Listed below are a number of case studies typical of patients attending for back related problems. Please also review the MRI - Before and After section.

Before HBOT ***After HBOT***

This is a recent case; Mr. SM has suffered chronic back and leg pain for years. He is a builder and spent most of his working life involved with heavy lifting. He has consulted virtually every form of therapy over the years ranging from massage, chiropractic, physiotherapy, and naturopathy; received ongoing medical supervision taking anti-inflammatory and muscle relaxants.

MRIs over a 2-years period; revealed continued structural instability and progressive neurological symptoms and eventually after increasing episodes of acute and debilitating pain he was referred to several surgeons and orthopedic specialists who all recommended discectomy and spinal fusion.

As a last attempt to avoid surgery he decided to try HBOT combined with appropriate physical therapy including direct electrical stimulated acupuncture. After 3-weeks of intensive HBOT a re-take of his MRI reveals considerable reduction of the sequestrated disc and reduction of both the compressive effects on both the lower cord and exiting nerve roots. His condition remains stable!

Mr. CD

Diagnosis : 34 year old male. L5/S1 herniation with sequestrated fragment and thrombosis involving the arteriovenous plexus.

Clinical Symptoms : Long history of chronic low back and leg pains. Constant stiffness with episodes of acute debilitating back and sciatic pains. Condition had been progressively deteriorating with increased back stiffness and leg aches. During initial consultation, he complained of severe lower back pain with sharp shooting pains extending down his right thigh, leg and foot. He describes a heavy numbness sensation of his lower leg and foot. He complained of constant pins and needles extending down his legs and across his toes. He reported weakness of his right leg and when walking found that he often missed a rising step with his right foot. Review and treatment by his medical doctor, extensive physical therapies including chiropractic and physiotherapy failed to improve his condition. Review by an Orthopedic Surgeon recommended decompressive surgery and possible fusion.

Investigation : Cat Scan - Large right paramedian L5/S1 disc prolapse with right S1 nerve root compression. MRI - Small L4/5 disc protrusion affecting the right L4 nerve root. Large L5/S1 disc extrusion with mass effect and compression of the right S1 nerve root. Disc extends as far as the S1-2 with mass displacement of the S2 nerve root. Margins of the disc are ill defined with suspicion of haemorrhage associated with disc material. Endplate reactive changes Modic type II infiltration of the inferior L5 vertebral body. Desiccation both L4/5 and L5/S1 discs indicating continuing degenerative joint disease.

AFTER

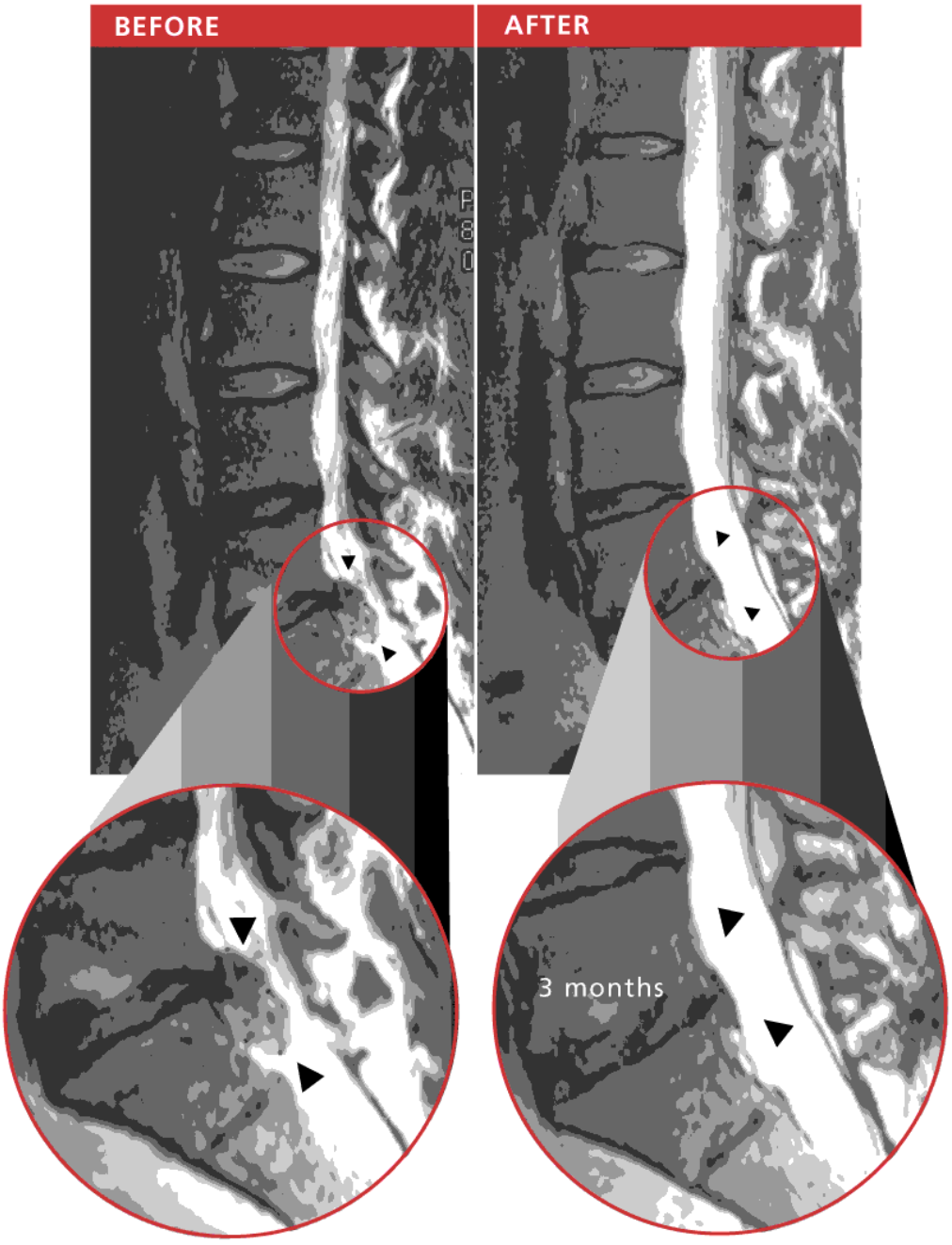
Treatment : Daily Hyperbaric Oxygenation and assertive physical therapy program to reduce pain, disability and promote functional stabilisation. HBOT performed at 2.0 ATA 100% O2 for 45-minute duration. Following clinical improvement patient treatments were reduced to 3 sessions per week. Physical therapy immediately following HBOT included electrically stimulated high frequency acupuncture, supportive chiropractic techniques and physiotherapy modalities including supportive taping, injectable vitamins. Medical review including muscle relaxants and anti-inflammatory medications.

