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## LUMBAR SPINAL STENOSIS FUSION SURGERY IN PARKINSON'S DISEASE: A CASE REPORT

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### ÖZET

Parkinson hastalığı progresif olarak hareketi etkileyen ve bozan sinir sistemi rahatsızlığıdır. Omurga deformiteleri ve motor hareket bozukluklarına bağlı olarak bu hastalarda spinal stenoz daha sık görülmektedir. Ayrıca Parkinson hastalığında osteoporoz topluma göre daha sık görülmektedir. Lomber dekompresyon ve füzyon cerrahisi, lomber dejeneratif omurga hastalarında sık kullanılan cerrahi tekniktir. Bu olguda Parkinson hastalığında spinal füzyon cerrahisi sonrası osteoporoz ve parkinsona bağlı postür gibi nedenlerle erken gelişen spinal instabilitenin sunulması amaçlanmıştır.

**Anahtar kelimeler:** Parkinson, lomber stenoz, osteoporoz, lomber instabilite

### ABSTRACT

*Parkinson's disease is a nervous system disorder that progressively affects and impairs movement. Spinal stenosis is more common in these patients due to spinal deformities and motor movement disorders. In addition, osteoporosis is more common in Parkinson's disease than in the general population. Lumbar decompression and fusion surgery is a frequently used surgical technique in lumbar degenerative spine diseases. In this case, it is aimed to present early spinal instability due to osteoporosis and posture after spinal fusion surgery in Parkinson's disease.*

**Keywords:** Parkinson's disease, lumbar stenosis, osteoporosis, lumbar instability



## INTRODUCTION

Parkinson's disease is a neurodegenerative disorder whose prevalence increases with age. It is a disease characterized by motor symptoms such as resting tremor, rigidity, bradykinesia, and postural dysfunction (kyphosis) (1,2). Lumbar spinal stenosis is a clinical condition caused by the narrowing of the central, subarticular and intervertebral canals of the lumbar spine for various reasons (3). 90% of the patients have low back pain followed by unilateral or bilateral leg pain (4). In patients at an advanced stage of Parkinson's disease, turns are slowed down, and walking is short, multi-step, and block-shaped. This might be a risk factor for falling (5). Management of spinal conditions in patients with PD is complex because of poor muscular supporting capability, diminished bone mineral density, motor control dysfunction in addition to the increased risk of surgical complications and the presence of comorbidities. (Spinal Surgery in Patients with Parkinson's Disease: Unsatisfactory Results, Failure and Disappointment).

## CASE REPORT

A 53-year-old female patient was admitted to our clinic with complaints of left leg pain and gait limitation for 1 month. In the patient's examination, left TA (tibialis anterior) muscle strength was found to be 3/5. The patient had neurogenic claudication. Lumbar Magnetic resonance imaging showed revealed bilateral foraminal stenosis at lumbar 3-4 and lumbar 4-5 levels. The patient underwent L3–L4 laminectomy with bilateral foraminotomies, and L2-3-4-5 posterior pedicle screw fusion. Postoperative pain resolved and the patient mobilized, discharged on the 4th postoperative day. On the 44th postoperative day, the patient presented with severe left leg pain. In the patient's examination, left TA (tibialis anterior) muscle strength was found to be 1/5. Lumbar MRI and CT examination showed that L5 pedicle screws broke the bilateral pedicle. According to the patient's trauma history, it was learned that she had fallen from her own height the day before. The patient was taken to surgery. L5 pedicle screws were removed bilaterally and S1 bilateral pedicle screws were placed. instrumentation was modified using bone cement against osteoporosis. Postoperative pain resolved and the patient was mobilized, discharged on the 5th postoperative day. The Patient presented with severe low back pain and inability to walk on the 17th postoperative day of the second surgery. In the CT examination of the patient, pedicle fracture of bilateral S1 screws was detected. At this admission, the patient had no history of trauma. The patient was recommended iliac wing screw surgery. The patient voluntarily refused the treatment and was discharged.



