



Research Article

Surgical Management of Cauda Equina Syndrome Due to Disc Herniation at Brazzaville University Hospital (2022-2025): About 16 Cases

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Abstract

Introduction: Cauda equina syndrome (CES) is a dreaded complication of lumbar disc herniations, requiring rapid surgical management. The few studies conducted in low-income countries note a failure to meet this requirement. We conducted this study to describe the management of patients operated on for this condition in the neurosurgery department of the Brazzaville University Hospital. **Methods:** This was a retrospective descriptive study conducted between January 2022 and December 2025, involving 16 patients operated on for CES due to disc herniation, confirmed by imaging (CT or MRI). Pre- and postoperative severity was assessed using the SSCES (Scoring System for Cauda Equina Syndrome). Patients were followed up at 1 month, 3 months, and 6 months. **Results:** The mean age was 48.2 years (range 39–68), with a sex ratio (M/F) of 3. Patients were seen on average 14.7 days (range 7–21) after the onset of signs. CES was complete in 56.2% and incomplete in 43.7%. Disc herniation was located at L4–L5 in 50%, L3–L4 and L5–S1 in 18.7% each, and L2–L3 in 12.5%. Discectomy was performed after laminectomy in 56.2% of patients. Patient outcomes were satisfactory, with the number of patients having an excellent or good SSCES score increasing from 2 preoperatively to 13 patients at the 6th postoperative month. **Conclusion:** The management of CES due to disc herniation at Brazzaville University Hospital is marked by diagnostic and therapeutic delays which impact neurological recovery. It is therefore important to raise awareness among healthcare providers and enable rapid patient access to imaging and surgery.

Keywords

Cauda Equina Syndrome, Disc Herniation, Laminectomy, SSCES Score, Brazzaville University Hospital

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1. Introduction

Cauda equina syndrome (CES) is a set of signs appearing during acute or subacute involvement of the nerve roots (lumbar and sacral) located below the conus medullaris [1]. In compressive etiologies, it constitutes a neurosurgical emergency whose functional prognosis is closely linked to the time to management [2, 3]. Large lumbar disc herniation is the most frequent cause, representing approximately 2 to 3% of operated disc herniations [2, 4]. Surgical treatment of lumbar disc prolapse has been the subject of systematic reviews [5]. The annual incidence of CES is estimated between 5 and 10 cases per million inhabitants [6, 7].

Clinically, CES classically combines distal sensory and motor disturbances of the lower limbs, saddle hypoesthesia, and genito-sphincteric disorders (urinary retention or incontinence, anal tone disorders) [1, 7]. The most used classification distinguishes incomplete CES (CESI), without urinary retention, from complete CES with retention (CESR), whose prognosis is worse [1].

In Sub-Saharan Africa, data on CES, especially in compressive etiologies, are rare. Local specificities, such as long delays in management, lack of diagnostic means, and follow-up

difficulties, significantly influence outcomes [8].

The objective of this work was to report the experience of the neurosurgery department of Brazzaville University Hospital in the management of CES of discal origin over a recent 4-year period (2022-2025).

2. Patients and Methods

This is a retrospective descriptive study conducted in the neurosurgery department of Brazzaville University Hospital from January 2022 to December 2025. Included were all patients operated on for CES due to disc herniation, confirmed by imaging (CT or MRI), during this period. Patients presenting with CES of other etiologies (tumor, trauma, spondylodiscitis, pure degenerative canal stenosis) were excluded.

Demographic, clinical, radiological, surgical, and outcome data were extracted from medical records.

Symptom severity was assessed using the SSCES (Scoring System for Cauda Equina Syndrome) [9] (Table 1).

Table 1. Scoring System for Cauda Equina Syndrome.

