



# The Importance of Hip Pathologies in Neurosurgery Practice: A Retrospective Analysis

## Nöroşirurji Pratiğinde Kalça Patolojilerinin Önemi: Retrospektif Analiz

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### ABSTRACT

**Objective:** Lumbar and leg pain is a common issue in neurosurgical practice. While physical examination and magnetic resonance imaging (MRI) are critical in diagnosis, differential diagnosis should also consider possible hip pathologies.

**Methods:** This retrospective study analyzed the hospital records of 970 patients who visited our outpatient clinic between 2013 and 2023 and underwent hip MRI along with standard assessments due to lumbar and leg pain. Data on the necessity of orthopedic hip surgery, lumbar spinal surgery, spinal epidural injections, and hip-related physical therapy and medical treatments were evaluated alongside demographic information, such as age and gender.

**Results:** Of 970 patients, 290 were male and 680 were female. The average age was 52.61 years, with males averaging 48.2 years and females averaging 54.5 years. Following hip MRI, orthopedic surgeries were performed in 18 patients with detected mass lesions and 32 patients with severe coxarthrosis. Neurosurgical interventions were performed in 215 patients, including 173 lumbar spinal surgeries and 42 spinal epidural injections. In addition, 385 patients received intra-articular hip injections and exercise therapy from the Physical Treatment and Rehabilitation. Medical treatment and lifestyle modification were recommended for 320 patients without further interventions.

**Conclusion:** This study underscores the frequent co-occurrence of spinal and hip pathologies, highlighting the need for multidisciplinary approaches in outpatient diagnostics. Mass lesions in the hip, which were observed in 1.85% of the cases, should be particularly noted. Future research will aim to further investigate physical examination findings and patient-reported pain characteristics to aid diagnosis.

**Keywords:** Lumbar disc, hip, coxarthrosis, orthopedics, physical therapy, differential diagnosis

### ÖZ

**Amaç:** Bel ve bacak ağrısı, nöroşirurji pratiğinde sık karşılaşılan sorunlar olarak izlenmektedir. Fizik muayene ve manyetik rezonans görüntüleme (MRG) tanıda hayati öneme sahipken, ayırıcı tanıda kalça patolojileri de göz önünde bulundurulmalıdır.

**Gereç ve Yöntem:** Bu retrospektif çalışma, 2013 ile 2023 yılları arasında polikliniğimizi ziyaret eden ve bel ve bacak ağrısı nedeniyle standart değerlendirmelerin yanı sıra kalça MRG istenen 970 hastanın hastane kayıtlarını analiz etmektedir. Ortopedik kalça cerrahisi, lomber omurga cerrahisi, spinal epidural enjeksiyonlar, kalça ile ilgili fizik tedavi ve tıbbi tedavilerin gerekliliği gibi veriler, yaş, cinsiyet gibi demografik bilgilerin yanı sıra değerlendirildi.

**Bulgular:** 970 hastanın 290'ı erkek, 680'i kadındı. Ortalama yaş 52,61 olup, erkeklerde ortalama 48,2, kadınlarda ise 54,5 yıl idi. Kalça MRG'si sonrasında, tespit edilen kitle lezyonları olan 18 hastaya ve şiddetli koksartrozlu 32 hastaya ortopedik cerrahi uygulandı. Nöroşirurjik müdahaleler 215 hastada gerçekleştirildi; bunların 173'ü lomber omurga cerrahisi, 42'si spinal epidural enjeksiyonuydu. Ayrıca, 385 hastaya fizik tedavi ve rehabilitasyon tarafından intra-artiküler kalça enjeksiyonları ve egzersiz tedavisi uygulandı. Ek müdahaleye gerek duyulmayan 320 hastaya medikal tedavi ve yaşam tarzı değişiklikleri önerildi.

**Sonuç:** Çalışma, omurga ve kalça patolojilerinin sık birlikte görüldüğünü vurgulayarak, ayakta tanı koymada multidisipliner yaklaşımların gerekliliğini ortaya koymaktadır. Vakaların %1,85'inde gözlenen kalça kitle lezyonları özellikle dikkate alınmalıdır. Gelecek araştırmalar, tanıda yardımcı olmak amacıyla fiziksel muayene bulguları ve hasta tarafından belirtilen ağrı özelliklerini daha detaylı araştırmayı hedeflemektedir.

**Anahtar Kelimeler:** Lomber disk, kalça, koksartroz, ortopedi, fizik tedavi, ayırıcı tanı

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## INTRODUCTION

One of the most common complaints of outpatient neurosurgery is low back pain. A recent study conducted in Turkey observed that although the majority of patients presenting at the neurosurgery outpatient clinic did not require surgical intervention, they predominantly reported complaints of spinal pain (1). This finding highlights the prevalence of nonsurgical spinal issues within the neurosurgical field.

