Lumbar Decompression and Fusion in a Centenarian

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abstract

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The incidence of chronic and debilitating conditions in the aging population is steadily increasing, and the treatment of extreme elderly patients with spinal conditions can be challenging. Spinal stenosis and spondylolisthesis can dramatically affect patient quality of life, and patients commonly seek a surgical solution for their condition. Many extreme elderly patients are cautioned against surgery secondary due to their high complication and in-hospital mortality rates when compared with younger patients.

This article describes the oldest patient (101 years old) in the English literature with severe spinal stenosis and spondylolisthesis who underwent primary lumbar decompression and fusion. His symptomatology dramatically affected his quality of life, and he was denied surgical care at another institution secondary to his advanced age and high potential risks. A successful outcome was ultimately achieved, and he was able to return to a higher level of physical functioning and social participation prior to his death of unrelated causes 3 years later.

This case questions the strict indications of surgery in less-than-ideal and extreme elderly surgical candidates. The authors believe that surgery should not be denied in extreme elderly patients who have failed conservative treatment modalities and continue to have functional impairments. Successful spinal surgery may allow extreme elderly patients an improved quality to the remainder of their life.
Lumbar decompression and fusion has a reported success rate of 85% for the treatment of degenerative spinal stenosis. Patient selection is critical to successful outcomes and the avoidance of complications. Age is a vital component to patient selection, with several studies reporting increased complication and mortality rates, longer hospital stays, increased costs, and decreased patient satisfaction following lumbar decompression and fusion in elderly patients. Furthermore, extreme elderly patients may be considered too high risk for surgery and ultimately be managed nonoperatively despite their level of symptomatology. This article describes a 101-year-old man who underwent primary lumbar decompression and fusion for lumbar stenosis and spondylolisthesis. To the authors’ knowledge, he is the oldest patient reported in the English literature treated in this manner. This article raises questions regarding the ideal management of extreme elderly patients.

CASE REPORT

A 101-year-old man presented with a 6-year history of low back, buttock, and bilateral radiating leg pain. The patient’s symptoms had steadily increased in severity, prompting him to seek treatment. He was routinely walking 3 to 4 miles per day until his symptoms became self-limiting. At evaluation, he used a walker for ambulation and limited his activity to the home. He reported that he no longer had control of his legs, had a number of recent falls, and felt relief of his radicular pain with forward flexion. The patient was first evaluated at another institution and had been denied surgical intervention secondary to the high risks associated with his advanced age.

His medical history included diverticulitis, atrial fibrillation, chronic renal insufficiency, and hypercholesterolemia. The patient was a retired chief executive officer of a major corporation and described an active lifestyle prior to the onset of his symptoms. On physical examination, he stood in a forward flexed position with limited motion of his lumbar spine. He ambulated slowly using a walker and was unable to toe- or heel-walk. Straight-leg raise testing at 45° of both extremities reproduced radicular symptoms. Motor and sensory examination revealed no definite deficits, and reflex examination was normal. He had palpable dorsalis pedis and posterior tibial artery pulses.

Radiographs of the lumbar spine demonstrated degenerative changes and a L4-L5 spondylolisthesis (Figure 1). Magnetic resonance imaging demonstrated severe lumbar stenosis from L3 to S1 (Figure 2).

Despite the patient’s advanced age, the authors believed his symptomatology and declining functional capabilities warranted surgical intervention. A posterior lumbar laminectomy, bilateral foraminotomies, and in-situ posterolateral fusion with autogenous iliac crest bone graft was performed from L3 to S1. Operative time was approximately 4 hours, with an estimated blood loss of 500 cc. The patient was administered 1 unit of packed red blood cells intraoperatively and 1 unit postoperatively. Cardiology and renal consultations were obtained immediately postoperatively, and he was initially admitted to the surgical intensive care unit postoperatively. Postoperative neurologic examination remained unchanged, no in-hospital complications occurred, and he was discharged after an uneventful 11-day hospital course.

The patient was followed up routinely after discharge, and at 6 weeks postoperatively, he reported complete relief of his bilateral buttock and leg pain but reported pain at the iliac crest graft site with uphill walking, which eventually resolved by 6 months. He reported returning to routine daily walking and participating in several social activities. Follow-up anteroposterior and lateral radiographs demonstrated a solid fusion mass from L3 to S1 (Figure 3). No further lumbar surgical interventions were performed. He remained asymptomatic until his death of unrelated causes 3 years later at the age of 104 years.

DISCUSSION

Degenerative spine disease is a relatively common condition, with an increasing incidence occurring with advancing age. Because of this, the appropriate selection of extreme elderly patients for surgical treatment is imperative to maximize the patient’s quality of life.
surgical success and minimize complications.6

Age is a major factor to consider when evaluating patients with spinal stenosis. Shabat et al7 reported a high failure rate and poor patient satisfaction following nonoperative treatment modalities in extreme elderly patients with spinal stenosis and recommended surgical treatment for these patients. Despite these recommendations, an earlier report by Deyo et al3 cautioned against the surgical treatment of elderly patients and demonstrated that the rate of complications following lumbar surgery increased significantly with older age in a large series of patients obtained from a hospital discharge registry. Patients aged 75 years or older had a rate of complications 3 times greater than patients aged 40 years or younger, and a relative risk of death during hospitalization was 4.2 for every 10-year age increment.3

Recent reports have documented the success of lumbar decompression in extreme elderly patients with an acceptable morbidity.8,11 However, the addition of posterior spinal arthrodesis following decompression can lead to increased operative times, blood loss, and an increased complication rate in extreme elderly patients.2,5,12,13 Carreon et al5 reported an overall complication rate of 80% (21% major) in a series of 98 patients aged 65 years or older who underwent posterior lumbar decompression and fusion. Glassman et al2 also reported significantly more complications in patients aged 65 years or older who underwent posterior lumbar decompression and fusion. Increasing complication rates in extreme elderly patients may be explained by several factors in addition to age. In the study by Carreon et al,5 complication rates increased with patient age, intraoperative blood loss, longer operative times, and number of levels fused.5 Raffo and Lauerman13 reported that inpatient complications were correlated with the presence of medical comorbidities in a series of patients in their ninth decade of life. Cassinelli et al12 reported a lower but considerable complication rate of 34% (3% major, 31% minor) in a series of 166 patients aged 65 years or older. No complication rates were associated with patient age, the presence of medical comorbidities, or the use of instrumentation but were associated with fusions of 4 or more levels.12

CONCLUSION

The treatment of extreme elderly patients with severe spinal stenosis is challenging. The aging population with chronic and debilitating conditions is substantially increasing, and the optimal treatment and selection of patients for surgical intervention requires consideration. Symptoms associated with spinal stenosis can dramatically affect patient quality of life. Surgical intervention should restore patient function while minimizing risk. This article describes an unusual case of a 101-year-old patient who underwent lumbar decompression and fusion for spinal stenosis and spondylolisthesis. Extended hospital stays (range, 5–7 days) were common at the authors’ institution during the time period that this patient underwent lumbar decompression and fusion to facilitate physical therapy and rehabilitation. The patient was also monitored in the intensive care unit for 2 days before ward admission, adding to his unusually long hospital course. Currently, patients are typically discharged home or to a rehabilitation facility by postoperative day 3 or 4.

Surgery should be considered in extreme elderly patients after the failure of conservative treatment modalities and continued symptomatology with functional impairments. Preoperative evaluation and surgical risk stratification is critical to avoid complications in less-than-ideal surgical candidates. Physicians should maintain control over patient care decisions without influence from a third party.

REFERENCES


