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Case Report

# Acute Pancreatitis after Lumbar Spine Surgery: A Case Report

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Acute pancreatitis is a rare but potentially life-threatening complication that typically occurs after various abdominal procedures, but it is extremely uncommon following spinal surgery. This case study describes a 38-year-old male martial arts champion who developed acute pancreatitis after undergoing lumbar laminectomy and Transforaminal Lumbar Interbody Fusion (TLIF) surgery for chronic lower back pain and bilateral radiculopathy in both legs. Despite the absence of typical risk factors, such as alcohol consumption or a history of pancreatitis, the patient developed abdominal pain, nausea, and vomiting on the second postoperative day, along with elevated serum amylase levels. These clinical findings raised suspicion for acute pancreatitis, which was subsequently confirmed through diagnostic imaging. Prompt treatment led to the resolution of symptoms and normalization of pancreatic enzyme levels. This case underscores the importance of recognizing and managing uncommon complications following spinal surgery, highlighting the necessity for a comprehensive, multidisciplinary approach to ensure optimal patient care.

**Keywords:** *spine surgery, pancreatitis, general surgery, scoliosis, case report, orthopaedic*

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## 1. Introduction

Acute pancreatitis is a potential complication following various surgical procedures, including both abdominal and non-abdominal surgeries. However, its occurrence following spinal surgery is relatively rare and has been reported only sporadically [1–4]. The diagnosis of acute pancreatitis typically requires meeting at least two of the following criteria: clinical symptoms such as abdominal pain, nausea, and vomiting; elevated serum lipase or amylase levels at least three times the upper limit of normal; and characteristic findings on Computed Tomography (CT) or Magnetic Resonance Imaging (MRI) [5]. Several factors may contribute to the development of pancreatitis following spinal surgery, including intraoperative hemodynamic instability leading to splanchnic hypoperfusion and mechanical compression from spinal correction [6]. These risks are particularly notable in individuals with a lower Body Mass Index (BMI) and reduced trypsin inhibitor activity post-surgery, which impairs defense against autodigestion and decreases intraoperative mean arterial pressures causing pancreatic ischemia [7, 8]. Furthermore, acute pancreatitis after spinal surgery appears to be more common in patients with conditions such as Neurofibromatosis Type 1, Marfan Syndrome, and Cerebral Palsy, although the exact mechanisms underlying this increased risk remain unclear [5].

To the best of our knowledge, there have been few reports of acute pancreatitis following Transforaminal Lumbar Interbody Fusion (TLIF) for spondylolisthesis. Given the life-threatening nature of acute pancreatitis and its potential to cause multiorgan failure and sepsis, spine surgeons should be vigilant about this potential complication. We report the case of a 38-year-old male who developed acute pancreatitis following TLIF.

## 2. Case Presentation

A 38-year-old male martial arts champion with no known medical history presented with a long-standing complaint of lower back pain (LBP) that had been successfully managed with conservative treatments until recently, when these measures failed. There was no history of trauma or constitutional symptoms. The patient had no prior medical conditions, such as chronic pancreatitis, and did not consume alcohol. He began experiencing persistent daily LBP, accompanied by bilateral radiculopathy (right leg more than the left), characterized by numbness and a burning sensation following the L5 and S1 dermatomes.

On examination, there was altered sensation following the L5-S1 dermatomes in both legs, with motor strength assessed at 5/5 throughout and normal reflexes. The patient's body mass index (BMI) was recorded at 27.6. Radiological imaging revealed lower lumbar degeneration, particularly at the L4-5 level, with Modic type 1 changes, endplate degeneration, and degenerative discopathy. A broad-based right posterolateral disc protrusion was noted, encroaching on the right lateral recess of the canal and proximal neural foramen, compressing the L5 nerve root (Figures **1**, **2**, **3**). Preoperative laboratory tests were all within normal limits.

The patient underwent L5 laminectomy, L4 to L5 fusion (posterolateral fusion with allograft), and L5-S1 Transforaminal Lumbar Interbody Fusion (TLIF) with a titanium expandable cage in the prone standard position (Figures **4**, **5**).

**Figure 1.** Standing AP and lateral X-rays for the lumbosacral spine showing degenerative changes at L4-5 and L5-S1 with narrow discs.

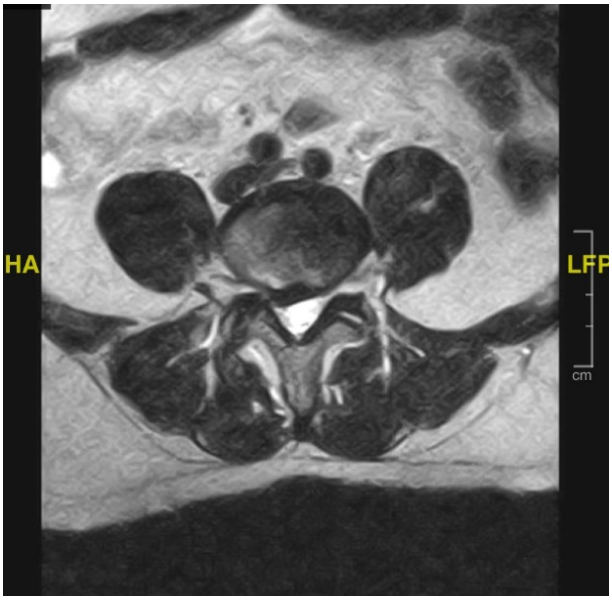


**Figure 2.** Axial T2 cuts of the L4-5 MRI shows modic disc changes and paracentral disc herniation compressing the traversing L5 nerve root.

