

Original Article

Urgent discectomy: Clinical features and neurological outcome

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Abstract

Background: To evaluate the clinical features and outcome of patients with progressive neurological deficits due to disc herniation who were treated surgically within 24 h.

Methods: We conducted a retrospective analysis of consecutive patients who were admitted between 2004 and 2013 via the Emergency Department. Records were screened for presenting symptoms, neurological status at admission, discharge, and 6-week follow-up.

Results: About 72 of 526 patients underwent surgery within 24 h. Magnetic resonance imaging showed lumbar disc herniation in 72 patients. The most common presenting symptoms included radiculopathy ($n = 69$), the Lasègue sign ($n = 60$), sensory deficits ($n = 57$), or motor deficits ($n = 47$). In addition, 11 patients experienced perineal numbness and 12 had bowel and bladder dysfunction. At discharge, motor and sensory deficits and bowel and bladder dysfunction had improved significantly ($P < 0.001$, $P = 0.029$, and $P = 0.015$, respectively).

Conclusion: Motor deficits, sensory deficits, and cauda equina dysfunction were significantly improved immediately after urgent surgery. After 6 weeks, motor and sensory deficits were also significantly improved compared to the neurological status at discharge. Thus, we advocate immediate surgery of disc herniation in patients with acute onset of motor deficits, perineal numbness, or bladder or bowel dysfunction indicative of cauda equina syndrome.

Key Words: Disc herniation, outcome, radicular pain, urgent discectomy

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**BACKGROUND**

Lumbar disc herniations may be associated with sensory and motor deficits and, less frequently, with the cauda equina syndrome, including perineal numbness and/or bladder and/or bowel dysfunction.^[1,5,7] This study describes the clinical features and outcomes of patients who were evolving acute cauda equina syndromes characterized by the sudden onset of sensory, motor deficits, sphincteric dysfunction warranting surgical treatment within 24 h.

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METHODS

We retrospectively reviewed the records of 526 patients with disc herniations and isolated 72 presenting with magnetic resonance (MR)-documented acute lumbar disc herniations contributing to severe radicular pain and cauda equina syndromes evolving over a 24 h period. Records were analyzed for multiple demographic criteria; age, sex, presenting symptoms/signs, neurological deficits, MR (75 patients/CT in 5 [pacemakers]), surgical procedures, and outcomes at 6 postoperative weeks [Table 1]. Lumbar discs were removed utilizing microsurgical resection (e.g., translaminar approach). The study was approved by the Local Ethics Committee (14-101-0086).

Indications for urgent surgery

About fifty-seven patients (79%) with acute onset of sensory deficits, 47 patients (65%) with acute onset of motor deficits, and 12 patients (17%) with cauda equina syndromes required emergency surgery within 24 h. The mean surgery time was 90 min (28–180 min).

Statistical analysis

All data are expressed as the mean value plus the standard error of the mean. Different groups were compared with the rank sum test (Mann–Whitney Test) (Sigma Stat Version 3.0, SPSS, Inc., Chicago, IL, USA). Correlations between data groups were evaluated by means of the Spearman rank analysis, and the level of significance was set at $P < 0.05$.

RESULTS

Morbidity

Perioperative complications occurred in four patients (6%). The surgical complications were dural tear in one patient, one subcutaneous seroma, one deep vein thrombosis, and one patient with retained disc prolapse due to the failure of removal during the first surgery. No patient required intraoperative or postoperative transfusions.

Outcome

Motor deficits, sensory deficits, and bladder and/or bowel dysfunction improved significantly ($P < 0.001$, $P = 0.029$, and $P = 0.015$, respectively), immediately, postoperatively. Motor deficits and sensory deficits further improved during follow-up, but bowel and bladder dysfunction plateaued. Alternatively, perineal numbness did not improve significantly within 6 weeks [Table 2].

Complications

During the average 6 weeks follow-up interval, one patient suffered from new radicular pain due to recurrent disc herniation. This patient required reoperation.

