

# Acute Onset of Guillain-Barré Syndrome after Multiple Spine Surgeries: A Rare Case Report

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## Abstract

*Guillain-Barré syndrome* is an autoimmune disorder presented by ascending paralysis and areflexia. The condition has been reported after many infections, but Guillain-Barré syndrome after spine surgery is rare. We, herein, present a case of Guillain-Barré syndrome after multiple spine surgeries for degenerative lumbar scoliosis. A 60-year-old woman with degenerative scoliosis underwent surgery for the third time and developed Guillain-Barré syndrome 3 weeks after the final operation. The patient received intravenous immune globulin therapy and needed mechanical ventilation and intensive care. She was discharged in good condition after 5 weeks.

**Keywords:** Guillain-Barré syndrome, spine, surgery

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## INTRODUCTION

Guillain-Barré syndrome is a rare areflexic peripheral paralysis. Guillain-Barré syndrome after spine surgery is a rare presentation of disease, and its diagnosis is usually delayed. Our goal was to present a case report of Guillain-Barré syndrome after multiple spine surgeries.

## CASE REPORT

A 60-year-old woman presented to our university hospital with severe claudication of both lower extremities with no radicular pain. Her ability to do her activities of daily living was severely affected. As she stated, she could not walk the distance from the bed to the kitchen without sitting. She underwent surgery in another center, but the symptoms did not improve after the operation. Six months after the first surgery and failure of conservative treatment, including physiotherapy and caudal injection of steroids, the patient underwent second surgery with the diagnosis of lumbar spinal stenosis [Figure 1].

At the time of surgery, previous instrumentation was removed and decompression of levels from L2 to L5 with laminotomy of each segment and undercutting of facets no more than 50% of each was done. At the time of surgery, no instrumentation was implanted [Figure 2]. Claudication symptoms diminished dramatically after the second surgery, and the patient's walking ability improved.

Five months after the second surgery, she developed back pain. Conservative treatment was planned again and caudal and lumbar facet steroid injection was done. The patient did not improve in the course of 1 year after the second surgery, and at this time, flexion and extension X-rays showed instability between L2 and L3 vertebrae [Figure 3]. The patient underwent third surgery and a long fusion from T11 to S, and decompression was done [Figure 4]. The patient spent 2 days in the intensive care unit postoperatively and then in the ward where she was out of bed and started walking. Three weeks

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after the last surgery, she gradually felt weakness in both legs. An internal medicine specialist assessed the patient and admitted her to the hospital.

As she was waiting for MRI, weakness started in her hands when Guillain-Barré Syndrome was diagnosed with neurologic consultation. The lumbar puncture showed five white blood cells and an 80 mg/dl cerebrospinal fluid (CSF) protein. Intravenous immune globulin therapy was initiated

immediately, but respiratory symptoms developed, and the patient was intubated. After 14 days of mechanical ventilation, she was weaned off the ventilator and, through a trial of spontaneous breathing through the endotracheal tube, eventually extubated and began to improve. After 5 weeks, she was discharged in a generally good condition with 4/5 distal and proximal limb muscle forces.

## DISCUSSION

Guillain-Barré syndrome is an autoimmune polyneuropathy presenting with acute neuromuscular paralysis and CSF changes.<sup>[1]</sup> It is usually preceded by an infection or other immune system stimulant.<sup>[2,3]</sup> So many infections like *Campylobacter jejuni*, cytomegalovirus, Epstein virus, influenza virus A, *Mycoplasma pneumoniae*, and *Haemophilus influenza*<sup>[1]</sup> have been linked to Guillain-Barré syndrome. Guillain-Barré syndrome can be seen after influenza vaccination.<sup>[4]</sup> Guillain-Barré syndrome after spine surgery is a rare complication, and almost all available articles are case reports.

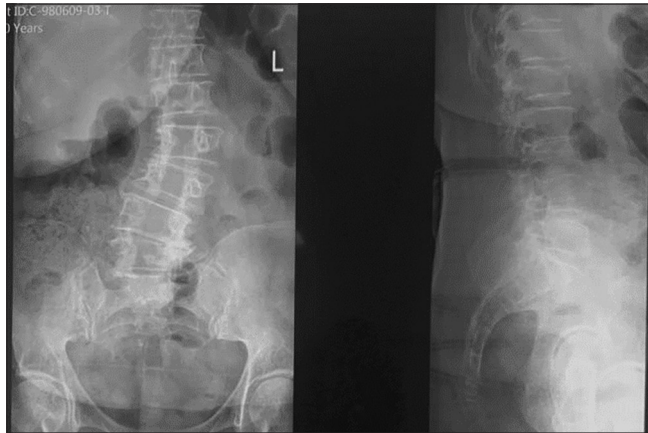
Guillain-Barré syndrome has been reported after surgeries like cardiac bypass surgery, bariatric surgery, and gastrectomy.<sup>[5-7]</sup> It also has been reported after failed pelvic fixation,<sup>[8]</sup> epidural anesthesia,<sup>[9]</sup> and total hip arthroplasty.<sup>[10]</sup>

Guillain-Barré syndrome typically presents rapidly progressive bilateral ascending weakness, which starts in the distal lower extremities.<sup>[3]</sup> Other symptoms include numbness, paresthesia, and pain.<sup>[1]</sup> Patients usually have reduced deep tendon reflexes and there is albuminocytologic dissociation in 50% of patients, as seen in our case.<sup>[1]</sup> The onset of symptoms after surgery was reported from the day after surgery<sup>[11]</sup> to 6 weeks postsurgery.<sup>[12]</sup>

The role of autoantibodies in the pathophysiology of Guillain-Barré syndrome, and their relation to the surgeries are not understood.<sup>[1]</sup> After surgical interventions, the inflammatory response has been reported as a possible cause of Guillain-Barré syndrome.<sup>[13,14]</sup> One hypothesis is that immunosuppression after surgery and postoperative infection might lead to Guillain-Barré syndrome.<sup>[15]</sup> However, there is no proven evidence of infection after every Guillain-Barré syndrome occurred postoperatively.<sup>[11]</sup> Our patient differs from other cases reported in the literature that the symptoms



**Figure 1:** Preoperative anteroposterior and lateral X-rays before the second surgery



**Figure 2:** Postoperative anteroposterior and lateral radiographs after the second surgery, implants removal, and decompression



**Figure 3:** Left: Flexion and extension lateral radiographs demonstrating instability of L3 and L4, Right: Sagittal MRI before the third surgery



**Figure 4:** Postoperative anteroposterior and lateral radiographs after the third surgery

occurred after the third spinal surgery, and the previous two postop periods were uneventful. The clinical and paraclinical workup failed to reveal any obvious source of infection before the symptoms evolved.

## CONCLUSION

Although Guillain-Barré syndrome is a rare complication after spinal surgery, it should be noted that any delay in the diagnosis could be disastrous and even fatal. The condition needs a high clinical suspicion and should be kept in mind for any patient who develops neurological symptoms after surgical intervention on the spinal column.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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