Items / Scoring			
1: Low back pain	0: Tolerable without meds	1: Tolerable with medication	2: Intolerable even with medication
2: Radiculalgia*	0: Absent	1: Intermittent	2: Persistent with Las ègue sign*
3: Sensation in lower limbs	0: Normal	1: Paresthesia	2: Loss of sensation
4: Tendon reflexes	0: Normal	1: Diminished	2: Absent
5: Saddle anesthesia	0: None	1: Diminished	2: Loss of sensation
6: Anal sphincter tone	0: Normal	1: Diminished	2: Absent
7: Motor function of lower limbs	0: Normal ($\geq$ Grade IV)	2: Gait disturbance (Grade III)	4: Frequent falls (Grade $\leq$ II)
8: Micturition disorders	0: None	2: Difficult urination	4: Inability to void

*Sciatica or cruralgia with Lasegue sign or Leri sign.

The total score ranges from 0 (no signs) to 20 (all symptoms severe), passing through 10 (minimum signs). This score allows evaluation of patient outcomes and classification as: Excellent (≤ 3), Good (4-6), Fair (7-9), and Poor (≥ 10).

Using this SSCES score, patients were evaluated preoperatively and postoperatively at two weeks, 3 months, and 6 months.

Data were entered and analyzed using Excel software. Quantitative variables are expressed as means and ranges, qualitative variables as numbers and percentages.

3. Results

Over the study period, 16 patients were operated on for CES due to disc herniation at Brazzaville University Hospital. The mean age was 48.2 years (range 39-68). The sex ratio was 3. Four patients were hypertensive, and 8 had chronic lumboradiculalgia, of which 5 were claudicating.

The mean duration of symptoms before surgical management was 14.7 days [7-21 days]. The mean duration of initial

low back pain was 7 days [2-90 days].

In 13 cases (81.2%), CES was inaugural, while in 3 patients (18.8%) it was preceded by low back pain. The classic clinical picture of cauda equina syndrome was found in all patients with varying severity. Involvement of the crural nerve roots in terms of sensation, motor function, and reflexes concerned 5 patients, whereas involvement of the sciatic nerve roots in all their components concerned 11 patients. Perineal and perianal hypoesthesia, as well as anal sphincter hypotonia, were present in all patients. Urinary retention was found in 9 cases (56.2%) and dysuria in 7 patients (43.8%). No cases of urinary incontinence were present.

Overall, 9 patients had an incomplete cauda equina syndrome, and 7 had the complete form. No patient had a preoperative SSCES score less than or equal to 3 (Excellent); 2 had a score between 4 and 6 (Good); 4 had a score between 7

and 9 (Fair); and the largest group had a score greater than or equal to 10 (Poor).

Imaging (CT or MRI) revealed disc herniation at L2-L3 in 2 cases (12.5%), L3-L4 in 3 cases (18.75%), L4-L5 in 8 cases (50%), and L5-S1 in 3 cases (18.75%). Associated lumbar canal stenosis was present in 8 cases (50%).

The median time to surgery was 2 weeks [1 to 8 weeks]. Complete laminectomy + discectomy was performed in 9 cases (56.2%), and discectomy via an interspinous approach in 7 cases (43.7%). No osteosynthesis was performed. All patients underwent a functional rehabilitation program, and those with urinary retention had a urology consultation.

Postoperative Evaluation:

Table 2 shows the postoperative progress of patients following the procedure and rehabilitation program using SSCES.

Table 2. Postoperative evaluation.

Items / Period	2 weeks	3 months	6 months
0 – 3 (Excellent)	0	4	6
4 – 6 (Good)	2	5	7
7 – 9 (Fair)	4	3	1
More than 10 (Poor)	10	4	2

4. Discussion

4.1. Epidemiological and Clinical Characteristics

Our series of 16 patients operated on for CES at Brazzaville University Hospital between 2022 and 2025 presents characteristics comparable to data in the literature. The mean age of 48.2 years and male predominance (sex ratio 3) are similar to the results of the Togolese study (49.7 years, sex ratio 2.3) [8]. The L4-L5 level is the most frequently affected (50%) consistent with the usual topography of lumbosacral disc herniations [2, 4].

The prevalence of sphincter disorders in our series is high: 56.2% urinary retention and 100% anal sphincter hypotonia. These figures likely reflect a late referral of patients, as evidenced by the mean duration of symptoms of 14.7 days before surgery. For comparison, the Togolese study reported a mean duration of symptoms of 12.7 days [8].

