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Review Paper

Pain Management Methods and Techniques in Lumbar Disc Surgery: A Narrative Review Study

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ABSTRACT

Background and Aim: This study examined the complex field of pain treatment related to lumbar disc disorders in a narrative review.

Methods and Materials/Patients: Our search strategy involved utilizing specific terms, including 'pain management,' 'lumbar disc surgery,' 'methods,' and 'techniques.' We formulated a search query using Boolean operators: ('Pain management' OR 'analgesia') AND ('lumbar disc surgery' OR 'spinal surgery') AND ('techniques' OR 'procedures' OR 'approaches' OR 'methods') AND 'narrative review.' A systematic search was conducted across reputable medical databases including PubMed, MEDLINE, and Cochrane Library. Filters were applied to refine search results based on publication type and date, with a focus on material published within the past two decades to ensure the inclusion of current, high-quality literature.

Results: This study synthesized information from several sources, demonstrating the changing methods used to address pain in lumbar disc disorders. The article explored the historical background of medical treatments, emphasized both contemporary surgical and non-surgical methods, and investigated the predicted factors that affect the results. The study investigated the range of surgical incidents and examined the clinical factors to be taken into account for treatments. The value of efficient pain treatment in alleviating chronic back pain and maximizing patient results was emphasized.

Conclusion: In conclusion, this review underscores the paramount importance of comprehensive management of lumbar disc pain. It stresses that effective pain control not only alleviates immediate suffering but also plays a pivotal role in ensuring positive surgical experiences, enhancing patient outcomes, and promoting long-term well-being.

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Highlights

• The efficacy of opioids with traditional periodic administration lacks specific delineation, as pertinent outcomes were not elucidated in the respective investigations.

• Multimodal pain management strategies, incorporating non-opioid analgesics such as acetaminophen, NSAIDs, and COX-2 inhibitors, demonstrated noteworthy reductions in opioid utilization and effectively addressed concerns related to dependency across distinct studies.

• Sublingually administered preoperative buprenorphine exhibited procedural simplicity and efficacy in mitigating postoperative pain, as evidenced by diverse empirical investigations.

• Nalbuphine, employed as an intrathecal adjuvant in spinal anesthesia, showcased efficacy in achieving notable pain relief in the context of orthopedic surgical interventions, as corroborated by pertinent studies.

• Low-dose intravenous administration of ketamine exhibited pronounced analgesic efficacy, concurrent with diminished opioid consumption and a morphine-sparing effect, particularly following spine surgeries, as substantiated by a collective body of research.

Plain Language Summary

This study delves into various approaches for managing pain after surgeries, aiming to communicate complex medical information in an accessible manner for the general public. Researchers have explored different ways to address post-surgical pain, investigating the use of medications like opioids, non-opioid analgesics, and alternative techniques such as nerve blocks and epidural administration. The focus was on understanding how these interventions impact pain levels and patients' recovery. One key finding is that employing a combination of non-opioid analgesics, like acetaminophen and NSAIDs, significantly reduced the need for opioids, which are powerful painkillers often associated with dependency concerns. This multimodal strategy emerged as an effective alternative, offering relief while minimizing potential risks. Additionally, certain drugs like buprenorphine and ketamine, administered through specific routes before or after surgery, demonstrated promising results in pain control, reducing the reliance on traditional opioids. These findings are crucial as they pave the way for safer and more efficient pain management strategies, potentially transforming the post-surgical experience for patients. The significance of this research extends beyond medical circles. It directly impacts individuals undergoing surgery, as it introduces alternatives that may mitigate the risks associated with opioid use. It is particularly relevant for anyone concerned about the side effects and dependency issues linked to conventional pain medications. By exploring diverse pain management strategies, this study contributes to a broader conversation about patient well-being and promotes safer, more tailored approaches to post-surgical pain relief. In essence, these findings have the potential to improve the overall experience and outcomes for surgery patients, making recovery a more manageable and less daunting process.

