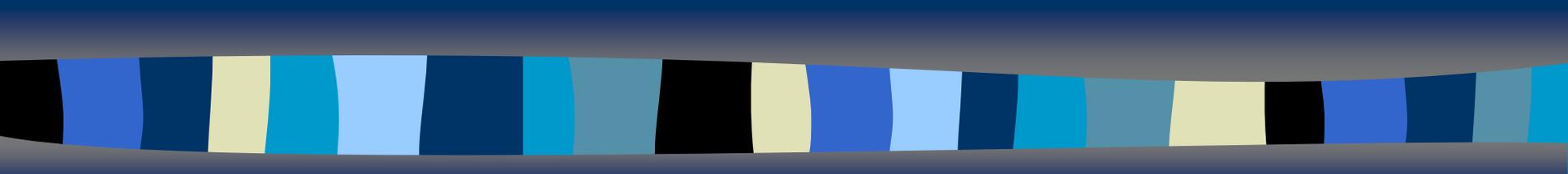


# The surgical treatment of metastatic disease of the spine



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**National Institute of Neurosurgery, Budapest**

# Spine tumours

- 15% of the primary tumours of the CNS affect the spine
- The spine manifestation appear around 10% of cancer patient (growing ↑)

## Location:

- Extradural (55%)
- Intradural-extramedullary (40%)
- Intramedullary (5%)



# Incidence



- 5-30% of cancer patient suffer from metastatic bone disease
- 60-70% affect the spinal coloumn
- The spine manifestation appear around 10% of cancer patient
- up to 80 cases per million people every year.
- Frequent in elderly (average 62 year)
- Frequent in male (60%)

# Incidence

- 80% of spine metastatic tumour disease primarily originate from
  - Lung
  - Breast
  - Prostate
  - Gastro-intestinal
  - Melanoma
  - Lymphoma
- 20-40% of metastatic spine tumour cause neurological damage



# Localisation

- Dorsal spine (40-60%)
  - Lumbar spine (30-50%)
  - Cervical spine (25%)
- 
- Most frequent the epidural localisation (mainly bony structures)
  - Intradural 2-4%
  - Intramedullar 1-2%

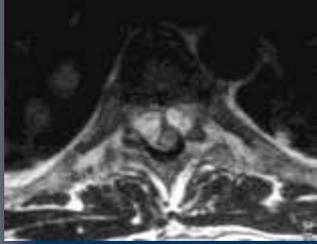


# Symptoms

- ❖ Pain – also in rest (95% !) localised, spinal pain or neurogenic, radicular pain
- ❖ Weakness of the limbs (only 18% of patients were able to walk without help at the time of diagnosis – 15% paraplegic)
- ❖ Sensory symptoms (50%)
- ❖ Autonomic dysfunction

The median times from the onset of symptoms to time of diagnosis were 3 months





# Pathomechanism

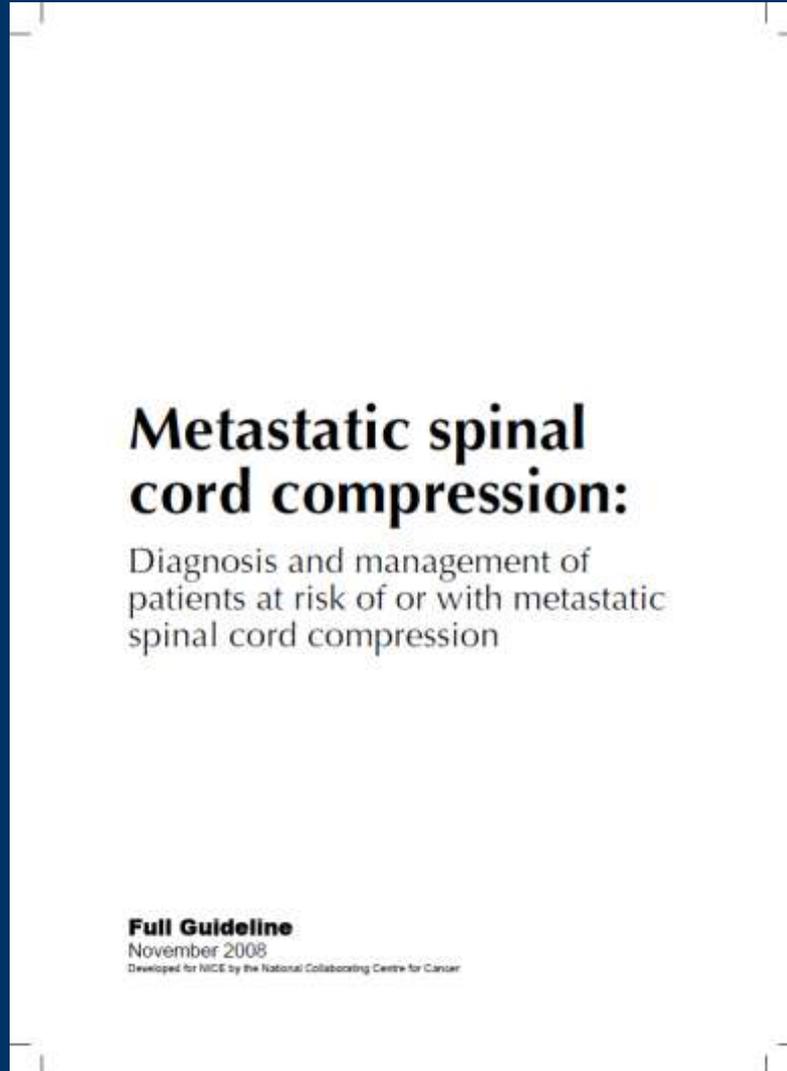


*Epidural or intradural* metastatic tumour - direct tumour growth causing compression of the spinal cord or cauda equina

- Pathological vertebral body collapse – causing spinal canal narrowing, instability and compression of the spinal cord
- More severe the developed neurological impairment at the time of intervention, more less the chance the recovery of the lost function

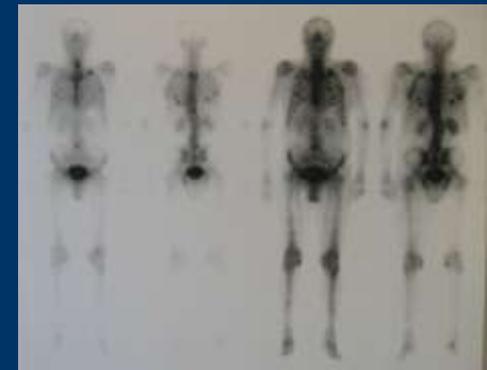
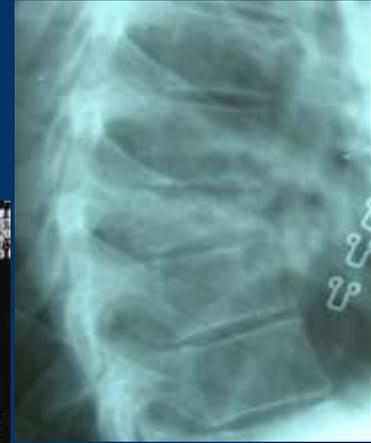
# Guideline:

# [www.nice.org.uk/CG75](http://www.nice.org.uk/CG75)



# Diagnostic procedures

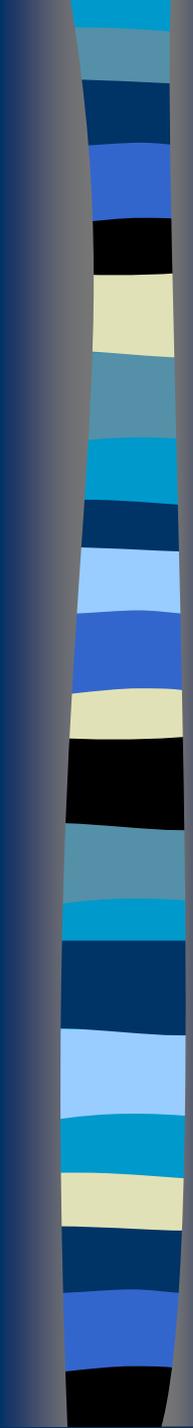
- X-ray (positivity 67-85%)
- MRI
- CT (bony structures)
- Bonescan (multiplicity)
- DSA (embolization)
- PET



# The aim of the surgical intervention



- **Elimination of neural compression** – pain attenuation, improvement of neurological function, prevent the progression
- **Terminate the instability**, statical restoration of spinal coloumn, prevent the fracture of vertebra
- **Improve the quality of life**
- Histology (unknown primary tu.)
- Palliation (surgical treatment do not increase the survival)



# Contraindications

- Complet paraplaegia present more than 24h
- Expected survival time < 3-6 month
- Oncologically unmanageable widespread metastatic disease

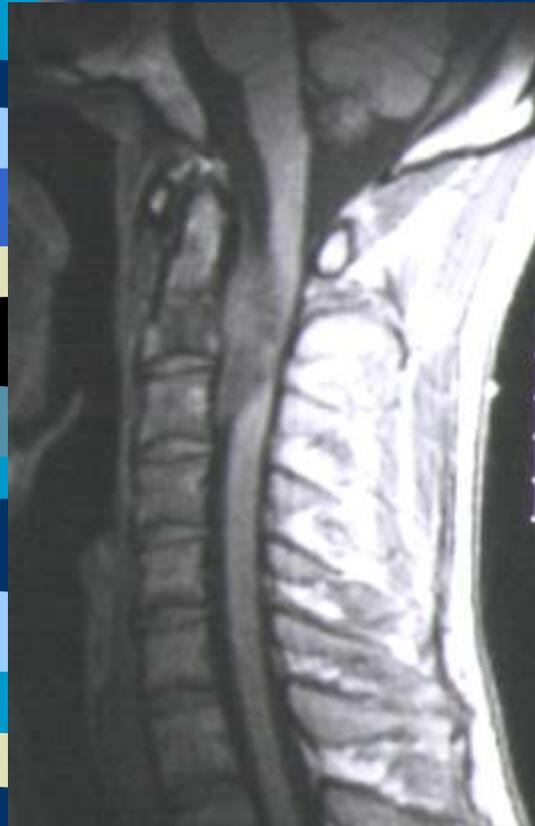
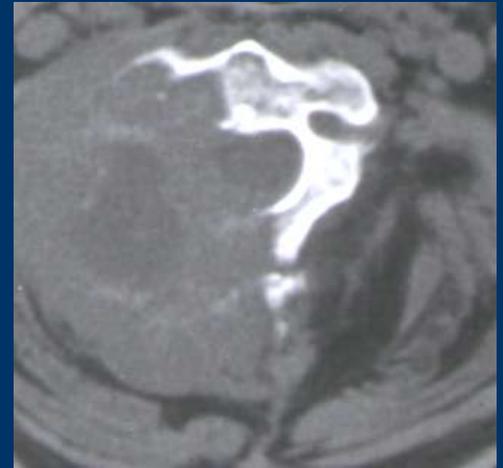
## *Relative* kontraindications:

