

**THE OSSEOLIGAMENTOUS FREE FRAGMENT:
CHALLENGING FOR ALL PHYSICIANS, INCLUDING THE
MANIPULATING DOCTOR**
*Right Far Lateral L5-S1 HNP Fragment Compressing Both L5 DRG and S1
Nerve Root*

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This 49 year old man is seen for the chief complaint of severe right leg pain, very little low back pain, walking by dragging the right leg behind and lateral to his body. He states that four days previously he had been playing with his grandchildren following riding in an airplane to visit them and he felt that prompted the onset of this leg pain. The pain in the leg is rated at a VAS of 10, is constant, causes him to have to crawl rather than to walk at times, and he cannot sleep at night due to the pain. His low back pain is less than half the intensity of his leg pain.

He also complains of arm and hand tingling which has been present since surgery in 2004 for a cervical spine fusion. See Figures 1 and 2. Prior to this fusion he had had three epidural steroid injections which did not help relieve his arm discomfort. The fusion of C5, 6, 7 did not help him. Following the surgery he had low back pain and he was told at that time from MRI study that he had two disc bulges and surgery was offered for his low back pain. He turned down the surgery due to the failure of the cervical spine surgery to help him.

Examination when first seen reveals normal vital signs. There is a left anterior incision on the neck from his previous spine fusion in 2004. See Figures 1 & 2 for this fusion.



Figures 1 & 2: show fusion with cages and titanium plate at the C5-7 levels.

Examination of the low back reveals a positive sitting and supine straight leg raise at 30 degrees, much worse when sitting (Bechterew's sign). The deep tendon reflexes of the lower extremities are bilaterally plus 3 at the patella and ankle and the great toes are down going. The Kemp sign is bilaterally positive. Due to pain, he cannot walk on the toes or the heels. He has a left list of the lumbar spine, a positive Lewin sign, and a reverse lordosis of the lumbar spine. Marked pain is noted on the right gluteal muscles, tensor fascia lata radiating into the anterior leg and dorsum of the foot. Ranges of motion cannot be tested due to pain. The muscle strengths on dorsi and plantar flexion of both the foot and the great toe as well as the gluteus maximus on the right are grade 4 of 5.

The MRI of the lumbar spine was ordered when the patient was first seen. It is shown in figure 3 and shows a diffuse right posterolateral disc protrusion with mass effect on the right S1 nerve root, which is grossly displaced by approximately 2 mm. There is mild bilateral facet hypertrophy. There is no facet effusion or periarticular soft tissue edema. A right foraminal free fragment which contacts the L5 dorsal root ganglion is noted.

