Case Report

Visual Loss After Lumbar Discectomy Due to Cortical Infarction: Case Report

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Summary

Postoperative vision loss associated with spine surgery is a well known, albeit very rare complication. Origin and pathogenetic mechanism of postoperative vision loss remain frequently unknown. Postoperative vision loss incidence after spinal surgery ranges from 0.028 to 0.2%. We report a 53 year-old woman in whom a partial visual loss in the right eye occurred two hours after lumbar spine surgery. Known comorbidities included arterial hypertension, diabetes mellitus type 2, and mild anemia. There was no significant problem during lumbar spine surgery in prone position. Dural tear did not occur. The operation time was 50 minutes. We have highlighted the possible mechanism of the unusual complication and how to prevent of such conditions.

Key words: Complication, postoperative vision loss, spine surgery

INTRODUCTION

Postoperative visual loss following spine surgery is a potentially devastating complication and its pathogenesis is often unclear in many cases. The causes of postoperative visual loss are cortical blindness, ischemic optic neuropathy, and central retinal artery thrombosis³. Risk factors include advanced patient age, diabetes, hypertension, anemia, hipercoagulopathies, prolonged operation time, excessive blood loss, and excessive intraoperative fluid load⁶. In this report we describe a 53-year-old woman with L4-L5 lumbar discal hernia who suffered postoperative vision loss after a simple lumbar discectomy operation. We also discuss the potential pathophysiologic mechanism and propose recommendations for minimizing the incidence of this occurrence.

CASE PRESENTATION

A 53-year-old woman presented to our clinic with a 6 months history of low back...
pain. She had arterial hypertension, type II diabetes mellitus, and mild anemia (Hb: 11 gr/dl) preoperatively. The coagulopathy tests were normal. There was no history of heart disease, arrhythmia, stroke or cigarette using.

On the neurologic examination, her motor function was 4/5 on left extensor hallucis longus and 3/5 on tibialis anterior. There was hypoesthesia on left L5 dermatome. Tendon reflexes were normal. There was no incontinence of bowel or the urinary bladder. Basic examination of the cranial nerves were normal. Preoperative lumbar spinal magnetic resonance imaging (MRI) revealed a disc herniation on the L4-L5 level. The patient underwent a left L4 hemilaminectomy and L4-L5 microdiscectomy operation. The operation was uneventful. Estimated blood loss was less than 200 ml. Dural tear did not occur. The operation time was 50 minutes. A vision loss in the right eye occurred two hours after the surgery.

An urgent ophthalmologic consultation was obtained. Fundoscopy and eye pressure were totally normal. There was visual loss on the right temporal field. Cranial MRI and cerebral digital subtraction angiography (DSA) were performed. The MRI showed that there was an acute cerebral infarction on the left occipital area (Fig 1a-b). DSA was normal (Fig 2).

![Figure 1](image1.png)  
**Figure 1:** Ischemic area is seen in the occipital region on T1 and T2-weighted axial MR images.

![Figure 2](image2.png)  
**Figure 2:** Normal DSA
DISCUSSION

Loss of vision after spine surgery is a devastating complication that has gained increasing recognition in the recent literature\(^1,6,7\). Spine surgeries being the second most common among the nonocular surgeries which can have such an unfortunate complication postoperatively\(^5,8\).

Risk factors for the development of vision loss after spine surgery include prolonged procedure, intraoperative anemia and hypotension and infusion of large amounts of crystalloid, significant intraoperative hydration, excessive blood loss, hemodilution, smoking\(^4,5,8\) (Table 1). Nevertheless, the cause of perioperative visual loss seems to be a multifactorial problem with unclear pathophysiological mechanism\(^9\). Our patient had two of these risk factors. Intraoperative hypotension was aggressively managed and anemia was corrected postoperatively.

Total cortical blindness is usually accompanied by signs of stroke in the parieto-occipital region. The patient may suffer agnosia. Pupillary reflexes are preserved and most of the visual field is restored within days, but impairment in spatial perception and in the relationship between sizes and distances may remain\(^2\).

Cortical blindness can result from global or focal ischemia, cardiac arrest, hypoxemia, intracranial hypertension, and exsanguinating hemorrhage, vascular occlusion, thrombosis, intracranial hemorrhage, vasospasm, and emboli\(^2\).

Cortical blindness can occur from a vascular insult to the visual cortex or tracts. This is suspected in patients with normal papillary reflexes and is established by MRI\(^8\).

The consensus of the task force is that a high-risk patient's vision should be assessed when the patient becomes awake. If there is an evidence of potential visual loss, an urgent ophthalmologic consultation should be obtained to determine its cause. Further management may include optimizing hematocrit levels, hemodynamic status, and arterial oxygenation. To rule out intracranial causes of visual loss, MRI may be considered\(^2\).

Table 1. Risk factors for visual loss after spine surgery

<table>
<thead>
<tr>
<th>Preoperative</th>
<th>Peroperative</th>
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<tbody>
<tr>
<td>Narrow angle glioma</td>
<td>Excessive blood loss</td>
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<tr>
<td>Vascular disease</td>
<td>Massive transfusion</td>
</tr>
<tr>
<td>Collagen disorders</td>
<td>Hypotension</td>
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<tr>
<td>Hipercoagulable state</td>
<td>Prone position</td>
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<td>Hypertension</td>
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<td>Diabetes</td>
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<td>Smoking</td>
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<td>Atherosclerosis</td>
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<td>Renal failure</td>
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</table>
The most common cause of visual deficits after spine surgery is ischemic optic neuropathy, which results from decreased perfusion pressure of the optic nerve head\(^{(6,8)}\). The other reasons are central retinal artery occlusion, cortical infarction and external ocular injury\(^{(9)}\).

Probably, multitude of factors play role, some known and some not yet known, contribute to the development of this complication in a small subset of these patients. In any case, all patients and their families should be counseled on the potential occurrence of this complication. It should be listed in the preoperative consent forms.

**CONCLUSION**

All risk factors should be identified very carefully preoperatively. Adequate transfusion guidelines should be established for at high risk patients. Unacceptable values of hemoglobin and hematocrit should be corrected\(^{(11)}\). Intraoperative, hemodynamic fluctuations and anemia must be aggressively managed with the avoidance of large amounts of crystalloid, when patient's status allow. Intraoperative positioning that helps reduce intraabdominal pressure and patient's heads position should be kept level with or higher than the heart\(^{(1,10)}\). All the surgical crew should be aware especially in at-risk patients. Postoperatively, detailed neurologic visual exam should be performed. An urgent ophthalmology consultation is indicated for any suspicion of postoperative vision loss.

**REFERENCES**


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