

**LUMBAR DISK HERNIATION: EVALUATION OF MEDICAL CARE AND PAIN MANAGEMENT AT THE SPECIALTIES HOSPITAL CREHVITAL AMBATO-ECUADOR: RETROSPECTIVE, CROSS-SECTIONAL STUDY, AND ASSESSMENT OF TWO CLINICAL CASES**

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**ABSTRACT**

**Objectives:** The objective of the study was to assess medical care and pain management of 237 lumbar disk herniation cases treated from 2011 to 2021 in the Specialties Hospital CREHVITAL, Ambato-Ecuador, and to provide a set of standards for appropriate management.

**Methods:** Retrospective, cross-sectional analysis of archives, and registries of patient’s data provided by the Specialties Hospital CREHVITAL, Ambato-Ecuador.

**Participants:** A total of 237 patients with lumbar disk herniation received medical services from 2011 to 2021; outcome measures were: Pain management, patient characteristics, surgical procedures, and medication after surgery.

**Results:** The 40–50 age range had the highest prevalence of lumbar disk herniation and a higher percentage of the pathology in men (66%) than in women. Of the 237 patients, magnetic resonance imaging (MRI) showed the highest lumbar disk herniation of the L4–L5 (101 men and 20 women), followed by herniation of the L5–S1 (59 men and 51 women). Two types of surgeries were performed: Classical surgery on 157 patients and microsurgery on 80 patients. The average period before receiving treatment was 1.5 years of maintaining back pain, and the early post-operative management consisted of patients receiving diclofenac, ketorolac, and ceftriaxone. Analgesics were used in 73.43% of patients. All cases required strict control, follow-up, and post-operative check-ups.

**Conclusion:** This study provides essential and conclusive evidence and information on treated cases of lumbar disk herniation and its incidence in the medical field.

**Keywords:** Hernia, Lumbar disk, Surgery, Involvement, Treatment.

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**INTRODUCTION**

Low back pain (LBP) occurs in approximately 80% of the world’s adult population, and 35% of them develop into sciatic back pain [1]. Lumbar disk herniation is a disease or alteration of an intervertebral cartilaginous disk that occurs due to the displacement of the content of the intervertebral disk [2]. This pathology can cause very acute pain and, without adequate treatment, may lead to disc surgery.

LBP occurs mainly due to ergonomic factors associated with an occupational origin that affects mobility. Among the most common causes that contribute to work-related musculoskeletal disorders are poor body position when walking, weight lifting, and incorrect position of the spine when performing any activity [3]. Several authors mention the involvement of the lumbar disk area as a problem that generates a degenerative and prolonged disease. It is necessary to highlight that the appearance of lumbar disk herniations leads to back pain, difficulties in walking, and permanent ailments that need adequate professional treatment. In this way, the patient may recover normal mobility and correct performance in the future through different techniques [4]. There are several methods and procedures to treat lumbar disk herniation, among the most common are physiatry treatment, conservative treatment with medication, and surgical treatment.

All patients must be clinically diagnosed through various methods, considering their medical history. The patient’s specific analysis will suggest the most appropriate treatment, surgical procedure, and post-operative pain management [5].

The purpose of this article is to present a comparative and informative analysis carried out at the Hospital of Medical Specialties CREHVITAL in the city of Ambato - Ecuador, on different cases of lumbar disk herniation, the consequences of not going to a specialist for effective treatment, and the evolutionary process in the medical field. A retrospective, cross-sectional study of the cases of lumbar disc herniation that underwent surgery was carried out. Then, it is expected that the cases presented will provide a clear clinical picture of the treatment and intervention.

**METHODS**

A retrospective, cross-sectional, study was performed. Information from medical records of patients with lumbar disk pathology or low back pain from 2011 to 2021 was used.

Surgery is the method that has been implemented for the study, analysis, and contribution regarding the pain present in lumbar herniated discs. Two types of surgeries were performed: classic surgery for 157 patients and microsurgeries for 80 patients. To begin the diagnosis and lumbar disk treatment, electromyography and a simple magnetic nuclear resonance of the lumbosacral spine were performed.

**Classic surgery**

An incision approximately 6–7 cm in length in which a Taylor retractor was used and under direct vision a small laminectomy was performed through which a discectomy of the extruded disc.

