

SPINAL PAIN

CLINICAL GUIDELINES FOR MANAGEMENT

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Back pain : Statistics

• GP consultations	14,000,000
• Hospital OP	1,600,000
• Xrays	1,500,000
• NHS physio	1,000,000
• Osteo / Chiro	700,000
• Admissions	100,000
• Operations	24,000

Back pain : Economics

- Annual cost to NHS : £480,000,000
- Lost production : £3,800,000,000
- DHS Benefit paid : £1,400,000,000
- Total cost:

£5,680,000,000

Evidence based management of spinal pain

- Good news

- Huge amount of literature with regards diagnosis and treatment of spinal pain

Population heterogeneity

Genetics

Sex

Age

Weight

PMH

Smoking history

Occupation

Social back ground

Exercise history

Expectations

Treatment modality

Outcome measures

- Bad news

- The vast majority is neither important nor valid
- Distinct lack of RCT
- I am afraid I don't have the answers !

Causes of Spinal Pain

1. Peripheral Nerve Problems
 - a. Piriformis syndrome
 - b. Meralgia paresthetica
 - c. Iliohypogastric, ilioinguinal, and genitofemoral neuritis
 - d. Femoral neuropathy
 - e. Obturator neuropathy
 - f. Sacral notch or sciatic neuropathy
2. Metabolic and Inflammatory Diseases
 - a. Bony infection of the spine (pyogenic, fungal, parasitic, tuberculosis)
 - b. Spinal epidural abscess
 - c. Rheumatoid variants: ankylosing spondylitis, psoriatic arthritis, Reiter's syndrome, intestinal arthropathies
 - d. Paget's disease
 - e. Gout
 - f. Pseudogout
 - g. Fibrositis
 - h. Ochronosis
 - i. Hemochromatosis
 - j. Osteogenesis imperfecta
 - k. Diabetic amyotrophy
 - l. Hyperparathyroidism
 - m. Bursitis
 - n. Osteoporosis
 - o. Osteoarthritis
 - p. Diffuse idiopathic skeletal hyperostosis
 - q. Adhesive arachnoiditis
3. Psychogenic Pain
4. Tumors
 - a. Intramedullary
 - b. Extradural
 - c. Intradural-extramedullary
 - d. Metastatic tumors of the spine
 - e. Primary benign and malignant tumors to bone
 - f. Sacral cysts
 - g. Retroperitoneal tumors and fibrosis
5. Referred Pain Syndrome
 - a. Gastrointestinal: peptic ulcer, pancreatic disorders, gallbladder disorders
 - b. Vascular: abdominal aortic aneurysm, arterial occlusion or insufficiency, other aneurysms
 - c. Renal: nephrolithiasis, infection, prostatitis
 - d. Gynecological/obstetrical: pregnancy, pelvic tumors, pelvic inflammatory disorders
 - e. Hip disorders
 - f. Knee disorders
 - g. Sacroiliac disorders
 - h. Coccygodynia
6. Mechanical
 - a. Segmental instability
 - b. Trauma
 - c. Spinal deformity
 - d. Spinal stenosis
 - e. Leg length inequality
 - f. Iliac crest syndrome
 - g. Facet syndrome
 - h. Herniated intervertebral disc
7. Congenital
 - a. Ilium—transverse process pseudarthrosis
8. Miscellaneous
 - a. Charcot's spine (vertebral osteoarthropathy)
 - b. Compartment syndromes (posterior thigh and paraspinal muscles)
 - c. Scheuermann's disease
 - d. Radiation-induced disorders
 - e. Spondylosis and spondylolithesis

Diagnosis

- Physiological diagnosis
 - What is the ‘ neurological lesion’
 - umn / lmn, motor /sensory, diffuse / focal
- Anatomical diagnosis
 - Where is it
 - Localise the lesion
- Pathological diagnosis
 - What is it
 - Differential diagnosis

William Osler

- Listen to the patient he is telling you the diagnosis
- To do medicine without books is to go to sea without a chart, but to do medicine without patients is to never go to sea at all
- There is no such thing as a bad historian, only a bad listener

Sensitivity and Specificity of elements in history and examination relating to specific causes of spinal pain

<i>Disease</i>	<i>Symptom or Sign</i>	<i>Sensitivity</i>	<i>Specificity</i>
<i>Malignancy</i>	Age > 50yrs	0.77	0.71
	PMH of cancer	0.31	0.98
	Unexplained Wt loss	0.15	0.94
	Pain lasting > 1/12	0.50	0.81
	ESR > 20 mm / hr	0.78	0.67
<i>Spinal Infection</i>	Fever	0.27 – 0.83	0.98
	IV drug abuse, UTI	0.4	n/k
<i>Compression #</i>	Age > 70	0.22	0.96
	Steroid use	0.66	0.99
<i>Prolapsed disc</i>	Sciatica	0.95	0.88

Sensitivity

100% sensitive = 0% false negative

Negative test excludes the diagnosis

All Index Cases

Specificity

100% specific = 0% false positive

Positive test includes the diagnosis

Only Index Cases

Acute Low Back Pain : sysrematic review of its prognosis
Pengel L, Herbert R, Maher C, Refshauge K. BMJ 2003; 327 ; 323

- Objective: to describe the course of acute LBP and sciatica.
- Design : Systematic review
- Results : 15 studies.
- Within 1/12
 - Rapid improvement (mean reduction of 58% of initial scores)
 - Disability (mean reduction of 58% of initial scores)
 - Return to work (82% of those initially off work)
- Recovery continued for 3/12
- 73% had a recurrence within 12/12
- Conclusion : People with acute LBP and associated disability usually improve within weeks. Recurrence is common

Mechanical neck pain

- Acute Cervical Pain < 3/12 duration
- Chronic Cervical Pain > 3/12 duration
- Causes
 - Degenerative cervical spondylosis : 60 - 80% asymptomatic patients have Xray and MRI evidence of spondylosis
 - Cervical Myelopathy
 - Cervical Radiculopathy
 - Disc / osteophyte : single / multiple
 - Facet Joint
 - Musculoligamentous
 - Trauma
 - Tumour
 - Infection
 - Autoimmune
 - Ankylosing Spondylitis

Mechanical neck pain

What I think a GP wants to know!

- Is it serious ?
 - History
 - Examination
 - Investigations
 - Haematological
 - Radiological
- What do I do ?
 - Evidence based best management

Common indicators from history and examination to cause concern

History

- Age
 - < 18yrs, > 55yrs
- History of trauma
- Nocturnal pain
- Weight loss, Fever
- PMH
 - Carcinoma
 - Immunosuppression
 - Systemic illness
 - Rheumatoid Arthritis
 - Ulcerative colitis
- D.H
 - Steroid therapy

Examination

- Spine
 - Structural Deformity
 - Pain in motion
- Neurological
 - Myeloradiculopathy
 - UMN / LMN
 - Sphincter disturbance
 - Gait disturbance
- Peripheral
 - Skin rash
 - Iritis

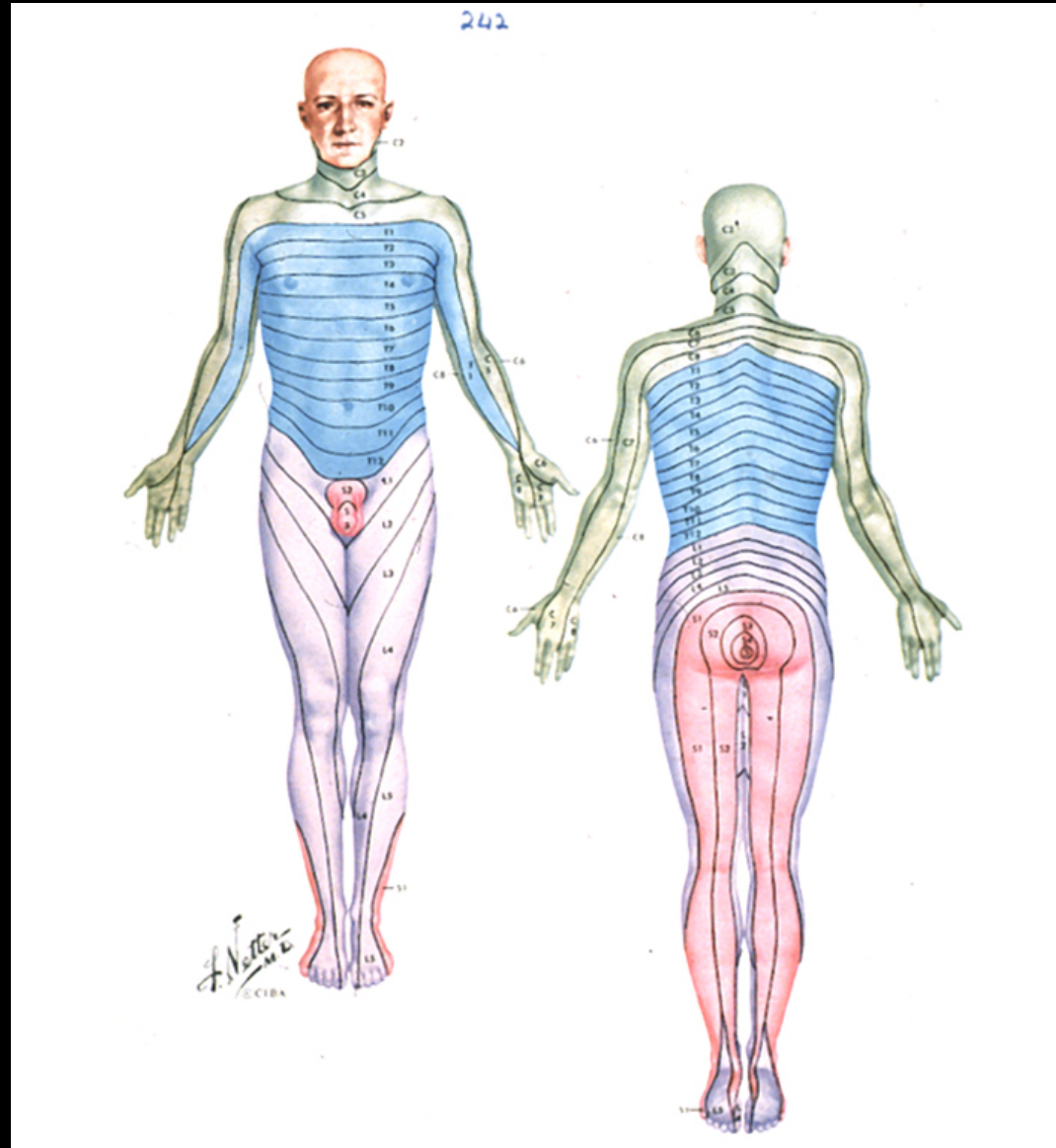
Diagnostic Triage :Nerve root pain

- Unilateral radicular brachalgia
- Dermatomal sensory loss
- Motor deficit
- Loss of reflex
- Positive Lhermitte sign

Root lesions of the arm

Root	C5	C6	C7	C8	T1
Sensory loss	Lat.border upper arm to elbow	Lat. Forearm Thumb and index finger	Middle finger Front and back of hand	Hypothenar eminence	Axilla
Pain distribution	As above Medial scapula border	As above Esp. thumb and index finger	As above	As above Up to elbow	Shoulder Axilla to olecranon
Motor deficit	Deltoid Supraspinatus Infraspinatus	Biceps Brachioradialis Pronators and Supinators of forearm	Triceps Wrist extension Wrist flexors Lat. Dorsi Pectoralis major	Finger flexors Finger extensors	Small muscles of hand
Reflex Arc	Biceps	Supinator	Triceps	Finger	None

Sensory Dermatomes



Spinal surgery

- Congenital
 - Down's syndrome, Klippel-Weil
- Degenerative
 - Cx / Lx Spondylosis
- Inflammatory
 - Rheumatoid arthritis
 - Ankylosing Spondylitis
- Neoplastic
 - Benign
 - Malignant
- Trauma

Reasons to operate

- Instability
 - Fusion
 - Bone graft
 - Instrumentation
 - Recombinant human bone morphogenetic protein
- Compression
 - Spinal cord
 - Nerve root

Neurophysiology of Back Pain

- Nociceptive

- activation of pain receptors in skin,muscle,joints,fascia,blood vessels
- Mediators : Substance P, PG's, Bradykinin, cytokines (induce NGF)
- High stimulation threshold :ie respond to noxious tissue threatening injury
- Inflammatory tissue
 - increase back ground activity
 - lower mechanical threshold

- Chronic pain

- High levels of CSF of NGF, SP ('central pain')
- Individual variations : ? Physiological differences in individual pain experience
- Psychosocial factors
 - Cultural beliefs,learned illness behaviour
 - Fear, anxiety : Fear of 'harm' form pain
- Spinal cord modulation

MRI studies of structural abnormalities in Cx and Lx Spine of asymptomatic patients

