

Spontaneous Resorption of Intervertebral Disc Herniation: A Series of 7 Patients

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Abstract

Background Data: With advancement of MRI technology, numerous studies have showed probability of spontaneous regression of the herniated disc. This is usually associated with recovery of neurological symptoms.

Purpose: The purpose of this study is to highlight the potential for spontaneous resorption of intervertebral disc herniation, review the literature and discuss the duration of conservative treatment.

Study Design: Retrospective clinical case study.

Patients and Methods: In this study patients with spontaneous regression of intervertebral disc herniation were reviewed. All patients were presented with a single level intervertebral disc herniation and radiculopathy. Six patients had lumbar disc herniation and one patient had cervical disc herniation. Surgical intervention was offered to them but all patients refused and were treated conservatively. Initial MRI was done at presentation and repeated in follow up.

Results: Seven patients were identified with a mean age of 35.5 years (range from 28 to 47). Five patients were male and 2 were female. All patients recovered from their radicular pain within a mean of 5 weeks (Range 3-8) of conservative treatment. Repeated MRI after a mean 12 months (Range 6-18) showed spontaneous resorption of the herniated intervertebral disc in all patients.

Conclusion: Herniated intervertebral disc can be resorbed spontaneously. A chance of conservative treatment should be given to patients with radicular pain caused by intervertebral disc herniation with no neurological deficits. If patients report improvement of his symptoms, conservative therapy should be continued. If there is no improvement, surgery should be considered. The reasonable duration of conservative therapy may two months. (2016ESJ095)

Keywords: disc herniation, spontaneous regression, conservative treatment

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Introduction

Patients with Lumbar disc herniation usually complain of back pain and sciatica, most of these symptoms disappear within two months of non-operative management due to regression of herniated disc and resolution of inflammation around involved neural elements.³ In cases of intervertebral disc herniation, repeated MRI should be done to detect any regression of the herniated disc.¹¹ Normal intervertebral disc protected from autoimmune system by the external annulus while the herniated disc lose this protection and attacked by inflammatory cells which resulting in resorption of the herniated disc material.⁴

The first case of spontaneous regression of herniated lumbar disc was detected in myelography by Key,¹² in 1945. Four decades later, disc regression was detected in computed tomography by Teplick and Haskin.²⁰ Since then, a lot of studies have reported significant reductions in the size of prolapsed discs with conservative therapy. Spontaneous regression of prolapsed disc can occur in lumbar, dorsal and cervical spine. The first case of spontaneous regression of herniated cervical disc was reported by Krieger and Maniker,¹⁴ in 1992. In this article 7 cases with intervertebral disc herniation showing spontaneous regression have been discussed accompanied with literature review.

Patients and Methods

Retrospective review of outpatient medical record was done and 7 patients with spontaneous regression of intervertebral disc herniation were identified (6 lumbers and one cervical) with a mean age of 35.5 years (Range 28-47 years). Five patients were male and 2 were female. All patients were presented with a single level intervertebral disc herniation and radiculopathy. The herniated intervertebral disc level was C5-6 in one case, L4-5 in three cases and L5-S1 in three cases. Surgical discectomy

was offered to them but all patients refused and were treated conservatively. Conservative treatment was including nonsteroidal anti-inflammatory drugs, analgesic, muscle relaxants and physiotherapy. All patients recovered from their pain within a mean of 5 weeks (Range 3-8) of conservative therapy. Repeated MRI after a mean 12 months (range from 6 to 18) showed spontaneous resorption of the herniated intervertebral disc in all patients (Table1).

Illustrative Cases:

Case 1: A thirty four year old male patient presented to outpatient clinic with neck pain and bilateral radicular pain and numbness with a C5 dermatome distribution. His neurological assessment was within normal limits. MRI of the cervical spine was done and showed a significant C4-5 disc herniation. The patient refused to proceed with surgical intervention. Consequently, the patient was treated in conservative way with analgesic, muscle relaxant medications and physiotherapy also neck collar for one month was advised. Within 2 months of conservative therapy, the patient reported marked improvement in his symptoms. MRI of cervical spine was repeated after 6 months from initial MRI and revealed regression of the herniated cervical disc (Figure 1).

Case 2: A thirty year old male patient presented to outpatient clinic complaining of low back pain, left sided sciatica. Neurologic examination showed positive straight left leg raising test at thirty degree and left L5 hypoesthesia, intact motor power and normal reflexes. An MRI of the lumbar spine was done and showed left sided posterolateral L4-5 disc herniation with upward migration, consistent with the patient's symptoms. L4-5 discectomy was advised but the patient did not agree to proceed with it because he was worried about anesthesia and surgical complications. Conservative treatment with medications and physical therapy was recommended. The patient reported significant improvement in his symptoms after one month of treatment. Follow up MRI after 14 months

from initial presentation showed regression of the herniated L4-5 disc (Figure 2).