1. Introduction

Lumbar disc disorder (LDD) is a widespread and consequential pathology that exerts its influence on the intervertebral discs situated in the lumbar region of the spine [1]. Marked by persistent back pain and functional limitations, LDD underscores the importance of prompt intervention. Historical therapeutic modalities, such as intradermal injections (chemonucleolysis), were directed at denervating affected discs. In contrast, contemporary strategies encompass surgical interventions and conservative approaches, like physical therapy [2, 3]. Globally, the estimated incidence of lumbar degenerative spine disease is 3.63%, with Europe exhibiting the highest prevalence at 5.7% [4]. Symptomatic herniated lumbar discs demonstrate a prevalence ranging from 1 to 3%, a variation influenced by age and gender. Moreover, non-spinal low back pain, inclusive of LDDs, has a global prevalence that fluctuates between 30% and 80%, with an upward trend associated with advancing age [5]. Lumbar intervertebral disc herniations stand out as a primary reason for lumbar spine surgery in the working-age population, underscoring the imperative need to

comprehend the epidemiology and pathophysiology of LDD for effective management and preventive strategies [6]. Critical in addressing lumbar disc herniation, lumbar disc surgeries play an important role in preventing the progression to chronic back pain and functional limitations if left untreated [7]. Procedures, such as discectomy involve the removal of herniated disc material to alleviate nerve pressure [8]. Personalized interventions are underscored by predictive factors for surgical outcomes, including sex and preoperative symptoms. The prevalence of lumbar disc herniation surgery exhibits variability, lacking a definitive correlation with preoperative patient characteristics [9]. Moreover, the estimated incidence of vascular complications post-lumbar disc surgery ranges from 1 to 5 per 10,000 disc operations [10]. Symptomatic lumbar spinal stenosis, a related condition, manifests in approximately 10% of patients aged over 65 years [11]. The criteria guiding the decision to perform surgery for treating symptomatic lumbar disc degeneration are not precisely defined, often relying on a case-by-case assessment dependent on specific clinical circumstances [12]. Lumbar disc pain is often associated with conditions such as lumbar disc herniation [13], which is important due to its potential to cause chronic back pain and functional limitations, thereby affecting daily activities and overall quality of life [13]. Addressing lumbar disc pain is necessary to prevent the exacerbation of symptoms, which may encompass pain, numbness, or weakness, significantly impeding daily activities [13]. Complications associated with lumbar disc issues, particularly herniated discs, may entail nerve injuries, dural puncture leading to positional headaches, infections, epidural abscess, epidural hematoma, paralysis, and the development of chronic back pain if left untreated [14]. Effective pain management is necessary for the success of disc disorder surgeries, influencing various aspects of the postoperative journey [15]. Swift recovery is facilitated as patients experience reduced discomfort, enabling an earlier return to normal activities. Beyond the immediate postoperative period, proficient pain control minimizes the risk of complications, such as infections and thrombosis, contributing to a smoother overall recovery process [16]. Patient comfort and satisfaction are heightened, fostering positive doctor-patient relationships and adherence to postoperative care instructions [17]. Implementing multimodal analgesia and non-opioid strategies not only lessens reliance on opioids and diminishes associated risks but also supports favorable long-term outcomes by encouraging early mobilization and participation in rehabilitation programs [18]. In essence, prioritizing pain management in surgeries for disc disorders is integral for optimizing patient outcomes, ensuring a positive surgical experience, and promoting long-term well-being [19]. The management of pain and provision of analgesia throughout all stages of surgery (preoperative, intraoperative and postoperative) is a critical procedure. This narrative review aimed to explore the many approaches and techniques of analgesia utilized in this context. It is employed in the field of spinal surgery.

2. Materials and Methods

Our search strategy involved employing a combination of pertinent keywords, such as 'pain management,' 'lumbar disc surgery,' 'methods,' AND 'techniques.' Using Boolean operators, we constructed a search query like ('pain management' OR 'analgesia') AND ('lumbar disc surgery' OR 'spinal surgery') AND ('techniques' OR 'procedures' OR 'approaches' OR 'methods') AND 'narrative review.' This approach included exploring reputable medical databases, like PubMed, MEDLINE, and Cochrane Library, with filters applied for publication type and date, focusing on articles published within the last 20 years. Additionally, the authors meticulously examined the search results, selecting the most relevant articles to ensure the inclusion of up-to-date and high-quality information in their review.