- Powell MC, Wilson M, Szypyt P et al. *Prevalance of lumbar disc degeneration in symptomless women. Lancet 1986;13:1366-1367*
 - 6 % < 20yrs , 79 % > 60yrs (n=302)
- Boden SD, Davis DO, Dina TS, et al. *Abnormal magnetic resonance scans of the Lx spine in asymptomatic subjects. J Bone Joint Surg Am 1990; 72:403-408*
 - < 50 yrs : 20% disc herniation, 1% spinal stenosis
 - > 60 yrs : 35% disc herniation, 21% spinal stenosis (n = 57)
- Boden SD, McCowin PR, Davis DO, et al. *Abnormal magnetic resonance scans of the Cx spine in asymptomatic subjects. J Bone Joint Surg Am 1990; 72: 1178-1184*
 - < 40 yrs : 25% disc degeneration, 5%disc 'bulge'
 - >40 YRS : 60% disc degeneration, 20% foraminal stenosis (n = 63)
- Lehto IJ, Tertti MO, Komu ME et al. *Age related MRI changes at 0.1T in Cx discs in asymptomatic subjects. Neuroradiology 1994;36:49-53*
 - common after 30yrs, > 40 yrs : 57% (n=89)

Neurophysiology of Back Pain

- Neurogenic
 - Results from neural injury in PNS or CNS
- Psychogenic
 - Related to underlying psychiatric disorder

Diagnostic Triage : Myelopathy

- Progressive sensory loss in limbs
- Progressive weakness in arms and legs
 - Loss of function
 - Doing up buttons
 - Gait Disturbance
- Clinical signs of myelopathy
 - Increased limb tone
 - Limb weakness, loss of sensation in spinothalamic and dorsal columns
 - Hyperreflexia
 - Extensor plantar responses

Indications for plain x - ray

- Pain $> 6 / 52$
- Pyrexial, systemically unwell
- History of malignancy
- Immunocompromised patients
- Neurological deficit (refer on)
- Unrelenting pain at rest or at night

Examples of different methods for treatment of back pain

- Acupuncture
- Anthroposophic medicine
- Back school
- Balneotherapy
- Bed rest
- Behavioural therapy
- Body awareness therapy
- Biofeedback
- Cardiovascular fitness training
- Chiropracter
- Connective tissue massage
- Corsets
- Crutches
- Cupping
- Diet
- Disc injections
- Electrotherapy
- Epidural anaesthesia
- Exercises
- Facet blocks and denervation
- Healing
- Herbal medicine
- Holistic therapy
- Homeopathy
- Hydrotherapy
- Injections of saline, water, local anaesthetics
- Ionic modulation
- Iontophoresis

- Laser therapy
- Magnet therapy
- Manipulation
- Massage
- Medication
- Meditation
- Mobilisation
- Moxibustion
- Multimodal rehabilitation
- Nerve blocks
- Ointments
- Osteopathy
- Physiotherapy
- Relaxation techniques
- Spa treatment
- Stretching
- Surgery, various types
- Taping
- Therapeutic conversation
- Thermotherapy
- Traction
- Transcutaneous electrical nerve stimulation, high and low frequency
- Trigger point injections
- Ultrasound
- Vibrator
- X-ray therapy
- Zone therapy

Non-surgical treatment of acute neck pain

‘Numerous non-invasive treatments are used for acute and subacute neck pain. However, only a few of them have been evaluated in randomised controlled trials , and these provide little evidence that one treatment method is more effective than another’

Neck and Back pain

The Scientific evidence of Causes, Diagnosis and Treatment

Non-surgical treatment of chronic neck pain

‘Because of methodological problems and lack of RCT, we believe it is not opportune to make any recommendations in favour of any type of treatment for chronic neck pain at this time - there is no clear evidence that any form of treatment studied is particularly effective for patients with chronic neck pain’

Neck and Back pain

The Scientific evidence of Causes, Diagnosis and Treatment

Non-surgical treatment of acute neck pain

- Reassure
 - Explain the probable cause
 - Explain the natural history
 - 90% patients have Sx resolution within 2- 12/52
- Continue physical activity
- Analgesia
- Cervical orthosis
 - If severe pain for limited period
- Physical therapy
 - Chiropracter
 - Osteopathy
 - Physiotherapy

Who to refer

- Emergency
 - Acute neurological deficit whatever the cause
- Routine
 - Failure of Cx Mx with persistent pain
 - Failure of Cx Mx with persistent Sx and Signs of nerve root / spinal cord compression

Surgical treatment of neck pain

• Indications

• Instability

- Degenerative
- Trauma
- Tumour

• Compression

- Spinal cord , nerve root
- Failure of Cx Mx
- Progression of neurological deficit

• Operative techniques

– Anterior approach

- ACD + / - Fusion
- Vertebrectomy

– Posterior approach

- Laminectomy
- Laminoplasty

BACK PAIN

Acute LBP : Causes

- Degenerative
 - Musculoligamentous, discogenic, facet joint, osteoporosis
- Trauma
- Tumour
 - Intra / extradural, pathological #
- Infection
 - Pyogenic, TB, discitis, osteomyelitis
- Inflammatory
- Vascular
 - Aortic aneurysm

Diagnostic triage

Recommendations

- Diagnostic triage
 - History
 - Examination
 - Investigation

Evidence

- Diagnostic triage forms the basis for decisions re:
 - Mx
 - Investigation
 - Referral
- Diagnostic triage based on clinical history and examination aids differentiation between :
 - Simple backache
 - Nerve root pain
 - Serious pathology
 - Tumour
 - Infection
 - Central disc prolapse

Diagnostic Triage

Simple Backache

- Presentation between ages 20 – 55
- Lumbosacral region : buttocks and thighs
- Mechanical pain
 - Varies with physical activity
 - Varies with time
- Patient well
- Prognosis
 - 90 % recover from acute episode in 6/52

Diagnostic Triage

Nerve root pain

- Unilateral leg pain worse than LBP
- Radiation to foot or toes
- Radicular Sx or signs
 - SLR
 - Sensory disturbance
 - Motor weakness
 - Reflex changes
- Prognosis
 - 50% improved within 6/52

Warning signs of serious pathology

- Age of onset : < 20 and > 55 years
- Constant unremitting progressive pain
- Thoracic radicular pain
- PMH : Carcinoma
- Systemically unwell, weight loss
- Drug abuse, HIV
- Structural deformity
- Significant trauma

Inflammatory Disorders

- Gradual onset before 40 years
- Marked morning stiffness
- Persisting limitation of spinal motion
- Peripheral arthritides
- Iritis, psoriasis, colitis, urethritis
- Family history

Cauda Equina Syndrome : Central disc prolapse

- Bilateral leg pain
- Saddle anaesthesia
- Bilateral foot weakness
- Bilateral loss of ankle reflex
- Loss of anal tone
- Painless urinary incontinence



Psychological components

- Pain on axial loading
- Inconsistent performance
 - SLR supine vs sitting
- Inappropriate tenderness
 - Superficial
- Motor / sensory symptoms not dermatomal or myotomal
- Overreaction during examination

Imaging

Recommendations

- Use of X Rays
There is no indication for routine x-rays in acute LBP of less than 6/52 in the absence of clinical warning signs

Evidence

- Recommendations of Royal College of Radiologists
- Lx XR is >150x dose of CXR

Imaging of the Lumbar Spine

Royal College of Radiologists 1995

Clinical problem	X ray	Guideline	Comment
Chronic intermittent back pain without 'warning Sx or signs'	Plain	Not routinely indicated	Degenerative changes are common
Back pain with other signs indicating possibility of serious pathology	Imaging	Indicated	Imaging + specialist referral. MRI
Acute back pain Sciatica with no motor loss	Plain MRI	Not routinely indicated After 6/52 if Sx fail to settle	X-ray does not show disc prolapse

Bed Rest

Evidence

Acute or recurrent LBP bed rest for 2-7/7 is worse than activity

Prolonged bed rest may lead to debilitation, chronicity and prolonged rehabilitation

Recommendations

1. Do not recommend bed rest as treatment
2. Aim for symptomatic control of pain so patient may return to normal activity asap
3. No evidence that bed rest is effective treatment for PID

Physical Activity

Evidence

Duration of pain is shorter

Shorter periods of time off work

Recommendations

1. Advise activity and continue daily activities
2. If patient is working, advise to stay at work or return as soon as possible

Drug Therapy

Evidence

Appropriate regular analgesia effectively reduces LBP

Different NSAID are equally effective

Ibuprofen and Diclofenac have lowest GI complication in the elderly

Recommendations

1. Advise regular paracetamol
2. NSAID as second line treatment
3. Paracetamol-opioid combination as third line
4. Diazepam as a short course (< 1/52) if above regime fails to provide analgesia
5. Avoid narcotics and if used for not more than 2/52

Manipulation

Evidence

Manipulative therapy may provide better short term pain improvement, patient satisfaction and increased activity levels cf no manipulative therapy

Risks are low provided appropriate patient assessment. Should not be undertaken in presence of neurological deficit

Recommendations

Manipulative therapy within first 6/52 for patients who continue to be in pain or who are failing to return to normal activities

Back Exercises

Evidence

- It is doubtful that specific exercises produce clinically significant improvement in acute LBP
- There is some evidence that exercise can improve pain and function in patients with chronic LBP

Recommendations

- Patients who have not returned to ordinary activities and work should be referred for rehabilitation

Psychosocial factors

Evidence

Psychological, social and economic factors play a role in chronic LBP and disability

Psychosocial factors influence response to treatment

Psychosocial factors are greater risk to chronicity c.f biomedical Sx or signs

Recommendations

1. Assessment should include psychological, occupational and socioeconomic factors
2. Management and advise should consider and allow for these factors which can predispose to chronicity and affect outcome

Risk factors for chronicity

- Previous history of LBP
- Total work loss in past 12 months
- Radiating leg pain
- Reduced SLR
- Signs of radiculopathy
- Reduced abdominal muscle strength and endurance

Risk factors for chronicity

- Poor physical fitness
- Self rated poor health
- Cigarette smoking
- Anxiety / Depression
- Disproportionate illness behaviour
- Low job satisfaction
- Social problems – alcohol, marital, financial
- Adversarial medico-legal proceedings

Evidence exists in support of the following statements :

- Most severe back pain and limited activity improves in the majority within 6/52
- Most patients will have some recurrence of pain at some point in the future
- The longer period off work with pain , the lower their chance of returning to work
- Back pain does not increase with age after 60 years

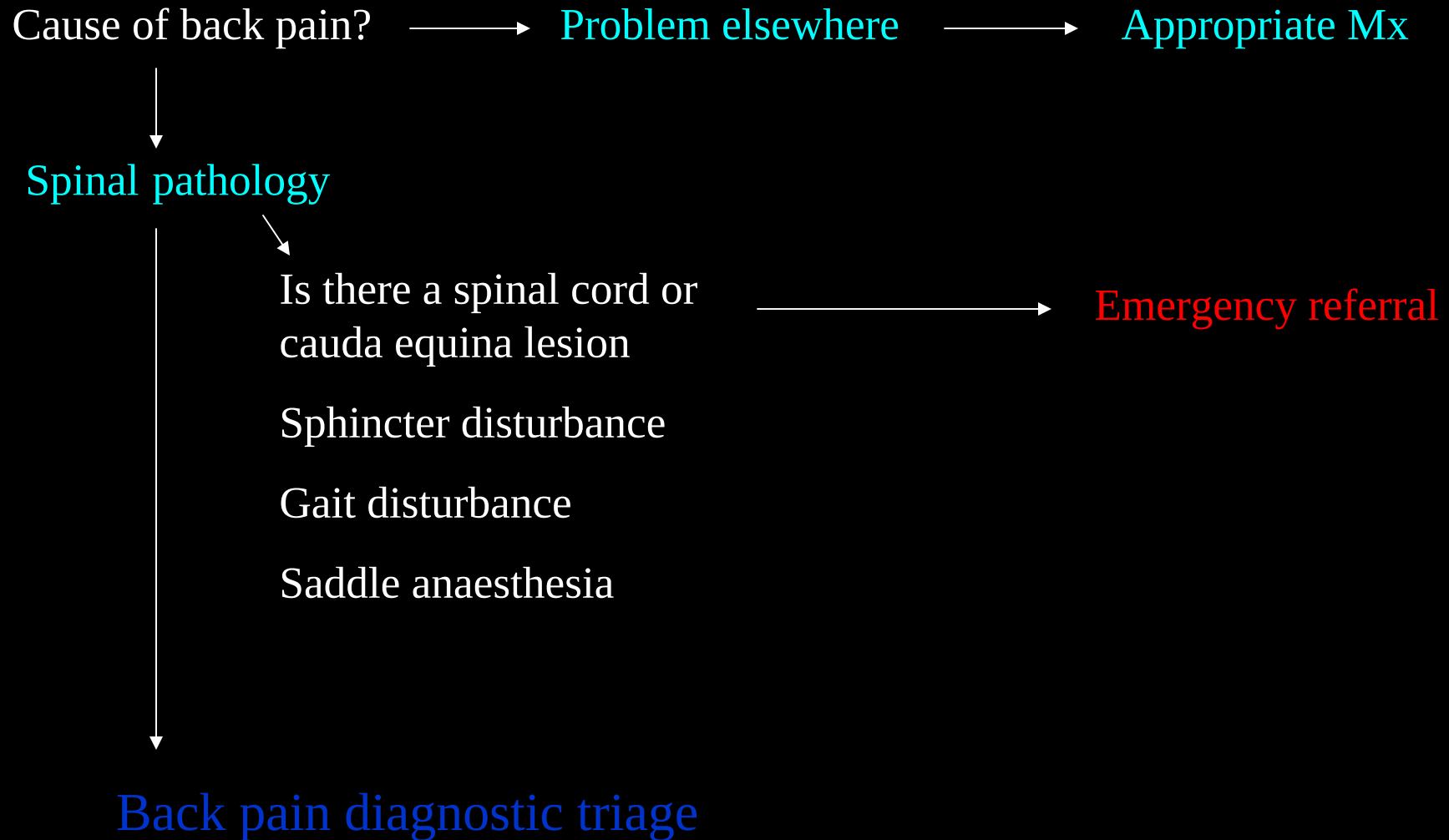
Treatments with limited evidence of effectiveness