Case 3: A forty two old male patient presented to outpatient clinic with history of low back pain and right sided sciatica. Neurologic examination showed hypoesthesia on the right S1 dermatome and straight right leg raising test was positive at forty degree. The initial lumbosacral spine MRI was done and showed a downward migrating

intervertebral disc at the L5-S1 level. Discectomy was recommended but the patient refused surgery and chose to proceed with medical treatment and physiotherapy. After 3 weeks of treatment his symptoms started to diminish, and they disappeared in 7 weeks. Follow up MRI after 18 months from initial presentation showed regression of the herniated L5-S1 disc (Figure 3).

Table 1. Patients' Characteristics

Patient	age	sex	Disc level	Disc Type/ MSU	Recovery/ weeks	Follow up MRI/ months
1	34	M	C4-5	Protruded/2-A	8	6
2	30	M	L4-5	Extruded/2-AB	4	14
3	42	M	L5-S1	Extruded/3-AB	7	18
4	37	M	L4-5	Extruded/2-B	4	12
5	28	F	L4-5	Protruded / 2-A	5	9
6	47	M	L5-S1	Extruded / 3-A	3	12
7	31	F	L5-S1	Extruded / 2-AB	6	12

MSU: Michigan State University classification for herniated disc.

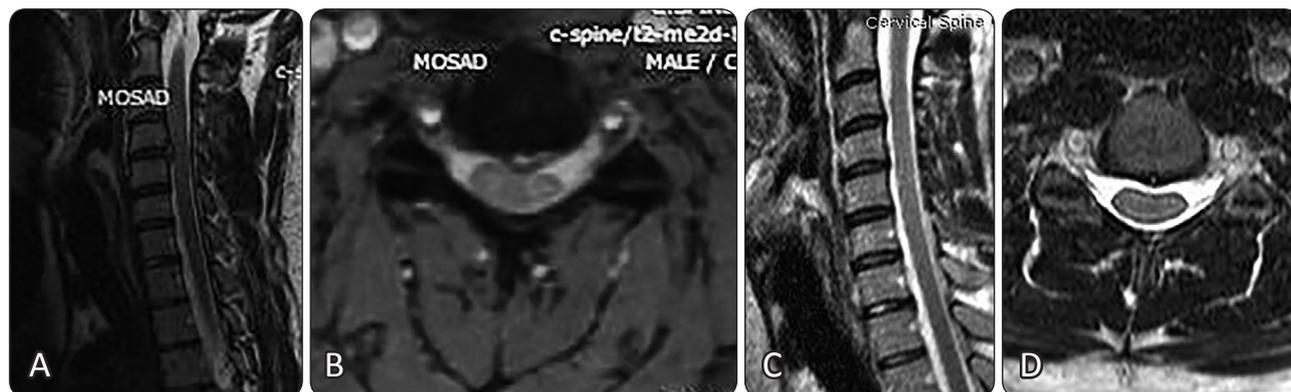


Figure 1. (A,B) Sagittal and axial T2WI MRI of the cervical spine images showed protruded disc fragment C4-5 level. (C,D) Sagittal and axial T2WI MRI after 6 months showed regression of the protruded disc fragment at the C4-5 level.

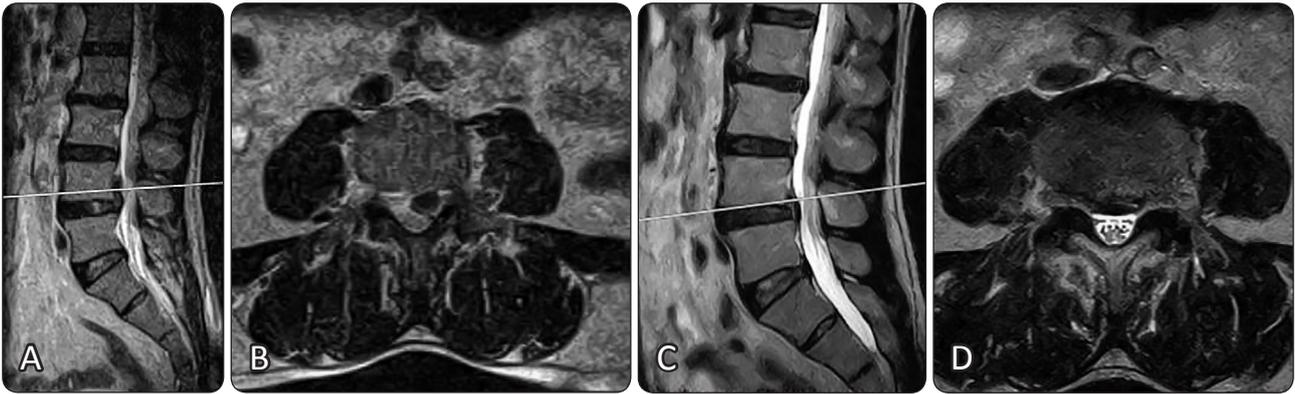


Figure 2. (A,B) Sagittal and axial T2WI MRI of the lumbar spine images show extruded disc fragment on the left side at the L4-5 level with upward migration. (C,D) Sagittal and axial T2WI MRI after 14 months showed regression of the extruded disc fragment at the L4-5 level.