Clinical Symptoms : Substantial reduction of pains to both lower back and right leg. He reports no altered sensory function and the strength to his right leg had returned.

Investigations : Follow up MRI (3 months) after commencing with SRG confirmed substantial reduction of L5/S1 prolapse with reduction of the mass effect on both the theca (lower spinal cord structures) and exiting S1 and S2 nerve roots. Further follow up (6 months) confirms stable appearances of both L4/5 and L5/S1 discs with continuing reduction of residual effects of the L5/S1 extrusion.

Continuing Therapy : Hyperbaric Oxygenation coupled with physical therapy recommended on a supportive measure based upon the patient's continuing presentation. Additional limited MRIs to be performed on a biannual basis to monitor overall progress.

Mr. CD --MRI PHOTOS BEFORE AND AFTER



Mr JB1

Diagnosis : 28-year-old male. L5/S1 herniation with large sequestrated fragment.

Clinical Symptoms : History of chronic back pain with periodic episodes of acute back and right-sided sciatica. Original injury occurred whilst lifting a desk at work several years ago. Initially he experienced a 'tearing' sensation, which resulted in severe pain and stiffness the following day. Eventually his condition settled with a residual dull ache. He maintains a high level of fitness including skiing, snow boarding, surfing etc. During the 12 months prior to treatment his condition continued to deteriorate with increasing episodes of acute pain.

Day to day living became severely restricted requiring assistance to perform simple basic functions including getting in and out of bed and attending the shower or toilet. Unable to sit or stand, he had become stooped attempting to find relief. Extensive forms of treatments including physiotherapy, chiropractic, traction and hydrotherapy, all failed to alleviate his symptoms. His local doctor recommended a surgical opinion including discectomy and possible fusion.

Investigation : Retrolisthesis L5 on S1 measuring approximately 8.0mm. MRI investigation identified significant desiccation of the L5/S1 disc with mild narrowing and endplate degenerative changes. A large central and right posterolateral extrusion with sequestrated fragment compressing both the thecal sac and obliterating the right S1 nerve root.