- Tens
- Trigger point injections
- Facet joint injections
- Acupuncture
- Epidural steroid injections
- Group education in back school

There is evidence against the following treatments

- Narcotics for more than 2/52
 - Pain of such severity requires further investigation
- Benzodiazepines for more than 2/52
 - Risk of habituation and dependancy
- Bed rest with traction
 - No evidence of effectiveness
 - Potential complications
 - Joint stiffness, muscle wasting, pressure sores , DVT
- MUA
 - No evidence of effectiveness

Diagnostic Triage Flow Chart (1)



Diagnostic Triage Flow Chart (2)

Back pain diagnostic triage

Possible serious spinal pathology

RED FLAGS

Age < 20, > 55
Non – mechanical
Tx pain
Unwell, weight loss
Deformity
PMH : Ca , steroids

Nerve root

Unilateral leg pain
Dermatomal sensory
loss, myotomal
weakness
Limited SLR, SST

Simple back ache

Age 20-55
Mechanical
Patient well

Is there neurological
progression

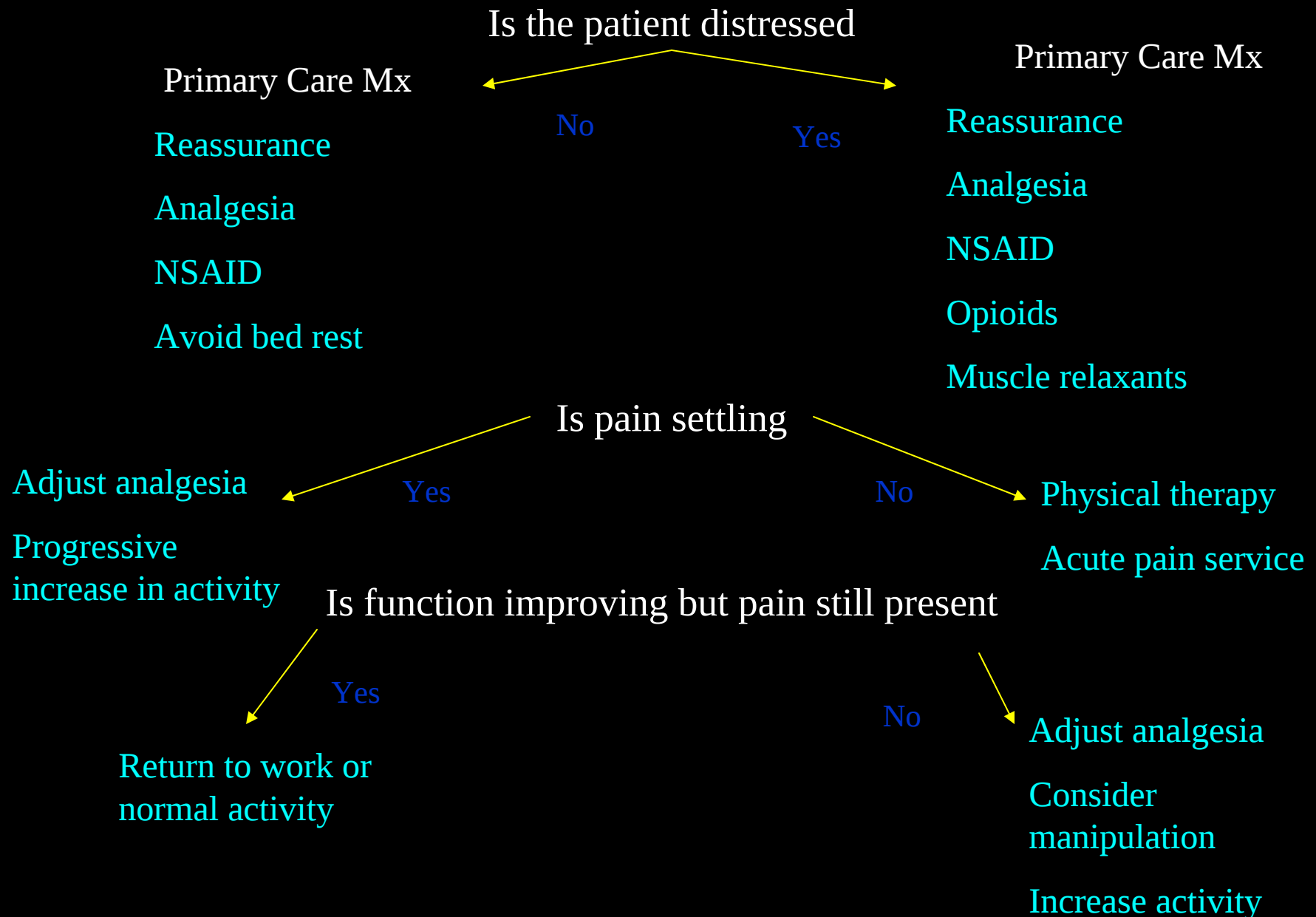
Yes

No

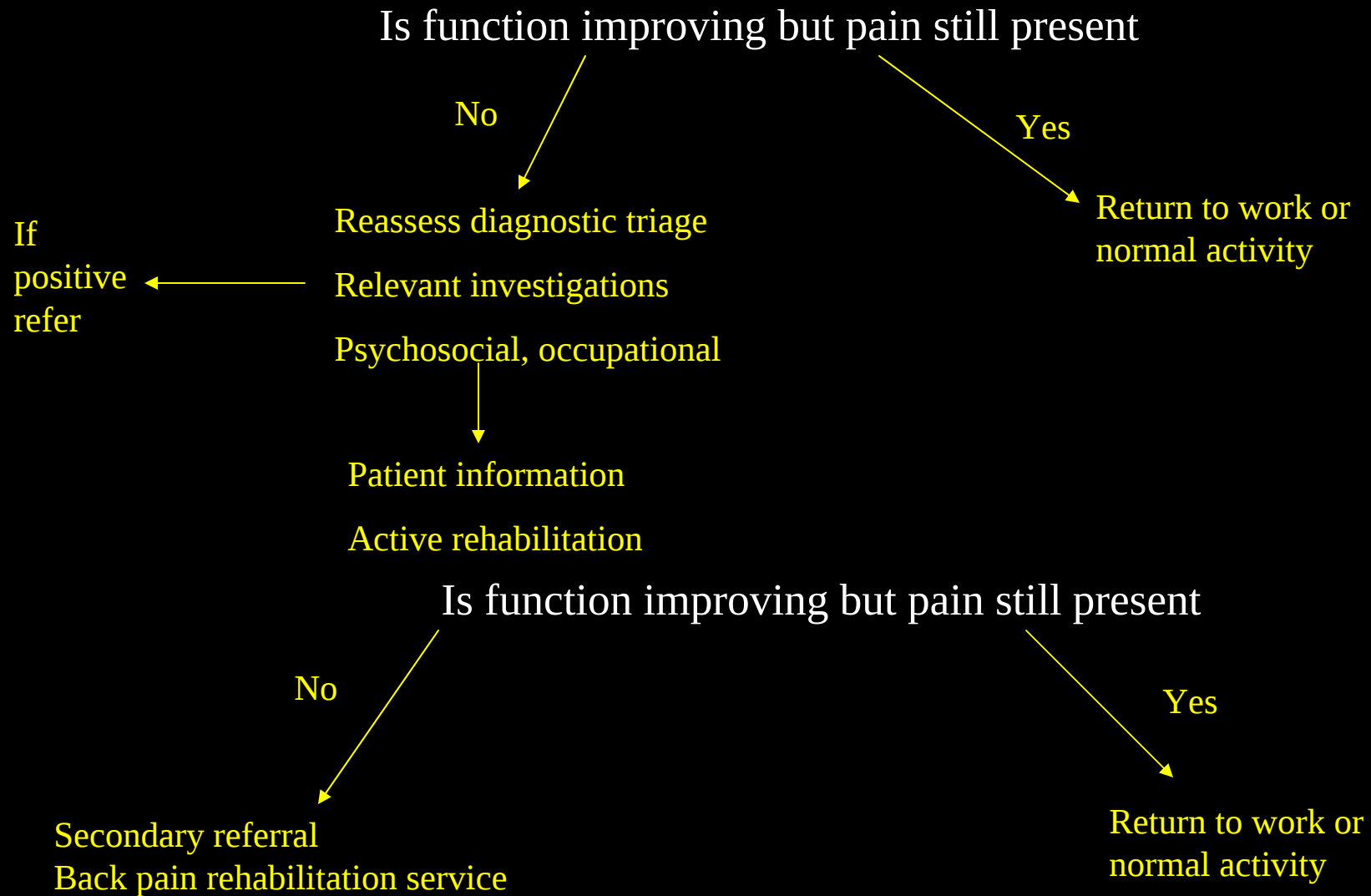
Urgent specialist
referral

PRIMARY CARE Mx

PRIMARY CARE MANAGEMENT OF SIMPLE BACK PAIN



PRIMARY CARE MANAGEMENT OF SIMPLE BACK PAIN



Who To Refer

- Pain with progressive or persistent myeloradicular symptoms or signs
- Failure of conservative management
- ? Infection
- ? Malignancy
- Following discussion with Neurosurgeon, Orthopaedic spinal surgeon, Rheumatologist

SCIATICA



William Mixer

NEW ENGLAND SURGICAL SOCIETY

RUPTURE OF THE INTERVERTEBRAL DISC WITH INVOLVEMENT OF THE SPINAL CANAL*

BY WILLIAM JASON MIXER, M.D.,† AND JOSEPH S. BARR, M.D.‡

DURING the last few years there has been a good deal written and a large amount of clinical work done stimulated by Schmorl's¹ investigation of the condition of the intervertebral disc as found at autopsy. His work will stand

In 1911 Goldthwait² reported a case of sciatica and paraplegia which he attributed to a posterior displacement of the intervertebral disc at the lumbosacral junction and suggested that such displacements might be the cause of many



FIG. 1. A normal intervertebral disc. Note cartilage plate, anterior and posterior longitudinal ligament, annulus fibrosus, and the amorphous nucleus pulposus which bears the superoinferior body weight and is retained in place under pressure by the annulus.

as the most complete, painstaking and authoritative that has ever been done in this condition. This work, however, is purely pathological and it now remains for the clinician to correlate it with the clinical findings and apply it for the relief of those patients who are disabled by the lesion.

In the routine examination of spines from autopsy material he discovered that the intervertebral disc is often involved in pathological changes, the most common one being prolapse of the nucleus pulposus into an adjacent vertebral body. He found one or more such prolapses (Knorpel-knochen) in about thirty-eight per cent of the spines examined. He also discovered that in about fifteen per cent of the spines there were small posterior prolapses beneath the posterior longitudinal ligament, but concluded that they rarely, if ever, produced clinical symptoms. He attributed their presence to weakening of the annulus fibrosus by degenerative changes, with mild trauma as a second factor, producing fissures in the annulus and escape of the semifluid nuclear material.

On the other hand, for a number of years clinicians have been reporting cases of spinal cord pressure from intervertebral disc lesions.

*Read at the Annual Meeting of the New England Surgical Society, September 24, 1923, at Boston.

†Mixer, William Jason—Vascular Surgeon, Massachusetts General Hospital. Barr, Joseph S.—Orthopedic Surgeon, to Orthopedic, Massachusetts General Hospital. For records and addresses of authors see "This Week's Issue," page 214.



FIG. 2. Autopsy specimen, CASE 1. Note small posterior prolapse such as Schmorl describes.

