Major Spinal Surgery Procedure on a High Cardiovascular Risk Patient with Symptomatic Neural Compression due to 1: Osteoporotic T12 Compression Fracture along with 2—L5/S1 Spondylolisthesis

1Sumeet G Pawar, 2Premanand Ramani, 3I Sabri Ibrahim

ABSTRACT

Introduction: Osteoporotic vertebral fracture most common located at thoracolumbar junction, whereas most spondylolisthesis at L4-5 is six to 10 times more frequent involved than adjacent level. Concomitant compressed fracture with lumbar spondylolisthesis is rarely reported.

Aim: To report an unusual case concomitant osteoporotic compressed thoracic fracture with lumbar spondylolisthesis and severe comorbidity.

Case: A 68 years old female complaining 3 months severe low back pain and right thigh pain after falling on the floor. On physical examination, she had bilateral foot drop, there was no sensory loss and neither any bowel and bladder involvement with cardiovascular problem 70% left artery coronary obstruction on cardiac angiography.

Investigation: Magnetic resonance imaging (MRI) D12 compression fracture with spinal cord and thecal sac compression and spondylolisthesis L5-S1.

Management: L5 laminectomy, L4/5 and S1 posterior stabilization, D-12 laminectomy and transpedicular vertebroplasty and posterior stabilization of D11-L1.

Result: The pain was significantly reduced after the surgery.

Conclusion: Open surgery among osteoporotic compression fracture in thoracic spine and degenerative spondylolisthesis in lumbar spine needs further evaluation regarding comorbid disease which often present in advancing age.

Keywords: Compression fracture, Spondylolisthesis, Vertebroplasty, Laminectomy and posterior stabilization.

INTRODUCTION

Lumbar spondylolisthesis requiring surgery is common. It is also common to get compression fracture in the DL region, particularly in elderly osteoporotic patients following a minor trauma like fall in the house. What is not common is to find patients presenting with symptoms of both spondylolisthesis and DL region compression fracture and requiring surgical intervention.1,2 In addition, this patient was very obese (98 kg) and had a very unstable cardiac status. Successful surgical management for this patient has prompted us to write this case report.

CASE REPORT

A 68 years old obese (98 kg) patient had complained of chronic low back pain for several years with neurogenic claudication. She had preferred conservative treatment until recently (3 months back) when she fell down in the house and sustained injury to the back. She complained of severe pain in the upper back and right sciatica making her life miserable and she was now asking for surgical treatment.

Clinically, her right SLR was restricted. Both ankle and right knee jerks were absent. She had developed bilateral foot drop with 0/5 power in left foot and 1/5 in right foot. Locally, there was kyphus prominence in the DL region of spine and it was tender. She also had tenderness in the lumbosacral region. She also had gross osteoarthritis in both knees being more marked in left knee joint.

INVESTIGATIONS

X-rays and magnetic resonance imaging (MRI) done showed that she had T12 compression fracture causing kyphotic deformity and severe compression of the spinal cord at that level.

She also had L5/S1 spondylolisthesis with severe lateral recess stenosis at L5/S1 and L4/5 levels (Figs 1A to C).

She required decompression and correction of kyphotic deformity in the DL region as well as surgical correction of L5/S1 spondylolisthesis.
She suffered from high blood pressure and uncontrolled diabetes for more than 10 years with fasting blood sugar of 600 mg/dl, and has been under the treatment of cardiologist for poor functioning of the heart. Her ECG showed old anteroseptal infarct. The ejection fraction (EF) was 35%. On admission, the cardiologist felt that her heart condition needed to be stabilized before undertaking surgery as she had NT proBNP of 5336 mg/dl indicative of congestive heart failure and, hence, she was discharged and readmitted after 3 weeks with heart stabilized with medicines. The cardiologist agreed for her to undergo back surgery first in view of severe pain but she remained a high-risk patient. The fact was explained to the relatives, and surgery was undertaken with the consent of the relatives.

The surgery was undertaken with cardiologist standby, arterial monitoring and central venous line in the right jugular vein for any eventualities.