Hip-related complaints are the most common issue among patients with low back pain (2). In this patient group, simultaneous complaints, such as groin, thigh, and knee pains, complicate the diagnosis. Although it is traditionally recognized that hip pathologies manifest primarily in the groin area, it has been observed that pain may also radiate to the groin (84%), gluteal region (76%), anterior thigh (59%), posterior thigh (43%), anterior knee (69%), anterior side of the leg (47%), and posterior side of the leg (29%) (3, 4). The widespread distribution of pain poses challenges in accurately identifying the underlying hip pathologies.

Considering that the general prevalence of osteoarthritis in Turkey is 11.2% according to 2022 data, a multidisciplinary approach to spinal patients is inevitable (5). This rate is 9.2% in the US (6) and 7% all over the world (7).

Diagnostic tests to distinguish hip pathologies from lumbar pathologies encompass examination-based assessments, such as the straight leg lift test, flexion, abduction, and external rotation, and flexion, adduction, and internal rotation, as well as imaging techniques, including plain radiography, Computed Tomography (CT), and Magnetic Resonance Imaging (MRI). However, the diagnostic intra-articular injection method is considered the most reliable approach for accurately identifying hip-related issues. (8)

The sensitivity of injections into the hip is 87%, with a specificity of 100%. This indicates a high level of accuracy when using this method to diagnose hip pathologies (9).

It is essential to determine which branch of medicine will oversee the follow-up and treatment of this patient group, which requires a detailed diagnostic examination. According to a study conducted in America, neurosurgeons specializing in spinal surgery perform spinal operations four times more frequently than their orthopedic colleagues in the same specialty. This highlights the significant role of neurosurgeons in the management of spinal conditions (10).

However, orthopedic physicians require additional examinations for the evaluation of hip pathologies at a rate of 52.6%, compared with 38.1% for neurosurgeons. Additionally, the success rates of orthopedic physicians

and neurosurgeons in identifying hip pathologies that require treatment are 43.6% and 28.9%, respectively (10). These statistics indicate a higher level of proficiency among orthopedic physicians in both the diagnostic and treatment processes for hip-related issues.

Considering the differences in working conditions and specialty training across medical disciplines in Turkey, there is a lack of research on this subject. The study also noted that patients evaluated in the outpatient clinic were examined in terms of their need for interventions from neurosurgery, orthopedic, and physical therapy disciplines. This underscores the importance of a multidisciplinary approach to the assessment and management of such conditions.

## METHODS

The study was designed in accordance with the Standards for Reporting Qualitative Research guidelines, ensuring that the criteria were prepared to meet this standards (11). This adherence enhances the clarity, transparency, and rigor of the research process and reporting. In this study, patients who visited the neurosurgery outpatient clinic between 2013 and 2023 were retrospectively analyzed using hospital records. The basis for data collection was lumbar and hip MRI examinations requested during the same patient visit. The outpatient clinics of four different neurosurgeons were reviewed, and the sample size remained consistent because only consecutive applications were considered. This study was approved by the Istanbul Health Sciences University Ümraniye Training and Research Hospital Scientific Research Ethics Committee (number: B.10.1TKH.4.34.H.GP.0.01/157, date: 16.05.2024).

MRI was deemed appropriate for the study due to its consistency in reliability across different observers and its ability to be radiologically reported. The inclusion criteria for participants were having both lumbar and hip MRI images taken during the same hospital visit and being re-admitted to the hospital for the results after the MRI request. Patients who did not meet the inclusion criteria were excluded from the study. No other exclusion criteria were specified.

970 patients undergoing lumbar and hip MRI were analyzed in this study. Demographic variables, including gender and age, were also assessed. The cohort was categorized into six distinct subgroups based on the type of medical intervention required. For those requiring orthopedic intervention, patients were subdivided into those with hip mass lesions and those with severe coxarthrosis. Neurosurgical intervention was required for patients undergoing either lumbar spinal surgery or spinal epidural

injection. Additionally, a subgroup of patients requiring physical therapy and rehabilitation were identified who received intra-articular hip injections and exercise. Lastly, the conservative treatment group through medical management and lifestyle modification was delineated (Table 1).

### Statistical Analysis

The statistical analysis was conducted to evaluate the differences in treatment modalities and demographic characteristics among patients with low back and hip pain. Descriptive statistics were used to summarize demographic variables, including age and gender distributions, across the study cohort. Continuous variables are presented as means and standard deviations, whereas categorical variables are expressed as frequencies and percentages.

### Results

In this study involving 970 patients, the cohort consisted of 290 males and 680 females. The mean age of the entire group was 52.61 years, with a mean age of 48.2 years for men and 54.5 years.

Treatment modalities varied across disciplines, with 50 patients treated by orthopedic physicians, 215 by neurosurgeons, 385 by Physical Treatment and Rehabilitation (PTR), and 320 by conservative methods.

**Table 1.** Treatment Types

Orthopedics	Surgery for mass lesion on the hip
	Surgery for severe coxarthrosis
Neurosurgery	Lumbar spinal surgery
	Spinal epidural injection
Physical therapy and rehabilitation	Intra-articular hip injection and exercise
Conservative	Medical treatment and lifestyle modifications

Within the orthopedic treatment group, 18 patients underwent surgeries for mass lesions in the hip, while 32 patients were treated for severe coxarthrosis.