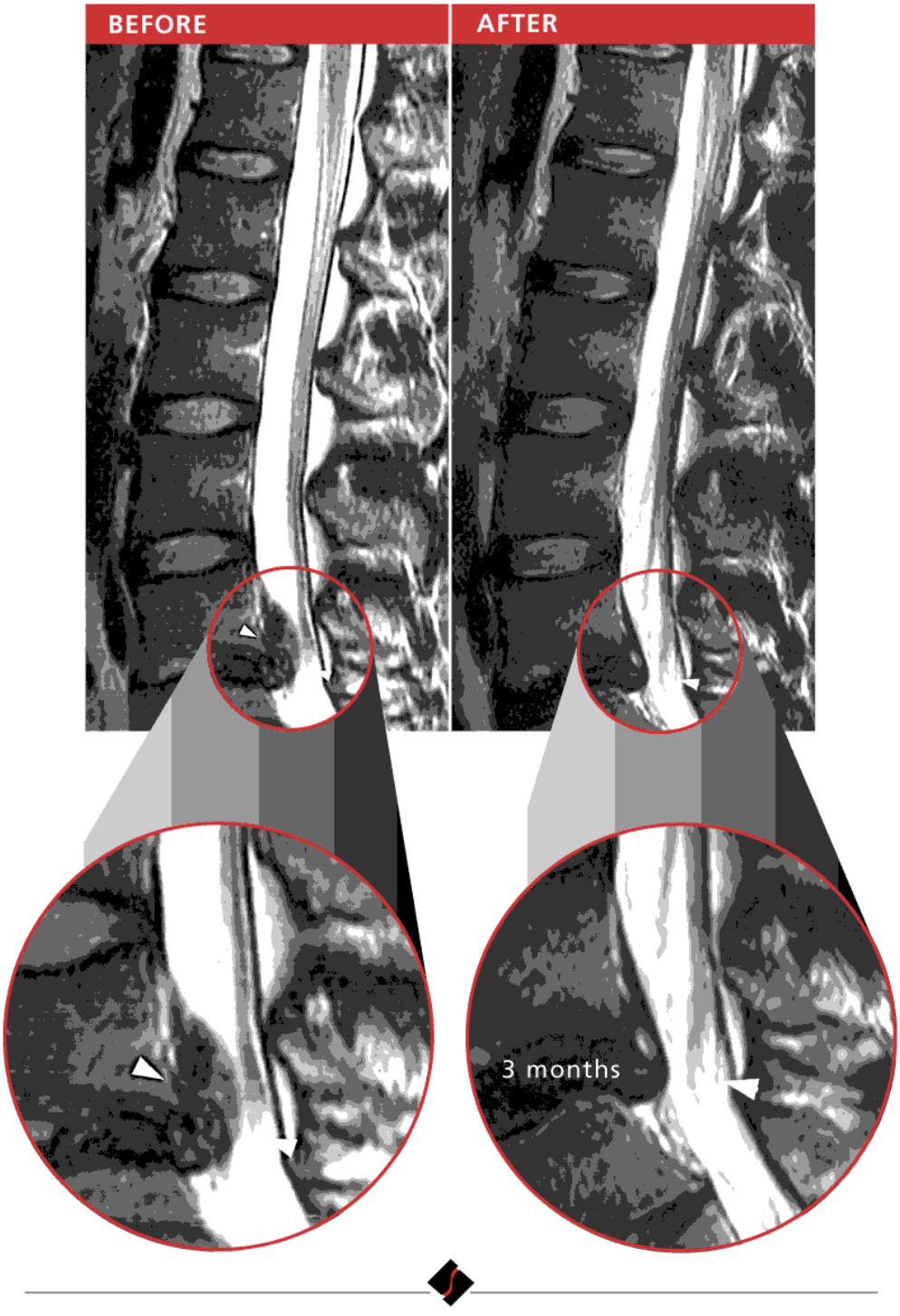
AFTER

Treatment : Daily HBOT and assertive physical therapy directed to reduce pain and promote stabilisation. HBOT performed at 2.0 ATA 100% O2 for 90-minute duration usually several sessions per day. Physical therapy included electrically stimulated acupuncture, supportive chiropractic and physiotherapy modalities, supportive taping, injectable and oral vitamins. Medical review including antibiotic therapy, muscle relaxants and anti-inflammatory medications.

Clinical Symptoms : Significant reduction of back and leg pain. Lifestyle and general sporting activities continue to require moderation. He remains prone to continuing bouts of episodic pain that are currently managed with continuing treatments and medication.

Investigation : Follow-up MRI (3 months) confirms substantial reduction of mass effect of the L5/S1 prolapse. Residual focal paracentral protrusion remains.

Mr. JB1--MRI PHOTOS BEFORE AND AFTER



Ms. CJ

Diagnosis : 40-year female. Residual back and leg pain subsequent to back surgery of L5/S1 disc.

Clinical Symptoms : Back pain initially caused by 'tripping over a step', jerking her back. Apart from a dull awareness her back did not really bother her. Several months later she began to complain of a deep-seated stiffness and pain. She also noticed an increasing sensation of numbness across her right buttock and down into her thigh, leg, calf, foot and across the bottom of her toes. Her local chiropractor commenced a course of manipulation, however no X-rays were performed. Her condition progressively deteriorated, regardless of her treatments, ultimately forcing her to attend hospital casualty for assistance and investigation. She was immediately recommended bed rest and strong anti-inflammatory medication. Investigation including CT Scan and Myeolgram revealed a large prolapsed L5/S1 disc compressing spinal cord structures.

Wide surgical decompression laminectomy and partial L5/S1 disc removal was performed 1 week later. Three months after the back operation, she began complaining of 'curling of the toes to her right foot' and a loss of sensation down the bottom of her leg and in her toes. She was walking with a distinct limp and described clawing of the toes that made her prone to tripping. Her surgeon stated that her 'foot condition was unrelated to her operation'.

Investigation : MRI-L5/S1 posterior laminectomy scar extending posterior and lateral to the thecal sac. The scar extends anteriorly to surround both the S1 nerve roots. The L5/S1 disc is narrowed with desiccation and substantial vertebral endplate degenerative changes (Modic type II). Minimal posterior disc bulging is seen deep to the scar. The L4/5 disc level reveals desiccation without significant narrowing. Prominent posterior annular tear and a further annular tear in a left posterolateral position in relation to the L4 foramina. Moderate L4 facet joint hypertrophy together with disc bulging causing moderate central canal stenosis at the L4/5 level. L2/3 level asymmetrical posterolateral disc bulge impinges on the point of origin of the left L3 nerve root.