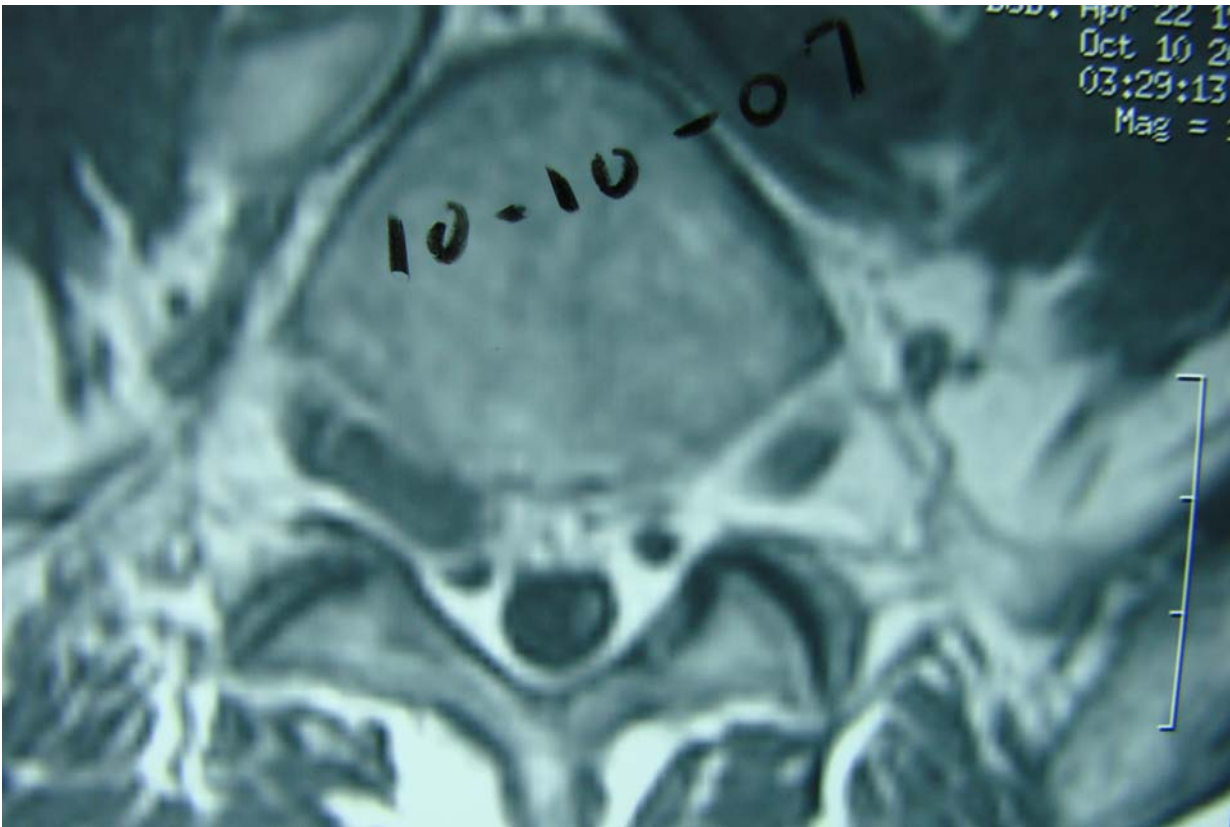


Figure 3: Note the large free fragment lying within the right osseoligamentous canal. It engulfs the right L5 dorsal root ganglion (compare its appearance with the normal dorsal root ganglion on the opposite left side to gain a perspective of the marked mass effect of the disc fragment on the DRG) and displaces the right S1 nerve root (again compare the left S1 nerve root as it is contacted and displaced with the left side which shows the normal S1 nerve root).

TREATMENT PLAN

Treatment was instituted following initial examination. Treatment consisted of decompression manipulation given 9 times which yielded relief of the low back pain but no relief of the leg pain, which actually continued to increase in severity until there was increasing loss of dorsiflexion and plantar flexion strength of the right ankle and great toe. A repeat MRI was performed three weeks later which showed that the extruded fragment within the L5-S1 foramen was increased in size and was creating a mass effect on the right L5 nerve root and dorsal root ganglion within the foramen and was also creating compression of the right S1 nerve root in the lateral recess. See figures 4-8.