The surgery, a double PLIF procedure lasting 8 hours, was conducted smoothly with anesthetist maintaining adequate blood pressure, stable cardiac status and satisfactory respiratory end-tidal volume.

**SURGICAL PROCEDURE**

This was done in two stages. In the first stage, D12 laminectomy was done with bilateral internal decompression of spinal stenosis (IDSS) to decompress the cord. Vertebroplasty was done and, although preoperative X-rays showed significant collapse of vertebra with two endplates almost touching each other, almost 80% expansion was achieved with good planum obtained in the anterior and superior endplates. Patient being obese, further stabilization of the segment was done with pedicle screw in T11 and L1. In stage 2, the lower lumbar spine and the sacrum was stabilized with dynamic screws following decompression (Figs 2A and B).

Her postoperative period was most uneventful, and she had stood the procedure well but she was transferred to ICU in view of her unstable heart and was observed there for 24 hours before transfer to the room. She was quickly mobilized and made to walk with support but the walking was hindered because of two factors namely, bilateral foot drop and osteoarthritis of knee joints. She was discharged from the hospital after 5 days with instructions to continue physiotherapy with electrical stimulation and splints for both feet, and further instructions for controlling diabetes, blood pressure and supervision over unstable ischemic heart.

She was seen for follow-up of 2 weeks and she has been progressing satisfactorily. She was brought on a wheelchair and was comfortable although at first admission she came on a stretcher. The postoperative X-rays show satisfactory decompression of dural sac at both places and satisfactory stabilization of the spine in both regions. She could sit comfortably and had no pain.
DISCUSSION

The impact of osteoporosis is increasingly recognized in the aging population. Vertebral compression fractures are a significant problem associated with pain and functional impairment. Traditional, open surgery has been problematic in the management of patients in this population because of poor bone quality, frequent and extensive medical comorbidity, and the overall frail patient condition. Recent studies are trying to establish methods to access bone quality intraoperatively.\(^3\)

Nonoperative management, including medications for pain relief and bracing, has been used traditionally; however, many patients are left with incapacitating residual pain and are unable to return to their previous level of activity.

While the option of conservative management seems to be better in patient with high cardiac risk and other comorbidities, the overall outcome is always better with surgical intervention. As seen in our patient, the cardiac risk was very high due to postinfarct status of the heart, poor ejection fraction and congestive cardiac failure. Due to osteoporotic compression fracture and severe low back pain from spondylolisthesis, the patient was bed ridden for more than 3 months and she wanted a surgery to improve her mobility. Hence, operative management was planned for her and she stood the procedure well, and was quickly mobilized much to her satisfaction. However, her joy could not be complete due to severe osteoarthritis in the knee joints and bilateral foot drop.

Vertebroplasty is effective in reducing pain and accelerating patient’s functional status. In our patient, the expansion of the vertebral body was extremely satisfactory with good planum maintained anteriorly, superiorly and inferiorly. Vertebroplasty and/or kyphoplasty have been proven to be a significant advancement in the treatment of patient with osteoporotic compression fractures.\(^4\)\(^,\)\(^5\)

Addition of adjacent vertebrae with pedicle screws and rods provides 360° stability in an obese patient with unstable segment in the DL region which had already caused segmental kyphosis.

Osteoporotic compression fracture and degenerative spondylolisthesis patients are usually in advanced age and often present with several comorbidities like our patient who had diabetes, blood pressure, ischemic heart disease, poor cardiac status and severe obesity. Patients with symptomatic spondylolisthesis like our patient who undergoes decompression and posterior lumbar interbody fusion are reported to have reduced pain and have a better functional outcome\(^6\) due to mobility possible because of operative procedure in patients who are otherwise bed ridden like our patient who was bed ridden for more than 3 months.

CONCLUSION

Providing mobility to patients who are bed ridden with severe low back pain from spondylolisthesis and severe pain in the DL region from osteoporotic fractures is a blessing for the elderly patients even by taking risk with the associated comorbid conditions.

REFERENCES