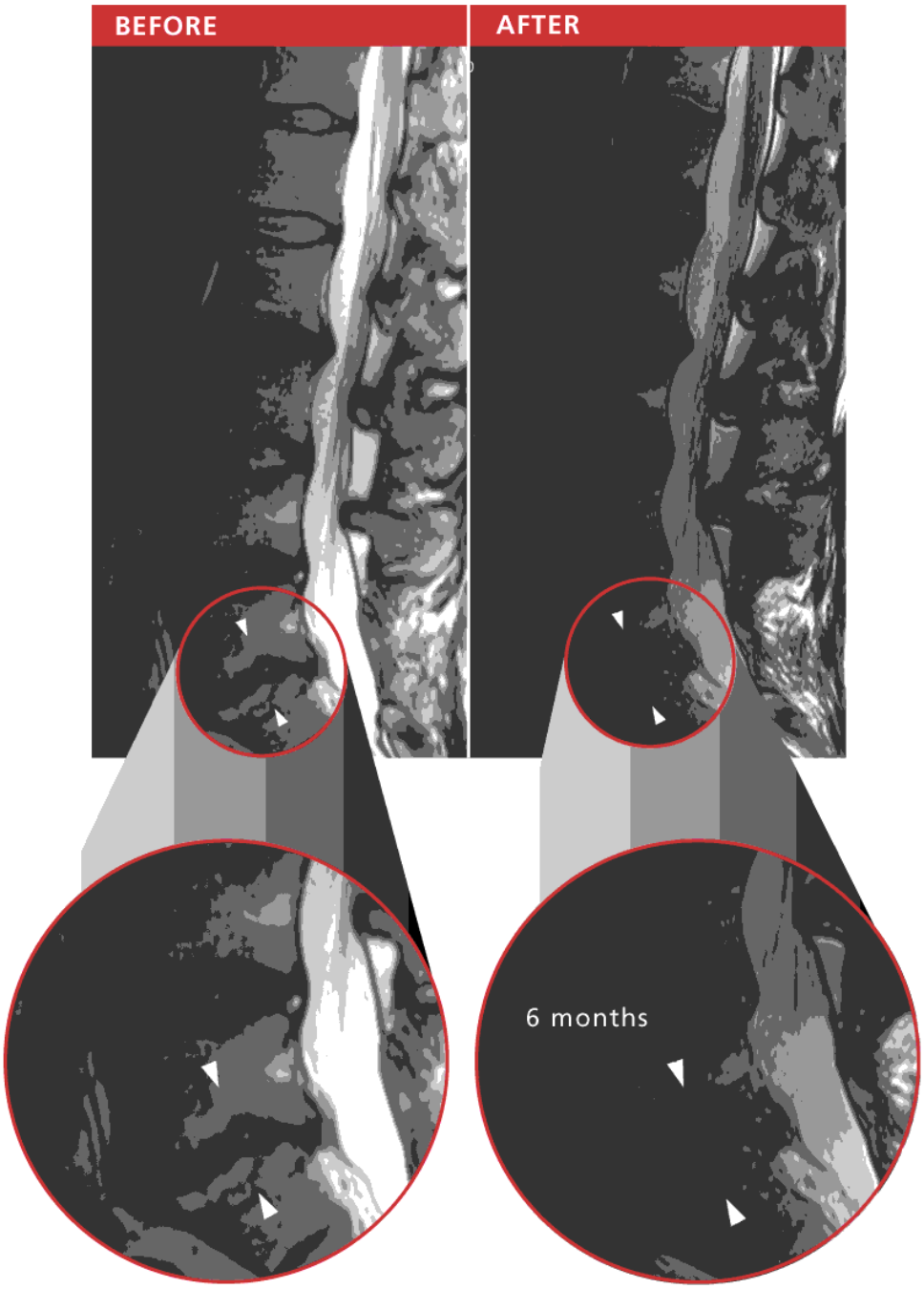
AFTER

Treatment : Daily HBOT and assertive physical therapy to reduce pain, and promote stability. HBOT performed at 2.0 ATA 100% O2 for 90-minute duration, several sessions per day. Physical therapy included electrically stimulated high frequency acupuncture, supportive chiropractic techniques and physiotherapy modalities including supportive taping and injectable and oral administered vitamins. Medical review including antibiotic therapy, muscle relaxants and anti-inflammatory medications.

Clinical Symptoms : Significant reduction of back and leg pain, increased sensation of the right leg and foot, regaining muscular strength and bulk of her lower leg and foot. Patient reports increased and improved lifestyle.

Investigations : Follow-up MRI (6 months) reduction of previously aggressive L5/S1 endplate degenerative changes. No recurrent or residual disc bulge is identified. L5/S1 disc space is generous compared to previous investigation. No abnormal enhancing soft tissue is identified at the laminectomy defect or within the epidural space to suggest scar formation. Ample CSF encases both S1 nerve roots with no identification of scar tissue surrounding.

Ms. CJ--MRI PHOTOS BEFORE AND AFTER



Mr. JB2

Diagnosis : 29-year-old male. L5/S1 disc prolapse with adjacent fragment.

Clinical Symptoms : Chronic history of low back and leg pain. Patient had received previous stabilisation treatment of his chronic back condition. Increased physical activities resulted in a slow deterioration of his lower back with a gradual increase in leg pains. Eventually his condition collapsed with intense crippling pain in his lower back extending into his right thigh and leg with intense pain at his right lower leg and ankle region.

Investigation : MRI demonstrated a 1-cm circumscribed T1 and T2 intermediate signal intensity lesion extending from the posterior aspect of the a L5/S1 disc protrusion/extrusion indenting the right anterolateral aspect of the thecal sac compromising the right S1 nerve root. This is associated with thickening of the posterior longitudinal ligament overlying the disc extrusion.

AFTER

Treatment : The patient was debilitated with severe pain. He was initially treated constantly receiving between 4-6 hours of treatment per day, including Hyperbaric Oxygenation. HBOT was performed at 2.0 ATA 100% O2 for 90-minute periods with a minimum of 2-3 sessions per day. Physical therapy was intense with the patient receiving constant attention including high frequency electrically stimulated acupuncture and mechanical blocking of the pelvis. In addition supportive chiropractic techniques and physiotherapy modalities, structural tapping, injectable and oral vitamins and a firm back brace between treatments were applied. Medical supervision included cortisone injections, muscle relaxants and anti-inflammatory medications.

Clinical Symptoms : Slow reduction of symptoms eventually stabilizing with a residual dull ache across the lower back and upper posterior right thigh.