### Microsurgery

For this type of surgery, the size of the incision must be taken into account, which will be a maximum of 4 cm, Caspar separator was used and under microscopic vision, a laminectomy and subsequent discectomy were performed.

### RESULTS

Of the total population, 74 (34%) patients were female and 163 (66%) patients were male. Studies to confirm herniation were of two types: Simple magnetic resonance imaging of the lumbosacral spine in the patients (100%) or electromyography in (30%) of them.

The variables used for this study included the patient's age and gender are summarized in Table 1. The greatest number of patients who attended the CREHVITAL hospital and underwent surgery for the appearance or discomfort related to lumbar disk herniation were between 30 and 50 years old.

### Symptomatology

According to the medical records and patient testimonies, the degree of involvement and time of symptom presentation is presented in Table 2. Most patients waited more than 2 years to be seen by a specialist.

The most common location of disk herniation between the 237 patients is summarized in Table 3. After having applied the pertinent

**Table 1: Age and gender of patients who underwent surgery over a 10-year lapse**

Age	Males	Females	Total
20-30 years	30	11	41
30-40 years	58	35	93
40-50 years	68	26	94
Over 50 years	7	2	9
Total	163	74	237

**Table 2: Time of symptomatology in patients**

Time	Number of patients
6-12 months	86
1-2 years	50
Over 2 years	101

**Table 3: Location and frequency of disk herniation in patients by gender**

Disk herniation	Males	Females	Total
L3-L4	3	3	6
L4-L5	101	20	121
L5-S1	59	51	110
Total	163	74	237

**Table 4: Early and late complications of patients that underwent hernial disc surgery**

Number of cases	Case	Treatment/Observation
Early 4	Dural fistula	Three cases were treated with prone position+weight on the surgical area+acetazolamide. One case required reintervention where a duroplasty with self-adherent dura mater was performed.
1	Spontaneous soft tissue hematoma with spontaneous resolution	It was controlled with ice and naproxen (without complications).
2	Infection	Antibiotic dosage and therapy
Late 2	New hernias	Re-intervention at two and six years of evolution.
3	Fibrosis and adhesions at 5 and 7 years of age	Surgery

examinations and studies, a diagnosis of lumbar disc affectation was obtained, which has a more frequent localization in L3-L4 (3 men and 3 women), L4-L5 (101 men and 20 women), and L5-S1 (59 men and 51 women).

On the other hand, the most frequent laterality in the patients was also identified, and as a result, there were 151 right and 86 left herniations, and 203 were lateral extruded herniations, and 34 were central with lateralization. As for the difference between the classic technique and the microsurgical one, it does not prove to be statistically significant, so their application should be carried out according to previous examinations. However, it should be emphasized that in the majority of patients (157) classic surgery was applied and 80 patients underwent microsurgery. It should also be added that no case of lumbar spinal stenosis was found, which consists of the narrowing of spaces located in the lumbar spinal column, it should be kept in mind that age is an influential factor in the appearance of this pathology [6,7].

The recovery time of sphincter control in the patients who presented it, as well as those who presented paresis for dorsiflexion of the foot, of the affected extremity, was greater than 6 months. And the control of lumbar and radicular pain was successful in 100% of the patients.

It is important to mention that according to the clinical histories of the patients, 17 of them had visited more than two doctors, 180 patients were treated by two doctors, and 40 patients visited one doctor before being treated and operated on in the Neurosurgical specialty of the CREHVITAL hospital in the city of Ambato - Ecuador.

However, there were some complications in the patients who underwent surgery, which were classified as early and late (Table 4).

Out of a total of seven cases with early complications, 100% of them were attended to promptly and their reaction was positive, improving the patient's recovery process. Of the five cases detected with late complications, 100% received post-operative treatment, as detailed below.

- Lumbosacral corset for 15 days.
- Physiotherapy from the second postoperative day, which lasted 15 days.
- Use of analgesics: Paracetamol and pregabalin.

After the interventions and post interventions, it was found and demonstrated that the pain and muscular and radicular affectations were controlled in 100% of the patients.

To support the findings and the explanation provided, below are some images that demonstrate the symptoms caused by lumbar disk herniations (Figs. 1 and 2).

### Clinical case # 1 of lumbar disc herniation

Female patient, single, mestizo, a private employee in marketing, 25 years old, born and residing in Ambato.