- Multiplicity of spine metastatic tumours
- Very sensitive tumor for radiotherapy (small cell (microcellular) pulmonary cancer)
- Poor performance status

# Possibility of surgical interventions



# C II metastatic disease



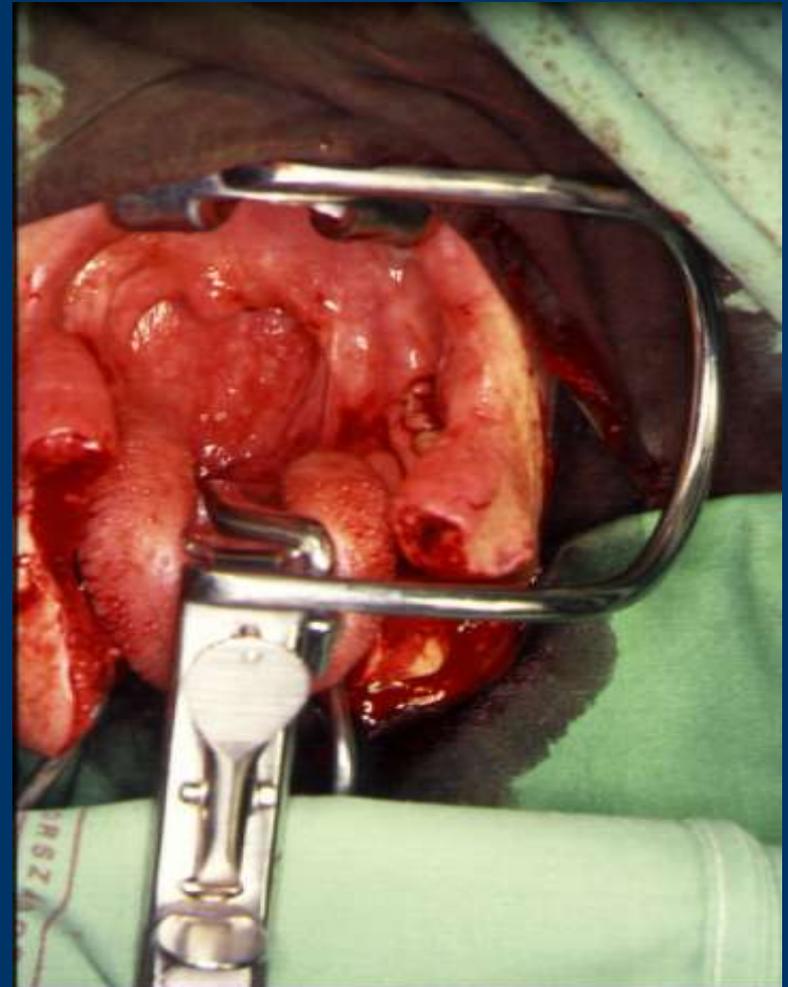
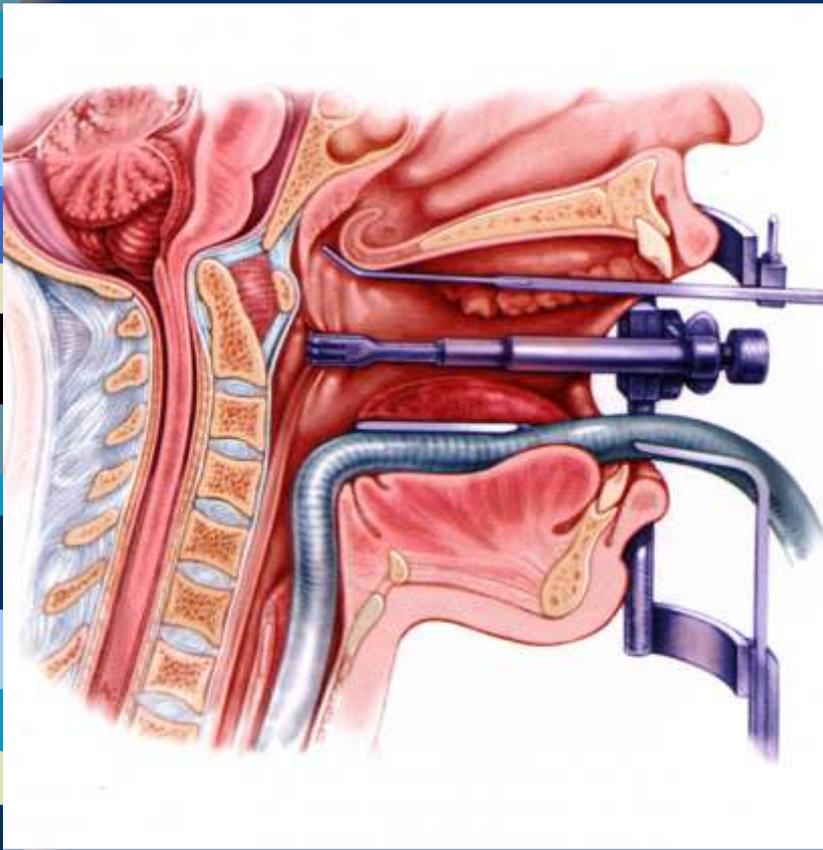
# C II metastatic disease