Investigations : Follow up MRI (3 months) confirms that the previously identified 1cm mass is no longer evident. This lesion most likely represented a combination of inflammatory change and haemorrhage rather than sequestrated fragment. The L5/S1 disc protrusion persists, however it is marginally smaller indenting the anterior and right aspects of the thecal sac contacting and displacing the right S1 nerve root. A small amount of fat persists between the right S1 nerve root and right-sided facet, and in addition the nerve root is not enlarged and although the nerve root is posteriorly displaced, no clear compression is evident. The disc extends to contact the left S1 nerve root as it emerges from the thecal sac, however no left sided neural compromise is evident.

Continuing Therapy : Hyperbaric Oxygenation coupled with physical therapy and medication continues. This patient has been instructed and continues to alter his lifestyle, which has included in excess of 7-kg weight loss. His continues to remain stable.

Mr. RC

Diagnosis : 45-year old male. Multi level degenerative instability due to a compression fracture of the L3 vertebra during 1976. Subsequent central canal stenosis L3/4 and L4/5.

Clinical Symptoms : Patient presents with a long history of chronic low back pain and right-sided sciatica. A heavy fall from a ladder during 1976 resulted in a compression fracture with subluxation. He is a commercial painter with heavy repetitive demands on his back. He complains of constant residual pain and disability. His condition has progressively deteriorated and suffers frequent episodes of acute attacks that force him to lie down between 4-7 days requiring heavy medication to provide some form of relief. He has consulted numerous medical doctors and treating practitioners. He has been recommended spinal fusion. He reports that manipulation definitely makes his condition worse.

Investigations : MRI - L5/S1 disc no abnormality. L4/5 disc narrowing, desiccation with prominent tear. Moderate central and right posterolateral protrusion compressing the theca and L5 nerve root. L4/5 level reveals moderate central canal stenosis with contribution from advancing posterior facet hypertrophy. L3/4 level reveals old wedge compression of the L3 vertebra. Substantial L3/4 disc degeneration with endplate degenerative changes, Modic type II. Moderate central canal stenosis with posterior facet joint arthropathy. Large central and right-sided posterolateral disc protrusion with L4 nerve root compression. L2/3 marked disc desiccation, narrowing with evidence of old herniation of the L2/3 disc into the L3 vertebral body. Degenerative endplate erosion again, at L2/3. Annular tear with moderate posterior bulging compressing theca and displacing the left L3 nerve root. Again, central canal stenosis is evident at the L2/3 level.

AFTER

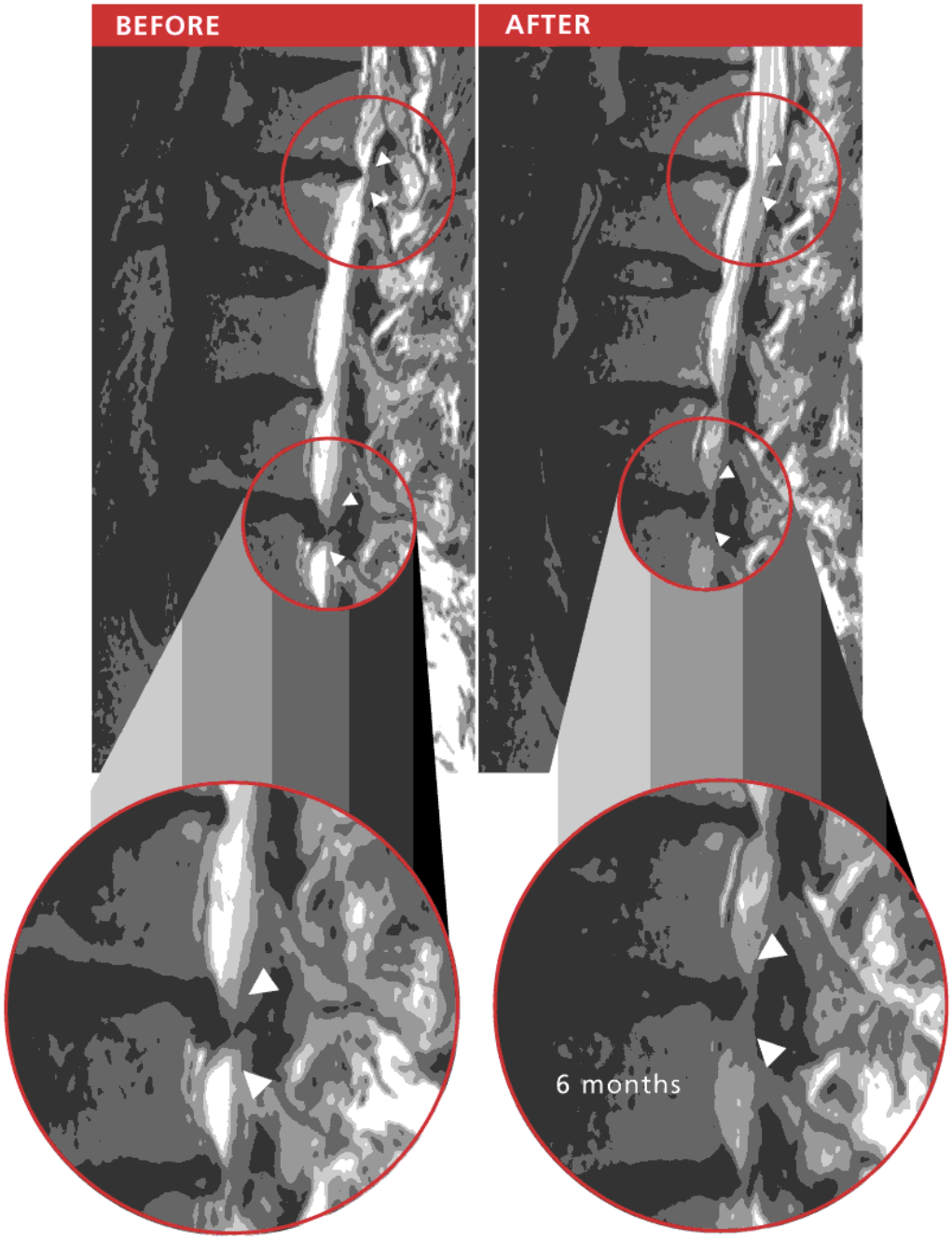
Treatment : Daily Hyperbaric Oxygenation and assertive physical therapy program to reduce pain, disability and promote functional stabilisation. HBOT performed at 2.0 ATA 100% O2 for 45-minute duration. Following clinical improvement patient treatments were reduced to 2 sessions per week. Physical therapy immediately following HBOT included electrically stimulated high frequency acupuncture, supportive chiropractic techniques and physiotherapy modalities including supportive taping, injectable vitamins. Medical review including muscle relaxants and anti-inflammatory medications.