3. Results and Discussion

Opioid analgesics

Pain management after lumbar disc surgery often needs the administration of opioids [15]. Traditionally, opioids have been periodically supplied as necessary to manage postoperative pain after spinal surgery [20]. However, there is a growing interest in alternative strategies to reduce opioid use due to concerns about dependency and side effects [21, 22]. Studies have explored the efficacy of non-opioid analgesics, such as acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), and COX-2 inhibitors, as a component of a multimodal strategy for pain management following intricate spinal surgery [17, 23]. The utilization of oxymorphone, nalbuphine, and buprenorphine has been examined in the context of pain management subsequent to lumbar disc surgery. It is noteworthy that preoperative sublingual administration of buprenorphine is recommended for its procedural simplicity and effectiveness in alleviating postoperative pain following lumbar disc surgery [24, 25]. Furthermore, the investigational use of intrathecal nalbuphine as an adjuvant in spinal anesthesia for orthopedic surgeries has been indicative of its efficacy in achieving pain relief [26, 27]. Sublingual buprenorphine

has demonstrated effectiveness in the control of pain subsequent to procedures, such as lumbar laminectomy and discectomy [28]. Moreover, the proactive administration of intravenous nalbuphine before surgery has shown positive outcomes, particularly in affording visceral pain relief, a notable benefit for patients presenting with symptomatic gallbladder disease [29].

Low-dose intravenous ketamine

Low-dose intravenous ketamine has emerged as a valuable adjunct in pain management strategies following lumbar disc surgery. Perioperative administration of low-dose ketamine can provide effective analgesia, reduce opioid consumption, and contribute to a morphine-sparing effect without a significant increase in adverse events after spine surgery [30-32]. This approach is very advantageous in reducing opioid demands in patients with chronic back pain undergoing surgery, thereby improving pain control and reducing the risk of opioid-related complications [33, 34]. Moreover, the amalgamation of low-dose ketamine with lidocaine as an adjunctive component augments the efficacy of low-dose ketamine in the management of pain following lumbar disc surgeries [35]. Some studies have been conducted on the effectiveness of low-dose ketamine as a pain management solution. These studies have consistently shown that ketamine can reduce intraoperative pain and provide short-term pain relief for up to 24 hours after surgery. However, it is worth noting that this pain reduction is not sustained over a longer period [35-37].

Epidural analgesia

Epidural analgesia is a notable pain management technique employed in lumbar disc surgery [38]. Studies have shown its effectiveness in providing postoperative pain relief and reducing the need for systemic analgesia [39, 40]. Intraoperative epidural analgesia, whether with nonsteroidal agents or other medications, has demonstrated efficacy in diminishing postoperative pain and analgesic consumption [41]. This technique is particularly valuable in severe spinal surgical interventions, aiding in managing the complexity and intensity of pain associated with lumbar disc surgery [42, 43].

Epidural administration of steroids

Epidural administration of steroids is a valuable approach in pain management for lumbar disc surgery. Studies have demonstrated that perioperative steroids contribute to better control of both back and leg pain post-surgery, leading to improved patient outcomes [44, 45]. Some surgeons have utilized the administration of epidural corticosteroids and local anesthetics during surgery for a herniated lumbar disc in order to alleviate postoperative discomfort [46]. Additionally, lumbar epidural steroid injections have been utilized to alleviate low back pain and sciatica, providing targeted relief in the affected area [47]. The effectiveness of intra-venous steroids as part of conservative treatment options, including oral and parenteral delivery, has also been explored to prevent complications and enhance recovery [48]. Overall, epidural administration of steroids proves to be a valuable component in multimodal pain management strategies for lumbar disc surgery. It seems that there is no clear agreement among studies on the effectiveness of using this method for chronic back pain management [48, 49].

According to Lee et al. (2018), both steroids and local anesthetics can effectively manage pain in disc surgery patients. However, when it comes to long-term pain control, they suggest that steroids might be a stronger option. The reason behind this is that the individuals who received steroids showed considerable improvement in pain control at 1, 3 and 6 months post-surgery [49]. In contrast, Samoladas et al. showed that intraoperative use of steroids and local anesthetic was effective in reducing pain only for a short time after surgery, while compared to the placebo, it did not affect the rate of infection or other long-term consequences [50].

Local anesthetic wound infiltration and catheter placement

Local anesthetic wound infiltration and catheter placement are commonly utilized methods in postoperative pain management. Wound infiltration involves the use of local anesthetics directly at the surgical area, proving to be an increasingly common technique for controlling postoperative pain [51-53]. This approach is particularly effective in minor surgeries, such as laceration repairs and skin procedures [54, 55]. Catheter placement involves the insertion of a catheter, often epidural or local anesthesia, for continuous administration of analgesics, providing sustained pain relief. In spine surgeries, options, like local anesthetic wound infiltration or catheter placement, along with spinal and epidural anesthesia, are considered for appropriate perioperative pain management [16]. In conclusion, both techniques aim to enhance patient comfort and reduce the need for systemic opioids, contributing to improved recovery outcomes.