Table 1: Baseline data and clinical presentation

	<i>n</i>	Percentage
All emergency patient		
Presentation emergency department	526	100
Conservative treatment	255	48.5
Surgical treatment	271	51.5
Urgent surgical treatment within 24 h (only lumbar)	72	13.7
Urgently treated patient (<i>n</i> =80)		
Radiating pain	69	96
Lasègue sign	60	83
Sensory deficits	57	79
Motor deficits	47	65
Cauda equina syndrome	12	17
Perineal numbness	11	15
Anatomical location		
L1/2	1	1.4
L2/3	4	6.9
L3/4	6	8.3
L4/5	33	45.8
L5/S1	28	38.8
Previous lumbar surgery	17	24

Table 2: Postoperative outcome

	<i>n</i>	<i>P</i>
Outcome at discharge		
Motor deficits improved	21	<0.001
Sensory deficits improved	12	0.029
Bowel/bladder dysfunction improved	9	0.015
Perineal numbness improved	7	0.058
Outcome after 6 weeks		
Motor deficits improved	9	<0.001
Sensory deficits improved	12	0.009
Bowel/bladder dysfunction improved	3	0.15
Perineal numbness improved	1	0.4

DISCUSSION

We analyzed 72 patients who presented with the acute onset of neurological deficits due to lumbar nerve root or cauda equina syndrome attributed to acute soft disc herniations that necessitated urgent surgery within 24 h of admission. We found that immediately, postoperatively, and during the 6-week follow-up, motor and sensory deficits improved significantly. Sphincteric deficits improved and then plateaued whereas perineal numbness did not improve statistically within 6 weeks. The perioperative morbidity was low with 6%, and the surgical complications included dural tear in one patient and one postoperative seroma of the wound.

Ahn *et al.* conducted a meta-analysis of 322 patients presenting with cauda equina syndromes from

42 publications; there were significant advantages for patients undergoing surgery within 48 h versus after 48 h.^[1] Similarly, Kohles *et al.* found better outcomes for patients undergoing comparable surgery within 24 versus after 24–48 h.^[4] Most studies have supported early decompression^[2-4] but without any sufficient statistical significance.^[6,8] In our study, for 11 patients with bladder or bowel dysfunction and 12 with perineal numbness undergoing surgery within 24 h, the former 11 demonstrated immediate improvement whereas the latter 12 had not significantly improved until 6 postoperative weeks.

SUMMARY

The authors conclude that urgent surgery for patients with acute lumbar disc herniations contributing to severe sensory/motor/sphincteric deficits (e.g., including cauda equina syndromes for the latter), surgery within 24 h results in significant functional improvement.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Ahn UM, Ahn NU, Buchowski JM, Garrett ES, Sieber AN, Kostuik JP. Cauda equina syndrome secondary to lumbar disc herniation: A meta-analysis of surgical outcomes. *Spine (Phila Pa 1976)* 2000;25:1515-22.
2. Buchner M, Schiltewolf M. Cauda equina syndrome caused by intervertebral lumbar disk prolapse: Mid-term results of 22 patients and literature review. *Orthopedics* 2002;25:727-31.
3. Gleave JR, Macfarlane R. Cauda equina syndrome: What is the relationship between timing of surgery and outcome? *Br J Neurosurg* 2002;16:325-8.
4. Kohles SS, Kohles DA, Karp AP, Erlich VM, Polissar NL. Time-dependent surgical outcomes following cauda equina syndrome diagnosis: Comments on a meta-analysis. *Spine (Phila Pa 1976)* 2004;29:1281-7.
5. Lurie JD, Tosteson TD, Tosteson AN, Zhao W, Morgan TS, Abdu WA, *et al.* Surgical versus nonoperative treatment for lumbar disc herniation: Eight-year results for the spine patient outcomes research trial. *Spine (Phila Pa 1976)* 2014;39:3-16.
6. McCarthy MJ, Aylott CE, Grevitt MP, Hegarty J. Cauda equina syndrome: Factors affecting long-term functional and sphincteric outcome. *Spine (Phila Pa 1976)* 2007;32:207-16.
7. Mixter WJ, Barr JS. Rupture of the intervertebral disc with involvement of the spinal canal. *N Engl J Med* 1934;211:210-5.
8. Roach RT, Trivedi TM, Jones P. Cauda Equine Syndrome. A Question of Time: Experience from a Single Centre in the UK [Poster Presentation]. Nottingham, UK: Britspine; 2004.