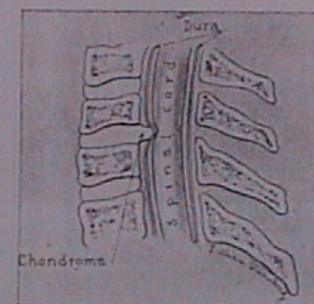
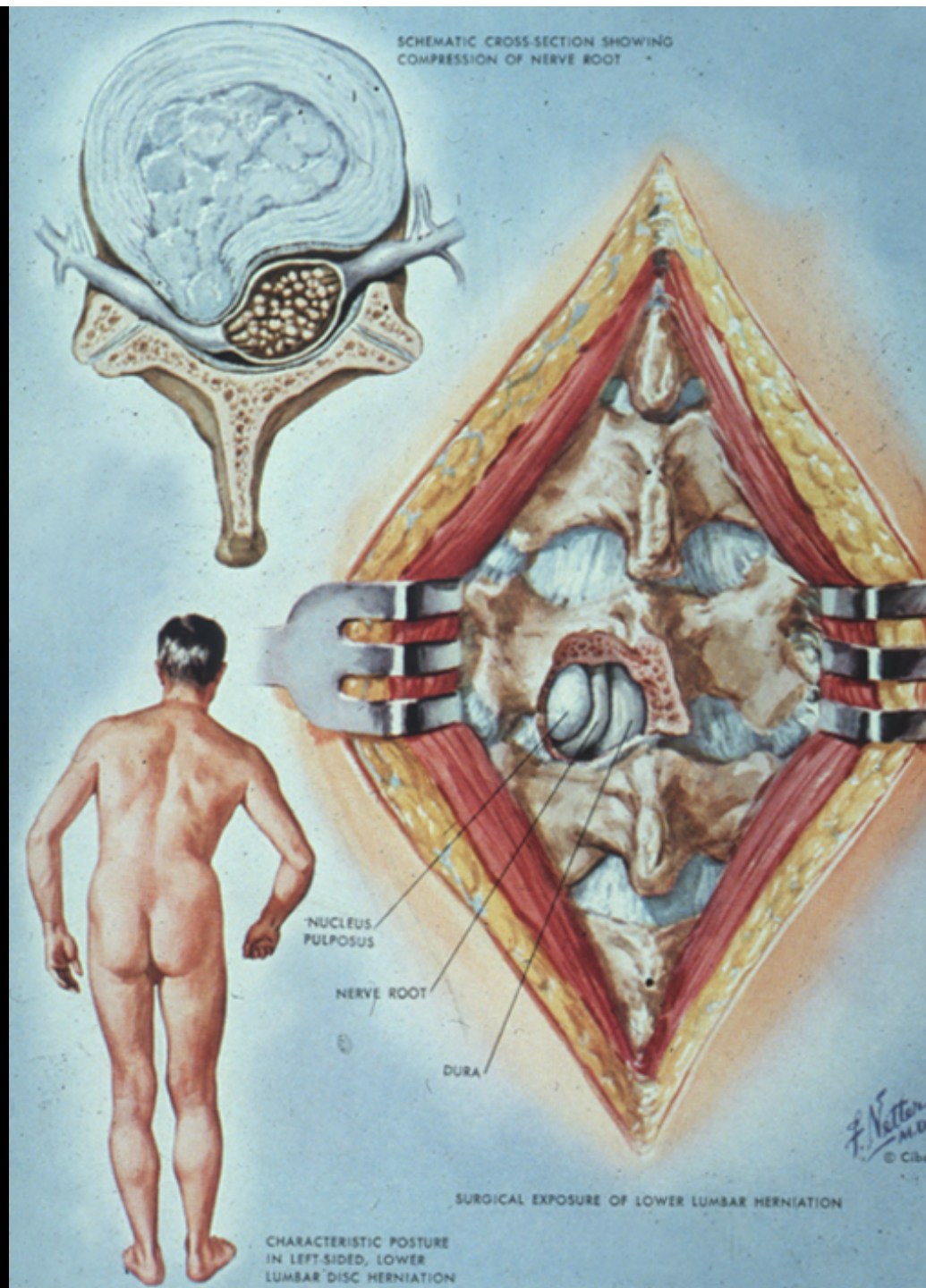


FIG. 3. Showing the usual location of a ventral vertebral disc chondroma. (Legend in Barr, *Spine, Neurology and Obstetrics*.)

FIG. 4. Illustration taken from article by Elsberg, showing "chondroma" arising from intervertebral disc. (Elsberg, *N. G. & O.*, 46, 19, 1924.)

cases of lumbago, sciatica, etc. Middleton and Teacher³ report a similar case confirmed at autopsy. Elsberg⁴ in 1916 mentions chondroma of the vertebrae as causing compression of the cauda equina and states that Oppenheim has described a similar case. Mixer⁵ in 1921 mentions a similar case and numerous other re-



Lumbar disc prolapse

Indications for surgery

- Failure of Cx Mx
 - 85% improved within 5 – 8 weeks
- Neurological deficit
 - Cauda equina syndrome : Immediate (Rare)
 - Bilateral sciatica
 - Saddle anaesthesia
 - Sphincter disturbance
 - Motor weakness
 - Radicular : Early
- Social
 - Early surgery allows more rapid return to employment

LUMBAR RADICULOPATHY

	<i>L3/4</i>	<i>L4/5</i>	<i>L5/S1</i>
%DISC	5%	45%	50%
ROOT	L4	L5	S1
REFLEX	KNEE		ANKLE
MOTOR	K.E	E.H.L, T.A	P.F
SENSORY	MED.CALF	LAT.CALF	LAT.FOOT
PAIN	ANT. THIGH	POST.LEG	P.L, ANKLE

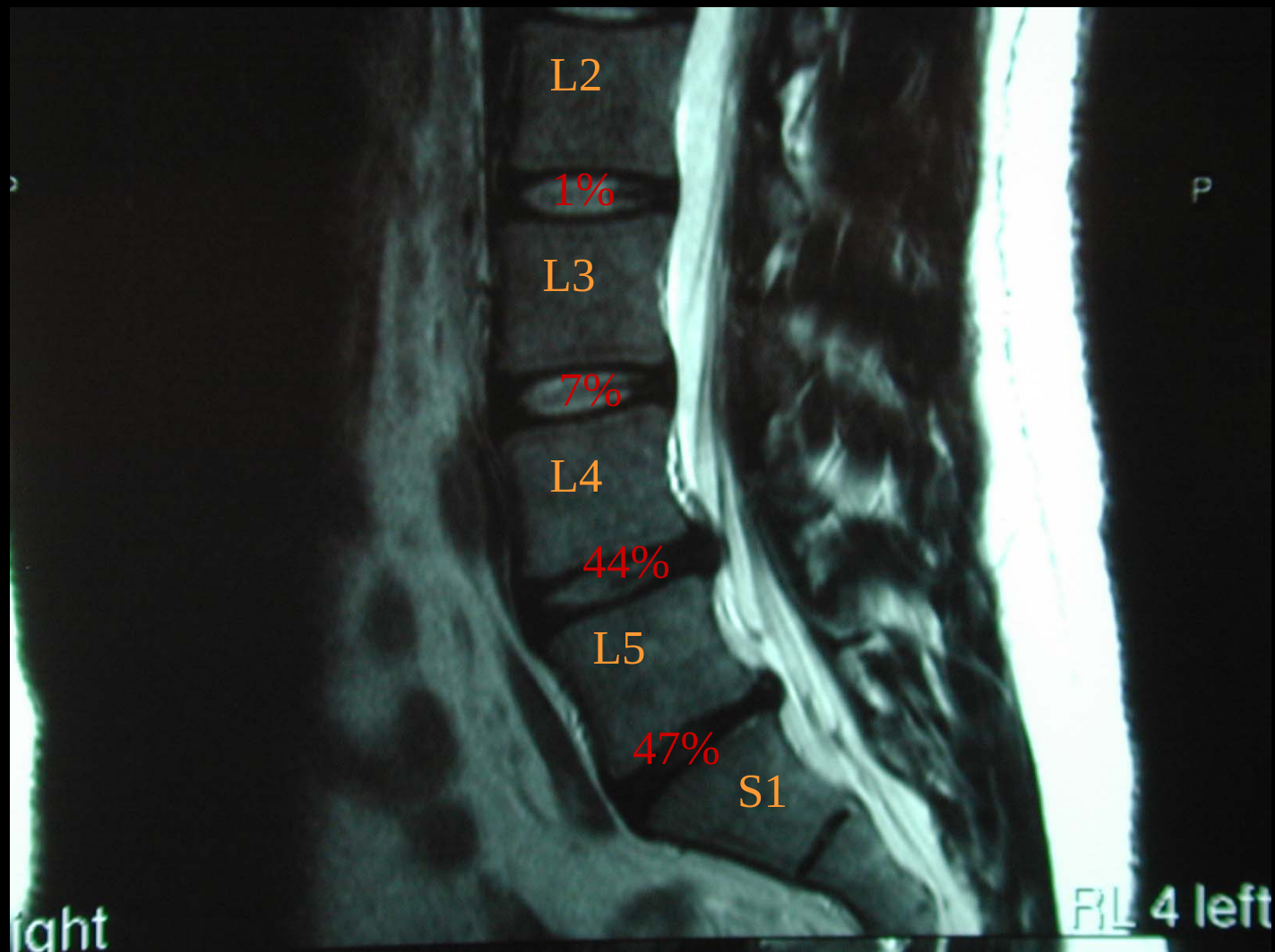
Conservative Management

- Bed Rest :
 - 2-3 Days
- Analgesia :
 - Paracetamol, NSAID, Opioids, anxiolytics
- Physiotherapy
 - Manipulation, exercise, TENS
- Pain Clinic
- Education
 - Back Care, Weight, Smoking
- Complimentary Medicine

Indications

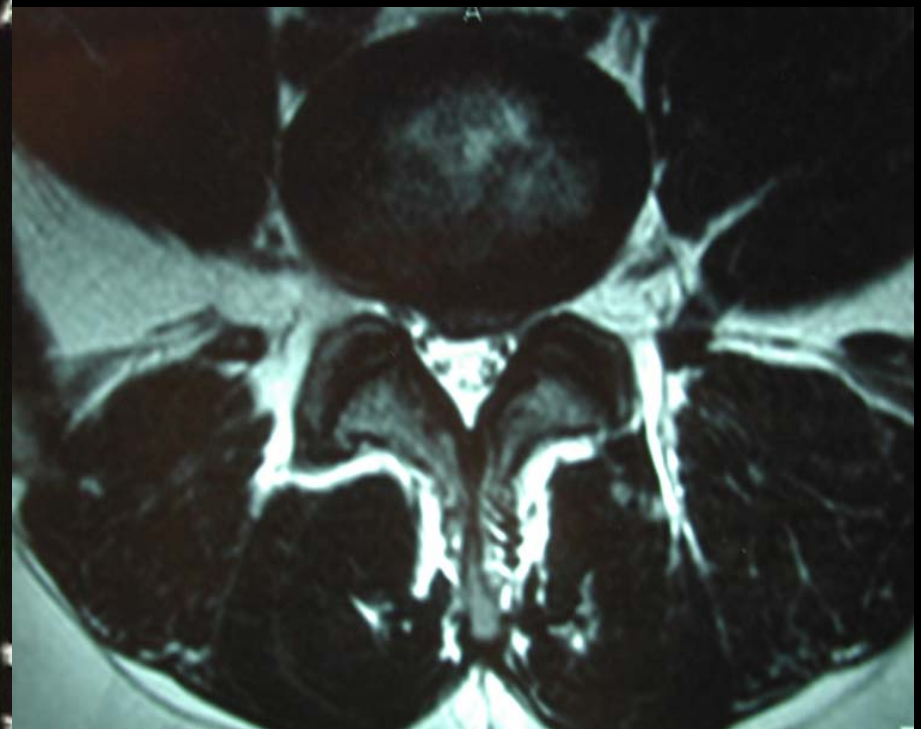
- Cauda equina syndrome
- Sciatica
 - Chronic
 - Recurrent
 - Acute
 - Associated neurological deficit