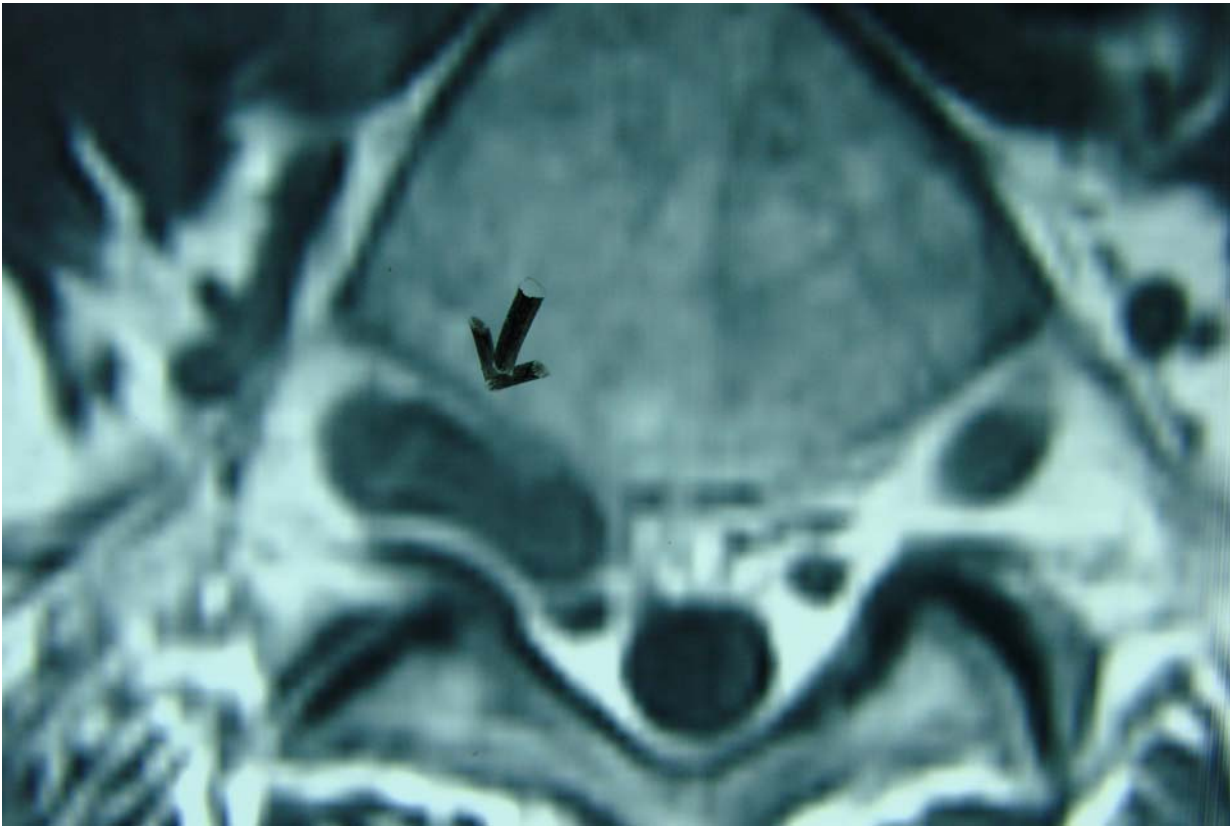


Figure 4: This is a repeat T1 weighted MRI performed three weeks after the one shown in Figure 3. Here is shown the L5-S1 level on axial view. Note the right disc extrusion and fragment (see arrow) which is larger than on the previous examination shown in Figure 3. In figure 3, the fragment measures 15 x 13 x 5 mm in size and in Figure 4 it measures 23 x 15 x 6 mm. The mass effect on the right L5 nerve root within the foramen is greater than on the previous exam, and the mass effect on the right S1 nerve root in the lateral recess is unchanged. It appears to be slightly displacing both of these structures without obviously compressing either one. No thecal sac compression or spinal stenosis is identified. There is an increased size of the right L5-S1 disc extrusion fragment, with slightly increased mass-effect on the right L5 nerve root, compared to the 10-10-07 MRI study shown in Figure 3.