# HALO external fixation



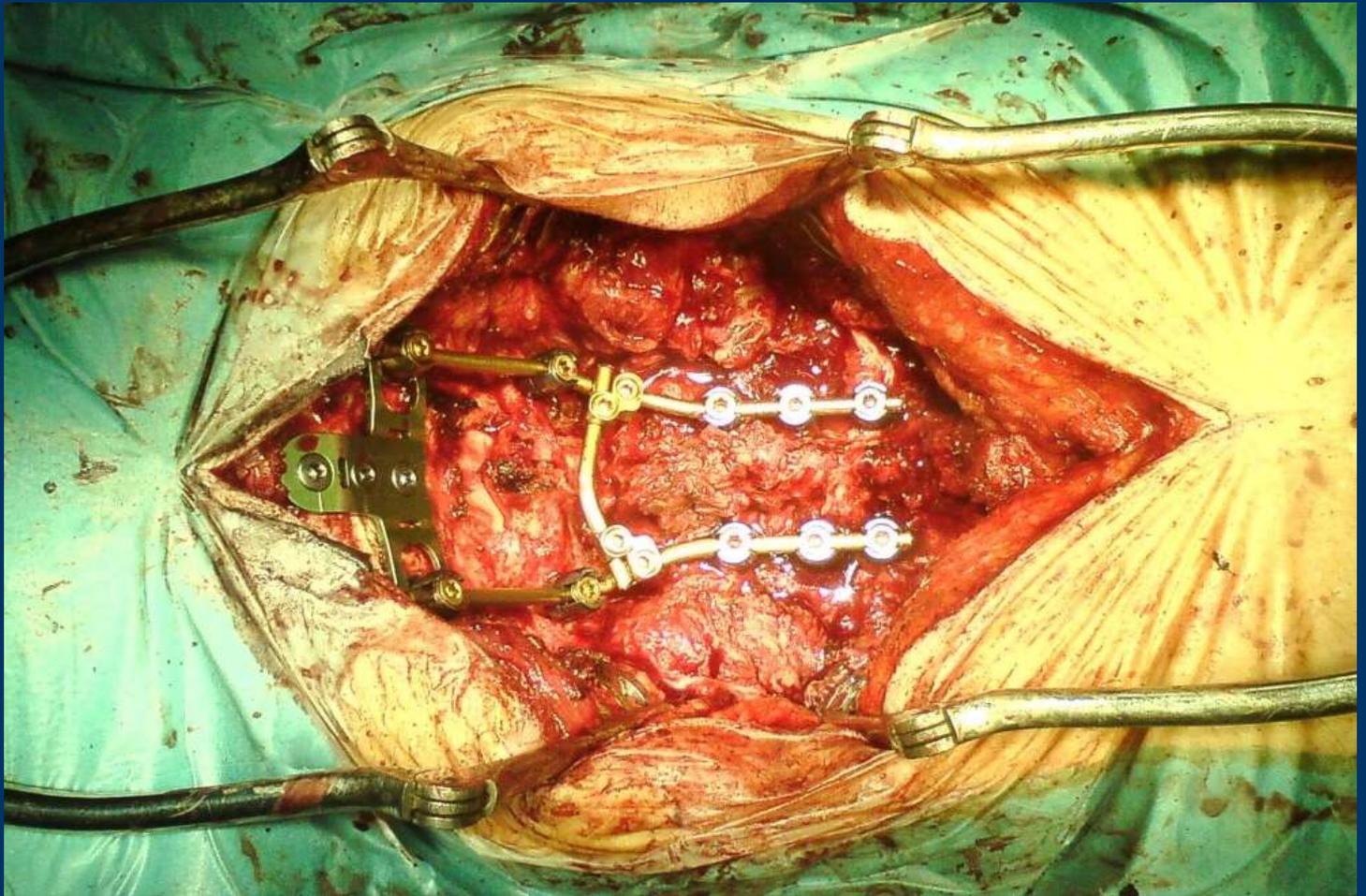
# Transoral approach



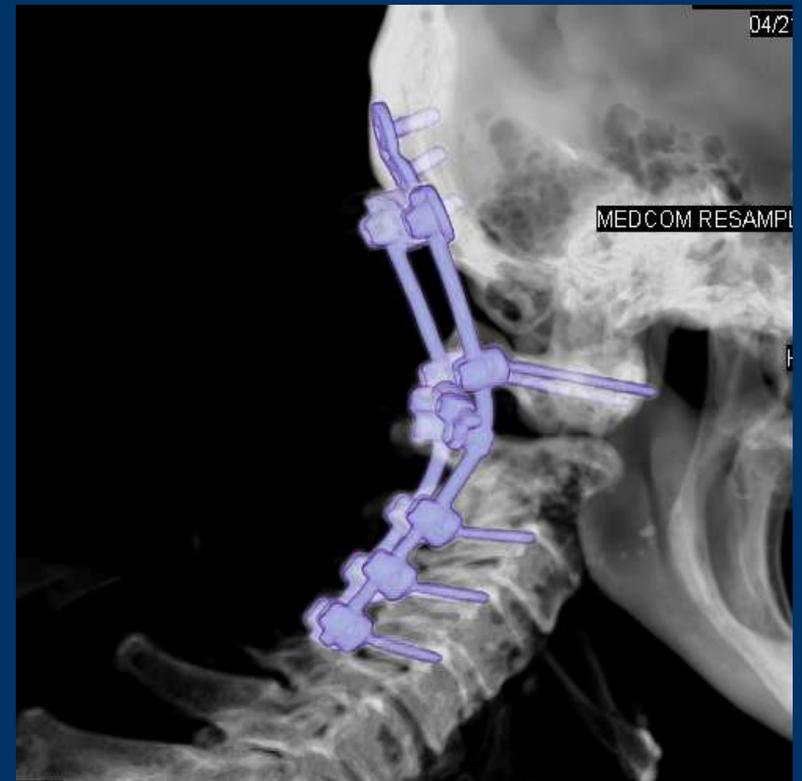
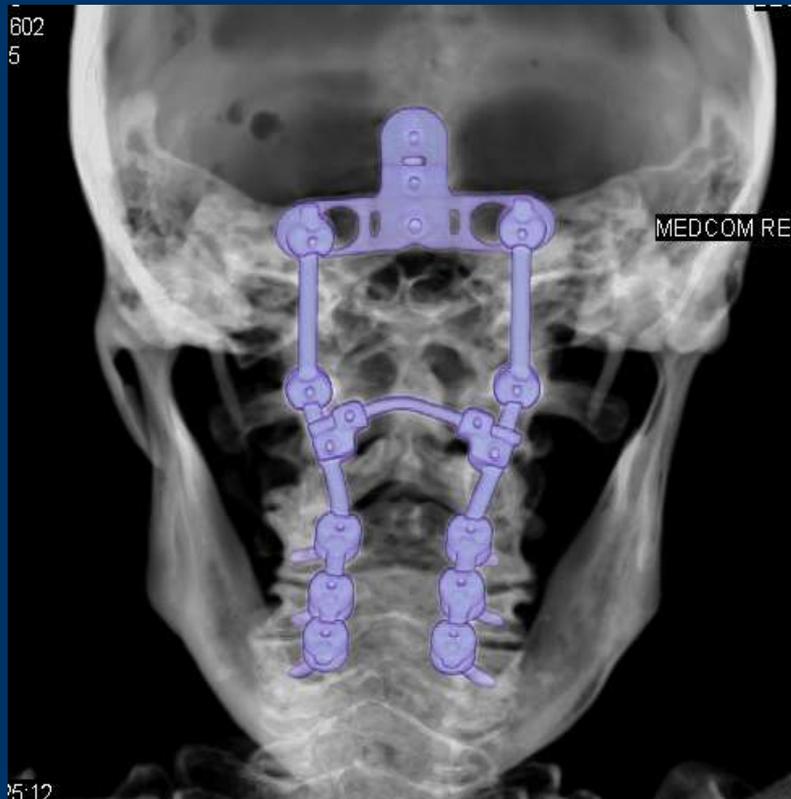
# Tumour transoral removal & fixation