Lumbar Disc Level



Investigations

POSTEROMEDIAL DISC PROLAPSE

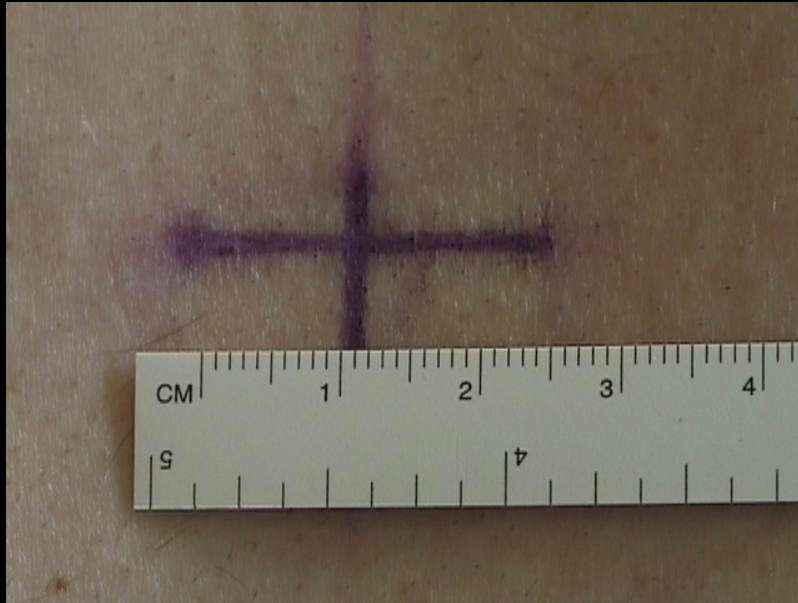


POSITION



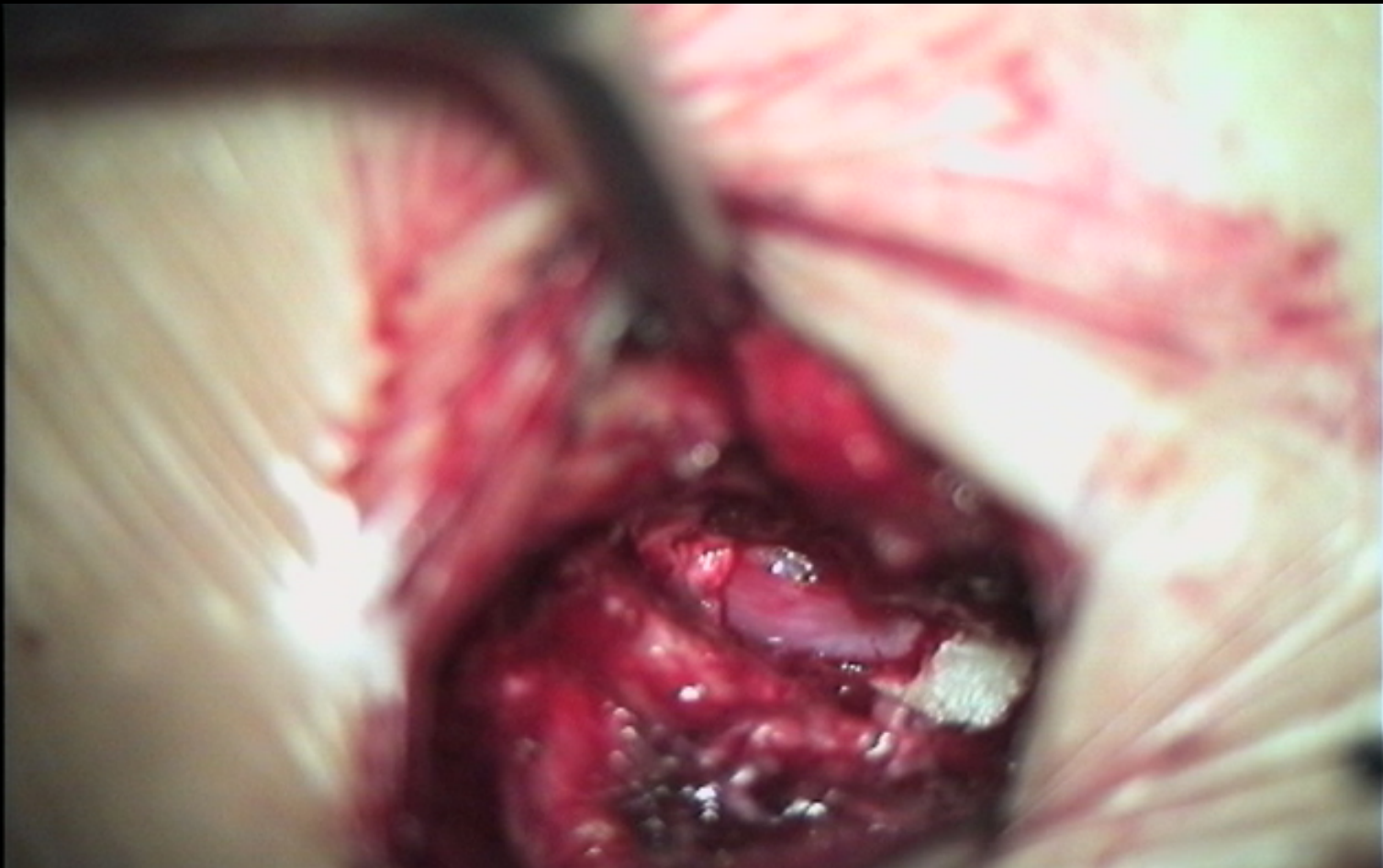
- Montreal / Wilson frame
- Lx Spine flexion to open interlaminar space
- Surgeon on same side as the sciatica

INCISION AND APPROACH

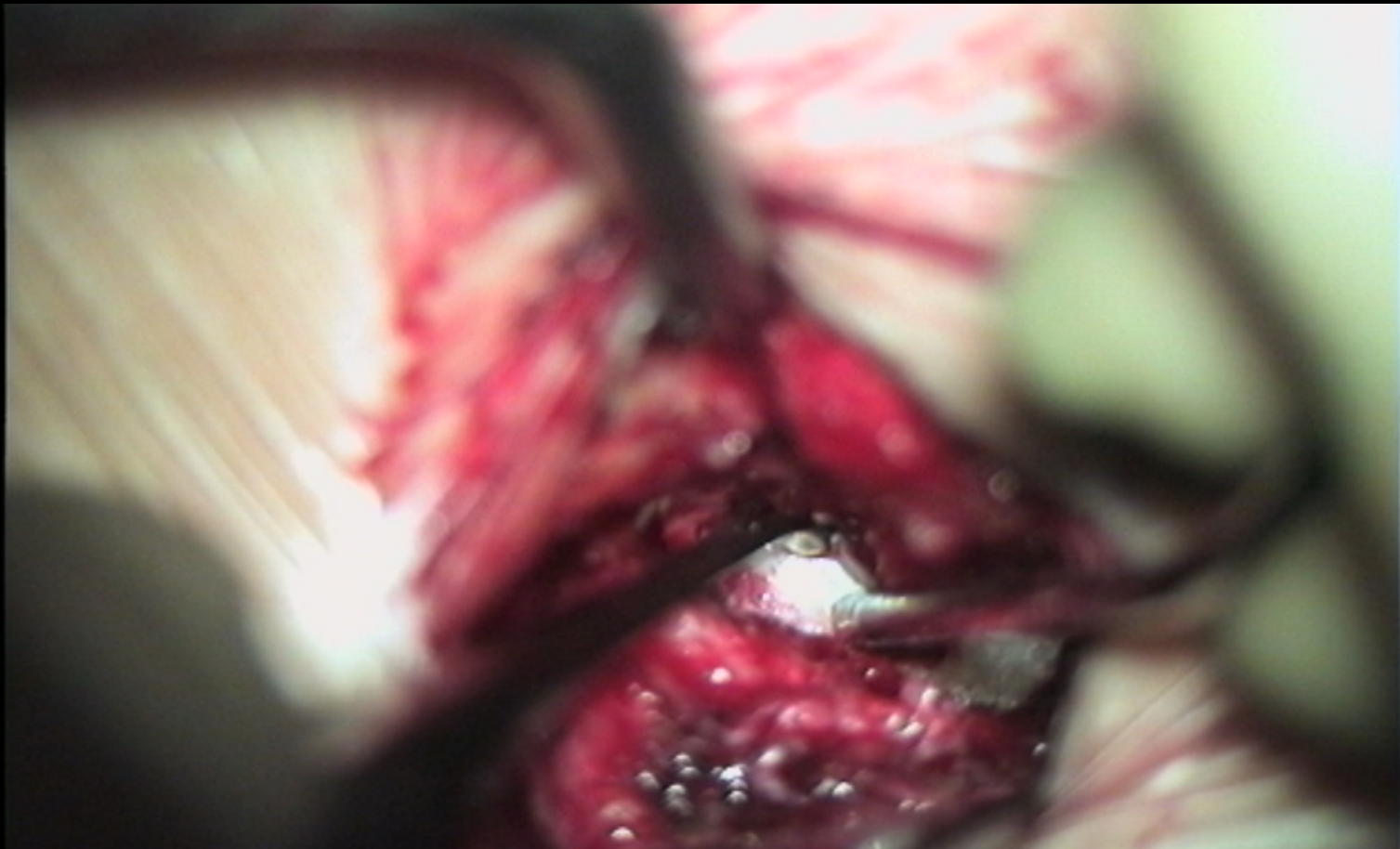


- Midline incision
- Interspinous position
- Unilateral subperiosteal muscle strip