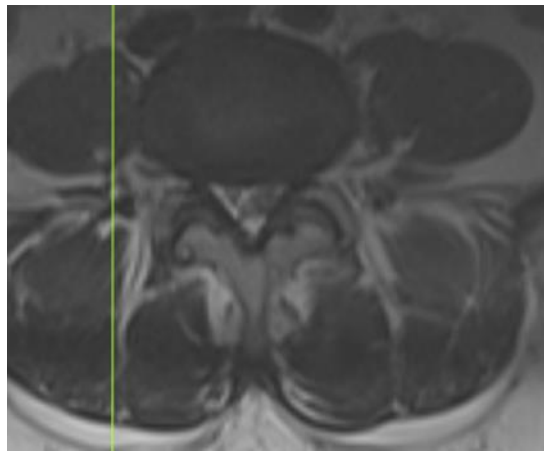


Figure 1. Foraminal stenosis image in preop MR



Figure 2. CT image of bilateral L5 pedicle fracture in postoperative control



Figure 3. CT image of bilateral S1 pedicle fracture seen at follow-up after the second surgery

## DISCUSSION

Parkinson's disease is a progressive neurodegenerative disease caused by the degeneration of dopamine-producing cells in the substantia nigra. The main symptoms in Parkinson's disease are bradykinesia, resting tremor, rigidity and postural instability (6). The classical deformity described in a PD patient is stooped posturing characterized by flexion of hips and knees (7). This posture can be considered as a factor of early instability after lumbar spinal stenosis fusion surgery. It has been determined that dopaminergic neurons are associated with vitamin D receptors. It also regulates factors such as neurotrophic factor of 1,25 (OH)<sub>2</sub> D<sub>3</sub>, which provide dopaminergic neuron development and function, and neurotrophic factor of glial origin. Vitamin D deficiency may play a role in the etiopathogenesis of Parkinson's disease (8). Osteoporosis is more common in patients with Parkinson's disease. And Lumbar spinal stenosis fusion surgery should be considered for early instability in PD patients. The most severe complication of gait disturbance in Parkinson's patients is falls and indicates the progression of the disease. Inability to maintain balance and falls as a result of impaired postural reflexes may cause severe injuries to patients (9). The risk of postoperative fall should be considered in terms of early instability in lumbar spinal stenosis fusion surgery. Lumbar spinal stenosis is more common in Parkinson's disease (10).

Patients with clinical signs or neurological deficits require surgery. The risk of developing early instability complications should be considered in Parkinson's patients who underwent lumbar fusion surgery.

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## KYPHOTIC ANGLE INCREASE AFTER THORACAL VERTEBRA KYFOPLASTY: A CASE REPORT

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### ÖZET

Torakolomber ve lomber fraktürlerde birçok sınıflama mevcuttur ve tedavi yöntemleri bu sınıflamalara göre belirlenmiştir. Başlıca tedavi yöntemi gerekli hastalarda anterior, posterior ya da kombine füzyon cerrahisidir. Özellikle cerrahi süresinin kısa olması avantajı nedeniyle son zamanlarda perkütan yolla uygulanan girişimler önem kazanmıştır. Kırığın sınıflandırılması neticesinde uygulanan cerrahi sonrası takipte angülasyon derecesine bağlı başka cerrahi tedavi gerektiren kifoz oluşabilir. Bu çalışmada, kifoplasti işlemi sonrası takibinde artan angülasyon sonucu posterior füzyon cerrahisi gereksinimi doğan olgu sunulmuştur.