In the neurosurgery group, 173 patients underwent lumbar spinal surgery, and 42 underwent spinal epidural injection.

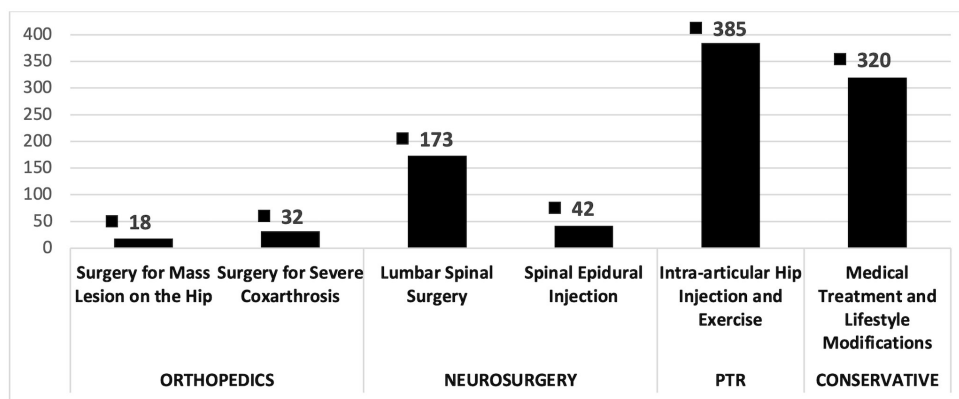
All 385 patients under the care of PTR received intra-articular hip injections. Additionally, 320 patients were managed conservatively, receiving medical treatment, and lifestyle modification (Figure 1).

### DISCUSSION

Lumbar and hip pain are significant concerns in the daily practice of neurosurgery. This study underscores that although these symptoms may often be attributed to underlying neurosurgical pathologies, the potential for orthopedic conditions should not be overlooked. Specifically, hip mass lesions, which occur in approximately 1.8% of cases, require orthopedic intervention. This highlights the importance of considering orthopedic causes when evaluating patients with these symptoms.

In the literature concerning the rate at which individuals consult a physician for low back pain, the female-to-male ratio typically ranges between 1.1 and 1.3. However, in this study, the female-to-male ratio was found to be 2.3, which is significantly higher than what is generally reported (12). Although bone-related pain intensifies in women during the postmenopausal period, the notably high female-to-male ratio observed in this study suggests that further investigation is warranted.

International publications indicate that approximately 15.76% of neurosurgical outpatients require surgical intervention, whereas domestic literature reports a slightly lower rate of 14.8% (1, 13). In this study, 17.8% of patients received neurosurgical surgical treatment. This relatively high rate was attributed to patients presenting with substantial pain



**Figure 1.** Treatment methods and number of patients

levels and clinical symptoms severe enough to necessitate hip imaging for differential diagnosis. Consequently, the findings underscore the importance of considering hip pathologies in neurosurgical practice. Such pathologies can significantly impact diagnosis and treatment strategies, highlighting the need for a thorough assessment of hip-related issues in patients with neurosurgical conditions.

Moreover, the need for a more integrated approach in medical training and practice is evident, with the aim of fostering deeper understanding and collaboration across specialties. This approach is not only crucial for enhancing diagnostic accuracy but also for ensuring that patients receive the most comprehensive and effective treatment. The study's emphasis on multidisciplinary treatment strategies confirms that addressing complex cases often requires insights from various medical fields, reinforcing the value of cross-disciplinary education and cooperation in clinical settings.

## CONCLUSION

Effective management of low back and hip pain requires a collaborative, multidisciplinary approach to ensure accurate diagnosis and appropriate treatment. This strategy enhances patient outcomes by integrating the expertise of neurosurgeons, orthopedic specialists, and rehabilitation specialists.

## ETHICS

**Ethics Committee Approval:** This study was approved by the Istanbul Health Sciences University Ümraniye Training and Research Hospital Scientific Research Ethics Committee (number: B.10.1TKH.4.34.H.GP.0.01/157, date: 16.05.2024).

**Informed Consent:** In this study, patients who visited the neurosurgery outpatient clinic between 2013 and 2023 were retrospectively analyzed using hospital records.

## FOOTNOTES

### Authorship Contributions

Surgical and Medical Practices: M.U.E., A.E.K., L.Ş., A.F.R.,  
Concept: F.A., A.E.K.,

Design: F.A., A.E.K., Data Collection or Processing: M.U.E.,  
F.B.Ö., Z.G., L.Ş., G.G.Ö., Analysis or Interpretation: M.U.E.,

F.A., S.I., F.B.Ö., Z.G., G.G.Ö., Literature Search: M.U.E., S.I.,  
L.Ş., Writing: M.U.E., A.F.R.

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