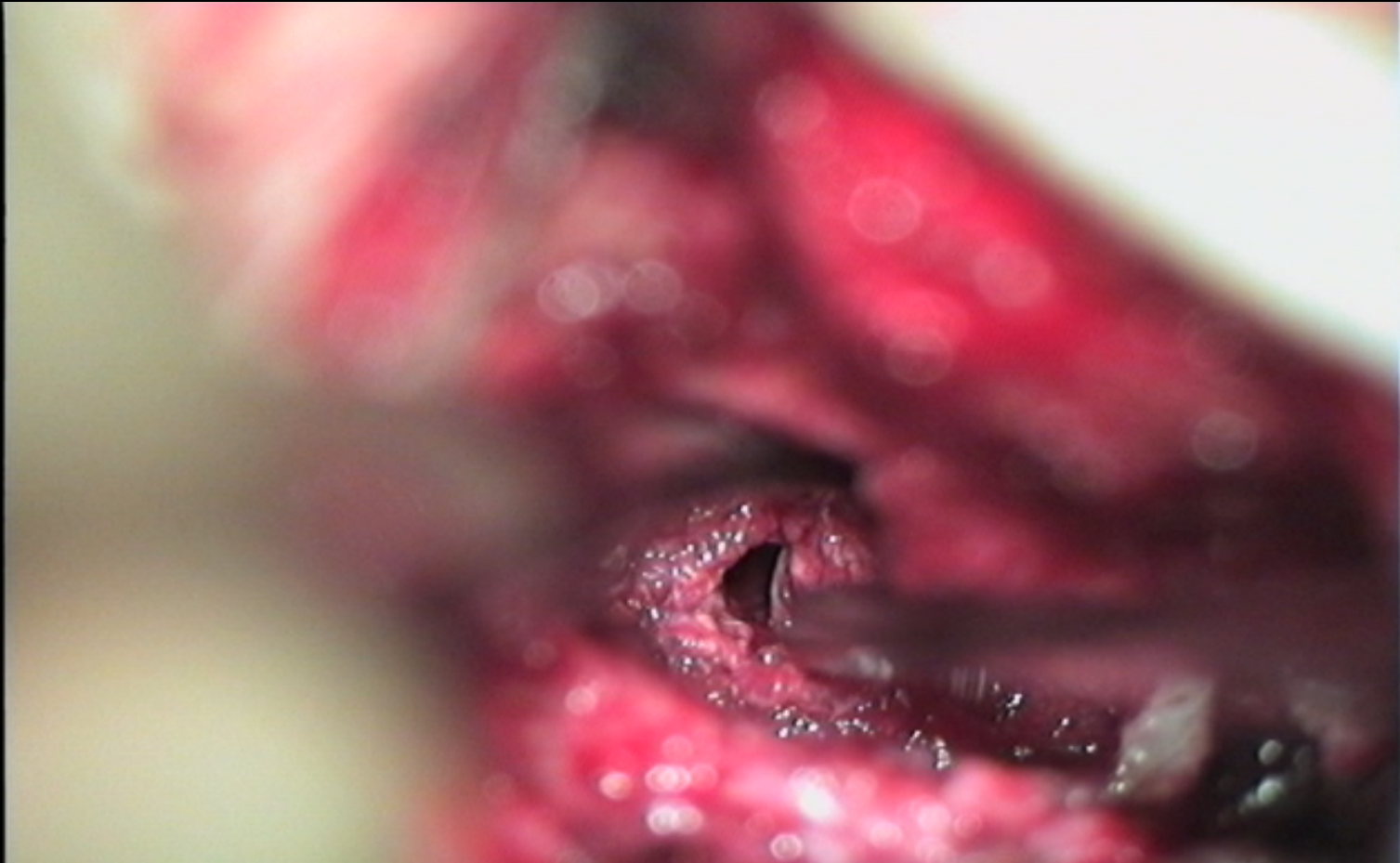
Compressed nerve root



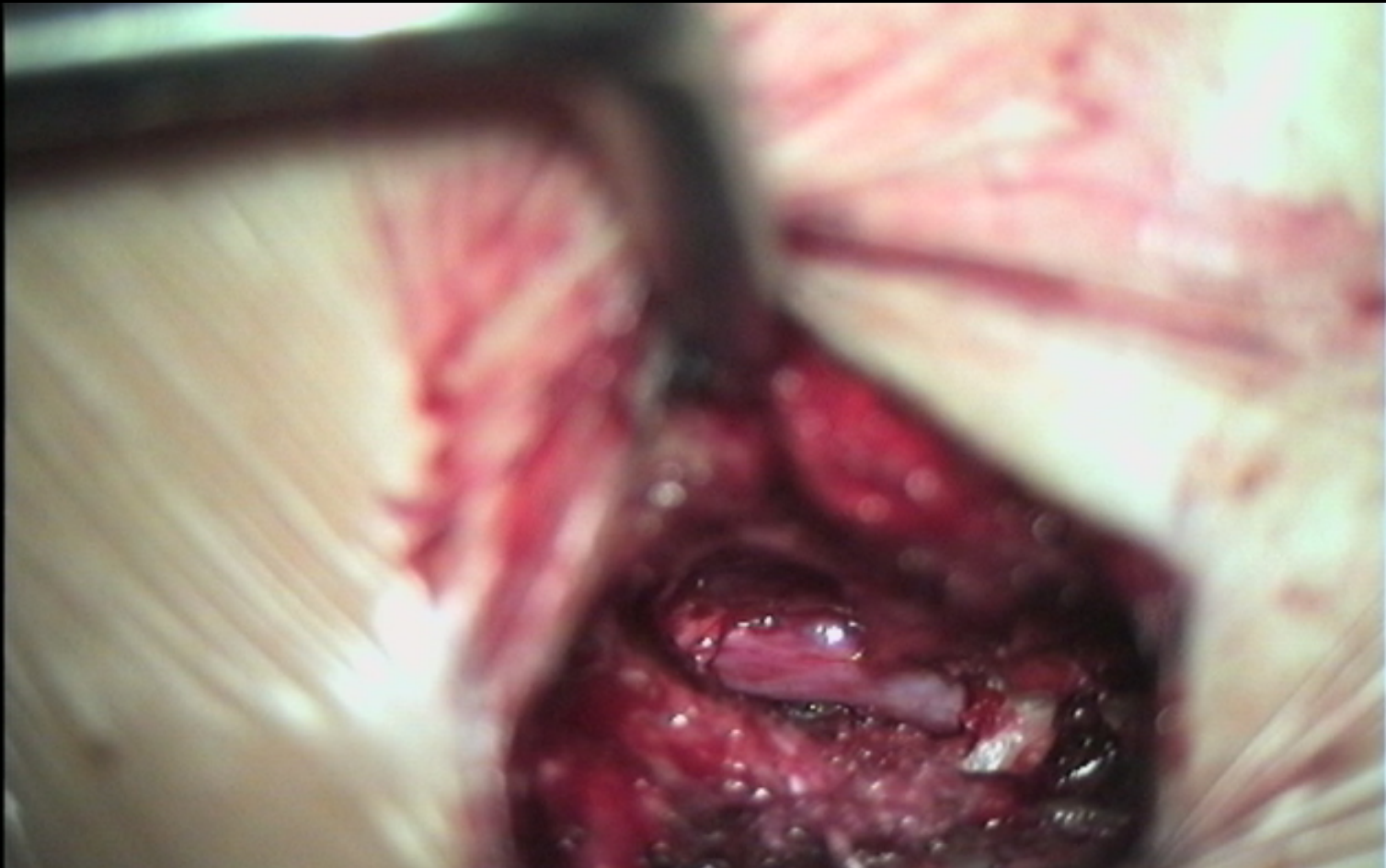
Disc protrusion



Discotomy



Decompressed nerve root



Complications

- No improvement
- Recurrence of pain
 - Recurrent disc prolapse
 - Epidural fibrosis
- Failed back surgery syndrome
- Infection
 - Disc
 - Wound
- Neural injury
- Vascular injury
- CSF fistula

Postoperative Management

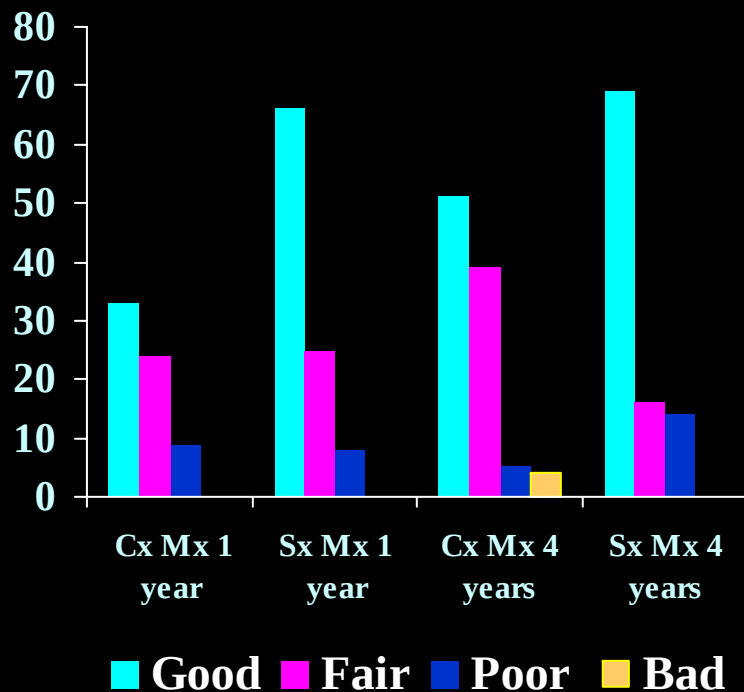
- Mobilise same day
- Physiotherapy assesment and instruction
- Home 2 – 3 days post op
- Removal of skin clips 10 days
- Return to work dependant on occupation
- Exercise 4 – 8 weeks

LUMBAR DISC HERNIATION

A Controlled Prospective Study With Ten Years of Observation

Weber H. *Spine* 8 131 –140 1983

Outcome After Randomisation



- Discectomy was significantly better than conservative therapy at one year, but no significant difference in outcome at 4 and 10 years
- Impaired motor function had a good prognosis regardless of treatment
- Sensory deficit remained in 50% of all patients

LUMBAR CANAL STENOSIS

Lumbar canal stenosis

- L3/4,L4/5 + facet joint hypertrophy + P.I.D
 - Canal Stenosis
 - Lateral recess stenosis
- Back pain + neurogenic claudication
- Symptoms relieved by flexion : aggravated by extension
- Normal examination : 18%
- Differential diagnosis:
 - Vascular claudication
 - Disc herniation
 - Diabetic neuropathy
- Investigations :
 - Plain X ray : ? Mobile spondylolisthesis
 - CT / MRI / Nerve conduction / Doppler studies



Lumbar Canal Stenosis : Cauda Equina Compression

- Neurogenic claudication
 - radicular pain brought on by walking, cycling OK
 - Usually L5 / S1
 - can be uniradicular but usually bilateral
 - Pain relieved by
 - Rest
 - Lumbar flexion
 - Examination
 - Usually normal
 - Exclude peripheral vascular disease
 - Investigation
 - XR : No value
 - MRI : Diagnostic

Lumbar canal stenosis : Management

- Conservative
- Surgical
 - Aims : pain relief
 - Stop progressive symptoms / signs
 - Improve deficit
 - Procedure :
 - Decompressive laminectomy +/-fixation
- Outcome
 - Excellent : 64 % (26 – 100%)
 - 27% recurrent sx within 5 years

CASE PRESENTATIONS

SPINAL TUMOURS

Spinal tumours

- Extradural : 55 %

- Metastatic
 - Lung, Breast, Prostate
- Primary spinal tumours
 - Chordoma, Osteoid osteoma, ABC

- Intradural

- Extramedullary : 45 %
 - Meningioma, Schwannoma
- Intramedullary : 5%
 - Ependymoma, Glioma, Dermoid

Presentation

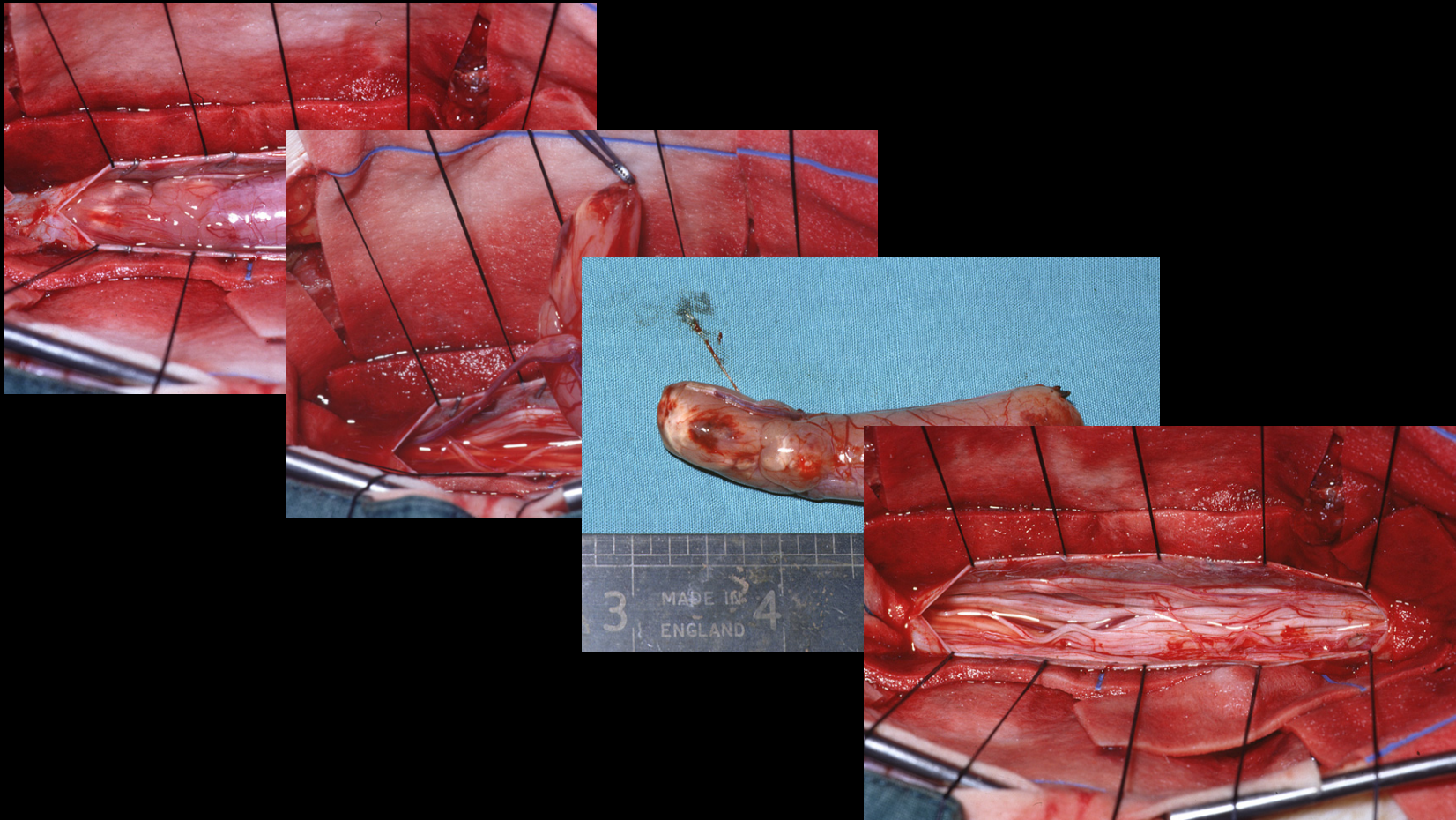
- Pain
 - Radicular, nocturnal, persistent, Valsalva
- Neurological deficit due to :
 - Neuraxial compression
 - Vertebral column instability
 - Motor weakness
 - Sensory loss
 - Gait disturbance
 - Sphincter disturbance

Indications for surgical treatment

- Diagnostic Bx
 - Percutaneous CT guided Bx
 - Open Bx
- Therapeutic Mx
 - Failure of medical therapy : DXT
 - Pathological isolated unstable #
 - Progressive neurological deficit

Extramedullary tumour

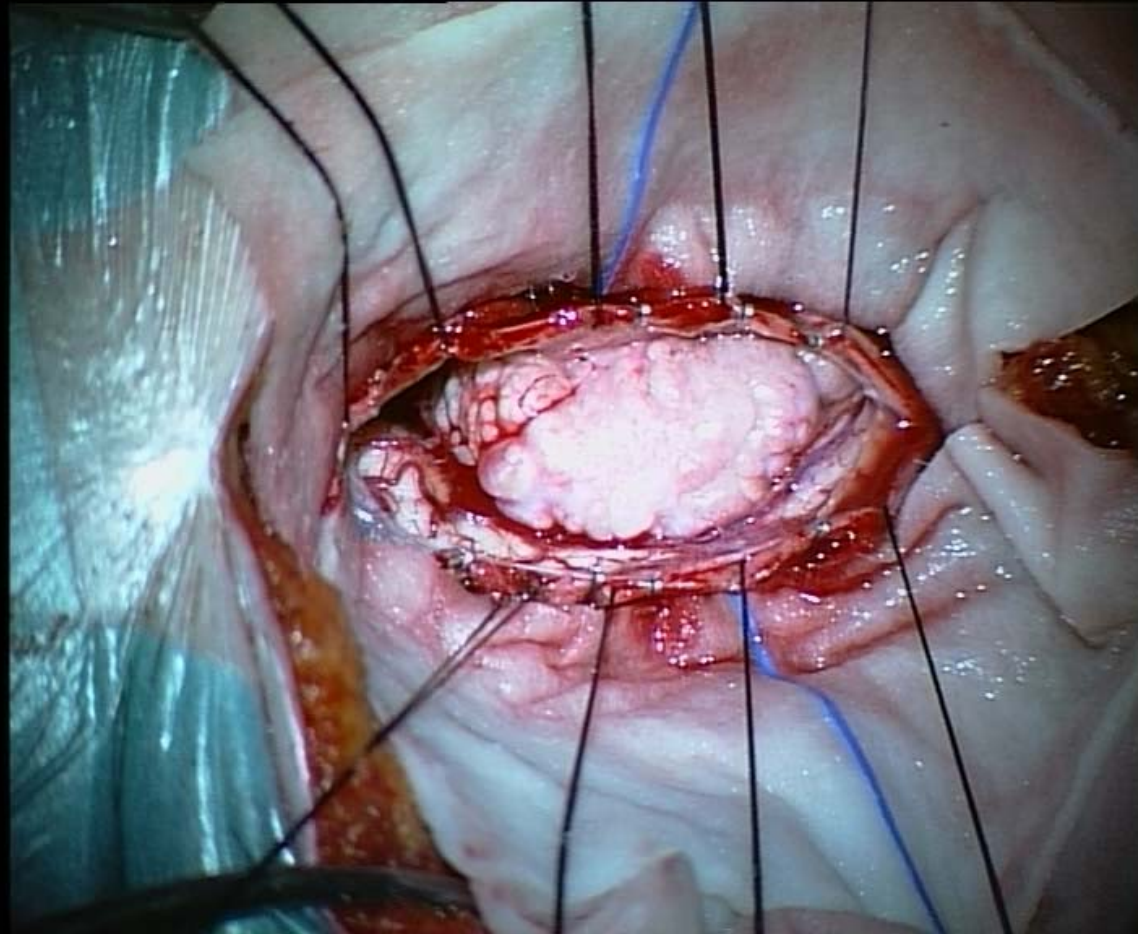
Neurofibroma





Intradural tumour

Meningioma



OSTEOARTHRITIS

- CERVICAL SPINE
 - LOWER CERVICAL
 - DISC / OSTEOPHYTE : SINGLE / MULTIPLE LEVELS
 - MYELO / RADICULOPATHY
- LUMBAR SPINE
 - L3 / L4 / L5
 - DISC DEGENERATION / FACET JOINT AND LIGAMENT HYPERTROPHY
 - CAUDA EQUINA COMPRESSION / RADICULOPATHY