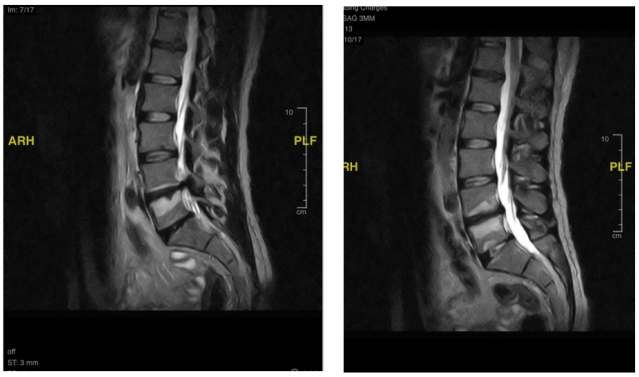


**Figure 3.** Sagittal T2 MRI of the lumbosacral spine shows stenosis at the L4-5 in the setting of black discs in L4-5 and L5-S1.

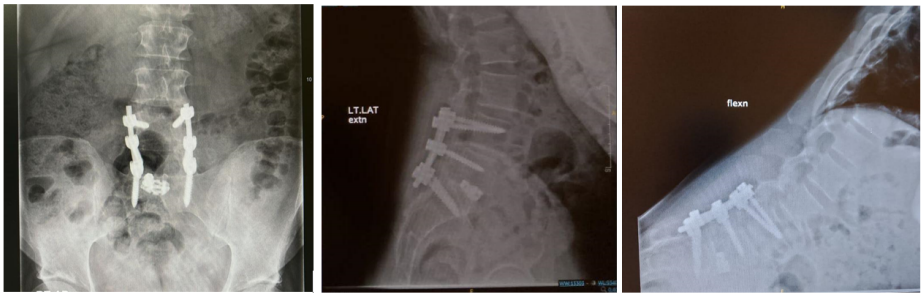


**Figure 4.** Standing AP and lateral lumbosacral X-rays post operative.


**Figure 5.** Sagittal CT cuts show decompression of L4 partial laminectomy, L5 laminectomy with the titanium cage TLIF in L5-S1.

The procedure was performed without complications, and the patient maintained hemodynamic stability throughout. Preoperative hemoglobin (Hb) levels were measured at 13.5 g/dL, with no blood transfusions administered prior to or during the surgery. On the second postoperative day, the patient developed mild abdominal pain, nausea, and vomiting, which rapidly progressed to a more severe clinical condition. Laboratory analysis indicated a substantial increase in serum amylase, which reached 543 IU/L (normal range: 0–125 IU/L), alongside an elevated lipase level of 465 IU/L (normal range: 13–60 IU/L). The patient exhibited tachycardia, with a heart rate of 122 beats per minute, prompting an urgent consultation with the general surgery team and subsequent transfer to the Intensive Care Unit (ICU) for further evaluation and management. A follow-up hemoglobin test showed a level of 13.1 g/dL. The general surgeon recommended the transfusion of one unit of blood based on concerns regarding potential hypoperfusion. Notably, the patient was not taking any medications known to induce acute pancreatitis.

An emergency contrast-enhanced CT scan of the abdomen and pelvis revealed borderline enlargement of the pancreatic head, with associated mural thickening and enhancement of the second part of the duodenum, along with surrounding misty fat planes and a minimal amount of fluid. No stones were detected in the bile duct or pancreas, and there was no evidence of pancreatic duct obstruction by a tumor (Figure **6**).

The initial diagnosis was Acute Pancreatitis. The standard treatment was carried out, consisting of abstaining from food and drink, antibiotics and intravenous fluid therapy.