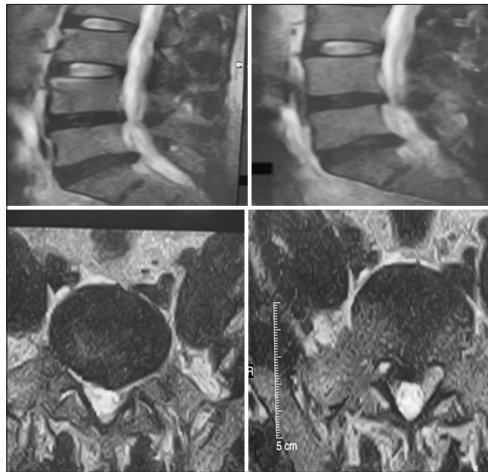


Fig. 1: Extruded hernia, left lateral



Fig. 2: Right lateral extruded hernia: A

#### Reason for consultation

Lumbar pain with irradiation to the left lower extremity.

#### Actual illness

The patient reports that approximately 7 months ago, and after physical exertion, he presented intense lumbar pain (8 / 10) that prevented daily activities, so he visited a private physician who requested an X-ray study and with a diagnosis of lumbago, he started treatment with celecoxib for 7 days, plus rest. He evolves satisfactorily decreasing his pain up to 3 / 10, after 2 months after practicing sports (basketball) he presents again lumbar pain, this time with irradiation to the posterior face of the left thigh, another traumatologist doctor recommends again NSAIDs without relieving the picture. Then he is recommended physiotherapy and rest with which the symptoms diminish, 1 week before admission and after lifting weight he presents intense pain in the lumbar region and irradiation to the left leg, so he goes to private consultation, it is recommended a magnetic nuclear resonance study of the lumbosacral spine, finding an extruded L5-S1 disc herniation with the left radicular compression.

#### Treatment

Surgical treatment is performed using a midline incision in the lumbosacral region from the spinous processes of L3 to S1, with blunt divulsion and monopolar electrocoagulation exposing laminae of L5 and S1.

Incision of the yellow ligament with scalpel number 15 precedes removing part of this along with hemilaminectomy.

It is exposed with a Taylor separator, and under direct vision the spinal root is separated medially, exposing the extruded hernia sac, it is incised with scalpel number 15 and with disk forceps proceeds to remove all the extruded material.

- Place 1 cc of lidocaine with 1 cc of depomedrol 40 mg, on the cruciate bed.
- Closure by planes
- Post-operative indications, absolute rest, ketorolac, and omeprazole.

#### Monitoring

- At 12 h postoperatively, the patient reported 90% pain relief, so tapentadol 50 mg V.O. TID was added.
- After 24 h the pain has disappeared, and the patient can walk alone, without support, with the use of a lumbosacral corset.
- The patient was monitored for 5 years without pain again.

#### Clinical case # 2 of lumbar disc herniation

Male patient, married, gas cylinder delivery truck driver, mestizo, 42 years old, sedentary, smoker 7 times a day, and alcohol every week.

#### Motive for consultation

Pain in the lumbar region with irradiation to the posterior face of the right thigh and external part of the leg.

#### Actual illness

The patient reports that 1 month ago and after physical exertion, while carrying a gas cylinder, he presents intense pain 10 / 10, right lower extremity, which causes inability even to get out of bed, was seen by a colleague who prescribes etoricoxib 120 mg QD, without improvement and refers to a neurosurgeon, the physical examination finds positive sign of Lassegue at 30° to the right, positive Hoffman points.

A simple magnetic resonance imaging study of the lumbosacral spine was performed, revealing extruded disk herniation L4-L5, with significant radicular compression.

#### Treatment

The patient underwent surgical treatment under general anesthesia; a linear incision was made from the lumbar process L4-S1. With blunt and monopolar divulsion, laminae of L4 and L5 are exposed to the right, under microscopic vision, the yellow ligament is opened, and with Midas Rex drill, a small superior and inferior hemilaminectomy is performed, the spinal root is located, and displaced medially, hemostasis of venous bundle with bipolar, incision of hernial sac and exeresis of the extruded disc.

1 cc of lidocaine with epinephrine + 1 cc of depomedrol 40 mg is placed on the surgical bed.

Closure by planes, bleeding 50 cc.