Clinical Symptoms : 6-month follow up, patient reports a significant reduction to his chronic and persisting condition. He reports a considerable reduction to both the frequency and intensity of acute episodes and his residual stiffness has also diminished. He reports improvement in his day to day activities stating that he though 'he had to live with it'. Follow up 12 month evaluation, he records no back or leg pain, experiencing a residual low back ache which disappears with simple stretching exercises.

Investigations : Follow-up MRI (6 months) reduction of the L3/4 prolapse with substantial improvement of the central canal stenosis. Improvements noted and recorded at other levels.

Continuing Therapy : Hyperbaric Oxygenation coupled with physical therapy recommended on a supportive measure based upon the patient's continuing presentation. Additional limited MRIs to be performed on a biannual basis to monitor overall progress.

Mr. RC--MRI PHOTOS BEFORE AND AFTER



Mr. JF

Diagnosis : 23-year old male. Central canal stenosis due to large L4/5 disc protrusion.

Clinical Symptoms : Long history of chronic low back problems. Patient describes his condition as being 'on and off' over the years and directly aggravated by heavy physical work. He reports a number of impact falls, heavy farm related work including sheep shearing and numerous sporting related injuries. Patient reports acute lower back pains extending down the right thigh into his calf and foot area. Pain is predominately right sided but reports involvement of his entire left leg also. He describes his back as feeling 'extremely unstable'.

His condition is aggravated by prolonged sitting and standing. Basic lifting and even gently exercise movements significantly aggravate his condition. Acute sharp attacks are also triggered by 'sneezing and even coughing'. Recommended extended bed rest by his local doctor provided no relief. He has consulted numerous treating practitioners with therapies including chiropractic, physiotherapy, acupuncture and massage. He has maintained a reasonable exercise and stretching program where possible. Continuing instability resulted in him being referred by his local medical doctor to an Orthopedic Surgeon who recommended surgical decompression and stabilisation.

Investigations : MRI - Large central L4/5 disc extrusion with high grade central canal compromise. Retrolisthesis L5 on S1 with small central disc protrusion. Posterior annular tear L5/S1 disc. Moderate bilateral L5 foraminal compromise. Desiccation at L4/5 and L5/S1 discs indicating continuing degenerative disc disease.

AFTER

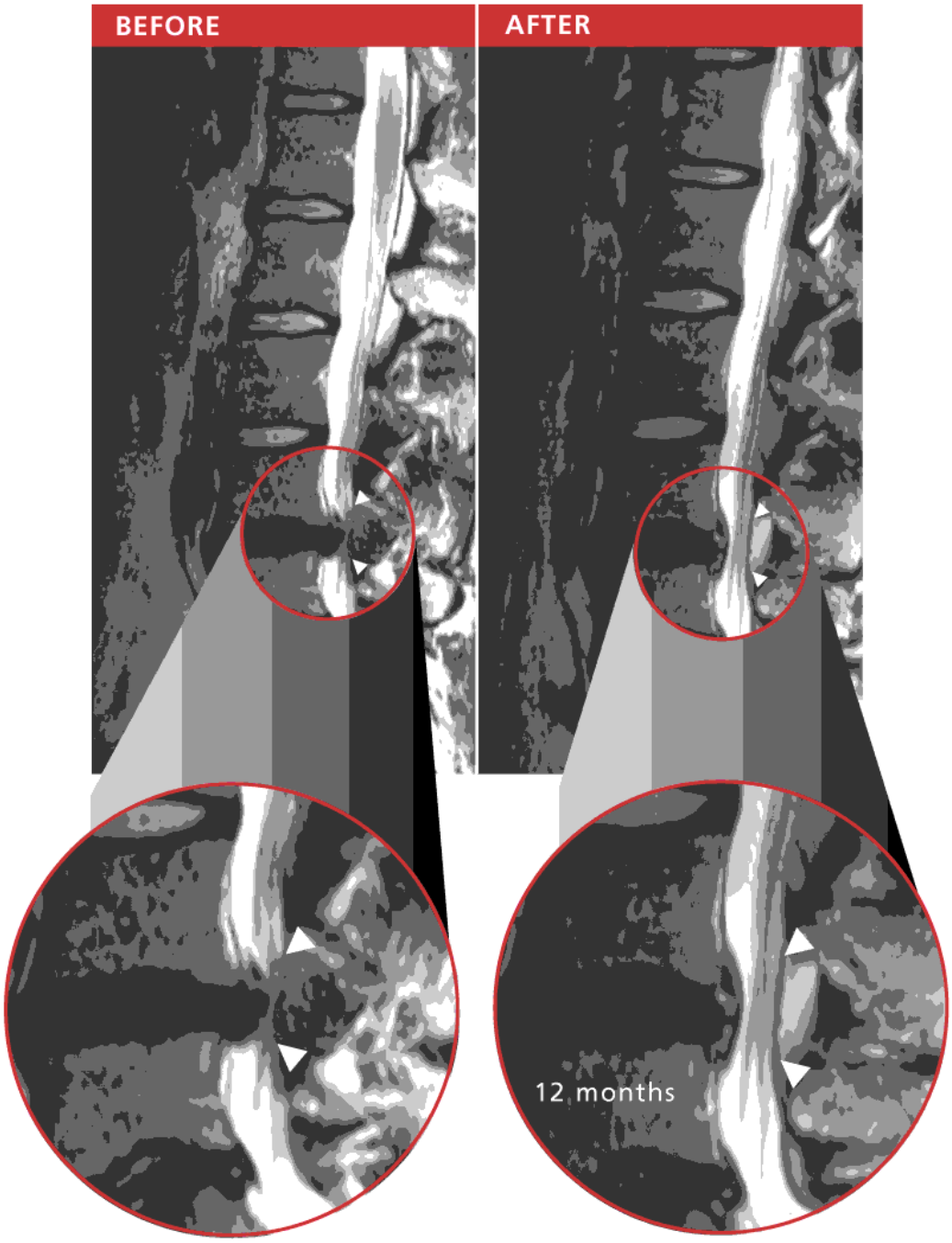
Treatment : 12 month stabilisation program recommended including Hyperbaric Oxygenation and assertive physical therapy to reduce pain, disability and promote functional stabilisation. HBOT commenced daily between 45-90 minute sessions at 100% O2, 2 ATA. Following clinical improvement patient treatments were reduced between 2-3 HBOT and physical therapy sessions per week. Physical therapy included electrically stimulated high frequency acupuncture, supportive chiropractic techniques and physiotherapy modalities including supportive taping, injectable vitamins. Medical review including muscle relaxants and anti-inflammatory medications.