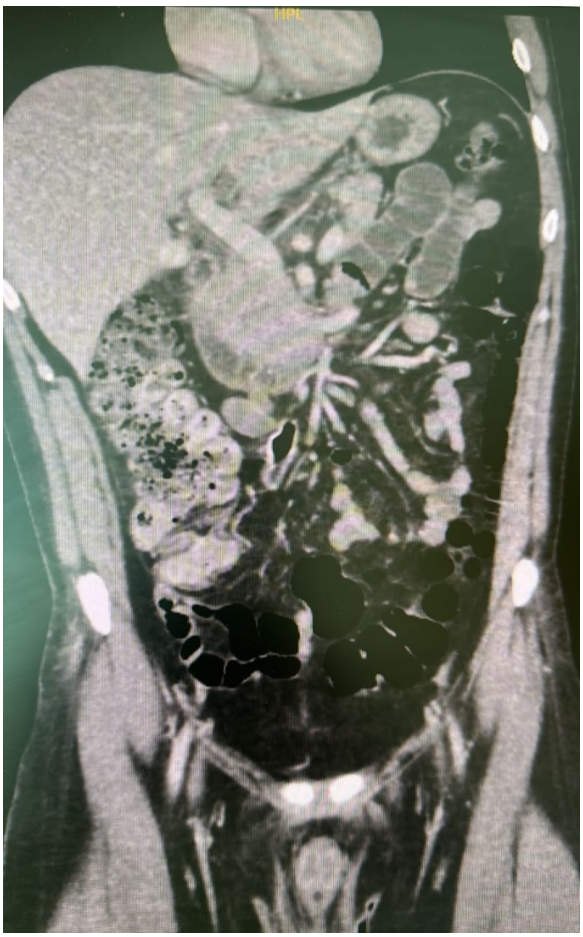

**Figure 6.** Contrast-enhanced CT scan of the abdomen and pelvis, showing borderline enlargement of the pancreatic head, with associated mural thickening and enhancement of the second part of the duodenum. Surrounding misty fat planes and a minimal amount of fluid are also evident.

By the third postoperative day, all his test readings (lipase at 46 IU/L and amylase at 82 IU/L). had reverted to normal. He has not experienced any return of the abdominal pains in the following year.

## 3. Discussion

The development of acute pancreatitis after spinal surgery can be attributed to various factors. Intraoperative hemodynamic changes such as fluctuations in blood pressure and perfusion can lead to reduced blood flow to the pancreas, resulting in ischemic injury. Additionally, mechanical compression from surgical instruments, particularly during lumbar spine procedures, may directly affect the pancreas and surrounding blood vessels, causing inflammation. Patient-specific factors, including pre-existing pancreatic conditions, low body mass index (BMI), and alterations in trypsin inhibitor activity post-surgery, may further increase the risk of pancreatitis [9, 10].

Diagnosing acute pancreatitis during the postoperative period involves thorough clinical assessment, laboratory evaluations, and imaging studies. Symptoms such as abdominal pain, nausea, vomiting, and elevated pancreatic enzyme levels are indicative of pancreatic injury [11]. Imaging modalities, particularly computed tomography (CT), are crucial to confirm the diagnosis and exclude other potential causes of abdominal pain.

Management of acute pancreatitis following spine surgery focuses on symptomatic relief, complication

prevention, and support for pancreatic recovery. This typically includes aggressive fluid resuscitation, effective pain control, and the initiation of enteral nutrition once the patient is hemodynamically stable. In severe cases, surgical or endoscopic intervention may be necessary [12, 13]. In our patient, conservative management proved effective, with symptoms resolved, and pancreatic enzyme levels returned to normal.

According to Jeffrey et al. the best practice to evaluate hemoglobin level, overall clinical context, patient preferences, and alternative therapies when making transfusion decisions for an individual patient [14]. In the present case, the patient experienced post-major spinal surgery pancreatitis with a hemoglobin level of 13.1 g/dL, based on which the surgeon was concerned about potential hypoperfusion and administered a blood transfusion to address the hemoglobin level.

## 4. Conclusion

Acute pancreatitis following spinal surgery is a rare but significant complication that warrants close attention from surgeons and healthcare providers. The exact pathophysiology of this association remains unclear, but factors such as hemodynamic instability, mechanical trauma, and systemic inflammatory responses may contribute. Prompt diagnosis and treatment of acute pancreatitis are essential to prevent further complications and improve patient outcomes. Ongoing research is necessary to better understand the risk factors and underlying mechanisms of postoperative pancreatitis in spinal surgery, which could lead to improved prevention strategies and patient care.

## Competing Interests

There are no competing interests.

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## Author Contribution

- Conceptualization, literature review, and drafting the initial manuscript: Abdulaziz Ahmed Munshi, Abdulaziz Fuad AlJehani, AbdullAziz A AlDarwesh, Fadhel Alherz, and Nayef Dajim.
- Data collection, analysis, and interpretation of findings: Abdulaziz Ahmed Munshi, Abdulaziz Fuad AlJehani, AbdullAziz A AlDarwesh, Fadhel Alherz, and Nayef Dajim.
- Review and editing of the manuscript, ensuring clarity and coherence: Abdulaziz Ahmed Munshi, Abdulaziz Fuad AlJehani, AbdullAziz A AlDarwesh, Fadhel Alherz, and Nayef Dajim.
- Supervise and guide clinical aspects of the case; final approval of the manuscript: Fadhel Alherz, and Nayef Dajim.

All authors contributed to the development of the manuscript and approved the final version for submission.

## Data Availability Statement

The data generated during this case report study are available upon reasonable request from the corresponding author. Due to patient confidentiality and privacy concerns, individual patient data cannot be made publicly available. However, aggregate data and findings that support the conclusions of this study can be provided, ensuring adherence to ethical guidelines and institutional policies.

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