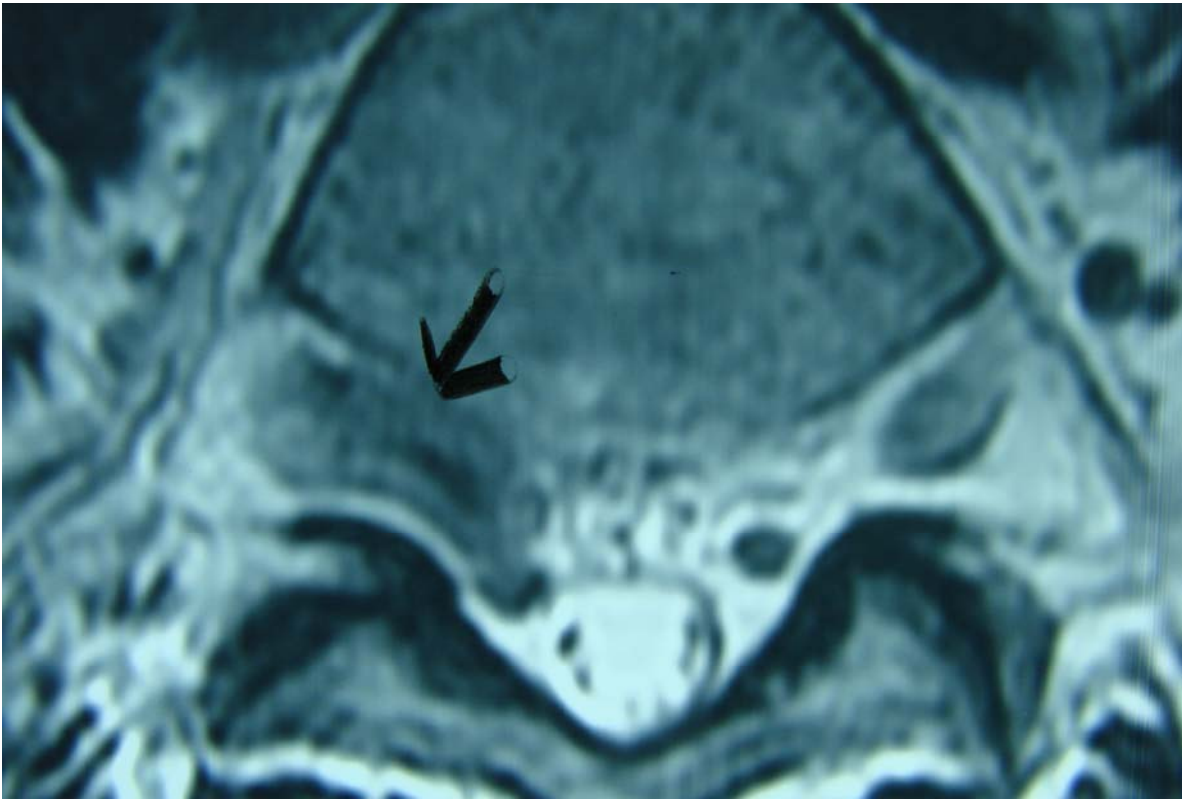


Figure 5: This is the T2 weighted image of Figure 4 for your comparison. Arrow points to the large free fragment.

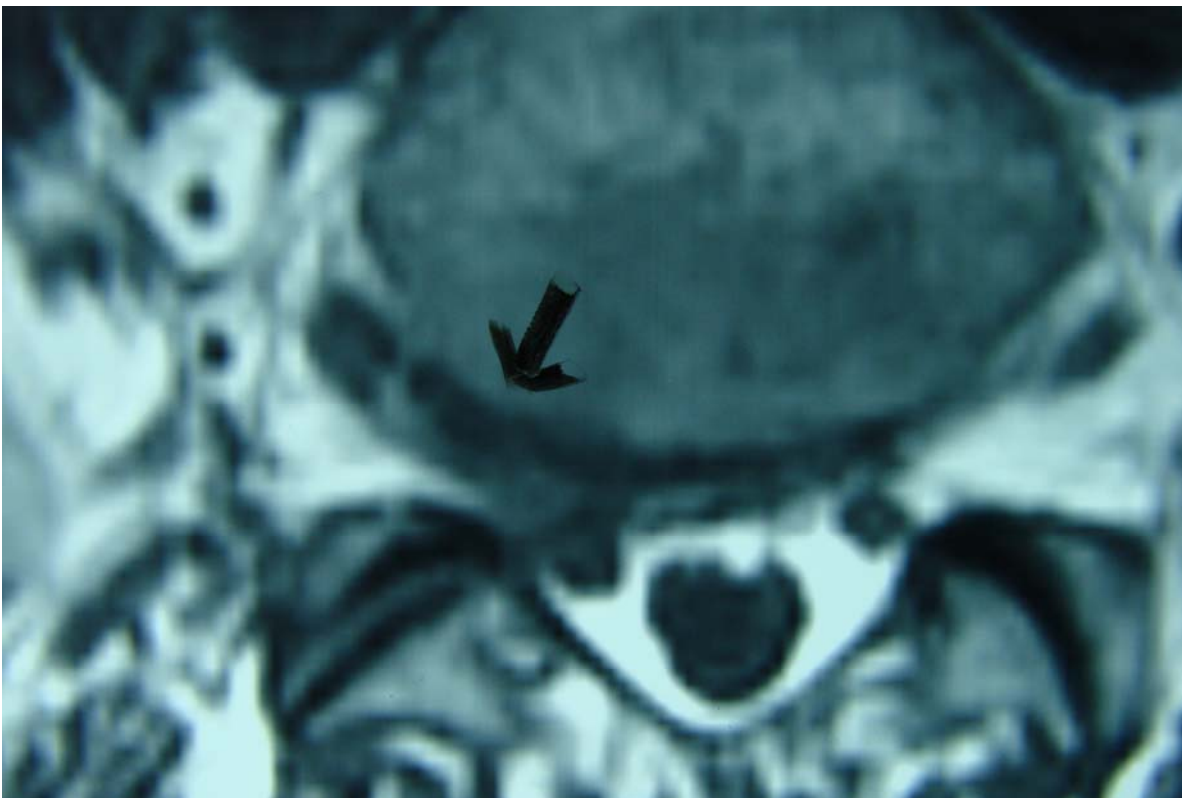


Figure 6: This is the MRI 4.5 mm superior to Figure 4 which shows the large size of this fragment as it extends superiorly (see arrow) to cause stenosis of the osseoligamentous canal to create mass effect and chemical inflammation of the S1 nerve root and L5 dorsal root ganglion.