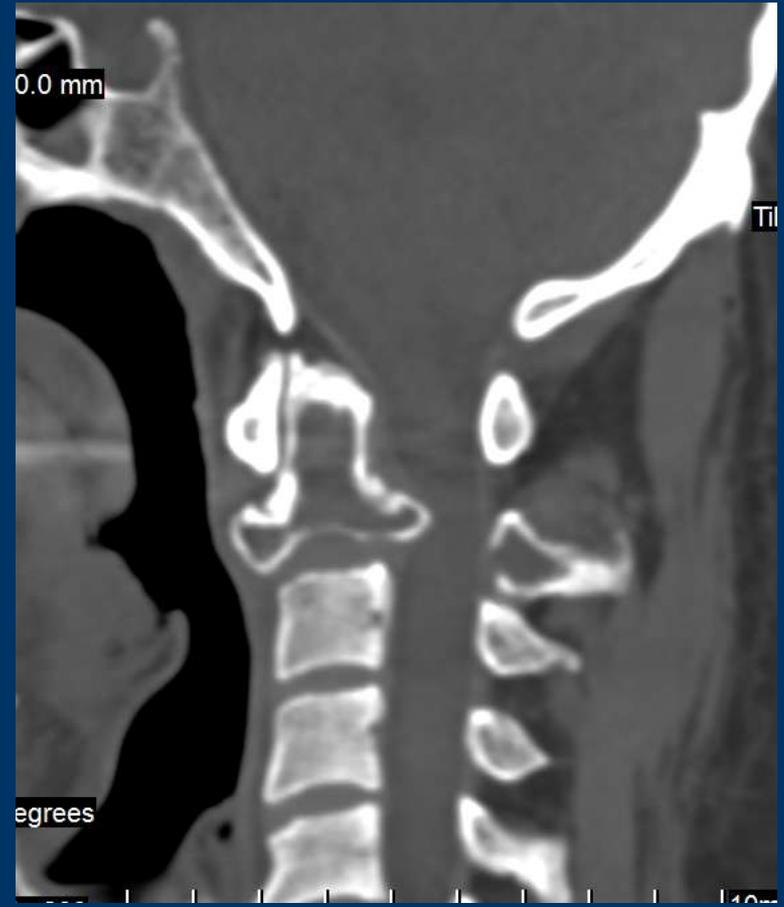
# Occipito-cervical fixation



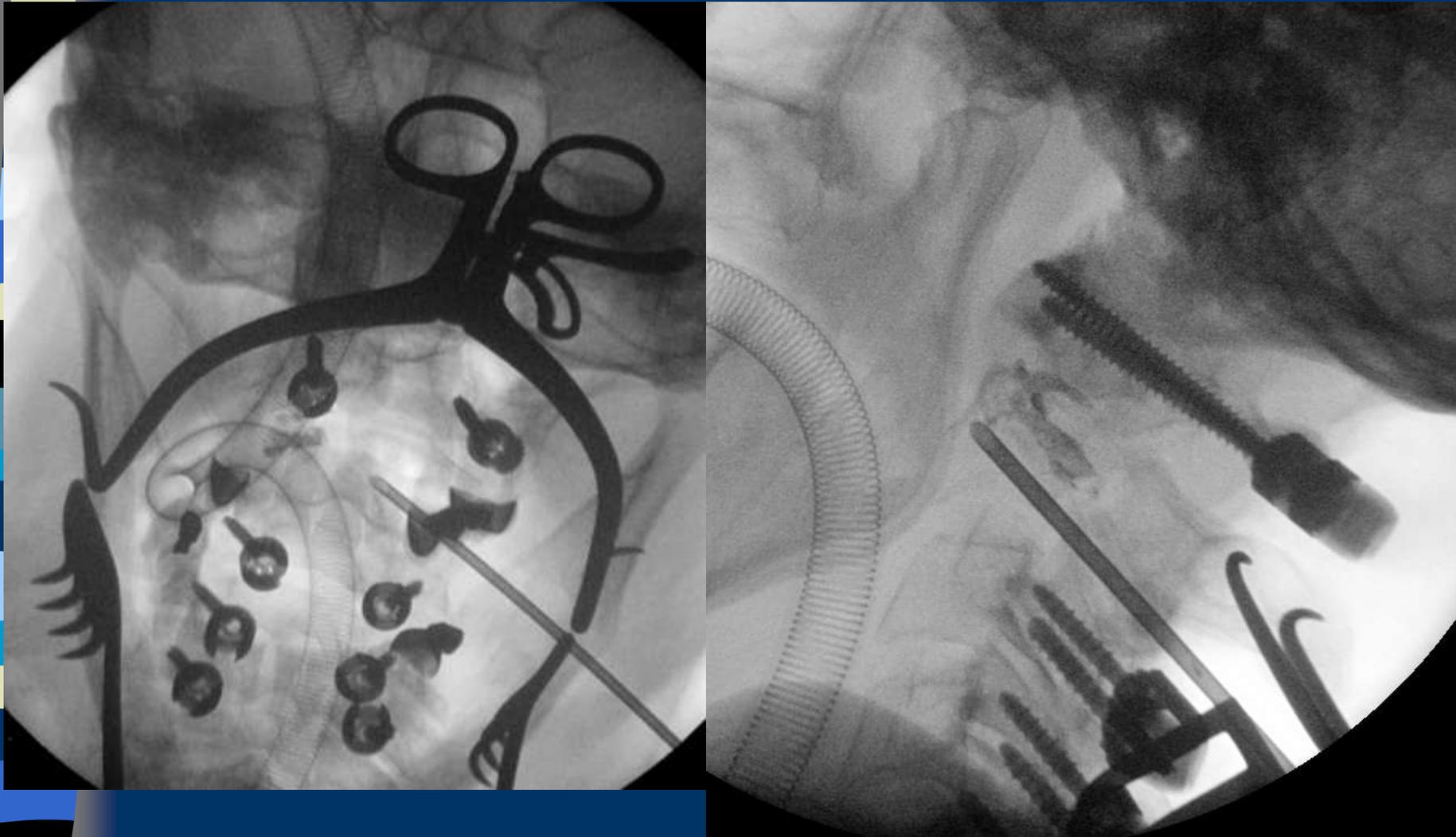
# Occipito-cervical fixation



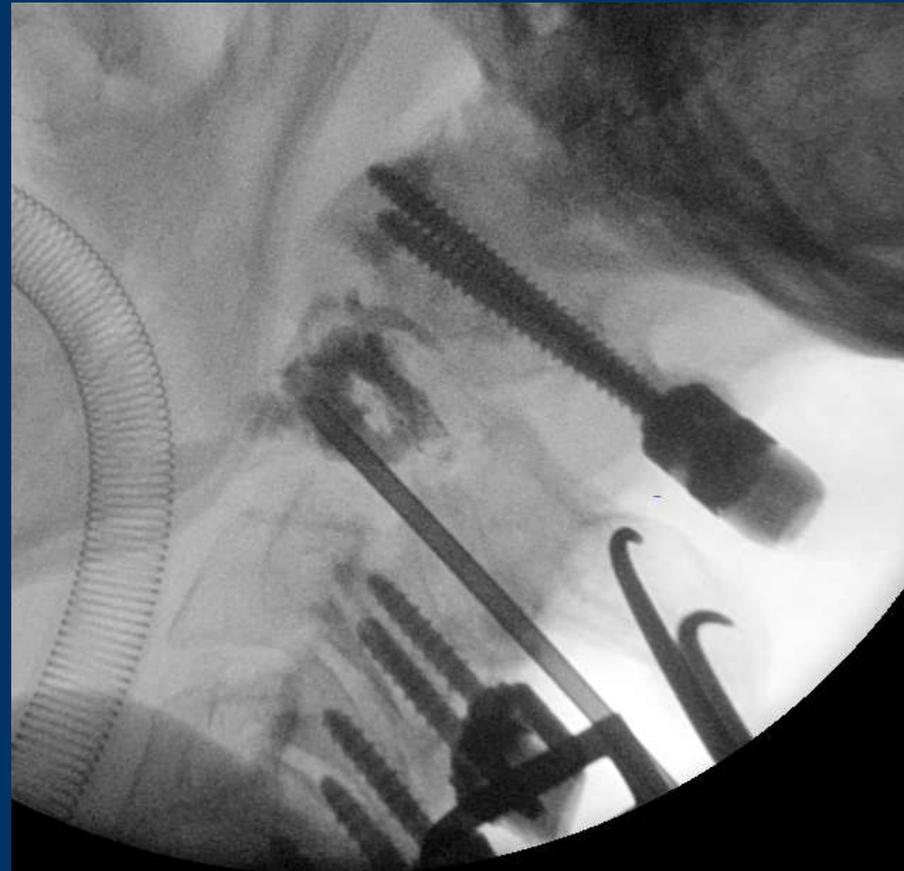
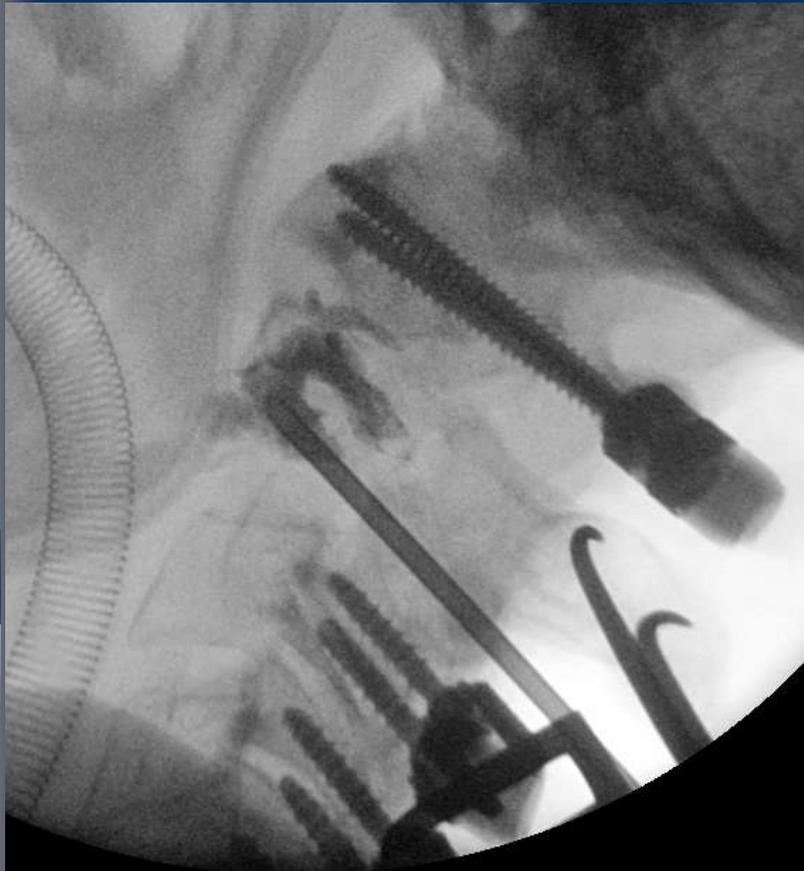
# CII multiple myeloma



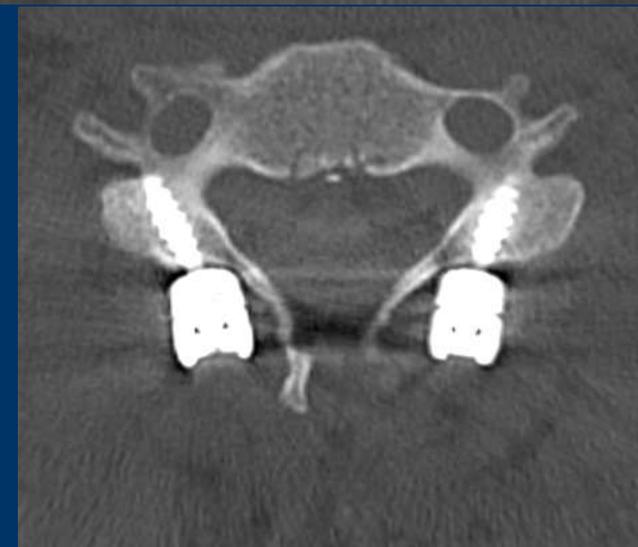
# CII vertebroplasty, fixation



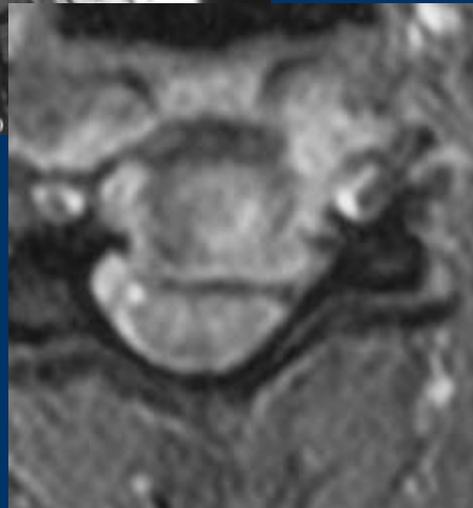
# CII vertebroplasty, fixation



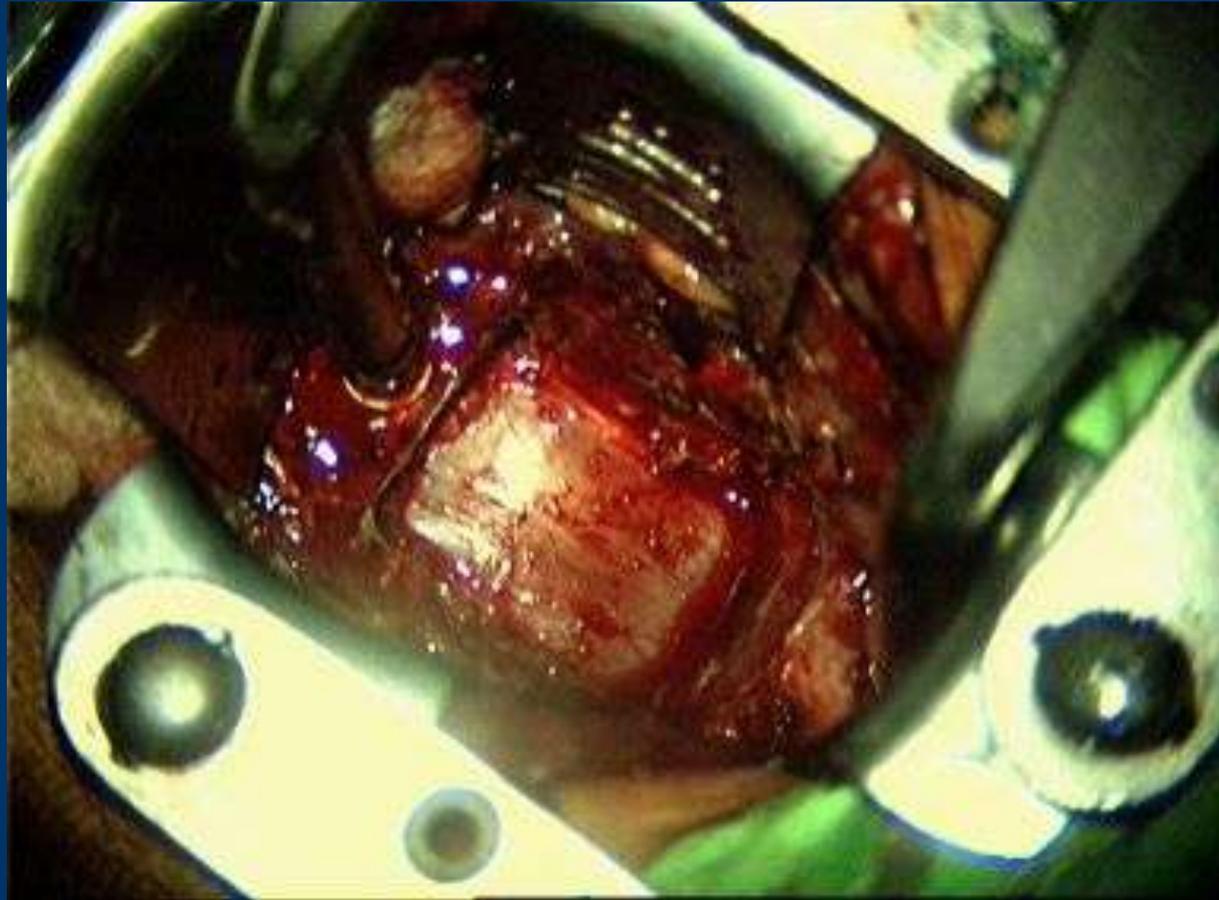
# CII vertebroplasty, fixation



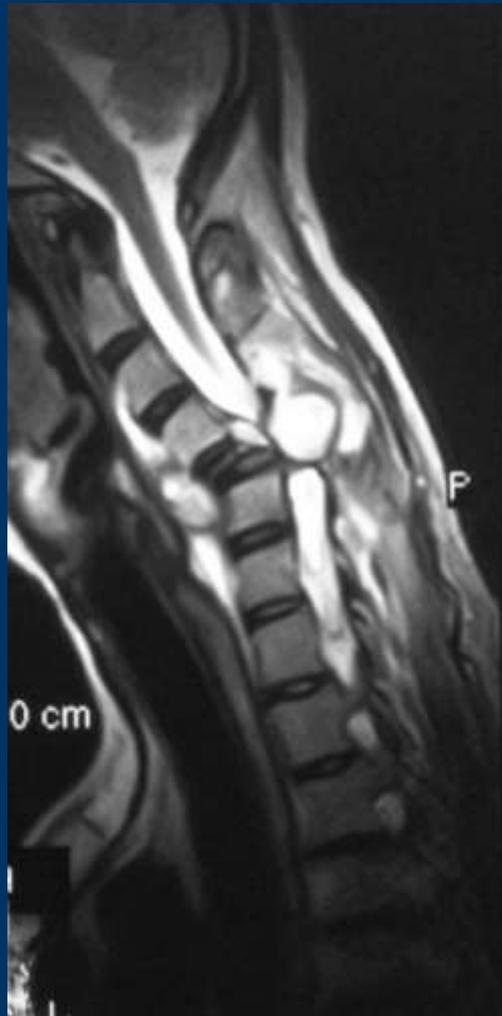
# Metastatic breast cancer (CIII)