NSAIDs

NSAIDs have been found to be effective in the perioperative and postoperative pain management of lumbar disc surgery. The incorporation of NSAIDs with opioid analgesics provides better pain control after lumbar spine surgery, resulting in significantly improved pain scores compared to a placebo [16, 56-58]. A meta-analysis of randomized controlled trials further supports the effectiveness of NSAIDs in postoperative pain management after lumbar spine surgery [59].

Acetaminophen

Acetaminophen has a role in postoperative pain control following lumbar disc surgery. While over-the-counter acetaminophen can be used to alleviate pain, evidence for its effectiveness as the sole agent for preventing postsurgical pain after spinal surgery is limited [60]. Some studies have suggested that intravenous acetaminophen IV effectively reduces postoperative pain and overall analgesic dosage after certain surgeries, such as craniotomy, but its impact on lumbar disc surgery may vary [15, 17]. Additionally, a study on minimally invasive spine surgery found no significant effect on postoperative pain with perioperative intravenous acetaminophen. The pain relief treatment for complicated spine surgery often involves administering acetaminophen before or during the surgery, along with COX-2 specific inhibitors or NSAIDs for ongoing pain control [61].

Peripheral nerve blocks

Peripheral nerve blocks have proven effective in managing pain associated with lumbar disc surgery. These blocks can be used to alleviate chronic lumbosacral radiculopathy, providing relief for patients dealing with persistent pain [62]. Furthermore, peripheral nerve blocks play a significant role in pain management for various surgical procedures, including lumbar disc surgery [63]. By blocking certain nerves, these blocks provide tailored pain relief when injected close to the nerves that govern sensation [64]. When dealing with either acute or chronic back pain, peripheral nerve blocks are thought to be a useful method [65].

Gabapentin and pregabalin

Gabapentin and pregabalin have demonstrated effectiveness in managing pain after lumbar disc surgery. Both medications are effective by reducing postoperative discomfort, minimizing the need for narcotics, and offering respite to patients undergoing spine surgery [66, 67]. Analgesic effects of gabapentin and pregabalin have been demonstrated in the management of pain caused by neuropathic pain, contributing to their use in postoperative pain management. Studies have investigated different dosages of these medications, providing evidence for their effectiveness in pain relief after spinal surgery [67, 68].

Postoperative physical therapy and rehabilitation

Postoperative physical therapy is essential for effectively managing pain after lumbar disc surgery. A focused rehabilitation protocol following surgery, especially one targeting low back pain, enhances patient satisfaction with therapy following minimally invasive lumbar decompression operations [69]. The effectiveness of postoperative physical therapy extends to improving patient outcomes, including pain and disability, after lumbar surgery. Supervised exercise, as part of a rehabilitation program, has shown promise in enhancing patient recovery and function post-surgery [16, 70].

Postoperative rehabilitation following lumbar disc surgery is an essential component of patient treatment, with a primary focus on enhancing patient outcomes and effectively managing pain. A systematic review highlighted the efficacy of postoperative rehabilitation in relieving pain, enhancing function, and improving the overall life quality of individuals with lumbar disc surgery [71]. A randomized investigation made a comparison between an exercise program and a control group in terms of pain, back impairment, and behavioral outcomes following lumbar disc surgery. The study revealed that the exercise program had beneficial impacts on patient recovery [72]. Postoperative rehabilitation training has demonstrated significant efficacy in alleviating pain and enhancing quality of life, making it strongly recommended in clinical settings [73]. The implementation of active physiotherapeutic rehabilitation following lumbar disc surgery has shown beneficial impacts on patient recovery, influencing both pain levels and functional results [74] (Table 1).

4. Conclusion

Opioids, while demonstrating efficacy, pose difficulties that necessitate contemplation of alternate options. Low-dose ketamine, epidural analgesia, and steroid epidurals are emerging as effective strategies, each with distinct advantages in alleviating postoperative pain and enhancing outcomes. Postoperative pain control after lumbar disc surgery involves the administration of local anesthetic to the surgical area, the insertion of a