Clinical Symptoms : Significant reduction of back and leg pain. Pain now described as a dull generalised ache across the lower back. No leg involvement.

Investigations : Follow up MRI (12 months) confirms clear and substantial reduction of the L4/5 prolapse with marked improvement of central canal compromise.

Continuing Therapy : Hyperbaric Oxygenation coupled with physical therapy recommended on a supportive measure based upon the patient's continuing presentation. Additional limited MRIs to be performed on a biannual basis to monitor overall progress.

Mr. JF--MRI PHOTOS BEFORE AND AFTER



Mr. BB

Diagnosis : 34-year old male. L5/S1 herniation with left S1 nerve root compression

Clinical Symptoms : Chronic history of low back stiffness and pain associated with many former years of competitive sports. He states that his overall condition has been manageable with general physical treatments without any serious ongoing problems. Recent lifting injury resulted with immediate acute debilitating pain that continued to deteriorate with pains shooting down his left thigh, leg and into his foot. He describes pins and needles across his left foot extending into his outside toes. Coughing, sneezing and straining with bowel action aggravate his condition. He states that since his back has deteriorated, he now complains of increased urination frequency and incontinence. He cannot sit, stand or lie down for any length of time without increased pain. He had received numerous forms of physical therapy, medical treatments including reviewed by a prominent Neurosurgeon who recommended surgery.

Investigations : Functional loading X-rays revealed a 4.0mm Retrolisthesis of the L5 on S1. MRI confirms Retrolisthesis at L5 with moderately large left posterolateral L5/S1 disc prolapse with mass effect of the exiting S1 nerve root. Desiccation both L4/5 and L5/S1 discs indicating continuing degenerative joint disease.