# Corpectomy



# 360° tumour removal & fixation



# Cage, Lift spacer



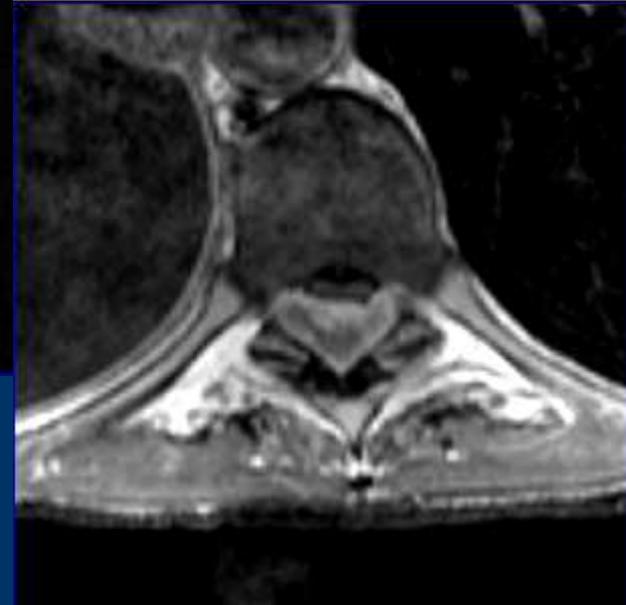
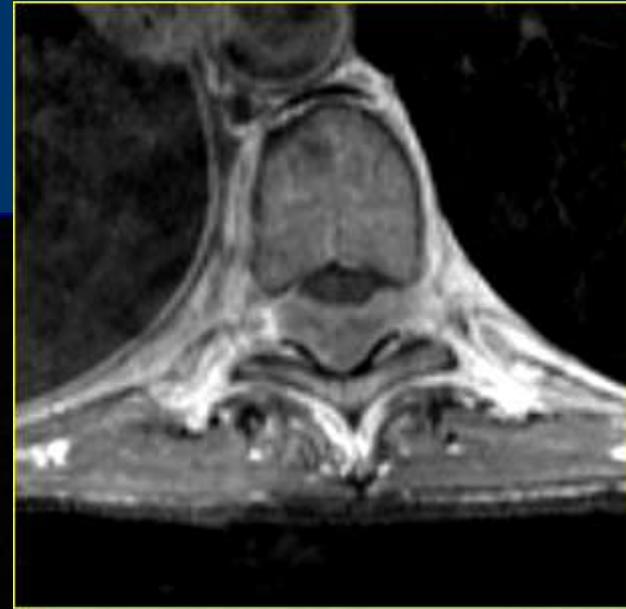
# Metastatic disease of cervico-thoracic junction