**Anahtar kelimeler:** Torakal fraktür, kifoplasti, kifotik açı

### ABSTRACT

*There are many classifications for thoracolumbar and lumbar fractures and treatment methods have been determined according to these classifications. The main treatment method is anterior, posterior or combined fusion surgery in necessary patients. Recently, percutaneous interventions have gained importance, especially due to the advantage of the short duration of surgery. Post-traumatic kyphosis, which requires other surgical treatment depending on the degree of angulation, may occur in the follow-up after the surgery performed as a result of the classification of the fracture. In this study, a case requiring posterior fusion surgery as a result of increased angulation in the follow-up after kyphoplasty procedure is presented.*

**Keywords:** Thoracic fracture, kyphoplasty, kyphotic angle

## INTRODUCTION

Many classifications have been made in thoracolumbar fractures from past to present and treatment methods have been tried to be determined according to these classifications. However, which patient should be treated conservatively and which patient should be operated on and which surgical technique should be preferred is still a matter of debate (1). Long-term absolute bed rest, painkillers and corset use are conservative treatment. Surgical approaches are used in patients with neurological deficits. Anterior-posterior procedures are performed in stabilization surgery. In recent years, alternative treatment options such as vertebroplasty and kyphoplasty have been developed in the treatment of compression fractures (2,3).

## CASE REPORT

A 16-year-old male patient applied to the emergency service after a bicycle accident. The patient had dyspnea and described pain in the thoracic region with palpation. There was no neurological deficit in the examination of the patient. Multiple rib and sternum fractures, hemothorax and pneumothorax were seen in the thorax CT examination of the patient. T4-5-7 compression and T6 stable burst fracture detected. The patient was followed in the immobile intensive care unit in extubated condition. The patient's pneumothorax and hemothorax regressed, and surgery was decided for the patient. T6 kyphoplasty procedure was applied to the patient with sternum fracture in order to shorten the surgical time in terms of prone position complication. The patient's pre-operative kyphotic angle value was 37.47 (figure 1), and the kyphotic angle after kyphoplasty was 32.41 (figure 2). Postoperatively, the patient was mobilized limitedly with a kypho-orthosis. The patient was discharged with recommendations. The patient came for control on the 14th postoperative day. In the control examination, the kyphotic angle value was measured as 34.21. The change in angle was minimal, the recommendations were repeated to the patient. The kyphotic angle was measured as 46.26 (figure 3) in the patient's control on the 28th postoperative day. Fusion and kyphosis surgery was recommended to the patient with back pain. Stabilization and kyphosis surgery was performed with pedicle screw at thoracic 3-4-5-7-8 levels. Postop kyphotic angle was measured as 26.14. The patient's back pain regressed, and the patient was discharged with recommendations.

