

A doctor with a pain in the leg

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Emergencies can spring up at any time and in many incarnations. Are you adequately equipped to deal with them? Each month we present a case study in emergency medicine based on real cases and events. Would you have been able to help this patient?

One evening, a close colleague walks up the few stairs to his front door after a very ordinary day. He notices slight muscular pain at the top of his right thigh near the femoral canal.

Self-diagnosis

Being an experienced clinician, his self-diagnosis of a pulled adductor muscle, despite no history of trauma, keeps him happy.

That evening, while out with his wife for dinner, he 'grizzles' more and more and starts to limp.

Like most of the doctors you know, over the next few weeks he continues to self-diagnose and treat himself, with a large tincture of male denial mixed in.

The symptoms are unusual, not fitting the conventional lumbosacral syndromes. The muscles of his thigh ache, spasm, and seem a little weaker. There are no acute back symptoms – only a

little stiffness which has been there for decades, possibly a consequence of all those teenage sports as well as a builder's labouring accident 35 years ago which put him to bed. At the time, the specialist orthoped had told his parents, 'He has ruptured two discs'.

Time to investigate

Even to the patient it becomes obvious that things are definitely not getting better. His intake of ibuprofen creeps up, the symptoms disturb sleep and even he knows that he is getting crankier.

So, on his next day shift in the emergency department where you both work, he goes up to the radiographer in charge of the CT scanner and asks whether she could fit in a lumbosacral scan. There has just been a cancellation and she says, 'If you bring the patient now, I'll do it'.

Quickly, he fills out forms and gets

Table. Neurological deficits associated with spinal cord injury

Nerve root	Sensory	Motor	Reflex
C3	Neck		
C4	Clavicular area	Diaphragm	
C5	Below clavicle Outer upper arm	Abduct shoulder	
C6	Thumb	Flex elbow	Biceps
C7	Middle finger	Extend elbow	Triceps
C8	Little finger	Flex fingers	
T1	Inner aspect arm	Spread fingers	
T4	Nipple	Intercostal and abdominal muscles	
T10	Umbilicus	Intercostal and abdominal muscles	
L1	Inguinal region	Flex hip	
L2	Outer thigh	Flex hip	
L3	Inner thigh	Extend knee	
L4	Inner lower leg	Extend knee	Patellar
L5	Outer lower leg	Dorsiflex ankle	
S1	Lateral foot	Plantarflex ankle	Achilles
S3/4	Perineal	Anal tone	

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patient labels. The staff's humour is kind, mild, but still at his expense – especially when he has to take off his doctor appearance for the scan, becoming, even if only for a moment, a helpless hospital inmate.

Staring at a hospital ceiling, dressed in that short ill-fitting hospital gown that reveals back, bum and hopefully, just some underwear, is not a good feeling.

Once changed again, he asks the radiographer if there was anything abnormal on the scan (they usually have a pretty good idea). He is told there are some significant degenerative changes.

Not wanting to be pushy, he waits until his next shift for the report. By this time he is in agony, especially when sitting and the pain is worse when driving; lying flat is not much fun either.

Having plenty of symptoms and time he studies the pain, applying his knowledge of anatomy and even looking up the dermatomes and reflexes (see Table).

He knows there is femoral nerve and L3 nerve root involvement, probably due to prolapse of the L2 disc above. The CT report does not agree with his clinical assessment:

'L2/3 level. Intervertebral disc is normal. No evidence of local or diffuse disc bulging. Neural exit foramina are patent. No evidence of canal stenosis. The posterior elements are normal.'

A few days later, once again in typical doctor fashion, he informally mentions the discrepancy between clinical and imaging findings to the radiologist in the parking station at work. He is told that if he is worried he should get an MRI as 'no test is perfect'.

By this time, a combination of pain, insight, commonsense and nagging, courtesy of friends and loved ones, causes him to go and see a neurosurgeon.

Murphy's Law rules

It is the Christmas holidays. Your colleague has been working extra shifts at hospital as well as at the practice, as

that was his roster and he did not want to let anybody down. Now, there is only one neurosurgeon 'in town'.

The neurosurgeon is well-trained, excellent specialist and person, and it seems like only yesterday that your colleague was helping him put in his first intravenous lines as an intern. He sees your colleague the day he calls, despite being obviously overloaded.

'In addition, there appears to be a small extruded sequestered fragment that despite the unusual location would appear to lie within the subarachnoid space in relation to the cauda equina on the right.'

'The focal disc protrusion is compressing the right L3 nerve root. There is degenerative disc disease at this level with loss of disc space height and signal.'

'The conus is of normal size and signal and lies at the T12 level.'

The report comes with the suggestion to repeat the MRI with contrast, in order to clarify the unusual pathology. Is there an intradural lesion? Is there a neurofibroma or such?

Your colleague is still working, still in severe pain, but now with a negative feeling about how it is all developing. He knows an operation is inevitable. So many times he has told patients 'the last thing you want for your back is an operation'.