# Combined 360° ventro-dorsal surgical removal



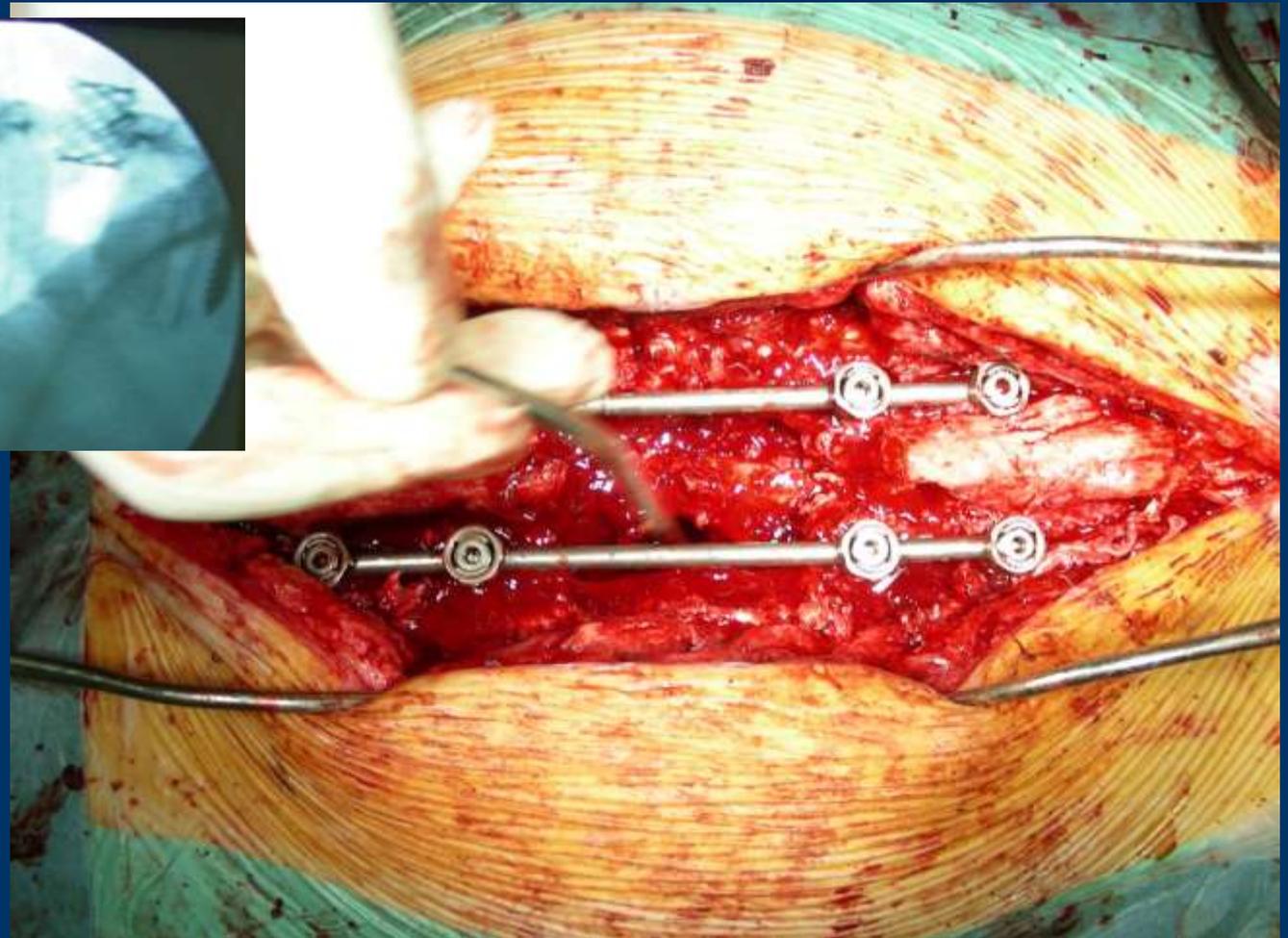
# Thoracic epidural metastasis



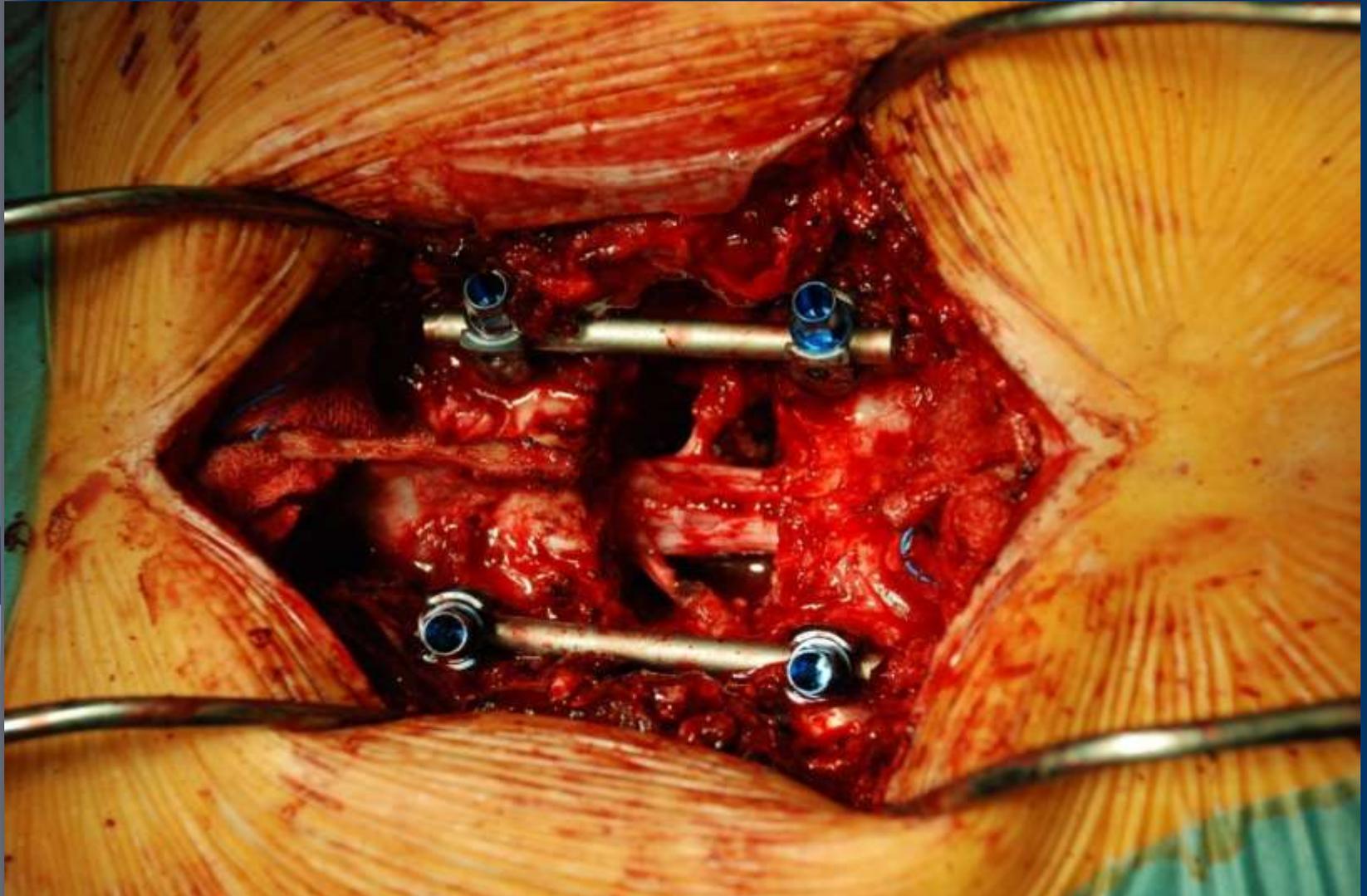
# Thoracic (ThXI) metastasis



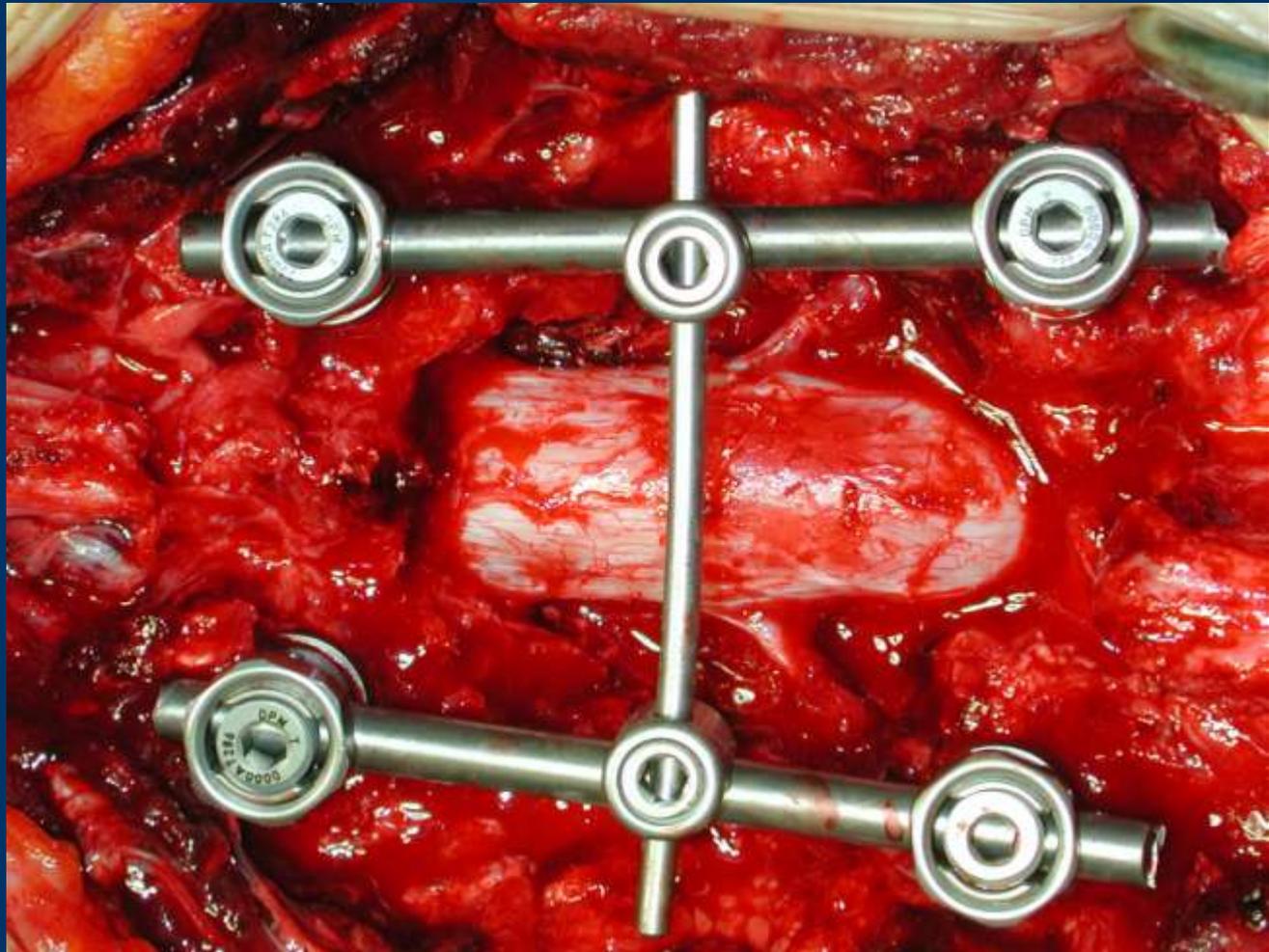
# Thoracic metastasis removal & fixation



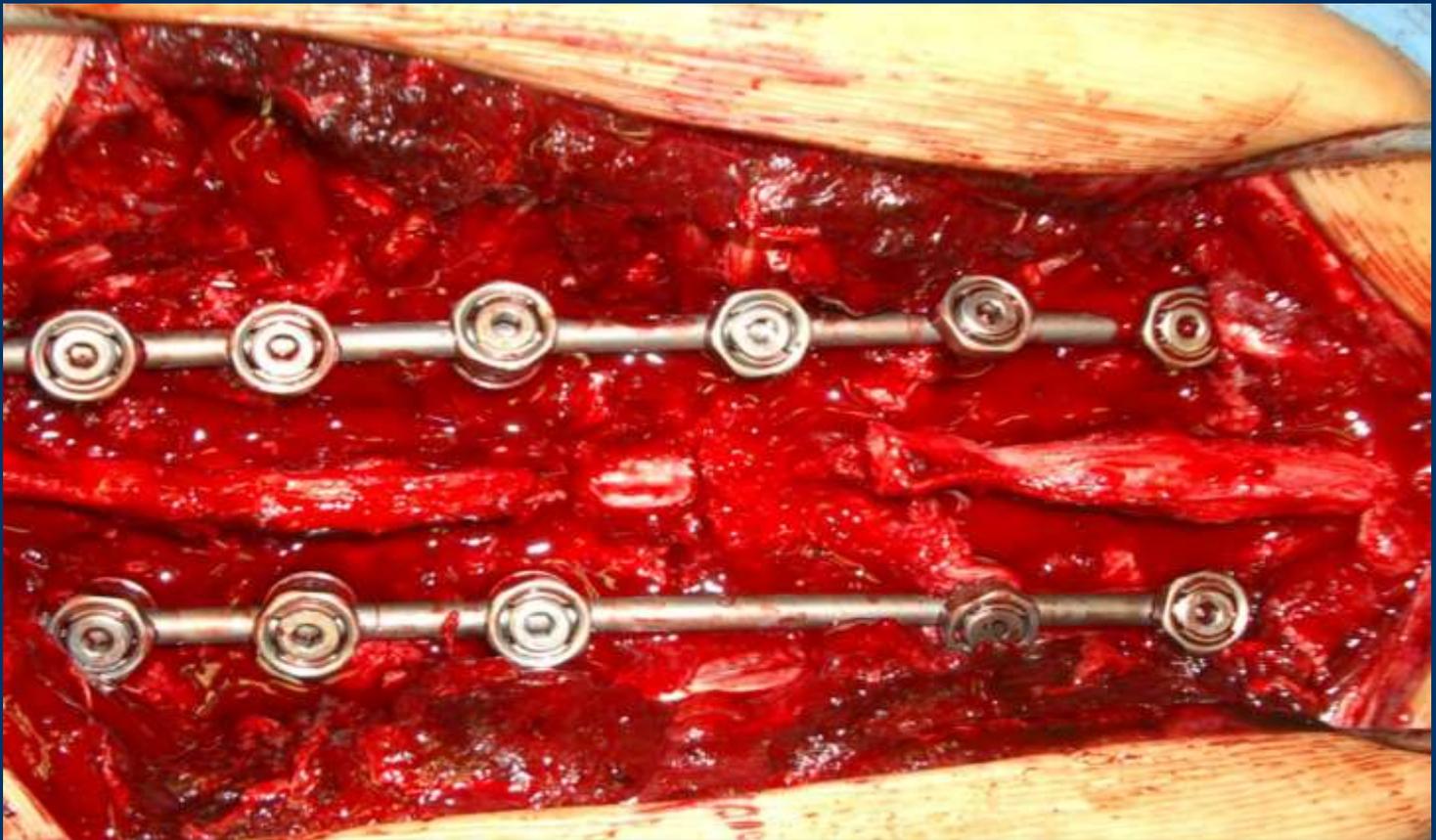
# Thoracic metastasis removal & fixation