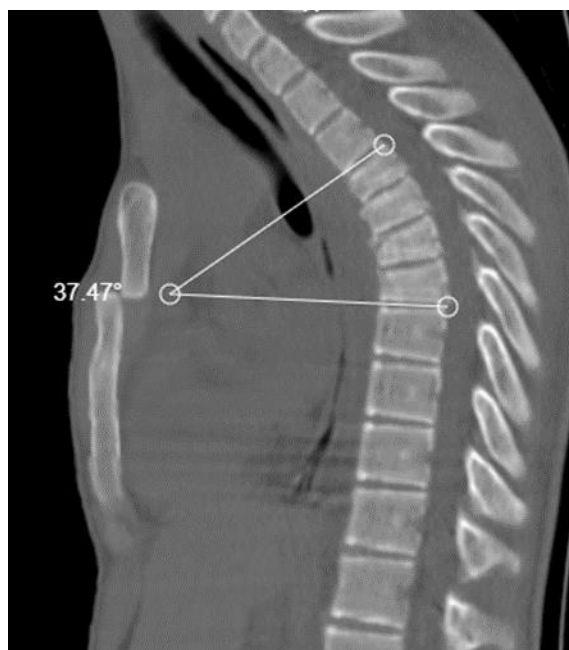


Figure 1. Preop kyphotic angle value 37.47

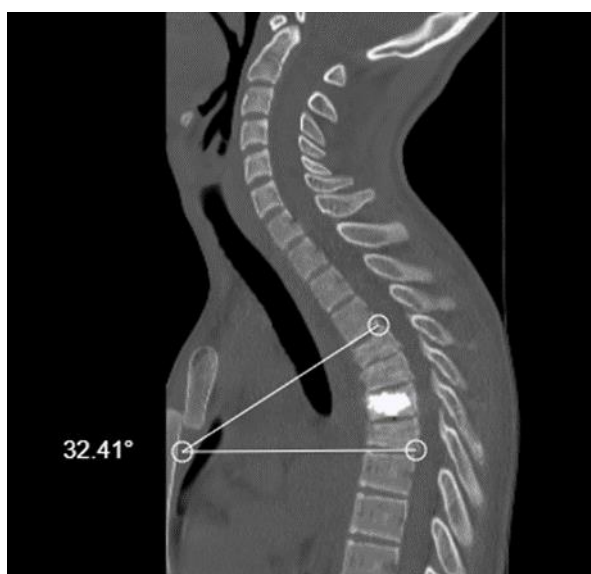


Figure 2. The kyphotic angle value after kyphoplasty is 32.41

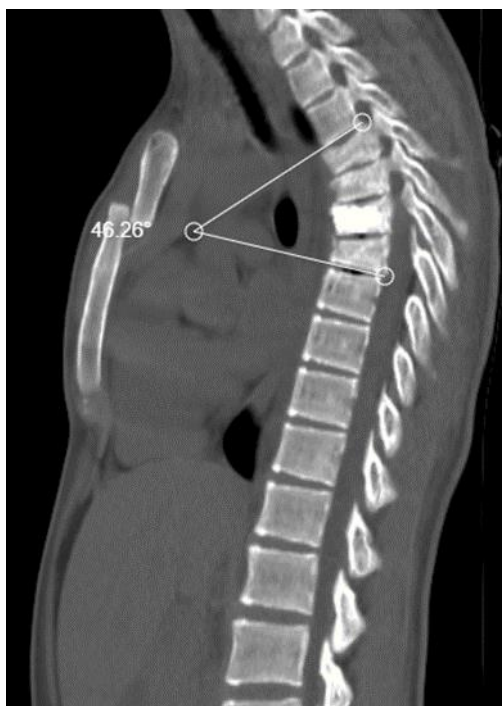


Figure 3. Final kyphotic angle value before fusion surgery 46.26

## DISCUSSION

Trauma is the most common cause of vertebral fractures, apart from osteoporosis (4). Various classification systems have been developed depending on the anatomical condition of the fracture or the type of trauma (5). However, it is still unclear whether conservative treatment or surgical treatment will be given to the patient (1). Percutaneous balloon kyphoplasty with percutaneous polymethylmethacrylate (PMMA) injection; is the strengthening of vertebrae that have been fractured due to osteoporosis, pathology, or trauma. It has been observed that healing is achieved with percutaneous cement injection into the vertebral body (6).

One of the most important sequelae of vertebral fractures is the development of posttraumatic kyphosis. Insufficient treatment of fracture is a factor in the formation of kyphotic deformity (7). Especially in the postoperative period, progressive neurological deficit and pain indicate progressive kyphotic deformity (8). Back pain reported by the case at the last control; It is the most important indicator of increasing kyphosis. Orthoses are recommended for patients to correct posture and straighten the thoracic spine and provide additional clinical benefit (9). In our case, it is noteworthy that the patient did not comply with orthosis use and restricted mobilization rules.

Biomechanical studies have shown that reduction of a fractured vertebra changes the sagittal balance by causing the spinal segment to become unstable (10). Considering that the preo-



perative kyphotic angle is the balance point as a result of the strength of the vertebral body affected by the trauma, it can be thought that the postoperative kyphotic angle should not exceed the primary preoperative kyphotic angle (11). In our case, the postoperative kyphotic angle was lower than the preoperative kyphotic angle. In the following period, an increase in the kyphotic angle was observed in the follow-up examination of our postoperative patient. this increased kyphotic angle was wider than the preop kyphotic angle. Therefore, fusion surgery was decided.

Treatment of vertebral fracture is determined by considering the current classifications and the systemic condition of the patient. Patients should be followed closely in terms of orthosis use, compliance with mobilization restrictions, pain status, and kyphotic angle in the postoperative period.