Indications

- Lumbar disc prolapse
 - POSTEROMEDIAL
 - » Focal
 - » Diffuse
 - » Sequestered
 - FAR - LATERAL
 - CENTRAL DISC PROLAPSE

Diagnostic Triage

Differential diagnosis between

- Simple non- specific backache
- Nerve root pain
- Possible serious pathology

Biopsychosocial assessment

SOCIAL

- Family
 - Attitudes and beliefs about ‘ the problem’
 - Reinforcement of illness behaviour
- Work
 - Physical demands of job
 - Job satisfaction
 - Other health or non – health related causes of time off or job loss

Biopsychosocial assessment

PSYCHOLOGICAL

- Attitudes and beliefs about back pain
 - Fear avoidance beliefs about activity and work
 - Personal responsibility for pain and rehabilitation
- Psychological distress and depressive symptoms
- Illness behaviour

RADIOLOGICAL FEATURES OF INSTABILITY

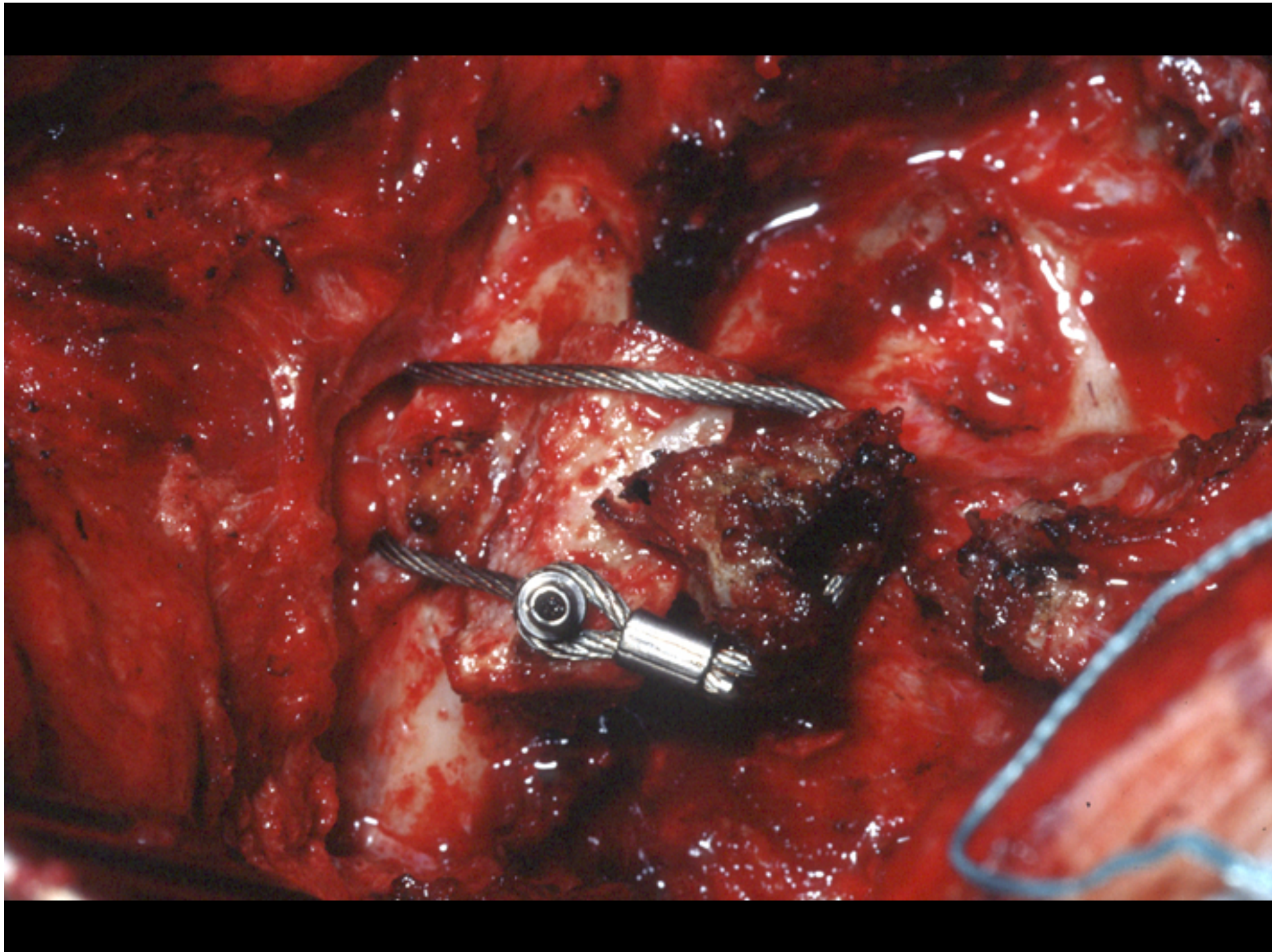
- ALIGNMENT
- VERTEBRAL BODY SUBLUXATION
 - > 5 mm
- CANAL DIAMETER
 - < 13 mm
- ANGULATION
 - > 11 degrees
- PREVERTEBRAL SPACE
 - > 50 % AP distance of vertebral body
- INTERSPINOUS GAP
- ATLANTO – DENTAL INTERVAL
 - > 3mm Adults , > 5 mm Children

Biopsychosocial assessment

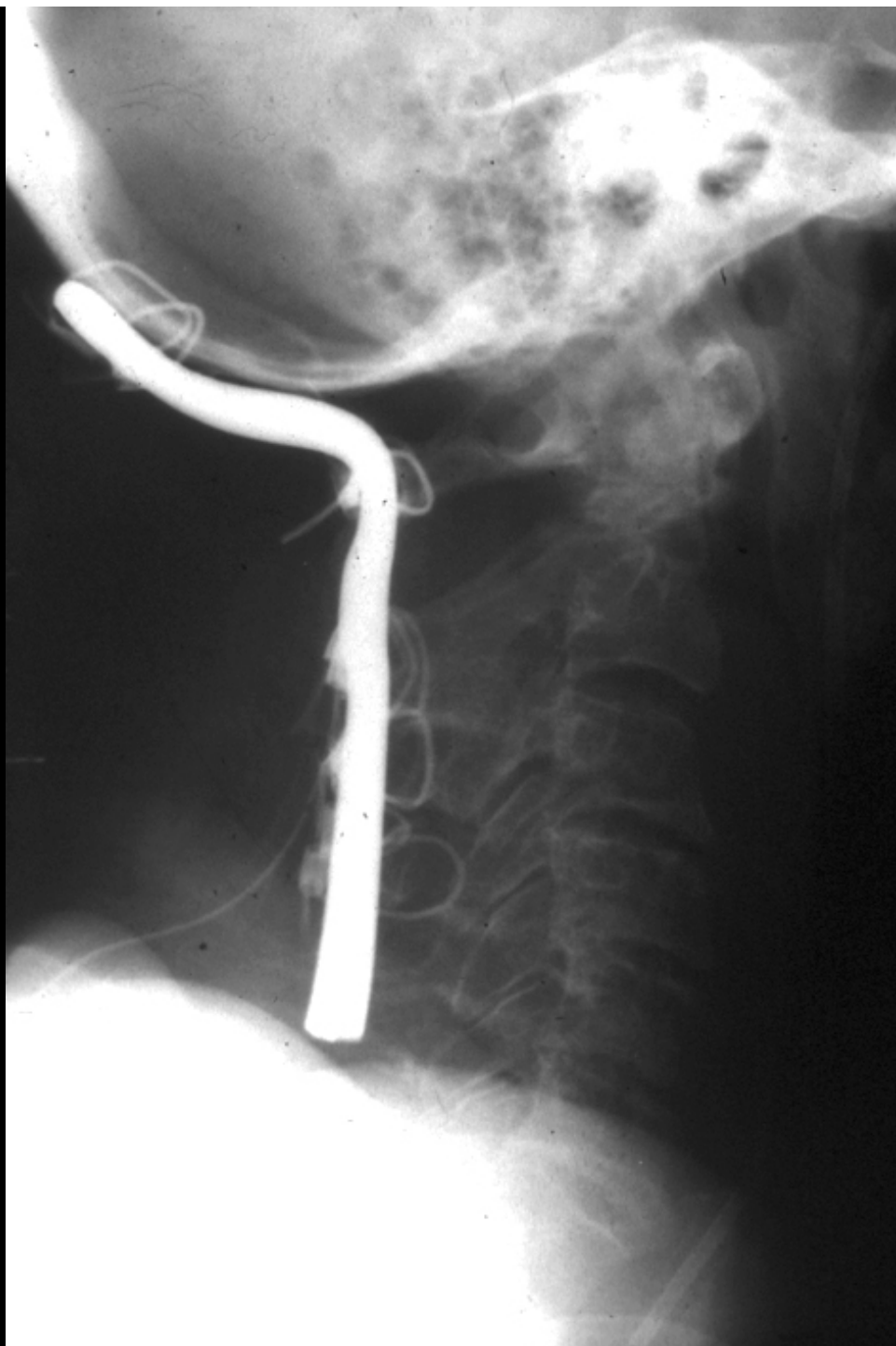
BIOMEDICAL

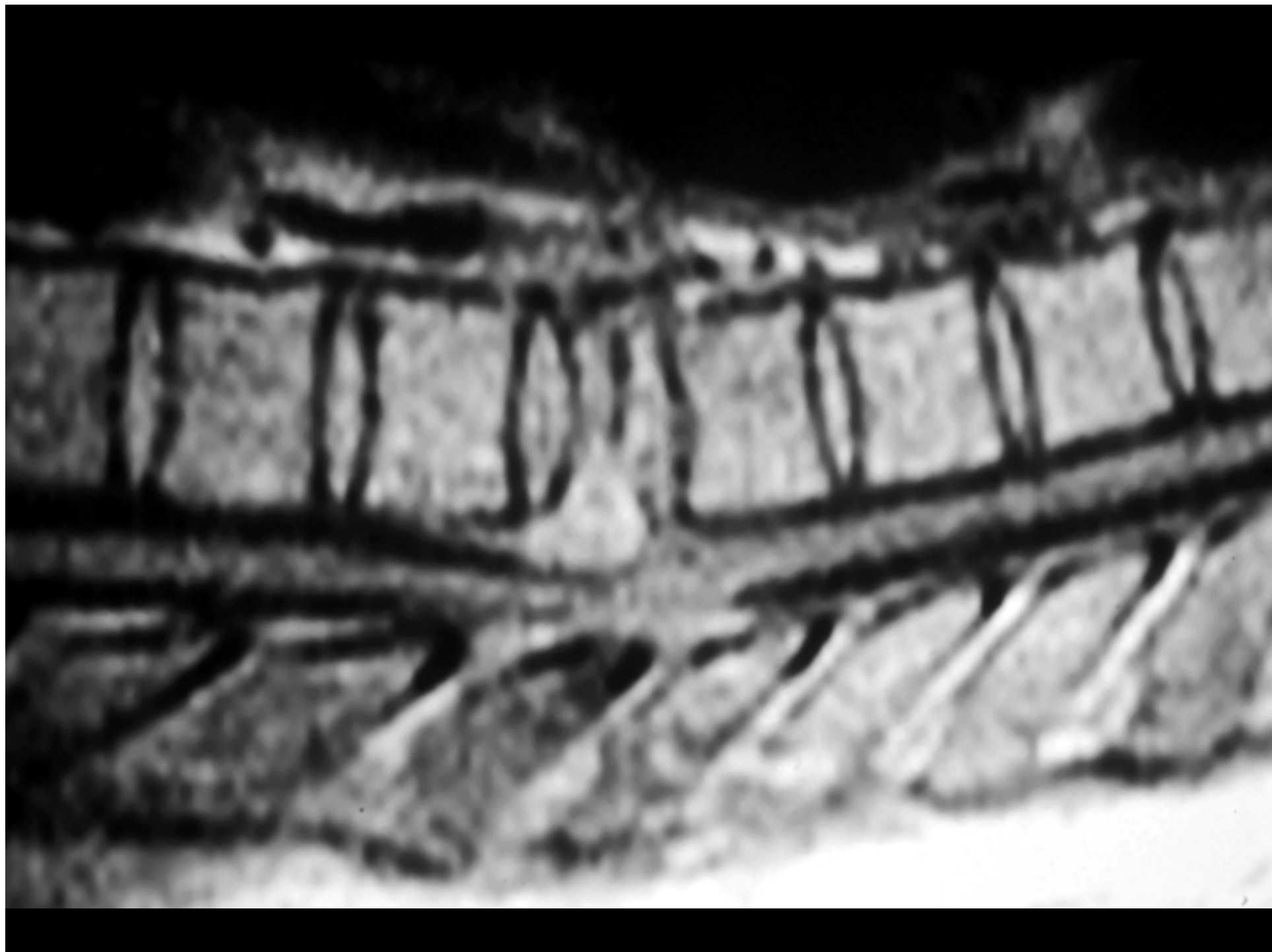
- Review diagnostic triage
 - Simple back apin
 - Radiculopathy
 - 'Serious' spinal pathology
- Haematological investigations and imaging