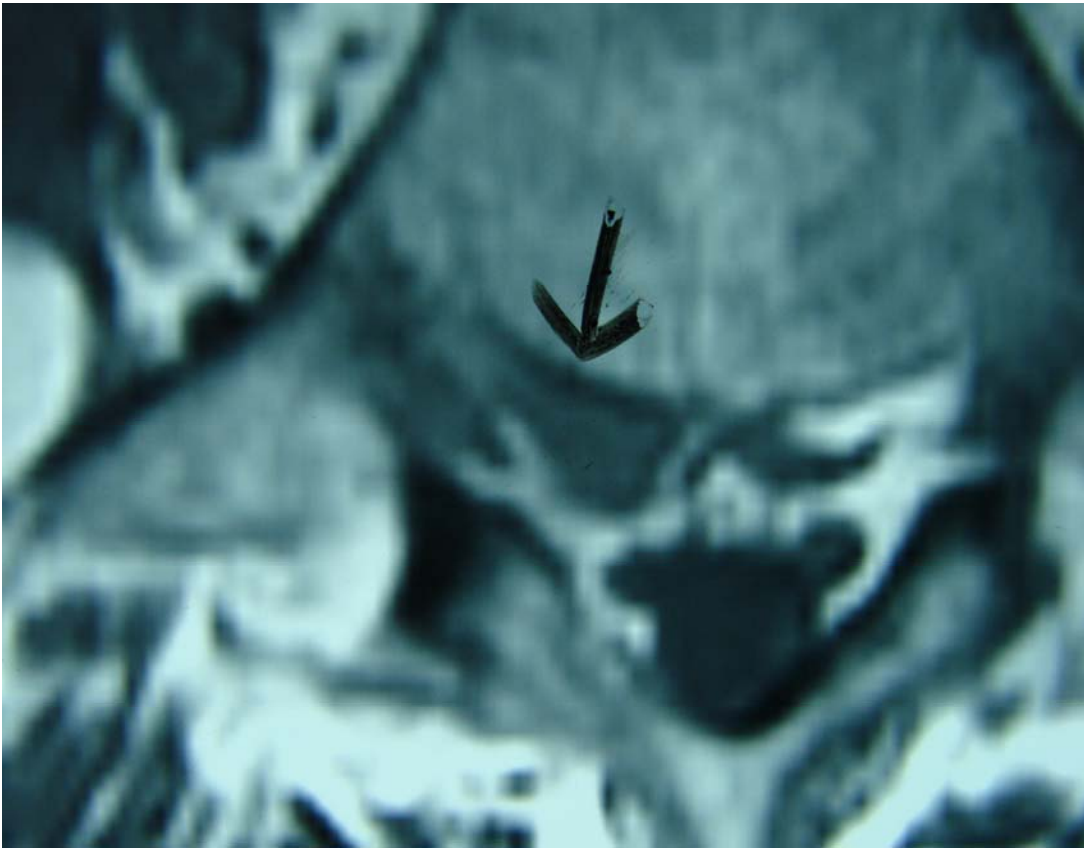


Figure 7: This is a T1 weighted axial image 4.5 mm adjacent to the mass shown in Figure 4. The fragment, shown at the arrow, lies over 18 mm from the fragment shown in Figure 4. This is a large fragment.