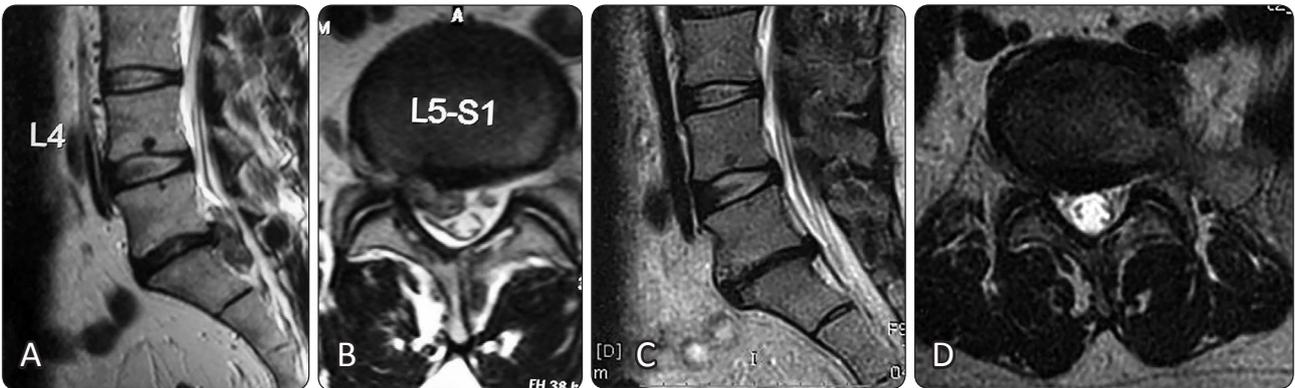


Figure 3. (A,B) Sagittal and axial T2WI MRI of the lumbar spine images show extruded disc fragment on the right side at the L5-S1 level with downward migration. (C,D) Sagittal and axial T2WI MRI after 18 months showed regression of the extruded disc fragment at the L5-S1 level.

Discussions

Spontaneous regressions of lumbar and cervical disc herniations have been described many times in literatures.^{3,11,14,20} Accompanying these regressions also has been a reduction in neurological symptoms. In this study 7 cases with intervertebral disc herniation showing spontaneous regression were reported and reviewed.

Mechanisms of Disc Regression:

Many mechanisms that explain the resorption of herniated disc have been reported in the literature. One of these mechanisms is retraction

theory, which assumes that the regression of herniated disc is due to its retraction into the intervertebral disc space. Another hypothesis states that dehydration of the intervertebral disc leads to reduction in the size of the disc resulting in spontaneous resorption of herniated disc.¹⁰ The last hypothesis stated that autoimmune system recognized the herniated disc fragment as a foreign body and induces an inflammatory reaction and neovascularization.^{6,7,13} Burke et al,² demonstrated that intervertebral disc tissue can produce chemokines, which attract macrophages and capillaries. This may explain the ingrowths of granulation tissue

in spontaneous resorption of disc herniation. Exposure of the disc material to systemic blood circulation is the most important independent determinant of spontaneous resolution.^{5,8,9} Large herniated disc fragments are more likely predicted to regress than small fragments that is may be due to more exposure to inflammatory cells and neovascularized granulation tissue.¹⁷

Clinical Studies:

With advancement of MRI technology, numerous studies have showed probability of spontaneous regression of the herniated disc. Saal and Saal,¹⁹ reported that lumbar disc herniation can be managed with conservative therapy with excellent outcomes for about 90% of cases. Rahimizadeh et al,¹⁶ have conducted a prospective study of 26 patients with acute brachialgia due to cervical disc herniation. Their ages ranged from 21 to 57 years with the mean of 37.3 years. Spontaneous regression occurred in all patients with clinical improvement. The marked resorption of the fragmented disc was observed simultaneously during a control MRI done within 4 months after the initial MRI for all of the subjects. Orief et al,¹⁵ studied 5 patients with lumbar disc prolapse and one patient with cervical disc prolapse treated conservatively. Neurological symptoms were relieved in all cases within 6 weeks, and repeated MRI of spine within 4 to 9 months showed regression of the herniated disc. Patients in previous studies and our series share some common features. Patients were young adults; most of them were below the age of 50. The herniated discs were of large size and most of patients had sequestered intervertebral disc fragment.

