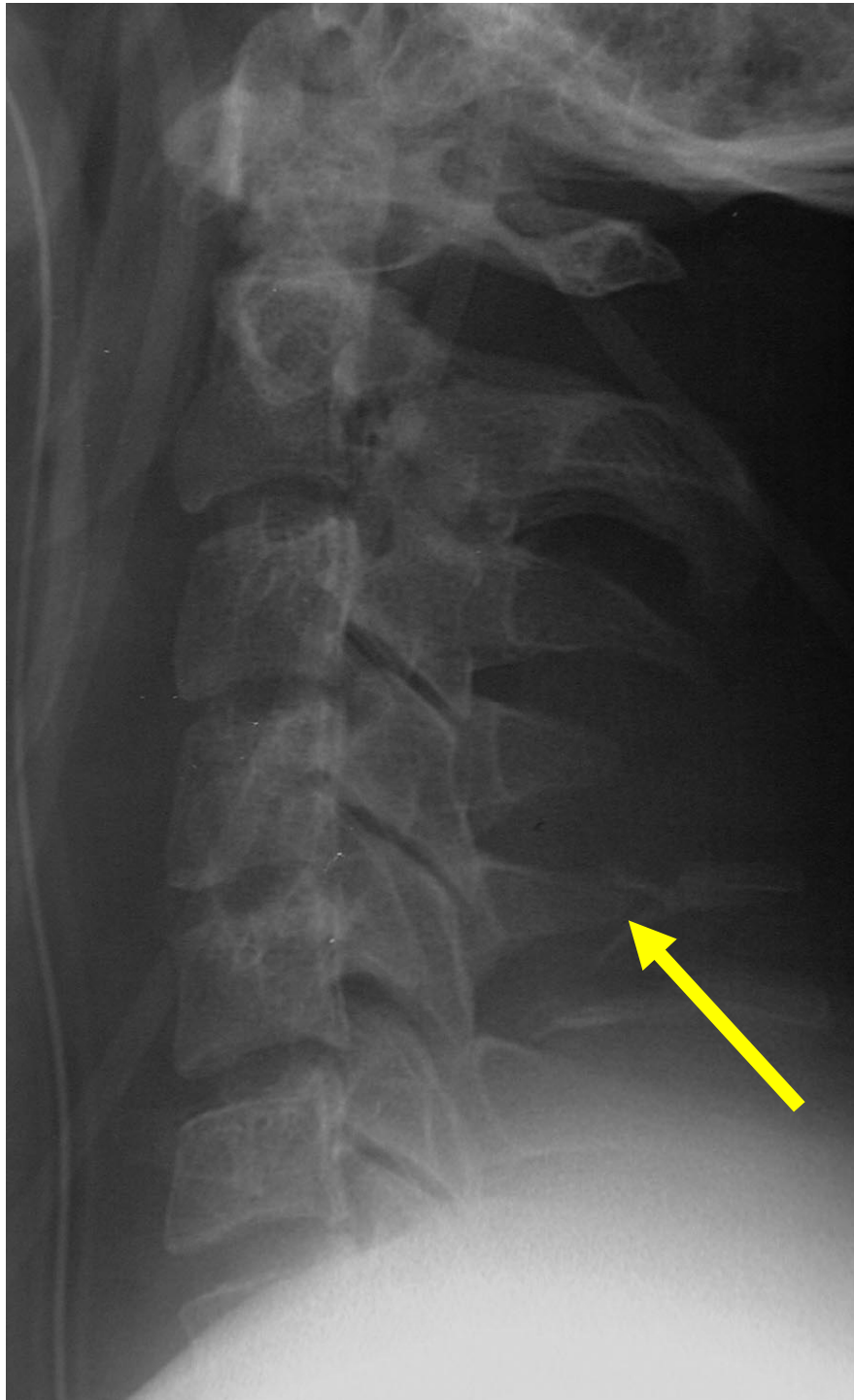
**CAS 1**

**NCB G non déficitaire**





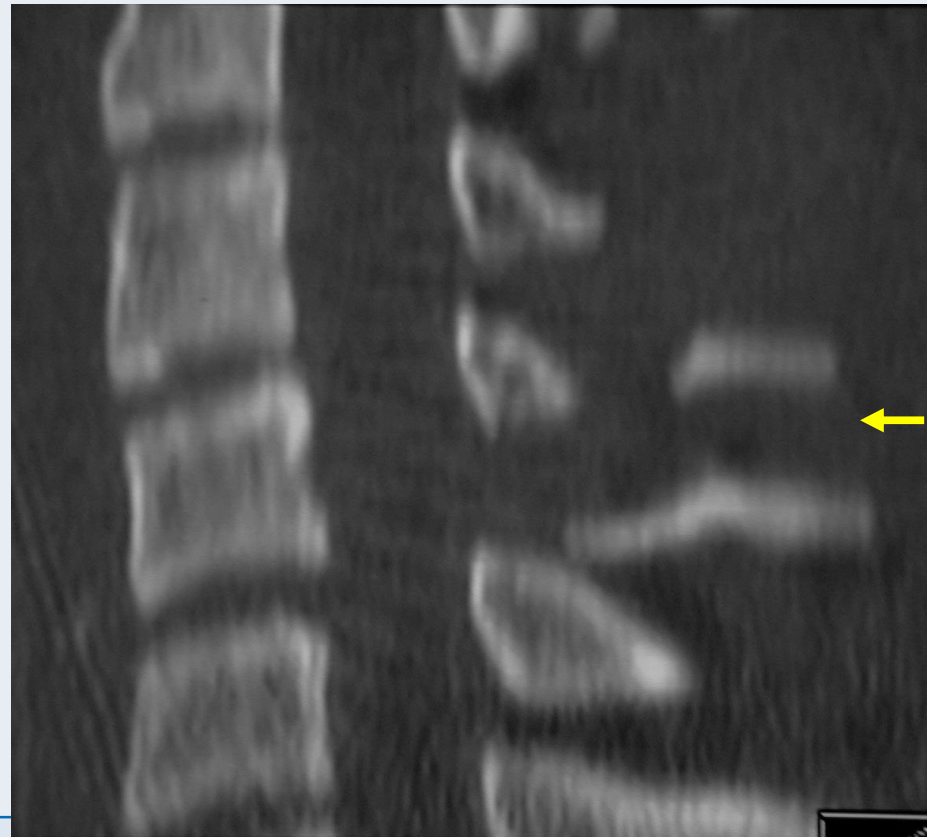




## **CAS 2**

**Accident de rugby**

**Tétraplégie incomplète**







**CAS 3**



**HERNIE DISCALE + SYRINX PRE TRAUMATIQUE**