Patients with clinical signs or neurological deficits require surgery. The risk of developing early instability complications should be considered in Parkinson's patients who underwent lumbar fusion surgery.

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## A SILENT BUT FATAL CASE OF AORTIC DISSECTION

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### ÖZET

Aort diseksiyonu, kan basıncı ve aort duvarının yapısal anomalileri başta olmak üzere, çeşitli mekanizmaların katkısıyla, aort intimasında meydana gelen yırtık sonucu aortun tunika mediasının ayrılması ve kanın aort duvarının içine dolması olarak tanımlanır. Aort diseksiyonu, yaşamı tehdit eden, ani göğüs ve/veya sırt ağrısı ile karakterize bir hastalıktır. Aort diseksiyonu tipik olarak, "yırtılma" şeklinde tanımlanan göğüs, sırt veya karın ağrısının gibi ani gelişen semptomlarla biz hekimleri aort diseksiyonu yönünden uyarıcıdır. Vakaların aort diseksiyonunun ağrısız olabileceği ve nörolojik hadiseler ile başvurularıda olabilir. Acil servise aort diseksiyonunun tipik semptomları dışında senkop, bilinç değişikliği, ekstremitelerde güç kaybı gibi için beklenmedik belirtilerle başvuran hastalarda aort diseksiyonu tanısı akılda tutmamız gerekir.

**Anahtar kelimeler:** Aort diseksiyonu, nörolojik semptom, serebral enfarktüs, pleji

### ABSTRACT

*Aortic dissection is defined as the separation of the tunica media of the aorta and the filling of blood into the aortic wall as a result of a tear in the aortic intima, with the contribution of various mechanisms, primarily blood pressure and structural anomalies of the aortic wall. Aortic dissection is a life-threatening disease characterized by sudden chest and/or back pain. Aortic dissection typically alerts us physicians to aortic dissection, with sudden onset symptoms such as chest, back, or abdominal pain defined as "tearing". Cases may have aortic dissection without pain and may present with neurological events. The diagnosis of aortic dissection should be kept in mind in patients who present to the emergency department with unexpected symptoms such as syncope, altered consciousness, and loss of strength in the extremities, apart from the typical symptoms of aortic dissection.*

**Keywords:** Aortic dissection, neurological symptom, cerebral infarction, plegia

## INTRODUCTION

Aortic dissection is defined as the separation of the tunica media of the aorta and the filling of blood into the aortic wall as a result of a tear in the aortic intima, with the contribution of various mechanisms, primarily blood pressure and structural anomalies of the aortic wall (1). The most commonly used classification is that of De Bakey et al. Dissections that start from the proximal aorta and involve the entire aorta are called Type I. Those involving isolated ascending aorta are classified as Type II and those involving isolated descending aorta are classified as Type III (2). According to the Stanford classification, regardless of distal spread, dissections involving the ascending and archus are called Type A, and those involving the descending aorta are called Type B (3).

## CASE REPORT

A 77-year-old female patient who applied to an external center with complaints of numbness and weakness in her right leg, which started approximately 6 hours ago, lasted for approximately one hour and then completely regressed, was referred to our emergency service for further examination. Has a known history of hypertension. The vital parameters of the patient who has no additional complaints; Fever: 36.5°C Arterial Blood Pressure: RIGHT: 140/70 mm/Hg LEFT: 130/70 mm/Hg Pulse: 82 beats/minute, O<sub>2</sub> Saturation: 98%. On physical examination, respiratory sounds are normal and there is no additional pathology. There is no defense - rebound in the abdomen. Right femoral pulse was felt weak in the peripheral pulses, but the left femoral pulse beat was normal. laboratory findings White blood cell: 11,45/mm<sup>3</sup> (85% neutrophil dominance) hemogram: 10.8 g/dl C-Reactive Protein: 177 mg/dL Platelet: 155/mm<sup>3</sup> INR: 1.12 Creatine: 1 mg/dl urea: 65 mg/dl d dimer: 8.7 µg/ml. Neuroimaging and thoracoabdominal CT angiography were requested due to the patient's complaints. No acute pathology was observed in cranial brain computed tomography. Cranial diffusion magnetic resonance imaging (MRI) revealed millimetric infarct findings in the right caudate nucleus head. CT angiography showed dissection findings extending to the iliac-common and iliac artery, including the ascending aorta, aortic arch, and descending aorta (Figure 1). The patient was referred to another center in consultation with the cardiovascular surgery department and neurology unit. The patient, who was operated on by cardiovascular surgery, died in the follow-ups after the operation.