AFTER

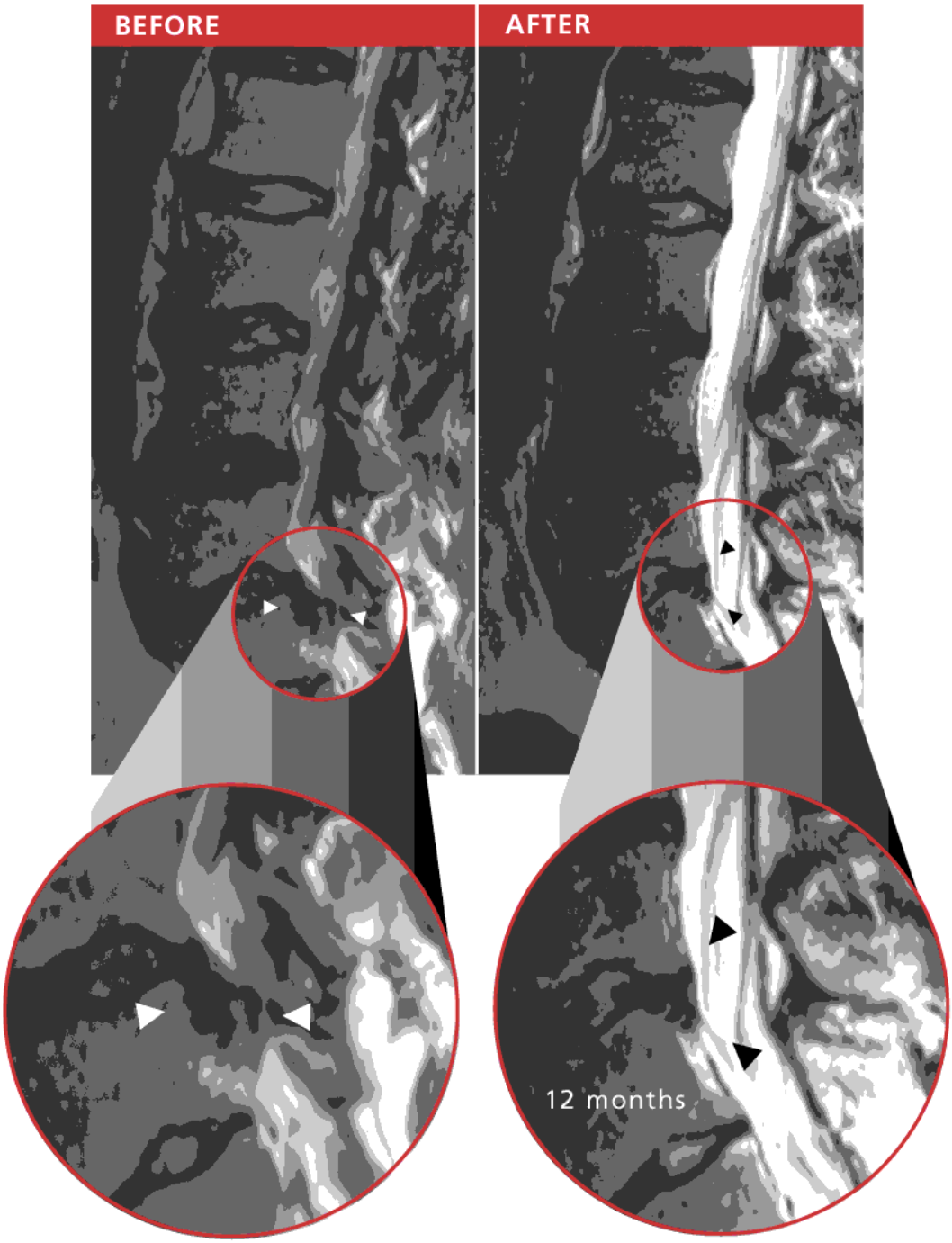
Treatment : This patient's home was approximately 2.5 hours away from our treatment facility. It was virtually impossible to provide an initial stabilisation period that is usually recommended to provide Oxygen saturation. Therapy sessions varied, occasionally daily if accommodation was provided, but often extended to beyond several weeks. HBOT was performed at either 45-minute or at 90-minute sessions at 2 ATA 100% O2. Physical therapy following HBOT sessions included high frequency electrically stimulated acupuncture, supportive chiropractic techniques and physiotherapy taping, injectable vitamins, and medications including muscle relaxants and anti-inflammatory.

Clinical Symptoms : Significant reduction of initial presenting symptoms. Residual generalised dull low back pain without leg involvement. Activity levels have improved dramatically without disability. No bladder or bowel symptoms. No altered sensory dysfunction.

Investigations : Follow up MRI (12 months) confirmed a substantial reduction of the L5/S1 prolapse with marked improvement and reduction of the mass effect on both theca and exiting S1 nerve root.

Continuing Therapy : Hyperbaric Oxygenation coupled with physical therapy recommended on a supportive measure based upon the patient's continuing presentation. Additional limited MRIs to be performed on a biannual basis to monitor overall progress.

Mr. BB--MRI PHOTOS BEFORE AND AFTER



Ms. JT

Diagnosis : 42 year old female L5/S1 and L4/5 disc herniation with left S1 nerve involvement.

Clinical Symptoms : 2-year history of increasing back pain. Fell down stairs approximately 10 years earlier and 'bruised her tail bone'. Low back and left leg involvement has progressively increased during the previous 2 years. During the initial consultation she complains of acute low back pain with left sciatica. Patient walks with severe limitations, and complains of increased leg pain with attempted walking and when transferring weight onto her left leg. She reports pins and needles and cramping sensation in her lower thigh and left calf extending into the left foot. Pain is increased with prolonged sitting, standing, stooping and twisting. Straining with bowel and bladder action significantly increases the back and leg pain. She complains of increased urination frequency with incontinence. Medical management included pain killers and anti-inflamatories. She had been recommended decompression surgery and possible spinal fusion.

Investigations : MRI investigation - L5/S1 left posterolateral disc herniation displacing the left S1 nerve root. L4/5 disc reveals a posterior annular tear and focal disc protrusion indenting the theca. The L3/4 disc reveals disc bulging which again contacts the theca. Desiccation noted at the L3/4, L4/5 and L5/S1 levels indicating continuing degenerative joint disease. Inferior endplate L5 and L4 are consistent with reactive degenerative change and secondary to disc disease.

AFTER

Treatment : HBOT commenced daily, initially performed at 90 minute sessions at 2 ATA 100% O2 then reduced to 45-minute sessions with clinical stabilisation. Physical therapy following HBOT sessions included high frequency electrically stimulated acupuncture, supportive chiropractic techniques and physiotherapy taping, injectable vitamins, and medications including muscle relaxants and anti-inflammatory.

Clinical Symptoms : Slow reduction of acute back and leg pain. Patient continued with residual symptoms that gradually improved with time and continuing conservative management. Frequency and intensity of acute relapses have significantly diminished and she continues to remain stable. No residual sensory dysfunction.

Investigations : Follow up MRI (3 months) confirms her clinical improvement with a clear reduction of the broad based L5/S1 prolapse.

Continuing Therapy : Hyperbaric Oxygenation coupled with physical therapy recommended on a supportive measure based upon the patient's continuing presentation. Additional limited MRIs to be performed on a biannual basis to monitor overall progress.

Ms. JT--MRI PHOTOS BEFORE AND AFTER