Table 1. Summary of the reviewed papers

Author(s)	Intervention (Drugs)	Pain Management Strategy	Main outcomes
Bajwa et al. (2015) [15]	Opioids	Traditional periodic supply	-
Dowell et al. (2022) [20]	Opioids	Traditional periodic supply	-
Patel et al. (2020) [21]	Non-opioid analgesics	Multimodal strategy with acetaminophen, NSAIDs, COX-2 inhibitors	Reduced opioid use, addressing dependency concerns
Wright et al. (2020) [22]	Non-opioid analgesics	Multimodal strategy with acetaminophen, NSAIDs, COX-2 inhibitors	Reduced opioid use, addressing side effects
Kiabi et al. (2021) [24]	Buprenorphine	Preoperative sublingual administration	Procedural simplicity and effectiveness in postoperative pain relief
Chen et al. (2019) [25]	Buprenorphine	Preoperative sublingual administration	Procedural simplicity and effectiveness in postoperative pain relief
Akshat et al. (2014) [26]	Nalbuphine	Intrathecal adjuvant in spinal anesthesia	Efficacy in achieving pain relief in orthopedic surgeries
Kaushal et al. (2021) [27]	Nalbuphine	Intrathecal adjuvant in spinal anesthesia	Efficacy in achieving pain relief in orthopedic surgeries
Malekshoar et al. (2021) [28]	Buprenorphine	Sublingual administration	Effectiveness in pain control after lumbar laminectomy and discectomy
Liu et al. (2021) [29]	Nalbuphine	Preoperative intravenous administration	Positive outcomes, particularly in visceral pain relief for symptomatic gallbladder disease
Zhou et al. (2022) [30]	Ketamine	Low-dose intravenous administration	Effective analgesia, reduced opioid consumption, morphine-sparing effect, no significant increase in adverse events after spine surgery
Kaur et al. (2015) [31]	Ketamine	Low-dose intravenous administration	Improved pain control, reduced opioid demands in patients with chronic back pain undergoing surgery, decreased risk of opioid-related complications
Wang et al. (2020) [32]	Ketamine	Low-dose intravenous administration	Contribution to morphine-sparing effect after spine surgery
Riddell et al. (2019) [35]	Ketamine+Lidocaine	Adjunctive use with low-dose ketamine	Very effective in pain management following lumbar disc surgeries
Pendi et al. (2018) [36]	Ketamine	Intraoperative pain reduction	Short-term pain relief for up to 24 hours after surgery
Nielsen et al. (2017) [37]	Ketamine	Pain reduction not sustained over a longer period	-
Guay et al. (2019) [38]	Epidural analgesia	Postoperative pain relief, reduced systemic analgesia	Efficacy in managing pain associated with lumbar disc surgery
Hermans et al. (2021) [39]	Epidural analgesia	Intraoperative epidural analgesia with nonsteroidal agents	Diminished postoperative pain and analgesic consumption
Hamed et al. (2023) [40]	Epidural analgesia	Intraoperative epidural analgesia with other medications	Diminished postoperative pain and analgesic consumption
Waqas et al. (2017) [44]	Epidural administration of steroids	Better control of back and leg pain post-surgery	Improved patient outcomes
Langmayr et al. (1995) [45]	Epidural administration of steroids	Better control of back and leg pain post-surgery	Improved patient outcomes
Lotfinia et al. (2007) [46]	Epidural administration of steroids	Administration during surgery for herniated lumbar disc	Alleviation of postoperative discomfort
Kovarsky et al. (2022) [47]	Epidural administration of steroids	Lumbar epidural steroid injections for low back pain and sciatica	Targeted relief in affected area
Carassiti et al. (2021) [48]	Epidural administration of steroids	Intra-venous steroids as part of conservative treatment	Explored to prevent complications and enhance recovery