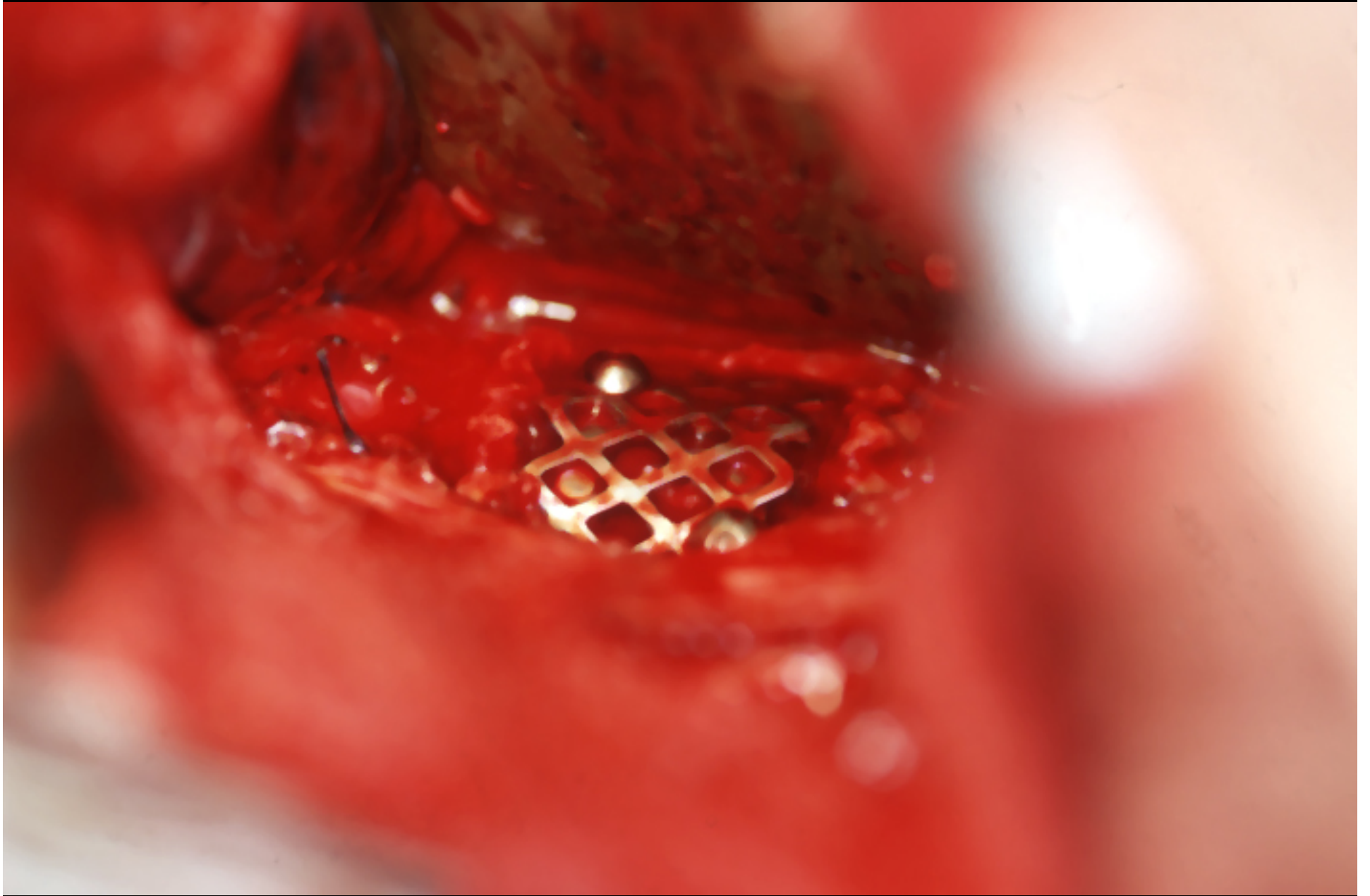


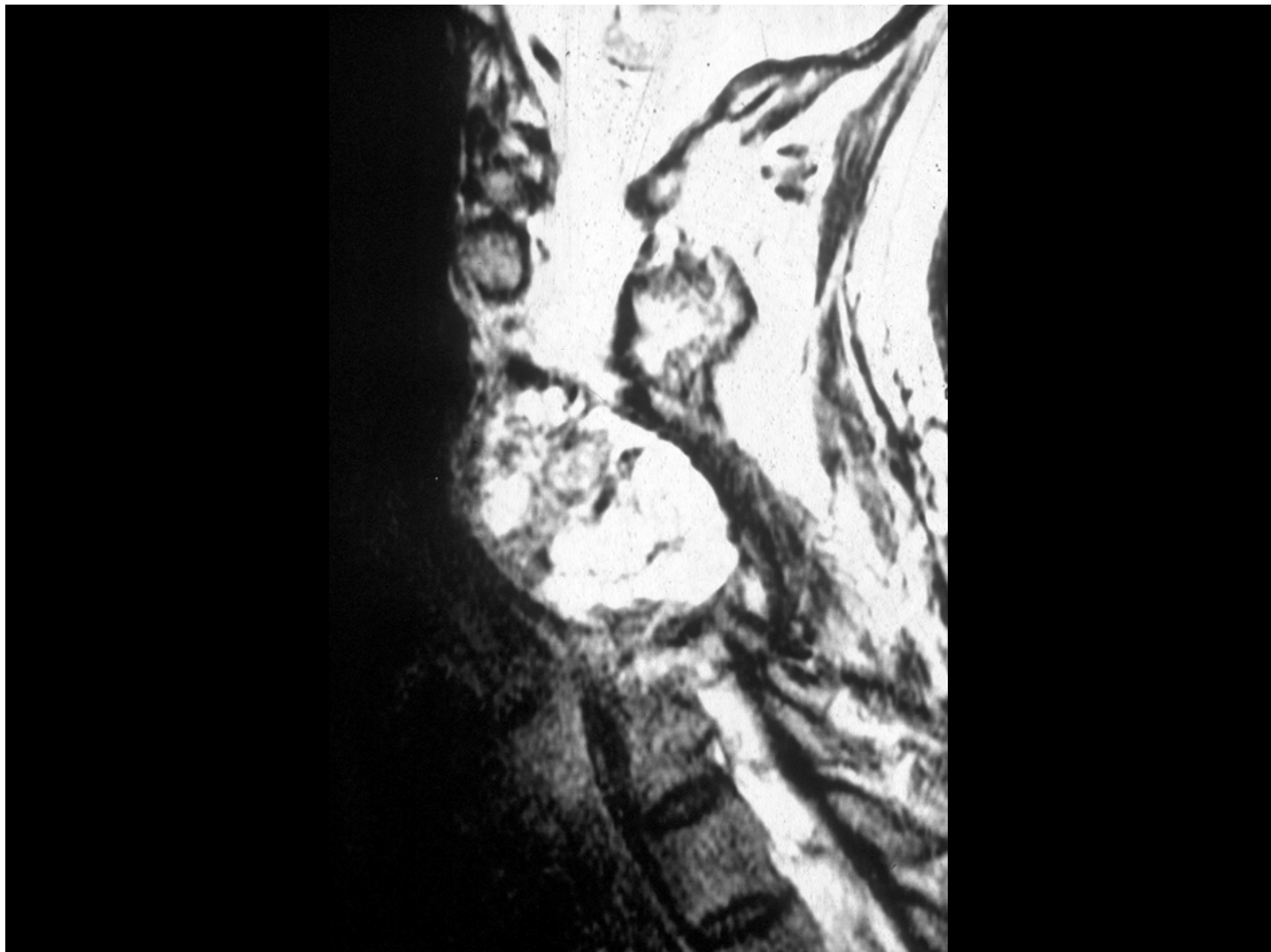
















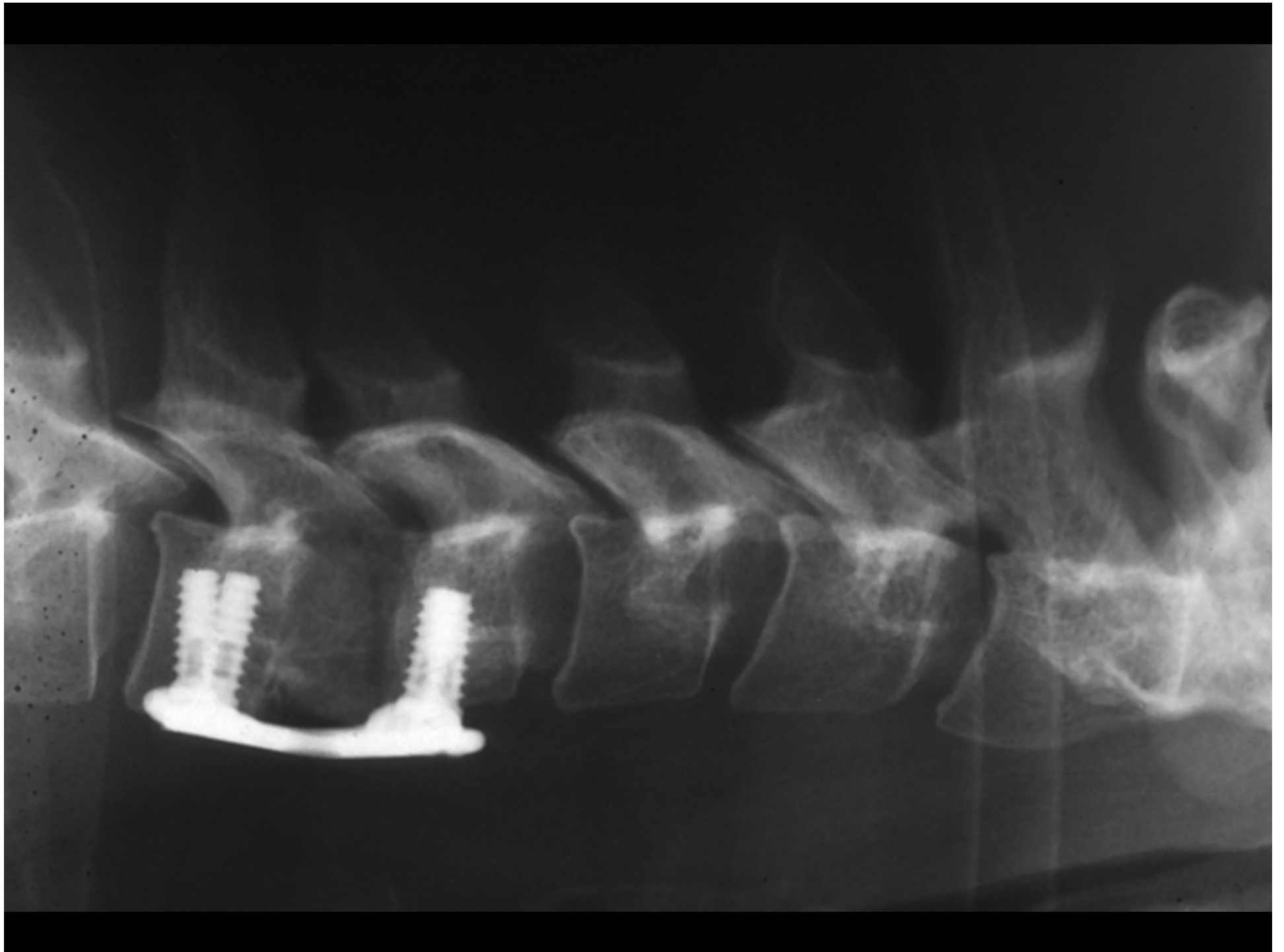


Cervical disc prolapse



Anterior Cervical Discectomy







3.08.01 VC
F -59.0
P +15.0
R +13.0
AG 00°
4.0mm

H

T

5.33.3

MINISCAN

S

liti: 0
HO: 1
U: 24cm
X: 5
IT: 160H/224U
min40sec



0.5
37

R 15.5
23437
003
008







THANK YOU