# Thoracic metastasis removal & fixation



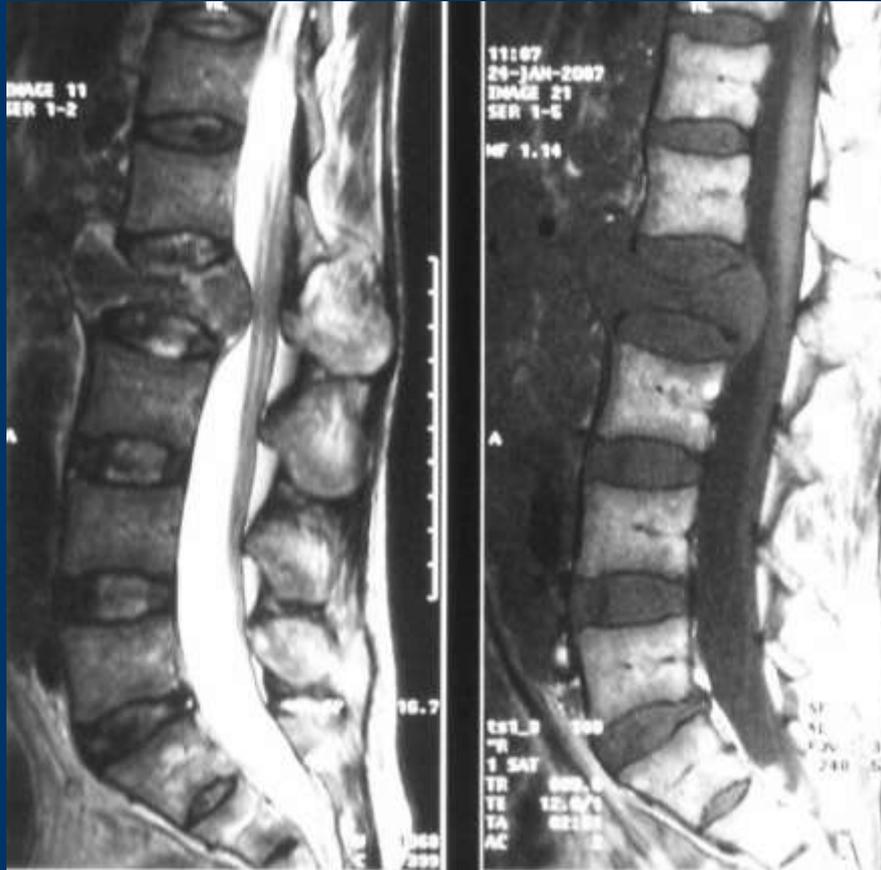
# Polysegmental fixation



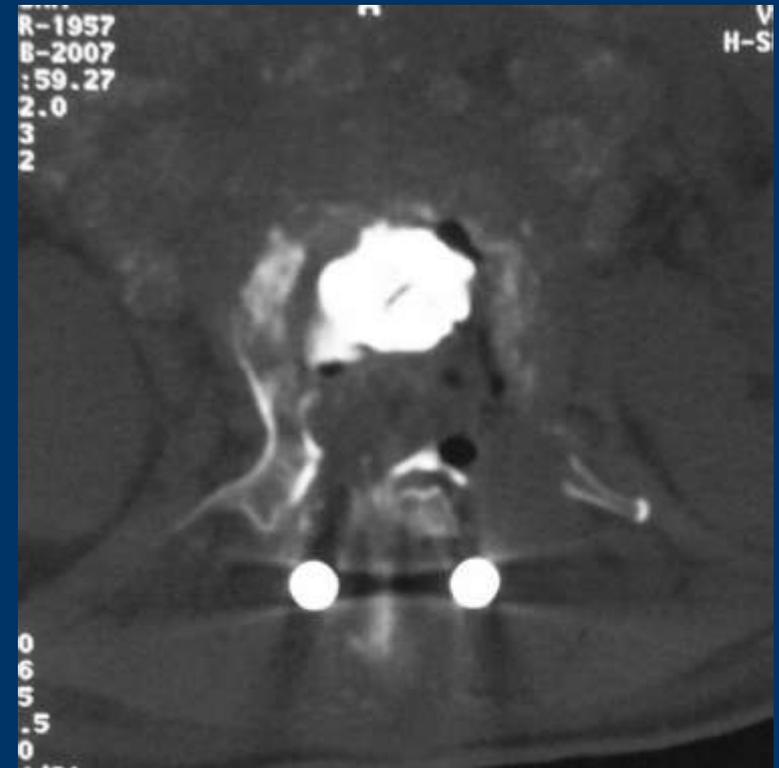
# Surgical removal of the body & fill with methylmetacrilát



# L II metastasis



# L II metastasis



# Kidney cancer with multiple metastasis



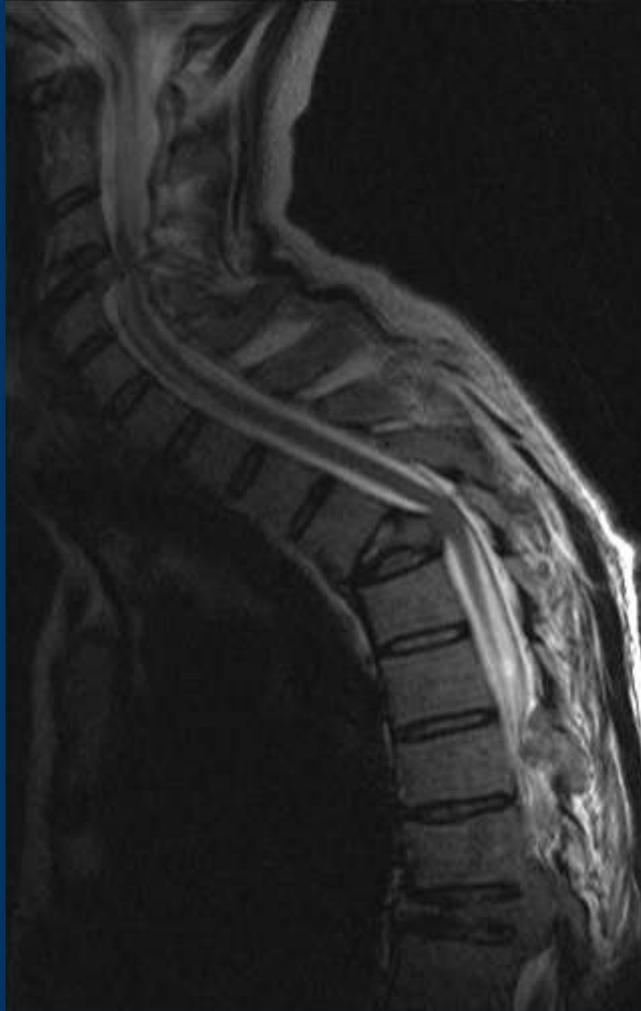
# Kidney cancer with multiple metastasis



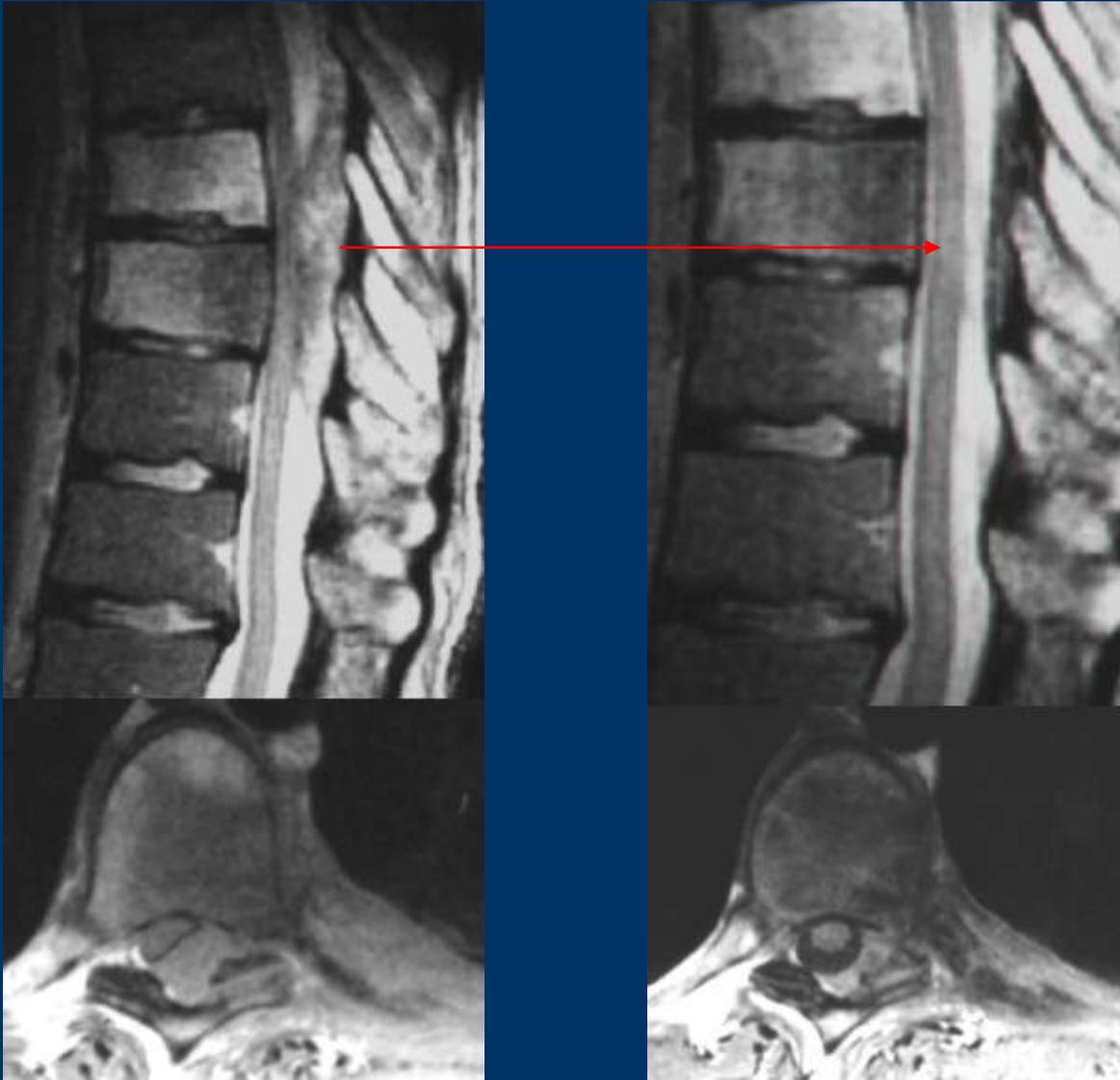
# What does it mean: inoperability?