Post-operative indications; saline solution, ketorolac, and ceftriaxone.

#### Monitoring

The following day the patient can walk without pain.

#### DISCUSSION

First of all, we must be clear that lumbar disc herniation appears or consists in the displacement of the disc material beyond the normal

margins of the intervertebral disk space and as a consequence gives way to the appearance of acute pain in the patient, it can also cause weakness, discomfort when walking and numbness in a myotomal or dermatomal distribution.

The present retrospective study was carried out from July 2011 to July 2021 and different techniques and reactions of patients who underwent this intervention can be evidenced. All patients, that is to say, 100% of them, presented with lumbar pain with sciatic irradiation, 142 patients representing 60% presented paresthesia, two patients presented bladder sphincter involvement, and four cases with paresis for dorsiflexion of the affected foot. With these pictures, some factors that have influenced the presence of failed surgery after a surgical intervention are mentioned [3]. Failure to follow an adequate treatment can cause serious damage and affect the daily performance of individuals both in the personal and professional spheres.

Sixty-six percent of the patients (163) who received surgery and treatment for lumbar disk herniation belonged to the male sex and 34% (74) of the patients who underwent surgery corresponded to the female sex. The difference in this affectation between men and women is evident.

According to the age of the patients, 11 women were between 20 and 30 years old, 35 of them were between 30 and 40 years old, 26 women were between 40 and 50 years old, and only 2 women were older than 50 years old.

On the other hand, 30 men were between 20 and 30 years old, 58 of them were between 30 and 40 years old, 68 patients were between 40 and 50 years old, and seven patients were older than 50 years old.

According to the pieces of evidence and clinical studies, it is shown that most of the intervened patients are male and their age range oscillates between 40 and 50 years old, with more right dominant laterality and with a more frequent location of the disc herniation at L4-L5 level, it is believed that this statistic is the result of an inadequate and forced work in which the spinal column intervenes [8]. Furthermore, it has been proven that there are no statistically significant differences between the results obtained with the classic surgical technique, versus the microsurgical technique, therefore both techniques are safe [9], and it depends on the surgeon's experience to decide which of the alternatives to offer to his patient. We agree that at present the gold standard is microsurgery once the surgeon has completed a perfection curve, this facilitates the surgical process with a better vision of the pathology to be treated, we also observed some cases of early and late complications which required antibiotic dosage, therapy, and re-surgical intervention respectively. All cases intervened and treated responded positively, of course under strict control of the treating physician and with the help of postoperative therapy [10].

## CONCLUSION

1. The best way to combat low back pain is definitely surgical intervention that guarantees a favorable recovery. Considering the examinations and interventions performed over 10 years, surgery of extruded disk herniation ensures positive results without major complications.

It is recommended to select the patient to be surgically intervened,

- a. Patient with disabling pain that does not respond to drug treatment and physiotherapy after 6 weeks or patient with chronic pain with little response to conservative treatment, or frequent recurrences.
- b. Patients with the acute neurological motor deficit. The clinical criterion and its correlation with imaging studies should always prevail.

2. According to conservative treatment, it is advisable to perform it for a maximum period of six weeks to avoid future complications and to define in that period of time if the treatment is being 100% effective, as a result, if it is identified that symptoms persist, surgery is necessary.
3. Most of the patients who received postoperative treatment for lumbar disk herniation were men, with an average age between 40 and 50 years old. It is concluded that several factors, among them physical work, is a conclusive elements for the deterioration of the lumbar disk section and the appearance of this condition.
4. The presence of complications due to prolonged compression hinders and lengthens the recovery time (sphincter control and motor alterations); therefore, when these signs appear, it becomes a neuro-surgical emergency. However, it is important to emphasize that once the complications were overcome, the results were encouraging.
5. The patients who were part of this study were elderly people who sought to alleviate their discomfort in the lumbar area and continue with a normal life that would allow them to carry out their work and daily activities. Consequently, even though a minimum of them required a postoperative treatment, all of them showed satisfaction and effectively resumed their tasks and occupations.
6. With the early surgical treatment, in those patients who fulfill the selection requirements, the recovery is faster and the return to work is earlier.

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## DECLARATION OF CONFLICTS OF INTEREST

The only financial relationship with CREHVITAL Specialty Hospital is an employment relationship. Payment of remuneration for my services.

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