Author(s)	Intervention (Drugs)	Pain Management Strategy	Main outcomes
Lee et al. (2018) [49]	Epidural administration of steroids	No clear agreement on the effectiveness of chronic back pain management	-
Samoladas et al. (2019) [50]	Epidural administration of steroids	Short-term pain reduction; no effect on infection rate or long-term consequences compared to placebo	Individuals receiving steroids showed improvement at 1 month, 3 months, and 6 months post-surgery
Lee et al. (2021) [51]	Epidural administration of steroids	Steroids effective for long-term pain control	-
Stamenkovic et al. (2021) [52]	Local anesthetic wound infiltration and catheter placement	Postoperative pain management	Effective for minor surgeries, such as laceration repairs and skin procedures
Kjærgaard et al. (2012) [53]	Local anesthetic wound infiltration and catheter placement	Postoperative pain management	Sustained pain relief through continuous administration of analgesics
Li et al. (2020) [54]	Local anesthetic wound infiltration and catheter placement	Postoperative pain management	Particularly effective for minor surgeries
Scott (2010) [55]	Local anesthetic wound infiltration and catheter placement	Postoperative pain management	Particularly effective for skin procedures
Prabhakar et al. (2022) [16]	NSAIDs	Multimodal strategy with opioid analgesics	Better pain control after lumbar spine surgery, significantly improved pain scores compared to placebo
Jirarattanaphochai et al. (2008) [56]	NSAIDs	Multimodal strategy with opioid analgesics	Improved pain management in lumbar disc surgery
Zhang et al. (2017) [57]	NSAIDs	Multimodal strategy with opioid analgesics	Improved pain management in lumbar disc surgery
Khoo et al. (2023) [58]	NSAIDs	Multimodal strategy with opioid analgesics	Improved pain management in lumbar disc surgery
Ma et al. (2023) [59]	NSAIDs	Meta-analysis of randomized controlled trials	Supports effectiveness of NSAIDs in postoperative pain management after lumbar spine surgery
Friedman et al. (2015) [60]	Acetaminophen	Postoperative pain control	Limited evidence for its effectiveness as the sole agent for preventing postsurgical pain after spinal surgery
Onda et al. (2016) [61]	Acetaminophen	Minimally invasive spine surgery	No significant effect on postoperative pain; varied impact on lumbar disc surgery
Kumar et al. (2023) [62]	Peripheral nerve blocks	Pain management for chronic lumbosacral radiculopathy	Alleviates persistent pain in patients
Jogie et al. (2023) [63]	Peripheral nerve blocks	Pain management for various surgical procedures, including lumbar disc surgery	Significant role in pain management
Joshi et al. (2016) [64]	Peripheral nerve blocks	Tailored pain relief by blocking certain nerves	Provides relief when injected close to nerves governing sensation
Adabala et al. (2020) [65]	Peripheral nerve blocks	Useful method for acute or chronic back pain	-
Tsai et al. (2023) [66]	Gabapentin	Pain management after lumbar disc surgery	Effectiveness in reducing postoperative discomfort, minimizing the need for narcotics
Routray et al. (2018) [67]	Pregabalin	Pain management after lumbar disc surgery	Effectiveness in reducing postoperative discomfort, minimizing the need for narcotics
Yu et al. (2013) [68]	Gabapentin and pregabalin	Different dosages investigated for effectiveness	Evidence for their effectiveness in pain relief after spinal surgery

Author(s)	Intervention (Drugs)	Pain Management Strategy	Main outcomes
Terai et al. (2022) [69]	Postoperative physical therapy	Enhancing patient satisfaction and outcomes	Focused rehabilitation protocol improves outcomes, especially for low back pain
Manni et al. [70]	Postoperative physical therapy	Improving pain and disability	Supervised exercise enhances patient recovery and function post-surgery
Afzal et al. (2022) [71]	Postoperative rehabilitation	Relieving pain, enhancing function, and improving overall life quality	Systematic review highlights efficacy
Ozkara et al. (2015) [72]	Postoperative rehabilitation	Comparison between exercise program and control group	Exercise program has beneficial impacts on patient recovery
Zhu et al. (2023) [73]	Postoperative rehabilitation	Significant efficacy in alleviating pain and enhancing quality of life	Strongly recommended in clinical settings
Atsidakou et al. (2021) [74]	Postoperative rehabilitation	Beneficial impacts on patient recovery, influencing pain levels and functional results	-

catheter for continuous pain relief, and the utilization of NSAIDs, acetaminophen, and external nerve blocks. The use of gabapentin/pregabalin, in conjunction with physical therapy, effectively alleviates pain and enhances functionality following surgical procedures. Implementing these measures thoroughly enhances patient comfort and improves the overall quality of life following lumbar disc surgery. One of the notable aspects of this study is its thorough examination of different pharmacological treatments used in surgical procedures and pain management. By integrating viewpoints from both opioid and non-opioid perspectives, this method addresses current concerns around opioid dependency and side effects and offers a well-rounded and detailed plan. This narrative review of lumbar disc surgery pain management has certain limitations. The inclusion of studies with diverse methodologies introduces potential variability in the quality of evidence. The heterogeneity in surgical procedures and patient populations limits generalizability. It is suggested that future quantitative studies and meta-analyses investigate pain control techniques and drugs in different phases before, during and after surgery.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

All authors contributed equally in performing the project and preparing the manuscript.

Conflict of interest

The authors declared no conflicts of interest.

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