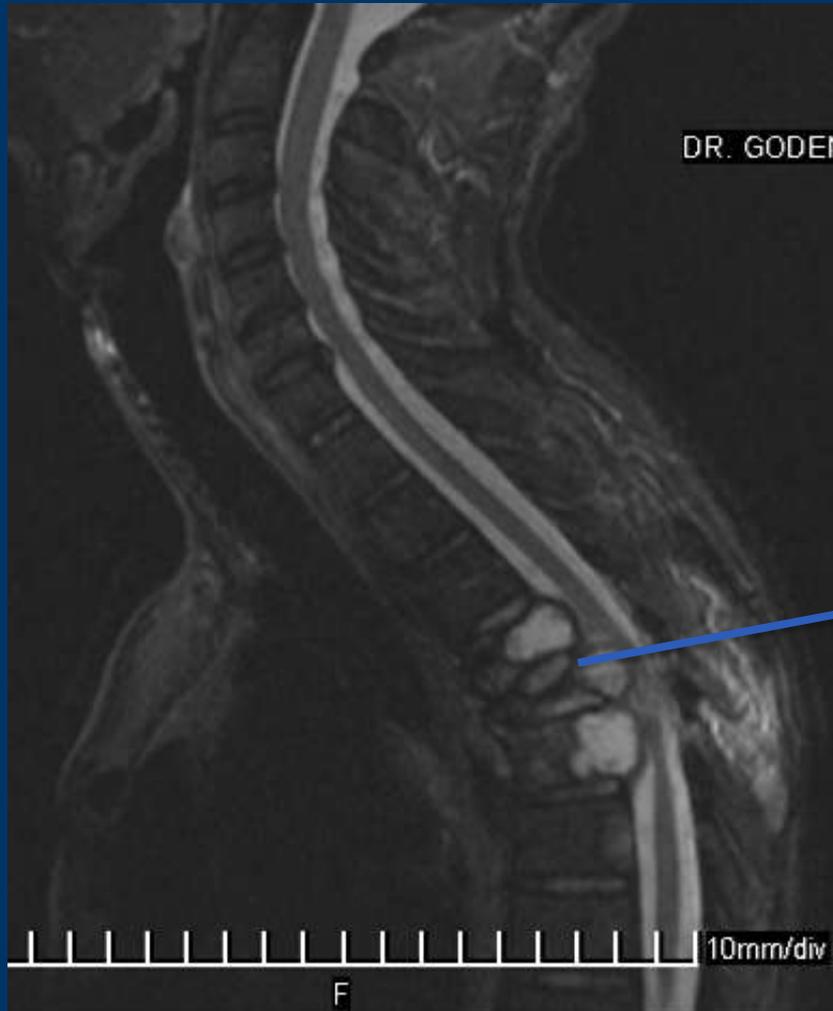
# Plasmacytoma, multiple body collapse



# Non-Hodgkin lymphoma-radiotherapy

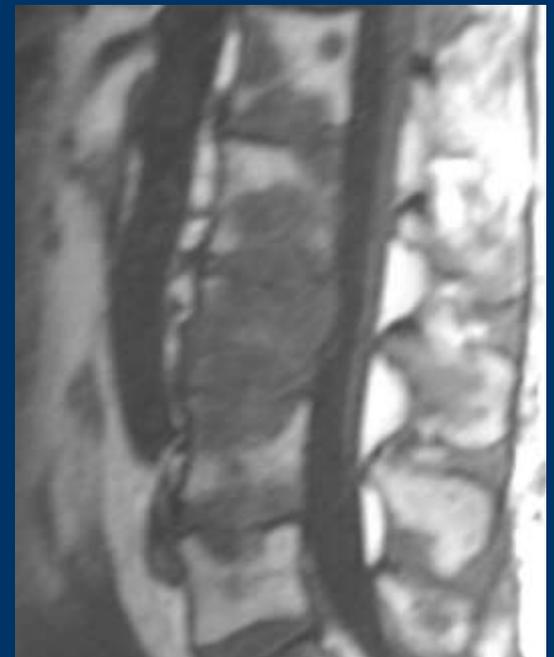


# Pulmonary microcellular carcinoma - radiotherapy

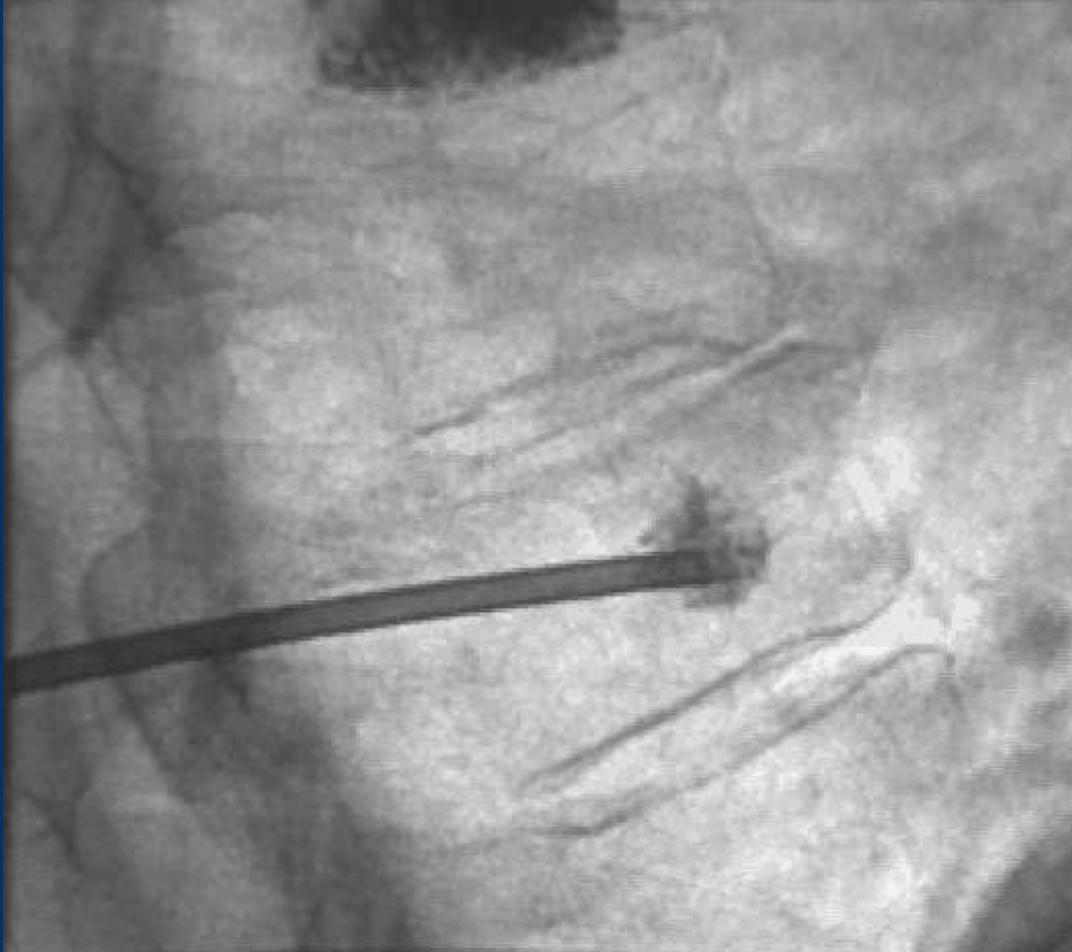


# Vertebroplasty

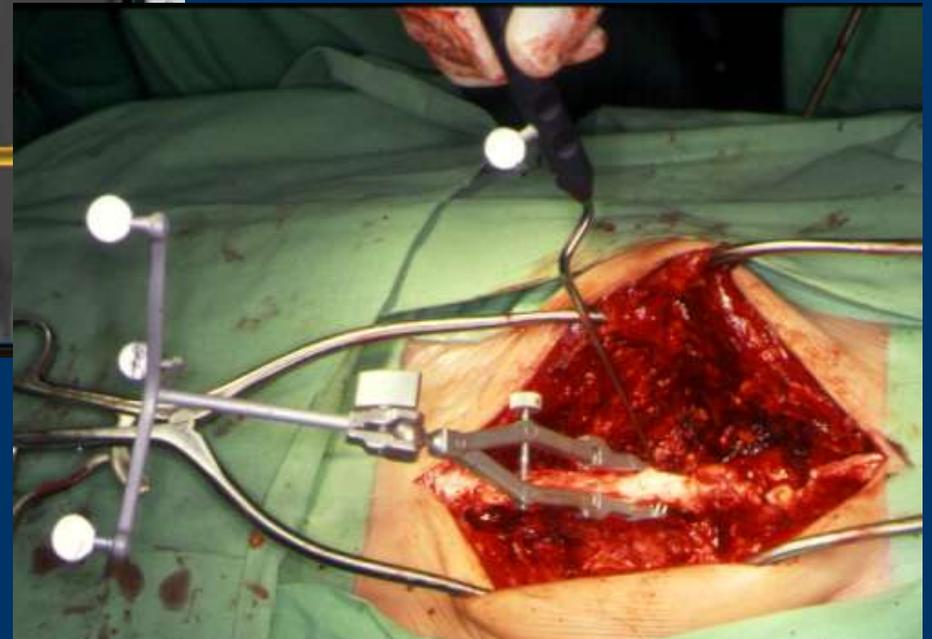
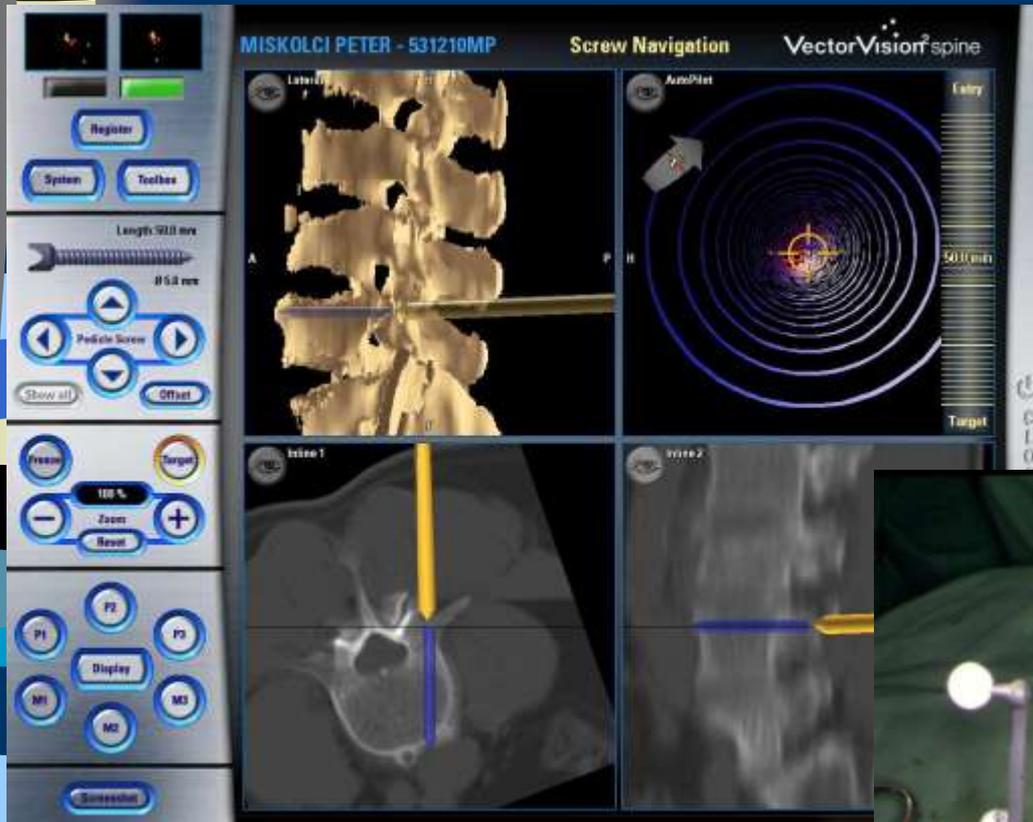
- Indication:
  - Severe, focal pain
  - Lytic lesions, with no neurology



# Vertebroplasty



# Spinal navigation





Thank you for attention!