After the second MRI he hangs about to witness the reporting of the films – no tumour but compression of the right L3 nerve root by a large disc bulge, and the separate intradural segment (Figures 1a and b).

As he knows the radiologist well, he asks why the lesions were not obvious on the CT. Nothing is said but she circles something on the CT that even he can recognise as obviously causing damage.

Although an 'urgent' laminectomy is offered to him, he insists on doing his shifts as there is nobody else around.

Two weeks later, a laminectomy, removal of the intradural disc fragment which is compressing the cauda equina, and decompression of the nerve root by removal of the lateral disc protrusion are undertaken.

The operative findings confirm the findings on clinical examination and the MRI reports.

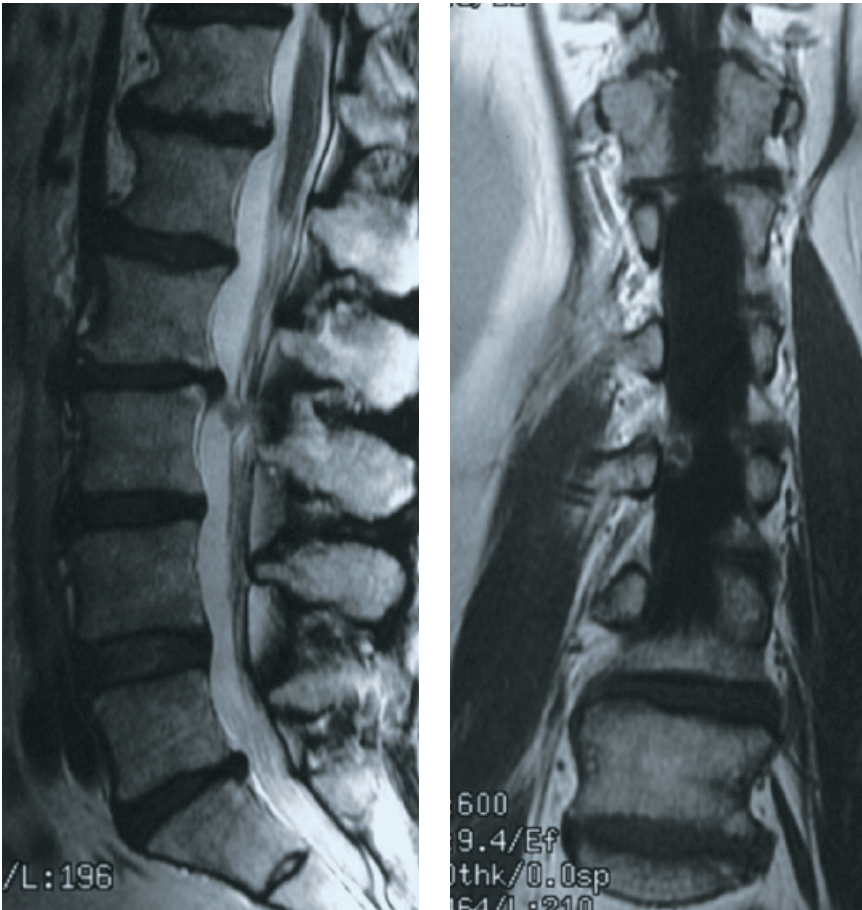
As you spend a few evenings with your colleague during his enforced rest

During the consultation the tension only really disappears when the patient is, and acts like, a patient.

Clinical examination confirms a femoral nerve root lesion with lower motor neurone signs. An MRI scan is booked for the next day. The films and report will go to the specialist who will ring your colleague directly.

The report is conveyed:

'At the L2/3 intervertebral level there is a focal disc protrusion on the right. This measures approximately 6 mm and extends inferior to the level of the disc. This does not appear to be contained by the posterior longitudinal ligament.'



Figures 1a and b. MRI at the L2/3 intervertebral level showing a focal disc protrusion on the right and a small, extruded sequestered disc fragment lying within the subarachnoid space. The focal disc protrusion is compressing the right L3 nerve root. There is degenerative disc disease at this level with loss of disc space height and signal. a. (left). Sagittal view. b. (right). Coronal view.

and convalescence you hear his first-hand patient stories of:

- feeling muscle stitches break as he vomited in the recovery ward
- the hospital realising, 12 hours post-op, that the patient-controlled analgesia (PCA) machine was faulty
- the system failing to appreciate the full amnesic effect of a midazolam premed and a three-and-a-half hour anaesthetic (some 36 hours)
- the system failing to meet his dire need for information, explanations and instructions for quite some time

- the need for a short course of steroids to manage a painful, 1:10 post-op swelling of the decompressed nerve
- a cerebrospinal fluid leak necessitating reoperation.

A happy ending

At the end of the evening your friend proposes a toast to appreciate how lucky he has been to survive to experience good health again, as well as being such a 'rare, interesting, and unusual case' that is destined to be written up in the specialty literature. MT