Cribb et al,⁴ have treated 15 patients with massive lumbar disc herniations non-operatively. Repeat MRI after a mean 24 months (Range 5-56) showed resolution of the herniation in 14 patients. While In our series spontaneous resorption of the herniated intervertebral disc

seen in MRI after a mean 12 months (Range 6-18).

Duration of Conservative Therapy:

As spontaneous regression of herniated intervertebral disc has been reported many times in the literatures, policy of management has been changing and conservative therapy recommended as a good available option in treatment of disc herniation. The usual method of management for intervertebral disc herniation with no neurologic deficit is non-operative care for some period of time.¹⁵ Very early progression to discectomy exposes an unnecessarily large number of patients to the risks of surgery. Delay of surgery in those patients with persistent severe pain prolongs suffering and disability.

Rothoerl et al,¹⁸ stated that conservative therapy for two months should be advised and if patient did not improve, surgical discectomy should be recommended. Alentado et al,¹ performed a literature review for optimal duration of conservative treatment prior to surgery for intervertebral disc herniation with radiculopathy. He concludes that the optimal duration of conservative treatment is 8 weeks from onset of symptoms. In our series the duration of conservative treatment within which the patients reported improvement in their symptoms was 8 weeks.

Conclusion

Herniated intervertebral disc can be resorbed spontaneously. A chance of conservative treatment should be given to patients with radicular pain caused by intervertebral disc herniation with no neurologic deficit, if patients report improvement of his symptoms, conservative therapy should be continued. If there is no improvement, surgery should be considered. The reasonable duration of conservative therapy may be two months.

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الملخص العربي

الضمور الذاتي للعضروف المنزلق بين الفقرات

البيانات الخلفية: لقد جعل التطور في تكنولوجيا التصوير بالرنين المغناطيسي من السهل متابعة الانزلاق العضروفي بين الفقرات من حيث الضمور الذاتي للعضروف وارتباط ذلك بتحسن الأعراض العصبية. وقد أظهرت العديد من الدراسات حدوث انخفاض في حجم العضروف المنزلق مع العلاج التحفظي.

الغرض: إن الهدف من هذه الدراسة هو تسليط الضوء على إمكانية حدوث ضمور ذاتي للعضروف المنزلق بين الفقرات ومراجعة الأبحاث المنشورة في هذا السياق ومناقشة المدة المثلى للعلاج التحفظي.

تصميم الدراسة: دراسة بأثر رجعي.

المرضى وطرق البحث: استعرضت هذه الدراسة المرضى الذين حدث لهم ضمور ذاتي للعضروف المنزلق بين الفقرات. جميع المرضى كانوا يعانون من انزلاق عضروفي في مستوي واحد فقد بين الفقرات واعتلال بجذور الأعصاب. كانوا يعانون ستة مرضى من انزلاق عضروفي قطني بينما كان يعاني مريض آخر من انزلاق عضروفي عنقي. رفض جميع المرضى العلاج الجراحي وتم علاجهم تحفظيا وقد تم فحص المرضى بالرنين المغناطيسي عند بداية المرض وتم تكرار الفحص عند متابعة المرضى.

النتائج: شملت هذه الدراسة على سبعة مرضى متوسط أعمارهم 0.٣٥ عاما (تتراوح من ٢٨ إلى ٤٧). وكان ٥ مرضى من الذكور و ٢ من الإناث. تعافى جميع المرضى من آلام جذور الأعصاب في خلال مدة متوسطها ٥ أسابيع (تتراوح من ٣ إلى ٨) من العلاج التحفظي وأظهر فحص الرنين المغناطيسي الذي تم إجراؤه بعد مدة متوسطها ١٢ شهرا (تتراوح من ٦ إلى ١٨) حدوث ضمور ذاتي للعضروف المنزلق بين الفقرات لجميع المرضى.

الخلاصة: أوضحت الدراسة أنه من الممكن حدوث ضمور ذاتي للعضروف المنزلق بين الفقرات وينبغي إعطاء المرضى الذين يعانون من انزلاق عضروفي بين الفقرات واعتلال بجذور الأعصاب مع عدم وجود فقدان لوظائف الجهاز العصبي فرصة للعلاج التحفظي فإذا لوحظ تحسن في الأعراض المرضية يتم الاستمرار فيه أما إذا لم يلاحظ تحسن فيتم التوجه نحو العلاج الجراحي ولقد تبين أن الفترة المثلى للعلاج التحفظي هي شهرين.