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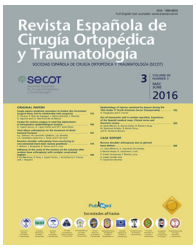

ORIGINAL ARTICLE

# Cauda equina syndrome secondary to lumbar disc herniation: Surgical delay and its relationship with prognosis☆

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**KEYWORDS**
Cauda equina syndrome;
Lumbar disc herniation;
Sphincter disturbance

**Abstract**
*Objective:* To determine whether surgical treatment delayed for more than 48 h in patients with cauda equina syndrome (CES) influenced the clinical outcome.
*Material and methods:* A retrospective study of 18 patients treated in our hospital from March 2000 to January 2012, after presenting with CES. The pre- and post-operative clinical status was determined: existence of back pain and/or sciatica, sensory disturbance in the perineum, sensory and motor deficits in the lower extremities, and the degree of sphincter incontinence (complete or incomplete CES). A clinical assessment was performed using the Oswestry disability index.
*Results:* As regards the onset of symptoms, 44% (8 of 18) of patients were treated at an early stage (within 48 h). None of the patients with complete CES operated in the early stage had urinary incontinence, and also had greater motor recovery. Of the 5 patients with complete CES who underwent delayed surgery, 3 showed residual urinary incontinence. A mean of 12.55 was obtained on the Oswestry disability index scale at the end of follow-up.
*Conclusion:* Although no statistically significant difference was found in our study, we observed greater motor and sphincter recovery in patients who were operated on within 48 h.
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**PALABRAS CLAVE**
Síndrome de cauda equina;
Hernia discal lumbar;
Disfunción esfinteriana

**Síndrome de cauda equina por hernia discal lumbar: demora quirúrgica y su relación con el pronóstico**

**Resumen**
*Objetivo:* Constatar si la demora en más de 48 h en el tratamiento quirúrgico de los pacientes con síndrome de cauda equina (SCE) influyó en el resultado clínico de nuestros pacientes.
*Material y métodos:* Estudio retrospectivo de 18 pacientes intervenidos en nuestro centro desde marzo de 2000 a enero de 2012, tras presentar SCE. Se recogió la situación clínica pre- y postoperatoria: existencia de dolor lumbar y/o ciático, alteración sensitiva en periné, déficit motor y sensitivo en extremidades inferiores y el grado de incontinencia esfinteriana (SCE completo o incompleto). Se realizó una valoración mediante el índice de discapacidad de Oswestry.
*Resultados:* Teniendo en cuenta el inicio de los síntomas, el 44% (8 de 18) de los pacientes se intervinieron de forma precoz (menos de 48 h). Ninguno de los pacientes con SCE completo intervenidos precozmente tuvieron incontinencia urinaria residual, presentando además mayor grado de recuperación motora. De los 5 pacientes con SCE completo intervenidos de forma tardía (más de 48 h), 3 continuaron con incontinencia urinaria residual. Al final del seguimiento se obtuvo una media de 12,55 en las escala de discapacidad de Oswestry.
*Conclusión:* Aunque no se han encontrado diferencias estadísticamente significativas, en nuestra serie hemos observado mayor recuperación motora y esfinteriana en los pacientes que fueron intervenidos antes de las 48 h.
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## Introduction

Cauda equina syndrome (CES) is a severe and rare neurological condition, consisting of conus medularis distal nerve root compression.[1] In the majority of cases the cause is a lumbar disc hernia that leads to root injury due to mechanical pressure, ischaemia and venous congestion. Diagnosis is clinical and involves bladder and/or rectal sphincter dysfunction. It may also be associated with different degrees of motor and sensory deficit in the lower limbs. Depending on the degree of severity, it is possible to distinguish between incomplete CES (altered sensitivity, a reduction in the jet of urine although control of the beginning and end of urination is kept) and complete CES, in which urine is retained with incontinence due to overspill.[2] If the condition progresses it may lead to permanent incontinence, sexual impotence and paraplegia.[1] 1% or 2% of the population will suffer a symptomatic lumbar disc hernia at some point in their life, and only 2%–6% of the hernias that require surgical treatment are due to the development of a horse tail syndrome.[3–5] Although it is controversial, the chief prognostic factor for neurological recovery seems to be urgent decompression,[6] although the time limit for this has not been clearly established. Some authors have therefore described a significant improvement in patients operated before 48 h.[1] On the other hand, a more recent study found no differences between patients operated before 48 h and those operated after this time.[7]

The chief aim of our study is to find whether a delay of more than 48 h in surgical treatment influences the clinical outcome for our patients, and to determine whether sphincter recovery is better in those patients with a complete established syndrome when surgical decompression occurs in under 48 h.

## Material and methods

A retrospective study was carried out of 18 patients (8 men and 10 women) operated in our hospital from March 2000 to January 2012 after presenting CES due to lumbar disc hernia. The inclusion criteria set were: patients who presented complete or incomplete sphincter dysfunction that could be associated with paresthesia or saddle anaesthesia, as well as lumbar or sciatic pain. In all cases the presence of massive disc hernia was detected using NMR or CAT. All of the patients with CES due to other causes were excluded (fracture or haematoma). We classify the reason for a delay in surgery into 4 groups: diagnostic (the patient did not visit primary health care or was not referred to the hospital), imaging tests (a delay in obtaining these), the patient (initial rejection of the proposed surgical treatment) and the surgeon (the non-availability of the surgeon in the spinal column unit). Urine retention diagnosis was clinical (a bladder that required catheterisation). The patients were not studied using ultrasound. The symptoms were considered to start at the moment when the genitourinary symptoms appeared, apart from lumbar or sciatic pain.

Data corresponding to the pre- and postoperative clinical situation: lumbar and/or sciatic pain, sensory alteration in the perineum, motor and sensory deficit in the lower limbs and the degree of sphincter incontinence (complete or incomplete CES). The ASIA muscle groups were evaluated for the lower limbs (L2: iliac psoas, L3: quadriceps, L4: anterior tibial, L5: long big toe extensor and S1: sural triceps).[8] The Medical Research Council classification was used to quantify muscle strength (0: absence of contraction) to (5: normal contraction) in each of the above-mentioned muscle groups. Thus in each leg the maximum score is 25 points in the

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