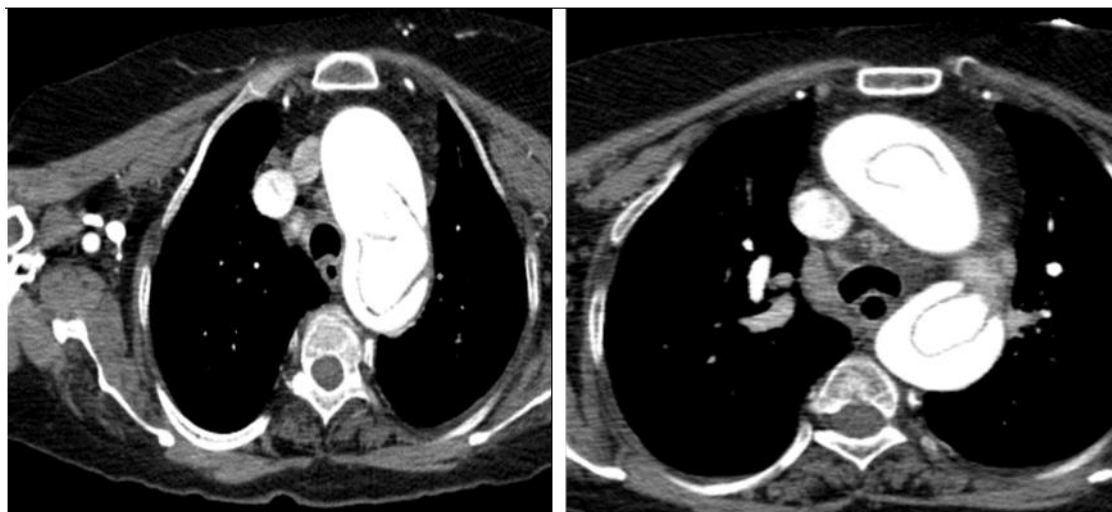


Figure 1. Computerized Tomography(CT) image of the patient

## DISCUSSION

Aortic dissection is a life-threatening disease characterized by sudden chest and/or back pain. Aortic dissection typically alerts us physicians to aortic dissection, with sudden onset symptoms such as chest, back, or abdominal pain defined as "tearing". These symptoms also provide patients with a quick and accurate diagnosis. Apart from this most characteristic symptom, the fact that these cases have different clinics may delay the diagnosis.

The disease is detected twice as frequently in men than in women (4). However, it should be kept in mind that aortic dissection may be painless in 10%-55% of cases (5-9). In the article they presented, painlessly similar to our case, these cases can often present with stroke, coma or spinal cord ischemia, acute renal failure, myocardial infarction, and co-workers' enteric ischemia findings (10,11). Patients may present with neurological symptoms such as hypoesthesia, plegia, syncope, horner's syndrome, and transischemic transient attack due to hematomas developing especially in dissection cases and decrease in organ nutrition in dissection cases(12,13). The most important factor in the diagnosis of acute aortic dissection is dissection (14). Therefore, in patients who present to the emergency department with unexpected symptoms for aortic dissection such as syncope, altered consciousness, hypotension, atypical abdominal pain, and loss of strength in the extremities, the diagnosis of aortic dissection should be kept in mind, and the physical examination should be evaluated in detail and necessary tests should be performed.

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