4.2. Time to Management: A Major Issue

The mean time to surgical management in our series (14.7

days) is significantly longer than international recommendations, which advocate surgical decompression within 24 to 48 hours for CES with retention [3, 10]. This delay, persisting over the 2022-2025 period, is multifactorial: difficulties in accessing emergency MRI, lack of awareness of red flag signs in peripheral healthcare facilities, and delays in referral to the neurosurgery department [8]. This finding is unfortunately shared by many centers in Sub-Saharan Africa, where access to emergency neurosurgery remains limited. The Togolese study also noted that, despite long delays, surgical outcomes were generally good [8].

4.3. Evaluation Using the SSCES Score

The use of the SSCES score in our series allowed us to objectively quantify clinical improvement postoperatively. It went from 2 patients (12.5%) with excellent and good scores at one week postoperatively to 13 patients (81.2%) at 6 months, an increase of 68.7%. This finding was also made by Kim et al. [9], and similarly by Yang et al. [11], who, using the SSCES score, reported a mean preoperative score of 11.7 ± 2.8 and a final score of 7.6 ± 3.4 . These results are encouraging and attest to the quality of surgical management and functional rehabilitation at Brazzaville University Hospital. The persistence of sequelae in 18.7% of patients (fair or poor

scores) concerns essentially patients who presented with preoperative urinary retention (CESR), consistent with the literature which reports a poorer prognosis in cases of retention [1, 2]. Sphincter recovery is often incomplete, and sexual difficulties may persist [2]. In our series, the absence of preoperative urinary incontinence and systematic functional rehabilitation likely contributed to the good results observed.

4.4. Comparison with Other Scoring Systems

The multi-domain nature of the SSCES score allows, in our opinion, for a better preoperative evaluation and, above all, good postoperative follow-up of patients. This does not neglect the SuCESS (Suspected Cauda Equina Syndrome Score), validated in 2026, which is useful for triaging patients eligible for medical imaging [12]. The Berlin CES Score, developed by König et al. in 2017, has prognostic value as it showed a correlation between a high preoperative score and the postoperative persistence of perineal disorders [13]. Other scales such as the Cauda Scale (TCS) have also been proposed [14].

4.5. Study Limitations

Our study has several limitations, including: the retrospective nature (risk of collection bias); the small sample size (n = 16) limiting statistical power and generalization of results; the absence of a control group, which does not allow comparison of different therapeutic strategies; the follow-up limited to 6 months, which is too short to properly assess definitive functional recovery; and finally, the absence of data on quality of life.

4.6. Perspectives

These results encourage: strengthening continuing education for general practitioners and emergency physicians on early diagnosis of CES, particularly recognition of "red flags"; improving access to emergency MRI and rapid scheduling in the operating room; using triage tools like SuCESS to optimize referral of suspected patients [12]; and finally, conducting a prospective study with a larger sample size and long-term follow-up (1 year and beyond).

5. Conclusion

The surgical management of cauda equina syndromes due to disc herniation at Brazzaville University Hospital, over the period 2022-2025, gives satisfactory results at 6 months, with a clear improvement in functional scores evaluated by the SSCES (mean reduction of 63%). The main challenge remains the reduction of diagnostic and therapeutic delays, still too long (15 days on average), in order to improve the neurological and sphincteric prognosis of these patients. Better awareness among healthcare providers and rapid access to imaging and surgery are priority areas for improving management.

Abbreviations

SSCES	Scoring System for Cauda Equina Syndrome
CES	Cauda Equina Syndrome
CESI	Cauda Equina Syndrome Incomplete
CESR	Cauda Equina Syndrome with Retention
CT	Computed Tomography
MRI	Magnetic Resonance Imaging
SuCESS	Suspected Cauda Equina Syndrome Score

Author Contributions

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Sinclair Brice Kinata Bambino: Data curation, Resources

Norbert Lamini: Funding acquisition, Methodology

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Conflicts of Interest

The authors declare no conflicts of interest.

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