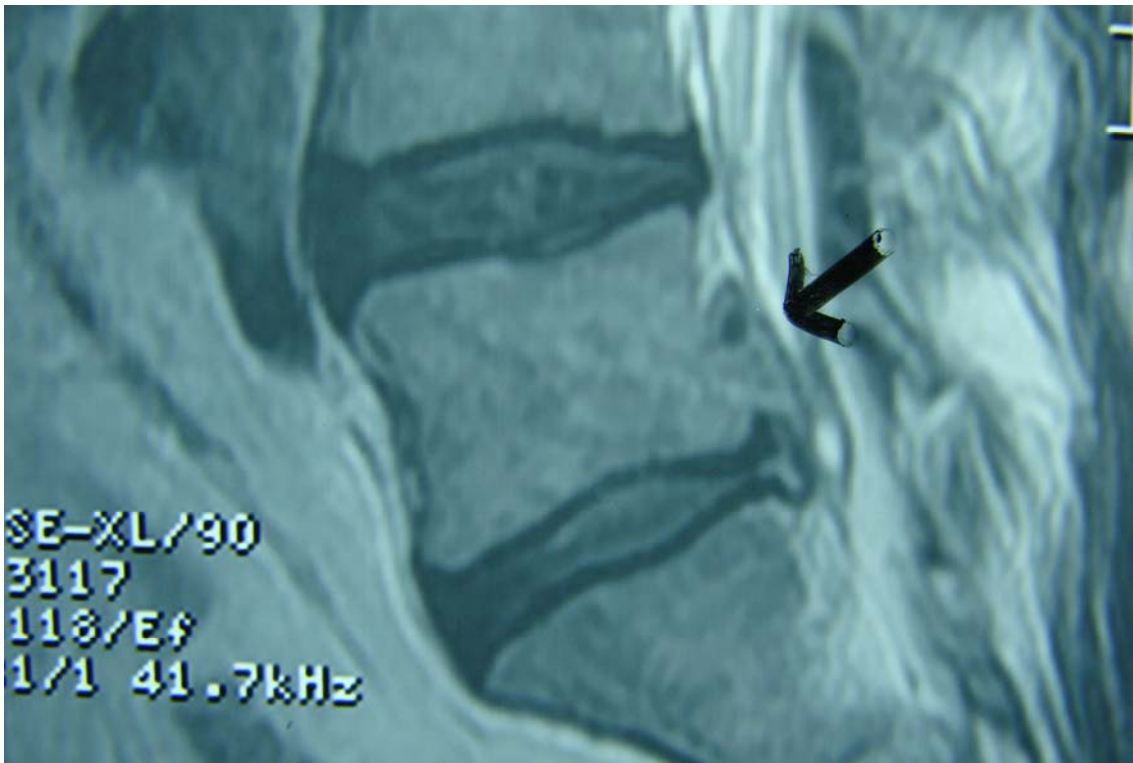


Figure 8: This sagittal T2 MRI slice shows the large free fragment, see arrow, lying posterior and superior to the L5-S1 disc space to lie posterior to the L5 vertebral body. Note the degeneration of the L4-5 and L5-S1 disc spaces with the hyperintensity of the posterior L5-S1 disc space indicating inflammatory change.

The patient was relieved of back and leg pain with the first flexion distraction and decompression treatment. I have witnessed this before – relief quickly and both doctor and patient are happy. In this case, the patient did not come in daily, drove his car against my suggestion, but was eager to escape another surgery due to the failure of his neck surgery to relieve his arm pain. He was fearful of surgery. However, I could not relieve his pain. Due to the increasing size and increasing motor weakness on both dorsi and plantar flexion of the foot and great toe, without relief of the leg pain, this patient was referred for surgical excision of this large fragment with in the right L5-S1 osseoligamentous canal.

MY SUMMARY OF THIS CASE:

WE CANNOT WIN ALL OF THEM. IN MY CLINICAL LIFE, AND THAT OF RUDY KACHMANN, MD, NEUROSURGEON, THESE TYPES OF DISC LESIONS ARE EXCEPTIONALLY DIFFICULT. THE PAIN IS INCREDIBLE, THE CHANCE OF MOTOR WEAKNESS IS GREAT SINCE BOTH L5 AND S1 NERVES ARE CHEMICALLY AND MECHANICALLY DISEASED BY THE DISC FRAGMENT, AND THERE ARE INHERENT DIFFICULTIES FOR THE MANIPULATION TO AFFECT THE CIRCULATION AND MECHANICS WITHIN THE OSSEOLIGAMENTOUS CANAL. THIS IS NOT A FAILURE FOR US, JUST A CASE IN WHICH WE EMPHASIZE THE DIFFICULTY OF THE FAR LATERAL DISC FRAGMENT AND THE NEED FOR VIGILANCE OF THE NEUROLOGICAL SIGNS IN TREATING SUCH CASES.

YOUR COMMENTS ARE WELCOME. DO YOU HAVE BETTER, WORSE, EQUAL RESULTS WITH SUCH CASES?

IN THE END, IT IS THE PATIENT'S HEALTH THAT IS PARAMOUNT.

Respectfully submitted,
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